United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Burns District Office
28910 Hwy 20 West
Hines, OR 97738

IN REPLY REFER TO:

4100 (ORB070) P

MAY 30 2014

CERTIFIED MAIL – 7010 1870 0002 7993 1740
RETURN RECEIPT REQUESTED

Rob Sanders
Roaring Springs Ranch
[redacted]

NOTICE OF PROPOSED DECISION
To Issue a Grazing Permit, Accept an Allotment Management Plan (AMP), Protect Springs, and Relocate a Fenceline within the South Steens Allotment.

Dear Mr. Sanders:

You are receiving this Proposed Decision because you are the grazing permit holder of record for the South Steens Allotment #6002.

BACKGROUND

The Andrews Resource Area, Burns District of the Bureau of Land Management (BLM), prepared the enclosed Environmental Assessment (EA) (OR-06-027-060) to analyze possible actions developed through Interdisciplinary Team (IDT) recommendations, Steens Mountain Advisory Council (SMAC) recommendations, public comments, and in coordination with you, the grazing permit holder, to aid in accomplishing allotment resource objectives and conform to (or continuing conforming to) all Oregon and Washington Standards for Rangeland Health (further referred to as Standards) and Guidelines for Livestock Grazing Management (further referred to as Guidelines; Standards and Guidelines together are referred to as S&Gs). Possible actions are grazing management, grazing permit renewal, proposed range improvements, including water developments, and approval of the AMP.

AUTHORITY AND COMPLIANCE

2005 ANDREWS MANAGEMENT UNIT (AMU)/STEENS MOUNTAIN COOPERATIVE MANAGEMENT AND PROTECTION AREA (CMPA) RESOURCE MANAGEMENT PLAN (RMP): The enclosed EA, *South Steens Allotment Management Plan/Environmental Assessment OR-06-027-060*, is tiered to the 2004 AMU/Steens Mountain CMPA Proposed RMP and Final Environmental Impact Statement (EIS) and relevant information contained therein is incorporated by reference. The Proposed Decision also complies with the below objectives.

- Manage impaired waters on public lands listed under Section 303(d) of Clean Water Act (CWA) to restore beneficial uses and to improve water quality so that listing is no longer warranted (Water Resources, RMP-18)[1].
- Achieve or maintain a rating of Proper Functioning Condition (PFC) for perennial and intermittent flowing and standing water bodies relative to site capability, site potential, and BLM management jurisdictions. Maintain, restore, or improve riparian/wetland vegetation communities relative to ecological status, site potential and capability, or site-specific management objectives. Manage riparian/wetland areas to maintain, restore, or improve soil moisture content and retention of alluvial ground water to augment base flow conditions during warm summer months (Vegetation, RMP-24).
- Maintain or restore native vegetation communities through sound landscape management practices. Increase species and structural diversity at the plant community and landscape levels in big sagebrush communities. Provide multiple successional stages within the landscape (Vegetation, RMP-30).
- Manage big sagebrush, quaking aspen, and western juniper plant communities to meet habitat requirements for wildlife. Manage big sagebrush communities to meet the life history requirements of sagebrush dependent species (Vegetation, RMP-31).
- Maintain, restore or improve habitat (for fish and wildlife). Manage forage production to support wildlife population levels identified by Oregon Department of Fish and Wildlife (ODFW) (Fish and Wildlife, RMP-33).
- Manage plant Special Status Species (SSS) and their habitats so management actions do not contribute to their decline or listing as Threatened & Endangered (T&E). Conserve animal SSS and the ecosystems on which they depend. Manage big sagebrush communities to meet the life history requirements of sagebrush-dependent SSS (SSS, RMP-35).
- Protect, maintain, improve, or restore Visual Resource values by managing all public lands in accordance with Visual Resource Management (VRM) system (Visual Resources, RMP-45).
- Work cooperatively with private and community groups, local government, and Burns Paiute tribal, or other tribal governments, to provide for customary uses consistent with other resource objectives and to sustain or improve local

[1] Within the South Steens Allotment, Home Creek is currently considered impaired due to not meeting the temperature requirements.

economies. Maintain and promote the cultural, economic, ecological, and social health of the Steens Mountain Area (Social and Economic Values, RMP-46).

- Provide for a sustained level of livestock grazing in the CMPA, while meeting resource objectives and requirements for the S&Gs. Implement administrative solutions and rangeland projects to provide proper management for livestock grazing while meeting resource objectives and requirements for S&Gs (Grazing Management, RMP-53).
- Manage public visitation in the wilderness to provide outstanding opportunities for solitude, primitive and unconfined recreation, naturalness, and other features including ecological, geological, scientific, educational, scenic, and historic features. (Wilderness, RMP-73).
- Manage livestock grazing in wilderness under the stipulations of the Congressional Grazing Guidelines (House Report 101-405 Appendix A) (Wilderness, RMP-75).
- Manage existing Wilderness Study Areas (WSAs) so as not to impair their suitability for preservation as wilderness (WSA and Parcels with Wilderness Characteristics, RMP-80).

The following management objectives are from the August 2005 AMU and Steens Mountain CMPA RMP/Record of Decision (ROD) Appendix J – Allotment Management Summaries, J-10.

- Improve the ecological condition of upland vegetation communities.
- Maintain the ecological condition of upland vegetation communities.
- Maintain/improve the condition of riparian vegetation communities.

STEENS MOUNTAIN COOPERATIVE MANAGEMENT AND PROTECTION ACT OF 2000 (STEENS ACT): Multiple sections of the Steens Act provide direction to manage for social and ecological health, and for economic purposes. The following is a summarized list of pertinent sections.

SEC. 1 (b) Purposes: (1) To maintain the cultural, economic, ecological, and social health of the Steens Mountain area in Harney County, Oregon; (5) To provide for and expand cooperative management activities between public and private landowners in the vicinity of the wilderness area and surrounding lands; (10) To maintain and enhance cooperative and innovative management practices between public and private land managers in the CMPA; (11) To promote viable and sustainable grazing and recreation operations on private and public lands; and (12) To conserve, protect, and manage for healthy watersheds and the long-term ecological integrity of Steens Mountain.

TITLE I, Subtitle A, SEC. 102: (a) The purpose of the CMPA is to conserve, protect, and manage the long-term ecological integrity of Steens Mountain for future and present generations; (b)(1) to maintain and enhance cooperative and innovative management projects, programs and agreements between tribal, public, and private interests in the CMPA; (b)(2) to promote grazing, recreation, historic, and

other uses that are sustainable; (b)(4) to ensure the conservation, protection, and improved management of the ecological, social, and economic environment of the CMPA, including geological, biological, wildlife, riparian, and scenic resources; and (b)(5) to promote and foster cooperation, communication, and understanding and to reduce conflict between Steens Mountain users and interests.

TITLE I, Subtitle B, SEC. 112: (b)(2) Exceptions - Paragraph (1) does not prohibit the use of motorized or mechanized vehicles on Federal lands included in the CMPA if the Secretary determines that such use: (A) is needed for administrative purposes or to respond to an emergency; or (B) is appropriate for the construction or maintenance of agricultural facilities, fish and wildlife management, or ecological restoration projects, except in areas designated as wilderness or managed under the provisions of section 603(c) of the Federal Land Policy and Management Act (FLPMA) of 1976 .

(d)(1) No new road or trail for motorized or mechanized vehicles may be constructed on Federal lands in the CMPA unless the Secretary determines that the road or trail is necessary for public safety or protection of the environment.

TITLE I, Subtitle B, SEC. 113: (e)(1) Except as otherwise provided in this section and title VI, the laws, regulations, and executive orders otherwise applicable to the BLM in issuing and administering grazing leases and permits on lands under its jurisdiction shall apply in regard to the Federal lands included in the CMPA.

(e)(2) The Secretary shall be responsible for installing and maintaining any fencing required for resource protection within the designated no livestock grazing area.

(f) No new facilities may be constructed on Federal lands included in the CMPA unless the Secretary determines that the structure: (1) will be minimal in nature; (2) is consistent with the purposes of this Act; and (3) is necessary (A) for enhancing botanical, fish, wildlife, or watershed conditions; (B) for public information, health, or safety; (C) for the management of livestock; or (D) for the management of recreation, but not for the promotion of recreation.

TITLE I, Subtitle C, SEC. 122: Development on public and private lands within the boundaries of the CMPA which is different from the current character and uses of the lands is inconsistent with the purposes of this Act.

TITLE I, Subtitle D, SEC. 132: (a) The advisory committee shall utilize sound science, existing plans for the management of Federal lands included in the CMPA, and other tools to formulate recommendations for the Secretary regarding: (1) new and unique approaches to the management of lands within the boundaries of the CMPA; and (2) cooperative programs and incentives for seamless landscape management that meets human needs and maintains and improves the ecological and economic integrity of the CMPA.

TITLE II, SEC. 202: (b) Where a wilderness boundary exists along a road, the wilderness boundary shall be set back from the centerline of the road, consistent with the BLM's guidelines as established in its Wilderness Management Policy.

TITLE II, SEC. 204: (a) Except as provided in section 502, any WSA, or portion of a WSA, within the boundaries of the CMPA, but not included in the wilderness area, shall remain a WSA notwithstanding the enactment of this Act.

(b) The WSAs referred to in subsection (a) shall continue to be managed under section 603(c) of the FLPMA [43 United States Code (U.S.C.) 1782(c)] in a manner so as not to impair the suitability of the areas for preservation as wilderness.

BLM MANUAL 6330 – MANAGEMENT OF WSAs: Multiple sections of BLM Manual 6330 are directly relevant to the proposed actions discussed within the South Steens Allotment Management Plan/Environmental Assessment. The following is a summarized list of pertinent sections.

1.1 (Purpose). To provide policy on the non-impairment standard to the BLM's personnel for use when managing WSAs, which is part of the BLM's National Landscape Conservation System. This manual is not the only policy that governs the management of WSAs. The BLM operates under many other laws and policies that may affect whether and how an activity may take place on WSAs.

1.2 (Objectives) A. Consistent with relevant law, manage and protect WSAs to preserve wilderness characteristics so as not to impair the suitability of such areas for designation by Congress as wilderness.

1.6 (Policy) A.1. Wilderness preservation is part of the BLM's multiple-use mandate, and the wilderness resource is recognized as one of the array of resource values considered in the land-use planning process. Section 603(c) of FLPMA provides direction to the BLM on the management of WSAs and states that with some exceptions (explained more fully below in Section 1.6.C.2): "During the period of review of such areas and until Congress has determined otherwise, the Secretary shall continue to manage such lands according to his authority under this Act and other applicable law in a manner so as not to impair the suitability of such areas for preservation as wilderness." This language is referred to as the "non-impairment" mandate. The BLM developed a non-impairment standard (see 1.6.C in this manual) to meet this mandate.

1.6.B. The BLM's policy will protect the wilderness characteristics of all WSAs in the same or better condition than they were on October 21, 1976 until Congress determines whether or not they should be designated as wilderness. When managers are in doubt as to a course of action in a WSA, this should serve as a guiding principle.

1.6.B.3.b. The BLM may remove structures and other facilities that impair wilderness characteristics, do not meet any of the exceptions to non-impairment, or are not permissible uses as detailed in section 1.6.D of this policy.

1.6.B.6. FLPMA requires the BLM to manage all WSAs "so as not to impair the suitability of such areas for preservation as wilderness." If wilderness characteristics have improved since 1976 for a particular WSA it is the policy of the BLM to not allow actions that would cause the regression of the WSA to its 1976 condition. The benchmark for the non-impairment standard is the condition in 1976 or current condition of the WSA, whichever is the better condition of wilderness characteristics.

1.6.C.1. The BLM will review all proposals for uses and/or facilities within WSAs to ascertain whether the proposal would impair the suitability of the WSA for preservation as wilderness. Unless excepted under 1.6.C.2, all uses and/or facilities must meet the non-impairment standard (i.e. must be both temporary and not create surface disturbance), as described in the following detailed criteria:

1.6.C.1.a. The use or facility is needed for a defined time period to respond to a temporary need, and would be terminated and removed prior to or upon wilderness designation. A chronic, repeated short-term use does not meet this definition of "temporary." Uses, activities, or facilities that create a demand for uses that would be incompatible with wilderness management also do not meet the definition of temporary.

1.6.C.1.b. There is no new disruption of the rock, soil, or vegetation, including vegetative trampling, that would necessitate reclamation, rehabilitation, or restoration in order for the site to appear and function as it did prior to the disturbance. Uses or facilities that would require only passive natural restoration may still be considered surface disturbing. Certain activities allowed in wilderness areas, such as recreational hiking, use of pack stock, or domestic livestock grazing, are recognized as acceptable within a WSA, although, in the literal sense, they cause surface disturbance.

1.6.C.2: There are seven classes of allowable exceptions to the non-impairment standard defined in section 1.6.C.1. When a use and/or facility that does not meet the non-impairment standard meets one of these exceptions, the BLM will endeavor to allow only the least impairing activities that facilitate the use and/or facility in order to avoid unnecessary impacts to wilderness characteristics. If an impairing proposed project—even one that meets an exception—can be implemented outside of a WSA and accomplish the objectives identified in the purpose and need statement prepared under National Environmental Policy Act

(NEPA), the BLM should endeavor to ensure that the project is implemented outside the WSA.

1.6.C.2.e. Grazing, mining, and mineral leasing uses and facilities that were allowed on the date of approval of FLPMA (October 21, 1976) are grandfathered, i.e. allowed as a preexisting use. As provided for in FLPMA Section 603(c), these uses and facilities may continue in the same manner and degree as on that date, even if this impairs wilderness suitability. Grandfathered uses may be acquired by a new operator, but cannot be transferred to a different location.

1.6.C.2.f. As described in section 1.6.A.2 of this manual, Section 2(c) of the Wilderness Act of 1964 outlines the characteristics required of every wilderness. Actions that clearly benefit a WSA by protecting or enhancing these characteristics are allowable even if they are impairing, though they must still be carried out in the manner that is least disturbing to the site.

1.6.C.2.g. Activities required to meet obligations imposed by other laws are allowed even though they may violate the non-impairment standard. Such activities should, however, be carried out in the least impairing manner practicable.

1.6.D.3.a.i. Livestock management developments existing or under construction on October 21, 1976 (or the designation date for Section 202 WSAs not reported to Congress), may continue to be used and maintained in the same manner and to the same degree as such use was being conducted on that date. In other words, they can have the same, but not more, physical or visual impact as they did at that time.

1.6.D.3.a.ii. New livestock management developments may only be approved if they meet the non-impairment standard or one of the exceptions, such as protecting or enhancing wilderness characteristics. In determining whether a development meets the protecting or enhancing wilderness characteristics exception, the BLM will determine if the structure's benefits to the natural functioning of the ecosystem outweigh the increased presence of human developments and any loss of naturalness or outstanding recreational opportunities caused by the new development. In addition, the BLM should consider whether or not the development will be substantially unnoticeable. The project must not require new motorized access since this would constitute surface disturbance and so would not meet the non-impairment standard. In order to allow new grazing development under the grandfathered use exception, there can be no increase in the AUMs existing prior to the new development as the result of any new permanent livestock management development.

1.6.D.3.c. As a grandfathered use, grazing management practices (e.g. level of use, season of use etc.) authorized during the 1976 grazing fee year including levels of use, may not be changed solely because the use may impair a WSA's suitability for preservation as wilderness. Section 603(c) of FLPMA, provides for the continuation of grazing on lands under wilderness review, "[p]rovided that in managing the public lands, the BLM shall by regulation or otherwise take any action required to prevent unnecessary or undue degradation of the lands and their resources or to afford environmental protection." If rangeland within a WSA is failing to Standards, the significant[2] factors contributing to this failure will be determined through monitoring and a review of existing uses. If existing grazing management practices are found to be a significant factor in the failure to achieve Standards, new grazing management practices may be established as needed if they meet the non-impairment standard or one of the exceptions.

> **1.6.D.3.c.ii.** While there will be no reduction in grazing use levels due to impacts to wilderness characteristics, grandfathered grazing use is not necessarily frozen at the October 21, 1976 (or date of designation for a 202 WSA not reported to Congress) level, but may be subject to general BLM grazing management policy. As described above, if the rangeland is failing to achieve Standards established by the BLM, the significant factors that contribute to those conditions should be ascertained and temporary or permanent reductions may be implemented as needed.

1.6.D.7.a. Section 102 of FLPMA sets forth Congress' declaration of policy that "the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values". FLPMA more specifically directs that the management of the public lands be on the basis of multiple use and sustained yield unless otherwise specified by law.

1.6.D.7.c. Measures required for watershed rehabilitation may be permitted if they satisfy the non-impairment criteria or one of the exceptions. Watershed rehabilitation activities to address natural successional processes that have been disrupted by past human activity may be allowed. Intervention will be limited to what is necessary to allow the system to return to a natural process and to what is necessary to address situations where stabilization through natural processes would take longer than one growing season and the impacted area would be susceptible to significant soil loss during that time or further ecological departure would occur. (See also section 1.6.D.8). Approaches that do not restore natural processes should not be approved.

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[2] The word "significant" used in reference to S&Gs as outlined in the S&Gs for Public Lands Administered by the BLM in the States of Oregon and Washington (1997) and 43 CFR 4180.1, does not meet the Council on Environmental Quality's definition of the word.

1.6.D.8.a. Whenever possible, natural processes will be relied on to maintain native vegetation and to influence natural fluctuations in populations. Manipulation of vegetation through management-ignited fire, chemical application, mechanical treatment, or human controlled biological means is allowed only where it meets the non-impairment standard or one of the exceptions. Exceptions that may pertain to vegetative treatment include emergencies, the protection or enhancement of wilderness characteristics, grandfathered uses, valid existing rights, and actions taken to recover a federally listed T&E, or candidate species.

1.6.D.8.b.iii.B. Where it meets the non-impairment standard or one of the exceptions, management action may be taken to restore vegetation to characteristic conditions of the ecological zone in which the area is situated where:

> **1.6.D.8.b.iii.B.I.** Natural successional processes have been disrupted by past human activity, to the extent that intervention is necessary in order to return the ecosystem to a condition where natural process can function;
>
> **1.6.D.8.b.iii.B.II.** Restoration through natural processes would require lengthy periods of time during which the impacted area would receive unwanted human use or be susceptible to significant soil loss without intervention, or further ecological departure would occur; or,
>
> **1.6.D.8.b.iii.B.III.** It is necessary to maintain fire-dependent ecosystems when adjacent land uses do not allow for natural fire occurrence.

1.6.D.10.c. New wild horse and burro developments. Proposed new facilities and their potential impacts must be evaluated in conformance with NEPA (see section 1.6.E). If a portion of the Herd Management Area (HMA) is outside the WSA, any new development should be placed there, where practicable.

> **1.6.D.10.c.i.** *Water developments*. As surface disturbing developments, new water sources for wild horse or burro herds can only be allowed where they meet one of the exceptions to the non-impairment standard. Water developments that are incorporated into the protection of springs or riparian areas (including water developments created to replace water lost elsewhere in the HMA) may be permitted if they meet an exception to the non-impairment standard.
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> **1.6.D.10.c.ii.** *Fences*. New fences may be allowed where necessary to protect springs or other water sources from impairment by wild horses or burros. Such exclosure fences must be visually minimized and large enough to avoid making native animals susceptible to predation.

The Proposed Decision has been designed to conform to the following documents, which direct and provide the framework for management of BLM lands within Burns District:

- Taylor Grazing Act (43 U.S.C. 315), 1934
- NEPA (42 U.S.C. 4320-4347), 1970
- Wild Free-Roaming Horses and Burros Act (16 U.S.C. 1331-1340), 1971
- FLPMA (43 U.S.C. 1701), 1976
- Public Rangelands Improvement Act (43 U.S.C. 1901), 1978
- BLM Manual 6330 Management of WSAs (2012)
- August 12, 1997 S&Gs for Public Lands Administered by the BLM in the States of Oregon and Washington
- 1998 Burns District Noxious Weed Management Program EA (OR-020-98-05)
- Greater Sage-Grouse and Sagebrush-steppe Ecosystems Management Guidelines (BLM-2000)
- Steens Mountain Cooperative Management and Protection Act (16 U.S.C. 460nnn), 2000
- BLM National Sage-grouse Habitat Conservation Strategy (2004)
- Steens Mountain Wilderness and Wild and Scenic River (WSR) Plan (August 2005)
- Steens Mountain Travel Management Plan (TMP; EA OR-05-027-021), 2007
- North Steens Ecosystem Restoration Project (North Steens Project) ROD, 2007
- Protection, Management, and Control of Wild Free-Roaming Horses and Burros [43 Code of Federal Regulations (CFR) 4700], 2009
- Greater Sage-Grouse Conservation Assessment and Strategy for Oregon (Hagen 2011)
- Washington Office Instruction Memorandum 2012-043 Greater Sage-Grouse Interim Management Policies and Procedures
- Maintenance of Range, Wildlife, and Wild Horse Improvements in WSAs in the Burns District (EA OR-020-05-080), 2005
- Oregon Department of Environmental Quality (ODEQ) Laws and Regulations
- State, local, and Tribal laws, regulations, and land use plans
- All other Federal laws that are relevant to this document, even if not specifically identified

PROPOSED DECISION

Having considered all alternatives and associated impacts based on analysis in EA# OR-06-027-060, it is my decision to implement the actions described below. The actions below have been selected from multiple alternatives, specifically Alternatives B, D, and E.

The selected actions are: approval of the AMP, easement acquisition, grazing permit renewal, livestock grazing management, and range improvements, specifically spring protection, way relocation, a fence relocation, and a well and associated trough located outside of WSA and Wilderness. At this time, no decision is being made on water developments within WSAs. The

implementation of these actions will result in significant progress being made toward achieving, or continuing to achieve S&Gs.

Approval of the South Steens AMP

Upon issuance of a final decision, the final decision and all of the components described below will become the AMP for the South Steens Allotment.

Grazing Permit Renewal

The Proposed Decision includes renewal of the existing livestock grazing permit for South Steens Allotment for the current grazing permittee. The current livestock grazing permit (#3602570) has five allotments on it, including South Steens Allotment. All discussion in this Proposed Decision regarding renewal of the grazing permit only applies to South Steens Allotment. This Proposed Decision renews the grazing permit for only South Steens Allotment. It removes South Steens Allotment from the current grazing permit authorization #3602570, places it on a separate grazing permit, assigning a new authorization number. The remaining allotments will remain on the existing grazing permit, and renewal of that grazing permit will follow current policy[3]. If an updated grazing permitting system allows NEPA information and expiration dates for each allotment on an authorization, these authorizations may be combined.

A new 10-year term livestock grazing permit will be issued to continue 9,577 active use Animal Unit Months (AUMs) of livestock grazing on public land within the South Steens Allotment. No changes to permitted AUMs will occur. The season of use will be shortened, from April 1 through October 31 to April 15 through October 31. The percentage public land based on forage production (%PL), will remain at 94% for the allotment; however, the %PL for each pasture will be added as a term and condition of the grazing permit, and the pasture %PL is what will be used for billing purposes in each pasture. The %PL for each pasture is currently calculated at: Hollywood Pasture - 93%, Tombstone and Steens pastures - 99% and Home Creek Pasture - 76%. The %PL will be adjusted, as necessary, following any land sales or purchases, exclusion of private property (fences), allotment/pasture boundary adjustment or correction, or new production information occurring within South Steens Allotment.

Terms and conditions on the grazing permit will include:

- A shortened season of use and adjusted number of livestock to keep AUMs at 9,577.
- %PL by pasture for billing purposes.
- Authorization of actual use billing

[3] Fully processing the grazing permit, making it active, will require complete NEPA analysis; if this occurs for other allotments on the current grazing permit, those allotments may also be placed under the new authorization number since they would both be active grazing permits and have the same expiration dates.

- Statement requiring that the grazing permittee open gates, not only within the allotment interior, but also between South Steens Allotment and the portion of the HMA within the Steens Mountain Wilderness, following livestock removal each year, to aid the free movement of wild horses throughout the HMA.
- Utilization maximum of 50% for native key forage species, requiring livestock to be removed, even if full use of authorized AUMs has not yet been taken.
- Conformance with the AMP.

Actual use billing is authorized as part of this AMP because of the variability in forage production from year to year and the unreliability of water sources. Annual grazing will be authorized with a Letter of Authorization prior to turnout. Accurate records must be kept and an Actual Use Grazing Report is to be submitted within 15 days after the authorized use is completed within the allotment. Advance billing will be allowed at the discretion of the BLM. If the terms and conditions are not met, including the timely submission of an Actual Use Grazing Report, actual use billing will no longer be allowed, and advanced billing will occur.

The grazing permit will be issued with changes to the terms and conditions, encompassing all changes within this AMP.

Livestock Grazing Management

Livestock grazing management is designed to provide periodic growing season rest for plants. Use periods in each pasture may vary annually in order to provide for recommended rest periods as described in the Grazing System (Table 1). Approximate use dates are not provided for the grazing system due to the location of the allotment on the western edge of Steens Mountain, where climatic conditions can vary greatly from year to year. This variation results in key forage species entering vegetative states on different dates, which is why livestock grazing management is based on grazing treatments and not specific dates (see EA Appendix A: Grazing Treatment Descriptions). Livestock use dates for each pasture will be determined annually based on the vegetative stages of key forage species and the prescribed grazing treatment, and will be authorizes through the Letter of Authorization issued prior to livestock turnout.

Permitted season of use will be April 15 through October 31, which will be adequate to carry out grazing management. Livestock numbers may vary annually (as outlined under Adaptive Management); however, total permitted AUMs will not exceed 9,577. Prior to authorizing grazing each year, monitoring data and current climatic conditions, such as drought, will be taken into consideration. This may result in changes to stocking levels, pasture rotations and timing of grazing in order to best meet objectives. Any modifications to the proposed grazing system will conform to the utilization maximum of 50% for native key forage species (averaged within each pasture and including wild horse and wildlife use), and care will be taken to ensure all pastures receive periodic growing season rest. If utilization reaches the 50% maximum before livestock have used all

permitted AUMs, livestock will be required to be removed. Temporary, non-renewable, annual extension of the permitted season of use, not to exceed 14 days prior to or following the permitted season of use, may be allowed to provide flexibility in meeting resource objectives, dependent on annual climate and growing conditions. The permittee will still be limited to the 9,577 AUMs, and this season of use extension is at the discretion of the BLM and is in no way guaranteed.

Hollywood Pasture receives high levels of wild horse use in the winter and spring. Therefore, Hollywood Pasture will primarily be used as a turnout and gather pasture to get cattle to and from Tombstone Pasture, resulting in early (spring) and defer (fall) grazing treatments[4]. Utilization in the early spring will be limited to 30% on native key forage species (livestock and wild horse utilization combined) in order to provide enough forage for livestock during fall gathering, and fall and winter wild horse use. Overall annual utilization will be limited to 50% (livestock and wild horse utilization combined). Defer use will only be authorized if maximum utilization levels will not be exceeded during the livestock use period, based on utilization determinations made prior to defer use occurring. In one year out of four, Hollywood Pasture will receive complete livestock rest, with livestock being allowed to trail through the pasture when being moved between Tombstone Pasture and private property.

Tombstone Pasture will rotate between an early/graze and a defer treatment, every other year. Steens Pasture will also rotate between an early/graze and defer treatment; however, it will be on an opposite rotation from Tombstone Pasture. Home Creek Pasture will generally be given an early treatment, with one year of complete rest every fourth year. This is due to the presence of Home Creek within the pasture and the need to protect the riparian area from late season use.

Under this rotation, Tombstone and Steens pastures will receive growing season rest (graze treatment rest) from livestock every other year, and Hollywood and Home Creek pastures will receive growing season rest from livestock every year. Providing periodic growing season rest for all pastures will result in continued conformance to Guidelines.

Table 1: Grazing System

Pasture	Cows	Year 1	Year 2	Year 3	Year 4	AUMs
Hollywood	500	Early/Defer	Rest	Early/Defer	Early/Defer	510
Tombstone	1,200	Early/Graze	Defer	Early/Graze	Defer	3,900
Steens	1,200	Defer	Early/Graze	Defer	Early/Graze	3,307
Home Creek	1,000	Early	Early	Early	Rest	1,860

Range Improvements

The Proposed Decision will construct spring protection exclosures, with route realignment occurring at Broken Leg Spring in order to further protect the spring and associated vegetation. In addition, the cistern at Burnt Car Spring will have access

[4] See EA Appendix A: Grazing Treatment Descriptions for definitions of prescribed grazing treatments.

modified to reduce the risk of entrapment, a portion of the Steens Pasture and Home Creek Pasture boundary fence will be relocated, and one well and associated 30-foot bottomless trough will be constructed. No new pipelines, spring developments, riparian meadow exclosure, reservoirs, or watergaps along Donner und Blitzen River will be constructed under this Proposed Decision. No existing reservoirs will be abandoned, and maintenance activities will continue as currently authorized. Table 2 shows the type of action, by WSA, for the Proposed Decision.

Table 2: Type of Action, by WSA, for the Proposed Decision

Blitzen River WSA		**South Fork Donner und Blitzen WSA**		**Home Creek WSA**	
Type of Action	Number /Miles	Type of Action	Number/Miles	Type of Action	Number/Miles
Spring Protection	0	Spring Protection	2	Spring Protection	0
Route Realignment	0	Route Realignment	1/<0.1 Mile	Route Realignment	0
Fence Removal	0	Fence Removal	1/5.4 Miles	Fence Removal	0
Fence Construction	0	Fence Construction	0.3 Mile (Within)	Fence Construction	1/2.6 Mile (Boundary)
Cistern Access Modification	1	Cistern Access Modification	0	Cistern Access Modification	0
Well	0	Well	0	Well	0
Trough	0	Trough	0	Trough	0

The locations of all proposed range improvements are estimated locations. All range improvements will occur within one-quarter mile of the current proposed location. Exact, on-the-ground locations of any proposed range improvements will be determined by those responsible for constructing the proposed developments, prior to actual construction, and will be determined taking into account physical factors such as topography and rockiness. Any proposed range improvements not currently shown within WSAs or wilderness will remain outside WSAs and wilderness.

Spring Protection/Route Realignment/Cistern Access Modification

Spring protection will occur at Three Springs and Broken Leg Springs since they are the only two springs currently not achieving S&Gs. Spring protection will include fencing of the riparian area to reduce damage caused by wild horses and livestock. The loss of Three Springs and Broken Leg Spring as water sources could result in higher levels of congregation by wild horses and livestock at Weaver and Burnt Car springs, and other existing water developments. Juniper trees may be cut within the spring exclosures in order to further protect the spring source and promote riparian vegetation; old growth trees will remain standing.

Cut trees may be used for the exclosure fence; trees not used for the fence will be hand piled (outside the exclosure and riparian area) and burned.

The specific spring exclosure size will be dependent on the size of the riparian areas around the springs. The fences will be located approximately 20 feet outside the riparian areas to reduce livestock and wild horse pressure on them. Fences around springs and riparian areas will wood, which is stronger and more aesthetically pleasing than a wire fence. These fences will include gates, as appropriate, to allow access for administration and recreational use. The wood fence will be approximately 48 inches tall and made of juniper removed from within the exclosure and surrounding area, when practical. The wood fence will be designed to allow wildlife to access the riparian area. Only spot removal of rocks or vegetation will occur, when necessary, during construction. Pickups and four-wheel All-Terrain Vehicles (ATVs) will be used in construction. Travel will be done in a manner that reduces establishment of tracks and any tracks adjacent to a road or way will be hand raked the distance necessary to deter the establishment of unauthorized routes.

The fence at Three Springs (S1) located on BLM-managed land is expected to exclose approximately five acres. The exclosure will require approximately 0.5 mile of fence, approximately half of which will be on BLM-managed land, with the other half being on the boundry between BLM-managed and private land.

Spring protection at Broken Leg Spring (S3) will include realigning the existing route approximately 150 feet west of the spring for a distance of approximately 250 feet. The new portion of this route will be created passively, only by passage of a vehicle. No heavy equipment will be used to remove large boulders. The old route will be barricaded by the exclosure and using downed juniper from the immediate area (if needed outside the exclosure) and reseeded using native seed if the site appears unable to recover naturally. The CMPA TMP will be updated to reflect the reroute, following completion of route realignment.

At Burnt Car Spring, natural materials found in the vicinity (i.e. rocks and juniper) will be used to reduce accessibility to the historic cistern and/or to allow for escape, reducing the risk of entrapment.

Any disturbed area that appears unable to recover naturally will be reseeded; within WSAs only native species will be used.

Fence Relocation (Removal and Construction)

The partial relocation of the Steens/Home Creek pastures boundary fence will occur, resulting in the removal of approximately 5.5 miles of fence and construction of approximately 5.8 miles of new fence. Approximately 5.4 miles of the pasture boundary fence will be removed from within the interior of the South Fork Donner und Blitzen WSA and 0.1 mile will be removed from private

property. However, approximately 0.3 mile of new fence will be constructed within the WSA to connect the remaining portion of the existing fence to the new fence located along the wilderness boundary.
Fence removal will be completed by hand using pack animals and existing roads. All posts and wire will be removed from the site. Removal of existing fences will occur within one year of constructing replacement fences.

The new fence will be located west of Lauserica Road and along Home Creek portion of Steens Mountain Wilderness and South Fork Donner und Blitzen WSA boundary, Home Creek portion of Steens Mountain Wilderness and Home Creek WSA boundary, and Home Creek WSA and private property boundary. The fence will be placed within the 30 foot wilderness buffer that follows the wilderness boundary roads, effectively placing it on BLM-managed land that has no special designation.

The fence that will be constructed on Home Creek WSA and private property boundary will be placed outside WSAs where possible; however, it is not expected the new fence will follow exactly on the boundary. Topographic features will likely result in the fence being built at least partially on BLM-managed land as well as on private property. There is currently a verbal agreement the grazing permittee will cooperate on this fence, allowing it to be located at least partially on private property. However, this document is in no way binding to the landowner and a formalized Cooperative Range Improvement Agreement (Form 4120-6) between the South Steens Allotment grazing permittee and Burns District BLM will be completed, as appropriate, to address specific fence locations and each partner's responsibilities for labor, construction, maintenance, and/or supplies[5]. See the Proposed Decision Map for a visual depiction.

Of the new fence, approximately:

- 1.9 miles will be within the wilderness 30-foot buffer between the Home Creek portion of Steens Mountain Wilderness and South Fork Donner und Blitzen WSA;
- 0.9 mile will be within the 30-foot wilderness buffer between the Home Creek portion of Steens Mountain Wilderness and Home Creek WSA;
- 2.6 miles will be along the boundary between private property and Home Creek WSA;
- 0.1 mile will be located fully on private property; and
- 0.3 mile will be located within South Fork Donner und Blitzen WSA.

[5] All agreements completed between the BLM and grazing permittee and/or private landowner are voluntary and cooperatively completed to provide mutual benefit.

Fence relocation will create a new western and southern boundary of Steens Pasture, and new eastern boundary of Home Creek Pasture.
The northern 0.25 mile portion of this fence relocation was proposed under Alternative D in the EA and tied into the existing fence approximately 0.3 mile east of Lauserica Road within South Fork Donner und Blitzen WSA. The rest of the fence relocation was proposed under Alternative E. The alternatives were designed this way in order to ensure Lauserica Reservoir #3 remained part of Home Creek Pasture. There was not an alternative that analyzed relocating the entire fence to the west side of Lauserica Road. Due to this, there is approximately 0.7 mile of fence that will be constructed in a location not specifically analyzed. Approximately 0.4 mile will be located west of Lauserica Road, within the 30-foot wilderness buffer, connecting the portions of the fence analyzed under Alternatives D and E. The additional 0.3 mile will connect the new fence to the existing fence, crossing WSA. Both Alternatives D and E analyzed the fence crossing WSA, with 0.5 mile and 0.3 mile being analyzed, respectively. If the fence was constructed in the locations proposed in Alternatives D and E, it would require 0.5 more miles of fence than is being authorized under this Proposed Decision. Therefore, fence relocation in this Proposed Decision is essentially similar to what has already been analyzed. It is within 0.5 mile of the original analysis area, with geographic and resource conditions sufficiently similar to what have been analyzed. While designing the new fence in this method removes Lauserica Reservoir #3 from within the Home Creek Pasture, it does allow for Lauserica Reservoir #1 and #2 to remain within the pasture. Effects that will result from construction of this fence are the same as those analyzed in the EA. The physical disturbance of this fence will be less than analyzed, as the total distance is less, and there are no substantial differences; no mitigation will be necessary. Where the new fence crosses Lauserica Road a cattleguard will be installed to allow for continued vehicular access. There will be no extraordinary circumstances involved with this.

The fence will be constructed following BLM standards. The fence height will be approximately 42 inches. The bottom wire will be smooth, and placed approximately 16 inches from the ground. The third and bottom wires will be placed approximately six inches apart, the second and third wire will be approximately eight inches apart, and the top and second wire placed approximately 12 inches apart. Metal stays will be used in each section of fence, to keep wires spaced appropriately. Posts will be standard metal posts, solid green in color. Green steel braces and stretch panels will be used where needed, instead of wood braces and rock cribs. Juniper trees may be used to support the fence when practical. Only spot removal of rocks or vegetation will occur, when necessary, during construction. Pickups and ATVs will be used in construction. Travel will be done in a manner that reduces establishment of tracks and any tracks adjacent to a road or way will be hand raked the distance necessary to deter the establishment of unauthorized routes. Any disturbed area that appears unable to recover naturally will be reseeded; within WSAs only native species will be used.

Well and Trough Installation

One well will be drilled, and an associated trough will be placed on BLM-managed land with no special designation (outside of WSAs and wilderness). The well and trough will be located within the 110 acre Roaring Butte Mineral Materials Source boundary , west of the Lauserica Road. Any disturbance that would result from the well, trough, and associated grazing would not be greater than what disturbance is currently allowed to occur as a result of the mineral materials source.

The well site would consist of an original disturbance area of approximately 100 by 100 feet. The entire disturbed area would be seeded with a native/non-native seed mix to increase the rate of recovery. Following seeding/rehabilitation of the disturbed site, the permanent footprint would be no more than 20 by 20 feet. An eight to 12 inch diameter hole would be drilled to accommodate six inch casing (pipe). Casing would be used for the entire depth of the hole unless solid rock is encountered. Pump size would be dependent upon depth of well. The pump in the well would be powered using solar power if solar power would meet the power requirements of the pump. This is dependent on well depth and water production, and the determination would be made by an engineer or other expert. Panels for solar energy would be installed using a tractor with an auger. Poles would be eight inches in diameter and concreted in the ground; solar panels would be mounted upon the poles. Pole height would be as low as possible, while still allowing panels to clear vegetation. Solar panels vary in size from 16 to 40 inches in length by 40 to 70 inches in width. Reduced glare solar panels, with camouflage netting applied to the back of the solar panels, would be used when available. If solar power was not an adequate power source a fuel generator would be used. If a fuel-powered generator is used, it would be 5,000 kilowatts, or smaller, with the exact size determined by well characteristics and availability. The generator would be located within a small trailer painted to blend in with the surrounding environment. The generator would be covered or enclosed to protect the generator and reduce noise pollution. The generator would be expected to run four to 16 hours a day, depending on water consumption, and may be audible up to one-quarter mile under some conditions. When the well is not in use, the generator would be removed.

The well and power source would be fenced to protect them from wild horses, livestock, and large wildlife species. The fence exclosure would be as small as possible, no more than 0.1 mile, while still providing adequate protection of the well and power source. The fence would be constructed to BLM specifications. Vegetative and topographic screening would be utilized as much as possible to minimize visual disturbance within the allotment.

One 10,000 gallon bottomless trough would be installed. This trough would be circular, up to 30 feet in diameter, with a four to six inch concrete bottom, and a two to four foot concrete apron to aid in erosion control. The sides of the trough

would be two feet high and constructed of galvanized metal. A backhoe would be used to scrape dirt and form the area for the tough. A concrete truck would haul concrete to the site to construct the apron and concrete bottom. The area disturbed during installation of the trough would be approximately 100 by 100 feet. The trough metal would be painted to blend in with the surrounding environment.

Wildlife escape ramps fabricated from metal would be installed in the trough. The trough would have a trough float installed to prevent water from overflowing, as well as an overflow pipe to protect the site in the event the float valve is damaged and water continues to flow. The trough would be located far enough away from the well to minimize pressure on the fence around the well and power source; however, it would be within 250 feet of the water source.

General Project Design Elements (PDEs)[6]

PDEs were developed to aid in meeting project goals and objectives. All projects implemented within WSAs will be constructed to reduce impacts to wilderness values on a site-specific basis, and measures will be taken to ensure a more natural appearance, considered on a case-by-case, site-specific basis. If new methods of increasing the natural appearance of any developments are found prior to construction, these new methods may be used as long as the level of disturbance from utilizing these methods is not greater than the methods currently analyzed. The Industrial Fire Precaution Levels will be followed during construction. Maintenance on all range improvements will be done to ensure the continued functioning of the improvement; maintenance activities will be the minimum necessary to ensure continued functionality of the improvement and will not exceed the original disturbance footprint of the improvement.

a. Proposed rangeland improvement sites will be surveyed for cultural values prior to implementation. Where sites could potentially be adversely affected by grazing, or development, consultation between the BLM and State Historic Preservation Office (SHPO) shall be initiated to determine site significance, document effects, and evaluate means for site protection in accordance with procedures specified in the Oregon Protocol Agreement between the BLM and SHPO, *Protocol for Managing Cultural Resources on Lands Administered by the BLM in Oregon.*

b. Proposed rangeland improvement sites will be surveyed for plant SSS prior to implementation. Plant SSS sites will be avoided.

[6] Only the PDE's specific to actions selected in this Proposed Decision are below. Therefore, the letter corresponding to each PDE represents the letter it was associated with in the EA, resulting in gaps in lettering.

e. No project construction or major maintenance activities will occur April 1 through June 15 during Greater Sage-Grouse nesting. Annual fence maintenance will still be allowed to occur during this period.

f. Proposed range improvement sites will be surveyed for noxious weed populations prior to implementation. Weed populations identified in or adjacent to the proposed projects will be treated using the most appropriate methods, in accordance with the 1998 Burns District Noxious Weed Management Program EA/Decision Record (DR) OR-020-98-05 or subsequent weed treatment decision.

g. The risk of noxious weed introduction will be minimized by ensuring all equipment (including all machinery, 4-wheelers, and pickup trucks) is cleaned prior to entry to the sites, minimizing disturbance activities, and completing follow-up monitoring, to prevent no new noxious weed establishment occurs. Should noxious weeds be found, appropriate control treatments will be performed in conformance with the 1998 Burns District Noxious Weed Program Management EA/DR OR-020-98-05 or subsequent weed treatment decision.

h. The grazing permittee will be responsible for fence maintenance, except for the fences that border the No Livestock Grazing Area, between Steens Mountain Wilderness and WSA on the eastern side of the allotment. Proper fence maintenance will be a stipulation for turnout each year. BLM will continue to be responsible for the portion of the fence bordering the No Livestock Grazing Area and exclosure fence.

Goals and Objectives for the South Steens Allotment

Use associated ecological site descriptions (ESDs) for comparison, where appropriate.

a. *Goal:* Maintain or improve riparian functioning condition of perennial and intermittent streams, and restore and maintain natural, free-flowing characteristics of springs and associated wet meadows.

- *Objective:* Maintain PFC of 1.4 miles of two unnamed perennial tributaries to Donner und Blitzen River in Tombstone Pasture assessed for PFC in 1999. *Measure:* PFC.
- *Objective*: Maintain an upward trend in riparian vegetation on 2.4 miles of Home Creek in Home Creek Pasture so wetland plant species continue to replace upland species within the Greenline. *Measure:* greenline, PFC.

- *Objective*: Improve vigor of woody riparian species (as appropriate) on 2.4 miles of Home Creek, in Home Creek Pasture, so all age classes are present for the five willow species established in the greenline, and potential shade can be achieved within the next decade in order to maintain or reduce stream temperature[7] for redband trout habitat, and address ODEQ 303d list concerns. *Measure:* greenline, temperature, photo points.
- *Objective*: Restore riparian areas around springs within Steens Pasture, to reach potential extent within one decade, and achieve presence of at least 75% wetland species in the greenline within two decades (presence of woody riparian species is not expected or required at these sites, based on ESDs). *Measure:* greenline, photo points.

b. *Goal:* Manage uplands in a mosaic of native plant communities and seral stages.

- *Objective:* Maintain or increase the relative frequency of key species, such as Idaho fescue (*Festuca idahoensis* Elmer), bluebunch wheatgrass [*Pseudoroegneria spicata* (Pursh) Á. Löve ssp. *Spicata*], mountain big sagebrush [*Artemisia tridentata* Nutt. ssp. *vaseyana* (Rydb.) Beetle], and forbs species that provide food for Greater Sage-Grouse, in Tombstone, Steens, and Home Creek pastures over the next 10 years. Current relative frequency is plot specific and historic trend data should be used for comparison. *Measure:* Pace 180° (Johnson and Sharp 2012), photo points.
- *Objective:* Maintain the relative frequency of key species, such as Indian rice grass [*Achnatherum hymenoides* (Roem. & Schult.) Barkworth], needle-and-thread grass [*Hesperostipa comata* (Trin. & Rupr.) Barkworth], Thurber's needlegrass [*Achnatherum thurberianum* (Piper) Barkworth], bluebunch wheatgrass, Wyoming big sagebrush (*Artemisia tridentata* Nutt. ssp. *wyomingensis* Beetle & Young) and forbs species, which provide food for Greater Sage-Grouse, in Hollywood Pasture over the next 10 years. *Measure:* Pace 180°, photo points.
- *Objective:* Maintain frequency and distribution of antelope bitterbrush [*Purshia tridentata* (Pursh) DC.] in Steens and Tombstone pastures over the next 10 years. *Measure:* Pace 180°, Cole Browse [Technical Reference (TR) 4400-3, Utilization Studies], photo points.

[7] The current ODEQ Temperature Standard for redband trout is 20° C (68° F).

c. *Goal:* Manage forage and water resources to provide and maintain a thriving natural ecological balance within South Steens Allotment portion of South Steens HMA.

- *Objective:* Manage wild horse populations at an Appropriate Management Level (AML) range of between 159 and 304 animals to provide and maintain a thriving natural ecological balance with all resource uses. *Measure:* wild horse census, utilization, Pace 180°.
- *Objective*: Improve wild horse distribution across the HMA, reducing areas of heavy utilization around current reliable water sources. *Measure*: wild horse census, utilization, wild horse observations.

d. *Goal:* Maintain wilderness characteristics within Steens Mountain Wilderness (Home Creek portion) and Home Creek, Blitzen River, and South Fork Donner und Blitzen River WSAs.

- *Objective:* Maintain wilderness in a manner consistent with the Steens Mountain Wilderness and WSRs Management Plan (August 2005), Steens Act, Wilderness Act, and FLPMA. *Measure:* wilderness monitoring.
- *Objective:* Maintain Home Creek, Blitzen River, and South Fork Donner und Blitzen River WSAs within South Steens Allotment in a manner consistent with the Steens Act and FLPMA. *Measure:* WSA monitoring.

Adaptive Management and Flexibility

Adaptive management is a system of management practices based on clearly identified outcomes and monitoring to determine if management actions are meeting desired outcomes; and, if not, facilitating management changes that will best ensure outcomes are met. Adaptive management recognizes that knowledge about natural resource systems is sometimes uncertain and, in this context, adaptive management affords an opportunity for improved understanding. Knowing uncertainties exist in managing for sustainable ecosystems, some changes in management may be authorized, which include, but are not limited to, adjusting the rotation, timing, season of use of grazing, and livestock numbers:

- Based on the previous year's monitoring and current year's climatic conditions.
- Based on the previous year's monitoring of bitterbrush utilization, Cole Browse transects, and/or other appropriate monitoring methods to ensure that at least 85% of existing deer winter range within this allotment remains intact (not grazed by livestock).
- Due to drought, causing a lack of available water in areas originally scheduled to be used.

- To balance utilization levels.
- To protect the riparian and water resources.

Rangeland monitoring is a key component of adaptive management. As monitoring indicates changes in grazing management are needed to meet resource objectives, changes are implemented annually, working with the grazing permittee. Flexibility in grazing management will be authorized, and changes in rotations will only be allowed as long as they continue to meet resource objectives. Flexibility is dependent upon the demonstrated stewardship and cooperation of the permittee and occurs within the confines of the grazing permit. A additional two-week period of flexibility will be allowed, prior to and following the permitted season of use, in order to adjust grazing in response to annual climate and vegetative conditions, using adaptive management. This is a non-renewable extension of the authorized season of use, and there is no guarantee to the permittee this will be authorized in any given year. Total AUMs annually authorized will not exceed the amount permitted (9,577 AUMs), even in years when the season of use is extended.

Monitoring[8]

Monitoring, by BLM staff, in coordination with the grazing permittee, of the success in meeting allotment specific resource objectives and goals will take place within South Steens Allotment. All monitoring will follow the direction provided in the CMPA Monitoring Plan dated March 17, 2011 (or subsequent plan) and the 2005 CMPA RMP.

Grazing management will be monitored annually and may include utilization studies for each pasture grazed, along with use supervision reports and actual use reports. The modified Key Forage Plant Method will be used to measure utilization in each pasture. The target utilization levels for key forage plant species will be no more than 50% utilization[9] on native upland perennial species (2005 CMPA RMP, p. 53). Utilization monitoring is performed after livestock leave pastures, along a route transect performed by vehicle and/or horseback. Upland trend will be monitored approximately every five years (as priorities, time, and budget constraints allow) using Pace 180° methodology (Johnson and Sharp 2012; Rangeland Monitoring: Trend Studies TR 4400-4, 1984) and permanent photo points to measure the relative frequency of occurrence of key forbs, shrubs, and perennial grass species in order to assess trend in rangeland condition. Soil Surface Factor methodology will be used to measure soil stability and Observed Apparent Trend will be assessed at each upland trend plot. Currently, there are 18 upland trend monitoring plots within the allotment.

The Cole Browse Method will monitor antelope bitterbrush, an important browse species for mule deer, on fall and winter range as often as possible. This method documents livestock use of bitterbrush to determine level of utilization occurring during different

[8] While monitoring will occur on the allotment, the extent and timeliness of it will depend on internal BLM factors such as funding and workforce, and may not occur exactly when planned.
[9] Burns District BLM measures utilization percentage using an ocular method, not a weight method.

grazing treatments. There are two existing Cole Browse transects established, one in Home Creek Pasture and one in Steens Pasture, but none have been established in the Tombstone or Hollywood pastures. Some additional transects will be established in each pasture, where antelope bitterbrush is present, to determine utilization rates and document reproductive status.

Wilderness areas will be monitored at least twice a year and WSAs will be monitored at a minimum of once per month (across the district), when accessible to the public, as directed in the 2005 CMPA RMP (RMP-81).

Wild horses will be monitored at least annually. Monitoring may be done using wild horse actual use data, observations, and/or utilization data with censuses occurring approximately every two to four years.

Riparian monitoring will be completed approximately every five years using the greenline and/or PFC methods, along with photos and stream sensors. Cultural resources, SSS, soils, recreation activities, and numerous other resources will be monitored periodically, throughout the allotment. An allotment evaluation of management objectives and actions is planned approximately five years after implementation of the Proposed Decision.

New Monitoring includes establishing:

- New upland monitoring plots, as needed to ensure plots are providing an accurate picture of what is happening across the allotment.
- Two to three Cole Browse transects in suitable bitterbrush stands.
- At least one new photo point at each spring/riparian area. One photo will be taken immediately after exclosure construction and retaken annually for the first five years after exclosure construction, then on a five to 10-year interval.

Previously Approved Projects

The North Steens Project is a landscape-level project, the goal of which is to reduce juniper-related fuel loading and improve the ecological health of the area by encouraging a healthy functioning ecosystem through approved land treatments. Treatment techniques include a combination of prescribed fire, juniper treatments, fencing, seeding and planting, in order to reduce fuel loads, restore vegetative communities, improve habitat, and increase forage for wildlife, wild horses, and livestock. Project activities primarily occur above 4,500 feet and below 7,200 feet, concentrating on the "juniper belt." The North Steens Project Area includes the entire South Steens Allotment. Juniper treatments authorized under the North Steens Project will continue to be implemented.

Easement Acquisition

The BLM will work with the private landowner, within the South Steens Allotment, to obtain a legal right by an easement, memorandum of understanding or cooperative management agreement to any Federal developments on private land, to ensure the ability to locate, construct, use, control, maintain, improve, relocate, and repair the developments located on private property. These Federal developments will include both those already existing on the ground, as well as any developments constructed on private property. This will be done cooperatively and voluntarily to ensure mutual benefit to the BLM and private landowner.

CHANGES IN THE SOUTH STEENS AMP/EA FOLLOWING THE JULY 11, 2013 VERSION RELEASED FOR PUBLIC COMMENT

- Andrews Resource Area changed to Andrews/Steens Resource Area throughout.
- Grammatical mistakes have been corrected throughout.
- Clarifications were made where needed; these did not change context.
- Improved document organization.
- Removed one instance of "invasion" as related to juniper.
- Removed "Decision Factors" from *Table of Contents* (EA page ii).
- Corrected acreages of public land in the CMPA within the allotment (EA page 1).
- Added clarification and statement support in S&G discussion stating: BLM TR 1737-20 states: Reducing stocking rates may reduce the percentage of area in unsatisfactory condition, but impacts around the foci of highly used areas (e.g., riparian areas or other water) will remain the same until few, if any, animals remain. While this reference is specifically addressing livestock, it would also apply to wild horses (EA page 7).
- Made statement saying that juniper can currently be managed under the North Steens Project (EA page 10).
- Added: All other Federal laws that are relevant to this document, even if not specifically identified (EA page 16).
- Added: National Historic Preservation Act (16 U.S.C. 470 et seq.), 1966 (EA page 16).
- Updated *Scoping* section to include information about comment period (EA page 19).
- Added statement about Wild Horse and Burro Program (EA page 24).
- Made clarifications to adaptive management and flexibility section (EA page 24 and 25).
- Added clarification that "intact" bitterbrush was not grazed by livestock (EA page 25).
- Added a footnote under Monitoring stating: While monitoring will occur on the allotment, the extent and timeliness of it will depend on internal BLM factors such as funding and workforce, and may not occur exactly when planned (EA page 25).

- Added sentence under *Easement Acquisition* stating: This would be done cooperatively and voluntarily to ensure mutual benefit to the BLM and private landowner (EA page 29).
- Made clarification on maintenance activities allowed during Greater Sage-Grouse nesting (specifically annual, minor fence maintenance would be allowed) (EA page 30).
- Made clarification on fence maintenance responsibility (EA page 30).
- Added a footnote stating: All agreements completed between the BLM and permittee and/or private landowner are voluntary and cooperatively completed to provide mutual benefit (EA page 31).
- Corrected to say that for proposed developments, materials (i.e. rock and soil) that are a by-product of construction could be used, but additional materials needed for proposed developments would be hauled in (EA pages 32-34).
- Added clarification to Spring Development PDE: Spring development would only occur at springs productive enough to support the water development while maintaining a functioning riparian area (EA page 38).
- Added clarification stating: While the entire AMP would become a term and condition of the grazing permit, only the components that are within the permittees management ability would be the permittees responsibility (EA page 40).
- Clarification made on proposed use in Home Creek Pasture, adding: This is due to the presence of Home Creek within the pasture and the need to protect the riparian area from late season use (EA page 41).
- Added information on cistern at Burnt Car Spring (EA page 43, 67, 78, 80, 99, 104, 118, 119, 123, 124, and 169).
- Updated proposed fence construction miles in Tables 5 and 6 (EA pages 50 and 53, respectively).
- Inserted footnote on AUMs proposed under Alternative F stating: Between 2003 and 2012, 7,875 AUMs were the maximum livestock actual use reported. However, it is important to note that there were extenuating circumstances during many of those years, including planned prescribed fire, a settlement agreement, over-population of wild horses, and drought (EA page 54).
- Changed "suspended use AUMs" to "removed from the permit" based on clarification of regulation 4110.3-2(b) which no longer allows for long-term suspension of AUMs (EA page 54).
- Changed column title in Table 8 from "Range Improvement" to "Proposed" (EA page 55).
- Changed value from 16 to 8 in sentence: Based on field observations by BLM cultural resources staff over the last 16 years…" (EA page 65).
- Removed sentence: As a result, current grazing practices have little effect on cultural resource sites, except when sites fall within congregation areas. Added: Archaeological sites are essentially databanks of prehistoric behavior. In order for archaeologists to study and interpret this data, it has to remain in the same horizontal and vertical position it was in when deposited in the past. Once the horizontal and vertical positions of these bits of data are scrambled by whatever outside force, the data can no longer be reliably retrieved and interpreted. In

essence, once the top 12" of sediment at an archaeological site is churned, it no longer retains data potential and the site has lost integrity in that portion of the deposit. If outside forces (e.g. frost heave, rodents, etc…) again churn the deposit, the net effect on the site is zero because it is already disturbed. Therefore, disturbance of the already disturbed deposit is not an effect from a scientific or regulatory perspective. Where outside forces continue to disturb deposits deeper than 12" an effect is occurring. This type of effect is what is seen in or adjacent to livestock congregation areas but not in generalized grazing areas of this allotment (EA page 65).

- Deleted part of sentence stating: livestock being permitted to graze the area. Replaced with: to the late 1970s when archaeologists were first employed by the BLM and inventory and monitoring began (EA page 67).
- Added additional references into the *Grazing Management and Rangelands* section (EA pages 69-95).
- Added information about grazing from 1976 when FLPMA was passed (EA page 69).
- Added clarification stating: decreasing the level of herd congregation around any given water source (EA page 81).
- Added: However, by limiting use in this pasture to early use and by using monitoring and adaptive management, BLM would be able to determine if damage was beginning to occur and make appropriate changes, preventing further long-term damage from occurring. The new location of the boundary fence and removal of reservoirs from that pasture is expected to change livestock grazing patterns, and may decrease the potential for livestock to access the southern area of Home Creek without being actively pushed. In addition, the fence would also be expected to improve the ability to manage livestock along the creek by limiting the ability of livestock to access the riparian area (EA page 89).
- Added "and associated effects" to sentence under Environmental Consequences Alternative G in *Grazing Management and Rangelands* section (EA page 93).
- Added supporting documentation to *Riparian Zones, Wetlands, and Water Quality* section's Affected Environment (EA pages 109-115).
- Changed "increase the" to "provide" (EA page 124).
- Changed "Viable ranching operation" to "a viable and sustainable grazing operation" (EA page 124).
- Added: The ranch would be responsible for finding replacement forage for the AUMs lost or would have to cut livestock numbers increasing their costs and decreasing their profits. If livestock numbers were cut, the production of beef would be reduced, reducing the economic value the ranch would be able to put into the economy (EA page 125).
- Added: There would be a loss to the economy due to the reduced beef production in the area (EA page 126).
- Added additional clarifying information on Biological Soil Crusts (EA page 128).
- Added clarification stating: Hoof action encompasses compressional disturbances which break sheaths and filaments and drastically reduces the ability of the soil organisms to function, particularly in providing nitrogen and soil stability (http://soilcrust.org/crust101.htm) (EA page 129). Also added reference.

- Added Greater Sage-Grouse connectivity information (EA page 134).
- Added additional background information about WNV (EA page 140). Added associated reference.
- Added Centers for Disease Control (CDC) reference (EA page 141).
- Added clarification on lek status (EA page 142).
- Added clarification sentence to SSS section stating: By spreading out livestock grazing, more cover would be remaining after grazing in current congregation areas; however, there would be fewer (or smaller) non-grazed areas throughout the allotment (EA page 146).
- Added footnote about the pre-settlement fire return intervals and references stating: Research on pre-settlement fire return intervals has a large range, but it has traditionally been considered to be 20-160 years, dependent on specific site characteristics. However, some research suggests the pre-settlement fire return is much longer and could be up to 450 years (Baker 2006 and Floyd et al. 2008). Added appropriate references (EA page 153).
- Corrected information on West Nile Virus (WNV) in the wild horse section about transmission (EA page 166).
- Clarified that North Steens 230-kV Transmission line and Echanis Project Site are outside of all Cumulative Effect Analysis Areas (CEAAs), even though there is a small paragraph that mentions its potential effects on elk which may move into the CEAA (EA page 197).
- Made date correction of April 1 to March 1 in Appendix A early grazing treatment to better describe flexibility within this treatment due to plant life-cycle stage (EA page A-1).
- Drainages have been removed from maps; only major intermittent drainages are shown to reduce confusion and clutter (EA pages C-2, 3, 4, 7, 8, 9, and 10).

RATIONALE

A Finding of No Significant Impact (FONSI) found the Proposed Decision, components of which are analyzed in EA# OR-06-027-060 did not constitute a major Federal action that will adversely impact the quality of the human environment. The FONSI determined that an EIS is unnecessary and will not be prepared.

This Proposed Decision is based on public comments, discussions and previous official recommendations of the SMAC, consultation with local governments and State agencies, discussions with the grazing permittee, requirements to make significant progress toward achieving Standards, and conformance to applicable laws and regulations. It also meets the Purpose of and Need for Action to: manage livestock and reduce wild horse impacts to riparian areas; develop a comprehensive AMP for South Steens Allotment; and consider an external request to renew a 10-year grazing permit. In addition, this Proposed Decision begins to meet the Purpose of and Need for additional sources of reliable, late-season water for wild horses and livestock within South Steens Allotment and decreases risk to wild horses in drought years. However, the location of the well along the Lauserica Road does not replace water historically used from Donner und Blitzen River or provide for better wild horse and livestock distribution.

This Proposed Decision includes issuing the grazing permit with the same number of AUMs (9,577) as currently authorized, developing only one new water source. This action is most similar to what was analyzed under the No Action Alternative, with some modification in terms and conditions, including a change in the season of use, which is not expected to modify livestock distribution. Utilization monitoring (with an annual utilization limit of 50% even if full use of authorized AUMs is not utilized) as well as demonstrated permittee flexibility and sound decisions have helped to maintain ecological conditions in the past. These same management decisions will continue to protect the area from ecological damage resulting from a lack of reliable water, as it has in the past. However, there will be no improvement in livestock distribution or ecological condition related to it. The grazing permit expired on February 28, 2014, and was renewed, without NEPA analysis, under the authority of Section 411, HR 3547 (Public Law 113-76), with the same terms and conditions as the previous grazing permit. This Proposed Decision will allow for the grazing permit for South Steens Allotment to be renewed and fully processed with adequate NEPA analysis.

This Proposed Decision will allow the allotment to make significant progress toward achieving Standards by constructing exclosures around the two springs not currently meeting Standards, and rerouting a way at Broken Leg Spring. The exclosure will remove year-round wild horse and seasonal livestock grazing from the spring areas, providing riparian vegetation protection from grazing and allowing it to improve in vigor, increase in abundance, and achieve PFC. In addition, juniper trees (excluding old growth trees) will be removed from the spring areas. These two treatments will result in all three of the casual factors currently responsible for the Standards not being achieved, to be removed. Due to the Proposed Decision to protect springs using exclosures, two springs on BLM-managed land will be removed from available water sources for wild horses and livestock. This is offset by the installation of a well and trough, in a different location, which will provide a reliable, year-round water source.

The No Action alternative was not selected as it would not result in the allotment achieving all S&Gs, which is required by regulation. Further discussion on how the No Action Alternative does not meet resource objectives can be found in Table 3.

Consistency with BLM Manual 6330 – Management of WSAs

The Proposed Decision involves relocating a fence from within a WSA to outside of or along the boundary of WSAs, building two spring exclosures and passively rerouting a way to protect the riparian areas, allowing the areas, and the allotment as a whole, to achieve Standards, and reduce the risk of entrapment at the Burnt Car Spring Cistern. None of the improvement will result in an increase in permitted AUMs. The Proposed Decision's consistency with management direction for WSAs is described below.

Spring Protection

The construction of exclosure fences will only affect naturalness in the immediate vicinity of the fence, decreasing further away. The use of a wood fence will provide a more natural, aesthetically pleasing feeling than a metal and wire fence, and will blend in with surrounding juniper trees, when present. The location of

these fences in areas of rolling topography with a large juniper component would ensure that they are substantially unnoticeable. In addition, by providing these spring areas, the riparian areas will improve in ecological condition, increasing the feeling of naturalness. Maintenance for these exclosures will not require motorized equipment.

Spring protection is consistent with exceptions to the non-impairment mandate as outlined in Section 1.6.C.2.f. *Protect or enhance wilderness characteristics or values*, which states that: "actions that clearly benefit a WSA by protecting or enhancing these characteristics are allowable even if they are impairing." Spring protection, including passive way relocation, will allow for associated riparian areas to be protected from over-grazing by wild horses and livestock and damage by vehicles, improving their ability to function properly and enhancing ecological condition, improving naturalness in the area.

Spring protection is also consistent with 1.6.C.2.g. *Other legal Requirements*, which states that: "activities required to meet obligations imposed by other laws are allowed even though they may violate the non-impairment standard." The riparian areas around some of the springs are currently resulting Standards not being achieved. Through the analysis in the associated EA it was determined that since wild horses are present year-round within the allotment and one of the causal factors for not achieving Standards (along with livestock and juniper), the only practical solution is to protect the springs by the construction of exclosure fences. Through regulation, specifically 43 CFR 4180.2.c. the BLM is legally required to take appropriate action to achieve S&Gs.

In addition, the proposed spring protection is in compliance with Section 1.6.D.3.a.ii. *New Livestock Developments*, which states that "in determining whether a development meets the protecting or enhancing wilderness characteristics exception, the BLM will determine if the structure's benefits to the natural functioning ecosystem outweigh the increased presence of human developments and any loss of naturalness." Through the associated EA, BLM has determined the benefit of protecting the springs outweighs any unnatural effects to wilderness characteristics. Naturalness at these sites will be enhanced by increasing ecological functioning and mitigating effects through use of natural materials.

Spring protection is further supported by Section 1.6.D.10.c.ii. *Fencing* which states that: "new fences may be allowed where necessary to protect springs or other water sources from impairment by wild horse or burros." Analysis has determined that due to the year-round presence of wild horses, spring protection in the form of a fence is required to protect these areas from impairment.

The passive route realignment associated with Broken Leg Spring is also consistent with Section 1.6.D.7.c. which says:

> *Measures required for watershed rehabilitation may be permitted if they satisfy...one of the exceptions. Watershed rehabilitation activities to address natural successional processes that have been disrupted by past human activity may be allowed. Intervention will be limited to what is necessary to allow the system to return to a natural process and to what is necessary to address situations where stabilization through natural processes would take longer than one growing season and the impacted area would be susceptible to significant soil loss during that time or further ecological departure would occur.*

The proposed activity will move a motorized travel way from crossing through a typically wet portion of the spring and riparian area. In the past, the spring and riparian area have been disrupted by vehicles being maneuvered to avoid muddy areas or ruts in the road, resulting in multiple areas of damage where riparian vegetation is continuously damaged or pulled up. The protection of this area will decrease disturbance and assist the area in returning to its natural ecological processes without continuous disruption.

Cistern Access Modification

At Burnt Car Spring, an existing concrete cistern is an entrapment risk for animals, including livestock and wild horses, and potentially humans, making it a public safety risk. Ingress to the cistern will be decreased, and egress will be increased using juniper and rocks in the vicinity. With the exception of cutting junipers, which requires the use of a chainsaw, all work will be done by hand, requiring to motorized access for initial modification or maintenance. As the cistern and the materials to be used are currently present at the site, modification activities will be substantially unnoticeable. As a public safety risk, that is a result of a human caused hazard in the WSA, disturbance of rock and vegetation is allowed under 1.6.C.2.b. of BLM Manual 6330.

Fence Relocation

Relocating 5.5 miles of fence currently within the interior of South Fork Donner und Blitzen WSA mostly (5.0 miles) outside South Fork Donner und Blitzen WSA, and along the boundary of Home Creek WSA, will effectively remove a portion of a structure currently impairing wilderness characteristics. This is consistent with section 1.6.B.3.b. in BLM Manual 6330 allowing the BLM to remove structures and other facilities impairing wilderness characteristics.

As fences can impair wilderness characteristics, specifically naturalness, removing the fence from the interior will result in an increase in naturalness of the WSA and enhance wilderness characteristics. Since the relocation of this fence

will enhance wilderness characteristics, it is also allowed under 1.6.C.2. *Exceptions to non-impairment* class f. *Protect or enhance wilderness characteristics or values.* As the new fence will be constructed in a manner similar to the fence that will be removed, and with PDEs that promote its blending into the surrounding area, the new fence will be substantially unnoticeable except when in close proximity to it. Maintenance on the reconstructed fence will not require motorized equipment.

The ability to continue to maintain all existing range improvements is supported by Section 1.6.D.3.a.i. which allows for maintenance activities in the same degree and manner as was being conducted on October 21, 1976.

Based on associated analysis and consistency with BLM Manual 6330, as described above, the Proposed Decision is not expected to impair any of the WSAs' suitability for preservation as wilderness by Congress, and as such will comply with Section 603(c) of FLPMA.

Table 3 provides a comparison of how the Proposed Decision and all of the alternatives meet the resource objectives associated with South Steens Allotment. Objectives (first column) have been pulled from the Steens Act, BLM Manual 6330 Management of WSAs, CMPA RMP/ROD including Appendices J and P, and the 1995 South Steens Wild Horse HMA Plan Update. This table can be used to show both why the Proposed Decision was selected and why other alternatives were not selected. For complete analysis of the alternatives see Chapter III of the South Steens AMP/EA.

Table 3: Resource Objective Comparison by Alternative

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
Steens Mountain Cooperative Management and Protection Act of 2000								
1. To maintain and enhance cooperative and innovative management projects, programs and agreements between tribal, public, and private interests in the Cooperative Management and Protection Area [Section 102(b)(1)].	This decision has been created through a collaborative process between the BLM, permittee, private landowner, SMAC, ODFW Burns Paiute Tribe, and non-profit organizations. While it may not be the desired result for all interested parties, it is a compromise that balances multiple-uses.	This alternative would not include any cooperation between interested parties and may damage existing cooperative potential with the permittee/private landowner. However, this alternative may improve cooperative efforts between the BLM and non-profit organizations.	This alternative shows cooperation between the permittee/private landowner, SMAC, ODFW, BLM, and other interested parties, but is lacking in cooperation from non-profit groups.	This alternative shows cooperation between the BLM and the permittee/private landowner. While some other individuals may support this alternative, it was negatively looked upon by other members of the interested public.	This alternative attempts to cooperate with non-profit organizations while trying to meet the need of the permittee/private landowner. However, support for this alternative was minimal.	This alternative attempts to cooperate with non-profit organizations while trying to meet the need of the permittee/private landowner. Support for this alternative by non-profit groups was higher than support of any other action alternative.	Reducing grazing would not maintain or enhance cooperation between the BLM and the permittee, and may damage cooperation between the BLM and other permittees in the district.	Grazing removal would not maintain or enhance cooperation between the BLM and the permittee, and may damage cooperation between the BLM and other permittees in the district, as well as with Harney County as ranching is a large component of the local economy/culture.
2. To promote grazing, recreation, historic, and other uses that are sustainable [Section 102(b)(2)].	Grazing will be maintained at the current level, with the permittee unable to regularly take full use due to a lack of reliable water and limited use areas. Effects to recreation would only occur during construction.	Similar to the Proposed Decision, only there would be no effects on recreation of other historic uses.	Sustainable grazing would be promoted. Recreation would be affected during construction activities.	Similar to Alt. B but with increased promotion of grazing.	Similar to Alt. B but with less promotion of grazing.	Similar to Alt. D but with less promotion of grazing.	Sustainable grazing would be reduced. There would be no effects to recreation of other historic uses.	No sustainable grazing would be promoted. There would be no effects to recreation of other historic uses.
3. To conserve, protect and to ensure traditional access to cultural,	No effect on traditional access. See #1 above for discussion of	No effect on traditional access. See #1 above for discussion of	No effect on traditional access. See #1 above for discussion of	No effect on traditional access. See #1 above for discussion of	No effect on traditional access. See #1 above for discussion of	No effect on traditional access. See #1 above for discussion of	No effect on traditional access. See #1 above for discussion of	No effect on traditional access. See #1 above for discussion of

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gathering, religious, and archaeological sites by the Burn Paiute Tribe on Federal lands and to promote cooperation with private landowners [Section 102(b)(3)].	cooperation.	cooperation.	cooperation.	cooperation.	cooperation.	cooperation.	cooperation.	cooperation.
4. To ensure the conservation, protection, and improved management of the ecological, social, and economic environment of the Cooperative Management and Protection Area, including geological, biological, wildlife, riparian, and scenic resources [Section 102(b)(4)].	The Proposed Decision will meet this objective, as it relates to the ecological component because it will allow for continued grazing while providing for protection of riparian resources. There would not be effects to the social environment. The economic environment may be benefited due to construction of improvements.	This objective would not be met since riparian resource would continue to be damaged and management of the ecological resources would not improve. Social and economic environment would not change.	Similar to the Proposed Decision but with increased conflict in the social environment and increased economic benefits due to the construction of more range improvements and the ability of the grazing permittee to regularly use all permitted AUMs.	Similar to Alt. B but with more increased conflict in the social environment and increased economic opportunities.	Same as Alt. B.	Same as Alt. B.	Similar to the No Action Alternative but with increased conflict in the economic environment due to the loss of AUMs.	Similar to No Action Alternative but with more social, ecological, and economic conflict.
5. To promote and foster cooperation, communication, and understanding, and to reduce conflict between Steens Mountain users and interests	See #1 for discussion on cooperation. Objective met by minimizing conflict by moving towards common goals.	See #1 for discussion on cooperation. As no changes are made, issues are not addressed and conflict is not reduced.	See #1 for discussion on cooperation. Alternative does not reduce conflict between may increase conflict due to WSA	Similar to Alt. B only with more conflict.	Similar to Alt. B only with slightly less conflict.	Similar to Alt. D, but with increased conflict over WSR and wilderness issues.	Similar to No Action Alternative but with increased conflict.	Similar to Alt. F but with even more conflict.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
[Section 102(b) (5)]			related issues.					
BLM Manual 6330 Management of WSAs (2012)								
6. Consistent with relevant law, manage and protect WSAs to preserve wilderness characteristics so as not to impair the suitability of such areas for designation by Congress as wilderness.	Naturalness will increase since removing an unnatural feature (fence) from the interior of WSAs and improving the natural condition of riparian areas will more than offset the loss of naturalness due to exclosure construction. Preserves other wilderness characteristics at the current level. The Proposed Decision is not expected to impair the suitability of the area for designation by Congress as wilderness.	This will preserve wilderness characteristics as they are and is not expected to impair the suitability of the area for designation by Congress as wilderness.	Would preserve wilderness characteristics. However, proposed developments would have a small negative effect due to the increase in unnatural features and a positive effect due to improved distribution patterns. These effects would not be expected to affect suitability of the area for designation by Congress as wilderness.	The large number of developments proposed under this alternative would affect wilderness characteristics more than any other alternative. The combined effects may be large enough to affect the suitability of the area to be designated by Congress as wilderness.	Similar to Proposed Decision, but would not benefit naturalness as much since there would be fewer miles of fence removed from within WSAs, and more range improvements constructed.	Same as Alt. D.	Same as the No Action Alternative.	Same as the No Action Alternative.
August 2005 CMPA RMP/ROD								
7. Manage impaired waters on public lands listed under	No effect on 303(d) listing.	No effect on 303(d) listing.	No effect on 303(d) listing.	No effect on 303(d) listing.	No effect on 303(d) listing.	No effect on 303(d) listing.	No effect on 303(d) listing.	No effect on 303(d) listing.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
Section 303(d) of CWA to restore beneficial uses and to improve water quality so that listing is no longer warranted (Water Resources, RMP-18).								

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
8. Achieve or maintain a rating of PFC for perennial and intermittent flowing and standing water bodies relative to site capability, site potential, and BLM management jurisdictions. Maintain, restore, or improve riparian/wetland vegetation communities relative to ecological status, site potential and capability, or site-specific management objectives. (Vegetation, RMP-24).	Spring protection will make significant progress towards achieving PFC and meeting Standards. Grazing management in Home Creek Pasture may result in Home Creek moving from Functioning at Risk to PFC. Fence relocation resulting in some reservoirs no longer being within Home Creek Pasture may result in livestock utilizing Home Creek riparian area more, and could move it away from meeting PFC. Monitoring and adaptive management will be able to determine if this is occurring and prevent long-term damage along Home Creek.	No movement towards PFC would be occurring within the allotment. Areas not in PFC would continue to not be in PFC.	Similar to the Proposed Decision but without effects caused by fence relocation.	Similar to the Proposed Decision but without effects caused by fence relocation.	Similar to the Proposed Decision but without effects caused by fence relocation.	Same as the Proposed Decision.	Same as the No Action Alternative.	Same as the No Action Alternative.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
9. Maintain or restore native vegetation communities through sound landscape management practices. Increase species and structural diversity at the plant community and landscape levels in big sagebrush communities. Provide multiple successional stages within the landscape (Vegetation, RMP-30).	Will meet objectives through spring protection, improved grazing management, and PDEs.	Would continue to meet objectives as currently occurring. Damaged areas around springs would not meet this objective.	Same as the Proposed Decision.	Same as the Proposed Decision.	Same as the Proposed Decision.	Same as the Proposed Decision.	Same as the No Action Alternative.	Same as the No Action Alternative.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
10. Manage big sagebrush, quaking aspen, and western juniper plant communities to meet habitat requirements for wildlife. Manage big sagebrush communities to meet the life history requirements of sagebrush dependent species (Vegetation, RMP-31).	Objective will be met as it relates to livestock grazing management. Other management is outside the scope of this document.	Current heavy use of forage resources near existing springs is affecting wildlife habitat in these areas and wild horse use of these springs may preclude wildlife use in the area. These affects would continue and result in this objective not being met.	New water developments available for late season use would affect bitterbrush stands, important mule deer forage in fall-winter, and may reduce some wildlife resources. Monitoring would prevent bitterbrush and forage from being over-utilized and affecting overall wildlife habitat. Spring protection would protect these areas and make them more suitable for wildlife use. This objective would be met as it relates to livestock grazing management. Other management is outside the scope of this document.	Same as Alt. B only with more risk to bitterbrush due to increased number of improvement.	Same as Alt. C.	Same as Alt. C.	Same as the No Action Alternative.	Same as the No Action Alternative.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
11. Maintain, restore or improve habitat [for fish and wildlife]. Manage forage production to support wildlife population levels identified by ODFW (Fish and Wildlife, RMP-33).	Spring protection will improve riparian habitat for wildlife species. Grazing management with monitoring will allow forage required for wildlife to continue to be available throughout the allotment.	Riparian habitat around springs would continue to be degraded by wild horses and livestock and would not provide quality habitat. Management of forage production to support wildlife would continue with no changes or improvement.	Similar to the Proposed Decision. However, the increased presence of water developments would work to even out livestock distribution and utilization patterns, resulting in fewer areas being heavily grazed, and more lightly to moderately grazed, resulting in more even forage availability for wildlife.	Similar to Alt. B, only with improved livestock distribution.	Similar to Alt. B, only with locations of water developments limiting the ability to distribute livestock grazing.	Same as Alt. D.	More forage available for wildlife and wild horses since livestock would remove fewer AUMs. However, no spring protection would occur and these areas would continue to provide degraded riparian habitat for wildlife.	Similar to Alt. F, only all AUMs previously available for livestock would be available for wild horse and wildlife use.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
12. Manage plant SSS and their habitats so management actions do not contribute to their decline or listing as T&E. Conserve animal SSS and the ecosystems on which they depend. Manage big sagebrush communities to meet the life history requirements of sagebrush-dependent SSS (SSS, RMP-35).	Objective will be met through PDEs and by following BLM policy and the Greater Sage-Grouse Conservation Assessment and Strategy for Oregon recommendations. Spring protection will result in quality riparian habitat available for wildlife. Plant SSS will not be affected by this alternative.	Riparian areas around springs would continue to be degraded, limiting their benefit to wildlife.	Same as the Proposed Decision.	Same as the Proposed Decision.	Same as the Proposed Decision.	Same as the Proposed Decision.	Same as the No Action Alternative.	Same as the No Action Alternative.

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13. Protect, maintain, improve, or restore Visual Resource values by managing all public lands in accordance with VRM (Visual Resources, RMP-45).	Visual resources will be slightly changed following spring protection due to the increase in vertical and horizontal lines associated with fence construction. PDEs will mitigate visual disturbance. Visual resources will be improved where fence removal occurs, but affected where the new fence is constructed.	No changes to visual resource values would occur under this alternative.	Similar to the Proposed Decision only with more effects to visual resources due to increased construction of water developments. However, these features require only minor excavation and would follow PDEs that would result in the developments not noticeably modifying landscape features.	Similar to Alt. B; however, more effects to visual resources would occur due to the increased number of water developments that would be constructed.	Effects would be between those described for Alt. B and C, though with effect to visual resources caused by fence removal and construction.	Same as Alt. D.	Same as the No Action Alternative.	Same as the No Action Alternative.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
14. Work cooperatively with private and community groups and local government, Burns Paiute tribal, or other tribal governments to provide for customary uses consistent with other resource objectives and to sustain or improve local economies. Maintain, and promote the cultural, economic, ecological, and social health of the Steens Mountain Area (Social and Economic Values, RMP-46).	Spring protection will allow the ecological health of the Steens Mountain Area to be improved, while PDEs and the continuation of grazing will protect the cultural/social health. The economic health of the area will continue as it has been over the last decade. All customary uses will be sustained. Actions taken will be the result of numerous cooperative discussions.	No action as a result of cooperative discussions would occur. There would be no improvement in ecological condition and degraded areas would remain degraded. The economic health of the area would continue as it has been over the last decade. All customary uses would be sustained.	Similar to the Proposed Decision only the ability to properly manage grazing within the allotment due to the increase in water developments would further increase the ecological health of the area, while construction of developments would improve the economic health of the area.	Similar to Alt. B only increased due to the increase in water developments.	Similar to Alt. B, with some decreased improvement due to location of water developments limiting benefits associated with improved livestock distribution.	Similar to Alt. D, only with less improvement in ecological health since location of water developments would further limit benefits associated with improved livestock distribution.	The reduction in grazing would result in a decrease in cultural/social and economic health of the area. Ecological improvement would be limited since springs would not be protected and more fine fuels would accumulate.	Similar to Alt. F only with a greater loss to the cultural/social and economic health of the area.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
15. Maintain a thriving natural ecological balance within HMAs. Maintain/improve year-round water sources to sustain wild horse herds (Wild Horses and Burros, RMP-50).	As maintenance of existing water sources will continue as currently authorized, these areas will continue to provide water for wild horses. In drought year, year-round water sources may still be limited, but the risk is decreased due to the construction of a well and trough. Spring protection will promote ecological balance in these areas, but they will no longer provide water to wild horses. This will slightly increase congregation at remaining water sources, especially late in the year when water is limited.	No ecological benefit would occur since springs would not be protected. All current water sources would continue to be accessible to wild horses.	Year-round, reliable water would be developed resulting in a decreased risk of wild horses running out of water during drought years. Distribution would be improved since wild horses would have more options for water late in the year and large numbers congregating at any given water source would be reduced. This improved distribution, increase in use areas, and protection of springs would result in a thriving ecological balance within the HMA	Similar to Alt. B but the benefits would be increased since more water developments would be constructed, providing additional reliable water sources.	Similar to Alt. C only with fewer benefits since fewer developments would be constructed and development location would limit distribution.	Same as Alt. D.	Same as the No Action Alternative.	Same as the No Action Alternative.

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16. Provide for a sustained level of livestock grazing in the CMPA, while meeting resource objectives and requirements for the S&Gs. Implement administrative solutions and rangeland projects to provide proper management for livestock grazing while meeting resource objectives and requirements for S&Gs (Grazing Management, RMP-53).	Spring protection and grazing management will result in the allotment achieving S&Gs, or eliminating livestock as a causal factor. Grazing will continue to occur as it has in the past decade, with the ability of the permittee to utilize all permitted AUMs regularly limited due to the lack of late-season water and limited use areas. Moving the fenceline may provide for improved management of the Home Creek Pasture, ensuring S&Gs continue to be achieved. Removal of water sources from this Pasture may result in livestock increasing pressure on Home Creek, moving it away from PFC. Monitoring and adaptive management will be able to determine if and limit or prevent long-term damage from occurring in	No spring protection or other developments would occur to move the allotment towards fully achieving S&Gs. Grazing would continue to occur as it has in the past decade, with the ability of the permittee to utilize all permitted AUMs regularly limited due to the lack of late-season water. A sustained level of livestock grazing would not occur as grazing would be very variable and dependent on availability of water.	Spring protection and grazing management would result in S&Gs being achieved, or at a minimum removing livestock as a causal factor. The new water developments would provide for improved livestock distribution and grazing management across the allotment, providing late-season reliable water and ensuring that they permitted AUMs are able to be sustained except in years of extreme drought.	Similar to Alt. B only the number of new water developments, including numerous wells, would result in the permitted AUMs being sustainable in all years, even those of extreme drought. Also, the additional developments would further improve distribution within the allotment.	Similar to Alt. B, but less since the location of new water developments would limit the distribution of livestock.	Same as Alt. D.	Similar to No Action Alternative, only the reduced number of AUMs permitted would be regularly sustainable and the ability to take full use would not be as dependent on the availability of water since less water would be required by livestock.	No sustainable livestock grazing would be provided for. Since no spring protection would occur, S&Gs would continue to not be achieved; only wild horses and juniper would be causal factors.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
17. Manage public visitation in the wilderness to provide outstanding opportunities for solitude, primitive and unconfined recreation, naturalness, and other features including ecological, geological, scientific, educational, scenic and historic (Wilderness, RMP-73).	Spring protection will allow the ecological condition of those areas to improve, resulting in an increase in the appearance of naturalness. The relocation of the fenceline from within WSAs will also increase naturalness in these areas. The affect to naturalness by the construction of protection fences will be negated by the overall improvements.	Not affected by this alternative.	Visitors may have a feeling of reduced wilderness characteristics during construction, but would return to pre-construction levels after completion. The ability to improve livestock distribution throughout the allotment would improve ecological conditions, and increase naturalness. Spring protection would also increase naturalness at these locations. While naturalness would be slightly decreased in the area of development, it is not expected that this decrease would be substantially noticeable by the casual observer.	Similar to Alt. B; however, the large number of developments would have a greater cumulative impact on naturalness which may result in effects being noticeable by the casual observer.	Similar to the Proposed Decision; however, the benefit from fence relocation would be reduced since only a portion of the fence within WSAs would be relocated. However, additional water developments would result in an improvement in distribution and ecological condition, but this would be limited by the location of the developments. The location of developments along roads would make these developments more visible to the casual observer and may result in decreased feelings of naturalness.	Similar to Alt. D, only the location of developments would be along the edge of WSAs and would not be as effective and improving distribution and providing the associated ecological benefits.	Not affected by this alternative.	Visitors to the allotment may have increased feelings of solitude since there would be no activities related to grazing management occurring. No other affects would occur.
18. Manage livestock grazing in wilderness	This alternative will comply with the guidelines.	Same as the Proposed Decision.	Same as the Proposed Decision.	Same as the Proposed Decision.	Same as the Proposed Decision.	Same as the Proposed Decision.	This alternative would not meet the objective as the	Same as Alt. F.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
under the stipulations of the Congressional Grazing Guidelines (HR 101-405 Appendix A) (Wilderness, RMP-75).							reduction in AUMs would not meet the purpose and need and is not required in order to fully achieve S&Gs, or at a minimum to remove livestock as a causal factor in not achieving them.	
19. Manage existing WSAs so as not to impair their suitability for preservation as wilderness (WSAs and Parcels with Wilderness Characteristics, RMP-80).	No actions will impair WSA suitability for preservation wilderness. Spring protection and fence relocation will provide for better management, improved ecological condition, and overall increased naturalness.	No changes to WSAs would occur.	While naturalness would be slightly affected within some of the WSAs, the decrease in naturalness would not be substantial enough to make the areas unsuitable for designation as wilderness. There would be an increase in naturalness associated with the improved ecological conditions due to improved distribution.	Similar to Alt. B but naturalness would be affected to a larger degree due to the increased number of developments. While there is no threshold for when a WSA would become unsuitable for wilderness designation, the total area of WSA affected by developments would be expected to be near the limit for some of the WSAs within the allotment.	Similar to Alt. C, but overall slightly less since fewer developments would be constructed.	Same as Alt. D.	Same as the No Action Alternative.	Same as the No Action Alternative.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
20. Improve the ecological condition of upland vegetation communities.	Improved grazing management will allow for ecological conditions to be maintained or improved.	No changes would occur to the ecological condition.	Ecological condition would be improved by improved grazing management and water development which would allow for improved livestock distribution.	Similar to Alt. B only greater since more water developments would allow for improved distribution and management.	Similar to Alt. B but slightly less since the location of developments would limit distribution and associated benefits.	Similar to Alt. D but less since development locations are even more limiting.	Similar to the No Action Alternative. However, fuel accumulation could reduce ecological benefits and increase the risk of catastrophic wildfire.	Similar to the No Action Alternative except no vegetation would be removed by livestock at any time of year, which may result in some ecological benefit as grasses may be allowed to complete reproduction cycles annually. However, fuel accumulation could reduce ecological benefits and increase the risk of catastrophic wildfire. The benefit would be reduced since wild horses would still be present within the allotment.
21. Maintain the ecological condition of upland vegetation communities.	See #20 above.	See #20 above.	See #20 above.	See #20 above.	See #20 above.	See #20 above.	See #20 above.	See #20 above.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
22. Maintain/ improve the condition of riparian vegetation communities.	Spring protection will improve riparian communities in these areas. Relocation of the fence will also allow for improved management of Home Creek which may improve riparian condition in that area. However, removal of water sources in Home Creek Pasture due to fence relocation may result in livestock increasing pressure along the riparian area, which may move it away from PFC. Monitoring will ensure no long-term negative effects occur to the Home Creek Riparian area following fence relocation.	Riparian condition would continue to be degraded around unprotected springs. The riparian community along Home Creek would be maintained.	Similar to the Proposed Decision, only the riparian community along Home Creek would affected by relocation of the fenceline.	Same as Alt. B.	Same as Alt. B.	Same as the Proposed Decision.	Same as the No Action Alternative.	Similar to the No Action Alternative, but the riparian area along home creek and some springs may slightly improve since livestock would no longer graze it. Since wild horses would still graze these areas the benefit would be reduced, especially in the more common congregation areas around springs.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
23. To maintain or improve ground water recharge and holding capacity of riparian/wetland areas to maintain or increase base flow conditions of water sources (streams and springs) (Water Resources, P-30).	Moving the fence may limit the ability of livestock to enter Home Creek since draw to that area will be reduced due to fewer reservoirs. This will allow for improved conditions along the creek. However, there is potential livestock will increase their preference for the riparian area since it is the only water source in the south end of the pasture. This may move the area away from PFC. Monitoring will ensure no long-term damage occurs. Conditions at springs will be improved.	No affect.	Protection would improve conditions at springs.	Same as Alt. B.	Same as Alt. B.	Same as the Proposed Decision.	No affect.	No affect.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
24. To manage soils to maintain, restore, or improve soil erosion classes, watershed health, and areas of fragile soils (Soils and Biological Soil Crusts, P-31).	See #23.	See #23.	See #23.	See #23.	See #23.	See #23.	See #23.	See #23.
25. Maintain or restore ecological status of native plant communities. Increase species and structural diversity at the plant community and landscape levels in the big sagebrush communities. Provide multiple successional stages within the landscape (Vegetation, P-35).	See #9, #10, #14, #20, and #22.	See #9, #10, #14, #20, and #22.	See #9, #10, #14, #20, and #22.	See #9, #10, #14, #20, and #22.	See #9, #10, #14, #20, and #22.	See #9, #10, #14, #20, and #22.	See #9, #10, #14, #20, and #22.	See #9, #10, #14, #20, and #22.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
26. To maintain, restore, or improve riparian/wetland vegetation communities toward an advanced ecological status condition at the reach or scale relative to wilderness management and other resource specific management objectives (Vegetation, P-36).	See #8, #22 and #23.	See #8, #22 and #23.	See #8, #22 and #23.	See #8, #22 and #23.	See #8, #22 and #23.	See #8, #22 and #23.	See #8, #22 and #23.	See #8, #22 and #23.
27. To maintain, restore, or improve SSS habitats. To conserve animal SSS and the ecosystems on which they depend (Fish, P-41).	See #7, #8, #11, #12, and #22.	See #7, #8, #11, #12, and #22.	See #7, #8, #11, #12, and #22.	See #7, #8, #11, #12, and #22.	See #7, #8, #11, #12, and #22.	See #7, #8, #11, #12, and #22.	See #7, #8, #11, #12, and #22.	See #7, #8, #11, #12, and #22.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
28. To continue cooperation and coordination with other State and Federal agencies on the management of wildlife, wildlife habitat, and protection of the character of the wilderness and WSRs. To manage forage protection to support wildlife population levels identified by ODFW, while minimizing effects to wilderness resources (Wildlife, P-42).	Cooperation and coordination will continue to occur.	Cooperation and coordination will continue to occur.	Cooperation and coordination will continue to occur.	Cooperation and coordination will continue to occur.	Cooperation and coordination will continue to occur.	Cooperation and coordination will continue to occur.	Cooperation and coordination will continue to occur.	Cooperation and coordination will continue to occur.
29. To protect, maintain, enhance, or restore visual resources by managing all BLM-managed lands in Wilderness and WSR corridors in accordance with VRM Class I objectives (Visual Resources, P-47).	No changes will affect visual resources within the wilderness or WSR corridor because no range improvements will be constructed in those areas.	Same as Proposed Decision.	Same as Proposed Decision.	Same as Proposed Decision.	Same as Proposed Decision.	Watergaps that would be constructed in the wilderness and the WSR corridor would have an effect on visual resources in those areas.	Same as Proposed Decision.	Same as Proposed Decision.
30. To maintain a thriving natural ecological balance within the HMA.	See #15.	See #15.	See #15.	See #15.	See #15.	See #15.	See #15.	See #15.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
To maintain / improve year-round water sources to sustain the wild horse herd (Wild Horses, P-49).								
31. Provide for a sustained level of livestock grazing in Steens Mountain Wilderness, while providing for S&Gs for Public Lands in Oregon and Washington, as described in the CMPA RMP. Implement administrative solutions and rangeland projects to provide proper management for livestock grazing while meeting resource objectives and requirements for S&Gs (Grazing, P-53).	See #16.	See #16.	See #16.	See #16.	See #16.	See #16.	See #16.	See #16.
1995 South Steens Wild Horse HMA Plan Update								
32. Manage wild horse populations at an AML of between 159 and 304 animals to maintain a thriving natural	Allocated AUMs will be available for wild horse use. Spring protection will allow wild horses to be excluded	Similar to the Proposed Decision only riparian areas would not improve in condition and no	Similar to the Proposed Decision only water would not be as likely to be lacking in drought years	Similar to the Alt. B only with improved habitat due to multiple constructed water developments.	Similar to Alt. C only with fewer constructed water developments.	Similar to Alt. B only with improved habitat due to watergaps along Donner und Blitzen River which	Same as the No Action Alternative.	Same as the No Action Alternative.

Resource Objectives	Proposed Decision	Alt. A: No Action	Alt. B: Proposed Action	Alt. C: Maximum Water Dev.	Alt. D: Along Road Dev.	Alt. E: Edge Dev.	Alt. F: Reduced Grazing w/ No Dev.	Alt. G: Complete Removal of Livestock Grazing
ecological balance within the HMA. Provide adequate quality forage for 3,648 AUMs of wild horse use. Wild horses will be managed in a manner that maintains satisfactory riparian condition and improves riparian conditions where less than satisfactory condition exists (1995 South Steens Wild Horse HMA Plan Update, *In:* 1995 South Steens AMP, Appendix E Pg. 74).	from riparian areas, improving riparian condition. Management of wild horses within the AML is outside the scope of this document. When wild horses are over the AML and require increased AUMs, they may not be available. Late-season reliable water may be lacking for wild horses, especially in drought years, but risk would be slightly decreased due to the construction of one well and trough.	new reliable water would be developed.	due to constructed water developments, improving habitat.			would provide year-round water.		

RIGHT OF PROTEST AND/OR APPEAL

Any applicant, permittee, lessee or other interested public may protest a proposed decision under Section 43 CFR 4160.1 and 4160.2, in person or in writing to Rhonda Karges, Andrews/Steens Resource Area Field Manager, Bureau of Land Management, Burns District Office, 28910 Hwy 20 West, Hines, Oregon 97738, within 15 days after receipt of such decision. The protest, if filed, should clearly and concisely state the reason(s) as to why the proposed decision is in error.

A written protest electronically transmitted (e.g. email, facsimile, or social media) will not be accepted as a protest. A written protest must be on paper.

In the absence of a protest, the proposed decision will become the final decision of the authorized officer without further notice unless otherwise provided in the proposed decision.

Any applicant, permittee, lessee or other person whose interest is adversely affected by the final decision may file an appeal of the decision. An appellant may also file a petition for stay of the decision pending final determination on appeal. The appeal and petition for stay must be filed in the office of the authorized officer, as noted above, within 30 days following receipt of the final decision, or within 30 days after the date the proposed decision becomes final. The petition for a stay and a copy of the appeal must also be filed with the Office of Hearings and Appeals at the following address:

United States Department of the Interior
Office of Hearings and Appeals
351 South West Temple, Suite 6.300
Salt Lake City, Utah 84101

The appeal must be in writing and shall state the reasons, clearly and concisely, why the appellant thinks the final decision is in error and also must comply with the provisions of 43 CFR 4.470. The appellant must also serve a copy of the appeal by certified mail on the Office of the Solicitor, U.S. Department of the Interior, 805 SW Broadway, Suite 600, Portland, Oregon 97205, and person(s) named [43 CFR 4.421 (h)] in the *Copies sent to*: section of this Decision.

A petition for stay, if filed, shall show sufficient justification based on the following standards (43 CFR 4.21(b)).

(1) The relative harm to the parties if the stay is granted or denied.
(2) The likelihood of the appellant's success on the merits.
(3) The likelihood of immediate and irreparable harm if the stay is not granted, and
(4) Whether the public interest favors granting the stay.

As noted above, the petition for stay must be filed in the office of the authorized officer.

A notice of appeal and/or request for stay electronically transmitted (e.g., email, facsimile, or social media) will not be accepted. A notice of appeal and/or request for stay must be on paper.

Rhonda Karges
Andrews/Steens Resource Area Field Manager

5/30/14
Date

Copies Sent To (by certified mail):

The Honorable Steven E. Grasty (CM# 7010 1870 0002 7993 1757)
Harney County Courthouse
450 N. Buena Vista #5
Burns, Oregon 97720

Oregon Department of Fish and Wildlife (CM# 7010 1870 0002 7993 1764
P.O. Box 8
Hines, Oregon 97738

Burns Paiute Tribe (CM# 7010 1870 0002 7993 1771)
100 Pasigo Street
Burns, Oregon 97720

Stacy Davies (CM# 7010 1870 0002 7993 1788)
Roaring Springs Ranch, Inc.
31433 Hwy 205
Frenchglen, Oregon 97736

Fred Otley (CM# 7010 1870 0002 7993 1795)
Otley Brothers, Inc.
20926 S. Diamond Lane
Diamond, Oregon 97722

Daniel Ekblaw (CM# 7010 1870 0002 7993 1801)
Casilla 1240
Valdivia XIV Region
Chile

The Cloud Foundation (CM# 7010 1870 0002 7993 1818)
107 S. 7th Street
Colorado Springs, Colorado 80905

Oregon Natural Desert Association (CM# 7010 1870 0002 7993 1825)
50 SW Bond, Suite 4
Bend, Oregon 97702

Oregon Natural Desert Association (CM# 7010 1870 0002 7993 1832)
917 SW Oak Street, Suite 419
Portland, Oregon 97205

Western Watersheds Project (CM# 7010 1870 0002 7993 1849)
P.O. Box 1602
Hailey, Idaho 83333

Western Watersheds Project (CM# 7010 1870 0002 7993 1856)
126 NE Alberta Street, Suite 208
Portland, Oregon 97219

George Wuerthner (CM# 7010 1870 0002 7993 1863)
Western Watersheds Project
P.O. Box 8359
Bend, Oregon 97708

UNITED STATES
DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Burns District Office
Andrews/Steens Resource Area
Finding of No Significant Impact
South Steens Allotment Management Plan /
Environmental Assessment
OR-06-027-060

INTRODUCTION

Andrews/Steens Resource Area, Burns District Bureau of Land Management (BLM), has prepared an Environmental Assessment (EA) and Allotment Management Plan (AMP) to analyze recommended management actions developed through an Interdisciplinary Team (IDT) to aid in accomplishing resource objectives, Standards for Rangeland Health (further referred to as Standards) and Guidelines for Livestock Management (further referred to as Guidelines; Standards and Guidelines together are referred to as S&Gs), and land use plan objectives for South Steens Allotment set forth in the 2005 Steens Mountain Cooperative Management and Protection Area (CMPA) Resource Management Plan/Record of Decision (RMP/ROD).

South Steens Allotment #6002 is located approximately 65 miles south of Burns, Oregon; east of Highway 205 and west of Donner und Blitzen Wild River. The allotment is approximately 3 air miles south of the town of Frenchglen and 19 air miles north of the town of Fields. There are 89,525 acres of BLM-managed lands, plus 5,073 acres of private land within the allotment, for a total of 94,598 acres. The allotment consists of four pastures: Home Creek, Tombstone, Hollywood Field, and Steens. Approximately 90,080 acres are within the boundary of the Steens Mountain CMPA that was designated in the Steens Mountain Cooperative Management and Protection Act of 2000 (Steens Act). There are currently 9,577 Animal Unit Months (AUMs) of active grazing preference for livestock within South Steens Allotment. Livestock grazing use is currently authorized from April 1 to October 31.

South Steens Allotment is a Management Category "I" (Improve) allotment (H-1734-2 – Rangeland Monitoring Handbook). The "Improve" category identifies allotments with management or resource issues or concerns. These allotments receive priority for funding, project implementation and monitoring. South Steens Allotment was designated an I Category allotment due to resource concerns such as riparian, water quality, Greater Sage-Grouse, bighorn sheep, noxious weeds, Wilderness Study Area (WSA), Wild and Scenic Rivers, wilderness, recreation, and juniper encroachment [Appendix J-10, 2005 CMPA RMP].

In 2008, South Steens Allotment was assessed for conformance to S&Gs by an IDT. Standard 1 – Watershed Function, Uplands, Standard 3 – Ecological Processes, and Standard 5 - Native, Threatened and Endangered (T&E), and Locally Important Species were fully achieved throughout the allotment. However, it was determined these Standards are at risk of not being achieved in the future due to juniper expansion. Standards 2 - Watershed Function, Riparian/Wetland Areas and 4 - Water Quality were achieved along the 3.8 miles of perennial

and intermittent streams that are capable of supporting riparian vegetation in Tombstone and Home Creek pastures[1]. This was determined based on the Proper Functioning Condition (PFC) assessment, which found that 1.3 miles are in PFC and 2.5 miles are functioning at risk with an upward trend towards PFC. However, Standards 2 and 4 were not achieved in the Steens Pasture due to wild horses, livestock, and juniper encroachment in spring riparian areas, resulting in these small areas not being in PFC. Of the three casual factors, only livestock grazing and juniper removal can be addressed using currently authorized management [no additional National Environmental Policy Act (NEPA) analysis required]. Even if livestock grazing and junipers were fully removed from these areas, wild horse use would still be prominent at these sites, causing damage from hoof shear and overutilization of riparian species. Therefore, BLM does not believe that changing the management of livestock or livestock and juniper removal alone would result the achievement of these Standards within the Steens Pasture. See Table 1 in the attached EA for further detail on Standards determinations. Grazing management practices were found to conform to Guidelines.

SUMMARY OF THE PROPOSED DECISION

The following would be the result of the Proposed Decision.

1. Permit Renewal

   A 10-year term livestock grazing permit would be issued, to continue 9,577 active use AUMs of livestock grazing on public land. The season of use would be shortened from April 1 through October 31 to April 15 through October 31. The percentage of public land (%PL) based on forage, would remain at 94% for the allotment. However, the PL% for each pasture would be added as a term and condition of the permit, and the pasture PL% is what would be used for billing purposes in each pasture. The associated Decision would be added as a term and condition of the permit, as would requiring that the permittee open gates between South Steens Allotment and the portion of the Herd Management Area (HMA) within Steens Mountain Wilderness following livestock removal each year, and close gates prior to livestock grazing, to aid in the free movements of wild horses. Actual use billing would be authorized.

2. Livestock Grazing Management

   Livestock use dates for each pasture would be determined on an annual basis based on the vegetative stages of key forage species and the prescribed grazing treatment (see EA Appendix A: Grazing Treatment Descriptions). Livestock numbers may also vary annually as outlined under Adaptive Management (EA Chapter II, A. Actions Common to All Alternatives); however, total permitted AUMs would not exceed 9,577. Any modifications to the proposed grazing system would conform to the utilization maximum of 50% for native, key forage species, and care would be taken to ensure all pastures received periodic growing season rest.

[1] Standards two and four were found not to be present in Hollywood Pasture.

Hollywood Pasture would primarily be used as a gather pasture to get cattle to and from Tombstone Pasture. Utilization in Hollywood Pasture in the spring would be limited to 30% on native key forage species (livestock and wild horse utilization combined) in order to provide enough forage for livestock during fall gathering, and fall and winter wild horse use. Hollywood Pasture would receive one full year of rest (from livestock) every four years. Tombstone Pasture would rotate between an early/graze and a defer treatment, every other year. Steens Pasture would also rotate between an early/graze and defer treatment; however, it would be on an opposite rotation from Tombstone Pasture. Home Creek Pasture would only be given an early treatment, with one year of complete rest every fourth year. Table 2 in the EA outlines the Proposed Grazing System.

3. Proposed Range Improvements

Rangeland improvement activities would include spring protection on Broken Leg Spring (S3) and the BLM-managed portion of Three Springs (S1), use juniper and rocks to reduce ingress and increase egress from the large cistern at Burnt Car Spring (S4), a well (W13) and associated trough (T11) located outside of WSAs within the Roaring Butte Mineral Materials Source boundary (all components of Alternative B), and fence removal and construction (components of Alternatives D and E). All range improvements would follow relevant *General Project Design Elements* (PDEs; EA Chapter II.B.2.) and *PDEs Specifically for Proposed Range Improvements* (EA Chapter II.B.3), unless otherwise provided for. Refer to the Proposed Decision Map in the Proposed Decision proposed range improvement locations.

The Proposed Decision includes the following proposed range improvements:

- Protection of Broken Leg Spring and the BLM-managed portion of Three Springs, using fencing (within a WSA);
- 250 feet of passive route realignment at Broken Leg Spring (within a WSA);
- Use of juniper trees and rock to reducing ingress and increasing egress from the large cistern at Burnt Car Spring (within a WSA);
- Removal of 5.5 miles of existing fence (within a WSA);
- Construction of 5.8 miles of new fence (0.5 mile located within a WSA); and
- Construction of a well (W13) and associated trough (T11) (outside WSAs).

All projects implemented within WSAs would be constructed to reduce impacts to wilderness values on a site-specific, case-by-case basis, and measures would be taken to ensure a more natural appearance including but not limited to the design features as described in the EA. All projects within WSAs would meet either the non-impairment requirement or an exception.

4. Adaptive Management and Flexibility

Adaptive management is a system of management practices based on clearly identified outcomes and monitoring to determine if management actions are meeting desired outcomes; and, if not, facilitating management changes that would best ensure outcomes are met. Adaptive management recognizes that knowledge about natural resource systems is sometimes uncertain and, in this context, adaptive management affords an opportunity for improved understanding. Knowing uncertainties exist in managing for sustainable ecosystems, some changes in management may be authorized, which include, but are not limited to, adjusting the rotation, timing, season of use of grazing, and livestock numbers, within the constraints of the grazing permit:

- Based on the previous year's monitoring and current year's climatic conditions;
- Based on the previous year's monitoring of antelope bitterbrush [*Purshia tridentata* (Pursh) DC.] utilization, Cole Browse Transects, and/or other appropriate monitoring methods to ensure that at least 85% of existing deer winter range within this allotment remains intact (not grazed by livestock);
- Due to drought, causing a lack of available water in areas originally scheduled to be used and reducing forage production;
- To balance utilization levels; and
- To protect the riparian and water resources.

Rangeland monitoring is a key component of adaptive management. As monitoring indicates changes in grazing management are needed to meet resource objectives, changes are implemented working with the grazing permittee. Flexibility in grazing management would be authorized, and changes in rotations will only be allowed as long as they continue to meet resource objectives. Flexibility is dependent upon the demonstrated stewardship and cooperation of the permittee and occurs within the confines of the grazing permit. A two-week period of flexibility will be allowed, both prior to and following the permitted season of use, in order to adjust grazing in response to annual climate and vegetative conditions, using adaptive management. This is a non-renewable extension of the authorized season of use. There is no guarantee to the permittee that this will be authorized in any given year and authorization of it is at the discretion of the BLM. Total AUMs annually authorized will not exceed the amount permitted (9,577 AUMs), even in years when the season of use is extended. Additional flexibility will occur within the terms and conditions of the grazing authorization.

Knowing uncertainties exist in managing for sustainable ecosystems, developments would be constructed in a phased-in approach, using adaptive management practices, and taking budget constraints into consideration, along with currently unforeseen ecological concerns.

5. Monitoring

Monitoring, by BLM staff in coordination with the permittee, of the success in meeting allotment specific resource objectives would take place within South Steens Allotment. Monitoring will occur no matter what the outcome of the EA and related Decision is. New monitoring would be established for proposed range developments that are selected in the decision.

6. Goals and Objectives for South Steens Allotment

Four new goals with associated objectives would be established for the South Steens Allotment. These goals would provide a baseline for comparison during the next allotment evaluation or AMP process (see EA page 27).

7. Easement Acquisition

The BLM would work with the private landowner, within South Steens Allotment, to obtain a legal right by an easement, memorandum of understanding or cooperative management agreement to any Federal developments on private land, to ensure the ability to locate, construct, use, control, maintain, improve, relocate, and repair the existing developments located on private property. These Federal developments would include both those already existing on the ground, as well as any developments constructed on private land that may be a result of this EA. This would be done cooperatively and voluntarily to ensure mutual benefit to the BLM and private landowner.

FINDING OF NO SIGNIFICANT IMPACT

Consideration of the Council on Environmental Quality (CEQ) criteria for significance [40 Code of Federal Regulations (CFR) 1508.27], both with regard to context and intensity of impacts, is described below:

Context

The Proposed Decision would occur in South Steens Allotment and would have local impacts on affected interests, lands, and resources similar to and within the scope of those described and considered in the Andrews Management Unit and CMPA Proposed RMP (PRMP)/Final Environmental Impact Statement (FEIS). There would be no substantial broad societal or regional impacts not previously considered in the PRMP/FEIS. The actions described represent anticipated program adjustments complying with the CMPA RMP/ROD, the Steens Act, and implementing range management programs within the scope and context of those documents.

Intensity

The CEQ's ten considerations for evaluating intensity (severity of effect):

1. *Impacts that may be both beneficial and adverse.* The EA considered potential beneficial and adverse effects. PDEs were incorporated to reduce impacts. None of the effects are beyond the range of effects analyzed in the AMU/CMPA PRMP/FEIS, to which the EA is tiered.

   Cultural Heritage: Cultural resources, if present, may be affected by grazing in existing congregation areas and new congregation areas that might arise. All new range improvements create new livestock congregation areas and could damage cultural resources within these areas. These range developments would be inventoried prior to construction and the best method to eliminate effects to cultural resources would be utilized.

   Grazing Management/Rangelands: The permittee would continue to request use of up to 9,577 AUMs as authorized on the Term Grazing Permit. However, use would continue to regularly be limited by the 50% utilization target and it would not be expected that the permittee would be able to use all permitted AUMs, except in wet years, without risking damage to resources. Grazing management would allow the Standards currently being achieved to continue to be achieved and to continue to conform to Guidelines. The exclosure of two springs, as part of spring protection, would protect the spring sources and associated riparian areas. This would allow the allotment to move towards meeting Standards 2 and 4. Range improvement projects would modify livestock distribution, but improvement would be minimal since no new water would be developed outside of the current use area. However, the new well would provide truly reliable water for livestock.

   Lands and Realty: The BLM would work with the private landowner, within South Steens Allotment, to obtain a legal right by an easement, memorandum of understanding or cooperative management agreement to any Federal developments on private land, to ensure the ability to locate, construct, use, control, maintain, improve, relocate, and repair the existing developments located on private property.

   Migratory Birds: At most (under Alternative C), approximately 5% of the available habitat within the allotment would have some level of reduced vegetation that might affect migratory birds. However, areas adjacent to the allotment also support habitat, so at most only 2% of available habitat in the allotment would be affected. Due to the varying presence and habitat needs of migratory birds, other effects would be nebulous and are not fully analyzed in the EA.

Noxious Weeds: New ground-disturbing activities have potential to create opportunities for noxious weed establishment and spread. Following PDEs would reduce opportunities for introduction of new weeds. Productive, healthy plant communities should reduce opportunities for noxious weed introduction and spread. The majority of range improvements would occur within ¼ mile of an existing road (open or closed) that would be used for monitoring.

Recreation/Visual Resources: Most developments would be located away from known areas of prolonged visitor use (i.e., campsites) and effects on the quality of the recreational experience would be minimal. Overall, the land/water component of the landscape character would be preserved. Given the limited area affected by developments as a whole, the vegetation component of the landscape character would be preserved.

Riparian Zones, Wetlands, and Water Quality: Protection of springs would eliminate wild horse and livestock access to riparian soils saturated year-round, forcing them to congregate on firmer upland soils. Without annual disturbance from grazing animals riparian vegetation would improve in abundance and vigor, and water quality at these sites would improve.

Social and Economic Values: The permittee would continue to have limited use of the permitted AUMs due to lack of reliable water. Implementing range improvements could provide economic opportunities for local contractors and suppliers. Range improvement projects may be funded under a cost share between the Burns District BLM and the permittee. By maintaining a viable ranching operation and improving rangeland conditions in South Steens Allotment, the traditions associated with the ranching communities of Harney County would be maintained and possibly improved.

Soils and Biological Soil Crusts (BSCs): Direct long-term (one or more decades) and short-term (less than one decade) impacts to soils and BSCs from all ground-disturbing activities associated with implementing this Proposed Decision would affect less than 1% of the allotment.

Special Status Species (SSS) - Wildlife: Areas within 0.25-mile of the well and trough would show reduced grasses and forbs so Greater Sage-Grouse would have to search other areas for sufficient food. Spring sources fenced to exclude grazing animals and returned to a more natural state would benefit Greater Sage-Grouse for watering and riparian/wetland vegetation for foraging.

Upland Vegetation: Direct long-term (one or more decades) and short-term (less than one decade) impacts to vegetation from ground-disturbing activities associated with implementing this Proposed Decision would affect less than 1% of the allotment.

Wild Horses: Spring protection would virtually remove two water sources from within the HMA. This would be offset by the well and trough, which would guarantee year-round water would be available, even in drought years. Wild horse movements and access to live water would continue to be restricted by the Donner und Blitzen River protection fence.

Wild and Scenic Rivers (WSR) and Wilderness: No range improvements are being proposed in the wilderness or WSR corridor and current grazing would continue within the Home Creek portion of the wilderness, there would be no anticipated effects to the Steens Mountain Wilderness.

WSA: The Blitzen River and Home Creek WSAs would not be affected as no new developments would be constructed within them. In South Fork Donner und Blitzen WSA the total area affected by proposed developments would have a net reduction of 237 acres due to partially removing a pasture boundary fence. Spring protection would protect riparian areas, which would improve the habitat for riparian-associated wildlife and avian species. By protecting riparian areas, these areas would increase in naturalness.

Wildlife and Locally Important Species: Small, less mobile mammals would be affected most through loss of habitat near new water troughs. Areas within 0.25-mile of the well and trough would show some reduced grasses and forbs so wildlife would have to search other areas for sufficient food. However, this effect would not be measureable since grasses and forbs would still remain in the area. Spring sources fenced and returned to a more natural state would benefit wildlife for watering purposes as well as increase available forage for them. Overall, effects of different development on different wildlife species would be minimal and should not affect habitat for different species.

2. *Degree to which the Proposed Decision affects public health and safety.* No aspect of the Proposed Decision would have an effect on overall public health and safety.

3. *Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.* Unique characteristics present within South Steens Allotment include: Cultural Resources, Wild Horses, SSS, WSR and Wilderness, and WSAs. See above section for related impacts.

4. *The degree to which effects on the quality of the human environment are likely to be highly controversial.* Controversy in this context means disagreement about the nature of the effects, not expressions of opposition to the Proposed Decision or preference among the alternatives. No unique or appreciable scientific controversy has been identified regarding the effects of the Proposed Decision.

5. *Degree to which possible effects on the human environment are highly uncertain or involve unique or unknown risks.* The analysis has not shown there would be any unique or unknown risks to the human environment nor were any identified in the AMU/CMPA PRMP/FEIS to which this proposal is tiered.

6. *Degree to which the action may establish a precedent for future actions with significant impacts or represents a decision in principle about a future consideration.* This project neither establishes a precedent nor represents a decision in principle about future actions. The Steens Act provided a unique opportunity to conserve, protect, and manage the long-term ecological integrity of the CMPA. In addition, range improvements, implementation of AMPs and issuance of 10-year grazing permits are ongoing and expected actions as outlined in the CMPA RMP/ROD and as analyzed in other EAs. No long-term commitment of resources causing significant impacts was noted in the EA or RMP.

7. W*hether the action is related to other actions with individually insignificant but cumulatively significant impacts.* The environmental analysis did not reveal any cumulative effects beyond those already analyzed in the AMU/CMPA PRMP/FEIS, North Steens 230-kV Transmission Line Project EIS, or the North Steens Ecosystem Restoration Project EIS, which encompasses the South Steens Allotment. The EA described the current state of the environment (Affected Environment by Resource, Chapter III), which included the effects of past actions. Continued livestock grazing, weed treatments, road maintenance, recreation activities, North Steens 230-kV Transmission Line Project, and the North Steens Ecosystem Restoration Project, are all Reasonably Foreseeable Future Actions (RFFA). The Comprehensive Recreation Plan for the CMPA and the South Steens Wild Horse Gather EA are in the NEPA process and subject to change based on public comments in future NEPA analysis and subsequent administrative remedies. Therefore, effects of these RFFAs are not addressed in the EA. The cumulative effects of these RFFAs were thoroughly addressed throughout Chapter III by resource, as applicable.

8. *Degree to which the action may adversely affect districts, sites, highways, structures or objects listed in or eligible for listing in the National Register of Historic Places.* There are no features within the project area listed or eligible for listing in the National Register of Historic Places. However, as part of the PDE identified in the attached EA, new range improvements would be inventoried for cultural resources prior to improvement construction. Sites eligible for listing to the National Register of Historic Places, within the area of effect of range improvements, would be avoided to mitigate potential effects. If avoidance is not a viable mitigation option, other measures such as surface collecting and mapping, testing and full-scale excavation could be used.

9. *The degree to which the action may adversely affect an endangered or threatened species or its habitat.* There are no known T&E species or their habitat affected by the Proposed Decision. However, SSS occurring within this Project Area include Greater Sage-Grouse, two species of bats (fringed myotis and Townsend's big-eared bat), diverse-leaved pondweed, and redband trout. Diverse-leaved pondweed, which is currently known to exist in Tombstone Reservoir, would not be affected since no actions are currently proposed for that reservoir. Effects to redband trout would be the result of effects to water quality. No measurable effects to redband trout are anticipated. Effects to Greater Sage-Grouse are summarized above.

10. *Whether an action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.* The Proposed Decision does not threaten to violate any law. The Proposed Action is in compliance with the CMPA RMP, which provides direction for the protection of the environment on public lands. The Steens Act also directs BLM to:

- Maintain the cultural, economic, ecological, and social health of the CMPA;
- Promote viable and sustainable grazing on private and public lands within the CMPA; and
- Conserve, protect, and manage the long-term ecological integrity of the CMPA.

On the basis of the information contained in the AMP/EA and all other information available to me, it is my determination that:

1. The implementation of the Proposed Decision will not have significant environmental impacts beyond those already addressed in the AMU/CMPA PRMP/FEIS (August 2004) or the North Steens Ecosystem Restoration Project EIS (September 2007);

2. The Proposed Decision is in conformance with the 2005 CMPA RMP/ROD;

3. There would be no adverse societal or regional impacts and no adverse impacts to affected interests; and

4. The environmental effects, together with the proposed PDEs, against the tests of significance found at 40 CFR 1508.27 do not constitute a major Federal action having a significant effect on the human environment.

Therefore, an EIS is not necessary and will not be prepared.

Rhonda Karges
Andrews/Steens Resource Area Field Manager

5/30/14
Date

SOUTH STEENS ALLOTMENT MANAGEMENT PLAN/ ENVIRONMENTAL ASSESSMENT

OR-06-027-060

Bureau of Land Management
Burns District Office
28910 Hwy 20 West
Hines, Oregon 97738

May 29, 2014

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SOUTH STEENS
ALLOTMENT MANAGEMENT PLAN /
ENVIRONMENTAL ASSESSMENT
OR-06-027-060

CHAPTER I. INTRODUCTION: PURPOSE OF AND NEED FOR ACTION

A. Summary

This Allotment Management Plan (AMP)/Environmental Assessment (EA) analyzes possible management actions developed through Interdisciplinary Team (IDT) recommendations, Steens Mountain Advisory Council (SMAC) recommendations, public comments, and in coordination with the livestock permittee, to aid in accomplishing allotment resource objectives and conform to (or continuing to conform to) all Oregon and Washington Standards for Rangeland Health (further referred to as Standards) and Guidelines for Livestock Grazing Management (further referred to as Guidelines; Standards and Guidelines together are referred to as S&Gs). Possible management actions include grazing management, permit renewal, and proposed range improvements including water developments. The goal of these management actions is to balance all resources and meet multiple use requirements, while conforming to required laws and policies.

B. Background

South Steens Allotment (#6002) is located approximately 65 miles south of Burns, Oregon, east of Highway 205 and west of Donner und Blitzen Wild and Scenic River (WSR). The allotment is approximately three air miles south of the town of Frenchglen and 19 air miles north of the town of Fields. See Map 1 – Vicinity. There is 89,525 acres of Bureau of Land Management (BLM) managed lands plus 5,073 acres of private land within the allotment, for a total of 94,598 acres. South Steens Allotment is divided into four pastures: Home Creek, Tombstone, Hollywood Field, and Steens. Approximately 88,937 acres of public land occurring within the allotment are within the Steens Mountain Cooperative Management and Protection Area (CMPA) and 588 acres are within the Andrews Management Unit (AMU). Of the public acres, 16,609 acres are within Steens Mountain Wilderness. South Steens Allotment contains parts of three Wilderness Study Areas (WSAs): South Fork Donner und Blitzen WSA (27,904 acres) and Home Creek WSA (1,178 acres) are both entirely contained within the South Steens Allotment, and Blitzen River WSA, of which 23,415 acres of 31,857 acres are located within the South Steens Allotment. All three WSAs became remnants of WSAs following the Steens Mountain Cooperative Management and Protection Act of 2000 (Steens Act) in which portions of all three WSAs were designated wilderness. See Map 2 – Land Status for a visual representation of land status and ownership within the allotment. The South Steens Allotment is fully encompassed within the South Steens Wild Horse Herd Management Area (HMA); this HMA also expands into another allotment and the Steens Mountain Wilderness and No Livestock Grazing Area. Within the South Steens HMA, the appropriate management level (AML) is between 159 and 304 animals. In 2012, a

census occurred within the HMA, and a direct count aerial inventory found 383 wild horses. Since this number is over the AML, the process for conducting a wild horse gather has been initiated. This allotment also contains 74,755 acres of Preliminary Priority Habitat (PPH) for Greater Sage-Grouse and 16,409 acres of Preliminary General Habitat (PGH) for Greater Sage-Grouse[1], which is a BLM Special Status Species (SSS). The U.S. Fish and Wildlife Service (USFWS) has concluded the Greater Sage-Grouse warrants protection under the Endangered Species Act, but protection is currently precluded due to the need to take action on other species facing more immediate and severe extinction threats.

One grazing authorization (permit), #3602570[2], exists for this allotment. Under this permit, the current season of use is from April 1 through October 31, for 9,577 Animal Unit Months (AUMs) of active grazing preference for livestock. For this allotment, percentage public land based on forage production (%PL) is 94% on the current permit[3].

The South Steens Allotment was designated an "Improve" (I) Management Category allotment (H-1734-2 – Rangeland Monitoring Handbook) in 1984 and reconfirmed in the 2005 AMU and Steens Mountain Cooperative CMPA Record of Decisions (RODs) and Resource Management Plans (RMPs; Appendix J-10). An "Improve" categorization identifies the allotment as having management or resource issues or concerns and resource conflicts. "I" category allotments typically receive priority for funding, project implementation, and monitoring. South Steens Allotment was designated an "I" category allotment due to resource concerns related to riparian condition, water quality, Greater Sage-Grouse, bighorn sheep, noxious weeds, recreation, western juniper [*Juniperus occidentalis* Hook. (further referred to as juniper) encroachment, WSAs, WSRs, and the Steens Mountain Wilderness (2005 AMU and Steens Mountain CMPA RODs and RMPs, Appendix J-10).

In the Omnibus Oregon WSR Act of 1988, 72 miles of the Donner und Blitzen River was designated as a wild river and became part of the WSR system. The 1980 BLM Oregon and Washington *Final Intensive Inventory Decisions* determined there were two units (three subunits) within the South Steens Allotment had wilderness characteristics. At this time, subunit 2-86E (Blitzen River) was 58,560 acres, subunit 2-85G (South Fork Donner und Blitzen River) was 35,870 acres, and subunit 2-85H (Home Creek) was 26,590 acres[4]. The final decision for these three subunits was that they all be designated as

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[1] PPH are areas that have been identified as having the highest conservation value to maintaining Greater Sage-Grouse populations, this corresponds to Core Habitat Areas as designated by Oregon Department of Fish and Wildlife (ODFW). PGH are areas of occupied seasonal or year-round Greater Sage-Grouse habitat outside of PPH. These areas include ODFW Low Density Habitat as well as additional areas of currently occupied Greater Sage-Grouse habitat.

[2] This grazing authorization also covers other allotments. The proposed management and alternatives described within this document do not affect the management of those other allotments.

[3] The %PL is determined by the proportion of livestock forage available on public lands within the allotment compared to the total amount available from both public lands and those owned or controlled by the permittee (43 CFR 4130.3-2g)

[4] These acreages include BLM-managed land, as well as private, state, and Malheur National Wildlife Refuge land.

WSAs. The Oregon Wilderness Study Report of 1991 determined 4,575 acres of public land within the Home Creek WSA were not suitable for wilderness due to the area's irregular configuration creating a potentially unmanageable area. The Blitzen River WSA contained 55,880 acres of public land of which 34,210 acres were recommended not suitable for wilderness due to the irregular configuration creating a potentially unmanageable area, as well as the fact that common land uses for the western portion of the WSA were livestock grazing, development of range improvement projects, and possible mineral exploration and development. South Fork of the Donner und Blitzen River WSA contained 37,555 acres of public land and all of the acres were recommended as suitable for wilderness. The 1991 Wilderness Study Report recommended livestock grazing continue at their current levels within all the WSAs.

In May 1993, the BLM prepared the Donner und Blitzen National WSR Management Plan EA (EA-OR-020-2-72), allowing livestock grazing within the Donner und Blitzen WSR corridor. The Decision was challenged in Federal District Court [*Oregon Natural Desert Association (ONDA) v. Green*]. In 1995, prior to receiving a Final Judgment on the challenge, the South Steens AMP/EA was written. The 1995 AMP allowed for livestock grazing and watering along the Donner und Blitzen WSR. In 1997, the Court in *ONDA v. Green* issued a Final Judgment barring BLM from 1) authorizing grazing in the river corridor; 2) building parking lots and improving roads in the corridor; and 3) constructing any water diversions in the river corridor until a new river plan and Environmental Impact Statement (EIS) were prepared.[5] The fourth component of the judgment required BLM to construct the "Blitzen protection fence" (previously analyzed in the 1995 South Steens AMP/EA), and within three years to remove an equal amount of obsolete fence from WSAs. The Blitzen protection fence was built in 1998, excluding livestock use on the southeastern edge of Steens Pasture within South Steens Allotment. The remainder of Donner und Blitzen WSR corridor was not fenced, as the BLM believed topography would prohibit livestock from watering on the river.

On October 20, 2000 Congress enacted the Steens Act, creating the 425,550 acre CMPA, adding over 28 miles of additional wild river designations within the Steens Mountain area, and a 97,229 acre No Livestock Grazing Area; the current acreage is 99,859 acres due to land exchanges occurred within the boundary of the No Livestock Grazing Area. Under the Steens Act, portions of the existing WSAs were converted to wilderness, leaving remnant WSAs adjacent to, but outside of the designated wilderness. The Steens Act states, upon cancellation of grazing permits, "future grazing use in that designated area [No Livestock Grazing Area] is prohibited. The Secretary shall be responsible for installing and maintaining any fencing required for resource protection within the designated no livestock grazing area" (Section 113). The western boundary of the No Livestock Grazing Area is formed by the Donner und Blitzen WSR corridor and is adjacent to the South Steens Allotment. The western boundary of the WSR corridor and the No Livestock Grazing Area are also the western boundary of Steens Mountain

[5] In October 2000, prior to completion of an EIS and WSR plan, the Steens Act permanently established the No Livestock Grazing Area along the river area. The Steens Mountain Wilderness and WSR Plan was completed in July 2005, and include recognition of the No Livestock Grazing Area.

Wilderness.[6] One exception to the No Livestock Grazing Area is the water gap in the Tabor Cabin area, within the Donner und Blitzen WSR corridor and Steens Mountain Wilderness (Steens Act). This water gap was previously on private property, which was exchanged through Title VI of the Steens Act. One element of the land exchange was Roaring Springs Ranch, Inc., reserved a "nonexclusive easement" to use and maintain, "for livestock, wild horse and wildlife watering purposes" the aforementioned water gap. This easement is recognized as a legal use of this portion of the No Livestock Grazing Area for said purposes.

The Steens Act also established the SMAC "to advise the Secretary in managing the Cooperative Management and Protection Area and in promoting the cooperative management under subtitle C" (Section 131). The BLM is required to "consult with the advisory committee as part of the preparation and implementation of the management plan" and the SMAC will in turn submit recommendations on management plans within the CMPA.

Following the Steens Act and subsequent land exchanges, the Active/Permitted Use AUMs for numerous allotments, including the South Steens Allotment, were adjusted. Changes to the mandatory terms and conditions on the associated permits were authorized by Public Law 106-399 of 2000 (Steens Act). South Steens Allotment went from 19,133 AUMs of Active/Permitted Use to 9,577 AUMs. The new Active/Permitted Use AUMs were determined using production characteristics of the remaining portion of South Steens Allotment. This was agreed upon by Roaring Springs Ranch, Inc. in the Livestock Grazing Agreement included with the Roaring Springs Ranch, Inc. land exchange signed February 15, 2002.

In 2001 BLM completed the *Projects for Implementation of the Steens Mountain Cooperative Management and Protection Act of 2000* EA OR-027-01-27 (referred to as the Implementation EA), which analyzed environmental effects of installing range improvements required to implement the Steens Act, including projects to exclude livestock from the No Livestock Grazing Area. The purpose was to:

> [I]mplement the 'no livestock grazing area,' install and maintain fencing required for resource protection within this area, provide replacement forage within and outside the CMPA, and construct fencing and water systems to allow for viable livestock operations and sustainable livestock grazing which promotes the long-term ecological integrity within the CMPA and meets the Standards for Rangeland Health and the Guidelines for Livestock Management.

[6] The Steens Mountain Wilderness is divided into two separate sections. The largest piece includes the No Livestock Grazing Area and the WSR corridor, and is located on top of the Steens Mountain, with the majority being located east of the Donner und Blitzen River. The smaller portion is located on the western side of the CMPA, and is centered on Home Creek. The two portions are separated by the South Fork Donner Und Blitzen and the Home Creek WSAs.

The need for the Implementation EA action was “to conform with the directives of the Act, thereby ensuring the long-term ecological integrity of the CMPA.” The Decision Record for the Implementation EA included construction of fences to exclude livestock from the No Livestock Grazing Area, among other improvements. Some sections of fencing along the river were not selected because the BLM believed topography along portions of Donner und Blitzen River was steep enough livestock would not be able to enter the river corridor and water at the river. The Implementation EA stated, "Although no other projects are being considered at this time, the addition of other gap fences where livestock are continually accessing the no livestock grazing area is possible."

Following the Implementation EA, the No Livestock Grazing Area boundary was monitored for cattle intrusions. Monitoring from 2003 to 2005 found cattle had been crossing South Fork Donner und Blitzen River from South Steens Allotment, and entering the No Livestock Grazing Area. Cattle were using existing trails and drainages on the west side of the river to enter the area, and would then continue into Big Indian, Little Indian, and Mud creeks as well as Riddle Brothers Ranch National Historic District (Riddle Brothers Ranch). In 2006, to stop cattle from entering the No Livestock Grazing Area, BLM amended the Decision Record for the Implementation EA to include the construction of a 2.5-mile fence, which had been previously analyzed but not selected in the original decision. The fence was to be located in T. 34 S., R. 32¾ E., Sections 7, 17, 18, and 20. The fence was to be constructed as close as topography would allow to the actual boundary between South Steens Allotment and Steens Mountain Wilderness. Roaring Springs Ranch, Inc., appealed the decision and requested a stay of the decision to the Department of the Interior's Office of Hearings and Appeals (OHA) on the basis that eliminating “livestock access to the river will render the adjacent portion of Steen’s Pasture useless except during the sensitive spring growing season.” In a declaration, the Roaring Springs Ranch manager stated, “Roaring Springs does not necessarily object to this fencing” and their “primary concern is to ensure a reliable replacement water source for Steen’s [sic] Pasture.” The BLM and Roaring Springs Ranch, Inc., entered into a joint motion to stay the decision and proceedings for one year in order to come to a resolution.

In 2006, the BLM and Roaring Springs Ranch, Inc., entered into a Cooperative Range Improvement Agreement. The agreement allowed Roaring Springs Ranch to clean out waterholes in South Steens Allotment, allow wild horses to utilize a new waterhole constructed on private land, and construct a pipeline from a private well to a private waterhole within the Hollywood Pasture, if necessary. Roaring Springs Ranch also agreed to work with the BLM to develop waterholes and reservoirs within the South Steens Allotment to provide late-season water, and to help protect the Three Springs complex area once other water was available. The BLM agreed to provide bentonite for Weaver Place and Solomon Canyon waterholes; rebuild Weaver Place Reservoir, and cleanout Weaver Place Dugout Waterholes to promote late-season water. In addition, BLM agreed to write an EA to analyze the development of waterholes and reservoirs within the South Fork Donner und Blitzen and Blitzen River WSAs to provide water for livestock, wildlife, and wild horses. Subsequent to the Cooperative Range Improvement Agreement, Roaring Springs Ranch, Inc., withdrew their appeal and OHA dismissed the

matter. The BLM constructed the 2.5-mile fence in fall 2007. One component of this AMP/EA will be the analysis of the development of waterholes and reservoirs as described in the Cooperative Range Improvement Agreement.

Under the 1995 South Steens AMP/EA, the grazing system was a four-year rotational system, using adaptive management to ensure changes can be made quickly in response to monitoring data. Flexibility in stocking levels, pasture rotations, and timing of grazing was allowed in order to attain utilization targets and achieve management objectives. During the first two years of the grazing rotation, cattle would start grazing the southern end of the allotment, summer at the upper elevations, and leave the allotment via the northern pastures. The following two years cattle would start on the north end and graze to the south end. This grazing management would have relied heavily on wranglers to make sure livestock left the riparian areas and grazed the uplands, as well as to limit utilization in the pastures. However, herding focused on riparian areas around the river and streams, with little focus on the smaller springs and meadows, and it is not known how often herding actually occurred or how effective herding was at protecting these small riparian resources. In addition, herding applied only to livestock, wild horses are unable to be herded. The prescribed grazing rotation was kept general, in order to allow for adaptive management changes in response to climate conditions and monitoring data. The general rotation prescribed in the 1995 South Steens AMP has not been followed in the last ten years due to the creation of the No Livestock Grazing Area and land exchanges from the Steens Act of 2000. This resulted in a decrease in size and number of pastures for South Steens Allotment. Adaptive management, which allows for coordinated flexibility in grazing management, was written into the 1995 AMP, which has allowed grazing management to be modified while still allowing the permittee to meet the terms and conditions of the permit. While the prescribed grazing management has not been directly followed, grazing management has been using adaptive management, and provided growing season[7] rest from livestock in at least one out of every four years. Current grazing management practices are conforming to Guidelines.

In 2008, South Steens Allotment was assessed for conformance to S&Gs by an IDT (see Chapter IV for current IDT members). Within the allotment, 3.8 miles of perennial and intermittent streams were determined to be capable of supporting riparian vegetation. A Proper Functioning Condition (PFC) assessment found 1.3 miles of streams are in PFC and 2.5 miles are functioning at risk with an upward trend. This resulted in Standard 2 - Watershed Function, Riparian/Wetland Areas, and Standard 4 - Water Quality being achieved in the Tombstone and Home Creek pastures (these Standards were determined not to be present in the Hollywood Pasture). However, Standards 2 and 4 were not achieved in the Steens Pasture due to wild horses, livestock, and juniper encroachment in riparian and spring areas, and not in PFC. Of the three causal factors, only livestock grazing can be addressed using currently authorized management[8] [no additional National Environmental Policy Act (NEPA) analysis required]; however, even if livestock were fully removed from these areas, wild horses would still be prominent at these sites,

[7] The growing season typically occurs between May 1 and July 1-15, depending on annual conditions.
[8] Juniper can currently be managed under the North Steens Ecosystem Restoration Project.

causing damage from hoof shear and overutilization of riparian species.[9] BLM Technical Reference (TR) 1737-20 states: *Reducing stocking rates may reduce the percentage of area in unsatisfactory condition, but impacts around the foci of highly used areas (e.g., riparian areas or other water) will remain the same until few, if any, animals remain.* While this reference is specifically addressing livestock, it would also apply to wild horses as both are grazing animals. Therefore, BLM management does not believe just changing management of livestock, or livestock removal, is an appropriate action, as it would not result in significant progress[10] towards the achievement of these Standards within the Steens Pasture. Standard 1 – Watershed Function, Uplands, Standard 3 – Ecological Processes, and Standard 5 - Native, Threatened and Endangered (T&E), and Locally Important Species were fully achieved throughout the allotment; however, it was determined these Standards are at risk of not being achieved in the future due to juniper expansion. See Table 1 for further detail on the determination of Standards.

Table 1: 2008 S&G Assessment[11]

Standard	Achieved	Not Achieved	Causal Factors	Comments
1. Watershed Function - Uplands	All Pastures	---	---	Juniper has contributed to a moderate departure from expected conditions for hydrologic function and biotic integrity in areas of juniper encroachment throughout the allotment. However, overall soil and site stability, hydrologic function, and biotic integrity are still essentially intact. Areas that have previously burned, reducing the amount of juniper on the site, have vigorous and abundant bunchgrass species. Continued juniper encroachment would increase the risk of this Standard not being achieved in the future. Cheatgrass (*Bromus tectorum* L.) in the Hollywood Pasture was found to be resulting in a slight departure from what is expected for biotic integrity.
2. Watershed Function - Riparian/ Wetland Areas	Home Creek, and Tombstone Pastures	Steens Pasture	Wild horses, livestock, and juniper expansion	Within the Tombstone Pasture, 1.33 miles of streams were found to be at PFC in a 1998 assessment and 2.5 miles of Streams in Home Creek Pasture were found to be Functioning at Risk with an Upward Trend. These streams have deep-rooted, obligate wetland plants that promote bank stability and proper functioning. The above-mentioned pastures have achieved this Standard. In the Steens Pasture, use of springs by livestock and wild horses has prevented development of riparian communities and altered flows supporting downstream meadows. Phases II and III[12] expansion juniper have

[9] A South Steens HMA Gather EA has been initiated and scoping completed for this process.
[10] Significant Progress: Used in reference to achieving a standard as outlined in the S&Gs for Public Lands Administered by the BLM in the States of Oregon and Washington (1997) and 43 CFR 4180.1. The use of the word "significant" in this context does not meet the Council on Environmental Quality's (CEQ) definition of the word.
[11] These S&Gs have not been updated since 2008 since the BLM does not believe that any major changes have occurred within the allotment that would result in these determinations being changed. Livestock grazing and wild horse management has not changed. Juniper, though treated in some areas, is still a threat and continues to contribute to a departure from expected conditions. Some improvement may have occurred in wildlife habitat where treatment has occurred, but the extent of this is not enough to modify the 2008 determination.
[12] Phase I of woodland succession is described as having trees present but shrubs and herbs are the dominant vegetation that influence ecological processes (hydrologic, nutrient, and energy cycles) on the site; Phase II woodlands have trees that are codominant with shrubs and herbs and all forms equally influence ecological

				also altered hydrologic cycles, resulting in a reduced period during which subsurface flows contribute to the meadows. The riparian areas within the Steens Pasture are not currently at PFC, and are not achieving this Standard. This Standard was determined not present in the Hollywood Pasture.
3. Ecological Processes	All Pastures	---	---	Plant composition and productivity are at or near expected levels for much of the allotment. Deep-rooted shrubs and grasses are prevalent, driving nutrient cycling, and maintaining the hydrologic cycle; litter is accumulating in place. Noxious weeds and invasive plants, such as cheatgrass, are not present to the extent they would substantially alter ecological processes. Nutrient and hydrologic cycles are currently functioning properly. However, juniper, where present and expanding, has contributed to a moderate departure from expected conditions for plant composition and community structure. The continued expansion of juniper puts the allotment at risk for not achieving this Standard in the future.
4. Water Quality	Home Creek, and Tombstone Pastures	Steens Pasture	Wild horses and livestock	Pastures achieving this Standard have tributaries at or near PFC and the nearby uplands are not contributing sediment to water above what is expected to occur naturally. In these pastures, juniper has encroached into riparian areas and resulted in decreased base flow and may result in increased sedimentation in the future. Home Creek was determined to have achieved this Standard due to its having an upward trend, moving toward PFC, a greenline occupied by vigorous, deep-rooted, obligate wetland species, and little sedimentation is occurring. However, Home Creek is on the Oregon Department of Environmental Quality's (ODEQs) list of streams exceeding the seven-day average maximum temperature for year-round use by redband trout. Expansion juniper is the major factor in not meeting the temperature requirement. Continued juniper expansion may result in this Standard not being achieved in the future due to altered hydrologic processes. Juniper expansion may also result in increased sedimentation. In the Steens Pasture, springs receive heavy use from livestock, when present, and year-round from wild horses, due to the fact they are reliable water sources within the pasture. Year-round presence of animals moving in and around the spring area increases sedimentation in the water, resulting in poor-quality drinking water for wild horses, livestock, and wildlife. This Standard was determined not present in the Hollywood Pasture.
5. Native, T&E, and Locally Important Species	All Pastures	---	---	Habitat for Greater Sage-Grouse is in generally good condition. The exception is areas that have Stage II/III juniper establishment in big sagebrush (*Artemisia tridentata* Nutt.), low sagebrush (*Artemisia arbuscula* Nutt.), and ephemeral wet meadows and riparian areas within the Steens Pasture. Juniper encroachment into Greater Sage-Grouse habitat is putting this Standard at risk for not being achieved in the future. Juniper encroachment is also beginning to degrade mule deer, pronghorn antelope, and elk habitat; however, current habitat is still adequate for these species. Waterthread pondweed (*Potamogeton diversifolius* Raf.), a SSS plant is present in Tombstone Reservoir, and is expected to remain there barring prolonged drought conditions.

processes on the site; woodland succession Phase III has trees that are the dominant vegetation and are the primary species influencing ecological processes on the site (Miller et al. 2005).

On January 7, 2009 the South Steens Water Development EA (which was written to analyze additional water developments as well as provide a comprehensive AMP), the signed Finding of No Significant Impact (FONSI), and Signed Proposed Decision were made available to the public for the 15-day protest period. This was followed by a 30-day appeal period on the Final Decision. Prior to the end of the appeal period on February 20, 2009 the Andrews/Steens Resource Area Field Manager, rescinded the FONSI and Final Decision Record. Following the rescinding, it was determined modifications and improvements to the EA were necessary to allow for a complete analysis of alternatives and fully meet all NEPA requirements.

This South Steens AMP/EA was written based on the original South Steens Water Development EA, with additional input from the SMAC and other interested publics, including previous comments and protests. This EA includes modified alternatives fully meeting all resource concerns, additional alternatives to ensure complete NEPA analysis occurs, and provides a comprehensive management plan for the allotment.

C. Purpose of and Need for Action

The purpose of the Action is to:

1. Manage livestock and reduce wild horse impacts to riparian areas within South Steens Allotment to make significant progress toward achieving the Watershed Function – Riparian/Wetland Areas and Water Quality Standards not currently achieved within Steens Pasture.

2. Continue to achieve Standards currently being achieved, and continue to conform to Guidelines in accordance with all applicable laws, regulations, and policies.

3. Provide additional sources of reliable late-season water for wild horses and livestock within the South Steens Allotment to replace water historically used from Donner und Blitzen River, provide for better wild horse and livestock distribution, and decrease risk to wild horses in drought years, while preventing the impairment of wilderness suitability in the WSAs. Consideration of additional water sources would meet the BLM's obligation to write an EA to analyze the development of waterholes and reservoirs within the South Steens Allotment to provide water for livestock, wildlife, and wild horses, as agreed upon in the 2006 Cooperative Range Improvement Agreement.

4. Develop a comprehensive AMP for the South Steens Allotment.

5. Consider an external request to renew a 10-year grazing permit, which expires on February 28, 2014. The AMP/EA focuses only on the grazing permit renewal for the South Steens Allotment. Other allotments that are on the current grazing permit will be renewed separately following appropriate analysis.

The need for the Action is:

1. Currently, Standards 1 - Watershed Function, Uplands, 3 - Ecological Processes, and 5 - Native, T&E, and Locally Important Species are fully achieved throughout the allotment and Standards 2 - Watershed Function - Riparian/Wetland Areas, and 4 - Water Quality are achieved in Tombstone and Home Creek pastures, and determined not to be present in the Hollywood Pasture. However, all Standards, in all pastures, are at risk of not being achieved in the future due to resource damage caused by juniper expansion across the allotment.

   Within Steens Pasture, Watershed Function – Riparian/Wetland Areas and Water Quality Standards (2 and 4) are not being achieved due to the heavy use of springs and mesic/wet meadows by wild horses and livestock, which have prevented development of riparian communities and altered flows supporting meadows. The year-round presence of animals moving in and around the spring areas increase sedimentation in the water, which results in poor-quality drinking water for wild horses, livestock, and wildlife. During field visits, the poor quality drinking water has been observed visually in the form of areas of stagnate muddy water, often with animal waste present within the water. This has resulted in these areas not being in PFC throughout the pasture. Phases II and III expansion juniper has also altered hydrologic cycles by consuming water that would otherwise flow in springs and meadows. This AMP/EA only addresses treatment of junipers within these spring areas, which are not currently achieving Standards. Treatment of expansion juniper across the allotment has been previously addressed in the 2007 North Steens Ecosystem and Restoration Project EIS and ROD (further referred to as the North Steens Project).

   Two pastures within South Steens Allotment, Tombstone and Steens, are adjacent to the No Livestock Grazing Area and the Donner und Blitzen WSR corridor. However, prior to Judge Haggerty's Final Order in *ONDA v. Green*, the Steens Act, and implementation of livestock exclusion fencing, South Steens Allotment included portions of Donner und Blitzen River. Wild horses and livestock within South Steens Allotment were able to use Donner und Blitzen River as a year-round water source, which was especially important for grazing on the eastern side of the pastures, during drought years, and in the late summer and fall when other waterholes within the allotment typically become dry. Due to the ability to utilize the river for water, few developments to provide reliable, year-round water for wild horses and livestock had been constructed on the eastern side of the allotment. Numerous water developments have been constructed on the western side of the allotment to allow utilization of areas farther from the river where there are fewer natural water sources. Wild horses and livestock tend to congregate in areas near water; as distance from water increases, utilization decreases. The full consequences of the Steens Act, and subsequent fencing limiting wild horse and livestock grazing movements, were not fully realized until implementation was complete and several years of drought occurred. The loss of Donner und Blitzen River as a water source has modified wild horse and livestock

distribution and utilization patterns. Losing the river as a water source resulted in wild horses and livestock that watered at the river, in addition to existing water developments (mostly on the western side of the allotment) and spring sources, to water exclusively at existing water developments and springs. Areas within grazing range of the river currently have few opportunities for wild horse and livestock watering; therefore, little grazing has occurred in these areas following the 2007 completion of the river corridor fence that was authorized in the amended Implementation EA Decision. The Implementation EA was an attempt to evaluate the consequences of the Steens Act, which included dividing the South Steens Allotment and removing the ability of livestock to water along the river, with the exception of the Tabor Cabin water gap. The Implementation EA originally included the development of two new waterholes (Weaver Place waterhole[13] and Black Canyon waterhole), both of which were completed, as well as the development of Burnt Car Spring, which was analyzed but not completed. At the time, it was felt these water developments would offset the effects of removing the river as a watering source from the allotment. Now, several years after the Implementation EA, BLM has monitoring data (trend, utilization, observations, etc…) for South Steens Allotment (as adjusted by the Steens Act). Monitoring has found development of two water sources has not been adequate to allow wild horse and livestock grazing to continue in a manner similar to where it occurred prior to implementation of the Steens Act. Map 3 – Current Range Improvements provides a visual display of current water sources within the allotment. Map 4 – Reliable Water Sources[14] identifies which water sources regularly provide water late in the year for wild horses and livestock. Maps 5 and 6 show estimated use areas, based on a two-mile grazing radius[15], using all reliable water sources and only reliable public water sources, respectively.

Following the fencing of Donner und Blitzen WSR corridor in 2001, Roaring Springs Ranch, Inc., has voluntarily utilized, on average, 5,102 AUMs per year (2003-2010[16]) of the 9,577 AUMs of Permitted Active Use. This was due to lack of water and concern that if they utilized 100% of their permitted use, livestock would heavily concentrate around the limited areas of existing water, resulting in ecological damage in the vicinity of these areas.

Better, more even distribution of wild horses and livestock throughout South Steens Allotment is needed to conserve, protect and manage the long-term

[13] Not to be confused with Weaver Spring (S2), which is located in the same vicinity as the waterhole, but was not developed or protected following the Implementation EA.
[14] Reliable water sources are those that have water available late in the grazing season, from approximately July through October, in most years. Variable reliability refers to water sources that hold water late in some years, but not all, and unreliable water sources do not normally hold water late in the grazing season.
[15] The two-mile grazing radius came from research by George et al. 2007, Ganskopp 2011, Holechek et al. 2001, which suggest that in general livestock will not graze further than two miles from water.
[16] The actual use data from 2011 and 2012 was not included in this average since Tombstone Pasture was rested per the BLM (for reasons other than widespread ecological concerns within the pasture), and using that data would inappropriately reduce the average use across the allotment.

ecological integrity, as stated in the Steens Act [Section 102 (a)], while promoting viable and sustainable grazing operations [Steens Act, Section 1 (b) (11)], protecting and managing healthy wild horse populations [The Wild Free-Roaming Horses and Burros Act of 1971 (Public Law 92-195)], and other wilderness supplemental values. Design features to prevent impairment of wilderness suitability and to enhance wilderness values would be utilized to assure conformance with Section 204(b) of the Steens Act and Section 603(c) of the Federal Land Policy and Management Act of 1976 (FLPMA), and are identified in Chapter II of this document.

2. The BLM has a responsibility to respond to an external request for renewal of the grazing permit associated with South Steens Allotment. If BLM decides to issue the grazing permit within South Steens Allotment, that decision must be consistent with grazing regulations at 43 Code of Federal Regulations (CFR) 4100, the Taylor Grazing Act (43 U.S.C 315, 1934), FLPMA, the Steens Act, and the Steens Mountain CMPA RMP, 2005. In coordination with the permit renewal, the BLM is developing a new AMP that would fit the current conditions of the allotment, as determined through monitoring, and include grazing management, as it would relate to the terms and conditions on the renewed permit. The AMP will contain the management components as established within the Decision Record that will be associated with this document.

D. Resource Objectives

The following objectives are from the Steens Act of 2000 [Section 102(b)].

- To maintain and enhance cooperative and innovative management projects, programs and agreements between tribal, public, and private interests in the CMPA [Section 102(b)(1)].
- To promote grazing, recreation, historic, and other uses that are sustainable [Section 102(b)(2)].
- To conserve, protect and to ensure traditional access to cultural, gathering, religious, and archaeological sites by the Burn Paiute Tribe on Federal lands, and to promote cooperation with private landowners [Section 102(b)(3)].
- To ensure the conservation, protection, and improved management of the ecological, social, and economic environment of the CMPA, including geological, biological, wildlife, riparian, and scenic resources [Section 102(b)(4)].
- To promote and foster cooperation, communication, and understanding, and to reduce conflict, between Steens Mountain users and interests [Section 102(b)(5)].

The following objective is from BLM Manual 6330 Management of WSAs (2012).

- Consistent with relevant law, manage and protect WSAs to preserve wilderness characteristics so as not to impair the suitability of such areas for designation by Congress as wilderness.

The following management objectives are from the August 2005 Steens Mountain CMPA RMP/ROD.

- Manage impaired waters on public lands listed under Section 303(d) of CWA [Clean Water Act] to restore beneficial uses and to improve water quality so that listing is no longer warranted (Water Resources, RMP-18)[17].
- Achieve or maintain a rating of PFC for perennial and intermittent flowing and standing water bodies relative to site capability, site potential, and BLM management jurisdictions. Maintain, restore, or improve riparian/wetland vegetation communities relative to ecological status, site potential and capability, or site-specific management objectives. Manage riparian/wetland areas to maintain, restore, or improve soil moisture content and retention of alluvial ground water to augment base flow conditions during warm summer months (Vegetation, RMP-24).
- Maintain or restore native vegetation communities through sound landscape management practices. Increase species and structural diversity at the plant community and landscape levels in big sagebrush communities. Provide multiple successional stages within the landscape (Vegetation, RMP-30).
- Manage big sagebrush, quaking aspen, and western juniper plant communities to meet habitat requirements for wildlife. Manage big sagebrush communities to meet the life history requirements of sagebrush dependent species (Vegetation, RMP-31).
- Maintain, restore, or improve habitat [for fish and wildlife]. Manage forage production to support wildlife population levels identified by ODFW (Fish and Wildlife, RMP-33).
- Manage plant SSS and their habitats so management actions do not contribute to their decline or listing as T&E. Conserve animal SSS and the ecosystems on which they depend. Manage big sagebrush communities to meet the life history requirements of sagebrush-dependent SSS (SSS, RMP-35).
- Protect, maintain, improve, or restore Visual Resource values by managing all public lands in accordance with VRM [Visual Resource Management] system (Visual Resources, RMP-45).
- Work cooperatively with private and community groups and local government, Burns Paiute tribal, or other tribal governments to provide for customary uses consistent with other resource objectives and to sustain or improve local economies. Maintain, and promote the cultural, economic, ecological, and social health of the Steens Mountain Area (Social and Economic Values, RMP-46).
- Maintain a thriving natural ecological balance within HMAs. Maintain/improve year-round water sources to sustain wild horse and burro (WH&B) herds (WH&B, RMP-50).
- Provide for a sustained level of livestock grazing in the CMPA, while meeting resource objectives and requirements for the S&Gs. Implement administrative

[17] As mentioned in the S&Gs, within the South Steens Allotment, Home Creek is currently considered impaired due to not meeting the temperature requirements.

solutions and rangeland projects to provide proper management for livestock grazing while meeting resource objectives and requirements for S&Gs (Grazing Management, RMP-53).

- Manage public visitation in the wilderness to provide outstanding opportunities for solitude, primitive and unconfined recreation, naturalness, and other features including ecological, geological, scientific, educational, scenic and historic (Wilderness, RMP-73).
- Manage livestock grazing in wilderness under the stipulations of the Congressional Grazing Guidelines (HR 101-405 Appendix A) (Wilderness, RMP-75).
- Manage existing WSAs so as not to impair their suitability for preservation as wilderness (WSA and Parcels with Wilderness Characteristics, RMP-80).

The following management objectives are from the August 2005 AMU and Steens Mountain CMPA RMP/ROD Appendix J – Allotment Management Summaries, J-10.

- Improve the ecological condition of upland vegetation communities.
- Maintain the ecological condition of upland vegetation communities.
- Maintain/improve the condition of riparian vegetation communities.

The following management objectives are from the August 2005 AMU and Steens Mountain CMPA RMP/ROD Appendix P - Steens Mountain Wilderness and WSR Plan.

- To maintain or improve ground water recharge and holding capacity of riparian/wetland areas to maintain or increase base flow conditions of water sources (streams and springs) (Water Resources, P-30).
- To manage soils to maintain, restore, or improve soil erosion classes, watershed health, and areas of fragile soils [Soils and Biological Soil Crusts (BSCs), P-31].
- Maintain or restore ecological status of native plant communities. Increase species and structural diversity at the plant community and landscape levels in the big sagebrush communities. Provide multiple successional stages within the landscape (Vegetation, P-35).
- To maintain, restore, or improve riparian/wetland vegetation communities toward an advanced ecological status condition at the reach or scale relative to wilderness management and other resource specific management objectives (Vegetation, P-36).
- To maintain, restore, or improve SSS habitats. To conserve animal SSS and the ecosystems on which they depend (Fish, P-41).
- To continue cooperation and coordination with other State and Federal agencies on the management of wildlife, wildlife habitat, and protection of the character of the wilderness and WSRs. To manage forage protection to support wildlife population levels identified by ODFW, while minimizing effects to wilderness resources (Wildlife, P-42).
- To protect, maintain, enhance, or restore visual resource values by managing all BLM administered lands in the Steens Mountain Wilderness and WSR corridors in accordance with VRM Class I objectives (Visual Resources, P-47).

- To maintain a thriving natural ecological balance within the HMA. To maintain/improve year-round water sources to sustain the wild horse herd (Wild Horses, P-49).
- Provide for a sustained level of livestock grazing where allowed in Steens Mountain Wilderness, while providing for S&Gs as described in the CMPA RMP. Implement administrative solutions and rangeland projects to provide proper management for livestock grazing while meeting resource objectives and requirements for S&Gs (Grazing, P-53).

The following management objectives are from the 1995 South Steens Wild Horse HMA Plan (HMAP) Update that was included in the 1995 South Steens AMP in Appendix E.

- Manage wild horse populations at an appropriate management level of between 159 and 304 animals to maintain a thriving natural ecological balance within the HMA. Provide adequate quality forage for 3,648 AUMs of wild horse use). Wild horses will be managed in a manner that maintains satisfactory riparian condition and improves riparian conditions where less than satisfactory condition exists (1995 South Steens Wild Horse HMAP Update, *In:* 1995 South Steens AMP, Appendix E, pg. 74).

E. Decisions to be Made

The BLM will decide whether to accept, reject, or accept with modifications the permittee's request to renew a 10-year grazing permit with specific terms and conditions, and adopt and implement the proposed new AMP. In addition, the authorized officer will determine whether to construct range improvements within the allotment.

F. Conformance with Land Use Plans

The Proposed Action and alternatives are in conformance with the Steens Mountain CMPA RMP/ROD, dated August 2005, even though they are not specifically provided for, because they are clearly consistent with the RMP decisions outlined above under D: Resource Objectives.

G. Consistency with Other Authorities

The Proposed Action has been designed to conform to the following documents, which direct and provide the framework for management of BLM lands within Burns District:

- Taylor Grazing Act (43 U.S.C. 315), 1934
- NEPA (42 U.S.C. 4320-4347), 1970
- Wild Free-Roaming Horses and Burros Act (16 U.S.C. 1331-1340), 1971
- FLPMA (43 U.S.C. 1701), 1976
- Public Rangelands Improvement Act (43 U.S.C. 1901), 1978
- National Historic Preservation Act (16 U.S.C. 470 et seq.), 1966
- BLM Manual 6330 Management of WSAs (2012)

- August 12, 1997 S&Gs for Public Lands Administered by the BLM in the States of Oregon and Washington
- 1998 Burns District Noxious Weed Management Program EA (OR-020-98-05)
- Greater Sage-Grouse and Sagebrush-steppe Ecosystems Management Guidelines (BLM-2000)
- Steens Act (16 U.S.C. 460nnn), 2000
- BLM National Sage-grouse Habitat Conservation Strategy (2004)
- Steens Mountain Wilderness and WSRs Plan (August 2005)
- Steens Mountain Travel Management Plan (TMP; EA OR-05-027-021), 2007
- Protection, Management, and Control of Wild Free-Roaming Horses and Burros (43 CFR 4700), 2009
- Greater Sage-Grouse Conservation Assessment and Strategy for Oregon (further referred to as Strategy; Hagen 2011)
- WO Instruction Memorandum (IM) 2012-043 Greater Sage-Grouse Interim Management Policies and Procedures
- Maintenance of Range, Wildlife, and Wild Horse Improvements in WSAs in the Burns District (EA OR-020-05-080), 2005
- State, local, and Tribal laws, regulations, and land use plans
- All other Federal laws that are relevant to this document, even if not specifically identified

H. Management Policy for Lands under Wilderness Review

Under Title II, Section 204(b) of the Steens Act and Section 603(c) of FLPMA, the Secretary shall manage lands, according to his authority and other applicable laws, in a manner so as not to impair the suitability of such areas for preservation of wilderness, prevent unnecessary or undue degradation of the lands and their resources, or to afford environmental protection. While at the same time under the Section 102 of the Steens Act, BLM must emphasize conserving, protecting, and managing the long-term ecological integrity of Steens Mountain, and to promote grazing, recreation, historic, and other uses that are sustainable. The BLM must also comply with the Wild Free-Roaming Horses and Burros Act. Compliance with Section 603(c) of FLPMA is based on guidance provided in BLM's Manual 6330 – Management of BLM WSAs. The BLM's management policy is to continue resource uses on lands designated as WSAs in a manner that maintains the area's suitability for preservation as wilderness as long as the use meets the non-impairment standard or exception (Manual 6330, Chapter 16.B).

There are seven classes of allowable exceptions to the non-impairment standard defined in section 1.6.C.1 in the BLM Manual 6330. One of the exceptions to the non-impairment standard is "[a]ctions that clearly benefit a WSA by protecting or enhancing these characteristics are allowable even if they are impairing, though they must still be carried out in the manner that is least disturbing to the site" (Manual 6330 Chapter 1.6.C.2.f.). Another exception includes "Other legal requirements. Activities required to meet obligations imposed by other laws are allowed even though they may violate the non-impairment standard." Such activities should still be carried out in the least impairing manner practical.

The manual provides for maintenance of existing developments: "Livestock management developments existing or under construction on October 21, 1976 (or the designation date for Section 202 WSAs not reported to Congress), may continue to be used and maintained in the same manner and to the same degree as such use was being conducted on that date" (BLM Manual 6330, Chapter 1.6.D.3.a.i).

The manual also allows for new livestock developments: "New livestock developments may only be approved if they meet the non-impairment standard or one of the exceptions, such as protecting or enhancing wilderness characteristics" (BLM Manual 6330, Chapter 1.6.D.3.a.ii).

The manual lays outs how changes in grazing practices are also allowed:

> As a grandfathered use, grazing management practices (e.g. level of use, season of use etc.) authorized during the 1976 grazing fee year (or prior to the designation date for Section 202 WSAs not reported to Congress), including levels of use, may not be changed solely because the use may impair a WSAs suitability for preservation as wilderness (BLM Manual 6330, Chapter 1.6.D.3.c).

Wild horse management is also addressed in the manual and it states:

> Wild horse and burro herds are managed to remain in balance with the productive capacity of the habitat; this includes managing herds so as not to impair wilderness characteristics. Wild horse and burro populations must be managed at appropriate management levels so as to not exceed the productive capacity of the habitat (as determined by available science and monitoring activities), to ensure a thriving natural ecological balance, and to prevent impairment of wilderness characteristics, watershed function, and ecological processes. The BLM should limit population growth or remove excess animals as necessary to prevent the impairment of the WSA (BLM Manual 6330 Chapter 1.6.D.9).

This EA analyzes and discloses the impacts (both adverse and beneficial) of the proposed AMP, renewing a 10-year grazing permit, and proposed range improvements. At the end of the process, the FONSI and Decision Record will need to make a finding of consistency with BLM Manual 6330, based on the analysis of impacts in this EA.

I. Consistency with Greater Sage-Grouse Guidance

ODFW published the first version of the Strategy in 2005 (Hagen 2005), in cooperation with several state and federal agencies and private landowners. The Strategy provided recommendations and guidance to land managers in the long-term conservation of Greater Sage-Grouse and sagebrush (*Artemisia* L.) communities. BLM's Oregon State Office agreed to implement the Strategy wherever possible. The updated version of the Strategy (Hagen 2011), which introduced the core area approach for identifying important areas for Greater Sage-Grouse, was finalized in 2011. This version contained core area determination

methodology, interpretation, and management recommendations. The BLM used the core area information to determine PPH and PGH.

Hagen (2011) considered and incorporated information from the Greater Sage-Grouse: Ecology and Conservation of a Landscape Species and It's Habitat (Greater Sage-Grouse Monograph; Knick and Connelly 2011) as well as information from the USFWS 12-Month Finding for Petitions to List Greater Sage-Grouse, as it relates to Greater Sage-Grouse populations and habitat, into the current version of the Strategy. The USFWS recognizes the Greater Sage-Grouse Monograph as the primary source of science, range wide, for the 12-Month Finding for Petitions to List Greater Sage-Grouse. The BLM is in the process of amending the existing Steens Mountain CMPA ROD to incorporate newer information contained in the National Technical Team Report (NTT; 2011) and the Strategy (2011), as part of BLM's National RMP amendment effort to conserve Greater Sage-Grouse and its habitat on BLM-managed lands, range wide.

The BLM implements the Strategy (2011) in accordance with SSS management policy in the revised BLM Manual 6840 (BLM 2008) and with IM WO-2012-043 Greater Sage-Grouse Interim Management Policies and Procedures issued December 27, 2011. Analysis of the different alternatives for consistency with the Strategy (2011) and the BLM 6840 Manual are discussed in Chapter III, A. 8. in the SSS – Wildlife section.

J. Scoping

On December 22, 2006, the BLM initiated a public comment period to receive input on EA development and to identify issues to be addressed. Forty-nine comment letters were received.

Issues identified through scoping include:

- WSA suitability and non-impairment
- Changes in grazing management
- Monitoring
- Riparian and upland vegetative impacts
- Motorized use and miles of roads associated with development
- Wild horse gathers
- Reliable, year-round water for wild horses
- Water distribution, quality and quantity
- Greater Sage-Grouse and habitat
- SSS and habitat
- Mule deer and habitat
- Wildlife and habitat
- Integrity of WSR and No Livestock Grazing Area
- Historical water usage
- Fencing
- Balancing grazing, access, preservation and other uses
- Invasive species and noxious weeds

- Socioeconomics
- Recreation
- Consistency with FLMPA, Steens Act, WSR Act, WSA Policy, and RMP
- Soils and BSCs
- Visual resources

In addition, this project was discussed at SMAC public meetings and a tour was provided in August 2007. The SMAC provided official recommendations on September 23, 2008, with the understanding new developments would not increase the number of permitted AUMs or the AML for wild horses, and the intent that the level of current AUMs can be managed in a more ecologically balanced manner. The official SMAC recommendations were taken into consideration prior to the release of this document. On July 24, 2008, a subcommittee of the SMAC provided additional scoping comments (not an official recommendation) regarding this EA after a second tour of the allotment on July 17 and 18, 2008. These comments were taken into consideration and addressed where applicable.

On January 7, 2009 the South Steens AMP/EA (called the South Steens Water Development EA at the time), signed FONSI, and Signed Proposed Decision were made available to the public for the 15-day protest period followed by a 30-day appeal period on the Final Decision. Prior to the end of the appeal period on February 20, 2009 the Andrews/Steens Resource Area Field Manager, rescinded the FONSI and Final Decision Record. Following the rescinding, modifications and improvements have been made to the South Steens AMP/EA with additional input from the SMAC and other interested publics. SMAC consultation included presentations and updates at multiple meetings during 2011, as well as another SMAC field trip (September 2011). At the September 2011 SMAC meeting, the SMAC provided the BLM with recommendations on how to develop the Proposed Action.

This South Steens AMP/EA is a revised version of the EA released in 2009. Some changes include additional relevant background information, revision of alternatives, addition of new alternatives, improved analysis, and increased use of scientific references. In addition, all comments from the 2008 version of the document were considered in the revision of this document. The September 23, 2008 SMAC recommendation was also considered, as were more recent unofficial recommendations[18] made during discussions of the South Steens AMP at numerous meetings. Changes were made to ensure BLM is meeting the requirements of the most recent laws, policies, and regulations, as well as providing adequate analysis under NEPA to allow a fully informed decision to be made. This EA with unsigned FONSI was made available for public comments in July of 2013. A letter informing interested parties that a copy of the EA and unsigned FONSI were available online at: http://www.blm.gov/or/districts/burns/plans/index.php or the Burns District Office was mailed to 57 agencies, organizations, and individuals, including all of those that provided

[18] A new official recommendation has not been possible due to lack of a SMAC quorum.

an address during scoping. In addition, all members of the SMAC received the letter. A notice was posted in the *Burns Times-Herald* newspaper on July 10, 2013 informing the public that the documents were posted at the public site mentioned above, and available for review. The Burns District BLM received a request to extend the comment period, which was granted with the comment period being extended from 30 to 47 days. The Burns District BLM received ten comments in the form of both letters and email communications. All comments were accepted. BLM Responses to Public Comments can be found in Appendix E of this document.

K. Issues Considered but not Analyzed Further

1. Wilderness Characteristics

Wilderness characteristics outside of designated wilderness and existing WSAs will not be analyzed in this EA for the following reasons.

In 2003, BLM reviewed current conditions and citizen information submitted for the lands that currently do not have a WSA or wilderness designation within the South Steens Allotment, including the BLM lands contained in three citizens' wilderness proposals, and updated the wilderness inventory. Pursuant to 40 C.F.R. §1502.21, the BLM hereby incorporates its wilderness inventory update by reference. The wilderness inventory update considered the standard wilderness criteria of size, naturalness, and outstanding opportunities for solitude or primitive and unconfined recreation, as described in Section 2(c) of the Wilderness Act. The BLM used multiple resources to complete the wilderness inventory update, including an in-house IDT with field knowledge of the areas, aerial photographs, and BLM databases containing records of Rights-of-Way (ROW), mineral leases, mining claims, road improvements, and vegetation treatments to make their findings. BLM staff made site visits to the field in areas where more information was needed to validate inventory findings. No changes to conditions within South Steens Allotment were identified that would modify the findings of the 1980 intensive inventory that had evaluated the presence of wilderness characteristics on BLM-administered lands. The Steens Mountain CMPA RMP confirmed no new areas within South Steens Allotment were found to have wilderness characteristics, but if parcels with wilderness characteristics were present, they would not be provided any additional special management status as the protection afforded by the CMPA was considered sufficient protection to properly protect and manage any wilderness characteristics that may be present (2005 Steens Mountain CMPA RMP, RMP-81). In addition, the 9th Circuit Court of Appeals in December 2010 upheld BLM's findings that these parcels do not possess wilderness values.

Those portions of the citizen proposed areas that were determined by BLM to lack wilderness characteristics were eliminated by BLM primarily due to the lack of outstanding opportunities for solitude or primitive and unconfined recreation. The BLM wilderness inventory update did not find wilderness characteristics to

be present. Below is a summary of the BLM's findings for citizen proposed WSA areas within the South Steens Allotment.

- Blitzen River South – Only subunit B was evaluated. Subunit A does not meet the acreage threshold. Subunit B is generally natural, but lacks outstanding opportunities for primitive and unconfined recreation or solitude.

- Roaring Springs – The inventory team could not reach consensus as to the naturalness of the unit. However, it does not possess outstanding opportunities for solitude or primitive and unconfined recreation.

- West Blitzen River – The entire unit was evaluated as an addition to the Blitzen River WSA. The inventory team could not reach consensus as to the naturalness of subunit, but it does not possess outstanding opportunities for solitude or primitive and unconfined recreation. Therefore, the unit does not qualify as wilderness and would not enhance the wilderness values present in the Blitzen River WSA.

Therefore, wilderness characteristics have been determined not to be present, no new information has come in, and the 2003 inventory is still considered current. Wilderness characteristics will not be analyzed in this EA.

2. Greenhouse Gas Emissions and Climate Change

Greenhouse Gas Emissions and Climate Change will not be analyzed in this EA for the following reason.

Livestock grazing results in methane emissions as a result of ruminant digestion. Methane emission rates from cattle vary widely and depend on many variables (Johnson and Johnson 1995; DeRamus et al. 2003). Estimates for grazing cattle typically range from 80 to 101 kilograms of methane per year, per animal [Environmental Protection Agency (EPA), 2009] or 6.7-9.2 kilograms of methane per month. This analysis will assume a methane emission rate of eight kilograms of methane per AUM. Assuming methane has a global warming potential 21 times carbon dioxide (EPA 2009, p. ES-3), each AUM results in 0.168 metric tons of carbon dioxide equivalent. Continuing to permit grazing use at the authorized level of 9,577 AUMs per year within the South Steens Allotment would result in methane emissions of 1,608.9 metric tons of carbon dioxide equivalent per year. Current U.S. emissions of methane from livestock total approximately 139 million metric tons of carbon dioxide equivalents per year (EPA 2009, p. 6-2), and current U.S. emissions of all greenhouse gases total approximately seven billion metric tons of carbon dioxide equivalents (EPA 2009, p. 2-4). Current global emissions of all greenhouse gases total 25 billion metric tons of carbon dioxide equivalents (Denman et al. 2007, p. 513). Emissions from grazing in the South Steens Allotment would represent 0.001% of the annual U.S. methane emissions from

livestock, 0.00002% of the annual U.S. emissions of all greenhouse gases, and 0.000006% of the global emissions of all greenhouse gases. Since there are no alternatives that would authorize more than 9,577 AUMs, the emissions from any alternative would be at or below the above numbers. Greenhouse gas emissions from the Proposed Action and alternatives would be so small as to be negligible. This emission would be so small its incremental contribution to global and national emissions would not be measurable at the level of precision of global and national emissions, and would not merit reporting under the EPA rule on mandatory reporting of greenhouse gases, which presents a reporting threshold of 25,000 metric tons of carbon dioxide equivalent for several industrial and agricultural sectors (40 CFR 98.2).

Livestock grazing can affect rangeland carbon levels, through changes in plant community and changes in ecosystem processes, but the effects have been variable and inconsistent among the ecosystems studied (Schuman et al. 2009). Some studies have found grazing can result in increased carbon storage compared to no grazing, because of increased plant turnover and changes in plant species composition (Follett et al. 2001). Many changes in rangeland carbon from different grazing practices do not result in substantial changes in total ecosystem carbon, but are redistributions of carbon, for example, from aboveground vegetation to root biomass (Derner and Schuman 2007). Overall, changes in rangeland carbon storage, as a result of changes in grazing practices, are expected to be small and difficult to predict, especially where a rangeland health assessment has determined S&Gs are achieved. Therefore, this analysis will assume changes in grazing practices on this allotment would not result in any change in total carbon storage.

Changes in greenhouse gas levels affect global climate. Forster et al. 2007 (pp. 129-234), reviewed scientific information on greenhouse gas emissions and climate change, and concluded human-caused increases in greenhouse gas emissions are extremely likely to have exerted a substantial warming effect on global climate. The U.S. Geological Survey (USGS), in a May 14, 2008 memorandum to the USFWS, summarized the latest science on greenhouse gas emissions and concluded that it is currently beyond the scope of existing science to identify a specific source of greenhouse gas emissions or sequestration and designate it as the cause of specific climate impacts at a specific location.

CHAPTER II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

Alternatives A through F have been fully analyzed in Chapter III of this AMP/EA. Following the public review period for this document, a Proposed Decision will be made by the Field Manager, who may choose to proceed with any one of the alternatives analyzed or a combination of portions of multiple alternatives.

A. Assumptions Common to all Alternatives

Actions described below would be part of the new AMP, and are not dependent on the specific alternative selected.

1. Permit Renewal

The current livestock grazing permit (#3602570) has five allotments on it, including South Steens Allotment. Any discussion on renewing the permit only applies to South Steens Allotment. If a Final Decision renews the permit, as it relates to South Steens Allotment, South Steens Allotment would be removed from the current grazing permit authorization #3602570, and would be placed on a separate authorization and assigned a new authorization number. Any other allotments on the current authorization that has NEPA analysis and a Final Decision completed within 2014 (would have the same expiration date as the South Steens authorization) may also be placed upon this new authorization. This would be done in order to keep the number of authorizations assigned to the permittee at a minimum while ensuring each authorization shows the appropriate status and expiration dates for all allotments. The remaining allotments would remain on the existing permit, and renewal of that permit will follow current policy[19]. If an updated grazing permitting system provides for NEPA information and expiration dates for each allotment on an authorization, these authorizations may be combined.

2. Billing

Actual use (after-the-fact) billing would be authorized as part of this AMP, if grazing continues to be authorized, because of the variability in forage production from year to year and the unreliability of water sources. Annual grazing would be authorized with a Letter of Authorization prior to turnout. Accurate records must be kept and an Actual Use Grazing Report is to be submitted within 15 days after the authorized use is completed within the allotment. Advance billing would be allowed at the discretion of the BLM; if the terms and conditions are not met, actual use billing would no longer be allowed, and advanced billing would occur.

3. Previously Approved Projects

The Implementation EA analyzed, and selected in the Decision Record, installation of two gap exclusion fences in the Burnt Car Road area to prevent livestock from entering the river corridor. These gap fences have yet to be constructed due to budget constraints; however, for purposes of this EA, the gap fences will be considered in all alternatives as existing.

[19] Active renewal of the permit would require complete NEPA analysis; if this occurs for other allotments on the current permit, those allotments may also be placed under the new authorization number since they would both be active permits and have the same expiration dates.

The North Steens Project is a landscape-level project, the goal of which is to reduce juniper-related fuel loading and improve the ecological health of the area by encouraging a healthy functioning ecosystem through approved land treatments. Treatment techniques include a combination of prescribed fire, juniper treatments, fencing, seeding and planting, in order to reduce fuel loads, restore vegetative communities, improve habitat, and increase forage for wildlife. Project activities primarily occur above 4,500 feet and below 7,200 feet, concentrating on the "juniper belt". The North Steens Project area includes the entire South Steens Allotment. Juniper treatments authorized in the North Steens Project ROD (2007) will continue to be implemented regardless of the Decision made from this analysis.

4. Wild Horse and Burro Program

Currently BLM's WH&B Program is facing multiple issues related to our inability to gather to maintain AML as temporary and long-term, off the range, holding facilities are approaching capacity, full, or over capacity. BLM is working on addressing short-term and long-term program reforms to help address these issues, including but not limited to various fertility control methods and non-reproducing herds. South Steens HMA is approximately 156 wild horses over the high end of AML. The foreseeable future for maintaining wild horse numbers within AML is unclear.

5. Adaptive Management and Flexibility[20]

Adaptive management is a system of management practices based on clearly identified outcomes and monitoring to determine if management actions are meeting desired outcomes; and, if not, facilitating management changes that would best ensure outcomes are met. Adaptive management recognizes knowledge about natural resource systems is sometimes uncertain and, in this context, adaptive management affords an opportunity for improved understanding. Knowing uncertainties exist in managing for sustainable ecosystems, some changes in management may be authorized, which include, but are not limited to, adjusting the rotation, timing, season of use of grazing, and livestock numbers, within the constraints of the grazing permit:

- Based on the previous year's monitoring and current year's climatic conditions;
- Based on the previous year's monitoring of antelope bitterbrush [*Purshia tridentata* (Pursh) DC.] utilization, Cole Browse Transects, and/or other

[20] Flexibility would not apply to Alternative G: Complete Removal of Livestock Grazing, since without livestock, this flexibility would not be needed. Adaptive management would continue to be used as it relates to other resources.

appropriate monitoring methods to ensure at least 85% of existing deer winter range within this allotment remains intact (not grazed by livestock);

- Due to drought, causing a lack of available water in areas originally scheduled to be used and reducing forage production;
- To balance utilization levels; and
- To protect the riparian and water resources.

Rangeland monitoring is a key component of adaptive management. As monitoring indicates changes in grazing management are needed to meet resource objectives, changes are implemented working with the grazing permittee. Flexibility in grazing management would be authorized, and changes in rotations will only be allowed as long as they continue to meet resource objectives. Flexibility is dependent upon the demonstrated stewardship and cooperation of the permittee and occurs within the confines of the grazing permit. A two-week period of flexibility will be allowed, both prior to and following the permitted season of use, in order to adjust grazing in response to annual climate and vegetative conditions, using adaptive management. This is a non-renewable extension of the authorized season of use. There is no guarantee to the permittee this will be authorized in any given year and authorization of it is at the discretion of the BLM. Total AUMs annually authorized will not exceed the amount permitted (9,577 AUMs), even in years when the season of use is extended. Additional flexibility will occur within the terms and conditions of the grazing authorization.

Knowing uncertainties exist in managing for sustainable ecosystems, developments would be constructed in a phased-in approach, using adaptive management practices, and considering budget constraints, along with currently unforeseen ecological concerns.

6. Monitoring

Monitoring, by BLM staff[21] in coordination with the permittee, of the success in meeting allotment specific resource objectives and goals, will take place within South Steens Allotment. Monitoring will occur no matter the outcome of decisions associated with this document. All monitoring will follow the direction provided in the CMPA and AMU Monitoring Plan dated May 4, 2011 (or subsequent plan) and the 2005 Steens Mountain CMPA RMP.

Grazing management will be monitored annually and may include utilization studies for each pasture grazed by livestock, along with use supervision reports and actual use reports, which will be collected by BLM staff. The modified Key Forage Plant Method will be used to measure utilization in each pasture. The target utilization levels for key forage plant species are no more than 50%

[21] While monitoring will occur on the allotment, the extent and timeliness of it will depend on internal BLM factors such as funding and workforce, and may not occur exactly when planned.

utilization[22] on native upland perennial species (2005 Steens Mountain CMPA RMP, p. 53). Utilization monitoring is performed yearly prior to turnout and after every pasture move, along a route transect performed by vehicle and/or horseback. Upland trend will be monitored approximately every five years using Pace 180° methodology (Johnson and Sharp 2012; Rangeland Monitoring: Trend Studies TR 4400-4, 1984) and permanent photo points to measure the relative frequency of occurrence of key forbs, shrubs, and perennial grass species, in order to assess trend in rangeland condition. Soil Surface Factor (SSF) methodology will be used to measure soil stability and Observed Apparent Trend (OAT) will be assessed at each upland trend plot. Currently, there are eighteen upland trend monitoring plots within the allotment.

The Cole Browse Method will monitor antelope bitterbrush, an important browse species for mule deer, on fall and winter range, as often as possible. This method documents livestock use of bitterbrush to determine what level of utilization occurs during different grazing treatments. Early use (spring through seed head formation) on grasses usually does not affect growth rates of bitterbrush. Use of bitterbrush by livestock increases as their seed heads ripen and as grasses and forbs enter dormancy. Moderate to heavy late-season use of bitterbrush by livestock affects availability of browse for wintering mule deer and continued moderate to heavy use, year after year, affects reproductive capabilities of these plants. There are two existing Cole Browse transects established, one in Home Creek Pasture and one in Steens Pasture, but none have been established in the Tombstone or Hollywood pastures. Some additional transects will be established in each pasture to determine utilization rates and document reproductive status.

Wilderness areas will be monitored at least twice a year and WSAs will be monitored at a minimum of once per month (across the district), when accessible to the public, as directed in the 2005 Steens Mountain CMPA RMP (RMP-81). Wild horses will be monitored annually. Monitoring may be done using wild horse actual use data, observations, and/or utilization data, with censuses occurring approximately every two to four years. Riparian monitoring will be completed approximately every five years using the Greenline and/or PFC methods. Cultural resources, SSS, soils, recreation activities, and numerous other resources will be monitored periodically, throughout the allotment. An evaluation of management objectives and actions will be completed approximately five years after implementation of this AMP, through an allotment evaluation process.

[22] Burns District BLM typically measures utilization percentage using an ocular method, not a weight method.

New Monitoring includes establishing:

- New upland monitoring plots as needed to ensure plots are providing an accurate picture of what is happening across the pastures.
- Two to three Cole Browse transects based on the presence of suitable bitterbrush stands.
- At least one new photo point at each spring/riparian area. If development of exclusion occur, one photo will be taken immediately after construction and retaken annually for the first five years after exclosure construction, and then on a five to 10 year interval.

Criteria for determining success of developments (new or maintained) include:

- The ability to supply water from July through October (dry season).
- The ability to accommodate 20 to 100 head of livestock and/or wild horses during the dry season.

7. Goals and Objectives

Goals and Objectives for the South Steens Allotment. Use associated ecological site descriptions (ESDs) for comparison, where appropriate.

a. *Goal:* Maintain or improve riparian functioning condition of perennial and intermittent streams, and restore and maintain natural, free-flowing characteristics of springs and associated wet meadows.

- *Objective:* Maintain PFC of 1.4 miles of two unnamed perennial tributaries to Donner und Blitzen River in Tombstone Pasture assessed for PFC in 1999. *Measure:* PFC.
- *Objective*: Maintain an upward trend in riparian vegetation on 2.4 miles of Home Creek in Home Creek Pasture so wetland plant species continue to replace upland species within the greenline. *Measure:* greenline, PFC.
- *Objective*: Improve vigor of woody riparian species (as appropriate) on 2.4 miles of Home Creek, in Home Creek Pasture, so all age classes are present for the five willow species established in the greenline, and potential shade can be achieved within the next decade in order to maintain or reduce stream temperature[23] for redband trout habitat, and address ODEQ 303d list concerns. *Measure:* greenline, temperature, photo points.
- *Objective*: Restore riparian areas around springs and associated riparian areas within the Steens Pasture, to reach potential extent within one decade, and achieve presence of at least 75% wetland

[23] The current ODEQ Temperature Standard for redband trout is 20° C (68° F).

species in the greenline within two decades (presence of woody riparian species is not expected or required at these sites based on ESDs). *Measure:* greenline, photo points.

b. *Goal:* Manage uplands in a mosaic of native plant communities and seral stages.

- *Objective:* Maintain or increase the relative frequency of key species, such as Idaho fescue (*Festuca idahoensis* Elmer), bluebunch wheatgrass [*Pseudoroegneria spicata* (Pursh) Á. Löve ssp. *Spicata*], and mountain big sagebrush [*Artemisia tridentata* Nutt. ssp. *vaseyana* (Rydb.) Beetle], and forbs species that provide food for Greater Sage-Grouse, in Tombstone, Steens, and Home Creek pastures over the next 10 years. Current relative frequency is plot specific and historic trend data should be used for comparison. *Measure:* Pace 180° (Johnson and Sharp 2012), photo points.
- *Objective:* Maintain the relative frequency of key species, such as Indian rice grass [*Achnatherum hymenoides* (Roem. & Schult.) Barkworth], needle-and-thread grass [*Hesperostipa comata* (Trin. & Rupr.) Barkworth], Thurber's needlegrass [*Achnatherum thurberianum* (Piper) Barkworth], bluebunch wheatgrass, Wyoming big sagebrush (*Artemisia tridentata* Nutt. ssp. *wyomingensis* Beetle & Young) and forbs species, which provide food for Greater Sage-Grouse, in Hollywood Pasture over the next 10 years. *Measure:* Pace 180°, photo points.
- *Objective:* Maintain frequency and distribution of antelope bitterbrush in Steens and Tombstone pastures over the next 10 years. *Measure:* Pace 180°, Cole Browse (TR 4400-3, Utilization Studies), photo points.

c. *Goal:* Manage forage and water resources to provide and maintain a thriving natural ecological balance within South Steens Allotment portion of South Steens HMA.

- *Objective:* Manage wild horse populations at an AML of between 159 and 304 animals to provide and maintain a thriving natural ecological balance with all resource uses. *Measure:* wild horse census, utilization, Pace 180°.
- *Objective*: Improve wild horse distribution across the HMA, reducing areas of heavy utilization around current reliable water sources. *Measure*: wild horse census, utilization, wild horse observations.

d. *Goal:* Maintain wilderness characteristics within Steens Mountain Wilderness (Home Creek portion) and Home Creek, Blitzen River, and South Fork Donner und Blitzen River WSAs.

- *Objective:* Maintain wilderness in a manner consistent with the Steens Mountain Wilderness and WSRs Management Plan (August 2005), Steens Act, Wilderness Act, and FLPMA. *Measure:* wilderness monitoring.
- *Objective:* Maintain Home Creek, Blitzen River, and South Fork Donner und Blitzen River WSAs within South Steens Allotment in a manner consistent with the Steens Act and FLPMA. *Measure:* WSA monitoring.

B. Actions Common to All Alternatives except the No Action Alternative

1. Easement Acquisition

The BLM would work with the private landowner, within South Steens Allotment, to obtain a legal right by an easement, memorandum of understanding or cooperative management agreement to any Federal developments on private land, to ensure the ability to locate, construct, use, control, maintain, improve, relocate, and repair the existing developments located on private property. These Federal developments would include both those already existing on the ground, as well as any developments constructed on private land that may be a result of this EA. This would be done cooperatively and voluntarily to ensure mutual benefit to the BLM and private landowner.

2. General Project Design Elements

Project Design Elements (PDEs) were developed to aid in meeting project goals and objectives. These features are nonexclusive and are subject to modification based on site-specific terrain characteristics (topography and vegetation). All range improvements would follow the PDEs outlined below unless specifically provided for in the alternative descriptions. The locations of all proposed range improvements are estimated locations. Exact, on-the-ground locations of any proposed range improvements would be determined, following clearances, by those responsible for constructing the proposed developments, just prior to actual construction. The exact location of any proposed range improvements not currently shown within WSAs, or wilderness, would remain outside WSAs and wilderness areas. All range improvements would occur within one-quarter mile of the current proposed location.

a. Proposed rangeland improvement sites would be surveyed for cultural values prior to implementation. Where cultural sites are found, their condition and National Register of Historic Places (NRHP) eligibility would be evaluated. If sites are determined to be NRHP eligible, and

under threat of damage, mitigation measures to protect cultural materials would be determined. Mitigation plans would be developed in consultation with the Oregon State Historic Preservation Office (SHPO), as necessary. Mitigation measures can include protective fencing, surface collection and mapping of artifacts, subsurface testing, and complete data recovery (full-scale excavation).

b. Proposed rangeland improvement sites would be surveyed for plant SSS prior to implementation. Plant SSS sites would be avoided.

c. New livestock facilities (livestock troughs, fences, corrals, handling facilities) would be constructed at least one kilometer (0.6 mile) from leks, in order to avoid concentration of livestock near leks, and reduce collision hazards to flying birds.

d. All proposed wire fences, constructed within 1.25 mile of an active lek or known seasonal use area, would include anti-strike markers on the wires to reduce potential mortality from Greater Sage-Grouse striking the fence.

e. No project construction or major maintenance activities would occur April 1 through June 15 during Greater Sage-Grouse nesting. Annual fence maintenance would still be allowed to occur during this period.

f. Proposed range improvement sites would be surveyed for noxious weed populations prior to implementation. Weed populations identified in or adjacent to the proposed project sites would be treated using the most appropriate methods, in accordance with the 1998 Burns District Noxious Weed Management Program EA/Decision Record (DR) OR-020-98-05 or subsequent decision.

g. The risk of noxious weed introduction would be minimized by ensuring all equipment (including all machinery, All-Terrain Vehicles (ATVs), and pickup trucks) is cleaned prior to entry to the sites, minimizing disturbance activities, and completing follow-up monitoring, to prevent new noxious weed establishment. Should noxious weeds be found, appropriate control treatments would be performed in conformance with the 1998 Burns District Noxious Weed Program Management EA/DR OR-020-98-05 or subsequent decision.

h. The grazing permittee would be responsible for all fence maintenance, except for the fences that border the No Livestock Grazing Area, between wilderness and WSA on the eastern side of the allotment. Proper fence maintenance would be a stipulation for turnout each year. BLM would continue to be responsible for the portion of the fence bordering the No Livestock Grazing Area and exclosures.

3. Project Design Elements Specifically for Proposed Range Improvements

Additional PDEs were developed to aid in meeting specific project goals and objectives. These features are nonexclusive and are subject to modification based on site-specific terrain characteristics (topography and vegetation). Changes, additions, or deletions would be made through coordination with appropriate BLM specialists, grazing permittee, and SMAC, and approved by the Field Manager. All projects implemented within WSAs would be constructed to reduce impacts to wilderness values on a site-specific basis, and measures would be taken to ensure a more natural appearance, including, but not limited to the features described below. If new methods of increasing the natural appearance of any of the below developments are found prior to construction, these new methods may be used as long as the level of disturbance from utilizing these methods is not greater than the methods described below. The design elements would apply to all proposed range improvements of the specified type (i.e. fence, well, pipeline, etc...), unless specifically provided for under the description of proposed range improvements for each alternative. The Industrial Fire Precaution Levels will be followed during construction. Maintenance on all range improvements would be done to ensure the continued functioning of the improvement. Maintenance activities would be the minimum necessary to ensure continued functionality of the improvement and would not exceed the original disturbance footprint of the improvement. Some proposed range improvements are located on private land; however, this document is in no way binding to the landowner and development of these improvements would still be decided by the landowner. Upon affirmative final decision to implement proposed range improvements, Cooperative Range Improvement Agreements (Form 4120-6) between the South Steens Allotment permittee and Burns District BLM would be completed to address each partner's responsibilities for labor, construction, maintenance, and/or supplies[24]. There is currently a verbal agreement that the permittee would cost share selected range improvement projects.

a. Fencing

Fences around wells with solar panels would be as small as possible, while still protecting the well and power source, and would be constructed to BLM specifications for a three strand, barbed-wire fence to meet cattle, elk, deer, and antelope requirements. Post spacing would be 22-feet (except in small exclosures were spacing may be less) and the maximum fence height would be 38 inches. The strands would be spaced beginning 16 inches from the ground, 10 inches between the bottom and middle strand, and 12 inches between the middle and top strands. The bottom strand would be smooth wire; the other strands would be barbed wire.

[24] All agreements completed between the BLM and permittee and/or private landowner are voluntary and cooperatively completed to provide mutual benefit.

Fences around springs and riparian areas may be a wood fence or four-strand barbed wire fence. These fences would include gates, as appropriate, to allow access for administration and recreational use. The wood fence would be approximately 48 inches tall and may be made of juniper removed from within the exclosure and surrounding area, when practical. The wood fence would be designed to allow wildlife to access the riparian area. The wire fence height would be approximately 42 inches. The bottom wire would be smooth, and placed approximately 16 inches from the ground, while the third and bottom wires would be placed approximately six inches apart, the second and third wire would be approximately eight inches apart, with the top and second wire placed approximately 12 inches apart. Metal stays would be used in each section of fence, to keep wires spaced appropriately. Posts would be standard metal posts, solid green in color. Green steel braces and stretch panels would be used where needed, instead of wood braces and rock cribs. Juniper trees may be used to support the fence when practical.

Where required, anti-strike markers would be placed on fence wires to reduce bird (specifically Greater Sage-Grouse) collision, wood rail fences would not have reflectors. Only spot removal of rocks or vegetation would occur, when necessary, during construction. Pickups and ATVs would generally be used in construction, travel would be done in a manner that reduces establishment of tracks, and any tracks adjacent to a road or way would be hand raked the distance necessary to deter the establishment of unauthorized routes.

Wire placed within the WSAs may be green coated.

b. Fence Removal

Fence removal would be completed by hand using pack animals and existing roads. All posts and wire would be removed from the site. Removal of existing fences would occur within one year of constructing replacement fences.

c. Reservoir Construction

Reservoirs would be designed based on site-specific factors. Reservoir dams would be 10 to 20 feet high, a minimum of 12 feet wide on top of the dam, and less than 150 feet in length. Slope on the upstream side would be a 2 to 1 ratio (2:1). Slope on the downstream side would be no greater than 3:1; however, the downstream portion of the dam would be designed to blend in with the surrounding topography better, resulting in a shallower incline. Fill materials needed (in addition to what is available from reservoir excavation), to blend the upstream side of the dam with surrounding topography, would be hauled in, following all appropriate

laws, policies, and regulations. No additional ground disturbance would occur on site to provide supplementary material. The dam would be seeded with perennial grasses, and rocks would be placed to promote naturalness (where they are a prominent part of the landscape). Spillways would be no less than 25 feet wide and 100 to 150 feet in length (may be longer as needed due to shallower dam slopes), with a smooth bottom and a mild grade to prevent cutting due to erosion. Rip rap (6-10 inch rocks) may also be used to further prevent erosion. During construction, trees and shrubs would be removed from the dam site and flooded basin. Where possible, trees and shrubs would be left in place to provide screening. The size of the disturbed area would depend on the size of the reservoir, but would be no more than two acres, with the permanent footprint of the reservoir being no more than one acre following revegetation. Any bentonite or borrow material needed (such as clay soils) would be hauled in and placed in layers at the reservoir site[25]. Access to the sites would be by existing roads where available. If no access road is available, cross-country travel would occur; no new roads would be constructed to access these developments. Within WSAs, any cross-country travel with equipment would be done in a manner that reduces establishment of tracks and any tracks adjacent to a road or way would be hand raked, and seeded as necessary, for whatever distance needed to deter the establishment of unauthorized routes.

All disturbed areas would be reseeded after construction. A native/ nonnative mix would be used in areas outside WSAs. Within WSAs, only native seed would be used. Within WSAs, shrub plantings and rock placement may occur, to reduce visual effects, on a site-specific basis, in areas where they are a prominent part of the landscape. No shrubs would be planted on dams to protect the structural integrity of the dam.

d. Reservoir Maintenance

Reservoirs would have sediment cleaned out of the basin and spill way (if needed) using a dozer or other large equipment, to increase reservoir depth to the original depth. If the reservoir is not holding water, bentonite would be applied. Dams and spillways would be repaired by a dozer, or other appropriate equipment, and may include the movement of rocks and sediment. Dams would be repaired by sealing and packing material on top of the dam with heavy equipment. New material may be obtained onsite or hauled in. When material is obtained onsite, the borrow area would be within the original area of disturbance, and would be rehabilitated to promote naturalness. Trees and shrubs within the reservoir, spillway, or on the dam may be removed, to improve structure soundness and functioning of the reservoir.

[25] The BLM would follow current laws, regulations, and policies when hauling in borrow materials.

Within WSAs, any additional material needed would be brought in following appropriate laws, policies, and regulations. Any cross-country travel with equipment would be done in a manner that reduces the establishment of tracks, and any tracks adjacent to a road or way would be hand raked, and seeded the distance needed to deter establishment of unauthorized routes, if necessary.

e. Reservoir Abandonment

Any reservoir identified to be abandoned would not be cleaned nor have dams or spillways repaired. These reservoirs would not have any bentonite (or other clay soils) applied to increase water holding ability. No removal of trees or shrubs would be allowed. As these reservoirs fail, they would not be repaired. Seeding of grass and shrub species would occur within reservoirs that no longer function; only native seed species would be utilized within WSAs. The BLM would not physically remove these reservoirs. Natural reclamation would be allowed to occur.

f. Wells

Access for well-drilling equipment would use existing roads and ways. Any needed materials (rocks or soil) would be hauled in with a dump truck. Roads needed for access may receive spot maintenance in accordance with the Transportation Plan (TP) and TMP, which would generally consist of removing rocks and tree limbs or trees in order to provide for safe passage by vehicles. The well site would consist of an original disturbance area of approximately 100 by 100 feet, within approximately 30 feet of a route. The entire disturbed area would be seeded with a native/non-native seed mix outside WSAs and with a native seed mix within WSAs, to increase the rate of recovery. Following seeding/rehabilitation of the disturbed site, the permanent footprint would be no more than 20 by 20 feet. In general, an eight to 12 inch diameter hole would be drilled at each well site to accommodate six inch casing (pipe). Casing would be used for the entire depth of the hole unless solid rock is encountered. Pump size would be dependent upon depth of well and location of storage tank (if needed). The pump in the well would be powered using solar power, a fuel generator, or both. The well and power source would be fenced, using the above-mentioned fencing standards. The fence would be the minimum needed to protect the well and energy source. Vegetative and topographic screening would be utilized as much as possible to minimize visual disturbance.

Panels for solar energy would be installed using a tractor with an auger. Poles would be eight inches in diameter and concreted in the ground; solar panels would be mounted upon the poles. Pole height would be as low as

possible, while still allowing panels to clear vegetation. The well and solar panels would be fenced to protect them from wild horses, livestock, and large wildlife species. The fence would follow the design features previously outlined, and would be no more than 0.1 mile in length. The smallest total area would be used. Solar panels vary in size from 16 to 40 inches in length by 40 to 70 inches in width. Reduced glare solar panels, with camouflage netting applied to the back of the solar panels, would be used when available. Solar panels would only be utilized if they would meet the power requirements of the pump, dependent on well depth and water production. This determination would be made by an engineer or other expert.

Fuel-powered generators would be 5,000 kilowatts, or smaller, with the exact size determined by well characteristics and availability. Generators would either be located within a small trailer, that is painted to blend in with the surrounding environment using the BLM Standard Environmental Color of Shadow Gray or another color determined by onsite vegetative characteristics, or placed in a small, three-sided pit (no more than 10 feet x 10 feet x 36 inches). Placing the generator in a pit would reduce the visual disturbance of the generator. With either option, the generator would be covered or enclosed to protect the generator and reduce noise pollution. Generators would be expected to run four to 16 hours a day depending on water consumption, and may be audible up to one-quarter mile under some conditions. Technology is now available to use satellites to start, stop, and notify users when problems arise with the generators; timers are also available to control times when generators operate. This technology may be used if appropriate and feasible. To limit the amount of time the generator operates, level switches could be installed in the storage tank (if present). These would only turn the generator on when the storage tank went below one-half full and would turn off when full. When wells are not in use, generators would be removed.

Windmills can also be used to power a well. They are approximately 20 feet high, placed on an eight foot by eight foot concrete bases, and installed directly over the well head using a boom truck. Equipment required would also include a backhoe and a concrete truck. However, based on the estimated depth of the proposed wells, it is not likely that windmills would be a viable option since windmills are not known to be effective in deep wells.

g. Storage Tanks

Storage tanks would be at most eight feet high by 28 feet in length and hold up to 10,000 gallons of water. Smaller tanks that would hold 5,000 gallons (approximately eight feet in height by 14 feet in length) would be utilized where they would fit the needs of the site. Tank size would be

based on water production of the well (a lower producing well would require a larger storage tank). Storage tanks would be associated with wells, when necessary, depending on the well and site characteristics and water system design. Storage tanks would be buried near the associated well, at a location that is higher than the associated pipeline and troughs, to allow it to gravity feed where possible. Buried tanks would disturb approximately a 12-foot wide by 36-foot long area (less for smaller tanks). A manhole, 36 inches-48 inches in diameter, covered, that would rise approximately six inches above ground level would be installed to provide access to the storage tank. Areas disturbed would be contoured to blend in with the surrounding undisturbed area to the extent possible. The disturbed area would be seeded with a native/nonnative mix outside WSAs; only native seeds would be used within WSAs. Equipment for installation would include an excavator, backhoe, or other heavy equipment, and a lowboy truck and trailer to haul in the tank. Access would require use of a maintained road. Maintenance would occur as described under the Wells PDE.

h. Pipelines

Pipeline trenches would be constructed using a steel-tracked crawler, with ripper and plastic pipe laying apparatus, within approximately 30 feet of a route. A trench would be dug with a simple ripping tooth, as deep as possible, up to 36 inches, and approximately three inches wide. A two inch black plastic (polyethylene) pipe would then be placed in the trench. All disturbed areas would be reseeded after construction, using a native/nonnative mix in areas outside WSAs; within WSAs, only native seeds would be used. The area would be further naturalized by returning rocks (mossy side up) disturbed by pipeline installation to their approximate original location to reduce the appearance of rock berms and to break up the linear shape of the pipeline. In some areas, it may not be possible to trench in the pipeline due to a rock layer. In these areas, a portion of the black plastic pipe may lie directly on the ground or just beneath the ground's surface. Efforts would be made to cover the pipe, as much as possible, without creating a dirt berm. Valve covers and vents would not be more than six inches above ground and would consist of a vertical piece of culvert with a lid, both of which would be painted to blend in to the surrounding environment using the BLM Standard Environmental Color of Shadow Gray or another color determined by onsite vegetative characteristics.

i. Troughs

Outside WSAs, up to 10,000 gallon bottomless troughs would be installed[26]. These troughs are circular, up to 30 feet in diameter, with a four to six inch concrete bottom, and a two to four foot concrete apron to aid in erosion control. The sides of the trough would be two feet high and constructed of galvanized metal. A backhoe would be used to scrape dirt, to form the area for a tough, within approximately 30 feet of a route. A concrete truck would haul concrete to the site to construct the apron and concrete bottom. The area disturbed during installation of the trough would be approximately 100 by 100 feet. The metal would be painted to blend in with the surrounding environment using the BLM Standard Environmental Color of Shadow Gray or another color determined by onsite vegetative characteristics.

Within WSAs 1,200 gallon, galvanized metal troughs, measuring four feet by 12 feet by 21 inches, would be utilized. If the site is expected to service large numbers of wild horses and/or livestock, multiple troughs may be installed, or the width of the troughs may be increased. Trough sites would be leveled using a backhoe. Disturbance associated with the installation of standard galvanized troughs would be approximately 50 by 50 feet. Rock would be hauled in by a dump truck and put around the trough using a backhoe to reduce soil compaction by livestock and assist in blending the site with the surrounding area. These troughs would be partially buried (where possible) in order to place the top of the trough below the dominant shrub vegetation. Rocks may be placed or concreted around the trough, and the trough may be chemically treated and/or painted to reduce glare. The specific treatments would be determined on a site-by-site basis and would be determined by members of the IDT.

Wildlife escape ramps would be installed in each trough. Escape ramps may be fabricated from metal or made from rocks placed in one part of the trough. All troughs would have trough floats installed to prevent water from overflowing, as well as an overflow pipe to protect the site in the event the float valve is damaged and water continues to flow. Troughs would be located far enough away from a well or spring source/exclosure to minimize damage to the water source site; however, they would be within 250’ of the water source. Troughs located on pipelines would be located within 50’ of the main pipeline.

[26] Smaller troughs including smaller bottomless troughs or galvanized troughs may be used outside of WSAs if there is no need for a larger trough. However, the disturbance for these smaller troughs would always be less than for the bottomless trough described here.

j. Spring Protection/Exclosures

Springs identified to be protected or exclosed, and meadow exclosures would be fenced using the standards mentioned above under fencing. The fence would be located 10-20 feet from the edge of meadow or riparian vegetation in order to reduce grazing pressure on the fence from wild horses and livestock. Wire fences would be marked with anti-strike markers to reduce the possibility of wildlife collisions with the fence, where appropriate. Generally, each exclosure would be approximately two to six acres, though the exact size would vary depending on the spring and the surrounding riparian area. Juniper trees within the exclosures may be cut (old growth junipers would remain standing) to further protect the spring source and promote the riparian area. Trees not used for the fence would be hand piled (outside the exclosure and riparian area) and burned.

k. Spring Development

Spring development would consist of surrounding the spring with fencing (see Spring Protection/Exclosures above), installing a spring box to gather water, and a short pipeline to carry water to a four by 12 foot metal trough. Spring boxes, generally consisting of a 1.5-foot diameter galvanized steel culvert and drain rock, would be installed using a rubber-tired backhoe. Any part of the headbox that is visible would be painted to blend in with the surrounding environment; however, the majority, if not all of the spring box, would be buried. Pipeline installation and trough placement would be as described above, with the trough located outside the fenced exclosure. Length of pipeline would be determined by exclosure size and trough placement. Depending on the water flow at the spring, more than one trough may be installed. All troughs would be constructed with a valve that would allow control of water flow into the trough. Troughs would be constructed with a float valve to prevent overflow; however, an overflow pipe would be installed to prevent loss of water in the event the float valve fails and water continue to flow into the trough, the overflow pipe would carry water back into the spring exclosure. The flow valve and overflow would result in only the water needed to fill the trough(s) being permanently removed from the spring source. Juniper trees within the exclosures may be cut (old growth junipers would remain standing) to further protect the spring source and promote the riparian area. Trees not used for the fence, may be left, or would be hand piled and burned outside the exclosure and riparian area. Spring development would only occur at springs productive enough to support the water development while maintaining a functioning riparian area.

l. Seeding/Rehabilitation

Seeding would occur on disturbed sites that are not expected to recover naturally.

Outside WSAs, a mix of native and non-native species would be seeded in order to provide the best chance of success; non-native species, such as crested wheatgrass, are often more competitive with annual grasses such as cheatgrass. Seeding of disturbed areas would occur using an ATV with a seeder attachment for large areas, or by hand using a seed thrower in smaller areas.

Within WSAs, only native species would be seeded and seeding would be completed by hand.

C. Alternative A: No Action

The No Action Alternative would renew the existing livestock grazing permit for South Steens Allotment for 10 years, continuing the current grazing management, for the permitted season of use of April 1 through October 31. Active grazing preference would remain at 9,577 AUMs[27] on public land. Even though the permittee has elected to use fewer AUMs over the past 12 years (with BLM approval) due to different circumstances, it has often been due to limited water availability and in wet years, full use is possible. This analysis shows the on-the-ground effects of utilizing the full permitted AUMs. The permit would be issued with the same terms and conditions as the current permit[28]. Management would continue as identified in the 1995 AMP to the extent possible. The permittee is expected to continue to use less than full grazing preference, especially during drought years, in order to reduce the risk of not achieving S&Gs in the future due to poor distribution as a result of limited reliable water sources. The permittee would continue to be able to apply for full permitted active use, which would only be limited in years when utilization reaches 50% in accessible areas. This would occur if resource damage were documented because of using the full permitted active use, and may occur prior to receiving use of permitted AUMs. No range improvements would be constructed under this alternative. Existing improvements, including those within WSAs, would continue to be maintained following existing policy.

[27] Authorized/Permitted AUMs would be as close to this number as possible using the adjusted season of use, without exceeding this number. The current method for calculating AUMs does not always allow for an exact number of AUMs to be placed on a permit.

[28] The grazing permit expired 2-28-2014 and was reissued under the authority of Public Law 112-74, as extended in sections 101 and 103 of Public Law 113-46, Continuing Appropriations Act, 2014.

D. Alternative B: Proposed Action – Management Changes and Range Improvements

The Proposed Action was developed by the BLM IDT in order to address identified resource concerns and issues and the Standards determination that two of five Standards were not fully achieved in the allotment with grazing (wild horse and livestock) and juniper encroachment being causal factors. The Proposed Action conforms to all Guidelines. In addition to AMP components discussed under the section *Actions Common to All Alternatives except the No Action Alternative*, management discussed below would be incorporated as part of the new AMP. While the entire AMP would become a Term and Condition of the Grazing Permit, only the components that are within the permittees management ability would be the permittees responsibility.

1. Permit Renewal

The Proposed Action includes renewal of the existing livestock grazing permit for South Steens Allotment for the current permittee. A new 10-year term livestock grazing permit would be issued, to continue 9,577 active use AUMs of livestock grazing on public land. No changes to permitted AUM numbers would occur. The season of use would be shortened slightly, from April 1 through October 31 to April 15 through October 31. The %PL based on forage, would remain at 94% for the allotment; however, the %PL for each pasture would be added as a Term and Condition of the permit, and the pasture %PL is what would be used for billing purposes in each pasture. The %PL for each pasture is currently calculated at Hollywood Pasture - 93%, Tombstone and Steens pastures - 99% and Home Creek Pasture - 76%. %PL would be adjusted, as necessary, following any land sales or purchases, exclusion of private property (fences), allotment/pasture boundary adjustment or correction, etc..., or new production information occurring within South Steens Allotment. The permittee would be billed using the most accurate %PL calculations.

Terms and conditions on the permit would include adjusting the season of use, adjusting the %PL by pasture for billing purposes, authorizing actual use billing, and this AMP. In addition, a Term and Condition requiring that the permittee open gates, not only within the allotment interior, but also between South Steens Allotment and the portion of the HMA within Steens Mountain Wilderness, following livestock removal each year and close them prior to livestock grazing, would be added to aid the free movement of wild horses throughout the HMA.

2. Livestock Grazing Management

Livestock grazing management is designed to provide periodic growing season rest for plants. Use periods in each pasture may vary annually in order to provide for recommended rest periods as described in the proposed grazing system shown in Table 2. Approximate use dates are not provided in the proposed grazing system due to the location of the allotment on the western edge of Steens Mountain, where climatic conditions can vary greatly from year to year. This

variation result in key forage species entering vegetative states on differing dates, annually. Therefore, livestock grazing management is based on grazing treatments (i.e. early, graze, and defer; see Appendix A: Grazing Treatment Descriptions) and not specific dates. Livestock use dates for each pasture would be determined on an annual basis based on the vegetative stages of key forage species and the prescribed grazing treatment. Permitted season of use would be April 15 through October 31, which would be adequate to carry out the proposed grazing management. Livestock numbers may vary annually as outlined under Adaptive Management (Chapter II, A. Actions Common to All Alternatives); however, total permitted AUMs would not exceed 9,577. Prior to authorizing grazing each year, monitoring data and current climatic conditions, such as drought, would be taken into consideration. This may result in changes to stocking levels, pasture rotations and timing of grazing in order to best meet objectives. Any modifications to the proposed grazing system would conform to the utilization target of 50% for native, key forage species. If the 50% utilization target were met, livestock would be required to be removed, even if full use of AUMs has not been taken. Care would be taken to ensure all pastures received periodic growing season rest. Adjustments to the permitted season of use, not to exceed 14 days, may be allowed to provide flexibility in meeting resource objectives, dependent on annual climate and growing conditions. This non-renewable extension of the permitted season of use would be authorized at the discretion of the BLM and would not be guaranteed to the permittee.

Hollywood Pasture receives high levels of wild horse use in the winter and spring. Therefore, Hollywood Pasture would primarily be used as a turnout and gather pasture to get cattle to and from Tombstone Pasture, resulting in early and defer grazing treatments. Utilization in the early spring would be limited to 30% (livestock and wild horse utilization combined) in order to provide enough forage for livestock during fall gathering, and fall and winter wild horse use. Overall, annual utilization would be limited to 50% (livestock and wild horse utilization combined). Defer (fall) use would only be authorized if maximum utilization levels would not be exceeded during the livestock use period, based on utilization determinations made prior to defer use occurring. In one year out of four, Hollywood Pasture would receive complete livestock rest, with livestock being allowed to trail through the pasture when being moved between Tombstone Pasture and private property.

Tombstone Pasture would rotate between an early/graze and a defer treatment, every other year. Steens Pasture would also rotate between an early/graze and defer treatment; however, it would be on an opposite rotation from Tombstone Pasture. Home Creek Pasture would generally be given an early treatment, with one year of complete rest every fourth year. This is due to the presence of Home Creek within the pasture and the need to protect the riparian area from late-season use.

Under this rotation, all pastures would receive growing season rest (graze treatment rest) from livestock, at least every other year, with both Hollywood and Home Creek Pastures receiving growing season rest from livestock every year.

Table 2: Proposed Grazing System

Pasture	Cows	Year 1	Year 2	Year 3	Year 4	AUMs
Hollywood	500	Early/Defer	Rest	Early/Defer	Early/Defer	510
Tombstone	1,200	Early/Graze	Defer	Early/Graze	Defer	3,900
Steens	1,200	Defer	Early/Graze	Defer	Early/Graze	3,307
Home Creek	1,000	Early	Early	Early	Rest	1,860

3. Proposed Range Improvements

Proposed range improvement activities include spring development and protection, riparian exclosure, well, pipeline, and trough installation, new reservoir construction, and maintenance and abandonment of existing reservoirs. All range improvements would follow *General PDEs* (Chapter II.A.6.) and *PDEs Specifically for Proposed Range Improvements* found under Chapter II.A.7., unless provided for below. All proposed range improvements would be located in the area shown on Map 7 - Alternative B: Proposed Range Improvements; however, some minor changes in location may be made during construction as described under *General PDEs* (Chapter II.A.6.). See Map 3 - Current Range Improvements and Map 7 - Alternative B Proposed Range Improvements.

Under the Proposed Action, 13 currently existing reservoirs, both within and outside of WSAs, would be maintained and nine existing reservoirs would be abandoned. Any existing reservoirs that are not identified to undergo maintainence at this time may be maintained in the future, following appropriate NEPA analysis. Nine new reservoirs would be constructed, all located in WSAs.

This alternative proposes the protection of two springs, one of which is partially on private property[29] and partially within a WSA (S1 Three Springs); the other (S2 Weaver Spring) is fully within a WSA. Spring protection would include fencing of the riparian areas to reduce damage caused by wild horses and livestock. The fence at Three Springs (S1) would exclose approximately 10 acres. Approximately five acres of the full exclosure would be on BLM-administered land; the exclosure would require approximately 0.5 mile of fence, approximately half of which would be on BLM-managed land. At Weaver Spring (S2), less than one acre would be exclosed; the total amount of fence required would be less than 0.1 mile. Fences would be located approximately 20 feet outside the riparian areas to reduce livestock and wild horse pressure on them. At Weaver Spring, a road crosses the riparian area created by spring runoff. To protect the riparian area,

[29] By analyzing proposed range improvements that would be located on private property, the BLM would be able to assist the landowner with development, most often in the form a labor or supplies. If the BLM assisted with development, all PDEs would be followed, including cultural clearances. However, the analysis of these range improvements does not guarantee that they would be constructed, nor does it in any way bind the landowner.

and prevent multiple sets of ruts from vehicles trying to maneuver through wet areas, a crossing would be created using rock and gravel.

Two other springs would be developed; this would include exclosure fences to protect the riparian area, as well as troughs located outside the exclosures to allow the spring to continue to be a watering source for animals. If it is determined water flow is not adequate to install a trough, no headbox, pipeline, or trough would be installed, and any disturbance would be rehabilitated. Fences would still be constructed to provide for spring protection. The spring exclosure fences would be dependent on the sizes of the riparian areas around the springs. The fences would be located approximately 20 feet outside the riparian areas to reduce livestock and wild horse pressure on them.

One of the springs, Burnt Car Spring (S4) was initially an *action common to all alternatives* as the development was authorized under a new Decision Record for the Implementation EA. However, the redevelopment of Burnt Car Spring is being fully analyzed within this document. There is currently a large cistern type storage tank at Burnt Car Spring. This tank may present an entrapment danger for wild horses and livestock where animals may fall into the tank and be unable to get out. Some bones within the tank suggest that this occassionally occurs. This could be potentially dangerous for recreators. In order to increase safety at Burnt Car Spring, ingress would be reduced using juniper trees and egress would be improved by piling nearby rocks into one corner.

The other spring, known as Broken Leg Spring (S3), currently has a route passing directly through the spring (located at T. 34 S., R. 32¾ E., Section 19). In order to effectively protect this spring, the existing route would be realigned approximately 150 feet west of the spring for a distance of approximately 250 feet. The new portion of this route would be created primarily by passage of a vehicle; however, to provide safe access, large rocks may need to be moved with equipment followed by filling of holes with soil. This would be the only work allowed to be done with equipment for the route realignment. The old route, approximately 200 feet long, would be barricaded using downed juniper from the immediate area and reseeded using native seed if necessary. If this alternative was selected, this EA would update the CMPA TMP to incorporate this route realignment.

In addition to spring development and protection, one riparian meadow exclosure, approximately 2.3 acres, would be constructed to protect a riparian meadow within South Fork Donner und Blitzen WSA.

Juniper trees may be cut within the spring and riparian exclosures in order to further protect the spring source and promote the riparian vegetation; old growth trees would remain standing.

Of the wells, none would be located within WSAs, and all of them would be powered with solar power or generators, depending on the site characteristics of each well site. Two of the wells would have a pipeline running off them, which would be approximately 0.5 and 0.1 miles in length. One pipeline would flow into a trough; the other would flow into a maintained reservoir. If solar panels are used, the protection fences around the wells and solar panels would be no longer than 0.1 mile each, and would be the minimum required to protect the development from damage.

All troughs are associated with spring developments, wells, and pipelines. Three troughs located outside WSAs would be 30 foot bottomless troughs (or smaller)[30] and the troughs located within WSAs would be galvanized metal troughs.

Of the range improvements proposed under this alternative, 14 of 19 would be new improvements within WSAs. An additional nine would be maintenance of existing reservoirs and nine more are abandonments of reservoirs, all within WSAs. Table 3 shows proposed range improvements and which, if any, WSA they would be located within.

[30] For analysis purposes assume 30-foot bottomless troughs would be installed, since they would have the most disturbance compared to smaller troughs.

Table 3: Alternative B: Proposed Range Improvements

ID #	Action	Within WSA?
Existing Reservoir (ER) Maintenance		
ER1	Maint.	Not in a WSA
ER2	Maint.	Not in a WSA
ER3	Maint.	Blitzen River WSA
ER7	Maint.	S. Fork Donner und Blitzen WSA
ER9	Maint.	S. Fork Donner und Blitzen WSA
ER10	Maint.	S. Fork Donner und Blitzen WSA
ER11	Maint.	S. Fork Donner und Blitzen WSA
ER12	Maint.	Home Creek WSA
ER14	Maint.	S. Fork Donner und Blitzen WSA
ER15	Maint.	Not in a WSA
ER17	Maint.	S. Fork Donner und Blitzen WSA
ER21	Maint.	Home Creek WSA
ER24	Maint.	Not in a WSA
ER5	Abandon	S. Fork Donner und Blitzen WSA
ER6	Abandon	S. Fork Donner und Blitzen WSA
ER8	Abandon	S. Fork Donner und Blitzen WSA
ER13	Abandon	Home Creek WSA
ER18	Abandon	S. Fork Donner und Blitzen WSA
ER19	Abandon	S. Fork Donner und Blitzen WSA
ER20	Abandon	Home Creek WSA
ER22	Abandon	Home Creek WSA
ER23	Abandon	S. Fork Donner und Blitzen WSA
TOTAL ER: 13 Maintain; 9 Abandon		
Proposed Reservoirs (R)		
R4	New	Blitzen River WSA
R5	New	Blitzen River WSA
R6	New	Blitzen River WSA
R7	New	S. Fork Donner und Blitzen WSA
R11	New	S. Fork Donner und Blitzen WSA
R12	New	S. Fork Donner und Blitzen WSA
R13	New	S. Fork Donner und Blitzen WSA
R14	New	S. Fork Donner und Blitzen WSA
R15	New	S. Fork Donner und Blitzen WSA
TOTAL R: 9		
Proposed Spring Development (S)		
S1	Protect	S. Fork Donner und Blitzen WSA/Pvt
S2	Protect	S. Fork Donner und Blitzen WSA
S3	Develop	S. Fork Donner und Blitzen WSA
S4	Develop	Blitzen River WSA
TOTAL S: 2 Protect; 2 Develop		
Proposed Wells (W)		
W3	New	Not in a WSA
W6	New	Not in a WSA
W13	New	Not in a WSA (Within Roaring Butte Mineral Materials Site)
TOTAL W: 3		
Proposed Pipelines (P)[31]		
P4	0.5 Miles	Not in a WSA
P8	0.1 Miles	Not in a WSA
TOTAL P: 2 Pipelines, 0.6 Miles		
Proposed Troughs (T)		
T6	New	Not in a WSA
T7	New	Blitzen River WSA
T11	New	Not in a WSA
T18	New	Not in a WSA
T24	New	S. Fork Donner und Blitzen WSA
TOTAL T: 5		
Riparian Meadow Exclosure Construction (E)		
E1	0.3 Miles	S. Fork Donner und Blitzen WSA
TOTAL E: 1 Exclosure; 0.3 Miles Fence; 2.2 Acres		

[31] This section, under all alternatives, only shows pipelines that lead to separate troughs, not the short pieces of pipeline that will be required to install a trough at a well or spring.

E. Alternative C: Maximum Water Distribution

Under Alternative C, permit renewal and livestock grazing would occur as described in Alternative B: Proposed Action. The difference between Alternative B and this alternative occurs in the number and types of proposed range improvements.

Proposed range improvement activities would include spring development, well, pipeline, and trough installation, maintenance and abandonment of existing reservoirs, and new reservoir construction. All range improvements would follow *General PDEs* (Chapter II.A.6.) and *PDEs Specifically for Proposed Range Improvements* found above under Chapter II.A.7., unless provided for below. All range improvements would be located in the area shown on Map 8; however, some minor changes in location may be made as described under *General PDEs* (Chapter II.A.6.). See Map 3 - Current Range Improvements and Map 8 Alternative C: Proposed Range Improvements.

Under this alternative, 16 currently existing reservoirs, both within and outside of WSAs would be maintained and seven existing reservoirs would be abandoned. Any existing reservoirs not identified to undergo maintenance at this time may be maintained in the future, following appropriate NEPA analysis. Seventeen new reservoirs would be constructed, all located in WSAs.

This alternative proposes the development of all four springs. Broken Leg Spring (S3) and Burnt Car Spring (S4) would be developed as discussed under Alternative B. Three Springs (S1) and Weaver Spring (S2) would be developed following PDEs in Chapter II.A.7, with the exclosure fences occurring as described under Alternative B. The Weaver Spring road crossing would be created using rock and gravel as described under Alternative B.

Of the proposed wells, four would be located within WSAs and six would be outside WSAs, all of which would be powered with solar or generator power, depending on the site characteristics of each well. If solar panels are used, the protection fences around the wells and solar panels would be no longer than 0.1 mile each, and would be the minimum required to protect the development from damage. There would be ten pipelines running off the wells, for 14.6 total miles of pipelines, with some wells supporting multiple pipelines.

All troughs would be associated with spring developments, wells, and pipelines. Under this alternative, 24 new troughs would be installed. Ten troughs located outside WSAs would be up to 30-foot bottomless troughs[32]. The other troughs, located within WSAs, would be galvanized metal troughs.

In addition to the proposed range improvements previously mentioned as being on private property, this alternative would include one spring development, three wells, and four troughs located (at least partially) on private property. Of the range improvements proposed under this alternative 32 of 41 are new improvements within WSAs. In addition to 24 troughs within WSA, there would also be 13 existing reservoirs maintained within WSAs and seven reservoirs would be abandoned. Table 4 shows proposed range improvements, length when applicable, and which, if any, WSA they are located within.

In addition, AMP components discussed under the section *Actions Common to All Alternatives except the No Action Alternative* would be incorporated as part of the new AMP.

[32] For analysis purposes assume 30-foot bottomless troughs would be installed, since they would have the most disturbance compared to smaller troughs.

Table 4: Alternative C: Proposed Range Improvements

ID #	Action	Within WSA?
Existing Reservoir (ER) Maint. / Abandonment		
ER1	Maint.	Not in a WSA
ER2	Maint.	Not in a WSA
ER3	Maint.	Blitzen River WSA
ER4	Maint.	S. Fork Donner und Blitzen WSA
ER5	Maint.	S. Fork Donner und Blitzen WSA
ER6	Maint	S. Fork Donner und Blitzen WSA
ER7	Maint.	S. Fork Donner und Blitzen WSA
ER8	Maint.	S. Fork Donner und Blitzen WSA
ER9	Maint.	S. Fork Donner und Blitzen WSA
ER10	Maint.	S. Fork Donner und Blitzen WSA
ER11	Maint.	S. Fork Donner und Blitzen WSA
ER12	Maint.	Home Creek WSA
ER13	Maint.	Home Creek WSA
ER14	Maint.	S. Fork Donner und Blitzen WSA
ER15	Maint	Not in a WSA
ER17	Maint.	S. Fork Donner und Blitzen WSA
ER16	Abandon	S. Fork Donner und Blitzen WSA
ER18	Abandon	S. Fork Donner und Blitzen WSA
ER19	Abandon	S. Fork Donner und Blitzen WSA
ER20	Abandon	Home Creek WSA
ER21	Abandon	Home Creek WSA
ER22	Abandon	Home Creek WSA
ER23	Abandon	S. Fork Donner und Blitzen WSA
TOTAL ER: 16 Maintain, 7 Abandon		
Proposed Reservoirs (R)		
R1	New	Blitzen River WSA
R2	New	Blitzen River WSA
R3	New	Blitzen River WSA
R4	New	Blitzen River WSA
R5	New	Blitzen River WSA
R6	New	Blitzen River WSA
R7	New	S. Fork Donner und Blitzen WSA
R8	New	S. Fork Donner und Blitzen WSA
R9	New	S. Fork Donner und Blitzen WSA
R10	New	S. Fork Donner und Blitzen WSA
R12	New	S. Fork Donner und Blitzen WSA
R13	New	S. Fork Donner und Blitzen WSA
R14	New	S. Fork Donner und Blitzen WSA
R15	New	S. Fork Donner und Blitzen WSA
R16	New	S. Fork Donner und Blitzen WSA
R17	New	S. Fork Donner und Blitzen WSA
R18	New	S. Fork Donner und Blitzen WSA
TOTAL R: 17		
Proposed Spring Development (S)		
S1	Develop	S. Fork Donner und Blitzen WSA/Pvt.
S2	Develop	S. Fork Donner und Blitzen WSA
S3	Develop	S. Fork Donner und Blitzen WSA
S4	Develop	Blitzen River WSA
TOTAL S: Develop 4		

Proposed Wells (W)		
W1	New	Blitzen River WSA
W2	New	Not in a WSA - Private
W3	New	Not in a WSA
W4	New	Not in a WSA
W5	New	Not in a WSA - Private
W6	New	Not in a WSA
W7	New	Not in a WSA - Private
W8	New	S. Fork Donner und Blitzen WSA
W9	New	S. Fork Donner und Blitzen WSA
W15	New	S. Fork Donner und Blitzen WSA
TOTAL W: 10		
Proposed Pipelines (P)		
P1	1.2 Miles	Blitzen River WSA
P2	1.2 Miles	Not in a WSA
P3	0.9 Miles	Blitzen River WSA
P4	0.9 Mile 0.5 Mile	Blitzen River WSA Not in a WSA
P5	1.7 Miles	Blitzen River WSA
P6	1.6 Miles	Not in a WSA
P7	2.2 Miles	S. Fork Donner und Blitzen WSA
P9	1.7 Miles	Not in a WSA
P10	2.2 Miles	S. Fork Donner und Blitzen WSA
P16	0.5 Miles	S. Fork Donner und Blitzen WSA
TOTAL P: 10 Pipelines; 14.6 Miles		
Proposed Troughs (T)		
T1	New	Blitzen River WSA
T2	New	Not in a WSA
T3	New	Not in a WSA - Private
T4	New	Blitzen River WSA
T5	New	Blitzen River WSA
T6	New	Not in a WSA
T7	New	Blitzen River WSA
T8	New	Not in a WSA
T9	New	Blitzen River WSA
T10	New	Blitzen River WSA
T12	New	S. Fork Donner und Blitzen WSA
T13	New	S. Fork Donner und Blitzen WSA
T14	New	S. Fork Donner und Blitzen WSA
T15	New	S. Fork Donner und Blitzen WSA
T18	New	Not in a WSA
T19	New	Not in a WSA - Private
T21	New	S. Fork Donner und Blitzen WSA
T22	New	Not in a WSA
T23	New	Not in a WSA - Private
T24	New	S. Fork Donner und Blitzen WSA
T25	New	Blitzen River WSA
T28	New	S. Fork Donner und Blitzen WSA
T29	New	Not in a WSA
T32	New	Not in a WSA - Private
TOTAL T: 24		

F. Alternative D: Along Road Development

Under Alternative D, permit renewal and livestock grazing management would occur as described in Alternative B: Proposed Action. Alternative D would focus the development of range improvements along roads and ways, in order to limit surface disturbance and improve access for construction and maintenance. Proposed range improvement activities would include spring development and protection, well, pipeline, and trough installation, maintenance and abandonment of existing reservoirs, new reservoir construction, and fence relocation. All range improvements would follow *General PDEs* (Chapter II.A.6.) and *PDEs Specifically for Proposed Range Improvements* found under Chapter II.A.7., unless provided for below. All range improvements would be located in the area shown on Map 9 Alternative D: Proposed Range Improvements; however, some minor changes in location may be made during construction as described under *General PDEs* (Chapter II.A.6.).

Under this alternative, seven currently existing reservoirs, both within and outside of WSAs, would be maintained and two existing reservoirs would be abandoned (both within WSAs). Any existing reservoirs not identified to undergo maintenance at this time may be maintained in the future, following appropriate NEPA analysis. One new reservoir would be constructed in the Blitzen River WSA.

The two springs, Burnt Car Spring (S4) and Weaver Spring (S2), which are not located along a road or way, would receive protection in the form of an exclosure fence. Burnt Car Spring would also be modified as described in Alternative B to address the safety issue. Broken Leg Spring (S3) and Three Springs (S1) would be developed as described under Alternative B and C, respectively.

Of the proposed wells, four would be located within WSAs and six would be outside WSAs; all would be powered with solar or generator power, depending on the site characteristics of each well. There would be thirteen pipelines running off the wells, for 17.5 total miles of pipelines; some wells may support multiple pipelines. If solar power were used, protection fences around wells and solar panels would be no longer than 0.1 mile each, and would be the minimum required to protect the development from damage.

All troughs are associated with spring developments, wells, and pipelines. Under this alternative, 20 new troughs would be installed. Ten troughs proposed outside of WSAs would be up to 30-foot bottomless troughs[33], while the remaining troughs proposed in WSAs would be galvanized metal troughs.

This alternative includes the partial relocation of the Steens/Home Creek pasture boundary fence, which would result in the removal of approximately 2.1 miles of fence, and the construction of approximately 3.0 miles of new fence. The new fence would be

[33] For analysis purposes assume 30-foot bottomless troughs would be installed, since they would have the most disturbance compared to smaller troughs.

located along the west side of Lauserica Road and would allow the Home Creek and Steens pasture boundaries to follow the boundary of the Home Creek portion of Steens Mountain Wilderness and South Fork Donner und Blitzen WSA more closely.

One spring development, three wells, and four troughs would be located at least partially on private property.

Of the proposed range improvements 19 of 29 are new improvements within WSAs, one of which is the removal of an existing fence. Table 5 shows proposed range improvements and which, if any, WSA they are located within.

In addition, AMP components discussed under the section *Actions Common to All Alternatives except the No Action Alternative* would be incorporated as part of the new AMP.

Table 5: Alternative D: Proposed Range Improvements

ID #	Action	Within WSA?
Existing Reservoir (ER) Maint. / Abandon		
ER2	Maint.	Not in a WSA
ER4	Maint.	S. Fork Donner und Blitzen WSA
ER5	Maint.	S. Fork Donner und Blitzen WSA
ER10	Maint.	S. Fork Donner und Blitzen WSA
ER11	Maint.	S. Fork Donner und Blitzen WSA
ER13	Maint.	Home Creek WSA
ER15	Maint.	Not in a WSA
ER19	Abandon	S. Fork Donner und Blitzen WSA
ER21	Abandon	Home Creek WSA
TOTAL ER: 7 Maintain, 2 Abandon		
Proposed Reservoirs (R)		
R4	New	Blitzen River WSA
TOTAL R: 1		
Proposed Spring Development/Protection (S)		
S1	Develop	S. Fork Donner und Blitzen WSA/Pvt.
S2	Protect	S. Fork Donner und Blitzen WSA
S3	Develop	S. Fork Donner und Blitzen WSA
S4	Protect	Blitzen River WSA
TOTAL S: 2 Develop; 2 Protect		
Proposed Wells (W)		
W1	New	Blitzen River WSA
W2	New	Not in a WSA - Private
W3	New	Not in a WSA
W4	New	Not in a WSA
W5	New	Not in a WSA - Private
W6	New	Not in a WSA
W7	New	Not in a WSA - Private
W8	New	S. Fork Donner und Blitzen WSA
W12	New	S. Fork Donner und Blitzen WSA
W15	New	S. Fork Donner und Blitzen WSA
TOTAL W: 10		
Proposed Pipelines (P)		
P1	1.2 Mile	Blitzen River WSA
P2	1.2 Mile	Not in a WSA
P4	0.9 Mile 0.5 Mile	Blitzen River WSA Not is a WSA
P5	1.7 Mile	Blitzen River WSA
P6	1.6 Mile	Not in a WSA
P7	2.2 Mile	Not in a WSA
P9	1.7 Mile	Not in a WSA
P10	2.2 Mile	S. Fork Donner und Blitzen WSA
P12	0.8 Mile	S. Fork Donner und Blitzen WSA
P14	0.8 Mile	S. Fork Donner und Blitzen WSA
P19	1.1 Mile	S. Fork Donner und Blitzen WSA
P20	1.0 Mile	S. Fork Donner und Blitzen WSA
P22	0.6 Mile	S. Fork Donner und Blitzen WSA
TOTAL P: 13 Pipelines; 17.5 Miles		
Proposed Troughs (T)		
T1	New	Blitzen River WSA
T2	New	Not in a WSA
T3	New	Not in a WSA - Private
T4	New	Blitzen River WSA
T6	New	Not in a WSA
T8	New	Not in a WSA
T9	New	Blitzen River WSA
T10	New	Blitzen River WSA
T13	New	S. Fork Donner und Blitzen WSA
T14	New	S. Fork Donner und Blitzen WSA
T15	New	S. Fork Donner und Blitzen WSA
T16	New	S. Fork Donner und Blitzen WSA
T18	New	Not in a WSA
T19	New	Not in a WSA - Private
T22	New	Not in a WSA
T23	New	Not in a WSA - Private
T24	New	S. Fork Donner und Blitzen WSA
T25	New	Blitzen River WSA
T28	New	S. Fork Donner und Blitzen WSA
T29	New	Not in a WSA
T31	New	S. Fork Donner und Blitzen WSA
T32	New	Not in a WSA - Private
TOTAL T: 22		
Proposed Fence Removal (RF)		
RF1	2.1 Mile	S. Fork Donner und Blitzen WSA
TOTAL RF: 1 Fence Removal; 2.1 Miles		
Proposed Fence Construction (F)[34]		
F6	0.5 Mile 2.6 Mile	S. Fork Donner und Blitzen WSA/Private S. Fork Donner und Blitzen WSA/Wilderness
TOTAL: 1 Fence; 3.1 Miles		

[34] Proposed fence construction totals do not include fences associated with other improvements such as Spring Developments or wells. These are mentioned in the PDEs.

G. Alternative E: Edge Developments

Under Alternative E, permit renewal and livestock grazing management would occur as described in Alternative B: Proposed Action. Alternative E proposes to maximize water developments on BLM-managed land located outside of wilderness and WSA. Proposed range improvement activities would include spring protection, well, pipeline, and trough installation, maintenance and abandonment of existing reservoirs, water gap development, and fence relocation. All range improvements would follow *General PDEs* (Chapter II.A.6.) and *PDEs Specifically for Proposed Range Improvements* found above under Chapter II.A.7., unless provided for below. All proposed range improvements would be located in the area shown on Map 10 Alternative E: Proposed Range Improvement; however, some minor changes in location may be made during construction as described under *General PDEs* (Chapter II.A.6.).

The only developments that would occur within the interior of the WSAs would be the four spring protection exclosures, three of which would be in South Fork Donner und Blitzen WSA and one would be within Blitzen River WSA. Spring protection would only include the construction of exclosure fences around the springs and associated riparian areas as described in the PDEs. This alternative would not include the route realignment at Broken Leg Spring (S3) or the road crossing at Weaver Spring (S2). It would include the safety work at Burnt Car Spring as described under the Proposed Action.

Under this alternative, three currently existing reservoirs, outside of WSAs, would be maintained and no reservoirs would be abandoned. Any existing reservoirs not identified to undergo maintenance at this time may be maintained in the future, following appropriate NEPA analysis.

Of the proposed wells, one would be located within a WSA and eight would be outside WSAs; all of them would be powered with solar or generator power, depending on the site characteristics of each well. There would be six pipelines running off the wells, for 7.0 miles of pipelines; some wells may support multiple pipelines. If solar power were used, the protection fences around the wells and solar panels would be no longer than 0.1 mile each, and would be the minimum required to protect the development from damage.

All troughs are associated with wells and pipelines. Under this alternative, 13 new troughs would be installed. All of these troughs would be located outside of WSAs and would be up to 30-foot bottomless troughs; however, the troughs may be smaller based on need at each individual site.[35]

In addition, this alternative includes the partial realignment of the Steens/Home Creek pasture boundary. The pasture boundary fence would be relocated between Home Creek and Steens pastures to the boundary between the Home Creek portion of Steens Mountain

[35] For analysis purposes assume 30-foot bottomless troughs would be installed, since they would have the most disturbance compared to smaller troughs.

Wilderness and Home Creek WSA, as well as along private property and Home Creek WSA boundary. This would result in the removal of approximately 4.6 miles of fence and the construction of approximately 5.2 miles of new fence.

To provide additional, reliable, late-season water for wild horses and livestock, three water gaps would be placed on the eastern edge of the allotment and Steens Mountain Wilderness. These water gaps would consist of an additional 1.4-1.5 miles of fence, and would result in three changes to the allotment boundary where the water gaps would be located. Delivery of materials used in construction of these water gaps would be done using pack animals, as would materials needed for maintenance. Monitoring would also be done using primitive, non-motorized methods.

One spring development, five wells, one pipeline, and seven troughs would be located on private land.

Of the proposed range improvements, nine of 26 are new improvements within WSAs and wilderness. One would be the removal of an existing fence within a WSA and three would be new fences associated with water gaps that would be located within Steens Mountain Wilderness, two of which would also be partially within a WSA. Table 6 shows proposed range improvements and which, if any, WSA is affected.

In addition, AMP components discussed under the section *Actions Common to All Alternatives except the No Action Alternative* would be incorporated as part of the new AMP.

Table 6: Alternative E: Proposed Range Improvements

ID #	Action	Within WSA?
Existing Reservoir (ER) Maintenance		
ER1	Maint.	Not in a WSA
ER2	Maint.	Not in a WSA
ER15	Maint.	Not in a WSA
TOTAL ER: 3 Maintain		
Proposed Spring Development/Protection (S)		
S1	Develop	S. Fork Donner und Blitzen WSA/Pvt
S2	Protect	S. Fork Donner und Blitzen WSA
S3	Protect	S. Fork Donner und Blitzen WSA
S4	Protect	Blitzen River WSA
TOTAL R: 1 Develop; 3 Protect		
Proposed Wells (W)		
W2	New	Not in a WSA - Private
W3	New	Not in a WSA
W4	New	Not in a WSA
W5	New	Not in a WSA - Private
W6	New	Not in a WSA
W7	New	Not in a WSA - Private
W10	New	Not in a WSA - Private
W12	New	S. Fork Donner und Blitzen WSA
W14	New	Not in a WSA - Private
TOTAL W: 9		
Proposed Pipelines (P)		
P2	1.2 Mile	Not in a WSA
P4	0.5 Mile	Not in a WSA
P6	1.6 Mile	Not in a WSA
P9	1.7 Mile	Not in a WSA
P21	1.3 Mile	Not in a WSA - Private
P22	0.6 Mile	S. Fork Donner und Blitzen WSA
TOTAL P: 6 Pipelines; 6.9 Miles		
Proposed Troughs (T)		
T2	New	Not in a WSA
T3	New	Not in a WSA - Private
T6	New	Not in a WSA
T8	New	Not in a WSA
T17	New	Not in a WSA - Private
T18	New	Not in a WSA
T19	New	Not in a WSA - Private
T22	New	Not in a WSA
T23	New	Not in a WSA - Private
T27	New	Not in a WSA - Private
T29	New	Not in a WSA
T32	New	Not in a WSA - Private
T34	New	Not in a WSA - Private
TOTAL T: 13		
Proposed Fence Removal (RF)		
RF3	4.6 Mile	S. Fork Donner und Blitzen WSA
TOTAL RF: 1 Fence Removals; 4.6 Miles		

Proposed Fence Construction (F)		
F2	0.2 or .3 Mile[36]	Blitzen River WSA / Steens Mountain Wilderness
F3	0.3 Mile	Steens Mountain Wilderness
F5	0.9 Mile	S. Fork Donner und Blitzen WSA/ Steens Mountain Wilderness
F7	0.3 Mile 1.3 Mile 1.0 Mile 2.6 Mile	S. Fork Donner und Blitzen WSA/Private S. Fork Donner und Blitzen WSA/Wilderness Home Creek WSA Not in a WSA - Private
TOTAL F: 4 Fences; 6.6 -6.7 Miles		

[36] There are two possible locations for this water-gap fence; the total length of new fence would be dependent on which location was selected.

H. Alternative F: Reduced Grazing with No Development

Under this alternative, no range improvements would be constructed. Current range improvements would continue to be maintained (under other NEPA analysis) in order to ensure functionality for wild horses and livestock. This alternative would result in the renewal of the 10-year grazing permit for South Steens Allotment, for the current permittee, with changes to terms and conditions encompassing all changes within this alternative. The 10-year term livestock grazing permit would be issued with 7,875[37] active use AUMs of livestock grazing on public land [a decrease of 1,702 AUMs (82.2%), which would be removed from the permit]. It is assumed this level of grazing would be possible in most years, without additional water sources being developed. Distribution would not be changed under this alternative since no new developments would be constructed. The season of use would be changed from April 1 through October 31 to April 15 through October 31. Livestock grazing management would follow the grazing rotation outlined in Alternative B: Proposed Action, with decreased livestock numbers and AUMs. See Table 7 for the grazing system under this alternative, showing livestock numbers and AUMs adjusted from Table 2. The BLM has authority to decrease grazing under 43 CFR 4110.3-2(b) and 4130.3-3(a).

Table 7: Grazing System for Alternative F

Pasture	Head	Year 1	Year 2	Year 3	Year 4	AUMs
Hollywood	500	Early/Defer	Rest	Early/Defer	Early/Defer	500
Tombstone	1,200	Early/Graze	Defer	Early/Graze	Defer	3,250
Steens	1,200	Defer	Early/Graze	Defer	Early/Graze	2,625
Home Creek	1,000	Early	Early	Early	Rest	1,500

In addition, AMP components discussed under the section *Actions Common to All Alternatives except the No Action Alternative* would be incorporated as part of the new AMP.

I. Alternative G: Complete Removal of Livestock Grazing

This alternative would result in the 10-year grazing permit not being renewed for this allotment, completely removing all permitted livestock grazing from the South Steens Allotment. The 9,577 AUMs of Active Grazing Preference would be removed from the permit. Under this alternative, no new range improvements would be constructed within the South Steens Allotment unless needed for another resource and analyzed as appropriate to meet NEPA requirements. Existing range improvements within this allotment would only be maintained as needed for other resources such as wild horses, following appropriate NEPA analysis. This alternative would only affect the South

[37] Between 2003 and 2012, 7,875 AUMs were the maximum livestock actual use reported. However, it is important to note that there were extenuating circumstances during many of those years, including planned prescribed fire, a settlement agreement, over-population of wild horses, and drought that resulted in fewer AUMs than permitted being utilized.

Steens Allotment on the current grazing permit. No other allotments on the current grazing permit would be affected by selection of this alternative.

AMP components discussed under the section *Actions Common to All Alternatives except the No Action Alternative* would only apply under this alternative when they are not related to livestock grazing.

J. Comparison of Alternatives

Table 8 provides a comparison of Alternatives.

Table 8: Number/Miles of Development per Alternative

Proposed	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E	Alt. F	Alt. G
Active Grazing Preference AUMs	9,577	9,577	9,577	9,577	9,577	7,875	0
Removed AUMs	0	0	0	0	0	1,702	9,577
Reservoir Maintenance (Outside WSAs)	0	4	3	2	3	0	0
Reservoir Maintenance (Within WSAs)	0	9	13	5	0	0	0
Reservoir Abandonment (Within WSAs)	0	9	7	2	0	0	0
New Reservoirs (Within WSAs)	0	9	17	1	0	0	0
Spring Development (Within WSAs)	0	2	4	2	1	0	0
Spring Protection (Within WSAs)	0	2	0	2	3	0	0
Riparian Exclosure (Within WSAs)	0	1; 0.3 Miles	0	0	0	0	0
Wells (Outside WSAs)	0	3	6	6	9	0	0
Wells (Within WSAs)	0	0	4	4	0	0	0
Pipelines (Outside WSAs)	0	2; 0.6 Miles	3.4; 5 Miles	4.4; 7.2 Miles	5; 6.3 Miles	0	0
Pipelines (Within WSAs)	0	0	6.6; 9.6 Miles	8.6; 10.3 Miles	1; 0.6 Miles	0	0
Troughs (Outside WSAs)	0	3	10	10	13	0	0
Troughs (Within WSAs)	0	2	14	12	0	0	0
Fence Removal (Within WSA)	0	0; 0 Miles	0; 0 Miles	1; 2.1 Miles	1; 4.6 Miles	0	0
Fence Construction (Outside WSA)	0	0	0	0	0.5; 2.6 Miles	0	0
Fence Construction (Within WSA/Wilderness)	0	0; 0 Miles	0; 0 Miles	1; 3.0 Miles	3.5; 4.0-4.1 Miles	0	0

K. Alternatives Considered but not Fully Analyzed

Six additional alternatives were considered, but not analyzed in detail because they did not meet the entire Purpose of and Need for Action. These alternatives were a modified season of use, change of class of livestock, complete removal of wild horses, relocating wild horses to Steens Mountain Wilderness, water hauling, and herding.

1. Modified Season of Use

This alternative was eliminated because the Purpose of and Need for Action of includes providing live, reliable, late-season water, which would not be met just by modifying the season of use. In addition, modifying the season of use would not protect riparian areas since wild horses are present year-round, and they are a causal factor, along with livestock and juniper encroachment, in not achieving Standards in the Steens Pasture. Additionally, all other Standards are being achieved fully throughout the allotment under the current season of use, and all pastures are conforming to Guidelines. The current and proposed season of use covers early, graze, and defer grazing treatments, and allows for flexibility and management of livestock.

Winter grazing is not feasible within this allotment as snow levels and road conditions would inhibit access to the area; livestock mortality rates would be higher if access is limited preventing regular livestock checks. Supplemental feeding would be needed with winter grazing due to snow; supplemental feeding is not generally permissible under BLM regulations. The allotment is also home to the South Steens HMA, which means wild horses are within the allotment year-round. Therefore, care needs to be taken to ensure wild horses are left with sufficient feed at all times, but especially during the winter when snow levels may decrease the ability to graze large portions of the allotment. Winter grazing by livestock would result in both wild horses and livestock utilizing the same areas where vegetation would be accessible.

Early spring grazing would not be possible in most years due to snow, wet, muddy, and cold conditions, which would limit management of livestock and forage availability and production within the allotment. By limiting livestock grazing to an early/graze treatment, grazing every year could cause long-term trend on plant communities to deteriorate since grazing would occur annually during the growing season. Therefore, pastures would not achieve Standards or conform to Guidelines.

Modifying use could also affect the economic viability of the permittee, as well as decrease the permittee's ability to rest private property adjacent to the allotment, which the permittee currently manages for Greater Sage-Grouse habitat. The permittee/private landowner is currently working with the USFWS on Candidate Conservation Agreement with Assurances and has requested Candidate Conservation Agreements for all BLM allotments.

2. Change of Livestock Class

Converting livestock class from cattle to sheep was determined to be unfeasible due to the proximity of the allotment to bighorn sheep habitat. In addition, it would not be economically feasible or satisfy the need for reliable water, which would still be needed for wild horses and sheep. In addition, most pastures are

conforming to Guidelines with only one pasture (Steens) not currently achieving Standards (see Table 1). Changing from cattle to sheep would remove livestock from the riparian areas that are not achieving Standards, due to herding, but Standards would not make significant progress towards achievement due to the continued presence of wild horses.

Bighorn sheep occasionally inhabit the area, which could result in contact with domestic sheep. Interactions between wild and domestic sheep have proven to be detrimental to bighorn sheep populations. In recent years, biologists and veterinarians have shown that even casual contact may lead to respiratory disease and fatal pneumonia in bighorns (Onderka and Wishart 1988, Schommer and Woolever 2001). In the summary of their disease overview, Schommer and Woolever (2001) quote several scientists concluding contact between bighorn and domestic sheep increases risk of bighorn mortality. A complete range of causal agents that lead to these disease events cannot be conclusively proven at this point. Therefore, segregation of these two species is the best management tool until more scientific research is completed. If sheep were allowed to graze within the South Steens Allotment, the 46-year effort to reestablish native California bighorn sheep on Steens Mountain could be jeopardized.

Additionally, the permittee's facilities are not currently capable of accommodating sheep, as they are currently set up for cattle production. Changing from cattle to sheep production would require a complete change of their facilities including, but not limited to rebuilding chutes, corrals and fences, and building lambing sheds. A change in employees would also be expected to occur with hiring of experienced sheepherders and the dismissal of current cattle wranglers. Predator control would have to be addressed at a higher intensity, and the purchase of sheepdogs would be needed. All of these changes would require a large input of capital from the permittee.

Sheep use is controlled by a herder that is with them continually and responsible for determining where grazing and when moving occurs. This type of use would intensively manage utilization levels and timing of use, and provide more uniform distribution and utilization patterns. To provide the most effective use of the allotment, it would be expected that interior fences would be removed. Removal of fences would benefit the free-roaming nature of wild horses and may aid in improved wild horse distribution across the HMA.

3. Complete Removal of Wild Horses

Complete removal of wild horses from the South Steens Allotment was eliminated from detailed analysis for the following reasons.

- The Wild Free-Roaming Horses and Burros Act requires the BLM to protect and manage wild horses in areas they were found at the time the act was passed and in a manner designed to achieve and maintain a

thriving ecological balance in keeping with the public land, multiple-use concept;

- The Steens Mountain CMPA RMP provides for viable wild horse populations in South Steens HMA. Removal of wild horses and closure of HMAs (even if partial) can only be conducted during the land use planning process or within an RMP revision or amendment. This document is not a land use plan allocation; therefore, removal of wild horses is outside the scope of this analysis;
- Wild horses are a supplemental value in all of the WSAs within South Steens Allotment;
- Current funding for wild horse gathers is scarce. Complete removal is difficult and would take multiple gathers, as wild horses are often spread out over large areas; and
- Rangeland conditions are currently achieving Standards in all but one pasture (Steens Pasture; see Table 1), with other viable options for achieving Standards. All pastures are conforming to Guidelines.

4. Permanently Relocating Wild Horse to Steens Mountain Wilderness Portion of the HMA

Permanently relocating all wild horses from the South Steens Allotment portion of the South Steens HMA to the Steens Mountain Wilderness portion of the HMA would not comply with the Steens Mountain CMPA RMP; which provides for viable wild horse populations in the entire South Steens HMA, including the South Steens Allotment, as well as a portion of the Steens Mountain Wilderness that is outside the allotment. Permanently relocating wild horses from South Steens Allotment would result in the allotment portion of the HMA becoming an inactive part of the South Steens HMA. This would also result in a decrease in the current AUM allocation for wild horses since none of the AUMs from within the South Steens Allotment would be available. To adjust for the decrease in AUMs, the HMA would have to be expanded somewhere else, or the AML would have to be decreased to the level that could be supported by the Steens Wilderness portion of the HMA and other allotments. Elimination of wild horses and closure of HMA's (even partial closures) can only be conducted during the land use planning process or within an RMP revision or amendment; which is outside the scope of this analysis.

Permanent removal of all wild horses from South Steens Allotment would not be in conformance to the Wild Free-Roaming Horses and Burros Act that requires the BLM to protect and manage wild horses in areas they were found at the time the act was passed in a manner designed to achieve and maintain a thriving ecological balance. This includes the South Steens Allotment portion of the HMA.

Additionally, relocating all wild horses to the Steens Mountain Wilderness portion of the HMA would not meet the Purpose of Action to "provide for better

wild horse and livestock distribution". The Steens Mountain Wilderness portion of the HMA does not provide year-round habitat for wild horses due to deep snow during most winter months, which would prevent free-roaming migration to their winter range. During most winters, this would result in dire impacts to herd health.

5. Water Hauling

The hauling of water to existing reservoirs, and installing new troughs for water storage, was not fully analyzed since it would not meet the entire Purpose of and Need for Action. When livestock are not present in a pasture, water would not be hauled; therefore, water would not be available for wild horses on a reliable and regular basis. In addition, water hauling would not be economically feasible. The permittee is located approximately 35 miles, and the BLM office is approximately 90 miles, from the allotment. The time and cost associated with hauling water on a daily basis during drought years for the BLM could cost as much as $6,848 just for vehicles per season [180 miles @ $0.21/mile (General Services Administrative, GSA, rate to cover fuel, maintenance and insurance) x 30.41666 days/month x 5 months) + $220/month x 5 months]. If the rate were the same[38], it would cost the permittee approximately $2,218 per season just for the vehicle use to haul water. Labor, time, water, and the purchase or rental of a water tanker, or other appropriate vehicle, is not included in this total and would increase the cost of hauling water by thousands of dollars per year. Routes throughout the allotment would need to be maintained and/or upgraded in order to get equipment to prime locations to dispense water and improve wild horse and livestock distribution across the allotment. This would be an issue since many of the routes within the allotment are actually "ways" found within WSAs that have strict maintenance limitations. Water hauling would not meet the purpose and need if the water could not be spread throughout the allotment to improve livestock distribution. If road conditions were insufficient to provide for water hauling under all conditions, including wet and muddy conditions, water hauling would not meet the purpose and need of providing a reliable water source for livestock.

Assuming cattle within the pasture are lactating (which is generally true since cow-calf pairs are typically turned out into this allotment), they would require 20 gallons of water per day[39] (NRC, 2000) and 608 gallons per AUM (20 gallon x 30.41666 days/month). Assuming all 9,577 AUMs are permitted, approximately 5,826,007 gallons of water would be needed. Using a 3,000-gallon tanker, this would be up to 1,942 water hauling trips[40] to provide water for livestock. This

[38] The permittee rate to haul water would follow current market prices, not the GSA rate. The calculation was based on the GSA rate since future market prices cannot be known.
[39] Assuming a temperature of 70 degrees Fahrenheit and a 1,100-pound cow. Non-lactating cows require only nine gallons per day.
[40] This is assuming drought conditions with no available water. Water hauling would be something less than this depending on what water was available at existing developments.

does not include the water need for wild horses. Assuming average weight for wild horses is 1,050 pounds, the Merck Manual (Kahn 2005) suggests horses require a minimum of 4.2 gallons per day, with an average intake of 6.8 gallons, and could be as high as 13.65 gallons. Therefore, to meet the water requirements of the South Steens HMA at least 668 gallons per day would be required (when at the low end of AML). When water requirements are at a maximum and AML is at the high end, up to 4,150 gallons would be needed per day. Hauling water to wild horses would result in an additional water tanker delivery at least every four to five days up to at least one tanker delivery per day. If water was hauled for wild horses, year around, at least 243,747 gallons of water would need to be hauled in, but the requirement could be as high as 1,514,604 gallons, which would equate 82 to 506 tanker loads, respectively.

6. Herding

This includes the herding of livestock, removal of fences, and rejection of all proposed range developments. This alternative was eliminated from detailed analysis for the following reasons.

- The riparian areas would receive less use if cattle were successfully kept out of the riparian areas. However, wild horses would still congregate in riparian areas (Ostermann-Kelm et al. 2008, Crane et al. 1997), since they do not respond to herding and typically run when approached by people on horseback or foot (Jewett et al. 1983), making it unlikely herding would allow these areas to make significant progress toward achieving Standards.
- While herding is a simple idea, much is needed to successfully implement cattle herding as a livestock management strategy. In these four large pastures, two to five riders would have to work this area every day. It takes several years for the cattle to get used to changed management. Problems that often occur during this learning period include: 1) small groups of cattle getting separated from the main bunches and ending up spending long periods of time near springs or other water sources; 2) placement of cattle in areas where it is very difficult to get them to stay; 3) figuring out the good and poor cattle locations; and 4) finding cattle once they become separated from the herd. This puts stress on the cattle which results in reduced performance and can require additional labor until livestock become familiar with the herding process. Even a few animals within riparian areas for an extended period can damage riparian areas. When herding was prescribed under the 1995 AMP, the focus of the herding was to keep cattle away from riparian areas associated with streams and creeks, with little effort to keep livestock away from riparian areas that occur in the uplands.

Combining strategic supplement placement with herding has shown synergistic benefits (Bailey 2004). Providing offsite attractants such as alternate water, shade, or supplements, along with herding, appeared to be more effective for

riparian management than herding alone (Bailey 2004). Monitoring of intensive herding management in Idaho found that the program was successful when the herder showed a consistent daily presence on the allotment (Butler 2000). If the herder missed just one day, the cows became unsettled and often refused to be herded (Butler 2000).

In order for herding to maximize ecological benefit, the herder would need to be able to access all water sources from all locations. Since fences would limit this, fence removal would likely occur. By removing fences, the herder would always be able to access the most appropriate water source without having to move the herd through the limited gates that currently exist within the allotment. If the herder regularly moved an entire herd through a limited number of gates, it would result in an increased number of trails and permanent ecological disturbance. If they were able to travel to water following a slightly different route each time, fewer trails and ecological disturbance would occur. Cost to completely remove the 23 miles of existing fence would be approximately $184,000 ($8,000/mile x 23 miles). If this alternative were unsuccessful, it would cost approximately the same amount to reconstruct the fences removed to return to non-herding management of livestock.

CHAPTER III. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This environmental consequences section presents the potential changes to the environment resulting from implementation of the alternatives. This chapter describes all expected effects, including direct, indirect, and cumulative effects, on resources from enacting the proposed alternatives.

This document is tiered to the August 2004 AMU/Steens Mountain CMPA Proposed RMP(PRMP)/Final EIS (FEIS). The environmental consequences and cumulative effects sections in the Andrews/Steens PRMP/FEIS describe potential environmental consequences to the greater environment of the South Steens Allotment and are incorporated into this document by reference in accordance with the CEQ regulations 43 CFR 1502.2.

Direct and indirect effects, plus past actions, become part of the cumulative effects analysis; therefore, use of these words may not appear. The Reasonably Foreseeable Future Actions (RFFAs) for this site are continued livestock grazing, wild horse use, wild horse gathers, weed treatments, road maintenance, recreation activities, and the North Steens Project; these are also relevant to cumulative effects and are discussed under each resource, as applicable.

The North Steens Project is a landscape-level project, the goal of which is to reduce juniper-related fuel loading, and improve the ecological health of the area, by encouraging a healthy functioning ecosystem through appropriate land treatments. Treatment techniques include a combination of prescribed fire, juniper treatments, fencing, seeding, and planting in order to reduce fuel loads, restore vegetative communities, improve habitat, and increase forage for

wildlife. Project activities primarily occur above 4,500 feet and below 7,200 feet, concentrating on the "juniper belt". The North Steens Project Area includes the entire South Steens Allotment.

The North Steens 230-kV Transmission Line Project ROD was signed on December 28, 2011 by Secretary of the Interior Ken Salazar in Washington D.C. The ROD contains a ROW grant decision under Title V of the FLPMA. BLM's decision is to issue new ROW grants to Echanis, LLC for a 230kV overhead electric transmission line, new and existing access roads, overland access routes, and temporary tensioning sites. The FEIS was made available on October 21, 2011. On March 16, 2012, the BLM issued a ROW to Echanis, LLC for the North Steens 230-kV Transmission Line Project. On April 5, 2012, the ONDA appealed the decision in the U.S. District Court of Appeals. The court found for the BLM on all counts on September 11, 2013. ONDA has appealed the decision to the 9th Circuit Court. No ground disturbing activities have taken place. All of the wind farm developments and portions of the transmission line are on private land, but were analyzed in the FEIS as connected actions under NEPA. The Echanis Project site, located completely on private land, is more than 15.5 miles from the eastern edge of the South Steens Allotment. All other components of this project are also more than 15.5 miles from the allotment.

Currently, a Comprehensive Recreation Plan is being developed by the BLM, which may affect some resources; however, this document is still in process and is subject to change based on public comments on NEPA analysis and subsequent administrative remedies. Therefore, this plan is not being considered a RFFA or included in the analysis of cumulative impacts. Scoping has also begun for the South Steen HMA Gather, but that document is also still in process and subject to change.

The IDT reviewed the elements of the human environment, as required by law, regulation, Executive Order, and policy, to determine if they would be affected by any of the alternatives. The IDT has also reviewed and identified issues and resources affected by the alternatives. The results are summarized in Table 9. Affected elements are shown in bold.

Table 9: Issues/Resource Table

Issues/Resources	Status	If Not Affected, Why? If Affected, Reference Applicable EA Section
Areas of Critical Environmental Concern (ACECs)	Not Present	There are no ACECs within this allotment.
Air Quality (Clean Air Act)	Not Affected	ODEQ is responsible for air quality permit requirements at facilities and for operations in Oregon. ODEQ currently requires no air quality permit for existing operations in the project area. The dust produced from livestock movement, range improvement construction, and vehicle use would be intermittent and not measurable.
American Indian Traditional Practices	Not Affected	No known American Indian Traditional Practices areas occur within the allotment.
Cultural Heritage	**Affected**	**See Chapter III, Part A.1**
Environmental Justice (Executive Order 12898)	Not Affected	The Proposed Action and alternatives would not have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations, as such, populations do not exist within the project area.
Farmlands (prime or unique)	Not Present	There are no prime or unique farmlands within the allotment.
Fisheries	Not Affected	Effects to fish species would be the result of effects to water quality (temperature or increased sediment), and water quality is addressed in the Riparian Zones, Wetlands, and Water Quality section of this document (see Chapter III, Part A.5). No measurable effects to fish for any of the alternatives are anticipated.
Flood Plains (Executive Order 13112)	Not Present	There is no occupancy or modification of flood plains and no risk of flood loss.
Grazing Management and Rangelands	**Affected**	**See Chapter III, Part A.2**
Hazardous or Solid Waste	Not Present	No known hazardous or solid wastes are in the allotment.
Lands and Realty	**Affected**	South Steens Allotment currently has several improvements in which BLM has no legal access (easement, memorandum of understanding, and/or cooperative agreement). The BLM has entered into negotiations with the private landowner to obtain legal access by easement to locate, construct, use, control, maintain, improve, relocate, and/or repair the existing improvements on private property as well as those that may be constructed on private property in the future. Related Actions would be evaluated in a separate document.
Migratory Bird Treaty Act (Executive Order 13186)	**Affected**	At most (under Alternative C), approximately 5% of the available habitat within the allotment would have some level of reduced vegetation that might affect migratory birds. However, areas adjacent to the allotment also support habitat, so at most only 2% of available habitat in the vicinity would be affected. Due to the varying presence and habitat needs of migratory birds, other effects would be nebulous and will not be further analyzed in this EA.
Noxious Weeds (Executive Order 13112)	**Affected**	**See Chapter III, Part A.3**
Paleontology	Not Affected	No alternative would have an affect beyond what has occurred in the past.
Recreation and Visual Resources	**Affected**	**See Chapter III, Part A.4**
Riparian Zones, Wetlands, and Water Quality (Executive Order	**Affected**	**See Chapter III, Part A.5**

11990)			
Social and Economic Values		**Affected**	**See Chapter III, Part A.6**
BSCs		**Affected**	**See Chapter III, Part A.7**
SSS and Habitat	**Wildlife**	**Affected**	**See Chapter III, Part A.8**
	Plants	Not Affected	If SSS plants were found during the botanical clearance, these sites would be avoided. *Potemegton diversifolius*, which is currently known to exist in Tombstone Reservoir, would not be affected since no actions are currently proposed for that reservoir.
	Fish	Not Affected	Since effects to redband trout would be the result of effects to water quality (temperature or increased sediment), and water quality is addressed in the Riparian Zones, Wetlands, and Water Quality section of this document. No measurable effects to redband trout are anticipated for any of the alternatives.
T&E Species or Habitat	Wildlife	Not Present	There are no known T&E species or habitat found within the allotment.
	Plants	Not Present	There are no known T&E species or habitat found within the allotment.
	Fish	Not Present	There are no known T&E species or habitat found within the allotment.
Upland Vegetation		**Affected**	**See Chapter III, Part A.9**
Wild Horses		**Affected**	**See Chapter III, Part A.10**
WSRs / Wilderness		**Affected**	**See Chapter III, Part A.11**
WSAs		**Affected**	**See Chapter III, Part A.12**
Wilderness Characteristics		Not Present	See Chapter I, Part K.1
Wildlife, Locally Important Species and Habitat		**Affected**	**See Chapter III, Part A.13**

A. Resources

1. Cultural Heritage

Affected Environment: Cultural Heritage

The South Steens Allotment has not received a high-level cultural resources survey. A research survey in the late 1970s and inventories for reservoirs, spring development, fuels treatments, and rock source development are the primary sources of cultural resource data in the allotment. These surveys found prehistoric archaeological sites associated with a number of topographic and hydrological features such as hilltops, low rims above relic water courses, playa lakes, springs, and modern watercourses. The adjacent Riddle Brothers Ranch has been completely inventoried with the discovery of 47 prehistoric sites within the approximately 1,000-acre Riddle Brothers Ranch. Although the Riddle Brothers Ranch probably has a high-site density because of access to the perennial

Little Blitzen River, many sites in the Riddle Brothers Ranch are not near the river. Slightly lower-site densities are expected in the upland portions of South Steens Allotment and similar site densities are expected near perennial water sources when compared to the Riddle Brothers Ranch. Several prehistoric sites in the Riddle Brothers Ranch are considered very important in the region. They are long-term village sites probably used nine months a year. At least three similar sites are known to occur within the allotment and one of the three prehistoric rock art sites on Steens Mountain occurs in the allotment. One site has both very old (over 7,000 years) rock art and has some of the oldest buried deposits on the mountain. The probability that more NRHP eligible sites occur within the allotment is very high.

South Steens Allotment has been grazed by sheep, cattle, and wild horses for up to 130 years. In former times, prior to the Taylor Grazing Act of 1935, grazing on public lands was essentially uncontrolled. After the Taylor Grazing Act, the allotments were tied to base property, shutting out former grazers without base property, and reducing the number of livestock on public lands. This situation exerted some control over grazing on public lands, which continued to be the responsibility of the Grazing Service. Under the Grazing Service, and then under the BLM beginning in 1946, the number of grazing managers was low, the number of grazers was high, and the pattern of grazing was more intense than it is today. Even as late as the early 1960s, grazing levels were considerably higher than current levels because grazing management had not been developed to the degree it is today. Cultural resource sites were affected more intensely and to a greater depth in the past than under the more refined, controlled grazing management of today's practices (Thomas 2013, personal communication).

Based on field observations by BLM cultural resources staff over the last eight years, the estimated average grazing effects on cultural resource sites has occurred in the top 12 inches of sediment. These effects are plant pedestalling, hoof shear, and surface scuffing. The deepest disturbance is seen in congregation areas where concentrated hoof shear is most common. Generalized grazing, where light hoof shear and scuffing are the most common effects, has produced light (2inches) to moderate (6 inches) damage. The conclusion of these observations is most sites have sustained a certain amount of grazing effects over the years.

Archaeological sites are essentially databanks of prehistoric behavior. In order for archaeologists to study and interpret this data, it has to remain in the same horizontal and vertical position it was in when deposited in the past. Once the horizontal and vertical positions of these bits of data are scrambled by an outside force, the data can no longer be reliably retrieved and interpreted. In essence, once the top 12 inches of sediment at an archaeological site is churned, it no longer retains data potential and the site has lost integrity in that portion of the deposit. If outside forces (e.g. frost heave, rodents, etc…) again churn the deposit, the net effect on the site is zero because it is already disturbed.

Therefore, disturbance of the already disturbed deposit is not an effect from a scientific or regulatory perspective.

Where outside forces continue to disturb deposits deeper than 12 inches an effect is occurring. This type of effect is what is seen in or adjacent to livestock congregation areas but not in generalized grazing areas of this allotment.

Environmental Consequences: Cultural Heritage

Effects Common to All Alternatives

Observations, at livestock congregation areas, and geomorphological factors lead to the conclusion that congregation areas (either current or future) are the only locations of on-going grazing effects to cultural resources sites. The cycle of ground disturbance, absence of vegetative cover, and resultant water and wind erosion lead to continued loss of sediment, which could continue until bedrock is exposed. Cultural materials anywhere within the sediment column would eventually be exposed to surface trampling. When the deepest cultural materials are exposed to surface trampling, site integrity would be reduced to near zero.

Alternatives that include new methods of spreading grazing impacts more evenly over the allotment are not expected to increase the effects on cultural resources, except where new congregation areas would arise. New congregation areas could arise due to spring developments, new water trough placements, changes in the fencing pattern within the allotment and new exclosure fences around riparian areas or formerly unfenced spring developments. It is in these areas around new range developments that new effects, particularly hoof shear, detrimental to cultural resources could be seen. Cultural resource clearances would occur prior to the development of any range improvement, and any sites found would be avoided as described in the PDE, in order to eliminate effects from construction and prevent the cultural site from becoming a congregation area.

Generalized grazing effects by livestock or wild horses would not be measurable under each alternative. Only effects in congregation areas may be measurable.

For the purposes of this analysis, the Cumulative Effects Analysis Area (CEAA) for cultural resources is at the allotment. All action alternatives[41] and other ongoing and RFFAs would not lead to cumulative effects to cultural resources because proposed projects would be localized or the sites would be completely avoided per PDEs. Potential direct and cumulative effects to cultural resources would be mitigated through project-specific cultural resource inventory and mitigation measures prior to any project implementation. The extent that sites have been affected by livestock trampling in the past has not been adequately measured and quantified due to a historic lack of information on the sites

[41] Action alternatives include active disturbance, such as the construction of range improvements.

themselves prior to the late 1970s when archaeologists were first employed by the BLM for inventory and monitoring.

The South Steens Allotment is the focus of fuels reduction and habitat improvement efforts under the North Steens Project, which is a RFFA. This project proposes to remove, through cutting and burning, thousands of acres of juniper within the allotment. Juniper in known cultural resources sites would not generally be cut. Prescribed fire, other than low-intensity surface fires, would not occur within cultural sites.

Alternative A: No Action

Under the No Action Alternative, cultural resources would not be affected by grazing, except where they are already located in existing congregation areas, typically located around water sources, where hoof shearing already occurs. No new developments would be constructed affecting cultural resources.

Alternative B: Proposed Action

Under the Proposed Action, cultural resources would not be affected by grazing effects, except in existing and new congregation areas that might arise near proposed range developments.

New range improvements such as reservoir construction, spring developments, placement of livestock water troughs, exclosure fences and other fencing projects all create new livestock congregation areas and could damage cultural resources within these areas. While PDEs require avoidance of cultural sites, any unidentified sites or nearby sites would be at greatest risk of future damage. Maintaining existing reservoirs would lead to continued disturbance in the existing congregation areas.

Any cultural site determined to require protection would be evaluated in consultation with the Oregon SHPO to determine its National Register eligibility. If found eligible, additional protection measures, such as fencing, would be required.

The large concrete cistern, measuring 48 feet by 30 feet by six feet deep is located at Burnt Car Spring. It has been documented by Burns BLM cultural staff and is at least 50 years old, judging by its construction method and weathered appearance. It has not been evaluated for eligibility for nomination to the NRHP and efforts are on going to determine its historic context. Physically modifying the cistern would affect its physical as well as historic integrity. If the cistern were found eligible for nomination to the NRHP, mitigation of the effect of modifying it would entail documentation of the feature through a Historic American Engineering Record in consultation with the Oregon SHPO and National Park Service. Reducing the ability for animals to fall into the cistern,

and providing a method for them to exit the cistern, using natural materials, would not affect the integrity of the site since they are not permanent modifications.

Alternative C: Maximum Water Distribution

Under Alternative C, effects would be similar to Alternative B.

However, Alternative C has the potential to have the greatest effect on cultural resources of all the alternatives because it proposes the greatest number of new and maintained range improvements.

Alternative D: Along Road Development

Under Alternative D, effects would be similar to Alternative B, less than Alternative C, and greater than Alternative E.

Alternative E: Edge Development

Under Alternative E, effects to cultural resource sites would be fewer than all the action alternatives because it has the fewest proposed range improvements.

Alternative F: Reduced Grazing with No Development

Under Alternative F, cultural resources would not be affected by grazing, except in existing congregation areas, which are already being affected.

Alternative F would affect cultural resources less than the No Action Alternative because grazing would permanently be reduced in the allotment, thereby decreasing use levels of existing congregation areas and associated hoof shear at those sites.

Alternative G: Complete Removal of Livestock Grazing

Under this alternative, cultural resources would not be affected since no livestock grazing or new range improvements to benefit livestock grazing would be allowed within the allotment. Hoof shearing by livestock would no longer occur in areas where it currently occurs, reducing the risk of additional damage to cultural resources at those sites. No maintenance would occur on existing range improvements (for the benefit of livestock), eliminating the possibility of damaging cultural resources at these sites.

2. Grazing Management and Rangelands

Affected Environment: Grazing Management and Rangelands

Authorized use consists of one cattle grazing permit (#3602570) in this allotment. The permitted active use for this permit is from April 1 through October 31, equaling 9,577 AUMs of active use within the allotment. Cattle numbers can fluctuate annually, as long as the AUMs of total active use on the allotment are not exceeded. In addition to the 9,577 AUMs allocated for livestock, 500 AUMs are allocated for deer, 22 AUMs for antelope, 60 AUMs for elk, and 3,540 AUMs for wild horses (Andrews/Steens RMP, J-10).

In this allotment, there are intermixed private lands within BLM-managed pastures (Table 10). The allotment is partially fenced with livestock movement out of the allotment on the north, south, and west sides completely limited by topographic features, on the north, south, and west sides. However, the east side of the allotment, bordering the Donner und Blitzen WSR, is only partially fenced. The partial fence in combination with using topography and gap fences usually prevents livestock movement out of the allotment. In addition, a portion of the pasture boundary fence between Tombstone and Steens pastures is not solid, relying on topographical barriers in some areas. Due to the allotment and pastures not having solid fences, livestock occasionally get into areas they may not be authorized. This issue is mitigated by the permittee pushing livestock back to the authorized areas as soon as they become aware of the issue. Without a solid fence, this issue can be mitigated, but not completely resolved.

Table 10: Percent Public and Private Land per Pasture based on Acres[42]

Pasture	% Public	% Private
Hollywood	92.4	7.6
Home Creek	78.0	22.0
Steens	99.4	0.6
Tombstone	98.9	1.1

In 1976, 16,225 AUMs were grazed within the South Steens Allotment, with 5,264 AUMs not used due to high wild horse numbers. Grazing that year occurred between April 1 and December 31. Utilization studies from that year show that the entire area currently within the South Steens Allotment was grazed. FLPMA grandfathers in grazing use, as it was permitted in 1976, not what was specifically authorized for that grazing year. Therefore, the grazing permit for South Steens at that time is what was grandfathered in. The current grazing permit and those proposed within this document, include fewer AUMs and a shorter season of use for the allotment than what was on the grazing permit in

[42] This table does not show %PL as discussed under the Proposed Action description. This table shows percentage of ownership and is based on acreage, while %PL is based on forage production.

1976. However, this allotment was much larger in 1976 due to changes occurring following the Steens Act.

In 1995, the South Steens Allotment consisted of 10 pastures, totaling 332,400 acres (private and public). Livestock use was permitted for 21,197 AUMs on public land and followed an adaptive rotational grazing system. In the adaptive rotational grazing system, livestock were turned out at lower elevations and moved up Steens Mountain where they summered, before returning to the lower elevations and being gathered.

In 2000, following the Steens Act, AUMs were reduced to 19,133. During the Steens Act three-year implementation period (2000-2003), AUMs were further reduced to 9,577 AUMs, the current active permitted use. The permittee has not used the allotted 9,577 AUMs since the implementation was completed (see Table 11 for the actual use AUMs following the Steens Act). This non-use was voluntary for resource conservation as the permittee and BLM were concerned that using the full permitted use would result in a downward trend in areas within a two-mile grazing zone around the limited reliable water sources. In addition to the water issue, there were other circumstances such as the North Steens Project, also resulted in fewer AUMs being used than authorized. In this instance, the voluntary reduction of AUMs is not related to a lack of forage within the allotment, but the inability for animals to access the forage due to a lack of water in the central portion of the allotment that resulted when the Donner und Blitzen River was fenced and became unavailable for livestock and wild horse watering.

Table 11: Actual Use for South Steens Allotment (2000-2012)

Year	Actual Use AUMs
2000	3959
2001	No Data
2002	3805
2003	4513
2004	7875
2005	No Data
2006	2241
2007	5865
2008	7011
2009	2046[43]
2010	6162
2011	2409
2012	5508

Following the Steens Act, grazing was modified for the four remaining pastures. Under the updated system, in two consecutive years livestock grazing starts at the north end of the allotment in May, after which cattle moved south through Tombstone Pasture, and removed from Steens Pasture on or before October 1.

[43] Tombstone Pasture was not used in 2009, 2011, or 2012, as required by the BLM for reasons other than ecological concerns.

For the following two years, cattle would start on the south end of the allotment, in Home Creek Pasture, then moved north through Steens and Tombstone Pastures, and removed from Hollywood Pasture in October. This grazing system was designed to provide rest during the growing season for native upland and riparian key forage species in two consecutive growing seasons for each pasture, on a two-year cycle. However, due to circumstances within the allotment, this grazing system has not been consistently implemented.

Within the South Steens Allotment, there are 22 reliable water sources in addition to Home Creek in the Home Creek Pasture, and the Tabor Cabin water gap in the Steens Pasture. There are 18 waterholes with variable reliability and 29 unreliable waterholes. In general, existing waterholes are located on the western half of the allotment due to the Donner und Blitzen River historically servicing the eastern portion of the allotment. Therefore, waterholes that are currently present have poor distribution across the allotment, with few reliable water sources in the eastern portion of the allotment. As the unreliable or variable water sources dry-up, wild horses and livestock are forced to congregate at fewer water sources. This concentration of livestock and wild horses causes increased utilization of upland and riparian vegetation around water sources, often to the point of heavy or severe utilization (61 to 100%) as is often the case with Three Springs, and Long Dam, Tombstone, and Kundert Reservoirs (based on field observations).

Currently, using a two-mile use area around reliable water[44], including Home Creek, only 83.3% of the allotment (78,818 acres) is available to livestock and wild horses within the allotment. Two of the reliable waterholes and a portion of Home Creek are currently located on private property. The BLM has no existing easement and the landowner[45] could stop providing wild horse and livestock access to them without warning or compensation, further reducing the reliable water supply within the allotment. In addition to the constructed water sources, wild horses and livestock are also able to water at four undeveloped spring complexes (one in Tombstone Pasture and three in Steens Pasture), which typically become muddy (water quality becomes poor) as the season progresses due to wild horse and cattle use, and Home Creek (located in Home Creek Pasture). The area where forage is available for grazers can be seen on Map 5 – Use Area Based on Reliable Water and Map 6 – Use Area Based on Reliable Water Not on Private Property.

Table 12 describes actual utilization levels, by pasture, for South Steens Allotment. The Tombstone Pasture was rested in 2009, 2011, and 2012. Grazing

[44] The two-mile use area is based on research by George et al. 2007, Ganskopp 2011, and Holechek et al. 2001. It is acknowledged that use areas may be smaller due to other factors, such as rockiness and topography (George et al. 2007, Holechek et al. 2001, Stuth 1991, Cook 1966).
[45] The private landowner within this allotment is currently the permittee.

was resumed in this pasture in June of 2013. Use shown in 2009 was from wild horses.

Table 12: Actual Percent Utilization of Key Forage Species for South Steens Allotment (2000-2013)[46]

Year	Hollywood Pasture (FEID, ACTH7, ELEL5[47])	Tombstone Pasture (FEID, PSSP6, ACTH7, ELEL5[48])	Steens Pasture (FEID, PSSP6, ACHNA[49])	Home Creek Pasture (FEID, ACTH7[50])
2000	65	40	34	21
2001	No Data	No Data	No Data	No Data
2002	No Data	No Data	No Data	No Data
2003	30	28	40	No Data
2004[51]	65	33	No Data	23
2005	15	36	28	No Data
2006	No Data	No Data	16	No Data
2007	46	44	23	52
2008	40	32	28	19
2009	63	55	No Data	No Data
2010	No Data	5	No Data	No Data
2011	No Data	No Data	No Data	No Data
2012	45.6	No Data	No Data	No Data
2013	47.5[52]	43.4	No Data	No Data

Steens Mountain CMPA RMP direction for the target utilization maximum of native forage plants is 50% (moderate) at the end of the growing season (RMP Grazing Management, p. 53). The modified Landscape Appearance Utilization / Key Species Monitoring Method employed by the Burns District BLM involves an observer placing areas of rangeland within grazing use categories by comparing observations with written descriptions of each utilization class. It is an ocular method; therefore, estimates are not determined by weight and cannot be directly compared to utilization percentages determined by clipping. Utilization classes are largely defined by the percentage of seed stalks of key forage species remaining in shrub interspaces after the grazing treatment; an observation indicative of the frequency of interspace grazing of grasses, similar to that quantified by France et al. (2008). Components of this method can be found in Interagency TR 1734-3, Utilization Studies and Residual Measurements. The utilization categories are No Use (0-5%), Slight (6-20%), Light (21-40%), Moderate (41-60%), Heavy (61-80%), and Severe (81-100%). At heavy utilization levels, it is expected that more than 15% of key forage species located

[46] This shows total utilization, not just livestock utilization. Therefore, livestock rest is not shown in the table since wild horses are always present.
[47] Idaho fescue, Thurber's needlegrass, and bottlebrush squirreltail [*Elymus elymoides* (Raf.) Swezey].
[48] Idaho fescue, bluebunch wheatgrass, Thurber's needlegrass, and bottlebrush squirreltail.
[49] Idaho fescue, bluebunch wheatgrass, and needlegrass (*Achnatherum* P. Beauv.).
[50] Idaho fescue and Thurber's needlegrass.
[51] Wild horses were gathered in fall of 2004 from South Steens HMA, wild horses were determined to be the major cause of exceeding the 50% target utilization in Hollywood Pasture.
[52] This is wild horse utilization from May 15, no livestock use had occurred.

under the shrub canopy are grazed (France et al. 2008). Utilization is total utilization and includes wildlife, livestock, and wild horse use. In areas where wild horses are known to congregate, utilization levels may be over 50% late in the year due to wild horse use; however, livestock are removed from those areas prior to the area exceeding 50% utilization. A weighted average is then used to calculate the overall utilization for the pasture. When water is limiting and poorly distributed in an area, large "sacrifice areas" around water sources often occur due to the increased presence of livestock at the water source (Holechek et al. 2004). Monitoring results show this higher utilization of upland and riparian species by wild horses and livestock around the current reliable water sources within the allotment.

It is expected that the majority of palatable plants occur at greater distances from water, since over time, those plants closest to water are repeatedly grazed at a higher level of utilization (Winder et al. 1996). Areas farther from water would increase in use as the area near the water source becomes over-utilized, which is why the areas near water are often utilized at very high levels becoming "sacrifice areas" while other areas are used only slightly or not at all, depending on overall distance from water (Phinney 1950). Due to the poor distribution within this allotment, as well as the limited reliable water sources, this situation is common.

The Ecological Site Inventory (ESI) was completed in 1990 for the Burns District. The following acres for each range condition class[53] category, by pasture, are shown in Table 13.

Table 13: Range Condition as Determined in ESI (Acres)

Pasture	Good	Good-Fair	Fair	Poor	N/A
Tombstone #1	7,183	13,994	8,568	0	<1
Steens #2	20,270	11,139	9,745	0	11
Home Creek #3	10,983	1,765	2,004	0	9
Hollywood #4	19	0	3,599	100	136

[53] The NRCS no longer uses this term; however, it was regularly used in range management at the time the ESI was completed.

As defined in the Natural Resources Conservation Service (NRCS) Range and Pasture Handbook (2003), range condition is defined as:

> The present status of vegetation of a range site in relation to the historic climax or natural potential plant community for the site. Range condition is expressed as a percentage of the climax plant community presently occurring on the range site and grouped into the following range condition classes:

Range Condition Class	Percentage of Climax Plant Community Present on the Site
Excellent	76-100
Good	51-75
Fair	26-50
Poor	0-25

Overall, the South Steens Allotment has approximately 38,454 acres (43.0%) in the Good class, 26,898 acres (30.0%) classified as Good-Fair, 23,916 acres (26.7%) in the Fair class, and100 acres (0.1%) in the Poor range class and (0.2% not rated)[54].

The ESI also documented the successional status (seral state) within the allotment as early, mid, late, Potential Natural Community (PNC), or some combination of those, and no data. This information for the South Steen Allotment is shown in Table 14. The successional status was determined using a similarity index that compares the status of the site to PNC as discussed in the ESI Handbook 1734-7 (2001). Using the similarity index, there are four successional status ratings. The successional status ratings are Early (0-25% similarity), Mid (26-50%), Late (51%-76%), and PNC (76-100%).

Table 14: Successional Status as Determined in ESI (Acres)

Pasture	Early	Mid	Mid-Late	Mid-PNC	Late-Mid	Late	PNC	No Data
Tombstone #1	191	7,997	13,207	0	240	7,838	272	<1
Steens #2	84	18,330	3,776	9,923	5,378	3,542	122	11
Home Creek #3	0	6,947	1,141	4,558	0	2,107	0	0
Hollywood #4	100	3,431	0	0	186	0	0	136

This data suggests that less than 0.5% of the allotment is in an early state, 41% is in a Mid, 20% is Mid to Late, 16% is Mid to PNC, 6% is Late to Mid, 15% is Late, less than 0.5% is PNC, and less than 1% has no data. This suggests that there is a large degree of diversity across the allotment, with the majority of the allotment being in a Mid to PNC state.

Within the allotment, there are some riparian areas, mostly associated with springs. Currently two of these springs are not in PFC or achieving Standards

[54] Range Condition Class was determined for BLM-managed lands only.

with grazing (both livestock and wild horse) and juniper encroachment being the causal factors. Cattle and other grazing animals generally prefer riparian areas (Clary and Webster 1989) due to the abundance of high quality, palatable forage. Cattle have been found to spend between five and 30 times more time in riparian areas than in adjacent uplands (Clary and Webster 1989). Selection for riparian areas over uplands is highest in July through September when upland plants are going dormant and riparian species are still green and palatable (Goodman et al. 1989). Riparian vegetation has a much longer growing season than upland plants due to the increased water available to them. They also often provide diversity, shade, and loafing areas making them desirable locations for grazing animals (Myers 1989). DelCurto et al. (1999) found cattle tended to loaf during the afternoon in watering areas, which could negatively affect riparian areas and water quality. This has been observed in the South Steens Allotment as grazing animal congregation in the riparian areas is more obvious later in the year. In many cases, even when timing and frequency of grazing are managed for the riparian areas, if animals are allowed to excessively graze in the riparian areas, the plant-soil-water resource would be expected to deteriorate (Mosley et al. 1999). Clary and Webster (1989) found there was no grazing system designed that was effective at ensuring the proper use of small riparian areas located within large upland pastures and that it is not the grazing system used that matters, but the ability to control use in the riparian area that plays the largest role. This is currently the issue occurring in riparian areas of the South Steens Allotment. Good management of riparian areas cannot occur unless all grazing animals can be removed following the designated use period (Clary and Webster 1989). Clary and Webster (1989) suggest riparian areas be grazed in the spring, then all grazing animals be removed, allowing riparian vegetation a chance to regrow, increasing cover which helps protect the riparian area and soil during high precipitation events. Since wild horses are a component of the allotment, it is currently impossible to fully remove all grazing animals within the allotment while following current laws and regulations.

Environmental Consequences: Grazing Management and Rangelands

Effects Common to All Alternatives except the No Grazing Alternative

For the purposes of this analysis, the CEAA for grazing management and rangelands consists of the allotment. Past and present actions, such as those described in *Affected Environment*, have influenced the existing environment within the CEAA. Past and RFFAs that have affected livestock grazing management are found in Table 15.

Table 15: Grazing Management Past and RFFAs[55]

ACTION	PAST ACTIONS			FUTURE ACTIONS		
	ACRES	MILES	NUMBER	ACRES	MILES	NUMBER
Wildfire Starts	---	---	37	---	---	Unknown
Wildfires	6041.4	---	6	Unknown	---	Unknown
Fences	---	58.3	---	---	None	---
Pipeline	---	0.5	---	---	None	---
Exclosures	2.6	---	1	None	---	None
Water Developments	---	---	69	---	---	None
Gravel Pit	125.7	---	1	None	---	None
Cutting	5352.6	---	11	6745.4	---	14
Piling	2339.0	---	8	839.4	---	7
RX Burning	9985.0	---	16	6318.9	---	20
Seeding	681	---	2	5	---	1

RFFAs in the CEAA that may contribute to cumulative effects to livestock grazing include livestock grazing under the current permit, ongoing maintenance of existing range improvements, wild horse utilization, periodic wild horse gathers to maintaining wild horse numbers within the AML, wildlife use, hunting, and other recreational pursuits, and ongoing noxious weed treatments. A major RFFA is the North Steens Project. Effects of reducing encroachment of juniper by cutting and burning will result in healthier and more vigorous sagebrush/bunchgrass plant communities. Increasing the composition of perennial grasses, forbs, and shrubs in these communities would be expected to inherently increase herbaceous forage production to all grazers. Reducing juniper dominance would be expected to increase water infiltration into the soil profile and improve ground water recharge (Deboodt et al. 2008). More available ground water would be expected to lead to more water in streams, springs, and waterholes for wild horses, livestock, and wildlife. Less reliable water sources are expected to become more reliable. Currently, juniper treatments (cutting, piling, burning, etc…) are occurring within both the Tombstone and Steens pastures, mostly north of the Steens Mountain Road (further referred to as the South Loop Road). Other areas will be determined as funding becomes available, and would follow the North Steens Project ROD. At this point in time, no broadcast burns are planned within the allotment.

All alternatives would achieve the Steens Mountain CMPA RMP (p. 53) objective to "[m]anage for a sustained level of livestock grazing while maintaining healthy public land resources." However, some degree of uncertainty would remain with respect to full use of authorized AUMs from year-to-year and would require an increased level of monitoring to ensure ecological damage did not occur, especially in places where use areas are smaller than the estimated two miles.

[55] This table, and all Past and RFFAs tables throughout the document, does not include unplanned or speculative actions. This table and all Past and RFFAs tables throughout this document are estimated based on currently available information and are subject to change.

Alternative A: No Action

The No Action Alternative is a continuation of the current AMP, under a renewed Term Grazing Permit. The Grazing Permit would be renewed with no changes to terms and conditions. Livestock are currently authorized to graze the allotment from April 1 through October 31. This season of use allows for the season of use in each pasture to be rotated, conforming to Guidelines. The permittee would continue to be annually authorized for up to 9,577 AUMs. Use would continue to be annually authorized, often at levels lower than the 9,577 AUMs, due to limited water and the resulting poor distribution of livestock throughout the pastures. The %PL on the permit would remain at 94% and all authorized AUMs would be billed at this level, with no adjustment for each pasture, resulting in the permittee being over or under charged depending on which pastures were used during the grazing season.

Since no new water developments would be constructed and existing reservoirs would not be maintained, the permittee may choose to continue to use fewer AUMs in order to prevent any long-term (over 10 years) damage to the resources. However, the permittee could also request full use of all 9,577 permitted AUMs, and the BLM would authorize them, but would have to monitor the allotment at an increased level to ensure livestock were removed prior to utilization exceeding 50% in accessible areas. This would likely be before all permitted AUMs were used, in order to protect the resources. Without any new reliable water sources, livestock would continue to utilize current reliable water sources heavily, especially late in the year as the unreliable and variable sources dry, since there wouldn't be any additional water sources for them to use. Continued heavy grazing in these limited areas accessible to water would eventually result in decreased vigor of plant species at these sites. Areas further from reliable water would have a lower level of use. These areas would continue to have a mixture of both green and old (previous years) growth on bunchgrasses. Accumulation of old dry material in areas inaccessible to livestock would increase the risk of severe wildfire. Recent research suggests properly managed livestock grazing is an effective tool that can be used to maintain healthy plant communities while reducing vegetative impacts resulting from wildfires (Davies et al. 2010, Patton et al. 2007, McNaughton 1993). Light to moderate livestock grazing can be used as a tool to decrease litter accumulation, indirectly preventing cheatgrass invasion by increasing the ability of the community to tolerate fire (Davies et al. 2009). Livestock grazing, when properly managed at moderate levels, may help protect the sagebrush communities, which is turn helps the wildlife species dependent upon them (Davies et al. 2010). This benefit of grazing would continue to be realized only in areas that are currently accessible to grazing, while areas outside of the current use areas would continue to be at risk of catastrophic wildfire due to fuel accumulation. Spring grazing may occur within the allotment to allow livestock to utilize intermittent creeks as a water source; however, this could only occur every other year to continue to meet guidelines.

Livestock distribution would continue to be uneven, and areas that have no water available for livestock would not be utilized. Uneven use of rangeland by livestock has been, and continues to be, a major problem confronting range managers (Holechek et al. 2001). When unmanaged, livestock distribution can negatively affect the plant community composition of rangelands (Pinchak et al. 1991). When cattle have uneven distribution, they over-graze preferred areas while other areas receive little use (Bailey et al. 2001). This over-grazing results in ecosystem degradation under some circumstances (Coughenour 1991, Bailey et al. 1996). However, some level of uneven grazing is often required in order to maintain the early or late seral habitat often required by wildlife such as Greater Sage-Grouse (Bailey et al. 1996). In many rangelands, including this allotment, the poor distribution of water is the main cause of poor livestock distribution (Holechek et al. 2004). However, distribution is also influenced by slope, vegetation characteristics, shading (DelCurto et al. 1999), livestock class, and livestock breed (Bailey et al. 2001). Sacrifice areas would continue to be large and increase in size if the permittee were to take full use (9,577 AUMS).

Under this alternative, no wet meadow or spring protection would occur. Livestock and wild horses would continue to trample the spring sources, and the springs and wet meadow areas would continue to not achieve Standards 2 and 4. Wild horses and livestock would continue to congregate in these areas late in the year as upland vegetation becomes course and water becomes limited. Generally, herbivores move at a slower pace through areas with an abundance of palatable plants, resulting in a higher nutrient intake at these sites compared to areas of unpalatable plants (Bailey et al. 1996, Stuth 1991) and more time spent at these sites. Continued heavy utilization in these areas would move riparian areas further away from PFC and achieving Standards, especially in years when full permitted use occurred. Kovalchick and Elmore (1992) found when not managed properly, grazing in riparian areas can severely affect the stability of those sites and suggest fencing, spring grazing, and riparian pastures as the best alternatives to protect them from damage. The route realignment at Broken Leg Spring and the crossing at Weaver Spring would not be constructed. Therefore, there would be no improvement to access at these sites, and access would still require traveling through the spring area, with the risk of getting stuck at these sites increased and the ability to properly manage grazing in these areas reduced due to limited access. Vehicular damage to these sensitive sites would continue to occur. The cistern and Burnt Car Spring would continue to be a hazard for livestock, occasionally resulting in the death of livestock due to entrapment.

Vegetation outside of the current use areas would only be grazed by wildlife, with occasional wild horse and livestock utilization. It is expected that this would continue to increase the fine fuel load in these areas, increasing the risk of severe wildfire. Since previous years' growth would be expected to remain on the plant, over many years this may increase the decadence of the plant as the old growth prevents some new growth from developing (Oesterheld and McNaughton 1991), especially where no event has occurred to remove the accumulations of dead

material. As plant decadence increases, the ecological condition of the site would be expected to decrease, resulting in fewer AUMs available for grazing animals.

Alternative B: Proposed Action

Under the Proposed Action, a new Term Grazing Permit would be created with terms and conditions that would allow the permittee to continue to be authorized for up to 9,577 AUMs, be billed on an after-the-fact basis, and to be billed using the calculated %PL for each pasture. These changes would allow for increased accuracy in the billing and administration processes. The change in the season of use would not be expected to affect grazing management since it is a small adjustment and actual use records show that in most years livestock have not turned out until after April 15 due to wet and muddy conditions.

During construction of range improvements, grazing would follow the described livestock management, with the understanding that water sources would still be limited and livestock may have to be removed when average utilization in areas accessible to livestock reaches 50%, possibly prior to receiving all permitted AUMs,. It is anticipated upon complete implementation of the proposed range improvements and planned grazing management, there would be adequate water and forage available to meet forage allocations from the Steens Mountain CMPA RMP, while achieving utilization targets and allotment specific resource objectives. The permittee would be able to regularly utilize all 9,577 AUMs authorized on the Term Grazing Permit, without risking damage to resources. There would be no increase in permitted AUMs. Grazing management would be modified to follow a rotation that applies to the four existing pastures, while using adaptive management to make sure no pasture is over utilized by livestock. By providing for periodic deferment of pastures, bunchgrasses are able to complete their physiological cycle before grazing, increasing plant vigor (Anderson et al. 1990). Adopting the new grazing management would allow the Standards currently being achieved to continue to be achieved and to continue to meet Guidelines.

The maintenance of 13 existing reservoirs would ensure water sources currently available would be able to continue functioning and become reliable water sources. Wild horses and livestock already know where existing reservoirs are located, and the disturbance associated with maintaining a reservoir is minor compared to replacing them with new developments. This alternative would also result in the abandonment of nine reservoirs, which currently have variable reliability or are unreliable. These reservoirs are near other, reliable water sources, and service the same general area, making them unnecessary. Although by abandoning them, the ability to potentially make them reliable would be lost, removing the potential of these reservoirs to spread out the effects of congregation to each reliable water source. Since these reservoirs would be abandoned and not removed, they may continue to function, to some degree, allowing them to

continue acting as a water source temporarily, and spreading out the congregation areas when they are holding water.

Under this alternative, nine new reservoirs are proposed. These reservoirs would replace the abandoned reservoirs, and would be strategically located throughout the allotment to improve grazing animal distribution and utilization patterns. In the long term (over 10 years), the total number of reservoirs would be the same as currently exists within the allotment. However, by changing the locations of some of them, ecological benefits seen by improving distribution would be realized. Some of the new proposed reservoirs have overlapping use areas, which would benefit grazing animals since the shown use areas do not take into account rockiness or terrain. There are multiple areas throughout the allotment where rockiness or terrain between two waterholes reduces the size of use areas for those waterholes. Overlapping use areas also increase the likelihood of the grazing animals readily moving between waterholes to access forage since travel distances would be smaller.

The presence of three new wells would increase the amount of truly reliable water, as the wells would be able to be pumped at any time of year, even in drought years when normally reliable water sources dry. One well (W3), located in Tombstone Pasture, would have a pipeline with two troughs, one at the well and one at the end of the pipeline. Another well (W6) would have a short pipeline that feeds into an existing maintained reservoir (no trough). The third well (W13) would consist of a single trough at the well site, which is located within the 110 acres Roaring Butte Mineral Materials Source boundary. Any disturbance that would result from W13 would not be greater than what disturbance is currently allowed to occur as a result of the mineral materials source. Both W6 and W13 would be located within the Steens Pasture. The use of solar power at the wells would decrease the need to continually monitor a generator, which would make them more reliable than those that are powered by generators, especially during muddy periods when access to the well site is limited. While power provided by generators would require more intensive maintenance, they would also provide reliable power under most circumstances. The exclosure of four springs, as part of spring protection and spring development, would protect the spring sources and associated riparian areas. This would allow the allotment to move towards achieving Standards 2 and 4. Two of the springs would also be developed, allowing them to continue functioning as a water source for wild horses and livestock. In addition to developing and protecting springs, a riparian meadow would also be protected by the use of an exclosure. By protecting these five riparian areas, the allotment would move toward achieving Standards currently not achieved. Due to the small size of the riparian areas within the allotment, and the large sizes of the pastures, the loss of forage within these areas would not measurable reduce the number of AUMs available for grazing. By reducing ingress and increasing egress from the large cistern at Burnt Car Spring, the risk of entrapment to livestock would be reduced, though not completely eliminated.

Grazing management, with the benefit of the proposed range improvements, would focus on scattering livestock across the allotment near required resources, promoting light to moderate use of all areas available to grazing animals. The areas of heavy use would be decreased due to the number of reliable water sources being increased, decreasing the level of herd congregation around any given water source. Under this grazing management, the desired level of even distribution would still result in some patchiness due to grazing animals being selective for palatable species and green plants. This grazing management should result in light to moderately grazed patches being spread evenly across the pasture, mixed with areas of no to slightly used areas still being present further from water sources and areas of heavy use immediately around water sources. Utilization and distribution would not be perfectly even across a pasture, since that would require grazing animals to have access to all forage, and be forced to utilize both palatable and unpalatable species, with no topography, cover, or water factors limiting use (Coughenour 1991). Truly even distribution is only possible in small pastures with large stocking rates over long-periods (Coughenour 1991). In addition, grazing animals lack the knowledge of where all the resources are located spatially, and at any given point in time, the populations are unlikely to be distributed perfectly across a pasture, especially when topography is a factor (Coughenour et al. 1991). In addition to defoliation, livestock also cause some patchiness by the redistribution of nutrients including urine and dung depositions, and trampling (Archer and Smeins 1991). Therefore, while distribution would be improved under this alternative, there would still be patchiness, which is valuable for some wildlife species.

Livestock and wild horses would have improved distribution and utilization patterns due to the increased number of water sources available and the presence of water sources within the two mile use area of the eastern portion of the allotment, which currently does not receive use due to lack of reliable water. In order for livestock to graze in the late summer and fall, reliable water has to be available. Within the allotment, new feeding locations would become available as additional water sources become available. The more reliable water sources, the better livestock distribution would be across the allotment since "[t]he location and number of watering points on grazing lands are important in controlling the movement, distribution and concentration of grazing animals" (Vallentine 2001). Most large ungulates focus their feeding strategies around available freestanding water, making the water their "home place" (Stuth 1991). Stuth (1991) found the optimum grazing area is located in a 0.5-mile radius around the water. In general, data shows livestock will travel up to two miles to access water (George et al. 2007, Ganskopp 2011, and Holechek et al. 2001). Miller (1983) found cattle generally stayed within three miles of water sources during the summer. Holechek et al. (2001) found cattle will regularly utilize rangelands within one mile of water, but utilization will decline by about 50% between one and two miles from water. Holechek et al. (2004) suggests that utilization around a water source can be as high as 100% directly next to the source, to over 50% 200 yards away from the water source. Valentine (1947) found at the water source,

utilization was usually around 65%, and decreased to approximately 55% at 0.2 mile from the water and 50% at 0.4 mile from the water. While the actual level of use depends on other factors such as stocking rate and other water source availability, the pattern described above is the normal pattern around water sources. Numerous studies support the conclusion that as livestock get father away from water, utilization levels will decrease and need to be accounted for (Cook 1966).

Livestock tend to search for and use areas that have positive attributes, including abundant high quality forage and water, and avoid areas with negative elements such as poisonous plants, pests, or limited resources (Launchbaugh and Howery 2005, Vavra 2005, Bailey et al. 1996). Roughness, steep topography, down timber, dense vegetation, weather, pests, and vegetation are a few of the other factors that can influence the distance livestock will travel for forage from water sources (George et al. 2007, Holechek et al. 2001, Stuth 1991, Cook 1966). All these factors are interrelated and play a role in feeding site selection, distribution, and utilization, which result in some degree of patchiness even when resources such as water are not limiting (Vavra 2005). Gillen et al. (1984) found as slope increased cattle preference for a site decreased. Cattle in southeastern Oregon were generally found to prefer slopes less than 10%, and avoid slopes of greater than 20% (Ganskopp and Vavra 1987). These results were similar to those obtained by Pinchak et al. (1991) who discovered cattle preferred slopes of less than 4% and found over 90% of total use occurred on slopes of less than 7%. Bailey (1999) found cows that had calves were less likely to graze steeper slopes and tended to stay closer to water. As more reliable water developments are constructed, the individual effects of livestock at any one water source would be lessened as the congregation effects are spread over the larger area that has become accessible to livestock and the increased number of congregation sites. Additional developments would be expected to reduce the effects of the above abiotic factors.

Numerous literature articles show that cattle distribution is largely determined by the availability of water (Miller and Krueger 1976; Gillen et al. 1984; Pinchak et al. 1991, George et al. 2007, Ganskopp 2011, Holechek et al. 2001). Water development placement can be used to alter habitat attributes of an area by changing or increasing the availability of a resource (Launchbaugh and Howery 2005), causing herbivores to adjust their grazing tactics (Stuth 1991), and encouraging more uniform distribution. Bailey (2004) found by developing water in areas more than 0.62 mile (one kilometer) away from existing water, overall uniformity of grazing increases. Ganskopp (2001) found moving water in arid pastures was the most effective tool for changing the distribution of cattle.

In areas where resources (i.e. water) have been limiting, but then become available, the use of these areas may not be as high as expected due to the occurrence of cured stems in the area. Studies have found livestock prefer green vegetation to cured vegetation since it is more nutrient rich; cured stems have

lower crude protein and digestibility levels (Ganskopp and Bohnert 2005). This behavior has been observed by both livestock and wild herbivores (Ganskopp et al. 1992). Herbel and Nelson (1966) found cattle would often graze plants with both green and dry portions, but they would try to select for the green portions and the dry portions would often drop out of their mouth. Ganskopp and Bohnert (2005) noted research shows cattle are aware of one cured stem within a green bunchgrass and that they are 40% more likely to reject grazing plants that have cured stems (considered wolfy) than those plants with no cured stems. They also found cattle were 2.3 times more likely to select areas of vegetation with mostly green stems (old growth had been previously removed) than areas with wolfy plants that had mixtures of green and cured stems (Ganskopp and Bohnert 2005). In a study done by Ganskopp et al. (1992), cattle showed avoidance to plants that had as few as three cured stems which contributed to as low as 4% of the total plant biomass. However, Ganskopp and Bohnert (2005) suggest after grasses complete their lifecycle and cure (i.e. during defer grazing treatments), cattle are much less aware of the older cured stems and tend to graze the area with improved distribution (Ganskopp et al. 1992). During these times, cattle will often graze sites that have more abundant forage, regardless of greenness or plant species (Stuth 1991). Therefore, rotating grazing treatments, including a defer treatment in the two largest pastures, would help minimize the effect of the cured stems.

By providing reliable water sources off creeks and rivers, livestock are less likely to put large amounts of pressure on the riparian areas, (Bailey 2004, DelCurto et al. 1999) as well as on the fences that have been constructed to keep them out of those areas. Parsons et al. (2003) states off-stream water development achieves more uniform cattle distribution than only using streams for watering. Off-stream water development improves cattle performance (weight gains) and distribution (Porath et al. 2002, DelCurto et al. 1999). Grazing exclusion from riparian areas has been found to promote recovery of degraded riparian plant communities, though species richness may not respond to grazing exclusion (George et al. 2011). DelCurto et al. (1999) found cattle with access to offstream water and supplements displayed a more even average distance from streams, than those without offstream water, which moved closer to the stream throughout the day. It is expected that to some degree, this would also hold true for other riparian areas, such as springs. Research suggests alternative water sources were over 99% effective in attracting the grazing animals away from the riparian areas during the period when thirst was the driving factor for animals (instead of hunger or loafing), and that it was over 89% effective in drawing animals away from the stream for loafing purposes (Miner et al. 1992). It is expected that a portion of these results were due to other factors, such as offstream water temperature, the presence of dry, firm ground at the alternative water source, and the location of the alternative water source in an easily accessible area as compared to a stream located in a canyon (Miner et al. 1992 and George et al. 2011). A research review was found to support the view water developments outside of riparian areas reduces both grazing use and the amount of time spent in riparian areas (George et

al. 2011). Godwin and Miner (1996) also found that offstream water can decrease not only the time livestock spend in riparian areas, but it can reduce water quality impacts caused by grazing of livestock and wild horses. It is expected that additional water sources would result in the affects described by this research, including reducing livestock pressure on the eastern boundary of the allotment.

By realigning the route around Broken Leg Spring and constructing a crossing at Weaver Spring, access would be improved since travel through the spring areas would not occur at Broken Leg Spring or be stabilized at Weaver Spring. This would reduce the risk of getting stuck in these areas, improving the ability to administer livestock grazing within the allotment. Ecological damage caused by vehicles would be eliminated at Broken Leg Spring, and reduced at Weaver Spring.

Map 11 shows the estimated use area within the allotment following the development of all range improvements proposed under this alternative, based on a maximum two mile grazing radius for livestock from the proposed developments (George et al. 2007, Ganskopp 2011, Holechek et al. 2001), along with the current use area based on existing reliable water. This map suggests constructing the developments proposed under this alternative would allow livestock to graze 99.3% (93,901 acres) of this allotment, with only a small section of the Hollywood Pasture remaining out of reach for livestock. That would be about a 19.1% increase in use area over No Action and Alternative F. While this map suggests these developments would provide livestock access to almost all of the forage within the allotment, it is important to note the map does not take into account topography, terrain, vegetation density (i.e. presence or absence of thickets), forage quality, digestion rate, cattle physiological state (i.e. lactating, dry, etc.), cattle species, cattle age, or numerous other factors that play a role in distance livestock will travel from water to graze (George et al. 2007, Ganskopp 2001). Therefore, under some circumstances and in some areas of the allotment, it is not expected livestock would travel a full two miles to water, possibly leaving some of the forage within the allotment unavailable to livestock. This is expected to occur less in the areas where the use area of proposed developments overlap each other or the existing use areas. Overlap of use areas increase livestock willingness to travel between waterholes while grazing, further improving livestock distribution and utilization patterns.

The more even livestock utilization is across the allotment, the fewer areas that would accumulate large amounts of fine fuels (due to periodic removal by grazing), decreasing the likelihood of a detrimental wildfire and increasing the sites ability to recover from one, as well as decreasing the risk of post-fire exotic plant invasion (Davies et al. 2010). Proposed range improvements would allow livestock grazing to once again occur in areas near the river, which were historically available but have not been accessible since the Donner und Blitzen WSR corridor was fenced to exclude livestock.

Anderson and McCuistion (2008) found grazing management, when upland birds are present, should be flexible, but limited to a light to moderate use (30-50% utilization), using deferred or rest-rotation grazing to limit grazing disturbances during critical bird life stages such as nesting. They concluded light to moderate use can increase forb quality and quantity since grazing can delay the maturation of forbs, extending their availability throughout the growing season (Anderson and McCuistion 2008). The grazing management described under this alternative would generally follow Anderson and McCuistion (2008) suggestion. Grazing management would include defer grazing treatments. Research suggests grazing deferral be utilized to prevent livestock caused disturbance to Greater Sage-Grouse during nesting, as well as preventing competition for forage, specifically forbs, that are required during that time (Adams et al. 2004). Adams et al. (2004) found deferred grazing can improve both the plant vigor and the productivity of grass communities, which in turn increases the amount of vegetative cover. By following the grazing management proposed under this alternative, a portion of the allotment would be deferred each year.

Based on the use areas under this alternative, which suggest improved distribution throughout the allotment, and utilization data, it is not expected average utilization of any key species would reach target utilization levels (50%), throughout the allotment, before the authorized season of use has ended. Therefore, Alternative B would achieve the Steens Mountain CMPA RMP (p. 53) objective to "[m]anage for a sustained level of livestock grazing while maintaining healthy public land resources."

Alternative C: Maximum Water Distribution

Under this alternative, effects would be similar to those under the Proposed Action, with the only changes being in the number of each type of development, with the exception of the riparian meadow exclosure, which would not occur under this alternative. This alternative would result in almost five times more troughs, serviced by a total of ten wells and ten pipelines, and four spring developments.

These well and trough combinations provide the most reliable season-long water since wells can be pumped and troughs filled whenever necessary, even in years of extreme drought. This increase in reliable water sources would mean that in years of drought when even reliable reservoirs dry, grazing animals, including wild horses, would have more water options than under any other alternative, resulting in increased livestock and wild horse distribution in all years, along with more even levels of utilization. The increase in the number of reliable water sources also allows for more separation between livestock and wild horses, since all animals would be able to utilize the 24 troughs associated with wells and springs, instead of only five troughs under the Proposed Action.

In addition to the wells, pipelines, and troughs, the increased number of new reservoirs (17 versus nine in the Proposed Action) would further improve distribution throughout the allotment, especially in years of normal to above-average precipitation, but even in drought years to some degree. This alternative also has 16 existing reservoirs being maintained and only seven being abandoned, increasing the benefit of the existing resources over that of the Proposed Action and other alternatives. All four springs would be developed under this alternative, providing protection for all the spring sources and riparian areas, allowing the allotment to move towards achieving Standards 2 and 4, while still utilizing them as water sources.

By increasing the number of reliable water sources, the use areas associated with each water source overlaps other use areas, increasing the likelihood that grazing animals would freely travel between water sources. This improvement in distribution, due to the arrangement of reliable watering sites, would ensure water would no longer limit full utilization of authorized AUMs, even during years when precipitation is below average. It would also decrease the occurrence of heavy utilization in the areas around the currently existing reliable water sources since grazing animals would be able to spread out more. Map 12 shows the estimated use area within the allotment following the development of all range improvements proposed under this alternative, compared to the existing use are, both based on the maximum two mile grazing radius for livestock from a water source (George et al. 2007, Ganskopp 2011, Holechek et al. 2001). This map suggests that constructing the developments proposed under this alternative would allow livestock to graze approximately 99.4% (93,975 acres) of this allotment, and would maximize grazing animal distribution. This would be an increase of about 19.2% over the current use area. This map increases the use area over the Proposed Action by covering the entire Hollywood Pasture. In addition, the amount of overlap of use areas is greater under this alternative, due to the increased number of proposed developments. This would reduce the likelihood some forage areas would not be grazed, due to factors other than distance to water (such as rim rock and canyons), since water developments would be much closer together and the effects of these factors reduced. Due to the increased overlap of use areas around each development under this alternative, it is expected this alternative would promote better livestock distribution and utilization patterns than the Proposed Action or any of the other alternatives.

Based on the amount of overlap of use areas under this alternative it is not expected utilization of key species would reach target utilization levels (50%) throughout the allotment before the authorized season of use has ended. Therefore, Alternative C would achieve the Steens Mountain CMPA RMP (p. 53) objective to "[m]anage for a sustained level of livestock grazing while maintaining healthy public land resources."

Due to the increased number of proposed water developments, under this alternative as compared to the Proposed Action, there would be fewer grazing

impacts and disturbance around any given water sources. This alternative provides the water needed for wild horses and livestock to achieve the best distribution possible and reduces the chance of wild horses and livestock being affected due to drought.

Alternative D: Along Road Development

Under this alternative, the Term Grazing Permit renewal, billing, and grazing management would have the same effects as under the Proposed Action.

The presence of ten new wells associated with 13 pipelines and 22 troughs would increase the amount of reliable water, as the wells would be able to be pumped at any time of year, even in drought years when normally reliable water sources dry. This alternative would provide more reliable water (in the form of wells) than all other alternatives except for Alternative C. Only one new reservoir would be constructed under this alternative since possible reservoir locations are generally away from roads along drainages. This alternative would include the maintenance of seven existing reservoirs, and the abandonment of two, resulting in this alternative not taking advantage of existing resources as much as occurs under Alternatives B and C. The development of two springs would protect the spring sources and associated riparian areas while still functioning as a water source for wild horses and livestock. The protection of two other springs would keep livestock and wild horses from damaging the riparian areas associated with the springs. These spring developments/protections would allow the springs to move toward PFC (streams within the allotment are already at or moving toward PFC) and toward achieving Standards 2 and 4. The effects from the route realignment and crossing at Broken Leg and Weaver Spring, respectively, would be the same as under the Proposed Action.

Under this alternative, livestock would have increased distribution from the No Action Alternative. Utilization patterns would be slightly improved due to the increased number of water sources available and the presence of water sources on the eastern portion of the allotment. However, this improved distribution is expected to be less than under the Proposed Action or Alternative C due to proposed developments being limited to locations adjacent to roads. This does not allow developments to be constructed in all areas where use is currently limited due to the lack of reliable water.

In addition to proposed water developments, this alternative includes the relocation of a portion of pasture boundary fence. Moving this fence is expected to result in some confusion for wild horses and livestock, which have already come to know where the fence is located, and where gates associated with the fence are. In the long term (over three years), grazing animals would learn the new fence location and adjust their movements accordingly. However, moving this section of fence would place a reliable reservoir out of Home Creek Pasture and into Steens Pasture, which is the main pasture affected by limited water. By

removing the reservoir from Home Creek Pasture, it is expected wild horses and livestock within that pasture would be more likely to congregate along Home Creek more than they have in the past. However, as this reservoir is in the north end of the Home Creek Pasture, this would not likely be a measurable change.

Map 13 shows the estimated use area within the allotment following the development of all range improvements proposed under this alternative, along with the current use area, based on a maximum two mile grazing radius for livestock from proposed water developments (George et al. 2007, Ganskopp 2011, Holechek et al. 2001). This map suggests constructing the developments proposed under this alternative would allow livestock to graze approximately 98.5% (93,129 acres) of this allotment, with two small areas (one approximately 803 acres and the other approximately 40.8 acres) in Steens Pasture remaining out of reach for livestock. One area would be located in the northeast corner of the pasture and the other would be in the southeast corner. This would be an approximate 18.2% increase in use area over what is currently available. While there is an increase in use area over the No Action Alternative and Alternative F, the increase in use area is less under this alternative than under Alternatives B and C. The majority of the vegetation within Home Creek Pasture is accessible to livestock even with the loss of one reliable reservoir due to other existing water sources. The amount of use area overlap under this alternative is less than under Alternative C and similar to Alternative B. Therefore, in the areas of the allotment not located near routes, it is expected livestock would not use the entire use area, possibly leaving some of the forage within the allotment unavailable to livestock.
Based on the use areas under this alternative, it is not expected that utilization of key species would reach target utilization levels (50%) throughout the allotment before the authorized season of use has ended. However, this would need to be monitored carefully as livestock develop use areas with less than a two-mile radius, utilization levels in some areas would increase, possibly over the 50% target maximum utilization, which may require modification using adaptive management.

Alternative E: Edge Development

Under this alternative, the Term Grazing Permit renewal, billing, and grazing management would have the same effects as under the Proposed Action.

Three reservoirs would be maintained and none would be abandoned; this would not allow full benefits to be recognized from existing water sources since less than 5% of existing water sources would be maintained to ensure functionality, at this time, under this analysis. One spring would be developed and three springs would be protected, allowing the allotment to move towards achieving Standards 2 and 4. However, by only developing one spring, the allotment would be losing three reliable water sources, changing distribution and utilization. Under this alternative, the route realignment at Broken Leg Spring and the crossing at

Weaver Spring would not be constructed. Therefore, there would be no improvement to access at these sites, and access would still require traveling through the spring area, with the risk of getting stuck at these sites increased and/or the ability to properly manage grazing in these areas reduced due to limited access. Ecological damage caused by vehicle travel would still occur at these springs.

Nine new wells, six new pipelines, and 12 associated troughs would provide new reliable, late-season water throughout the allotment. Since no new reservoirs would be constructed, and only three existing reservoirs maintained, these troughs would be the driving factor behind changing wild horse and livestock distribution within the allotment.

This alternative also includes two fence removals totaling 4.6 miles, and four fence constructions of 6.6-6.7miles. Three of the fence construction developments would be for water gaps located on the eastern side of the allotment on Donner und Blitzen River. The three water gaps would provide reliable, late-season water that would require minimal management, with the only annual requirement being fence maintenance. Maintenance of these gap fences would be expected to be intensive in years of normal to above average precipitation where the fences cross the river. As these would not require a power source due to being on a naturally flowing water source, these water gaps would be the most reliable water within this alternative. However, as the river is generally situated in a small canyon, grazing animals would have to enter the canyon to utilize these water sources, and it is expected they would congregate in these areas, which would have riparian vegetation they can easily graze. The other fence construction development is a pasture boundary fence relocation. This fence relocation would move eight reservoirs currently in the south end of Home Creek Pasture, into Steens Pasture. Of these eight reservoirs, one is reliable and the other seven are considered variable. These waterholes would allow the south end of the Steens Pasture to have increased water and distribution, to some extent, in all years, but the benefit may be minimal in drought years when the variable reservoirs do not hold water. In addition, the Home Creek Pasture would be affected by the loss of these reservoirs. The waterholes would be replaced by one well and two troughs in the southern end of the Home Creek Pasture, which would provide a new source of reliable water in the pasture. However, the number of watering areas would be decreased from eight to two, with the expected result being increased use of Home Creek, and increased congregation along the river, mostly on private, but also on BLM-managed land. This effect would be larger than under Alternative D because the lost reservoirs are closer in proximity to Home Creek. Over time, the increased presence of grazing animals along Home Creek may result in Home Creek being at risk of no longer being at PFC and Home Creek Pasture would be at risk for not achieving Standards 2 and 4, with livestock and wild horses being the causal factors. However, by limiting use in this pasture to early use and by using monitoring and adaptive management, BLM would be able to determine if damage was beginning to occur and make appropriate changes,

preventing further long-term damage from occurring. The new location of the boundary fence and removal of reservoirs from that pasture is expected to change livestock grazing patterns, and may decrease the potential for livestock to access the southern area of Home Creek without being actively pushed. In addition, the fence would also be expected to improve the ability to manage livestock along the creek by limiting the ability of livestock to access the riparian area. Distribution and utilization patterns in Home Creek Pasture are expected to decrease slightly due to a reduction in overlap of use areas, making the benefits of improved distribution in Steens Pasture potentially less beneficial to the allotment as a whole.

Distribution in the northern portion of Home Creek Pasture would be improved due to the presence of two wells providing reliable water. All proposed developments, with the exception of the spring protections and fence relocation, would be located along the edge of the WSAs and/or Steens Mountain Wilderness. Currently unreliable reservoirs, located within the WSAs, would remain unreliable, but may still function as a water source in some years. By not abandoning any reservoir, maintenance of them may be possible in the future, under appropriate analysis.

Under this alternative, livestock would have increased distribution and utilization patterns compared to the No Action alternative and Alternative F, within the Steens and Tombstone Pastures. However, distribution would be decreased, compared to the same alternatives, in Home Creek Pasture due to the loss of all the reservoirs in the southern half of that pasture being greater than the proposed range improvements for that area. Overall, this improved distribution would be less than under the other action alternatives, due to proposed developments being limited to locations adjacent to, and not in the interior, of WSAs. The presence of nine new wells, associated troughs, and water gaps, would increase the amount of reliable water, and would provide more reliable water than the Proposed Action, but less than Alternatives C and D. In addition, the water gaps would allow portions of the allotment not regularly grazed since the river was fenced off, to be grazed again, further increasing the amount of forage accessible to grazing animals.

The benefits of reliable water within the allotment would be limited to within the two-mile use area of the proposed developments located along the edge of WSAs, or within BLM-managed land that does not currently have a special designation. There are five proposed developments located on private inholdings within WSAs, making some forage in the WSA interior accessible to livestock. However, due to the locations of the inholdings, especially in Steens Pasture, the benefit would be limited.

The protection of three springs would keep livestock and wild horses from damaging the riparian areas associated with the springs and the one spring development would protect the spring while providing a reliable water source.

These spring developments/ protections would allow the springs to move toward achieving Standards 2 and 4. This alternative would not provide reliable, late-season water throughout the entire allotment, but would concentrate livestock use on regular BLM-managed and private lands, and along the edges of WSAs.

Map 14 shows the estimated use area within the allotment following the development of all range improvements proposed under this alternative, as well as the existing use area, based on a maximum two mile grazing radius for livestock from the proposed developments (George et al. 2007, Ganskopp 2011, Holechek et al. 2001). This map suggests that constructing the developments proposed under this alternative would allow livestock to graze all of Tombstone, Hollywood, and Home Creek pastures. However, within Steens Pasture, the use areas developed for this alternative suggest the two miles on the east side of the pasture along the river would be accessible for livestock to graze, but approximately 4,000 acres in the middle of the pasture would remain inaccessible due to being in the interior of WSAs, away from water sources. This alternative would allow for approximately 95.0% (89,799 acres) of the allotment to be accessible to livestock. This would be an increase in use area of about 13.9% over the No Action Alternative, but would be less of an increase than under the other action alternatives. The amount of use area overlap under this alternative, is also less than under all other action alternatives, but would be improved from the No Action Alternative and Alternative F.

Based on the use areas under this alternative, utilization patterns of key species would be improved over the No Action Alternative and Alternative F. However, the limited locations of proposed developments would make it uncertain as to whether or not livestock would exceed utilization levels (50%) throughout the allotment (within use areas) before the authorized AUMs have been fully utilized. Grazing would need to be monitored carefully as livestock develop use areas, to determine if the allotment can support full authorized active use without causing ecological damage by consistently exceeding the 50% target maximum utilization. In drought years, this alternative is expected to still limit full use of authorized AUMs. Therefore, Alternative E is not expected to achieve the Steens Mountain CMPA RMP (p. 53) objective to "[m]anage for a sustained level of livestock grazing while maintaining healthy public land resources," due to the degree of uncertainty that would remain with respect to full use of authorized AUMs from year-to-year.

Alternative F: Reduced Grazing with No Development

Under this alternative, no range developments would be constructed. Current range improvements would continue to be maintained, under the appropriate analysis, as needed, in order to ensure functionality for wild horses and livestock. Livestock grazing management would follow the grazing rotation and billing procedures analyzed in the Proposed Action, with a decrease in livestock numbers and AUMs. This alternative would result in the renewal of the 10-year grazing

permit, with changes to terms and conditions encompassing all changes within this alternative. The 10-year term livestock grazing permit would be issued with 7,875 active use AUMs of livestock grazing on public land (a decrease of 1,702 AUMs), which is the maximum number of AUMs utilized in any year since the Steens Act was implemented.

By decreasing authorized AUMs within this allotment, the risk of livestock exceeding the 50% maximum target utilization would be decreased from the No Action Alternative, due to fewer animals utilizing current use areas. This would allow the ecological health of the allotment to remain stable in commonly grazed areas, with other areas remaining generally inaccessible due to a lack of water. Due to the decreased level of AUMs, it would be even less common for areas outside of the current use areas to be grazed, allowing for greater accumulation of fine fuels and increasing the risk of catastrophic wildfire spread. Effects of having large areas of accumulating fine fuels would be similar to the No Action Alternative, only increased since fewer AUMs would be required in all years, while it is currently voluntary under the No Action Alternative. Plants that are not grazed would continue to accumulate dead material, potentially reducing their vigor.

Since no developments would be constructed to protect the four springs within the allotment, and grazing animals have a strong preference for riparian areas, especially later in the year, these springs would continue to receive heavy utilization by wild horses and livestock. Animals would continue to congregate in these areas with available water and moist forage (Kauffman and Krueger 1984). However, due to decreased numbers, these effects would be expected to be slightly less than under the No Action Alternative (assuming full permitted use). The benefit to the springs would not be expected to be large enough to move the springs toward PFC and the allotment would continue to not achieve Standards 2 and 4 since both livestock and wild horses would continue to congregate in these areas.

Under this alternative, the route realignment at Broken Leg Spring and the crossing at Weaver Spring would not be constructed. Therefore, there would be no improvement to access at these sites, and access would still require traveling through the spring area, with the risk of getting stuck at these sites increased and/or the ability to properly manage grazing in these areas reduced due to limited access. Vehicles would continue to cause ecological damage at these sites.

In addition, unless the permittee agrees to voluntary non-use, the BLM would have to process a decrease in authorized AUMs, which is considered an adverse action by most permittees, often causing the BLM to lose permittee cooperation. The permittee for this allotment is currently willing to cooperate with the BLM in finding alternative solutions that meet the needs of the allotment, including protecting ecological resources.

Alternative G: Complete Removal of Livestock Grazing

Under this alternative, livestock grazing and associated effects would be eliminated from the allotment and therefore, no grazing permit would be renewed or issued for this allotment. No new range improvements would be constructed, and those that currently exist would not be maintained through the range management program. However, all water sources benefit (at a minimum) wild horses and those sources would be expected to continue to be maintained under appropriate NEPA analysis. Non-water improvements, such as fences, may or may not be beneficial to the management of wild horses and/or wildlife and their continued maintenance would likely be site and project specific.

Livestock would no longer be a causal factor for riparian areas not achieving S&Gs since no livestock use would occur. However, wild horses would continue to have access to and use of these areas, resulting in Standards 2 and 4 continuing to not be achieved. Analysis of habitat use by free-ranging horses in sagebrush communities reported that horses seek riparian habitats (Crane et al., 1997). In a wild horse habitat use study in the northern sagebrush steppe by Ganskopp and Vavra (1986) wild horses rapidly vacated the watering areas after drinking; however, a seasonal trend was observed in which wild horses remained slightly closer to perennial water sources during warm, dry summer months. Ganskopp and Vavra (1986) noted that there were adequate year-round sources of water available for the wild horses in their study. Considering the limited supply of year-round water sources available in South Steens Allotment, concentration of wild horses at these sites during the warm summer months is expected. In a study on the Sheldon National Wildlife Refuge, approximately 40 air miles south of the South Steens Allotment, estimates of wild horse use from September to October on standing riparian biomass varied from negligible to nearly 100% (Boyd et al. 2012). Crane et al. (1997) concluded streamside and meadow habitats were preferentially selected by wild horses during the growing season, the most probable season of negative grazing impact. While removing livestock would reduce a large portion of total AUMs used within the allotment, the draw of riparian areas to grazing animals, including wild horses, is strong, especially when you consider the proportionate size and availability of the riparian areas to upland sagebrush communities within the allotment. Removing livestock would reduce the inter-species competition for these sites, but the intra-species competition would remain. In a wild horse behavior study in Grand Canyon, Berger (1977) summarized home ranges for all bands decreased in size in successive warm months, probably due to increased ambient temperature and drought, resulting in greater utilization of spring areas that led to increased inter-band confrontation and agonistic display. Miller and Denniston (1979) reported that even females participated along with male group mates when threatening another group of horses at water. It is expected that wild horses that made limited use of these areas due to competition, would begin to use these areas, but the small size of these areas would still result in intra-species competition. Therefore, the benefit of removing livestock in these areas would be reduced, potentially to no net

improvement. However, the fluctuation in wild horse numbers between gathers may result in some progress towards PFC and Standards when wild horse numbers are low and intra-species competition, between wild horse bands, for these sites is reduced. Overall, it would be expected that no to little progress would be made towards PFC or Standards in these riparian areas by only removing livestock.

Livestock would not be present to reduce the accumulation of fine fuels and livestock grazing would not reduce the risk of community altering wildfire (Davies et al. 2010). Davies et al. (2009) found grazing exclusion decreases the ability of the native herbaceous community to tolerate fire due to the accumulation of fine fuels, which can result in increased mortality of desirable vegetation during fire events. Davies (2010) found wildfires that occur in areas without grazing would "increase the probability of postfire exotic plant invasion by increasing the risk of fire-induced mortality of perennial bunchgrasses." This risk would be greater than under all other alternatives since no livestock grazing would occur. In addition, no livestock would be present to remove old growth from plants, preventing some new growth from developing and possibly increasing the overall decadence of the plant (Oesterheld and McNaughton 1991).

The complete removal of livestock would eliminate ecological damage currently caused by livestock in areas of current livestock congregation, specifically around existing water sources. Since livestock related affects would be removed some of these congregation areas would improve in ecological health, due to reduced grazing and trampling at the sites. This improvement would occur in the long-term (more than five years) as desirable perennial species become reestablished and/or improve in vigor. Wild horses would still congregate in some of the existing congregation areas, especially around existing water sources, reducing the benefit of removing livestock. BLM TR 1737-20 states: "reducing stocking rates may reduce the percentage of area in unsatisfactory condition, but impacts around the foci of highly used areas (e.g., riparian areas or other water) will remain the same until few, if any, animals remain." While this reference is specifically addressing livestock, it would also apply to wild horses. Improvement in ecological condition at existing livestock congregation sites would be expected to be largest at sites that wild horses rarely use, and smallest at sites that have large levels of existing wild horse congregation. However, since there would be fewer total grazing animals within these congregation areas, some improvement would be expected to occur at all existing congregation sites. At existing congregation sites where existing desirable vegetative species are limited, annual grasses or other weed species may begin to dominate, which would limit the improvement in ecological condition and these sites would take a longer time to improve in ecological condition.

Since no new developments would be constructed, distribution of wild horses would remain the same, with the majority of use centered around existing water sources.

3. Noxious Weeds

Affected Environment: Noxious Weeds

Noxious weeds are currently present within the area and require continued monitoring and treatment. The allotment is susceptible to introduction and spread of noxious weeds, in particular, Scotch thistle (*Onopordum acanthium* L.), due to the presence of noxious weed species within and near the allotment. Livestock, wildlife, and wild horses tend to concentrate at existing water developments and recreational visitors are often present within the area, all of which are capable of spreading noxious weeds. Recreational visitors to Steens Mountain travel the road network and camp in many areas. Hikers spread out across incidentally monitored trails. Each visit creates opportunities for new weed introductions. New introductions can spread quickly in disturbed areas, potentially infesting many new acres. Many reservoirs in the area already have infestations of Scotch thistle. Depending on climatic conditions in any given year, weed infestations vary from a few plants to several acres. Once Scotch thistle establishes in an area, the seed can be viable onsite for over 25 years. Seeds are windborne and can travel miles; they can also be dispersed by water (Sheley and Petroff 1999). Table 16 shows which noxious weeds are known to currently exist within the allotment, by pasture, as well as acres of infestation.

Table 16: Noxious Weeds by Pasture

Pasture	Noxious Weed	Infested Acres	Pasture Acres (BLM Only)
Hollywood	Scotch thistle	34.52	-
	HOLLYWOOD TOTAL	**34.52**	**3,853**
Home Creek	Whitetop [*Cardaria draba* (L.) Desv.]	0.11	-
	Bull thistle [*Cirsium vulgare* (Savi) Ten.]	0.17	-
	Scotch thistle	2.09	-
	HOME CREEK TOTAL	**2.37**	**14,762**
Steens	Whitetop	0.53	-
	Spotted knapweed (*Centaurea stoebe* L.)	3.20	-
	Diffuse knapweed (*Centaurea diffusa* Lam.)	<0.01	-
	Yellow star-thistle (*Centaurea solstitialis* L.)	<0.01	-
	Canada thistle [*Cirsium arvense* (L.) Scop.]	50.03	-
	Bull thistle	22.83	-
	St. johnswort (*Hypericum perforatum* L.)	<0.01	-
	Scotch thistle	1.03	-
	STEENS TOTAL	**77.63**	**41,165**
Tombstone	Russian knapweed [*Acroptilon repens* (L.) DC.]	0.01	-
	Whitetop	1.06	-
	Diffuse knapweed	0.00	-
	Field bindweed (*Convolvulus arvensis* L.)	0.08	-
	Scotch thistle	8.10	-
	Mediterranean sage (*Salvia aethiopis* L.)	5.92	-
	TOMBSTONE TOTAL	**15.17**	**29,745**

Table 17 shows the weed treatments that have occurred within South Steens Allotment between 2001 and 2010. The table includes the species and the acres treated, as well as the size of the project that was the driving factor in the weed monitoring and treatment. Note: the project acres are not related to disturbance acres for proposed developments discussed within this document.

Table 17: Weed Treatments within South Steens Allotment

Year	Species	Acres Treated	Project Acres
2001	Scotch thistle	0.4	572
	TOTAL	**0.4**	---
2002	Scotch thistle	0.12	572
	TOTAL	**0.12**	---
2003	Scotch thistle	0.16	572
	TOTAL	**0.16**	---
2004	Scotch thistle	0.34	572
	TOTAL	**0.34**	---
2005	Scotch thistle	0.54	572
	TOTAL	**0.54**	---
2006	Scotch thistle	0.08	572
	Whitetop	0.02	572
	TOTAL	**0.1**	---
2007	Scotch thistle	0.36	572
	TOTAL	**0.36**	---
2008	Scotch thistle	0.08	572
	Spotted knapweed	0.02	124
	TOTAL	**0.1**	**---**
2009	Spotted knapweed	0.12	124
	Scotch thistle	0.595	586
	Canada thistle	0.5	209
	TOTAL	**1.22**	---
2010	Whitetop	0.04	12
	Scotch thistle	0.20	15
	TOTAL	**0.24**	---
2011	Scotch Thistle	1.1	1,735
	Canada Thistle	0.6	2.8
	Whitetop	0.14	581
	Spotted knapweed	0.01	124
	TOTAL	**1.85**	---
2012	Scotch Thistle	0.001	2.8
	Canada Thistle	0.02	441
	TOTAL	**0.02**	---

Environmental Consequences: Noxious Weeds

Effects Common to All Alternatives

The CEAA for this analysis is the South Steens Allotment. Past and RFFAs that have affected Noxious Weeds are found in Table 18. The North Steens Project, which includes numerous juniper control methods including prescribed fire and mechanical removal, will result in soil disturbance, which is expected to allow noxious weeds to become established. Prescribed fire also opens up the site to

weed infestation by removing existing cover and reducing competition for weed species. Weed introduction and spread will still occur due to wildlife movements, wild horse movements, wind, water, and human activities.

Table 18: Noxious Weeds Past and RFFAs

ACTION	PAST ACTIONS			FUTURE ACTIONS		
	ACRES	MILES	NUMBER	ACRES	MILES	NUMBER
Wildfire Starts	---	---	37	---	---	Unknown
Wildfires	6041.4	---	6	Unknown	---	Unknown
Known Primitive Campsites	---	---	14	---	---	Unknown
Trails	---	13.9	---	---	None	---
Open Roads	---	100.3	---	---	None	---
Closed Roads	---	34.2	---	---	None	---
Fences	---	58.3	---	---	None	---
Pipeline	---	0.5	---	---	None	---
Exclosures	2.6	---	1	None	---	None
Water Developments	---	---	69	---	---	None
Gravel Pit	125.7	---	1	None	---	None
Cutting	5352.6	---	11	6745.4	---	14
Piling	2339.0	---	8	839.4	---	7
RX Burning	9985.0	---	16	6318.9	---	20
Seeding	681.5	---	2	5	---	1

Alternative A: No Action

Concentrated grazing, resulting in above average utilization around the limited currently reliable water sources, could affect the health of plant communities, creating opportunities for new weed introductions and spread. Impacts to vegetation caused by trampling or overgrazing can open up niches for noxious weed invasion and spread. This alternative could result in the increased size of existing weed sites around existing water developments. If the permittee attempted to use the full permitted use under the No Action Alternative (removing livestock when full use was achieved or when the 50% utilization ceiling was reached), the concentration of livestock at current reliable water sources would be increased over what has occurred during the past decade. Light to moderate livestock grazing can be used as a tool to decrease litter accumulation, which would indirectly prevent annual grass invasion by increasing the ability of the community to tolerate fire (Davies et al. 2009). A community that is better able to tolerate fire would be less susceptible to weed invasion. Under this alternative, the route realignment at Broken Leg Spring and the crossing at Weaver Spring would not be constructed. Therefore, there would be no improvement to access at these sites, and access would still require traveling through the spring area, with the risk of getting stuck at these sites. The ability to properly monitor and treat weeds in these areas would be expected to be limited due to access problems when springs are flowing. Continued vehicle disturbance at these springs would provide disturbed areas for weed establishment and spread.

Alternative B: Proposed Action

Any new ground-disturbing activities that would be authorized under this alternative have potential to create opportunities for noxious weed establishment and spread. Therefore, there is a risk of new weed introductions. This risk would directly correlate to the numbers of ground-disturbing activities. Following PDEs listed in Chapter II would reduce opportunities for introduction of new weeds.

Additional water sources would help reduce concentrations of livestock, wildlife, and wild horses around currently reliable water sources, thereby, reducing impacts to plant communities in those areas. Livestock would congregate around new developments, but by having an increased number of developments, disturbance caused by livestock would be spread out over a larger area and would not be as severe as is currently occurring around existing reliable water sites. This would result in a lower level of disturbance occurring at each site, on average, than what currently occurs. The lower the level of disturbance, the fewer niches available for weed establishment. Productive, healthy plant communities would reduce opportunities for noxious weed introduction and spread. Light to moderate livestock grazing can be used as a tool to decrease litter accumulation, which would indirectly prevent annual grass invasion by increasing the ability of the community to tolerate fire (Davies et al. 2009). A community that is better able to tolerate fire would be less susceptible to weed invasion.

Locating water sources where they would be beneficial but also reasonable to monitor and treat for noxious weeds would help sustain proper function of this area, while minimizing consequences associated with noxious weed introduction and spread. Monitoring, particularly in known weed-prone areas, is generally done using ATVs equipped with motorized spray equipment so when weeds are found, they can be treated promptly, appropriately, and efficiently. Under this alternative, the majority of range improvements would occur within ¼ mile of an existing road (open or closed) used for monitoring. However, four proposed new reservoirs are located further from roads and would require off-road travel over greater distances in order to monitor them. The route realignment and crossing at Broken Leg and Weaver Springs, respectively, would allow for improved access for monitoring and treating weeds in these areas. Those actions would also limit vehicle and animal disturbance at the springs, reducing the risk of weed establishment and spread at these sites. By reducing ingress and increasing egress from the large cistern at Burnt Car Spring, a small amount of disturbance may occur; however, as work would be done by hand, the risk of noxious weeds establishment due to it would be negligible.

Alternative C: Maximum Water Distribution

The effects of this alternative would be similar to the Proposed Action. However, this alternative would create the most disturbance due to the increased number of developments constructed, which would be spread across a greater area, resulting

in a larger risk of new weed introductions throughout the allotment. As the level and intensity of disturbance increases, so does the density of weedy plants (Jensen 1995). Monitoring such a large number of new developments, on a regular basis, would be problematic for noxious weed management. Under this alternative nine proposed developments would be located further than ¼ mile from any road (open or closed), requiring an increased level of off-road travel when compared to the Proposed Action. The effects of route realignment and crossing at Broken Leg and Weaver Springs, respectively, would be the same as under the Proposed Action.

Alternative D: Along Road Development

The effects of this alternative would be less than Alternative C, but greater than the Proposed Action since the number of new developments would be between the two. However, this alternative keeps most new developments within already disturbed sites (e.g., roads and trails). This would be beneficial for annually recurring weed monitoring and treatment due to existing access. This alternative would be the least problematic for both monitoring and treatment. The exception would be the areas of spring protection; however, these sites would only consist of new exclosure fences and disturbance to the surrounding vegetation would only occur from vehicles during construction and at the location of each post. Fence removal and new fence construction would cause temporary (less than three months) disturbance. However, these disturbances would be localized to the area where the fence is placed (or removed), as well as where materials would be located prior to use or removal, and would only require monitoring following the construction phase. Since the new fence would be located along a road, monitoring would not be problematic. The route realignment and crossing at Broken Leg and Weaver Springs, respectively, would have the same effects as under the Proposed Action.

Alternative E: Edge Development

The effects of this alternative would be similar, but slightly less than Alternative D due to one less reservoir being constructed, one less spring development, seven fewer troughs, and seven fewer pipelines. Large areas with no reliable water would result in livestock and wild horses continuing to concentrate at reliable watered areas. The concentration would be somewhat lower than in the No Action Alternative since there would be some new water sources developed. However, the level of disturbance to vegetation around these sites would be higher than desired and would be more susceptible to noxious weed invasion and spread. The removal of a fence and construction of a new pasture boundary fence would have the same effects as under Alternative D; however, a portion of this fence follows the BLM and private property boundary, not a road, making monitoring after-construction more problematic. In addition, three of the proposed developments would be water gaps along Donner und Blitzen River. These sites currently do not have known weed infestations and opening the area to

grazing would result in high levels of utilization in the narrow water gap areas, increasing the risk of noxious weed establishment and spread.

Under this alternative, the route realignment at Broken Leg Spring and the crossing at Weaver Spring would not be constructed. The effects would be the same as under the No Action Alternative.

Alternative F: Reduced Grazing with No Development

This alternative would have effects similar to the No Action Alternative. If the permittee continued to willingly reduce utilized AUMs from the permitted AUMs under the No Action Alternative, the effects would be the same. However, if the permittee attempted to use the full permitted use under the No Action Alternative (removing livestock when full use was achieved or when the 50% utilization ceiling was reached), the concentration of livestock at current reliable water sources would be increased. In that situation, the effects of this alternative would be less than the No Action Alternative due to fewer AUMs being removed from the allotment.

Under this alternative, the route realignment at Broken Leg Spring and the crossing at Weaver Spring would not be constructed. The effects would be the same as under the No Action Alternative.

Alternative G: Complete Removal of Livestock Grazing

Under this alternative, no livestock grazing would occur within the allotment. Livestock would no longer be a source of weed spread, but wild horses and wildlife, and all other sources of weed spread, would still be present in the allotment. This would eliminate livestock congregation around water sources, decreasing opportunities for new weed introductions and spread. The lack of livestock grazing would reduce impacts to vegetation from trampling and overgrazing, resulting in fewer disturbances where noxious weeds could establish and spread. However, congregation at these sites would still occur due to the presence of wild horses; it would just occur at a lower level across the allotment since livestock would be gone. This alternative could result in a decreased size of existing weed sites, especially around water sources where disturbance is often high. Since weeds are currently present within the allotment, monitoring and treatment would continue, although since there would be no livestock, there would be less range staff monitoring the allotment to document weed infestations.

Under this alternative, the route realignment at Broken Leg Spring and the crossing at Weaver Spring would not be constructed. The effects would be the same as under the No Action Alternative.

4. Recreation and Visual Resources

Affected Environment: Recreation and Visual Resources

The primary recreation activities within the allotment include driving for pleasure, sightseeing, camping, hiking, backpacking, horseback riding, wildlife viewing, hunting, fishing, and photography. Other recreational opportunities include picnicking, biking, rock hounding, snowmobiling, cross-country skiing, and off-highway vehicle use. The main season of use is generally July through November, with highest use occurring during the fall from late September through mid-October coinciding with rifle season for deer hunting.

South Loop Road is the main access route into the allotment and is suitable for passenger-car traffic. Motorized and mechanized vehicle use is limited to designated roads. Most designated routes leading off the South Loop Road in the allotment are not suitable for passenger cars, but are designed for high clearance vehicles. As a result, recreational use in areas accessed by these routes is limited to those with an appropriate vehicle and is generally low, except during hunting season. Motorized access to the allotment is limited during part of the year when the South Loop Road is gated and locked, generally from late November through late May, due to snow or wet road conditions, to protect resources.

South Loop Road is the Key Observation Point (KOP) for this area as it is regularly travelled (on a daily basis) when the road is open. A KOP is defined as "one or a series of points on a travel route or at a use area or a potential use area, where the view of a management activity would be most revealing" (BLM Manual 8400). When travel on South Loop Road is restricted, it is not a KOP.

Most of the allotment (69,251 acres) falls within a VRM Class I category. Class I management objectives provide for preservation of the existing character of the landscape. This class provides for natural ecological changes and allows for very limited management activity. Class I lands in the allotment correspond to BLM lands designated as wilderness or WSAs.

Most of the remaining area within the allotment (15,978 acres) falls within a VRM Class II category. Class II objectives provide for retention of the existing landscape character. Level of change to the characteristic landscape should be low, but some management activity is allowed. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements found in the predominant natural features of the characteristic landscape and be constructed to minimize visual disturbance.

There are small portions of the allotment (4,281 acres) that fall within a VRM Class III category. Class III objectives provide for partial retention of the existing character of the landscape. Level of change to the characteristic landscape can be moderate and management activities are often allowed. Management activities may attract attention but should not dominate the view of the casual observer.

Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape in order to minimize visual disturbance. Most Class III lands are south of South Loop Road adjacent to the Home Creek portion of Steens Mountain Wilderness.

Environmental Effects: Recreation and Visual Resources

Effects Common to All Alternatives

For the purpose of this analysis, the CEAA for recreation and visual resources encompasses South Steens Allotment. Table 19 shows Past and RFFAs for this resource.

Other projects affecting recreation include potential removal of juniper trees as described in the North Steens Project ROD. These treatments are not expected to affect the types of recreation opportunities. Limitations on recreational use in areas treated would only last weeks. Depending on the type of treatments implemented, there may be some short-term (3-5 years) disturbance to visual resources in areas treated. However, these treatments are expected to help restore the natural fire regime, and protect ecological integrity in the CMPA as a whole, over the long term (over five years), as provided for under the Steens Act. To the extent possible, juniper trees that help screen developments or dispersed campsites would be left intact, which would limit the visual effects of these treatments. Overall, the character of the landscape would be preserved. There are no other known RFFAs that would contribute to effects to recreation or visual resources.

Table 19: Recreation and Visual Resources Past and RFFAs

ACTION	PAST ACTIONS			FUTURE ACTIONS		
	ACRES	MILES	NUMBER	ACRES	MILES	NUMBER
Wildfire Starts	---	---	37	---	---	Unknown
Wildfires	6041.4	---	6	Unknown	---	Unknown
Known Primitive Campsites	---	---	14	---	---	Unknown
Trails	---	13.9	---	---	None	---
Open Roads	---	100.3	---	---	None	---
Closed Roads	---	34.2	---	---	None	---
Fences	---	58.3	---	---	None	---
Exclosures	2.6	---	1	None	---	None
Water Developments	---	---	69	---	---	None
Gravel Pit	125.7	---	1	None	---	None
Cutting	5352.6	---	11	6745.4	---	14
Piling	2339.0	---	8	839.4	---	7
RX Burning	9985.0	---	16	6318.9	---	20
Seeding	681.5	---	2	5	---	1

No changes to the types (i.e., hiking, horseback riding, hunting, etc.) of recreation opportunities available in the project would occur as a result of any of the alternatives.

Effects Common to All Action Alternatives

Spring protection/development would result in improved riparian areas within the exclosures. This may draw more recreationists to these areas as the springs would have more vegetation and be more aesthetically pleasing. As these riparian areas also provide habitat to small wildlife species, recreationists may have increased opportunities to view such wildlife at these sites, with less disturbance associated with wild horses and livestock.

Alternative A: No Action

No changes to recreation opportunities or activities or to visual characteristics would occur under this alternative.

Alternative B: Proposed Action

If any encounters with visitors occur during construction of the proposed developments, there would be some temporary and short-term (days) disturbance to recreational activities in the immediate area.

Proposed developments are located away from known areas of prolonged visitor use (i.e., campsites) and would not be expected to have any effects on the quality of the recreational experience. Any visual or noise disturbance associated with developments would be expected to be short term, lasting minutes as visitors pass by on foot, horseback, or by vehicle. Such disturbance could last longer if developments are located near dispersed campsites. Dispersed campsites, by their nature, change locations over time as some sites grow over with vegetation or are abandoned in favor of new sites. The proposed developments would not affect a camper's ability to pick a desirable spot to camp. Some visitors may be displaced from some of the campsites either by noise or visual disturbance associated with developments or increased presence of cattle or wild horses, while other visitors may enjoy those developments and associated livestock and wild horse presence. However, it is expected livestock would be better distributed, in smaller groups, across the allotment, rather than concentrated in larger numbers around the limited reliable water sources. Overall, evidence of grazing animals may be reduced at each water source since there would be the same number of cattle as currently permitted and more water sources for them to utilize. The route realignment and crossing at Broken Leg and Weaver Springs, respectively, would allow for improved access for visitors by reducing the risk of getting stuck in these areas when the springs are flowing and/or ensure that all visitors have access to the areas serviced by these roads. Reducing ingress and increasing egress from the large cistern at Burnt Car Spring would reduce the risk of entrapment to visitors, though not completely eliminated.

Table 20 shows a comparison of proposed developments within each VRM class.

Table 20: Proposed Developments by VRM Class for the Proposed Action

Development	VRM Class I	VRM Class II	VRM Class III
Reservoir Maintenance	9	3	1
New Reservoirs	9	0	0
Spring Development	2	0	0
Spring Protection	2	0	0
Exclosure	1	0	0
Wells	0	2	1
Pipeline	0	1 - 0.5 mile	1 – 0.1 miles
Troughs	2	3	0

It would not be expected that the land and water component of the landscape character would change given that none of the developments would require large scale excavation that would noticeably modify landscape features. Reservoirs would have the most excavation, but they would be located in drainages and would not be expected to be large enough to modify the overall form of those drainages. Overall, the land and water component of the landscape character would be preserved.

Disturbance to the vegetation feature of the landscape would be the same for each development, as described in the WSA section of this document. With the exception of vegetation effects associated with livestock use water sources, disturbed areas would be seeded and expected to have vegetation return within one to five years. Given the limited area affected by developments as a whole, the vegetation component of the landscape character would be preserved.

These developments would add structures to the landscape character that would introduce vertical lines associated with wells and fence posts, and horizontal lines associated with fences and troughs. PDEs would ensure developments, especially those within WSAs, would blend in with the surrounding area to the maximum extent possible decreasing visual contrast and mitigating the visual effects (see Ch. II.A.7). The taller the power source for wells, the more visible it would be, and the visual contrast would be greater; any moving parts would further increase the visual contrast in the landscape and draw visitor's attention. Length of time the development would be in view would be expected to be minutes as most visitors pass by in motorized vehicles but also by foot or horseback. Given topographic and vegetative screening, visitor encounters with most other developments not located near an area of prolonged visitor use (i.e., dispersed campsites) would also be expected to last only minutes as visitors pass. Exposure would be longer for those developments near dispersed campsites.

Map 15 shows both the estimated maximum and minimum viewshed disturbance[56] if all proposed improvements within this alternative were constructed. The maintenance or abandonment of existing reservoirs would not

[56] See Appendix D for a discussion on how the viewshed analysis was completed and individual maps for each proposed development.

have any additional effects on visual resources as they are already occurring. Since pipelines would be almost exclusively buried and above-ground components would be small, close to the ground, and generally hidden by vegetation, they would not affect visual resources. Therefore, there are no viewshed analyses done for these developments. Under this alternative, there are five proposed developments with individual viewshed maps showing the estimated maximum viewshed would cross South Loop Road. These developments are S2, W13, T11, R7, and R11. However, none of their estimated minimum viewsheds cross South Loop Road, so it is not expected these developments would be obvious to visitors along the South Loop Road once all PDEs are followed.

Alternative C: Maximum Water Distribution

The effects of this alternative would be similar to those described under the Proposed Action. However, the cumulative effects of this alternative would be greater due to the larger number of developments.

As more areas are developed, the opportunity to camp or recreate away from these developments would become more difficult. However, with the proposed mitigation efforts found under PDEs (see Ch.II.A.7) most recreationists would not directly feel the presence of these developments unless they were within close proximity (less than ¼ mile).

This alternative would have more effects to the visual resource than the Proposed Action since it would create more developments expected to be noticeable on the landscape. In this area of historic grazing and range improvements, this alternative would increase the number of developments but would not change the existing character of the landscape. With the mitigation measures applied, there would not be a noticeable contrast to the existing visual resource.

Table 21 shows a comparison of proposed developments within each VRM class under this alternative.

Table 21: Proposed Developments by VRM Class for Alternative C

Development	VRM Class I	VRM Class II	VRM Class III
Reservoir Maintenance	13	3	0
Reservoir Abandonment	7	0	0
New Reservoirs	17	0	0
Spring Development	4	0	0
Wells	4	2	1
Pipeline	7 – 9.5	4 – 5.1 miles	0
Troughs	14	5	1

Map 16 shows both the estimated maximum and minimum viewshed disturbance if all proposed improvements within this alternative were constructed. The maintenance or abandonment of existing reservoirs would not have any additional effects on visual resources as they are already occurring. Under this alternative,

there are eleven proposed developments whose individual viewshed maps show the estimated maximum viewshed would cross South Loop Road. These developments are S2, R7, R8, W4, W7, W8, T12, T13, T14, T23, and T29. However, none of their estimated minimum viewsheds cross South Loop Road, so it is not expected these developments would be obvious to visitors along South Loop Road once all the PDEs are followed.

Alternative D: Along Road Development

The effects of this alternative would be similar to those described under Alternative C except fewer developments would be implemented, especially on BLM-administered lands that fall within a VRM Class I category (WSAs), and six of the proposed developments would be located near dispersed campsites, which are generally located along roads. In addition, there would be approximately three miles of new fence under this alternative, not including that needed for spring exclosures and around wells. The new fence has potential to restrict travel of visitors in the area immediately surrounding the fence. However, no destinations or unique features were identified that would be affected by the fence and most visitors would be able to cross it with little difficulty. This effect on both recreation and visual resources would be offset by removal of 2.1 miles of fence that currently exists in the same general area and currently has the effect of potentially restricting travel.

Table 22 shows a comparison of proposed developments within each VRM class.

Table 22: Proposed Developments by VRM Class for Alternative D

Development	VRM Class I	VRM Class II	VRM Class III
Reservoir Maintenance	5	2	0
Reservoir Abandonment	2	0	0
New Reservoirs	1	0	0
Spring Development	2	0	0
Spring Protection	2	0	0
Wells	4	2	1
Pipeline	9 – 12.4 miles	4 – 5.1 miles	0
Troughs	10	5	1
Fence Removal	1 – 2.1 miles	0	0
Fence Construction	1 - 3.0 miles	0	0

Map 17 shows both the estimated maximum and minimum viewshed disturbance if all proposed improvements were constructed. The maintenance or abandonment of existing reservoirs would not have any additional effects on visual resources as they are already occurring. Under this alternative, there are eight proposed developments whose individual viewshed maps show the estimated maximum viewshed would cross South Loop Road. These developments are S2, W4, W7, W8, T13, T14, T23, and T29. However, none of their estimated minimum viewsheds cross South Loop Road, so it is not expected these developments would be obvious to visitors along South Loop Road once all the PDEs are followed.

Alternative E: Edge Development

The types of effects under this alternative would similar to those under Alternative C except fewer developments would be constructed within lands classified as VRM Class I and four of the proposed developments would be located near dispersed campsites. In addition, there would be 6.7 miles of new fence (including fences for water gaps) under this alternative, not including that needed for spring exclosures and other developments. Approximately 2.5 miles of this fence would be located on the boundary between BLM and private land, and would not restrict visitor movement on BLM land. The rest of this fence would restrict the travel of visitors in the area immediately surrounding the fence. However, access to destinations or unique features would not be affected. The effect of the new fence construction would be offset by the removal of 4.7 miles of fence that currently exists in the same general area and currently has the effect of potentially restricting travel. Since route realignment and crossing at Broken Leg and Weaver Springs, respectively, would not be constructed, there would be no change to recreation in these areas.

Table 23 shows a comparison of proposed developments within each VRM class.

Table 23: Proposed Developments by VRM Class for Alternative E

Development	VRM Class I	VRM Class II	VRM Class III
Reservoir Maintenance	0	3	0
Spring Development	1	0	0
Spring Protection	3	0	0
Wells	1	2	1
Pipeline	1 – 0.6 mile	4 - 5.0 miles	0
Troughs	0	5	1
Fence Removal	1 - 4.6 miles	0	0
Fence Construction	4 - 4.1 miles	0	0

Map 18 shows both the estimated maximum and minimum viewshed disturbance if all proposed improvements within this alternative were constructed. The maintenance or abandonment of existing reservoirs would not have any additional effects on visual resources as they are already occurring. Under this alternative, there are six proposed developments whose individual viewshed maps show the estimated maximum viewshed would cross South Loop Road. These developments are S2, W4, W7, T23, T29, and F3. However, none of their estimated minimum viewsheds cross South Loop Road, so it is not expected these developments would be obvious to visitors along the South Loop Road once all the PDEs are followed (see Appendix D: Viewshed Analysis for Individual Viewshed Analysis Maps for proposed improvements).

Alternative F: Reduced Grazing with No Development

Under this alternative, the effects would be similar as under the No Action Alternative. However, there would potentially be fewer effects caused by

livestock since fewer livestock animals would be present under this alternative than if the permittee elected to take full permitted use under the No Action Alternative.

Alternative G: Complete Removal of Livestock Grazing

Under this alternative, recreationists would no longer see livestock within the allotment. No changes to recreation opportunities or activities, or to visual characteristics, would occur.

5. Riparian Zones, Wetlands, and Water Quality

Affected Environment: Riparian Zones, Wetlands, and Water Quality

The allotment includes portions of ten subwatersheds. Only five of these subwatersheds include streams with perennial flows (3.05 miles) or intermittent streams (less than 0.5 mile) capable of supporting riparian vegetation. The remainder of the subwatersheds are composed of 227 miles of zero[57] and first[58] order stream channels, that do not have riparian soils or support riparian vegetation communities.

Five springs are displayed by USGS topographic maps on BLM-administered land within the allotment, only two of which are known to emerge with surface flow; the others demonstrate sub-flow (below the surface). Neither of the springs with surface flow has been developed. None of these springs contributes to perennial stream flows that reach Donner und Blitzen River or Catlow Basin water bodies.

Numerous small (generally less than one acre) unmapped mesic/wet meadows with riparian vegetation are present, some of which originate at non-developed springs. Others are the result of subsurface flow from the surrounding areas. Most of these meadows do not maintain saturated soils through late spring and summer.

Monitoring is currently occurring on perennial water sources that flow through the allotment. For Home Creek monitoring includes, but is not limited to, 26 photo points last taken in 2000, four trend plots last read in 2003, PFC assessments, greenline assessments, 10 shade monitoring plots from 2005, temperature monitoring, flow data, and a riparian inventory from 2003. For the Donner und Blitzen River there are over 37 photo points last taken in 2008, eight temperature plots, and six PFC locations. In addition to the monitoring of these

[57] A zero-order stream refers to intermittent streams that lack distinct stream banks but periodically function as conduits of water, sediment, nutrients, and other materials during some precipitation events.
[58] First order stream have the smallest distinct channel. These streams have no other recurring or perennial streams running into it.

streams conducted by the BLM, ODFW regularly monitors sites along them and conducts fish counts; information is shared between agencies.

Informal assessments of two springs and one unmapped intermittent riparian-capable stream that flow into Dry Creek, were conducted in 2008 utilizing factors considered in PFC field assessments, including hydrogeomorphic, vegetation, erosion and deposition, soils, water quality and biotic community factors. Each written assessment, including numerous photos, was reviewed by the assessment IDT for concurrence. The current condition of the springs with perennial flow is largely influenced by wild horses and livestock, resulting in concentrated hoof chiseling on saturated soils, and grazing on riparian vegetation. Short riparian-capable stream sections, small wetlands, and springs within large pastures are generally difficult to manage effectively without the use of exclosures (BLM TR 1737-20, 2006). This is especially true within South Steens Allotment as wild horses are present year-round, meaning even when livestock are removed from the area, damage to the springs and riparian areas continues. Cattle and wild horse share a common diet dominated by graminoids (Vallentine 1990). However, feeding mechanisms differ mechanically as cows eat by wrapping their thick rough tongue around a mouthful of grass, pulling it in, biting it, then swallowing. Horses graze by gathering grass by the lips then chopping it off close to the ground with top and bottom incisors (Vallentine 1990), occasionally pulling entire root systems from the ground, particularly in the wetted areas near streams and springs. Soil compaction and bank shearing increase with the amount of trampling; however, the relationship is asymptotic (Cole 1987). As the number of animals causing damage increases, the actual damage caused by any individual, on average, decreases since there is a lesser amount of undisturbed area. From an ecological point of view, it is similar to the economic Law of Diminishing Returns.

Soil shearing and severing of roots is more likely when soils are wet (Vallentine 1990). In the South Steens Allotment, the season of use for livestock occurs between April 1 and October 31. Average annual precipitation in the region is between eight and 14 inches falling mostly as snow from November through February. Generally, the last spring frost occurs by May 30 and the first frost of autumn by September 2; however, frost may occur during any month of the year. Damage to these riparian areas is often increased in drought years since they provide green, soft, palatable grasses long after upland grass species become dormant, attracting more animals, and resulting in heavier use.

Although waterholes may occasionally support aquatic and wetland vegetation, for the purposes of analysis, they do contribute to riparian functioning condition. This is because waterholes respond to surface runoff, lack contact with the water table, are intended to store water rather than transport water through watersheds, and cannot be assessed using PFC factors as described in interagency protocols (TR 1737-15, 1998a. or TR 1737-16, 2003).

Analysis of riparian condition is based on an assessment of PFC, a methodology developed by BLM and U.S. Forest Service (USFS) resource specialists to provide a consistent approach for considering hydrology, vegetation, and soil erosion/deposition attributes and processes to assess conditions of riparian and wetland areas. Assessments are conducted by IDTs of BLM resource specialists, and may include livestock operators and specialists from cooperating agencies. Seventeen factors of *hydrology*, *vegetation,* and *erosion/deposition* are evaluated for lotic (flowing stream) assessments [U.S. Department of the Interior (USDI) BLM Tech Ref. 1737-15, 1998a.], and 20 factors are evaluated for lentic (wetland) assessments (TR 1737-16, 2003).

Approximately four stream miles (representing six stream reaches) within South Steens Allotment were assessed in 1998 and 1999. These assessment miles are composed primarily of three reaches of Home Creek, in Home Creek Pasture, and two unnamed perennial tributaries to Donner und Blitzen River in near Burnt Car Spring in Tombstone Pasture. These four miles includes less than 0.02 mile of South Fork Donner und Blitzen River, where the Tabor Cabin water gap facilitates livestock access. All assessed stream reaches were determined to be in PFC or functioning at-risk with an upward trend.

South Fork Donner und Blitzen River (*Donner und Blitzen Sub-basin*) and Home Creek (*Guano Sub-basin*) are included on ODEQ's 303(d)[59] list (2010 Integrated Report) because both streams exceed the water temperature standard for salmonid fish (spawning, rearing, or presence). Since less than 0.02 mile of South Fork Donner und Blitzen River is in the allotment, BLM's management and development within this allotment would not be expected to influence the 303(d) listing of the South Fork Donner und Blitzen River. A Water Quality Restoration Plan (WQRP) was completed and implemented for the Guano Sub-basin in 2007. The WQRP (p. 20) states: *The existing grazing management described under the Problem Description and Condition Assessment section* [for Home Creek] *has demonstrated maintenance and/or restoration of riparian vegetation communities and stream channel stability over historic management and condition.*

The ODEQ was scheduled to complete Total Maximum Daily Loads (TMDLs), for temperature, for the Donner und Blitzen and Guano Sub-basins in 2010; however, this deadline was not met and the TMDLs for these sub-basins have not yet been completed.

For pastures in which no perennial streams are present, the primary designated beneficial use of surface water is for livestock, wildlife, and aesthetic quality. Springs in the allotment receive unrestricted use year-round from wild horses, and

[59] Oregon's water quality standards are contained in Oregon Administrative Rules 340 Division 41. Section 303(d) of the CWA requires the State to identify those waters not meeting the water quality standards, referred to as "water quality limited" or "impaired," and to develop TMDLs. The TMDLs describe the amount of each pollutant a water body can receive without violating water quality standards.

seasonally from livestock, which results in poor-quality water (especially in the fall when congregation at these sites increases) and degraded spring condition.

Riparian vegetation has a much longer growing season than upland plants due to the increased water available to them; they also often provide diversity, shade, and loafing areas making them desirable locations for grazing animals (Myers 1989), as is the case with the riparian areas within this allotment. In many cases, even if timing and frequency of grazing are managed for the riparian areas, if animals are allowed to excessively graze in the riparian areas, the plant-soil-water resource is expected to deteriorate (Mosley et al. 1999). Since wild horses are in the allotment year round, this occurs often, even when livestock are not present. Clary and Webster (1989) found there was no grazing system designed that was effective at ensuring the proper use of small riparian areas located within large upland pastures, which is what occurs within this allotment, and that it is not the grazing system used that matters, but the ability to control use in the riparian area that plays the largest role. Good management of use in riparian areas cannot occur unless all grazing animals (i.e. livestock and wild horses) can be removed following the designated use period (Clary and Webster 1989). Kovalchick and Elmore (1992) found when not managed properly, grazing in riparian areas can severely affect the stability of those sites and suggest fencing as one of the best alternatives to protect the riparian vegetation from damage caused by grazing. Research also suggests that poor management of livestock grazing in these areas can negatively affect water quality (DelCurto et al. 1999). Other research, summarized in Chamberlain and Doverspike (2001), indicates cattle prefer to drink from troughs rather than from stock ponds or streams. This preference is thought to be due to problems with depth perception and behavioral adaptation for predator avoidance (BLM TR 1737-20, p. 25).

Where juniper has become well established in the allotment, hydrologic cycle has been altered and precipitation available for infiltration is generally reduced (Pierson et al. 2007). Research has suggested that juniper establishment can result in changes to infiltration rates, sediment loss, and soil water storage and depletion rates (Miller et al. 2005). As juniper density increases on a site, the risk of resource loss may increase, due to increased runoff and erosion over areas of bare ground (Miller et al. 2005). Anecdotal evidence suggests that increases in juniper can result in decreases in the amount of water present in streams, springs, and meadows (Miller et al. 2005). Water for these sources is from precipitation that has infiltrated the soil to an impermeable layer, along which it laterally moves until it reaches the ground surface, stream channel, or spring (Miller et al. 2005). The more groundwater utilized by juniper trees, the less available to augment late-season base flow for streams, springs, and other riparian areas, which is important since it contributes cool water to moderate stream temperatures.

Availability of water from precipitation, either as rainfall or as snowmelt, within South Steens Allotment, is determined by the amount of precipitation received annually and over consecutive years, and by the capability of subwatersheds to

capture, store, and release water as base flow. Annual precipitation within the allotment ranges from 11 inches in the NW portion of the allotment (Hollywood Pasture) to 25 inches in the SE portion of the allotment (Steens Pasture). Capture and storage capability are determined by soils and by plant community composition and distribution relative to infiltration and runoff. Presence of expansion juniper continues to have the greatest influence on capture and storage of precipitation within allotment subwatersheds, and by consequence, is expected to control aspects of ecological processes. Greater cover by juniper shifts the deposition of precipitation away from infiltration in favor of interception, evapotranspiration, and surface runoff (Pierson et al. 2007). This influences the degree to which precipitation can recharge springs and streams as infiltrated base flow, regardless of the arrangement of water developments within the allotment. It is expected that this is occurring within the allotment since estimated juniper cover ranges from 0-24%, based on the ESI data completed in 1990.

Current hydrologic conditions are summarized below by sub-basin and by subwatershed within the allotment.

Donner und Blitzen Sub-basin

Dry Creek Subwatershed (5,774 acres): Approximately 1.4 miles of two unnamed perennial tributaries to Donner und Blitzen River were assessed for PFC in 1999. These streams, located near Burnt Car Spring in T. 33 S., R. 32½ E. Sections 9 and 15 have rocky, very stable channels with diverse vegetative communities that include at least three woody riparian species. They were determined to be in PFC, and were at or very near potential.

Three Springs Subwatershed (16,719 acres): The entire subwatershed is within the allotment. One riparian-capable stream flows from a spring complex, on BLM and private land, in the Three Springs area in T. 34 S., R. 32½ E., Section 25. Perennial flows are expected to extend no more than 0.1 mile during the wettest years. Intermittent flows support at least some riparian vegetation for another 0.25 mile below this, after which an ephemeral stream channel alternates with infrequent patches of mesic/wet meadow vegetation. Hoof chiseling from cattle and wild horses has altered soil topography, effectively shrinking the extent of saturated soils and the total area capable of supporting riparian vegetation. The amount of shrinkage has not been measured, but may be as much as 10% of the total riparian-capable area. Therefore, this spring is functional at-risk because the riparian area has shrunk, upland watershed is contributing to riparian degradation (loss of base flow potential), and none of the applicable vegetative factors (specifically age class distribution, species composition, and vigor) indicate maintenance of riparian function. Since flows from this spring are consistent and tributary areas are small (tens of acres), erosion/deposition factors are of lesser or no concern with respect to functioning condition. A spring not displayed on USGS topographic maps has been located in T. 34 S., R. 32½ E., Section 9 (Weaver Place). This spring has a variable level of surface flow.

Deep Creek Subwatershed (837 acres): No riparian-capable perennial or intermittent streams flow within the portion of this subwatershed located within the allotment.

Fivemile Lake Subwatershed (248 acres): No riparian-capable perennial or intermittent streams flow within the portion of this subwatershed located within the allotment.

Mud Creek Subwatershed (837 acres): The portion of the subwatershed within the allotment includes the existing water gap (Tabor Cabin) on Donner und Blitzen River. Since access to the river is limited, requiring travel in a narrow canyon, and forage is abundant around the water gap, livestock do not appear to linger there. The banks of the water gap are well vegetated and stable. No other perennial or riparian-capable intermittent streams are within this subwatershed. Surface water emerges at Broken Leg Spring in T. 34 S., R. 32¾ E., Section 19, along Three Springs Road. The spring is capable of supporting only approximately 300 square feet of wetland vegetation under regular conditions. Although the spring is wallowed-in by wild horses year-round, and by livestock while present, extensive root masses of sedges and rushes produce new growth every year. The road passes directly below the spring, and a gully has developed (probably decades ago) at the crossing altering the outflow path from the spring, and is believed to have reduced the extent of saturated soils capable of supporting riparian vegetation in the small (0.3 acre) mesic/wet meadow below. Soils remain saturated throughout the dry portion of the year in less than 0.1 acre of this meadow. An informal assessment indicates hoof chiseling from cattle and wild horses has further reduced the seasonally saturated portion of the meadow. Therefore, this spring is functional at-risk because the riparian area has shrunk (at least in the portion that remains saturated year-round), upland watershed issues are contributing to riparian degradation (loss of base flow potential), and none of the applicable vegetative factors (specifically age class distribution, species composition, and vigor) indicate maintenance of riparian function within the portion saturated year-round. Since flows from this spring are consistent, and tributary areas are small (tens of acres), erosion/deposition factors are of lesser or no concern with respect to functioning condition.

Guano/Harney Sub-basin

Dry Creek Subwatershed (20,392 acres): The entire subwatershed is within the allotment. One riparian-capable intermittent tributary to Dry Creek in T. 34 S., R. 32½ E., Section 36, south of Three Springs, supports facultative wetland vegetation[60] in the greenline for approximately 2,000 feet. A wet meadow system

[60] *Facultative wetland* species are plants that occur in wetlands (estimated probability of finding a specific facultative wetland species is greater than 67% - 99%), but are occasionally found in non-wetlands. *Obligate*

is supported by subsurface flow from the adjacent uplands along at least some of this stream channel. The stream and meadow complex have not been formally assessed for PFC, but an informal assessment conducted in 2008 indicates it is functioning at-risk, with a static or slow upward trend. Hoof-shear on streambanks from grazing animals is the main reason for the determination, but it is not certain whether this is due primarily to wild horses or cattle as it is a combination of both. Expansion juniper is also reducing the subwatershed's capacity to capture and store precipitation, reducing subsurface flow to support meadow vegetation. Three mapped springs are identified on USGS maps in the sub-basin. These springs could not be located on the ground in 2008, and may no longer emerge due to reduction in base flow and watershed yield caused by expansion juniper.

Kueny Canyon Subwatershed (17,167 acres): No riparian-capable perennial or intermittent streams flow within the portion of this subwatershed located within the allotment. One intermittent spring has been located in T. 34 S., R. 32 E., Section 2. This spring does not appear on USGS topographic maps.

Solomon Canyon Subwatershed (17,703 acres): No riparian-capable perennial or intermittent streams flow within the portion of this subwatershed located within the allotment.

Threemile Creek Subwatershed (1,621 acres): No riparian-capable perennial or intermittent streams flow within the portion of this subwatershed located within the allotment.

Home Creek Subwatershed (3,509 acres): Approximately 2.6 perennial miles of Home Creek is within the allotment, and all of it is in an area that has been designated wilderness. Home Creek was assessed for PFC in 1998, and the stream was determined to be functioning at-risk with an upward trend. A riparian inventory study of streams in the Guano Sub-basin was conducted in 2003. Based on the informal reassessment of factors used to determine riparian functioning condition, this reach of Home Creek is now expected to be near or at PFC. Expansion juniper has become well established in riparian areas along Home Creek and may negatively affect riparian characteristics.

Environmental Consequences: Riparian Zones, Wetlands, and Water Quality

<u>Effects Common to All Alternatives</u>

For the purpose of this analysis, the CEAA for Riparian Zones, Wetlands, and Water Quality extends to the subwatershed level beyond the allotment boundary.

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wetland species are plants that usually occur under natural conditions in wetlands (estimated probability of finding a specific obligate wetland species is greater than 99%).

Past, present and RFFAs in the CEAA that may contribute to cumulative effects to riparian habitat and water quality include livestock grazing, noxious weed treatments/removal, wildfire, sediment load from road crossings, conifer thinning/cutting, wildfire, and prescribed burning. Adherence to the Guidelines for Livestock Grazing Management on BLM-managed lands would minimize/negate cumulative effects from livestock grazing. Sediment loading from road crossings are planned to be addressed on a site-specific basis and fixed, as funding allows, following appropriate NEPA activities. The effects of wildfire on riparian/wetlands and water quality would be analyzed in post-fire rehabilitation plans. Past and RFFAs that have affected Riparian Zones, Wetlands, and Water Quality are found in Table 24.

Table 24: Riparian Zones, Wetlands, and Water Quality Past and RFFAs

ACTION	PAST ACTIONS			FUTURE ACTIONS		
	ACRES	MILES	NUMBER	ACRES	MILES	NUMBER
Wildfire Starts	---	---	127	---	---	Unknown
Wildfires	39,804.4	---	34	Unknown	---	Unknown
Open Roads	---	336.0	---	---	None	---
Water Developments	---	---	161	---	---	None
Gravel Pit	408.4	---	6	None	---	None
Cutting	7,206.6	---	20	11,817.1	---	17
Piling	2,362.0	---	10	1,951.5	---	21
RX Burning	9,985.0	---	16	16,555.3	---	22
Seeding	15,483.3	---	17	5	---	1
Weed Treatments	152,213[61]	---	2089	Unknown[62]		Unknown

For the allotment, as a whole, the long-term cumulative effects (over decades) to riparian areas, from expansion juniper, associated erosion, and effects to water quality and riparian vegetation, are greater than what is expected to occur from the grazing system currently in place or proposed. After planned juniper management activities occur as part of the North Steens Project, a greater proportion of precipitation is expected to reach the soil surface to become available for forbs, shrubs, and bunchgrasses within affected treatment units. Soil infiltration potential is also expected to increase, which may facilitate slower inflow to existing reservoirs and any new reservoirs, as well as springs and streams.

Effects Common to All Action Alternatives

Since new or rehabilitated reservoirs are, or would be, located on ephemeral stream channels, surface runoff would be captured that might otherwise flow further downstream since some infiltrated subsurface water may be captured. The

[61] This number includes repetitive treatments on the same acres (for example along Highway 205 and the Steens Loop Road. Therefore, the number of specific acres ever treated would be substantially less than this if repeat treatments were not included.

[62] Since weed treatments are based on monitoring data, the amount of future treatments are unknown; however, future weed treatments would occur.

channel of an ephemeral stream lies above the water table and only flows in response to recent localized precipitation. On average, commonly occurring precipitation levels and small flow events do not fully connect these small ephemeral streams directly with the Donner und Blitzen River. Since all reservoirs are designed to facilitate downstream passage of overflow, and since flow from these streams generally does not reach perennial streams lower in the watershed, effects from reservoirs on water quality and flow volume in affected sub-basins as a whole would not be measurable. Headwater ephemeral streams such as these make up a large percentage of the total watershed distance. Due to their seasonal dynamics, they have the capacity to store and remove large amounts of sediment and particulates. The amount of particulate retention will depend on the timing, duration, and the amount of water received. The accumulation of sediment and particulates carried by these ephemeral streams typically settle out prior to entering the Donner und Blitzen River. Therefore, the construction of proposed reservoirs on these ephemeral streams and any sediment generated by livestock presence around them in the future is not expected to be a contributing factor to lower or diminish the water quality in the Donner und Blitzen River. Any sediment or particulate matter carried by an ephemeral stream is expected to settle out within the footprint of the proposed reservoirs and not reach the Donner und Blitzen River except in cases of large pulse precipitation events.

Stream channel integrity and the surrounding vegetative community also determine the carrying capacity of the stream. In this semi- arid high desert environment, compacted soils and low infiltration rates coupled with sparse vegetation in the upland environment can further increase the sediment load. These ephemeral headwater streams and any associated riparian areas (however small) are in a unique position and tend to intercept the nutrients and contaminants from upland environments before they reach larger perennial streams resulting in decreased water quality at lower elevations. Water moving within these smaller channels comes into closer contact with sediment, soil organic matter, and vegetative matter. Therefore, this causes these elements and compounds to be removed from the water by either direct uptake or by conversion to inactive forms.

Effects to downstream beneficial uses, primarily resident fish and aquatic life, is expected to be uncommon, episodic, occurring no more frequently than with the No Action Alternative, and not measurable after any specific storm event. There would be no affect to riparian areas, wetlands, or water quality as a result of construction of new water developments and fence construction or fence removal.

Since stream channels below springs are ephemeral and are not capable of supporting wetland vegetation, and the tributary areas around springs are very small (tens of acres at most), the potential decrease in sediment yield from increased vegetation at springs, due to spring exclosures (protection), is not measurable.

Alternative A: No Action

Since no changes in the permitted active use AUMs or season of use would occur, the grazing system in place, with the current configuration of water availability, is expected to maintain PFC or an upward trend on portions of Home Creek functioning at-risk, and would maintain PFC in 1.4 miles of unnamed intermittent streams in Dry Creek Subwatershed in Donner und Blitzen sub-basin. However, if the permittee requested full use of the permitted AUMs, riparian areas would be expected to see an increase in grazing pressure while livestock are present, which would be expected to result in the allotment remaining in a stable condition or moving away from PFC and the achievement of Standards 2 and 4 along these streams.

For springs and the riparian meadow, factors contributing to current condition would not change. Therefore, trend in functioning condition of these springs would not improve, and would be expected to degrade further if full permitted use is requested by the permittee. Livestock would continue to utilize and damage the springs and riparian areas during the time they are present within the allotment and wild horses would continue to utilize and degrade them year round. Hoof chiseling would continue to channel flows such that the extent of wetland soils capable of supporting wetland vegetation would diminish. Although wetland vegetation would continue to be present at the springs, it is not expected to achieve adequate age class distribution, species diversity, and vigor required for the springs to achieve Standards. The cistern at Burnt Car Spring would continue to be an entrapment risk, which would continue to periodically result in the death of animals, temporarily negatively affecting water quality.

The cumulative effect on watershed processes from nonfunctional or poorly functioning springs would not be measurable, since flows from springs are not tributary to any perennial streams that reach Donner und Blitzen River or Guano/Harney sub-basin.

The current condition and trend of surface water quality within the allotment, described as effects to designated beneficial uses, would not change. Springs would continue to receive unrestricted use year-round from wild horses and livestock, when present, resulting in poor-quality (muddy) water, especially in the fall.

Since no change would occur in grazing management, the trend to water quality (temperature) in Home Creek as described in the WQRP would continue, and cover of woody vegetation would expand and continue to provide additional shade to the stream.

Alternative B: Proposed Action

Maintenance of unreliable reservoirs would tend to pull livestock and wild horses away from Home Creek by providing alternative reliable water sources. A research review was found to support the view water developments outside of riparian areas reduces both grazing use and the amount of time spent in riparian areas (George et al. 2011). Godwin and Miner (1996) also found that offstream water can decrease not only the time livestock spend in riparian areas, but it can reduce water quality impacts caused by grazing of livestock and wild horses. This is seen most when the alternative water source is located on gentle slopes in an area easily accessible to livestock (George et al. 2011).This redistribution of grazing animals would be expected to accelerate the current upward trend in riparian functioning condition, which would be visible as cover of woody species, such as willows, alder, and dogwood increase in age class, abundance, and vigor.

The protection of springs would result in the associated riparian areas being protected although results of rehabilitation may not be obvious or immediate at springs were flow from the spring currently appears to be very low, specifically S2 (Weaver Spring). Development and protection of springs would eliminate wild horse and livestock access to riparian soils saturated year-round, forcing them to congregate on firmer upland soils. Without annual disturbance from hoof chiseling by wild horses and livestock, the extent and function of riparian soils would expand within topographic limits at the sites, and support riparian vegetation over a larger area (estimated at 12 to 15 acres for the entire allotment). Since troughs fed by springs would include float valves and overflows to assure flows in excess of animal needs would not be removed from the spring or would be diverted back to riparian areas. It is not expected that development would result in a measurable loss of riparian vegetation. However, loss of riparian vegetation would be dependent upon the amount of water utilized. Monitoring at these sites that would be established would allow for early detection if this was occurring and mitigation would be needed. With protection, response of wetland vegetation would be immediate, and is expected to reach potential extent within the following decade. The route realignment around Broken Leg Spring would facilitate recovery of riparian function below the spring and help with restoration of the spring and downstream meadow to PFC. The road crossing at Weaver Spring would protect the spring source from further degradation caused by vehicles. Reducing ingress and increasing egress from the large cistern at Burnt Car Spring would have no regular effect to riparian zones; however, risks to water quality from decomposing animals within the cistern would be reduced.

The construction of the riparian meadow exclosure would protect that system from degradation caused by grazing of livestock and wild horses. Though wildlife would still be able to access the meadow, the meadow would improve in condition with protection.

Grazing exclusion from riparian areas has been found to promote recovery of degraded riparian plant communities, though species richness may not respond to grazing exclusion (George et al. 2011). Exclusion of both livestock and wild horses would eliminate the effects of trampling within these riparian areas. Protection of the springs and riparian areas within Steens Pasture would result in the pasture moving towards achieving Standards 2 and 4 in that pasture.

Alternative C: Maximum Water Distribution

Effects under this development would be the same as under the Proposed Action, with two exceptions. One of the proposed reservoirs in Tombstone Pasture (R1) would be constructed on a riparian-capable stream (unnamed tributary to Donner und Blitzen River, southeast of Burnt Car Spring) now in PFC. At this reservoir, functioning condition of the stream would diminish to some extent due to the increased presence of grazing animals and disruption of persistent flows. In addition, the riparian meadow would not be protected since the riparian exclosure would not be constructed under this alternative.

Alternative D: Along Road Development

Effects under this development would be the same as under the Proposed Action, with one exception. The riparian meadow would not be protected since the exclosure would not be constructed under this alternative.

Alternative E: Edge Development

Under this alternative, the effects of spring protection and development of springs would be the same as under the Proposed Action. However, the route realignment around Broken Leg Spring and the crossing at Weaver Spring would not be constructed and degradation of these sites would continue, with the most degradation occurring in wet years when the springs are flowing at increased rates.

While no new reservoirs would be constructed or maintained within Home Creek Pasture, three new wells and one pipeline would be constructed. However, by relocating the pasture fence, eight existing reservoirs currently in the southern end of Home Creek Pasture would become part of Steens Pasture, and only one of the wells and pipelines (two troughs) would be located in an area that would replace these reservoirs as a water source. This would result in an overall decrease of six water sources in the southern end of Home Creek Pasture. Since Home Creek runs through the southern portion of this pasture, this is expected to result in livestock utilizing Home Creek more for reliable water, changing the riparian trend along the creek from upward to stable or downward depending on how much livestock use of the creek increases. While Standards 2 and 4 are expected to become achieved, or move toward being achieved, in Steens Pasture due to spring protection, it is expected these Standards, currently achieved in Home

Creek Pasture, would be at risk of not being achieved in the future. However, the new fence location would reduce access to the riparian corridor along Home Creek, which may counter some of the draw to the river. Monitoring would be needed to ensure Home Creek continues to achieve all Standards in the future; this may require mitigation or adjustments using adaptive management.

Based on riparian condition of the existing water gap (Tabor Cabin) on Donner und Blitzen River, it is not expected that the addition of three more water gaps would have any measurable influence on overall riparian condition or water quality along the Donner und Blitzen corridor. As with the existing water gap, access would be limited, terrain on the approach would be relatively steep, and forage would not be abundant near the water source. Therefore, grazing animals would not be expected to linger at any of the three proposed water gaps any more than they do now at Tabor Cabin.

Alternative F: Reduced Grazing with No Development

The effects of this alternative would be similar to the No Action Alternative, and the same if assuming the status quo. If the permittee were to utilize full permitted active use under the No Action Alternative, the effects to riparian areas under this alternative would be slightly less than under the No Action Alternative due to the decreased permitted levels of livestock use in riparian areas. Wild horse use would be the same as under the No Action Alternative; therefore, the overall decrease in the use of riparian areas would not be as beneficial to the riparian areas as full protection of the sites.

Alternative G: Complete Removal of Livestock Grazing

Under this alternative, effects would be less than the No Action Alternative. Livestock would no longer graze riparian areas, decreasing effects to riparian areas from livestock overgrazing and trampling. However, these effects would still occur due to wild horses continuing to graze within the allotment and continuing to congregate in riparian areas. Therefore, the overall decrease in the use of riparian areas would not be as beneficial as full protection of the sites under other alternatives. The reduction in grazing would result in PFC being maintained or showing an upward trend on streams within the allotment.

6. Social and Economic Values

Affected Environment: Social and Economic Values

Livestock raising and associated feed production industries are major contributors to the economy of Harney County. The highest individual agricultural sales revenue in the county is derived from cattle production (65%), which is inextricably linked to the commodity value of public rangelands. The cattle industry provided

$37,955,000 in sales in Harney County in 2009 compared to $42,973,000 in 2008 [Oregon State University (OSU), Extension Service, 2010].

Those engaged in ranching and forage production are an important part of the history, culture, and economy of Harney County, and make up a strong component of the fabric of the local societies. Livestock grazing operations on public and private lands can have a stabilizing influence on local employment and quality of life (social, health, economic and environmental conditions). *Quality of life* is very individual when determining what is valued in a lifestyle and what features make up that lifestyle. Lifestyle features can be determined by historical activities of the area, career opportunities, and the general cultural features of the geographical area. Quality of life issues are subjective and can be modified over time with exposure to other ways of living.

Recreation is a component of most lifestyles in the area, and includes driving for pleasure, camping, backpacking, fishing, hunting, hiking, horseback riding, photography, wildlife viewing, and sightseeing for the overall quality of life for residents. In addition to local recreation use, the undeveloped, open spaces in the county are themselves a tourist attraction and contribute a "sense of place" for many. The attachment people feel to a setting, typically through repeated experiences, provides them with this sense of place. Attachments can be spiritual, cultural, aesthetic, economic, social, or recreational.

Tourism also contributes revenue to local businesses. The Steens Mountain area is central to Harney County tourism. A 2007 study found local economic effects associated with recreation visits to Malheur National Wildlife Refuge totaled approximately 4.4 million dollars during 2006 (Carver and Caudill 2007). Hunting and other types of dispersed outdoor recreational experiences contribute to the local economy on a seasonal basis. Fee hunting and recreation alone contributed $110,000 to Harney County in 2009 (http://oain.oregonstate.edu, 2009).

Currently the allotment is licensed for 9,577 AUMs at $1.35/AUM (subject to change on a grazing year basis). During drought years, the permittee has elected to use fewer AUMs, averaging 5,102 AUMs per year between 2003 and 2010. Approximate revenue generated over the last five years is $34,438.

Environmental Consequences: Social and Economic Values

Effects Common to All Alternatives

The CEAA for this project is Harney County. The North Steens Project is a RFFA, having potential to improve rangeland health and increase forage production for wildlife, wild horses, and livestock. Thereby, maintaining or possibly increasing economic opportunities and fostering more desirable recreation opportunities with associated economic benefits to the local economy. Rangeland improvement could also bring about increased sustainability for

livestock operations, further improving the local economy and supporting a well-established, local, rural-oriented social fabric.

Alternative A: No Action

Under the No Action Alternative, the permittee is expected to use fewer than permitted AUMs, as no new water developments would be constructed.

Costs associated with development of water features vary from $7,320 to develop a spring to $35,000 to drill a well. No contracts for construction or supplies would be purchased from local vendors under this alternative; therefore, no new revenue would be generated.

The value of livestock in the allotment is expected to remain at current levels as rangeland conditions remain stable. However, potential exists for rangelands to move toward a downward trend if uneven distribution of livestock continues or the permittee grazes all allotted AUMs in the portions of the allotment with access to reliable water. Poorer range conditions could lead to lower weaning weights or a reduction in overall cattle numbers affecting the economics of the ranch, as well as the chance of the BLM permanently reducing permitted AUMs on the allotment if grazing at current full permitted use did result in downward range conditions. The cistern at Burnt Car Spring would continue to be an entrapment risk for livestock, which could periodically result in a loss of livestock.

The Federal government would continue to collect grazing permit fees from the permittee, and this commodity use on public lands would continue to generate revenues for the Federal government and private sector. However, under this alternative the government does not expect to collect fees for all 9,577 AUMs allotted, as the permittee has historically voluntarily used fewer AUMs than permitted and the BLM would require the permittee to have cattle removed if the 50% maximum utilization level is exceeded within the allotment or if the allotment was showing ecological damage.

At the same time, public lands in and around the allotment would also continue to contribute social amenities such as open space, scenic quality, and recreational opportunities (including hunting, hiking, sightseeing, and camping). These amenities enhance local communities and tourism, though the specific contribution of the allotment area is not known.

No effects to a visitor's experience or opportunities are expected by implementing the No Action Alternative.

Alternative B: Proposed Action

This alternative would allow the permittee to graze all 9,577 allotted AUMs and provide revenue to the Federal government. Payment to the Federal government would be $12,928.95/year at the current AUM rate of $1.35/AUM.

This alternative could utilize contracts to construct the proposed developments. To develop all rangeland improvements under this alternative the cost is estimated to be over $260,000. This number would not include costs associated with maintaining existing reservoirs as BLM or the permittee under a rangeland agreement would do this work.

Implementing the project could provide economic opportunities for local contractors and suppliers. Range improvement projects may be funded under a cost share between the Burns District BLM and the permittee, as would be specified in a future cooperative agreement. The permittee has verbally agreed to cost share range improvement projects.

The proposed developments are designed to better distribute livestock and wild horses, which in turn should continue to improve rangeland conditions over time by reducing utilization around current reliable water sources and increasing it in areas only slightly, or not currently, used. Improved rangeland conditions could increase forage production for livestock, wild horses, and wildlife. Providing for sustainable grazing management that improves habitat conditions for wildlife would in turn increase economic opportunities and foster more desirable social opportunities such as hunting and wildlife viewing. However, some visitors may feel additional range improvements would detract from their recreational experience. By reducing ingress and increasing egress from the large cistern at Burnt Car Spring, the risk of entrapment and subsequent loss of livestock would be reduced.

There would be some temporary and short-term (days) disturbance to recreational activities in the immediate area during construction; however, no changes to the types of recreation opportunities are expected. Reservoirs would have the most excavation, but they would be located in drainages and would not be expected to be large enough to modify the overall form of those drainages.

Some visitor's perception of solitude and experience may also be affected by presence of livestock; however, it is expected livestock would be better distributed, in smaller numbers, over the entire area.

By maintaining a viable and sustainable grazing operation and improving rangeland conditions in South Steens Allotment, the traditions associated with the ranching communities of Harney County would be maintained and possibly improved.

Alternative C: Maximum Water Distribution

Under this alternative, effects from implementation would be similar to the proposed action. The differences being that under this alternative, the cost to develop all range improvements would be estimated to be over $669,145, in addition to costs associated with maintaining existing reservoirs. BLM or the permittee under a cooperative rangeland agreement would do work associated with maintenance.

Alternative D: Along Road Development

Effects from implementing Alternative D would be similar to the Proposed Action. One difference is that costs associated with construction of developments would be approximately $746,419 assuming BLM would perform the work. In addition, 3.0 miles of new fencing could potentially restrict the travel of visitors but this would be partially offset by removal of 2.1 miles of existing fence. No destinations or unique features were identified that would be affected by the fence. Under this alternative, distribution of livestock and wild horses would not be realized as well as under Alternative B or C as development would be limited to areas along roads (with the exception of spring protections).

Alternative E: Edge Development

Costs associated with implementing Alternative E would be estimated to be $698,996. Livestock and wild horse distribution would not be realized as well as under Alternative B or C as development would be limited to outside, and along the edges, of WSAs. This alternative could mean lower weaning weights for calves, lower breed-back percentages, and overall lower livestock health, affecting the permittee. Approximately 6.7 miles of new fence are proposed under this alternative and would restrict the travel of visitors in the area immediately surrounding the fence. However, no destinations or unique features were identified that would be affected by the fence. This effect would also be offset by the removal of 4.6 miles of existing fence, which already restricts some travel. All other effects would be the same as Alternative B.

Alternative F: Reduced Grazing with No Development

Under this alternative, effects would be the same as under the No Action Alternative except that the Federal Government would only realize $10,631 (maximum) in grazing fees annually due to the reduced number of permitted AUMs. The ranch would be responsible finding replacement forage for the AUMs lost or would have to cut livestock numbers increasing their costs and decreasing their profits. If livestock numbers were cut, the production of beef would be reduced, reducing the economic value the ranch would be able to put into the economy.

Alternative G: Complete Removal of Livestock Grazing

Under this alternative, the Federal Government would not collect annual grazing fees and no revenue would be generated from the purchase of supplies or contracts since no livestock grazing or range improvements would occur within the allotment. *Quality of life* for the ranch would be affected by the need to decrease herd size or find new rangelands for livestock to utilize. The actual extents of the effects to the ranch are unknown. There would be a loss to the economy due to the reduced beef production in the area; however, the specific amount of the loss would be based on current market values, class of animal grazing the allotment, among other variables, and would be difficult to accurately calculate without making multiple assumptions. Other social effects would be the same as the No Action Alternative.

7. Soils and Biological Soil Crusts

Affected Environment: Soils and Biological Soil Crusts

Four general soil types have been identified within the allotment. Table 25 contains a description of each type, by acres, within South Steens Allotment.

Table 25: Soil Types in the South Steens Allotment (BLM only)

Soil Type	Description	Acres
Spangenburg-Enko-Catlow	Very deep, somewhat poorly drained, hydric soils of basins and playas. Low potential for water erosion, moderate potential for wind erosion.	410
Reallis-Vergas-Lawen	Well-drained, very deep soils, formed on high lake terraces and fan terraces. Generally low potential for erosion from wind or water.	2,463
Raz-Brace-Anawalt	Well-drained, shallow or moderately deep soils formed in residuum and colluvium on tablelands. Generally low potential for erosion from wind or water.	11,595
Ninemile-Westbutte-Carryback	Well-drained, shallow and moderately deep soils formed in residuum and colluvium on tablelands. Generally low potential for erosion from water, moderate potential from wind erosion.	75,041
	TOTAL ACRES	**89,509**

Approximately 83,207 acres (92%) of the allotment is composed of claypan soils in the Ninemile-Westbutte-Carryback and Raz-Brace-Anawalt general soil series. The primary characteristic of these soils is a dense, compact, slowly permeable layer in the subsoil, having much higher clay content than the overlying material, from which it is separated by a sharply defined boundary. Claypans are usually hard when dry, and plastic and sticky when wet. These soils limit or slow the downward movement of water. Erosion potential is slight for both wind and water. Within the allotment, mountain big sagebrush and low sagebrush are dominant shrubs on claypan soils, usually with Sandberg bluegrass (*Poa secunda* J. Presl), bluebunch wheatgrass and Idaho fescue being the dominant grasses. Forb diversity and density can be quite high on these soils.

Approximately 3,608 acres (4%) of the allotment in the Ninemile-Westbutte-Carryback soil series is composed of rock outcrops on mountainsides, hillsides, and escarpments with slopes steeper than 30%. These areas support communities primarily composed of mountain big sagebrush, bluebunch wheatgrass, Thurber's needlegrass, and Idaho fescue. Local stands of bitterbrush are also present. These areas are often less accessible (or inaccessible) to livestock.

Loamy soils in the Reallis-Vergas-Lawen series comprise approximately 2,463 acres (3%) of the allotment. Erosion potential is slight for water and moderate for wind. These soils are on slopes generally less than 25% and support vegetation communities including Wyoming big sagebrush, low sagebrush, needlegrass species, and bluebunch wheatgrass.

Three small areas encompassing approximately 410 acres (less than 1%) consist of seasonal flood plains, and dry basins and playas, in the Spangenburg-Enko-Catlow soil series. These areas typically support communities consisting of silver sagebrush (*Artemisia cana* Pursh), basin wildrye [*Leymus cinereus* (Scribn. & Merr.) Á. Löve], and Sandberg bluegrass, and have a slight potential for both wind and water erosion.

BSCs are specialized organisms that occupy the nutrient-poor zones between vegetation clumps in many types of upland, arid vegetation communities. BSCs function as living mulch by retaining soil moisture, discouraging annual weed growth, reducing wind and water erosion, fixing atmospheric nitrogen, and contributing organic material to soil fertility (USDI TR 1730-2, 2001). The BSCs include such organisms as mosses, lichens, green algae, microfungi, cyanobacteria, and other bacteria. Presence and general health of BSCs are reflected in a site's soil surface stability (USDI TR 1730-2, 2001) and biological productivity, which in turn is a reflection of BSC contribution to ecological processes supporting these elements.

Potential types, cover area, and species composition of BSCs are influenced by a number of physical and biotic site-specific factors. Species composition is sensitive to subtle changes in soil chemistry (Ponzetti and McCune 2001), especially with respect to lichen species. Cover area by BSCs is generally greater at drier sites at lower elevations, especially salt desert shrub communities not subjected to periodic seasonal flooding and Wyoming big sagebrush sites. Several factors generally influencing the distribution and vigor of BSCs include elevation, precipitation (timing and amount), soils and topography, disturbance, vascular plant community structure, ecological gradients and microhabitats. Potential cover by BSCs is generally inhibited by wetter conditions that support vigorous cover by vascular plants at higher elevations (USDI TR 1730-2, 2001). Because BSCs increase infiltration of precipitation, as well as trap microscopic and macroscopic nutrient particles, the reduction in the diversity and cover of microbiotic crusts may disrupt the ecological processes of the nutrient and

hydrologic cycles and energy flow, as well as site stability and resistance to undesirable species such as cheatgrass (Pellant 1996).

Within the allotment, dense vascular vegetation (especially mountain big sagebrush), accumulating plant litter, and high herbaceous plant density are the primary limitations to potential BSC cover (USFS 2000 Interior Columbia Basin Ecosystem Management Project Supplemental Draft EIS). The BSC cover is expected to be highest on soils with fine-textured silt, silt loam, and clay surface layers, where low sagebrush grows. Rangeland health assessments found short mosses to be the most common BSC type within the allotment. Foliose lichens are present on north slopes with deeper soils, usually in association with mountain big sagebrush communities. In areas of low sagebrush and shallower soils, the nitrogen fixing lichen, *Collema*, is present in varying degrees.

Rangeland health indicators are a tool to ascertain whether or not grazing is having an impact on vegetation and indirectly, BSC. Proper grazing management can reduce the threat of catastrophic wildfires that would permanently remove BSCs from areas that can be in excess of 10,000s of acres. A greater threat to BSCs is invasive annual grass species such as cheatgrass and medusahead rye. These species occupy the same habitat (interspaces) as BSCs. While livestock can be a vector for these species, other vectors such as wildfire, recreation, and other human activities have a greater influence on the establishment of these species (TR-1730-2, 4.2.2).

Grazing (livestock and wild horse) has occurred in the allotment for over 100 years. Effects to soil compaction and BSCs from grazing within the allotment are greatest around water and mineral supplement sites, and along frequent travel corridors. They are lowest on slopes steeper than 20%, areas with low forage quality or quantity, very rocky sites, and areas farthest from water and supplement sites. Over 90% of the allotment is in slopes 0 to 12%; therefore, on 90% of the allotment, slope is not expected to be a factor in determining use by livestock and wild horses.

Environmental Consequences: Soils and Biological Soil Crusts

Effects Common to All Alternatives

For the purposes of this analysis, the CEAA for soils and BSCs is the allotment boundary. Past and present actions and events have influenced the existing environment within the CEAA. RFFAs in the CEAA that may contribute to cumulative effects to soils and BSCs include livestock grazing, hunting, and other recreational pursuits.

Effects Common to All Action Alternatives

None of the action alternatives increase authorized AUMs for livestock grazing, and all slightly decrease (by 15 days) the authorized season of use. Since the alternatives change only distribution of soil disturbance from hoof impact from grazing, the net effect to soil surface stability, and extent and vigor of BSCs, within the allotment as a whole, are expected to be the same for any alternative, including the No Action Alternative. Hoof action encompasses compressional disturbances, which break sheaths and filaments, and drastically reduces the ability of the soil organisms to function, particularly in providing nitrogen and soil stability (USGS Canyonlands Research Station 2006). The sum of differences in environmental consequences between alternatives is characterized by the extent, degree, and distribution of *localized* impacts. The alternatives represent a range of impacts from greater extent and degree distributed within a smaller portion of the allotment, to lesser extent and degree of impacts distributed over a larger portion. To the extent these actions would not regularly occur, such as with infrequent return for maintenance over decades, effects are expected to be temporary, disappearing within a few years to a decade at most.

All action alternatives propose to select from a list of proposed developments to achieve allotment objectives. Alternatives differ only in the type, number, location, and arrangement of proposed developments. Potential environmental effects from individual developments are local in nature, but the cumulative effect of each alternative would be a change in distribution of grazing animals throughout the allotment. Degree and extent of disturbance at any particular site would vary by alternative, and would be determined primarily by the number and distribution of water sources available to grazing animals within the allotment. Localized impacts to soils and BSCs from grazing animal use, and trails at and around any single reliable water source, are expected to be light in wet years when unreliable sources are available, and heavier in drier years when only the reliable sources are available. During drought, years localized impacts to soils and BSCs at unreliable reservoirs would be expected to be light, but during wet years they would be expected to be heavier.

Virtually all of the allotment (over 99%), is within an elevation band (4500 feet to 8500 feet) subject to expansion juniper. Soil surface stability, health and vigor of vegetative communities, and the extent and vigor of BSCs is expected to decline over time (excluding areas that historically support old-growth juniper stands), due to juniper expansion. A separate analysis (North Steens Project FEIS, 2007) was prepared and management of juniper is planned within the allotment, regardless of the alternative chosen under this EA. Because there is always soil compaction and disturbance associated with water developments, affects to soil stability and BSCs would be neutral from the S. Steens AMP projects. Juniper management provided through the North Steens FEIS will have a greater impact on stability and presence of soils and BSCs and are analyzed in that document.

RFFAs include continued juniper management through the North Steens Project, recreation, hunting, grazing, and wildlife use. Juniper management would have the greatest effect on soils and BSCs by reducing the competition from juniper and allowing native grasses, shrubs, and forbs to reestablish and stabilize soils, as well as allowing BSCs to expand beyond their current sites. Establishment and reestablishment of BSCs is a slow process that can take anywhere from less than one year for mosses to 25 or more years for some lichens.

The effect of each individual development, by type, is discussed below. The cumulative effects of each alternative would be dependent upon the number and type of proposed developments under that alternative.

New Reservoirs and Maintained Existing Reservoirs: Established upland soil profiles would be removed or turned-over. Compaction and disturbance to soils and BSCs would occur along access routes for equipment, during both construction and maintenance activities, but these effects would be temporary in nature, visible for less than one to three years. Annual frost action would restore soil bulk density on access routes within one to two winters depending on soil moisture content and temperatures (professional observation).

At each reservoir, zones of locally heavier annual soil disturbance and compaction would develop due to livestock and wild horse use, diminishing with distance from the development, depending on terrain and available forage nearby. Where reservoirs are constructed at confined sites with steep banks, soil disturbance is expected to be limited to the inflow periphery and the berm/dam. At more open sites, soil impacts are expected to be more evenly distributed, or may be locally heavier where shade is available nearby since shaded areas are popular for loafing.

Due to focused soil compaction resulting from annual hoof impacts, BSCs may be completely eliminated from a band of soil surface surrounding reservoirs. Width and configuration of this band depends on topography and proximity to shade during warmer months. However, effects to soil surface stability are offset by rocks, vegetative litter, manure, and soil physical properties, which generally have low to moderate potential for erosion within the allotment. Any surface erosion that does occur is mostly, if not entirely, captured by the reservoir itself, since the impact area is primarily sloped toward the catchment.

Wells: Soil would be compacted in an area approximately 100 feet by 100 feet. Soil compaction from presence of drilling equipment and materials would be temporary, requiring one to two years of frost action to recover.

Pipelines: Pipeline installation would turnover soil profiles in an area that would equate to approximately 0.25 acre per linear mile. Direct seeding

and rocks would provide initial protection of soil surfaces, augmented by establishment of shrubs and other native vegetation naturally over the following decade.

Troughs: Bottomless troughs (30-foot diameter) would replace roughly 710 square feet of soil surface with concrete, upon which the trough would be placed and sealed. Since bottomless troughs are usually placed on relatively flat terrain, it is expected this area would be somewhat uniform. Installation of metal troughs would partially disturb vegetation and compact soil over an area approximately 10 feet by 20 feet and completely cover an area four feet by 12 feet directly under the trough. At each trough, zones of locally heavier annual soil disturbance and compaction would develop due to grazing animal use, diminishing with distance, depending on terrain and available forage nearby.

As with reservoirs, focused soil compaction resulting from annual hoof impacts may completely prevent recovery or reestablishment of BSCs on a band of soil surface surrounding troughs, with the same dependent characteristics.

Storage Tanks: The process and equipment required to bury a 10,000-gallon water storage tank would turn over soil profiles over an area approximately 12 feet wide by 36 feet long, or 0.01 acre per site. Direct seeding and rocks would provide initial protection of soil surfaces, augmented by establishment of shrubs and other native vegetation naturally over the following decades. Should the tank need to be replaced, the process would occur again in 20 or more years.

Fencing: Since blading, grading, and brushing would not occur to facilitate construction of new fence in WSA and wilderness, affects are expected be unnoticeable one to two years after construction. Some soil surface disturbance and compaction would occur adjacent to fence lines during construction, but frost action returns soils to previous conditions after one winter. The construction of wire fences would only have long-term (one or more decades) effects on soils and BSCs where the soil was disturbed at each post (less than four square inches per post). The construction of wood fences would have a greater effect on soils and BSCs than wire fences due to the removal of soil surface the size of the post (approximately six inches in diameter), which would require the turning of the soil profile for a post hole of 12-18 inches in diameter in order to properly set each post. Rocks would provide initial protection of soil surfaces, around the posts, augmented by establishment of vegetation naturally over the following decade. Effects to soils and BSCs from passage along fence lines to check maintenance needs would not be measurable.

Spring Development/Protection: Effects to upland soils and BSCs are addressed previously as those resulting from pipeline burial, trough placement, and fencing. Soil profile turnover would occur in a very small area (less than 10 square feet) where the head box would be buried.

Route Realignment[63]: Soil compaction resulting from vehicle passage to create the alternate route would be offset as soils on the original route recover through frost action and other soil processes. Over the following decade, as the old route becomes rehabilitated, effects become a one-for-one exchange, with the area of the new route effecting soil more since the new route would be approximately 50 feet longer than the old route.

Water Gaps: Effects to soil and BSCs would be the same as under fencing.

Alternative A: No Action

The existing condition, trend of BSCs, and their contribution to soil surface stability, would be maintained. Livestock distribution would continue to be driven by availability of water as currently described, which would maintain the current uneven utilization of bunchgrasses and the pattern of effects to soil surface stability and BSCs within the allotment. Animals would continue to have access to currently existing reservoirs, in addition to existing springs. Effects to BSCs in any given year would generally be greatest around water sources used earliest, when clay soils are wet. Once clay soils have dried, the timing of which is variable from year-to-year, hoof shear from summer and fall livestock grazing would have less influence on BSCs (USDI TR 1730-2, 2001). Growth and expansion of juniper would continue to be the primary influence on vegetation and BSCs, and their effects on soil surface stability would continue until planned treatments are implemented. Temporary effects (lasting less than one decade, but generally one to three years) to soils and BSCs would continue to occur infrequently as part of existing range improvement maintenance.

Alternative B: Proposed Action

Direct long-term (one or more decades) and short-term (less than one decade) impacts to soils and BSCs from all ground-disturbing activities associated with implementing this alternative, would affect less than 1% of the allotment. The cumulative effect of the alternative, when all proposed projects have been completed, would be to distribute annual disturbance to BSCs and soils from livestock and wild horse grazing across the allotment by increasing the amount of area available to animals for grazing due to the increase in use area size.

[63] These effects would not occur under Alternative E, as route realignment is not proposed under that alternative.

Alternative C: Maximum Water Distribution

Effects under this alternative are similar to the Proposed Action. However, they would be greater than under the Proposed Action due to a large increase in the number of proposed developments. The more reliable developments, the more evenly these effects would be spread across the allotment.

Alternative D: Along Road Development

Effects under this alternative would be similar to the Proposed Action. However, since only one new reservoir would be constructed, direct long-term effects would be less than under Alternatives B and C. The cumulative effect of the alternative, when all proposed projects have been completed, would be to increase distribution of annual disturbance to BSCs, soils, and vegetation from grazing along existing roads and ways; however, the effects would not be as evenly spread across the allotment as under Alternatives B or C.

Alternative E: Edge Development

Effects under this alternative would be similar to the Proposed Action. However, the cumulative effects of the alternative, when all proposed projects have been completed, would be to increase distribution of annual disturbance from livestock and wild horse grazing along the edges of WSAs and private inholdings, with the interiors of the WSAs remaining largely inaccessible to grazing animals due to distance from water. Grazing in the allotment and associated impacts to soil are expected to be consistent between years due to fewer reliable water sources. Since no new reservoirs would be constructed, which result in the largest, long-term disturbance to soils and BSCs, direct long-term effects would be less than under all other action alternatives.

Grazing in the allotment and associated impacts to soil and vegetation are expected to be consistent between years. Localized impacts to soils and BSCs from grazing and livestock trails, at and around any single water source, may be light in wet years when unreliable sources are available, and heavier in drier years when only reliable sources are available.

Alternative F: Reduced Grazing with No Development

Under this alternative, the effects to soils and biological crusts would be similar to the No Action Alternative, but would be expected to be less due to the permanent reduction in AUMs under this alternative (under the No Action Alternative the permittee can still request up to full use of 9,577 AUMs).

Alternative G: Complete Removal of Livestock Grazing

Under this alternative, effects to soils and biological crusts would be similar to the No Action Alternative, only less due to the permanent removal of livestock from the allotment. Since wild horses would still graze within the allotment, effects of wild horse grazing would still occur on soils and BSCs.

8. Special Status Species

Affected Environment: Special Status Species-Wildlife

Wildlife SSS occurring within the allotment include the Greater Sage-Grouse and two species of bats, the fringed myotis and Townsend's big-eared bat. Greater Sage-Grouse use the allotment yearlong and have seven leks within the allotment, three of which are known to be active[64] at this time. The other four have intermittent use, where they are used some years and not others (for more information on leks contact ODFW).

Table 26: Greater Sage-Grouse Habitat by Type.

Greater Sage-Grouse Habitat	Acres	Percent
PPH	74,755	79%
PGH	16,409	21%
TOTAL	94,563	100%

Approximately 79% of the allotment is designated PPH and 21% is designated PGH. Nest sites were located in the allotment during a radio telemetry study from 1997 to 2000. Approximately 65% of nests were within two miles of a lek and 83% were within three miles of a lek. Approximately 75% of this allotment is within three miles of a lek site. Greater Sage-Grouse connectivity is currently unknown until further telemetry studies can be completed; anything else at this point is nothing more than supposition and cannot be backed with any scientific data or findings. ODFW identified areas that may be used as connectivity corridors in the Strategy, using a habitat viability model, but specifics about Greater Sage-Grouse connectivity is limited. The BLM continue to monitor research related to connectivity. Nest sites were determined to be located mostly in big sagebrush/mountain shrub vegetation types with about one-third of nests occurring in low sagebrush sites (Crawford et al. 2000). Since most Greater Sage-Grouse hens nest during late March to early April, new growth on perennial grasses is minimal and previous years' (residual) grass growth provides cover for nesting. Nest success for Greater Sage-Grouse is higher when sagebrush canopy cover is high and residual tall grass cover (greater than seven inches) is present at the nest site (Gregg et al. 1994, DeLong et al. 1995). Residual grass cover

[64] A lek attended by ≥1 male Greater Sage-Grouse during the breeding season. Acceptable documentation of grouse presence includes observation of birds using the site or recent signs of lek attendance (e.g. fresh droppings, feathers). New leks found during ground counts or surveys are given an annual status of active.

provides horizontal screening at the nest site, which blocks the view from predators. Utilization data for the allotment, which directly affects residual grass cover, is discussed under Grazing Management and Rangelands Section. Brood rearing also occurs in the allotment, but with few meadow areas in the allotment, Greater Sage-Grouse hens with broods may move to springs, higher elevations, riparian areas around perennial water such as Home Creek, or move outside the allotment. During the summer months, Greater Sage-Grouse seek water, usually associated with wet meadows and succulent vegetation (Call and Maser 1985). If the year has been unusually dry, Greater Sage-Grouse may use any water source available, including reservoirs, but do not use livestock watering troughs as readily since access to the water is more difficult (Call and Maser 1985, Hanf et al. 1994). Partially buried water troughs or those set with the top near ground level may be accessed more easily by Greater Sage-Grouse (Call and Maser 1985, Hanf et al. 1994). Greater Sage-Grouse winter in lower elevations of the allotment, depending on snow depth during winter.

Anderson and McCuistion (2008) found grazing management, when upland birds are present, should be flexible, but limited to a light to moderate use (30-50% utilization), using deferred or rest-rotation grazing to limit grazing disturbances during critical bird life stages such as nesting. They concluded light to moderate use can increase forb quality and quantity since grazing can delay the maturation of forbs, extending their availability throughout the growing season (Anderson and McCuistion 2008). Adams et al. (2004) suggests grazing encourages the height and cover of sagebrush and other native species during nesting seasons, and light grazing is used to create patches in the vegetation, increasing the herbage of species preferred by Greater Sage-Grouse, especially during nesting and brood-rearing. Greater Sage-Grouse often prefer the lightly grazed areas and desired grazing intensity should be light to moderate to meet their needs for litter and cover (Adams et al. 2004). France et al. (2008) found that in more arid sites sagebrush cover provides the bulk of screening cover (for wildlife including Greater Sage-Grouse), which is contradictory to other research (Connelly et al. 1991; Delong et al. 1995; Sveum et al. 1998) that emphasizes the role of herbaceous cover for screening. While Greater Sage-Grouse like some patchiness in grazing due to the increased forb production that may occur on these sites, largely uneven livestock distribution can be undesirable since the impacts associated with heavy use often occur in preferred habitat such as riparian areas (Adams et al. 2004). In general, the desirable livestock distribution, as far as Greater Sage-Grouse are concerned, would be healthy vegetation with good cover and small patches of moderate to heavy use (Adams et al. 2004). For Greater Sage-Grouse, poor livestock management would result in large areas of uniform grazing at moderate or higher grazing intensities (Adams et al. 2004). This uniformity occurs when grazing animals have access to all forage, and are forced to utilize both palatable and unpalatable species within the pasture, with no topography, cover, or water factors limiting the use (Coughenour 1991). Uniformity is not expected to occur within this allotment. Research also suggests grazing deferral be utilized to prevent livestock caused disturbance to Greater

Sage-Grouse during nesting, as well as preventing competition for forage, specifically forbs, that are required during that time (Adams et al. 2004). Adams et al. (2004) found deferred grazing can improve both the plant vigor and the productivity of grass communities, which in turn increases the amount of vegetative cover. Due to the complexities of sagebrush communities and the variation in grazing effects on these communities, it can be difficult to draw large-scale conclusions regarding the impact of current grazing on Greater Sage-Grouse (Crawford et al. 2004).

The Strategy (Hagen 2011) has an action item to:

> Promote vegetation that supports nesting, brood-rearing, and winter habitats including maintenance or recovery of shrub and herbaceous (native grasses and forbs) cover. Retain residual cover adequate to conceal Greater Sage-Grouse nests and broods from predation, and plant communities that provide a diversity of plant and insect food sources.

The Strategy recognizes that appropriate livestock grazing can be compatible with Greater Sage-Grouse habitat needs and has the following conservation guidelines for livestock grazing (pg. 103-104):

> 1) Where livestock grazing management results in a level of forage use (use levels) that is consistent with Resource Management Plans, Allotment Management Plans, Terms and Conditions of Grazing Permits or Leases, other allotment specific direction, and regulations, no changes to use or management are recommended if habitat quality meets Rangeland Health Standard and Guidelines.
>
> 2) Where livestock grazing management results in a forage use level detrimental to habitat quality, it is recommended changes in grazing management be made as soon as possible to recover habitat quality. Adjustments to grazing management should be conducted in accordance with regulations of responsible land management agency.
>
> a) Adaptive management that should be considered include:
> i) changes in salting and/or watering locations,
> ii) change in the season, fencing, duration or intensity of use,
> iii) reducing grazing use levels,
> iv) temporary livestock non-use (rest), or
> v) extended livestock non-use until specific local objectives are met as identified by implementation group.
>
> 3) The timing and location of livestock turnout and trailing should not contribute to livestock concentrations on leks during the sage-grouse breeding season.

4) Measurement of grazing levels should be conducted on that portion of the pasture which is known to be sage-grouse habitat and will not be based on "average use" throughout the entire pasture.

5) Reduce physical disturbance to sage-grouse leks from livestock through managing locations of salt or mineral supplements by placing them greater than 1 km (0.6 mi) from lek locations.

6) Avoid supplemental winter feeding of livestock in known/occupied habitat unless it is part of a plan to improve ecological health or to create mosaics in dense sagebrush stands that are needed for optimum grouse habitat. Although ecologically winter grazing may have a minimum ecological impact on the plant community, the impacts to residual cover for sage-grouse nesting can be detrimental.

The Strategy also has the following recommendations for livestock management infrastructure:

1) Locate new and/or relocate livestock water developments within sage-grouse habitat to maintain or enhance habitat quality.

2) Spring developments both new and old should be constructed and/or modified to maintain their free-flowing natural and wet meadow characteristics.

3) Ensure wildlife accessibility to water and install escape ramps in all new and existing water troughs.

4) Construct new livestock facilities (livestock troughs, fences, corrals, handling facilities, "dusting bags," etc.) at least 1 km (0.6 mi.) from leks to avoid concentration of livestock, reduce collision hazards to flying birds, or eliminate avian predator perches.

a) Fences can be detrimental to local sage-grouse populations. Those fences identified as such or within 1.6 km (1 mile) of an active lek or known seasonal use area should be marked with anti-strike markers.

The Strategy also contains guidelines for wild horse management as it relates to sagebrush habitat management (pg. 104), it states:

The management goals for wild horses are to manage them as components of the public lands in a manner that preserves and maintains a thriving natural ecological balance in a multiple use relationship. Wild horses are

managed in twenty Herd Management Areas (HMAs) that involve 2.8 million acres of public land, primarily in southeastern OR.

The recommended conservation guidelines for wild horses from the strategy are:

1) The cumulative Appropriate Management Level (AML) for horse numbers should be kept within current AML (1,351 to 2,650) in herd management areas.

a) Management agencies are strongly encouraged to prioritize funding for wild horse round-ups in sage-grouse areas that are over AML
b) Evaluate the AMLs for impacts on sagebrush habitat
c) Further measures may be warranted to conserve sage-grouse habitat even if horses are at, above, or below the appropriate AML for a herd management area.

These excerpts are not inclusive of all guidelines in the Strategy, but are the most pertinent to this document.

BLM IM 2012-043 Greater Sage-Grouse Interim Management Policies and Procedures has the following to say about livestock grazing: "Grazing can have localized adverse effects on Greater Sage-Grouse habitat depending on the condition of the habitat and the grazing practices used." This IM also recognizes that appropriate livestock grazing can be compatible with Greater Sage-Grouse habitat needs:

Depending on design and application, grazing practices can also be used as a tool to protect intact sagebrush habitat and increase habitat extent and continuity which is beneficial to Greater Sage-Grouse and its habitat. Given the potential financial constraints in addressing the primary threats identified by the [US]FWS, enhanced management of livestock grazing may be the most cost-effective opportunity in many instances to improve Greater Sage-Grouse habitat on public lands.

This IM includes the following conservation guidelines for livestock grazing and associated facilities:

Propose and authorize livestock grazing and associated range improvement projects on BLM lands in a way that maintains and /or improves Greater Sage-Grouse and its habitat. Analyze through a reasonable range of alternatives any direct, indirect, and cumulative effects of grazing on Greater Sage-Grouse and its habitats through the NEPA process:

- Evaluate and implement grazing practices that promote the growth and persistence of native shrubs, grasses, and forbs. Grazing practices include kind and numbers of livestock, distribution, seasons of use, and livestock management practices needed to meet both livestock management and Greater Sage-Grouse habitat objectives.

- Evaluate the potential risk to Greater Sage-Grouse and its habitats from existing structural range improvements. Address those structural range improvements identified as posing a risk during the renewal process.

- Balance grazing between riparian habitats and upland habitats to promote the production and availability of beneficial forbs to Greater Sage-Grouse in meadows, mesic habitats, and riparian pastures for Greater Sage-Grouse use during nesting and brood -rearing while maintaining upland conditions and functions. Consider changes to season-of-use in riparian/wetland areas before or after the summer growing season.

- Evaluate the need for proposed fences, especially those within 1.25 miles of leks that have been active within the past 5 years and in movement corridors between leks and roost locations. Consider deferring fence construction unless the objective is to benefit Greater Sage-Grouse habitat, improve land health, promote successful reclamation, protect human health and safety, or provide resource protection. If the BLM authorizes a new fence, then, where appropriate, apply mitigation (e.g., proper siting, marking, post and pole construction) to minimize or eliminate potential impacts to Greater Sage-Grouse as determined in cooperation with the respective state wildlife agency.

- To improve visibility, mark existing fences that have been identified as a collision risk. Prioritizing fences within 1.25 miles of a lek, fences posing higher risks to Greater Sage-Grouse include those:

    - On flat topography;
    - Where spans exceed 12 feet between T-posts;
    - Without wooden posts; or
    - Where fence densities exceed 1.6 miles of fence per section (640 acres).

- NEPA analysis for all new water developments must assess impacts to Greater Sage-Grouse and its habitat.

- Install escape ramps and a mechanism such as a float or shut-off valve to control the flow of water in tanks and troughs.

- Design structures in a manner that minimizes potential for production of mosquitoes which may carry West Nile virus.

These excerpts are not inclusive of all Interim Conservation Policies and Procedures discussed in IM 2012-043, but they are the most pertinent to this document.

West Nile Virus (WNV) was documented in Greater Sage-Grouse in Wyoming near coal bed methane wells (Naugle et al. 2004). Water in new ponds constructed at the well sites provided habitat for mosquitoes that carry WNV to live in areas that previously had little late-season water. Greater Sage-Grouse mortality was 25% higher in these areas versus control areas without late-season water (Naugle et al. 2004). In 2006, approximately 60 Greater Sage-Grouse carcasses/feather piles were discovered in a meadow area near Burns Junction, Oregon. Only three carcasses had enough body tissue left to be tested for WNV, which was found in all three (R. Garner, personal communication). While no instances of WNV have been documented in Greater Sage-Grouse populations, in Harney County since 2006, Malheur County has had several cases of humans infected with WNV. Several permanently wet areas around BLM Burns District, that are closer to recent WNV outbreaks than the project area, have not had any recorded deaths in Greater Sage-Grouse populations. These areas were checked by ODFW for evidence of WNV associated mortalities in Greater Sage-Grouse populations but none have been found. Existing reservoirs in and near the project area such as Long Dam and Desert Meadow reservoirs, which usually hold water yearlong, have not had any known WNV outbreaks. If WNV were prevalent in the area, Malheur Lake and other nearby water sources outside of the allotment, which consistently have water, would be of more concern than sources that contain only small amounts of seasonal water. The large sources of standing water nearby increase the probability of WNV carrying mosquitoes moving up the Donner und Blitzen drainage, or cross country, and entering the allotment. The Greater Sage-Grouse NTT Report (2011) addresses WNV in Appendix C: BMPs for how to make a pond that will not produce mosquitoes that transmit West Nile virus [from Doherty (2007)]. These measures were considered but discounted due to the other constraints (WSA etc.) already occurring on the landscape that would be in discordance with these measures, as well as the lack of WNV documented in the area. The closest documentation occurring in 2006 is over 45 aerial miles (and on the other side of the Steens Mountain) from the allotment.

There have only been a few studies researching vertical transmission (female to egg) or transovarial transmission. However, the studies that do show it occurring have been conducted in laboratory conditions and vertical transmission was minimal, at most showing transmission occurring in 6.9 of 1,000 cases under ideal conditions (Goddard et al. 2003). There is no evidence that adult female mosquitos may overwinter by entering a diapause state (hibernation physiology and behavior) or that WNV persists this way (CDC 2013). The conditions are such on the Steens Mountain that all areas freeze every winter, not allowing infected adult mosquitoes to over winter. Based on research available and the conditions on Steens Mountain, professional opinion within the BLM is that there is little risk in this area of vertical transmission occurring. This means that unless infected mosquitoes or birds are introduced to the Steens area, there would not be expected to be an outbreak of WNV.

Bats are a migratory species with arrival in the allotment during May to June. Most species may migrate south in the fall but a few winter hibernacula are known to exist in the area. Bats roost in small caves or rock crevices and in loose bark of cottonwood or older juniper trees. Bats forage for insects anywhere they can find sufficient concentrations and use still water pools in streams, springs, reservoirs, and water troughs for watering. Bats may travel several miles from day roost sites for foraging and watering. Usually they roost during the night for a period of time, then forage before returning to their day roost.

Environmental Consequences: Special Status Species-Wildlife

Effects Common to All Alternatives

For the purposes of this analysis, the CEAA for SSS extends up to 10 miles beyond the allotment boundary to encompass regular movements of wildlife SSS that may be using the allotment. The total acreage of the allotment plus the CEAA would be approximately 532,987 acres. Vegetation communities in the allotment are fairly representative of those across the CEAA.

RFFAs in the CEAA that may contribute to cumulative effects to SSS and habitat include management activities associated with livestock grazing, hunting and other recreational pursuits, and cutting and prescribed burning treatments to reduce expansion juniper and restore habitat. Several thousand acres of juniper treatments are proposed in the CEAA, but funding, weather conditions, and other factors will affect timing of implementation. Completion of analyzed juniper treatments within CEAA would improve habitat quality for Greater Sage-Grouse, and decrease the risk of a catastrophic wildfire that would remove habitat. Past and RFFAs, from the previous fifteen years, that have affected SSS or their habitat in the CEAA are found in Table 27.

Table 27: SSS - Wildlife Past and RFFAs

ACTION	PAST ACTIONS			FUTURE ACTIONS		
	ACRES	MILES	NUMBER	ACRES	MILES	NUMBER
Wildfire Starts	---	---	107	---	---	Unknown
Wildfires	163,660	---	36	Unknown	---	Unknown
Known Primitive Campsites	---	---	84	---	---	Unknown
Trails	---	95.0	---	---	38.5	---
Trailhead	---	---	4	---	---	None
Recreation Sites	---	---	9	---	---	None
Open Roads	---	785.0	---	---	None	---
Closed Roads	---	180.8	---	---	None	---
Fences	---	457.4	---	---	6.2	---
Pipeline	---	4.3	---	---	0.11	---
Exclosures	141.2	---	6	16.9	---	2
Water Developments	---	---	235	---	---	None
Gravel Pit	688.9	---	11	None	---	None
Cutting	8,264.0	---	32	17,062.8	---	21
Piling	3,736.8	---	12	2,975.6	---	25
RX Burning	54,304.6	---	62	16,555.3	---	21
Seeding	41,165	---	45	1,960.4	---	4

Other actions, mainly implementation of the North Steens Project, will have a positive effect on Greater Sage-Grouse habitat by removing encroaching juniper from what was believed to be suitable nesting and brood-rearing habitat prior to juniper encroachment. Removal of juniper would be expected to increase the amount of forage available for livestock, wild horses, and certain wildlife species. This would leave more residual nesting cover in the long-term (10 to 15 years) for Greater Sage-Grouse. Cutting, piling, and burning of juniper within two miles of lek sites would retain much of the shrub cover and increase nesting habitat near leks. Removing juniper may also increase the amount of water available in seasonally wet areas that would improve Greater Sage-Grouse brood-rearing habitat.

Another project falling within the CEAA is the Miller Homestead Fire Emergency Stabilization and Rehabilitation Plan (EA# DOI-BLM-OR-B060-2012-0047-EA). The Miller Homestead Fire occurred in 2012 burning over 160,000 acres of BLM-managed, private, and Malheur National Wildlife Refuge lands. Of the burned area, 91% is considered PPH and 7% is considered PGH. It also burned six known leks, three of which are considered occupied, and three others considered unoccupied pending, where pending denotes lack of sufficient monitoring to definitively say one way or the other. While there are some unburned areas within the fire perimeter, they are generally small in size and very scattered, with the fire removing most of the big sagebrush in its interior. Due to the limited cover and habitat currently found within the burned area, Greater Sage-Grouse are likely to avoid the area until habitat components are restored. Some of these animals may move into unburned areas near the fire, including the South Steens Allotment. Projects associated with the Miller Homestead Fire Emergency Stabilization and Rehabilitation Plan included seeding portions of the burned area

(occurred fall 2012) to minimize ecological damage, construction of two temporary fences to protect the burned area and seeding from grazing, and planting of sagebrush plugs. Fences were marked with anti-strike markers to reduce the risk of collision. Also associated with this project is the planting of sagebrush plugs across the burn area in order to help restore Greater Sage-Grouse habitat in the burned area by providing a seed source for sagebrush.

Within the allotment, and across the Burns District, Aroga moth infestation has been contributing to sagebrush mortality, increasing the risk of catastrophic wildfire, and decreasing cover and food sources for birds. Mortality caused by Aroga moth has been observed in all sagebrush types within the allotment. It is believed that sagebrush mortality as a result of Aroga moth infestation was at least partially responsible for the large size of the Miller Homestead Fire and the limited number and size of unburned patches within the fire perimeter. These habitat component losses can result in declining Greater Sage-Grouse populations due to increased nest predation and early brood mortality associated with decreased nest cover and food availability (Braun 1998, p.149; Moynahan 2007, p. 1781). Continued Aroga moth infestation within the allotment may result in Standard 5 not being achieved in the future.

The sagebrush plant communities that support Greater Sage-Grouse are very complex and successionally dynamic as is the effects of livestock grazing within these communities, often making it difficult to form large scale conclusions about the impacts of current livestock grazing practices on Greater Sage-Grouse populations (Crawford et al. 2004). However, research suggests it is possible for grazing to be managed in a way that promotes forage quality for Greater Sage-Grouse since grazing can set back succession, which may result in increased forb presence (Vavra 2005). When grazing management is periodic and allows forbs to regrow or prevents their utilization by livestock, the number of forbs available to Greater Sage-Grouse may increase (Vavra 2005). Anderson and McCuistion (2008) found grazing management, when upland birds are present, should be flexible, but limited to a light to moderate use (30-50% utilization) with deferred or rest-rotation grazing to limit grazing disturbances during critical bird life stages, such as nesting. They recommended light to moderate use on their conclusion that this level of grazing can increase forb quality and quantity since grazing can delay the maturation of forbs, extending their availability throughout the season (Anderson and McCuistion 2008). Anderson and McCuistion (2008) also acknowledge the complexity of managing grazing within Greater Sage-Grouse habitat and determined no one grazing system is best suited in all cases, but should be site specific. While many of these references specifically refer to livestock, it is concluded that they to apply to wild horses as well, since they are grazing animals with similar diets.

Effects Common to All Action Alternatives

Disturbance from construction of the different projects would have negligible temporary (during construction activities) effects on wildlife SSS. Effects would only be during the actual construction and would be expected to have a negligible impact on SSS use of the habitat. Since not all projects would be constructed or completed at the same time, effects would be spread out over several years and disturbance would be localized. Construction work would occur after Greater Sage-Grouse nesting season, April 1 to June 15. Once individual projects are completed, and humans are generally absent, SSS would be expected to use the areas again (professional judgment).

About two acres of vegetation would be removed around each new trough mainly through use by livestock and wild horses. Vegetation would be removed during construction of reservoirs (about two acres), but use by livestock and wild horses would not be expected to remove more shrubs than would be removed during construction. Although vegetation would remain outside the immediate area of construction, grasses and forbs would be used more heavily within about 0.25 mile from these water sources. Based on location of these new sites, Greater Sage-Grouse could be affected through the loss of nesting habitat. Exclusion of livestock and wild horses from existing spring sources would improve these areas for Greater Sage-Grouse use, by providing water and restoring riparian vegetation, which Greater Sage-Grouse depend on during the late summer months. Wire fences would be marked to reduce Greater Sage-Grouse collisions with these fences. Spreading out water sources would allow for later season use in areas around new water sources. This late-season use would reduce the amount of residual grass near these sites and reduce herbaceous horizontal cover for nesting Greater Sage-Grouse the following spring. However, as other areas around existing water sources would be less, and no alternatives increase permitted AUMs, the amount of horizontal herbaceous cover removed across the allotment would not be greater than what could occur under the No Action Alternative. Reduction in horizontal cover would be expected to affect nest success for Greater Sage-Grouse through increased predation and would occur only on years when use occurred in a pasture late in the year (defer) and when regrowth is not expected. Only vegetation receiving no use or early grazing treatments would allow for grasses to reach full height in years of normal precipitation although wild horses would still have access to graze these areas. The early/graze treatments would be expected to allow for some regrowth, depending on how late into the growing season livestock stay in an area, and available soil moisture for plant regrowth. While defer grazing treatments allow for full growth of grasses before livestock graze, residual vegetation used for spring nesting would be decreased.

Wild horses would have access to these water sources yearlong, annually, and would be expected to have effects on residual nesting cover from season-long use. Maintenance of wild horse populations to within the AML would lessen late-

season effects of grazing by wild horses on residual grass cover for Greater Sage-Grouse nesting habitat. Spreading of water sources would help reduce season-long grazing use by wild horses at currently reliable water sources present and increase vegetation vigor at these sites. This would increase brood rearing habitat at these sites.

Increased late-season water could provide additional habitat for mosquitoes that carry WNV, which has reduced Greater Sage-Grouse populations in certain areas (Naugle et al. 2004). However, while the amount of late-season water needed for livestock and wild horses is limiting, it does occur within the allotment, and it is not expected that late-season water is a limiting factor for mosquito presence. Additionally, increased late-season water could benefit bat species by providing more watering areas. This would be expected to lead to some increased population numbers but this would be dependent on available roost/maternity sites, as well as available insect populations. Bats would be expected to use some of the new water sources, such as troughs and reservoirs, for watering spots during evening foraging. Whether this would affect bat populations is not known since roosting sites (day roosts, maternity colonies) may already be fully occupied. Bats would forage on mosquitoes that carry WNV but would not reduce the population enough to eliminate the threat to Greater Sage-Grouse.

The South Steens Allotment is only 94,598 acres of the 3,055,778 acres of the Burns District (Strategy pg. 59). This is less than 3.1% of the entire area, and this EA is only proposing development on a small number of acres within the allotment. The actions mentioned in this EA would not increase grazing (overall AUMs remain, at most, the same as currently authorized), would not further fracture or degrade the landscape, and would result in *no net loss* of remaining, intact sagebrush landscapes.

Cumulative effects would be increased with late-season livestock and wild horse use in Greater Sage-Grouse habitat. Late-season use outside of identified Greater Sage-Grouse habitat would have some effect on residual cover the following spring, but it is not known if or how much of these areas are used by Greater Sage-Grouse for nesting. Fencing of several spring sources for protection, and spreading of livestock use to other areas, would provide more late-season, brood-rearing areas for Greater Sage-Grouse. While the number of yearlong water sources is increased from the No Action Alternative, several water sources already present in and near this allotment have provided possible breeding sites for WNV carrying mosquitoes, and mosquitos are already prevalent across the allotment. There have been no known outbreaks of WNV in this part of Harney County, so an outbreak is not expected even with increased water sources.

Cumulative effects for bats would be the increased water sources available for watering and foraging in the long term (more than three years).

Alternative A: No Action Alternative

In this alternative, wildlife SSS would have the same resources available as are currently present in the allotment. Some areas of the allotment near reliable water sources would continue to be affected by concentrated livestock and wild horse use. Portions of the allotment away from existing waterholes and springs would have large non-grazed areas, which would be expected to provide suitable nesting sites for Greater Sage-Grouse due to more residual grass cover. This would be expected to be highest during drought years and lowest during wet years since in those years there is more late-season water and the use area would expand to include areas around variable water sources. Residual grass cover provides horizontal screening at nest sites, in addition to screening from shrubs, which is believed to reduce predation. During drought years, Greater Sage-Grouse would have only those reliable water sources currently available to them, which have little vegetation for cover or may have juniper nearby, and are often grazed heavily by wild horses and livestock. Bats would rely on the few reliable reservoirs with late-season water or use other slow moving waters nearby, such as pools in Little Blitzen River.

Alternative B: Proposed Action

This alternative would spread water around the allotment with five new troughs associated with wells and springs, and nine new reservoirs being constructed. Of the new proposed developments, 18 would be within PPH and six would be within PGH. About two acres of vegetation would be removed around each new trough, mainly through use by livestock and wild horses. Vegetation would be removed during construction of reservoirs (approximately two acres) but use by livestock and wild horses would not remove many more shrubs than removed during construction. With nine new reservoirs constructed and five new troughs installed, approximately 28 acres of vegetation would be removed around new water sources. Areas within 0.25 mile of water sources (about 1,750 acres) would show reduced grasses and forbs so Greater Sage-Grouse would have to search other areas for sufficient food. Spring sources and riparian areas fenced (about 27 acres) to exclude livestock and wild horses, and returned to a more natural condition would benefit Greater Sage-Grouse for watering and riparian vegetation for foraging, which Greater Sage-Grouse depend on during the late summer months, especially for brood rearing purposes. By spreading out livestock grazing, more cover would be remaining after grazing in current congregation areas; however, there would be fewer (or smaller) non-grazed areas throughout the allotment. Beck and Mitchell (2000) suggest that livestock use in riparian areas, within brood-rearing habitat, be regulated using fencing or herding management to protect the vegetation by restricting overuse of these nutritious areas.

New and maintained existing reservoirs would also provide watering sources for Greater Sage-Grouse as long as water remains throughout the year. Troughs

would be supplied with water mainly from wells, but also from the two springs that would be developed, which are more reliable than reservoirs, so water could remain in more areas later in summer than with the No Action Alternative. However, this would be dependent on when the wells were pumping and when they were turned off, as well as spring flow each year. Although late-season grazing effects would be spread out, this could affect residual grass cover for nesting Greater Sage-Grouse the following spring. Wild horses would be expected to have a greater effect on residual grass cover than livestock since they are in the allotment year-round.

With more late-season water sources available, the possibility of mosquitoes being found throughout the allotment, especially later in the year, is increased. The chances of those mosquitoes being infected with WNV and affecting Greater Sage-Grouse populations is not increased, based upon the fact that virtually all of the water remaining late in the year, within this area, freezes solid for several months of the year, thus there is little to no overwintering of mosquitoes in the South Steens Allotment. This would be partially offset by the abandonment of nine existing reservoirs, which, when they stopped functioning, would no longer provide mosquito habitat.

Overall, effects of different developments on Greater Sage-Grouse should not affect habitat. About 1,750 acres (about 0.36%) of Greater Sage-Grouse habitat in the CEAA would have some reduced vegetation that would be expected to affect use such as nesting or feeding. Other areas that surround the allotment such as the wilderness area to the east would also provide habitat for Greater Sage-Grouse so the amount of habitat affected would be less than 0.25% of available habitat within the CEAA. Since these projects are spread throughout the allotment and would occur over a number of years, there should be no effects on population numbers. All proposed new projects would be greater than one mile from a lek.

Bats would be provided with more opportunities from late-season watering sources and would have more areas to forage for insects near these water sources. Late-season water availability would depend on the reliability of new reservoirs to capture and retain water season-long, as well as the distribution of new troughs, and the period the troughs contain water.

Initially, there would be about 0.25 acre disturbed by well drilling at each location which would be rehabilitated after the well drilling was complete so that an area about 0.01 acre would be permanently disturbed around the well site. If most of the drilling were completed during September through March, disturbance to Greater Sage-Grouse would be expected to be negligible since Greater Sage-Grouse are not as dependent on specific habitats. Greater Sage-Grouse are expected to return to use areas near wells once the disturbance from drilling has ceased. If well drilling is completed during June 15 through July, there could be localized disturbance to nesting within 0.5 mile radius of the drilling rig.

Alternative C: Maximum Water Distribution

This alternative would spread the most water around the allotment with 24 new troughs associated with wells, pipelines, and springs, and 17 new reservoirs constructed. Of these proposed new developments, 51 would be within PPH and 13 would be within PGH. Effects of this alternative in any one year would be similar to Alternative B, but would be increased due to more developments being installed over the years.

Disturbance from well drilling would be the greatest in this alternative since 10 wells are proposed. Only one proposed well (W7) at Bald-Headed Camp would be within 0.5 mile of a lek and known nesting habitat near that lek. Although located on private land, drilling should occur during the fall and winter period to avoid disturbance to breeding and nesting Greater Sage-Grouse. Pipelines (5.5 miles) to three troughs would be associated with this well and would increase livestock and wild horse grazing in known nesting habitat. Installation of these pipelines and troughs would occur during the fall or winter months to avoid disturbance to breeding or nesting Greater Sage-Grouse. Use of this well and pipeline system would concentrate livestock near the lek and nesting habitat when the early/graze treatment is being used in the Tombstone Pasture and near nesting habitat when the early/graze treatment is being used in the Steens Pasture.

Late-season grazing effects would be spread out due to increased water availability, but this could affect residual grass cover for nesting Greater Sage-Grouse the following spring if livestock graze in nesting areas that were previously outside the use area. Wild horses are expected to have a greater effect on residual grass cover than livestock since they are in the allotment year-round.

With more late-season water sources available, the possibility of mosquitoes being found throughout the allotment is increased. The chances of those mosquitoes being infected with WNV and affecting Greater Sage-Grouse populations is not increased, based upon the fact that virtually all of the water within this area during the winter freezes solid for several months of the year, thus there is little to no overwintering of mosquitoes in the South Steens Allotment.

Once all reservoirs are constructed, and wells, troughs, and pipelines installed, approximately 5,100 acres (about 1%) of the CEAA would have some reduced vegetation (ranging from large amounts at construction sites to lesser amounts further from those sites) that would affect Greater Sage-Grouse habitat. Other areas, such as the wilderness area to the east, that surround the allotment would also provide habitat for Greater Sage-Grouse so the amount of habitat affected would be less than 0.5% of available habitat within the CEAA. Since these projects are spread throughout the allotment and over a number of years, there should be no effects on Greater Sage-Grouse population numbers. While this alternative proposes the maximum number of water developments, this would not

necessarily lead to increased Greater Sage-Grouse populations since carrying capacity is not based solely on water availability.

Bats would be provided the most opportunities from late-season watering sources as they may have more areas to forage for insects near these water sources. Late-season water availability would be greatly increased from the Proposed Action due to more new reservoirs, wells, pipelines, and associated troughs.

Alternative D: Along Road Development

The effects under this alternative, in any one year, would be similar to Alternative C; however, there would be fewer disturbances over the years due to the decreased number of developments proposed under this alternative. Of the proposed new developments, 44 would be within PPH and nine would be within PGH.

Disturbance from well drilling would be the same as Alternative C since 10 wells are proposed. If most of the drilling were completed during September through March, then disturbance effects to Greater Sage-Grouse would be negligible. There are twenty troughs proposed under this alternative which is four less than Alternative C, so effects of installing toughs would be about eight acres less than in Alternative C. Effects of new reservoir construction would be much less than under Alternative B or C since only one new reservoir is proposed for construction. Although existing reservoirs would still be available for Greater Sage-Grouse use, their reliability during dry years is variable and only seven existing reservoirs would be maintained under this alternative. Greater Sage-Grouse would have access to numerous troughs for water, which is more hazardous than reservoirs due to the trough edges being above ground level. Escape ramps would be installed on new troughs to reduce risk to birds. Greater Sage-Grouse would probably move to other wet areas, located outside the allotment, for late brood-rearing habitat. There would be a gain of approximately one mile of new fence construction, which should not have any effect on Greater Sage-Grouse populations but increasing the amount of fence would slightly increase the risk of collision.

Overall, there would be 42 acres of disturbance from installation of troughs and one new reservoir. The affected area around reservoirs and troughs would amount to about 2,625 acres or 0.54% of the CEAA area. Other areas, such as the wilderness area to the east, that surround the allotment would also provide habitat for Greater Sage-Grouse so the amount of habitat affected would be less than 0.20% of available habitat within the CEAA. Since these projects are spread throughout the allotment and construction would occur over a number of years, there should be no effects on population numbers of the different species.

Bats would be provided the increased watering and feeding opportunities from late-season watering sources since insects may be more abundant near these water

sources. Reliable late-season water availability would be greatly increased from the Proposed Action due to more new wells, pipelines, and associated troughs.

Alternative E: Edge Development

Of the action alternatives, this alternative would have the fewest effects on Greater Sage-Grouse nesting habitat since fewer water developments would be installed or constructed. Of the proposed new developments 27 would be within PPH, eight would be within PGH, and two would be in both. There would still be some effects, as described under the Proposed Action, around new water troughs where livestock and wild horses would gather during late summer when other water sources have dried. With more late-season water sources available, the possibility of mosquitoes being found throughout the allotment is increased, though fewer late-season water sources would be present than Alternatives C and D, making the increase less than under those alternatives. The chances of those mosquitoes being infected with WNV and affecting Greater Sage-Grouse populations is not increased, based upon the fact that virtually all of the water within this area freezes solid for several months of the year, thus there is little to no overwintering of mosquitoes in the South Steens Allotment.

Effects under this alternative would be comparable to the Proposed Action since the number of new developments would be similar. Difference would be more troughs (13) and no new reservoirs. Therefore, about the same vegetative loss would occur as under the Proposed Action. The addition of about seven miles of fence and removal of about five miles, due to fence realignment, for a net gain of two miles of fence would occur under this alternative. The net gain of two miles of fence would have little effect on Greater Sage-Grouse populations since it is greater than two miles from a lek or in areas Greater Sage-Grouse would not readily use along the Donner und Blitzen River. However, increasing the net amount of fence within the allotment would increase the risk of collision.

Overall, there would be about 26 acres of disturbance from trough installation and the affected area would be about 1,625 acres or about 0.34% of the CEAA. Other areas such as the wilderness area to the east that surround the allotment would also provide habitat for Greater Sage-Grouse so the amount of habitat affected would be less than 0.14% of available habitat within the CEAA. Since these projects are spread throughout the allotment and construction would occur over a number of years, there should be no effects on Greater Sage-Grouse populations.

Bats would have fewer late-season water sources than under alternatives C and D but would have more than under the No Action Alternative and the Proposed Action.

Alternative F: Reduced Gazing with No Development

Effects under this alternative would be similar as under the No Action Alternative for wildlife SSS. The only difference would be that since the permittee would be limited to lower AUMs under this alternative, there would always be more herbaceous cover available than if the permittee was able to take all 9,577 AUMs under the No Action Alternative.

Alternative G: Complete Livestock Removal

Effects under this alternative would be similar to those under the No Action Alternative for wildlife SSS. The exception would be that since no livestock grazing would occur within the allotment, areas near perennial water sources would no longer be affected by the concentration of livestock, although wild horse concentration would still occur in those areas. Since livestock would not remove 9,577 AUMs of forage, there would be more residual vegetation that would provide more suitable nesting for Greater Sage-Grouse due to more residual grass cover.

9. Upland Vegetation

Affected Environment: Upland Vegetation

In 1990, the Burns District ESI was completed and included South Steens Allotment. The Burns District ESI included both a soil and vegetation inventory. The vegetation inventory looked at current (at the time) vegetative cover and range condition interpretations. The Range Condition and Ecological Status for South Steens Allotment, at the time of the ESI, are shown in Tables 13 and 14 in the Grazing Management section of this document.

Within South Steens Allotment there are currently eighteen upland trend monitoring sites; however, many of the sites have only been visited once and there is no data yet available for comparison. Data on the trend plots has been periodically collected between 1976 and 2012. All of the plots are currently associated with Pace 180° transects and photo points. The complete trend analysis of the data collected from each of these plots is in Appendix B. Long-term trend data collected at eighteen upland trend sites in 2012 shows bare ground ranging from 18% to 55%, with other types of cover being rock, litter, and vegetation. The trend analysis found that within the allotment 12 plots have an OAT of upward, with the remaining six plots showing a stable OAT. SSF determined the soil erosion condition class and was found to be stable at all sites, in all pastures, except one in Tombstone Pasture, which was slight. In addition to OAT and SSF, the data and photos from each plot were analyzed and a trend was determined. The data analysis found five of the plots show a stable trend, while one plot shows an upward trend. The other 12 plots had no data trend determined since data was collected only in 2012. The photo analysis showed six plots

exhibited a stable trend while the remaining one showed a downward trend. Plot 6002-006 in Steens Pasture showed a downward trend for both data and photo analysis. Overall, trend analysis for the entire allotment suggests the uplands are stable. However, in order to get a more accurate picture of what is going on within each of these large pastures, trend plots need to be read more often following a more specific protocol in order to reduce inconsistencies and make improved determinations that provide a better picture of the average condition of the allotment.

Approximately 6,041 acres within Steens, Hollywood, and Home Creek pastures have burned as a result of wildfires since 1981. An additional 9,985 acres have been treated as part of prescribed burn projects. Approximately 790 acres have been subject to both wildfire and prescribed fire since 1981. Effects to vegetation resulting from fire, either prescribed or natural, are obvious, and can be compared easily at the edges of these disturbance areas. In addition to the presence of burned and dead juniper trees, these burned areas typically support taller, more vigorous bunchgrass plants, few if any young juniper trees, and those shrubs that did not burn, or ones that have reestablished, are vigorous and have little or no visible decadence. Cheatgrass is especially competitive with perennial plants after a wildfire when additional nitrogen is released by the burning of standing biomass and litter (Pellant 1996). Cheatgrass does not currently dominate any portion of the allotment, but it is present, especially along roads, and could become an issue in the future.

The introduction of cheatgrass into the Great Basin and Upper Columbia River Basin has upset the ecological balance. Ecological processes such as energy flow, nutrient and hydrologic cycles, and structure and dynamics, result in fauna and flora having been adversely affected. In addition to the ecological implications associated with cheatgrass invasion, the impacts to land uses in the area are also substantial (Pellant 1996). Cheatgrass was found by Knapp (1996) to dominate approximately one-fifth of the potential sagebrush-bunchgrass habitat. Secondary succession following disturbance is often caused by damage and destruction from lagomorphs and rodent grazing (Knapp 1996), resulting in reduced competition for cheatgrass. Since cheatgrass is present within the community, it is at risk for these associated effects of cheatgrass.

The biotic communities most at risk to the impacts of the “cheatgrass-wildfire cycle” are the Wyoming big sagebrush and more mesic salt desert shrub plant communities (Peters and Bunting 1994; Pellant 1990). Within the South Steens Allotment, approximately 16,310 acres are associated with Wyoming big sagebrush ESDs. Not only is cheatgrass adapting to new environments, it is now being invaded by other noxious weeds (Pellant 1996). In the western United States, big sagebrush steppe communities dominate approximately 60 million hectares (148 million acres) and comprise the largest vegetation type (Wambolt and Hoffman 2001). However, due to the invasion of exotic plants, fire has become a driving force in the ecology and management of sagebrush steppe

communities. The high variability in cover and density of shrubs indicates the complexity of factors influencing recruitment and establishment of sagebrush from both natural populations and from artificial seeding (Lysne and Pellant 2004). If current sagebrush restoration efforts do not result in a more consistent establishment and persistence of this important shrub, large areas of sagebrush-steppe may be lost, and rehabilitation may no longer be a viable option (West 2000).

Juniper occurs in a band between 4,500 and 8,500 feet on Steens Mountain, over 90% of which is comprised of trees established after the 1860s (Miller et al. 2008). Over half of the area of the present juniper forest in eastern Oregon was established between 1850 and 1900 (Gedney et al. 1999). Once established, juniper woodlands increased in density, with the greatest increase occurring between 1879 and 1918 (Gedney et al. 1999). This rapid increase in juniper stand establishment occurred during a period of favorable climatic conditions, and reduced fire frequency and intensity (Gedney et al. 1999). Larger trees are sometimes killed by fire, but many survive; survival is often dependent on fire intensity. The crowns of larger juniper trees often limit grass and other vegetative growth beneath them, thereby, reducing the fuel necessary to carry fire into the tree, fireproofing the crown and stem (Agee 1993).

In the absence of pre-settlement fire return intervals, juniper has functioned as an invasive species over much of Steens Mountain, generally increasing in frequency to the greatest degree on north slopes and at higher elevations (Johnson and Miller 2006), encroaching into more productive mountain big sagebrush and low sagebrush plant communities[65]. Expansion juniper intercepts precipitation and utilizes soil moisture, well beyond its own crown area, that would otherwise be available to competing vegetation (Bates et al. 2000).

Within the allotment, based on ESI data, approximately 40% of the allotment is within the 0.5–3.0% cover class for juniper, 20% is within the 3.1–10.0% cover class, and 5% is within the 10.1–23.8% cover class. The remainder of the allotment, approximately 35%, is not classified within any of the above juniper encroachment cover classes. Since ESI was completed in 1990, juniper cover has increased across the allotment. Under the North Steens Project, some juniper treatments have occurred, but it is not expected that they have prevented an overall increase in juniper cover across the allotment at this point. Since juniper expansion is occurring within the allotment, it is expected that effects associated with juniper expansion are occurring. Juniper has assumed control of ecological site processes (soil hydrologic cycle and nutrient transfer through the soil profile) within portions of the allotment. Loss of shrubs, grasses, and forbs has occurred

[65] Note: Research on pre-settlement fire return intervals has a large range, but it has traditionally been considered 20 - 160 years, dependent on specific site characteristics. However, some research suggests the pre-settlement fire return is much longer and could be up to 450 years (Baker 2006 and Floyd et al. 2008).

in some areas, and could lead to loss of soil surface stability over the next few decades.

Up to 10% of juniper stands within the allotment are comprised of older juniper trees (over 100 years) inhabiting rocky ridges or shallow soil areas where fires are not expected to burn. Tree age may exceed 1,000 years in these stands, and at these sites the rocky surface controls soil infiltration and maintains soil surface stability.

Since watering sites are not well-distributed across the allotment, especially in Steens Pasture, visual effects to vegetation from grazing are more obvious around water sources and not easily observed in portions of the allotment away from water and not in the current use area. Bunchgrass vigor is declining, or expected to decline, in locally heavily-grazed areas of Hollywood Pasture due to utilization in excess of 50% over successive grazing seasons, primarily due to high levels of wild horse use since livestock are not allowed to utilize a pasture over the 50% utilization maximum and are removed before that point is reached. Conversely, bunchgrass vigor may also decline in lightly-grazed or non-grazed areas, due to plant decadence that may limit growth by accumulation of old and dead tissue (Oesterheld and McNaughton 1991), especially where no fire or other event has occurred, to remove accumulations of dead material. Both of the above conditions have been observed in the allotment.

Vigor of bunchgrass plants may be maintained, or even improved, by some disturbance that removes buildup of previous years' growth, either infrequently through large sudden events as wildfire, which may kill the plant, or more frequently with less intensity, such as with grazing. The effect of defoliation to bunchgrasses, before and after prescribed and wildfire, can be directly observed within the allotment. The effect on plant vigor from grazing is more subtle, and involves interplay between a plant's ability to reestablish photosynthetic activity and its ability to retain a competitive position in the plant community (Oesterheld and McNaughton 1991).

The impacts of grazing in sagebrush communities can vary greatly depending upon the management of the livestock (Davies et al. 2011). Davies et al. (2011) determined livestock grazing is not necessarily a threat to the sustainability of sagebrush ecosystems, but that appropriately managed grazing is critical to protecting it. The major impacts are due to the interaction of grazing with other factors, which combined result in changes in vegetation (Davies et al. 2011). Grazing impacts vegetation by reducing the photosynthetic capacity caused by the reduction in the leaf area of the plant (Briske 1991). When species are grazed severely, they are placed at a competitive disadvantage compared to species grazed to a lesser extent since the species grazed less severely are able to grow more rapidly following grazing and are able to be more competitive for resources in the community (Briske 1991). Vegetation that has a competitive advantage under light grazing, and dominates a site, may decrease or be replaced as grazing

pressure on it increases (Archer and Smeins 1991). Appropriate grazing management can help maintain or improve species composition, diversity, and production (Archer and Smeins 1991). Due to the current distribution of reliable water within the allotment, the allotment is receiving a large range of grazing pressure from no use to heavy use. Grazing management is able to limit the frequency and intensity of grazing on plant species and lenient grazing may not alter species composition on a site (Briske 1991). However, as utilization increases, the competitive interactions of vegetation become intensified, increasing the likelihood that palatable species may become replaced (Briske 1991, Archer and Smeins 1991). In addition to frequency and intensity of grazing, the season of grazing can have different effects on vegetation (Briske 1991). When vegetation is grazed continuously during their growing period, they are at a larger competitive disadvantage than species that have previously completed their growth cycle (Briske 1991). Communities are often relatively stable and resilient to change under some grazing; however, when grazing intensity crosses a threshold level, the community changes often occur rapidly (Archer and Smeins 1991). When species are severely overgrazed, the production potential of the site can be changed due to the alteration of hydrological properties, soil erosion (Briske 1991), reduced nitrogen fixation, increased ammonia volatilization, and leaching (Archer and Smeins 1991). Moderate utilization and defer grazing treatments have been found to result in the accumulation of stubble and litter that helps retain precipitation, increase infiltration, and reduce evaporation of water while providing the shaded micro-environment that many grass and forb seedlings need for survival (Anderson et al. 1990). Both moderate utilization and defer grazing are occurring within the allotment.

Studies have shown that while grazing does affect vegetation, the removal of grazing may not result in an increase in total herbaceous standing crop. West et al. (1984) found there was no increase in standing herbaceous crop after 13 years of rest from livestock grazing, and that there was actually a decrease for many perennial grass species. He also found that cheatgrass increased in the area (West et al. 1984). Davies et al. (2011) also determined removal of livestock grazing would not conserve the sagebrush ecosystem and that to protect the sagebrush ecosystem other factors such as fire and conifer encroachment need to be addressed as well. Manier and Hobbs (2006) found grazing exclusion resulted in a reduction on both cover and frequency of forbs, with no substantial effects on cover or frequency of grasses, biological crusts, or bare ground. They also found that areas excluded from grazing had more shrub cover (Manier and Hobbs 2006). Forty years of grazing exclusion also seemed to have little effect on plant diversity (Manier and Hobbs 2006). Daddy et al. (1988) found areas protected from grazing had vigorous sagebrush while heavily grazed sites had a large amount of decadent sagebrush with numerous seedlings in the interspaces suggesting that livestock exclusion may accelerate woody plant growth. However, they found total herbaceous cover and the amount of above-ground biomass were greater on a moderately grazed site than on heavily grazed sites and

areas with no grazing for 21 years (Daddy et al. 1988). Courtois et al. (2004) found greater plant densities outside of grazing exclosures, and suggested this might be the result of increased seed dispersal and seed-soil contact resulting from grazing. In addition, they found exclusion of grazing did not conclusively increase species richness, and species richness was generally greater under grazing treatments (Courtois et al. 2004). The limited changes in vegetation characteristics between moderately grazed sites and those excluded from grazing for 65 years suggest recovery rates [from heavy utilization] have been similar under both treatments (Courtois et al. 2004). Daddy et al. (1988) found evapotranspiration loss was greatest at the heavily grazed and not grazed sites, and there was a lack of soil water recharge at the heavily grazed site, which was likely due to poorer infiltration and increased surface evaporation at the heavily grazed site compared to the moderately grazed and not grazed sites. Research suggests if the site has not crossed an ecological threshold, into a different steady state, the site can be returned to good ecological condition under both grazing exclusion and light to moderate grazing (Miller et al. 1994). Research also suggests that once a community has entered a new steady state, the removal of livestock is not expected to return the system to the good ecological condition it was previously in (Miller et al. 1994). Svejcar and Tausch (1991) found substantial disturbance does not need to occur in order for annual grasses to establish and dominate an area, and therefore, the absence of the same disturbance would not necessarily favor a return of the system to its previous, native species dominated condition. Another study found cheatgrass was higher in two areas excluded from livestock grazing than in the grazed areas and 65 years of grazing exclusion did not prevent cheatgrass invasion on the sites (Courtois et al. 2004). Research shows managers should not assume reduction or removal of grazing would result in the successional pathway being reversed and that the site would return to a pre-disturbance community (Archer and Smeins 1991). The effects of grazing on vegetation composition and productivity can be minor when compared to changes resulting from variation in precipitation patterns, and it can be difficult to separate if it is grazing or precipitation that is the main driving force of community changes in the short-term (Archer and Smeins 1991).

Although assessments have found the allotment meets the Standard for upland watershed health, local areas of declining bunchgrass health have been observed, generally in areas directly around the limited reliable water sources that regularly experience heavy use and areas affected by juniper expansion. This suggests that without juniper control in these areas, the allotment is at risk for not achieving Standards in the future, despite management of grazing animals. In addition to juniper encroachment across the allotment, Aroga moth infestations have also been contributing to sagebrush mortality, increasing the risk of catastrophic wildfire. This has been seen occurring in Wyoming and mountain big sagebrush, low sagebrush, and silver sagebrush both within the allotment and district wide.

Environmental Consequences: Upland Vegetation

Effects Common to All Alternatives

For the purposes of this analysis, the CEAA for upland vegetation consists of the South Steens Allotment. While vegetation types do not end at the allotment boundary, cumulative effects to the vegetation would not occur outside the allotment. Past and present actions, such as those described in Affected Environment, have influenced the existing environment within the CEAA. RFFAs in the CEAA that may contribute to cumulative effects to upland vegetation include livestock grazing, wildlife use, hunting and other recreational pursuits, and wildfire. Past and RFFAs that have affected upland vegetation are found in Table 28.

Table 28: Upland Vegetation Past and RFFAs

ACTION	PAST ACTIONS			FUTURE ACTIONS		
	ACRES	MILES	NUMBER	ACRES	MILES	NUMBER
Wildfire Starts	---	---	37	---	---	Unknown
Wildfires	6041.4	---	6	Unknown	---	Unknown
Known Primitive Campsites	---	---	14	---	---	Unknown
Trails	---	13.9	---	---	None	---
Open Roads	---	100.3	---	---	None	---
Closed Roads	---	34.2	---	---	None	---
Water Developments	---	---	69	---	---	None
Gravel Pit	125.7	---	1	None	---	None
Cutting	5352.6	---	5	6745.4	---	14
Piling	2339.0	---	8	1270.0	---	11
RX Burning	9985.0	---	16	6318.9	---	20
Seeding	1446.5	---	2	5	---	1

Effects Common to All Action Alternatives

None of the action alternatives increase authorized AUMs for livestock grazing; however, all action alternatives (with range improvements) would provide increased opportunity to utilize full permitted use. There would be a reduction in utilization levels in the areas of current heavy utilization, with an increase in utilization around new water sources. The degree and extent of reduction or increase would depend on the number of new and maintained water sources.

Other environmental effects to vegetation are the extent of vegetative disturbance required to access and construct proposed developments. These actions would occur once, during initial construction, with infrequent return for maintenance over decades; effects are expected to be temporary, disappearing within a few years to a decade at most.

Virtually all of the allotment (over 99%) is within an elevation band of 4,500’ to 8,500’ subject to the expansion of juniper, leading to an expected decline in the health and vigor of vegetative communities over time. A separate analysis (North

Steens Project FEIS, 2007) was prepared and management of juniper is planned within the allotment, regardless of the decision made on this document.

RFFAs include continued juniper management through the North Steens Project, recreation, hunting, grazing by wild horses and livestock, weed treatments, and wildlife use. Juniper management will have the greatest effect on vegetation by reducing the competition from juniper and allowing native grasses, shrubs, and forbs to reestablish and stabilize soils.

The effect of each individual development, by type, is discussed below. The cumulative effects of each alternative would be dependent upon the number and type of proposed developments under that alternative.

New Reservoirs and Maintained Existing Reservoirs: Upland vegetation would be removed and prevented from becoming reestablished (by saturated soils) during construction of new reservoirs and maintenance at existing reservoir sites. Disturbance to vegetation would occur along access routes for equipment, during both construction and infrequent maintenance, but these effects would be temporary in nature, visible for less than one to three years. Vegetation disturbance associated with construction would be no more than one acre, and disturbance caused by livestock and wild horse concentration would be approximately two acres for each water source due to the increased level of use.

Reservoir Abandonment: The abandonment of reservoirs would not disturb vegetation any more than was previously disturbed. As the reservoir stops functioning (i.e. holding water), soils in the reservoir would no longer be saturated, grazing animals would no longer congregate at them, and upland vegetation would become established. Seeding would occur as described in the PDEs, which would increase the rate of vegetation reestablishment. The increase in vegetation would be dependent on the size of the reservoir and the currently disturbed area. The increase in vegetation for these reservoirs would occur in the long-term, from two years to decades, depending on the current condition of the reservoir.

Wells: Vegetation would be crushed or damaged during well construction in an area approximately 100 feet by 100 feet. Vegetative damage from the presence of drilling equipment and materials would be temporary, requiring less than one to three years for full recovery. Vegetation would only be permanently removed where the actual well is placed, and where the posts for solar panels and fences are placed; this would be less than five square feet of total vegetation loss per site. Disturbed areas would be rehabilitated and seeded, as needed, to promote vegetative recovery.

Pipelines: Pipeline installation would damage vegetation in an area equating to approximately one acre per linear mile. Direct seeding would be augmented by establishment of native vegetation, and vegetation would return in one to three years. Periodic maintenance of the pipeline may remove small areas (size would depend on the length of the area needing maintenance, but would be within the original area of disturbance) of vegetation, but this would only occur in areas where the pipeline broke and needed to be replaced. Areas of disturbance would be reseeded to promote recovery of the vegetation on the site, increasing the speed of recovery.

Troughs: Bottomless troughs (30 foot diameter) would replace approximately 710 square feet of vegetation with concrete, upon which the trough would be placed and sealed. Installation of 1,200 gallon metal troughs would disturb vegetation over an area approximately 10 feet by 20 feet and the trough would completely cover an area 48 square feet. Vegetation disturbance associated with construction would be no more than 0.05 acre for each trough, and these disturbed areas would be rehabilitated if needed, increasing the vegetative recovery rate. Disturbance caused by livestock and wild horse concentration would be approximately two acres for each trough due to the increased level of use in the area.

Storage Tanks: The process and equipment required to bury a 10,000 gallon water storage tank would remove vegetation on an area approximately 12 feet wide by 36 feet long, or 0.01 acre per site. Direct seeding would help the establishment of native vegetation and the site would recover in one to three years.

Fencing: Since blading, grading, and brushing would not occur to facilitate construction of new fences, visual effects to vegetation are expected to be unnoticeable less than one to two years after construction. Vegetation would be crushed or damaged to a greater extent (approximately 0.73 acre/linear mile), where vehicles are used to deliver fence material, or to a lesser extent where pack animals are trailed, and where material is placed. These effects would not be expected to affect vigor of vegetation, and disturbance would be undetectable after one or two growing seasons.

Spring Development/Protection: Effects to vegetation are addressed previously as those resulting from pipeline burial, trough placement, and fencing. Vegetation would be temporarily (lasting fewer than three years) lost during the installation of the headbox (less than10 square feet), and vegetation would recover naturally in one to three years.

Route Realignment[66]: The route realignment at S3 would result in the loss of upland vegetation in areas where vehicles create the new route; however, as the route would be created by use and not equipment (except where needed to remove large rock) or bladed, the loss of vegetation would only be in the vehicle tracks. Over the following decade, as the old route becomes rehabilitated, effects become a one-for-one exchange, with the area of the new route effecting soil more since the new route would be approximately 50 feet longer than the old route.

Water Gaps: Effects to vegetation would be the same as under fencing. The majority of the vegetation in these areas would be riparian vegetation and the associated effects are covered under the Riparian Zones, Wetlands, and Water Quality portion of this document.

Alternative A: No Action

The existing condition and trend of vegetation would be maintained throughout the allotment, but would show a downward trend in areas near reliable water sources, especially in less than average water years as less reliable water sources become dry, or if the permittee were to request full permitted use. Livestock distribution would continue to be driven by availability of water as currently described, which would maintain the current utilization pattern of bunchgrasses within the allotment. Under this alternative, livestock would regularly be precluded from utilizing full permitted use as variable waterholes dry up to ensure impairment to vegetation does not occur overtime; this may also occur in normal precipitation years. The number of AUMs unavailable in any given year would depend on the time of grazing and the availability of water; livestock would be required to be removed if utilization exceeded the maximum utilization of 50% in the use areas, which would often occur prior to full use being taken. Areas outside of the current use areas would be expected to continue building up fine fuels increasing the risk for catastrophic wildfire and resulting in bunchgrasses becoming decadent due to lack of removal of old growth (Oesterheld and McNaughton 1991).

Alternative B: Proposed Action

Direct long-term (one or more decades) and short-term (less than one decade) impacts to vegetation from ground-disturbing activities (vegetation loss, reduction, trampling), associated with implementing this alternative, would affect less than 1% of the allotment. These long-term effects would be offset by the abandonment of nine reservoirs, which would result in an increase in vegetation at those sites in the long-term (one or more decades).

[66] These effects would not occur under Alternative E since route realignment is not proposed under that alternative.

Providing additional water sources is anticipated to maintain utilization, from all grazers, at or below target levels of 50%, across the allotment, as seen by Map 11 – Alternative B Use Area. This improved distribution, combined with the proposed grazing rotation, which provides growing season rest to key forage plant species, is anticipated to cause a stable to upward trend in rangeland condition on upland plant communities across the allotment. Over the next decade, as livestock access portions of the allotment where bunchgrasses have become decadent due to lack of removal of old vegetation, trampling and light to moderate grazing would be expected to begin to improve vigor of plants (Oesterheld and McNaughton 1991, Archer and Smeins 1991, Anderson et al. 1990).

Alternative C: Maximum Water Distribution

Under this alternative, the effects would be similar to under the Proposed Action, only they would occur in more areas due to the increased developments. Direct long-term (one or more decades) and short-term (less than one decade) impacts to vegetation from ground-disturbing activities (vegetation loss, reduction, trampling), associated with implementing this alternative would affect less than 1% of the allotment.

Alternative D: Along Road Development

Under this alternative, the effects would be similar to the Proposed Action. Direct short-term impacts to vegetation from reservoir construction and pipeline and trough placement affect less than 1% of the allotment. Since only one new reservoir would be constructed, direct long-term effects would be less than the Proposed Action. While livestock would be able to access portions of the allotment previously unavailable due to limited water, a larger proportion (compared to the Proposed Action) of the allotment would remain inaccessible due to limited water and would still be lightly used or unused, especially in dry years.

Alternative E: Edge Development

Under this alternative effects would be similar to the Proposed Action alternative. Direct short-term impacts to vegetation from development construction would affect less than 1% of the allotment. Since new water sources would be mostly at or near WSA edges, livestock and wild horse distribution in WSA interiors, especially in Steens Pasture and Home Creek Pasture, would be minimally changed. Areas that remain inaccessible to livestock and wild horses would have the same effects as the No Action Alternative.

Alternative F: Reduced Grazing with No Development

The effects of this alternative would be similar to the No Action Alternative. The exception being, that under this alternative, the permittee would be precluded from using the current full permitted use. Under the terms and conditions associated with this alternative, the permittee would only be allowed to utilize 7,875 AUMs. While this would be an 18% reduction in numbers, the remaining livestock and wild horses would continue to utilize the allotment as in the past. They would utilize the same trailing routes to and from resources and continue to use preferred grazing sites within the allotment. Heavy use areas would remain the same resulting in negligible changes to vegetation.

Alternative G: Complete Livestock Removal

Under this alternative, no livestock grazing would occur within the allotment. Areas near reliable water sources and previous mineral sites would maintain or improve in condition due to the decreased congregation levels. Since no new water sources would be developed, wild horse distribution would continue to be driven by water availability, keeping current wild horse utilization patterns. Impacts to vegetation around these water sources would be expected to be negligible due to continued use by wild horses, which would limit the availability of vegetation to recover at these sites. Areas outside of the current use areas would be expected to continue building up fine fuels increasing the risk for wildfire and resulting in bunchgrasses becoming decadent due to lack of removal of old growth (Oesterheld and McNaughton 1991). The rate at which this would occur would be greater than that under Alternative A or F since livestock would not be present to remove any fine fuels.

10. Wild Horses

Affected Environment: Wild Horses

South Steens HMA encompasses the South Steens Allotment, as well as portions of the Steens Mountain Wilderness and two adjacent allotments. Herd Areas (HAs) are locations where WH&B populations were found when the Wild Free-Roaming Horses and Burros Act of 1971 passed. The HMA was originally the same as the HA. The original HA and HMA from the 1979 South Steens HMAP, written in response to the Wild Free-Roaming Horses and Burros Act, consisted of 175,605 acres of federal land, 12,390 acres of state land, and 64,240 acres of private land for a total of 252,235 acres. The AML was established as 150-300 animals in the original 1979 HMAP. As a result of the 1982 Andrews Management Framework Plan (MFP), the 1984 Andrews Rangeland Program Summary (RPS), 1984 State Land Exchange, and Steens Act land exchanges, the HMA boundary has been changed several times which separated the active HMA acreage from inactive HA acres. The 1984 Andrews RPS reduced the size of the South Steens HMA by eliminating the Alvord Peak area where there was existing

forage conflict between wild horses and bighorn sheep (no specific acreage was given). The 1984 State Land Exchanges added 9,151 Acres to the South Steens HMA in order to block up the BLM managed lands. Since the early 1980's, 34,745 acres within the original HA have been disposed of and 27,290 acres have been acquired through multiple land exchanges including the Steens Act land exchanges which had the purpose of "protecting and consolidating Federal lands within the CMPA" (Steens Act 2000). Since 1979, the original active HA acres went from 252,235 to 134,491 total acres in the current HMA and 146,256 acres total acres within the inactive HA. Current boundaries for the HMA (active HA) and inactive HA were finalized in the 2005 AMU and CMPA RODs. Table 29 shows the public and private acres in the HMA and inactive HA both prior to and following the 2005 AMU and CMPA RODs.

Table 29: South Steens HA Acres

	Public	Private	Malheur NWR	State	Total
HMA before RMP[67]	127,840	34,923	12	658	163,433
HMA after RMP	126,732	7,716	12	0	134,460
Inactive HA before RMP	58,948	58,336	0	0	117,284
Inactive HA after RMP	60,055	85,543	0	658	146,256

[67] Before the current 2005 Steens Mountain CMPA RMP, but after HMA adjustment due to land exchanges following the Steens Act.

Although the HMA boundary adjustments had to be made, the AML was not adjusted due to lack of monitoring data to support a change. Approximately 75% of wild horse summer range containing the most reliable water in the HMA, and most of the winter range, have been lost following the land exchanges over the years. Wild horse management has been impacted as the water sources lost in the exchanges were not replaced. The Steens Mountain CMPA RMP states: "Permanent increases or decreases in AML and forage allocations will be considered if analysis of monitoring data indicates changes in long-term forage availability" (CMPA ROD, p. 50). Currently, wild horse management in South Steens HMA is being maintained within an AML of 159 to 304 animals, which has only been slightly modified (increased by a total of five animals) since the original 1979 determination, despite over a 50% reduction in the size of the HMA. Forage is allocated to ensure enough feed exists within the HMA to sustain AML of 304 wild horses throughout the year. Wild horses are allocated 3,648 AUMs of forage, with 3,540 AUMs being allocated in the South Steens Allotment. The last gather occurred in November 2009 with wild horses coming off the range in good health and quality, reflective of past management actions that returned the best animals to the range; thereby, improving and maintaining characteristics of good conformation, size, color, and temperament.

McInnis and Vavra (1987) found at least 88% of the mean annual diets of horses and cattle consisted of grasses; therefore, there is a direct competition for forage within the allotment. In McInnis and Vavra's (1987) work horses and cattle showed predilection for many of the same forages, and dietary overlap was substantial (62–78%) every season. In addition, dietary overlap between horses

and cattle grazing common sagebrush-grassland range in eastern Oregon average 67%, 69%, and 72% during spring, summer, and winter, respectively (Vavra and Sneva 1978). Dietary overlap is not sufficient evidence for exploitative competition (McInnis and Vavra 1987, Colwell and Futuyma 1971), and consequences of overlap partially depend upon availability of the resource. Site observations and utilization studies indicate wild horse utilization patterns are similar to livestock; however, wild horses will typically use range farther from water than cattle. Miller (1983) found that wild horses generally stay within 4.8 kilometers (2.98 miles) of a water source during the summer, while Pellegrini (1971) found wild horses will roam up to seven miles from water before returning. Green and Green (1977) found wild horses range three to seven miles from a water source, but the distance is related to forage availability. When water and forage are available together, the range will be smaller, and when they are not available together, wild horses concentrate in areas of ample forage and travel further distances to water (Green and Green 1977). Research has also shown when wild horses have to share water sources with cattle and antelope, there is direct competition (Miller 1983). When water was abundant, there was no aggression noticed; however, at times when water was limited, both cattle and wild horse would force each other from the water source while antelope were always displaced (Miller 1983). Miller (1983) also found presence of horses did not limit Greater Sage-Grouse or coyotes from drinking at the water source.

To maintain a thriving ecological balance "an adequate year round quantity of water must be present within the HMA to sustain wild horse and burro numbers within AML" (4700 Wild Free Roaming WH&B Management). The Merck Veterinary Manual (Kahn 2005) states: "Water requirements depend largely on environment, amount of work or physical activity being performed, nature of the feed, and physiologic status of the horse." The manual suggests the minimum daily water requirement is 0.4 gallon per 100 pounds of weight, with the average daily intake being closer to 0.65 gallon per 100 pounds. The manual recognizes this increase under specific conditions, such as sweat loss, increased activity, and lactation, with the increase being as much as 200%, up to 1.3 gallons per 100 pounds, per day. Wild horses within the South Steens HMA range from 900 to 1,200 pounds. Assuming an average weight of 1,050 pounds, wild horses within South Steens HMA require a minimum daily water intake of 4.2 gallons, with an average daily intake of 6.8 gallons, but the requirement may be as high as 13.65 gallons. This calculates out to 668 gallons per day when the HMA is at the low end of the AML (159 animals) and using only the minimum amount of water, to almost 4,150 gallons per day when the HMA is at the high end of the AML (304) and requiring a water intake 200% above average. Over the course of a year, this translates to a range of 243,747 gallons of water (minimum) to 1,514,604 gallons of water (maximum). The maximum water requirements would be even higher for the HMA when wild horse numbers exceed the AML.

The most common wild horse management action that occurs within the project area are wild horse gathers, which are to be done as the herd surpasses the

maximum established AML number and when monitoring data (census, utilization, use supervision, etc.) indicate ecological balance would be exceeded. Depending on reproductive rates, results of rangeland monitoring data, funding, and management considerations, wild horses within the HMAs are typically gathered and removed on a four to five year cycle. Since 1998, there have been numerous census counts, gathers, and releases within the HMA. Table 30 shows the wild horse counts for each activity occurring since 1998.

Table 30: South Steens HMA - Census and Gather History since 1998

Year	Activity	Number of Wild Horses
August 1998	Census	271
October 1998	Gather	259
October 1998	Release	91
June 2001	Census	321
September 2002	Census	387
October 2004	Gather	376
October 2004	Release	101
July 2009	Census	491
November 2009	Gather	376
November 2009	Release	143
June 2012	Census	385

Utilization of forage species within the HMA is not uniform due to a lack of reliable water. In part, this is due to a loss of approximately 28,973 acres of the existing HA that was crucial summer range and foaling areas with reliable live water. These acres were placed in inactive HA status due to legislated land exchanges and resulted in the concentration of wild horse use around limited reliable water sources within the active HA. Viable water sources in HMAs for wild horses are different than they are for domestic livestock. Water for domestic livestock need only last until the end of the grazing season and if water is unavailable, livestock can be gathered. HMAs must have reliable, year-round water to sustain wild horses. Reservoirs benefit livestock more than wild horses in that livestock can be removed when the reservoirs go dry and wild horses must find other water sources. When there is little water present in reservoirs at livestock turn out, an evaluation must be done on the available water to ensure there is sufficient water present to ensure yearlong water for wild horses before the livestock are allowed to turn out. When drought results in little or no water available for wild horse use, the options available are to provide water using a well, to haul outside water into the HMA, or to conduct an emergency gather that would have the goal of temporarily removing all wild horses from the area. Emergency gathers are not an immediate solution and must be planned prior to water running out to prevent wild horse death.

Wild horses are present in the allotment year round, requiring reliable water in the late summer and fall, and in drought years, even when livestock are not present. Fencing of the Donner und Blitzen WSR corridor by court decree, as well as numerous miles of private land fences constructed before the land exchanges on the east side of Donner und Blitzen River, has resulted in additional reliable water

being excluded from wild horse use. While some of the private land fences have been removed in the No Livestock Grazing Area, the openings (gates and water gap at Tabor Cabin) to Donner und Blitzen River are not suitable for wild horse use due to juniper encroachment. These three crossings are choked with juniper trees, which restrict the free movement of wild horses, due to their innate fear of predation. The needed juniper reduction in the area of these crossings is critical to the proper functioning of the HMA. Opening these crossings, by removing juniper trees, would redistribute use throughout the HMA. However, gates would only be able to be opened when livestock were not present in the pasture to prevent livestock from entering the No Livestock Graze Area. An isolated population of approximately 20 wild horses that uses the HMA on the east side of the river does not access the remaining portion of their HMA within the South Steens Allotment. In winter months these wild horses have a harder existence due to lack of access to suitable winter range which may result in death and affect the reproductive health of these wild horses and lower recruitment (Garrott and Taylor 1990). These wild horses were not seen during the 2012 or 2013 censuses.

In this HMA, external perimeter fences exist to contain wild horses within the HMA while internal fences are used to manage timing of livestock grazing, provide areas with periodic rest from livestock grazing, and exclude livestock from Donner und Blitzen WSR and No Livestock Grazing Area. Approximately 100 miles of fence exists in the HMA associated with the South Steens Allotment. While necessary for livestock grazing management, these fences create seasonal barriers to the free movement of wild horses within the HMA. If wild horses were continually unable to move through the allotment due to closed gates, they would stop trying to migrate through their HMA, resulting in overuse of certain areas. This can be seen in the Hollywood Pasture, which is one of the most common locations to observe wild horses in South Steens Allotment. In order to provide this pasture with as much rest from wild horse use as possible, gates are occasionally left closed throughout the summer when the majority of the wild horses have moved into other pastures. To mitigate effects of fencing, once livestock have been removed from an HMA, internal fence gates are generally required to be opened by the permittee as a term and condition of their permit. In addition, during the livestock grazing season, pasture gates should be left open whenever livestock are not present in the affected pastures.

There has been no documented evidence of WNV in the South Steens wild horse herd. The disease affects a horse's immune system and is spread by mosquitoes and biting flies. Mosquitoes and biting flies are present within the HMA; however, horses (as well as humans and other mammals) are dead-end carriers of the virus and do not develop high enough levels of the virus in their bloodstream to pass the virus on (CDC 2013). A BLM equestrian campground is located close to the HMA along the south section of South Loop Road. WNV infected insects could be transported in horse trailers to the HMA by the public or commercial concessionaires.

Within the northern Great Basin, drought conditions are common. In Nevada during 2007 and Oregon 2009, drought conditions affected water availability in several HMAs nationally. In Nevada, before wild horses could be gathered, many died and a large number (approximately 150) of animals gathered subsequently died from salmonella poisoning due to contaminated, poor quality water. Proactive management of supplying adequate water could have prevented this situation as well as saved the lives of many wild horses. Emergency gather measures are always contingent on funding and space to hold animals resulting in potential compromise of forage conditions in addition to animal loss. As a result of drought, habitat around drying water sources suffers from overgrazing. As the unreliable or variable water sources dry-up, wild horses and livestock are forced to congregate at fewer water sources. This concentration of wild horses (and livestock) cause increased utilization of upland and riparian vegetation around water sources, often to the point of heavy or severe utilization (61 to 100%) as is often the case with Long Dam, Tombstone, and Kundert reservoirs, and Three Springs (based on field observations). Addressing the habitat components (water, forage, cover, & space) of wild horses as required in WH&B Management Handbook (H-4700-1, 2010) and Five Year Strategic Plan for 2010 to 2015 is a priority in Oregon. Proper water developments would disperse grazing use and reduce the chance of emergency gathers being required.

Wild horses of this HMA are managed to exhibit saddle horse conformation with the most common colors being pinto variations, sorrel, bay, and red roan, with several other colors present. Genetics analysis was completed by E. Gus Cothran from Texas A&M University using DNA collected from wild horses during the 2009 gather. Genetic similarity results suggest a herd with mixed ancestry that primarily is North American riding stock and possibly includes Thoroughbred, although this may be due to Quarter Horse ancestry (Cothran 2010). Cothran (2010) summarized that current variability levels are high enough that no action is needed at this point, although, the herd should continue to be monitored for genetic variability.

Environmental Consequences: Wild Horses

<u>Effects Common to All Alternatives</u>

Fences restricting access to Donner und Blitzen River have reduced the amount of remaining live water in the HMA. Fence construction has been partially mitigated by opening gates along the river corridor when livestock were not present on the allotment; this would continue under all alternatives, though the use of the openings by wild horses is limited due to juniper encroachment.

Currently BLM's WH&B Program is facing multiple issues related to our inability to gather to maintain AML as temporary and long-term, off the range, holding facilities are currently approaching capacity, full or over capacity. BLM is working on addressing short-term and long-term program reforms to help

address these issues including, but not limited to, various fertility control methods and non-reproducing herds.

South Steens HMA is approximately 156 wild horses over the high end of AML. The foreseeable future for maintaining wild horse numbers within AML is unclear. With the removal of water sources and land base of the South Steens HMA following the Steens Act, drought conditions over the past three years resulting in less available forage and water, and increasing utilization levels as wild horse numbers increase, returning wild horses to the east side of the Donner und Blitzen River into the No Livestock Grazing Area portion of the wilderness section of the HMA and/or decreasing AML for the South Steens HMA are valid considerations.

The CEAA for wild horses for this project is the South Steens HMA. RFFAs for wild horses would include future wild horse gathers, HMAPs, and the North Steens Project. The Miller Homestead Fire burned approximately 731 acres of the South Steens HMA. However, the acres burned did not affect South Steens wild horses as this area is separated from the rest of the HMA by two fences and Hwy 205, and wild horses do not typically access this area.

Effects Common to Action Alternatives

All action alternatives include development of reliable, water, in the form of wells, pipelines, and troughs, which would be essential and required to sustain wild horses within the HMA during drought conditions. However, if spring protection or reservoir abandonment were to occur prior to additional water developments being constructed, this would result in a net loss of available water for wild horses. Any reduction in water from what is currently available would have a negative impact on wild horses, reduce wild horse distribution, and increase the probability that an emergency gather would be required. This risk would remain in place until replacement water sources are developed. Wells would allow the BLM to turn water on when needed and supply water year-round to disperse use by wild horses. Development of reliable late-season water sources within the HMA would reduce concentrations of wild horses at individual water sources and reduce the chance of disease spread due to contaminated water.

Alternative A: No Action

Wild horse movement would continue to be restricted by the management fence for Donner und Blitzen River as well as other internal livestock management fences. Animal distribution would continue to be problematic as some areas would be over-utilized while other areas would be underutilized by wild horses due to a lack of reliable water on the eastern portion of the allotment. Wild horses would continue to congregate in the riparian areas around springs. In severe drought years, wild horse loss would be expected to occur due to lack of water and/or lack of clean water. Although gates to Donner und Blitzen River could be

opened for access to the river during drought (when livestock are not present), wild horses may not be able to locate these openings. In severe drought years, an emergency gather may be conducted (following appropriate NEPA). In addition, juniper encroachment has occurred around many of these gates, increasing the presence of mountain lions (predators), and further reducing the likelihood that wild horses would use them. The cistern at Burnt Car Spring would remain an entrapment risk for wild horses, especially foals.

Alternative B: Proposed Action

Under this alternative, three new reservoirs would be constructed, 15 existing reservoirs would be rehabilitated to improve functionality, four springs would be developed, and nine troughs would be installed, five of which would be associated with wells. Water developments would disperse grazing use and reduce the chance of emergency gathers being required. Spring protection, without development, would reduce reliable water sources within the allotment. However, the development of new water within the same area would replace the spring water, reducing the impact to wild horses. These new developments are spread throughout the allotment, which would allow for improved wild horse distribution and utilization across the allotment. The troughs associated with wells and pipelines would guarantee year-round water would be available, even in drought years. However, with only five troughs associated with wells, in drought years these locations would receive heavy utilization as other water sources dry, resulting in uneven distribution and utilization patterns during those years. Wells that are powered by solar panels would provide the most reliable power. Therefore, the most reliable water would be provided at these sites since there would be no reliance on fuel, which would require year-round access. Wild horse movements and available live water would continue to be restricted by the management fence for protection of Donner und Blitzen River. By reducing ingress and increasing egress from the large cistern at Burnt Car Spring, the risk of entrapment to wild horses would be reduced, though not completely eliminated.

Alternative C: Maximum Water Distribution

Providing numerous reliable water sources throughout the HMA would result in animals being more evenly distributed throughout the HMA. Under this alternative, 24 new troughs would be installed, 20 of which would be associated with wells and pipelines, 17 new reservoirs would be constructed, four springs would be developed, and 15 existing reservoirs would be rehabilitated to improve functionality. Proper water developments would disperse grazing use and reduce the chance of emergency gathers being required. These developments are spread throughout the allotment and would provide reliable water to wild horses in all areas of the allotment, including within WSAs. The proposed troughs associated with wells and pipelines would guarantee reliable, clean, year-round water was available to wild horses, and the locations of these proposed troughs would allow

for more even distribution patterns across the allotment. This would result in having forage utilization being more evenly distributed, reducing areas of overuse. Wild horse movements and available live water would continue to be restricted by the Donner und Blitzen River protection fence.

Alternative D: Along Road Development

Under this alternative, 18 new troughs, associated with wells and pipelines, would be constructed which would provide clean, reliable, year-long water sources for wild horses. In addition to the troughs, one new reservoir would be constructed, two springs would be developed, and seven existing reservoirs would be rehabilitated to increase functionality. While these water sources would not be as reliable as the troughs associated with pipelines and wells, they would provide water for at least part of the year, and may provide yearlong water. Proper water developments would disperse grazing use and reduce the chance of emergency gathers being required. Since the developments would only occur along roads, there would still be some areas wild horses would not graze regularly due to their distance from water, leaving an uneven distribution pattern. As the year progressed and water sources dried, wild horses would move to the remaining reliable sources resulting in concentrations of wild horses in areas with water. Distribution of grazing animals would not occur as well as under Alternative B or C, as this alternative leaves portions of the area HMA overused and portions underused, but would still be expected to provide enough new water sources to sustain wild horses during droughts. Wild horse movements and available live water would continue to be restricted by the Donner und Blitzen River protection fence.

Alternative E: Edge Development

This alternative would not have any well development within WSAs in Steens Pasture, resulting in the center of the HMA being under-watered. This would continue the uneven distribution and utilization pattern of wild horses that is currently observed within the allotment. In addition, constructing a protection fence around springs without developing them would further hamper the potential for distribution and concentration would be around those areas with reliable water. Removing the springs as water sources would increase the risk of water becoming limited, and would temporarily (one year) disrupt their seasonal movements with their home ranges. Wild horses are expected to find alternate water sources, especially once additional sources would be developed within the allotment. Congregation at existing water sources would increase during the period between spring protection and the development of new water sources. As these new water sources are constructed, wild horse bands would establish new home ranges. This alternative includes an increased number of reliable water developments throughout the allotment and would disperse wild horse use and reduce the chance of emergency gathers being required. Proposed wells, pipelines, and troughs on the edge of the WSAs, within the Steens Pasture, would

slightly improve the distribution to include areas around the new developments. Proposed wells, pipelines, and troughs within Tombstone and Home Creek pastures would provide reliable, clean water sources for wild horses within those pastures. The proposed water gaps along Donner und Blitzen River would also provide wild horses with a clean, reliable source of water year-round, partially compensating them for the fencing on the river in most areas. However, the proposed locations of these water gaps is generally near dense stands of juniper trees, which would limit wild horse use due to the innate fear of predation in those areas. For water gaps to be regularly used, the juniper within the water gaps and along the main access path would need to be removed. The proposed water gaps on the east side of the allotment would have the largest effect on distribution and utilization patterns compared to the effect of other proposed improvements. Throughout the entire allotment, wild horses would have 16 more yearlong water sources (in the form of troughs connected to wells, and the water gaps) than they currently have available, reducing the possibility of wild horse loss due to drought conditions. Three existing reservoirs would be maintained and one spring would be developed, all of which would provide additional reliable water sources to wild horses, but these may not be as reliable as troughs and wells during drought years. During drought conditions, wild horses would concentrate at the more reliable sources and forage use around these areas would be over-utilized while other areas located further from water or near water sources that had already dried would remain unused or under-utilized.

Alternative F: Reduced Grazing with No Development

Under this alternative, there would be no new water sources developed for wild horse use. Therefore, the effects would be the same as under the No Action Alternative. The mandatory reduction in livestock grazing AUMs may result in more forage and water being available for wild horses compared to alternatives A through E. However, this would only be true for Alternative A in years when the permittee elects to take AUMs above the average use that has been recently taken. However, wild horse distribution and utilization patterns would remain limited to areas around existing water sources, and in severe drought years emergency gathers may still be needed. Wild horses would continue to heavily use the riparian areas around springs.

Alternative G: Complete Livestock Removal

Under this alternative, there would be no new water sources developed for wild horse use. Therefore, the effects would be the similar as under the No Action Alternative. The exception would be that permanently removing livestock grazing from the allotment would increase forage and water availability to wild horses by decreasing competition. However, wild horse distribution and utilization patterns would remain limited to areas around existing water sources, and in severe drought years emergency gathers may still be needed. Wild horses would continue to heavily use the riparian areas around springs.

11. Wild and Scenic Rivers and Wilderness

Affected Environment: Wild and Scenic Rivers, and Wilderness

Steens Mountain Wilderness consists of 172,911 acres of BLM-managed lands in two separate pieces. The main portion of the Steens Mountain Wilderness is directly east of the South Steens Allotment and on top of Steens Mountain. The smaller portion of the Steens Mountain Wilderness is known as the Home Creek portion. The Home Creek portion is 16,609 acres, and it is located in the southwestern corner of South Steens Allotment, within Home Creek Pasture (see Map 2).

The allotment borders Donner und Blitzen River WSR corridor, with approximately 242 acres of the corridor within the allotment. The river has a wild classification and the outstanding remarkable values identified include scenery, geology, recreation, fish, wildlife, and vegetation. The main wilderness area and WSR is relatively remote and has undesignated trails along the river, from recreational use primarily associated with fishing and hunting. This main portion of the wilderness and the WSRs falls within the No Livestock Grazing Area established by the Steens Act.

One exception to the No Livestock Grazing Area is the water gap in the Tabor Cabin area within Donner und Blitzen WSR corridor and Steens Mountain Wilderness. This water gap was previously on private property, which was exchanged through Title VI of the Steens Act. One element of the land exchange was that Roaring Springs Ranch, Inc. reserved a "nonexclusive easement" to use and maintain "for livestock, wild horse and wildlife watering purposes" the aforementioned water gap. This easement is recognized as a legal use of this portion of the No Livestock Grazing Area for said purposes. While no other portions of Donner und Blitzen River are part of the allotment, only portions of the river are physically fenced out of the allotment, with the remaining portions relying on topography to keep livestock from the river. Winter weather conditions in the area often damage the fence, resulting in additional areas the livestock may access the river. The fence is maintained multiple times per year, and the river corridor is inspected by horseback to find weak areas and push any livestock that are in the corridor back into the allotment. Livestock, knowing water is available at the river, occasionally find access to the river in the unfenced areas with steeper topography or put pressure on the fence, going through the weak spots, to access the river and drink water. This often results in livestock loafing in and foraging on the riparian vegetation until they are discovered and forced out of the corridor.

Wilderness values in Steens Mountain Wilderness are outlined in section 2(c) of the Wilderness Act and are divided into several components including naturalness, opportunities for solitude, primitive and unconfined recreation, and

supplemental values that may include values associated with ecological, geological, or other features of scientific, education, scenic, or historic importance. Naturalness refers to an area, which "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable" (BLM Manual 6340). Steens Mountain Wilderness is in a natural condition except for areas containing certain human-made elements (2005 CMPA RMP). Opportunities for solitude within the Steens Mountain Wilderness are plentiful because the area features a varied and rugged topography, as well as vegetated creek and canyon bottoms, enhancing the experience of seclusion and remoteness. There is outstanding opportunity throughout the Steens Mountain Wilderness for primitive and unconfined recreation, which includes hiking, backpacking, camping, horseback riding, hunting, fishing, photography, and sightseeing. Supplemental values of wilderness include geology, scenery, vegetation, wildlife, and historic values. Management within the wilderness is centered upon the protection of naturalness, while providing for public use and primitive recreation in a manner that would preserve wilderness characteristics.

Environmental Consequences: Wild and Scenic Rivers, and Wilderness

Actions Common to all Alternatives

For the purpose of this analysis, the CEAA area for WSRs and wilderness is the Steens Mountain Wilderness and the Donner und Blitzen WSR corridor. The North Steens 230-kV Transmission Line Project (EIS# DOI-BLM-OR-B060-2010-0035-EIS) and the Echanis Project wind turbines are RFFAs and would be located approximately 1.5 miles north of the Steens Mountain Wilderness at the nearest point. Neither the Echanis Project nor any project transmission line alternatives would bisect or cross the Steens Mountain Wilderness. The North Steens Project would also be a RFFA; however, there would be no cumulative effects on WSRs or wilderness from this project since the ROD (2007) does not include treatments within these areas.

Alternative A: No Action

Under this alternative, there would be no changes in grazing management and no new developments built within wilderness or the WSR. There would still be pressure from livestock attempting to access water from Donner und Blitzen River, which is in the wilderness, especially in drought years when many of the existing developments within the adjacent areas become dry. Livestock presence in the No Livestock Grazing Area of the wilderness may affect recreationists. However, the affects may be positive or negative depending on the person. Livestock grazing in the No Livestock Grazing Area is in violation of the Steens Act, which established the area, and every effort should be made to ensure that it does not occur.

Alternative B: Proposed Action

Under this alternative, the permittee would be able to fully use permitted AUMs. Since no range improvements are being proposed in the wilderness or WSR corridor and current grazing would continue within the Home Creek portion of the wilderness, there would be no anticipated effects to the Steens Mountain Wilderness. There would be a benefit to the Donner und Blitzen River WSR because there would be less to no pressure by livestock to get water from the river due to the increased number of off-stream watering sources.

Alternative C: Maximum Water Distribution

Under this alternative, effects would be similar to the Proposed Action, with even less pressure by livestock to access Donner und Blitzen River due to the increased number of off-stream watering sources.

Alternative D: Along Road Development

Under this alternative, the effects would be the same as under the Proposed Action.

Alternative E: Edge Development

This alternative would authorize livestock watering in the No Livestock Grazing Area of Steens Mountain Wilderness. Construction of three water gaps would occur along Donner und Blitzen River and within the No Livestock Grazing Area.

Delivery of fence materials and construction of the water gap fences would be done with pack animals and hand tools. Naturalness would be reduced due to the construction of the new fences in the corridor. There could be temporary, short-term (days) disturbance to solitude and recreational use from noise during construction. The structures are not expected to restrict water movement, so the free-flowing character of the river segments would be maintained. Motorized access for monitoring and maintenance of the structures (e.g., replacing individual components or clearing debris) would not be allowed, so impacts to wilderness values associated with these activities would not occur. However, if major reconstruction of the structures were needed, impacts similar to those associated with construction would be expected.

Following construction, water gaps would be observable as unnatural features in the wilderness and WSR. Water gaps would impede visitor access immediately along the river, requiring visitors to climb over or hike around the structures, but encounters should last no more than several minutes as visitors approach and pass the structures.

Benefits to wilderness values include the ability of wild horses, which are a special feature, to use the proposed water gaps for water, attracting them to the wilderness portion of the HMA. However, these water gaps would also allow livestock to water within the wilderness and WSR, which may reduce the outstanding solitude and recreational opportunities for some visitors. Providing three additional areas where livestock would be allowed to access the river would reduce some pressure from livestock trying to access the river in other areas. The lack of off-stream developments within the use area of the river would limit this benefit, and some level of livestock pressure along the river fences would still occur.

Alternative F: Reduced Grazing with No Development

Under this alternative, the number of AUMs on the grazing term permit would be reduced. The level of authorized use under this alternative would be similar to what has occurred in the past by the permittee voluntarily using fewer AUMs than permitted. Therefore, these changes to grazing management would maintain current effects on the wilderness values of Steens Mountain Wilderness. No proposed range improvements would be constructed and no changes to wilderness values would occur. There would still be pressure from livestock to go to Donner und Blitzen River for water, especially in drought years when many of the existing developments go dry. If the permittee were to fully use permitted AUMs under the No Action Alternative, the pressure on the river fence under this alternative would be less than under the No Action Alternative.

Alternative G: Complete Livestock Removal

Under this alternative, no livestock grazing would occur within the allotment. No proposed range improvements would be constructed under this alternative and no direct changes to wilderness values would occur. However, since no livestock would be present, there would be no pressure on the river fences and livestock would not enter the No Livestock Grazing Area from this allotment. Since livestock would not be allowed to graze within the allotment, the Home Creek Portion of the Steens Mountain Wilderness would effectively become part of the No Livestock Grazing Area. Wild horse concentration around existing water sources would continue in the Home Creek Portion of the wilderness.

12. Wilderness Study Areas

Affected Environment: Wilderness Study Areas

There are three “remnant” WSAs within South Steens Allotment: Blitzen River WSA, South Fork Donner und Blitzen River WSA, and Home Creek WSA, with 23,415 acres, 27,904 acres, and 1,178 acres within the allotment, respectively (see Map 2).

Wilderness characteristics of the three WSAs, summarized below, are from the BLM Oregon and Washington *Final Intensive Inventory Decisions* (1980). Since the Steens Mountain Wilderness designation, the remnant WSAs have not been re-inventoried to determine what wilderness characteristics still exist. Each one of these WSAs was reduced in size due to the Steens Act. Therefore, current wilderness characteristics for each WSA may be different from described, due to the modification of the shape and size of each WSA.

Wilderness characteristics include naturalness, outstanding opportunities for solitude, outstanding opportunities for primitive and unconfined recreation, and the presence of supplemental values (BLM Manual 6330). The size of the area must also be at least 5,000 acres (with some exceptions). If an area is found to have naturalness, outstanding opportunities for solitude or outstanding opportunities for primitive and unconfined recreation, and meets the size requirement, the area is determined to have wilderness characteristics. Supplemental values are not required for wilderness characteristics to be present, but add to the overall wilderness value of the area. Once designated as a WSA, an area is managed to preserve its wilderness values until Congress either releases it from WSA status or designates it as wilderness. WSA management follows the BLM Manual 6330 – Management of WSAs. The following definitions are from the BLM Manual 6330.

Naturalness refers to an area that "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable."

Solitude is defined as "the state of being alone or remote from habitations; isolation. A lonely, unfrequented, or secluded place."

Primitive and Unconfined Recreation is defined as non-motorized and undeveloped types of outdoor recreation activities.

Supplemental Values are listed in the Wilderness Act as "ecological, geological, or other features of scientific, educational, scenic, or historical value."

Blitzen River WSA (2-86E)

Prior to the Steens Act, the Blitzen River WSA was 58,560 acres, with 720 acres of private land and 520 acres of state land. Currently, Blitzen River WSA is approximately 31,901 acres (23,415 acres are within the South Steens Allotment) and is in a generally natural condition.

Note: Wilderness characteristics of Blitzen River WSA summarized below (italicized) are from the BLM Oregon and Washington *Final Intensive Inventory Decisions* (1980), pages 188-190. Current wilderness characteristics, if still present, may be different from described.

This subunit primarily consists of the high desert plateau which forms the western slope of the Steens Mountain. The dominant feature within the subunit is the Donner und Blitzen River. This canyon ranges from one-fourth to one-half mile wide, is approximately ten miles long, and reaches 700 feet in depth as it runs from north to south across the subunit. West of the Donner und Blitzen River the topography consists of rolling hills and small rimrock edged ridges. To the east of the river the plateau rises sharply and the topography becomes much more pronounced. The vegetation is also varied, with stands of juniper occurring on the west side, and quaking aspen, mountain mahogany and mountain meadows occurring frequently on the east side. The canyons contain riparian plant common throughout the subunit.

Naturalness: Approximately 6,500 acres do not appear to be in a natural condition because they are affected by substantially noticeable imprints of man including a powerline (2,850 acres), a concentration of reservoirs (3,510 acres), and a crested wheatgrass seeding (140 acres). The remainder of the subunit contains 20 reservoirs, 12 miles of fence, and approximately 35 miles of vehicle ways. These latter developments are well dispersed, overgrown, or otherwise screened so as not to appear substantially noticeable.

Note: Current unnatural features remaining within the remnant Blitzen River WSA consist of 17 reservoirs, a developed spring, 14 fences totaling 23.5 miles, a corral, and 34 miles of ways. Approximately 3,115 acres (9.8% of the remnant WSA is currently influenced by these unnatural features. Portions of this area have been identified as crucial deer habitat and contain Greater Sage-Grouse leks.

Solitude: Because of the topographic and vegetative screening available within much of the area, the subunit provides many places for visitors to find a secluded spot. These factors, combined with the area's relatively large size and compact shape, create outstanding opportunities for solitude.

Primitive Recreation: This subunit provides opportunities for hiking, backpacking, viewing wildlife, sightseeing, photography, hunting, and fishing. Because of the quantity and quality of the recreational activities offered within this area, the subunit has outstanding opportunities for the pursuit of primitive and unconfined types of recreation.

Supplemental Values: The subunit contains a large concentration of raptor nesting sites within the rocky gorges of the canyons. Portions of the area have been identified as crucial deer habitat and sage-grouse booming grounds. Cultural resources of various types have also been identified within the subunit.

Note: Though not specifically mentioned wild horses are present in this WSA and are generally considered a special feature that enhances the wilderness experience of some visitors. The WSA also provides important winter range habitat for elk. Most of the spectacular scenery and topography lies in the portion of the WSA that is now part of Steens Mountain Wilderness.

South Fork Donner und Blitzen River WSA (2-85G)

Prior to the Steens Act, the South Fork Donner und Blitzen River WSA was 35,870 acres with 1,280 acres of private inholdings and 1,280 acres of State inholdings. Currently, South Fork Donner und Blitzen River WSA is approximately 27,968 acres (27,904 acres are within the South Steens Allotment).

Note: Wilderness characteristics of South Fork Donner und Blitzen River WSA summarized below (italicized) are from the BLM Oregon and Washington *Final Intensive Inventory Decisions* (1980), pages 183-187. Current wilderness characteristics, if still present, may be different from described.

> *The area is characterized by gently rolling topography which gradually rises in elevation as one travels eastward from approximately 5,600 to 6,000 feet. The Donner und Blitzen River and Indian Creek have formed predominant drainages in the eastern portion of the area. The rest of the area has shallow intermittent streams. The general vegetative cover for the subunit is sagebrush, grass, and juniper. The perennial drainages hold water tolerant species such as willow and alder.*
>
> *Naturalness: Developments include six reservoirs (five of these are along the western boundary road); 21 miles of ways found throughout the area…along the northern boundary road. In general, the developments are sufficiently dispersed throughout the subunit so that the rolling topography and the sage/juniper vegetative cover adequately screens and makes the developments substantially unnoticeable.*

Note: Current unnatural features remaining within the remnant WSA consist of 17 reservoirs, one dugout, 28.2 miles of ways, four fences totaling 9.4 miles, and the Weaver Place. It is estimated that approximately 2,636 acres (9.4%) of the remnant WSA is currently influenced by these unnatural features.

> *Solitude: The average east-west length of the area is seven and one-half miles and the average north-south breadth is five and one-half miles. The gradually inclining topography and its accompanying low sagebrush vegetation offer limited screening in the western two-thirds of the area. However, the eastern one-third of the subunit with the Donner und Blitzen and Deep Creek drainages, ridge topography and juniper cover offers outstanding opportunities for screening visitors from each other. It is*

possible to find a secluded spot in much of the subunit because of the topographic and vegetative screening. The unit offers an outstanding opportunity for solitude.

Primitive Recreation: The unit offers opportunities for sightseeing, horseback riding, hiking, backpacking, hunting, and fishing. The user has ample opportunities to experience outstanding primitive and unconfined recreation within the area, especially fishing, backpacking, and hiking within the eastern portion.

Supplemental Values: Evidence of cultural resources has been found within this area.

Note: Though not specifically mentioned as a special feature, wild horses are present in this WSA and are generally considered a special feature that enhances the wilderness experience of some visitors. The WSA also provides important winter range habitat for elk.

Home Creek WSA (2-85H)

Prior to the Steens Act, the Home Creek WSA was 26,590 acres with 640 acres of State land inholdings and 80 acres of private land inholdings. The majority of the original WSA has been incorporated into the Steens Mountain Wilderness. Currently, Home Creek WSA is approximately 1,178 acres (entirely within the South Steens Allotment). This WSA no longer meets the required 5,000 acres for a WSA, although it meets a size exception by being contiguous with the Steens Mountain Wilderness. The remnant portion of Home Creek WSA is bordered by the Lauserica Road to the north and east, an unnamed route to the west, and private land to the south. The Steens Mountain Wilderness (Home Creek portion) is west of the unnamed route that makes up the remnant WSA's western boundary.

Note: Wilderness characteristics of Home Creek WSA summarized below (italicized) are from the BLM Oregon and Washington *Final Intensive Inventory Decisions* (1980), pages 184-187. Current wilderness characteristics, if still present, are different from described.

The area is characterized by a steep rim on its most west edge and gradual south and eastward inclining topography. The elevation varies from 4,500 feet to over 6,000 feet. The western rim elevation is from 5,200 to 5,400 feet. From the rim area the elevation changes gradually (600 to 800 feet) through the rest of the subunit. Three Mile Creek, Home Creek, Dry Creek, and Roaring Springs Canyon are dominant east/west drainage features. Home and Three Mile Canyons contain perennial creeks. Grass, sagebrush, and juniper are the dominant vegetative

species, with willow, alder, and other water dependent plant species found in the riparian zones along the creeks.

Note: The current remnant Home Creek WSA contains only two intermittent streams and none of the creeks or canyons mentioned above. The elevation currently ranges from 5,880 to 6,040 feet.

Naturalness: The subunit contains six reservoirs scattered along the eastern boundary road, four miles of ways, and 12 miles of fenceline just inside the midwestern and mideastern boundary of this area. These developments do not affect the general natural appearance of the subunit because they are sufficiently dispersed throughout the subunit making the area seem generally unaffected by the works of man.

Note: Currently, five reservoirs and a one mile-long way remain within the remnant Home Creek WSA. It is estimated approximately 162 acres (13.9%) of the remnant WSA is currently influenced by these unnatural features.

Solitude: The average east-west breadth of the subunit is five miles and the average north-south length is six miles. The canyon areas offer outstanding opportunities to find a secluded spot, even though they comprise a relatively small part of the total subunit. The area above them is sloping to flat and is vegetated with sagebrush and scattered juniper and would offer limited opportunities for solitude. The subunit does offer outstanding opportunities for solitude.

Note: The current remnant WSA does not contain any of the canyons that offer outstanding opportunities for solitude. Therefore, the remnant WSA relies on the adjacent wilderness area to meet this criterion.

Primitive Recreation: The subunit offers opportunities for hiking, photography, sightseeing, backpacking, horseback riding, fishing and hunting. The opportunities for hiking, backpacking, fishing, and sightseeing are outstanding especially within Dry and Home Creek Canyons.

Note: The current remnant WSA does not contain any of the creeks or canyons previously mentioned. Currently, the recreation opportunities within this remnant WSA include hiking, photography, backpacking, horseback riding, and hunting, but there are no features to make these opportunities outstanding.

Supplemental Values: Evidence of golden eagle and prairie falcon nesting areas have been found within the area.

Note: Though not specifically mentioned wild horses are present in this remnant WSA and are generally considered a special feature that enhances the wilderness experience of some visitors.

Environmental Consequences: Wilderness Study Areas

Effects Common to All Alternatives

For the purposes of this analysis, the CEAA for WSAs is the Blitzen River, South Fork Donner und Blitzen River, and Home Creek WSAs. Past and present actions, such as those described in *Affected Environment*, have influenced the existing environment within the CEAA. Past and RFFAs in the CEAA that may contribute to cumulative effects to WSAs include hunting and other recreational pursuits which increase use in the area, range improvements, roads, and the North Steens Project. Depending on the type of treatments implemented within the WSAs under the North Steens Project, there may be some short-term (years) disturbance to the appearance of naturalness in areas treated for juniper encroachment. However, these treatments are expected to help restore the natural fire regime and protect ecological integrity in the WSAs and the CMPA as a whole over the long-term (decades) as provided for under the Steens Act, enhancing wilderness characteristics. There are no other known RFFAs that would contribute to effects to wilderness values in the WSAs. Past and RFFAs that have affected WSAs in the CEAA are found in Table 31.

Table 31: WSAs Past and RFFAs

ACTION	PAST ACTIONS			FUTURE ACTIONS		
	ACRES	MILES	NUMBER	ACRES	MILES	NUMBER
Wildfire Starts	---	---	37	---	---	Unknown
Wildfires	6041.4	---	6	Unknown	---	Unknown
Known Primitive Campsites	---	---	14	---	---	Unknown
Trails	---	13.9	---	---	None	---
Open Roads	---	100.3	---	---	None	---
Closed Roads	---	34.2	---	---	None	---
Fences	---	58.3	---	---	None	---
Pipeline	---	0.5	---	---	None	---
Exclosures	2.6	---	1	None	---	None
Water Developments	---	---	69	---	---	None
Gravel Pit	125.7	---	1	None	---	None
Cutting	384.8	---	5	None	---	None
Piling	293.9	---	4	None	---	None
RX Burning	9985.0	---	16	100.3	---	3
Seeding	100	---	1	5	---	1

Effects Common to All Action Alternatives

The general effects to naturalness from each type of development are described below.

Wells and Tanks: The permanent development component observable aboveground after installation of wells would be the top portion of the well pipe (12 to 36 inches in aboveground height) and the power source. The rest of the well pipe would be below ground. Any storage tanks associated with the well would also be buried. There would be less than 0.25 acre of soil and vegetation disturbance and after construction these areas would be rehabilitated. Seedings of native species and rock placement would help promote a more natural appearance within three to five years.

The viable options for power include solar panels and generators. If a portable generator was used to run the well pump, it would only be present during the period the well is in operation each year (approximately two months) between April and October, though it may be in operation longer in drought years if it is used to provide water for wild horses. This time period is when Steens Mountain area is most accessible to visitors.

Up to 10 feet x10 feet x 36 inches of soil and vegetation may be disturbed if a pit was constructed to conceal the generator and reduce some noise pollution. The access for wells along closed ways would need to be improved to allow the drill rig entrance and some level of maintenance would be needed for motorized access along the closed ways to install and remove the generator every year.

Total soil and vegetation disturbance for the generator pit would be less than 0.01 acre. The generator and trailer would be relatively small in size (similar to the bed of a standard-sized pickup) and covered to protect the generator and help buffer the sound of the motor. Depending on water use, the generator is expected to run four to 16 hours a day; however, the use of a level switch in a storage tank may reduce the time the generator needs to operate. Topography, vegetation, and wind would also help muffle the sound of the generator. It is not expected the generator would be heard for a distance of greater than 0.25 mile from the generator. When a generator is used, the area affected by sight and sound would be approximately 126 acres.

If power is provided by solar panels, it is expected no more than 0.25 acre of soil or vegetation disturbance would be associated with construction. These facilities would be observable year-round. Solar panels would stand out less than windmills, since they would be constructed as close to the ground as possible and fenced for protection, while windmills would have to be tall enough to intercept a maximum level of wind. The estimated area of visual disturbance for windmills would vary, depending on height, and topographic and vegetative screening, which ranges from 56 to 2,010 acres. Due to topographic screening, and the use of reduced glare solar panels, solar panels are not expected to be seen for a distance

of greater than 0.25 mile from the panel (56 acres). The presence of topographic and vegetative screening would allow the visual disturbance area to be on the low end of the range.

The area affected by noise disturbance from generators would be similar to visual impacts of solar panels. Generators would be a temporary facility, present less than half the year.

If the WSA in which wells and tanks were located were designated as wilderness, the allowable level of maintenance would be determined by Congress. However, if Congress determined that no motorized access would be allowed for maintenance, wells would likely be abandoned if pumps failed or other major problems with the wells arose.

Pipelines: Impacts to soils, vegetation, and naturalness are expected to be minimal given all of the proposed pipelines would be located along existing roads, ways or closed roads. Some ways are currently not open to the public for use and are not shown on maps, but are available for administrative uses. In addition, the pipelines would be buried (unless limited by rock), with only occasional vents and valve boxes being visible above ground (four to six inches). For each mile of pipeline there would be approximately one acre of ground disturbance; however, since pipelines would be placed along existing roads, ways or closed roads, a portion of this disturbance would take place in areas previously disturbed by the routes. The area disturbed by pipeline installation would be seeded, with native species, in areas that had vegetation prior to pipeline installation. Rocks disturbed from the site would be placed in a manner that appears natural to break up the linear pattern of disturbance, as long as they would not reduce accessibility on the route. Following this rehabilitation, the disturbed area would be expected to appear natural within three to five years. Maintenance of pipelines, while more difficult, could be done using pack animals and without motorized equipment if the WSA was designated as wilderness in the future, though they may also be abandoned.

Troughs: Vegetation disturbance associated with construction would be no more than 0.05 acre for each trough, and disturbance caused by livestock and wild horse concentration would be approximately two acres for each trough. These areas would receive concentrated grazing and soil disturbance, and naturalizing the area with vegetation may be difficult due to the increased level of use. To the extent possible, troughs would be located in a manner utilizing vegetative and topographic screening. As troughs would be partially buried, troughs would not be expected to be identifiable from a distance greater than one-sixth of a mile, even with limited topographic screening. If the area is designated as wilderness, troughs could be maintained without motorized equipment. However,

motorized equipment would be required to replace troughs or remove them.

Reservoir Construction: Vegetation disturbance associated with construction and concentrated use by livestock and wild horses around each reservoir would be approximately two acres, with actual construction resulting in less than one acre of disturbance. However, reservoirs would be located in drainages, which often have good topographic and vegetative screening, so reservoirs are not expected to be observable as a man-made structure until a visitor came into direct contact with them. Establishment of unauthorized motorized routes is not expected because any cross-country travel by motorized equipment for reservoir construction would be conducted to minimize soil and vegetation disturbance and any tracks observable near existing roads and ways would be raked and rehabilitated. Monitoring of the reservoirs would occur by primitive methods. Maintenance of reservoirs generally requires motorized equipment; however, most reservoirs can function for decades without any maintenance. If the WSA in which a reservoir is located is designated as wilderness, the application of bentonite, if needed, could be packed in and spread by hand, and no maintenance requiring motorized equipment would occur.

Maintenance of Existing Reservoirs: Maintained reservoirs would be cleaned out, making them deeper, rather than wider or longer in size. Bentonite or another water-holding soil would be added to the bottom of the reservoir to increase water holding ability. Structural weaknesses (usually seen in the dam) would be fixed; this may require using soil and rock from near the reservoir. The additional area disturbed (outside the existing reservoir footprint) is not expected to be larger than 0.25 to 0.5 acre. Disturbance is not expected to influence an area greater than that which occurred during the original reservoir construction. Most existing reservoirs are adjacent or close to existing roads or ways, so cross-country travel by equipment is expected to be minimal and establishment of new routes would not occur, as any tracks visible from currently open roads would be rehabilitated. Maintenance of reservoirs generally requires motorized equipment; however, most reservoirs can function for decades without any maintenance. If the WSA in which a reservoir is located is designated as wilderness, the application of bentonite, if needed could be packed in and spread by hand, and no maintenance requiring motorized equipment would occur.

Reservoir Abandonment: Reservoirs that would be abandoned would receive no maintenance or monitoring. In time, as these reservoirs stop working, native vegetation would become established and overtime, these reservoirs would appear more natural to the casual observer. In the long-term (decades) wilderness values would be enhanced in these areas. As

they would hold little to no water, the disturbance around the reservoir caused by concentrated grazing would decrease. No motorized equipment would be utilized in the abandonment of reservoirs.

Spring Development/Protection: Each spring exclosure would be approximately two to six acres (on BLM-managed land). There would be soil and vegetative disturbance caused by exclosure fence construction. However, no blading or scraping along the fences would be allowed and rocks and vegetation would only be removed in areas where they directly impede fence construction, such as the placement of a post. The riparian exclosure would have the same level of disturbance as spring protection exclosures. For each mile of fence constructed, up to 60 acres of naturalness may be affected due to fence visibility. Since less than 0.5 mile of fence would generally be constructed, on BLM-managed land, per spring exclosure, 30 acres of visual disturbance would occur. This would be used to calculate the affected area of naturalness when no development is occurring. For spring development, disturbance to soil and vegetation would occur where the spring box, pipeline, and trough(s) are installed, affecting less than one acre. The pipeline would be buried below ground and would not be observable after installation. If metal troughs were used, they would be following PDE to blend in with the surrounding area, making it less observable, except when in close proximity. Vegetative and topographic features should help screen the fence from view except when a direct encounter occurs. The use of green posts would help camouflage the fence and would create less visual disturbance than fences using other materials. However, wood fences would be expected to have a more natural appearance and are more aesthetically pleasing than barbed wire fences; wood fences would be more noticeable at a distance. If the area in which a spring is located is designated wilderness, maintenance could be done using pack animals and by hand. However, if a trough associated with the spring development needs to be replaced or removed, this would require motorized access.

Fence Construction/Removal: Soil and vegetation disturbance would be expected from construction or removal of fences; however, no blading along the fence would be allowed in a WSA. Any area needing spot removal of rock or vegetation would be expected to return to a natural appearance within three to five years. Cross-country travel would not be allowed by motorized vehicles and visual impacts of the proposed fences would be along WSA boundaries, adjacent to existing roads. Up to 60 acres of naturalness would be affected for each mile of fence constructed. If the area in which a fence is located is designated wilderness, maintenance could be done using pack animals and by hand. Negligible disturbance would occur with fence removal.

New developments proposed as part of this project occurring on BLM-administered or private lands outside but near the WSA would be expected to have some influence on naturalness. These effects would be limited, as most developments would occur along the outer edges of the WSAs. The acre-affected estimates shown in the tables under each alternative include those areas affected not only by soil and vegetation disturbance, but also by the visual and noise effects as described above for the developments. Following rehabilitation, most acres estimated to be affected by developments would still have a generally natural appearance with shrubs and some grasses present, but would have some visual or noise disturbance associated with the presence of the improvement. Therefore, it is estimated that following successful rehabilitation the numbers in the tables would be overestimates of the areas affected by the development.

No changes to the types (e.g., hiking, horseback riding, hunting, etc.) of recreation opportunities available in any of the WSAs are expected. If encounters with visitors occur during installation of the proposed developments, there would be some temporary and short-term (days) loss of solitude and disturbance to recreational activities in the immediate area.

Most developments are located away from known areas of prolonged visitor use (e.g., campsites, trails). As a result, visual or noise disturbance associated with the presence of proposed developments to visitor solitude or their recreational experience is expected to be short term (minutes) and be limited to a visitor's direct encounter with a development as they pass by on foot, horseback, or in motor vehicle.

Some visitor's perception of solitude and recreation experiences within all WSAs would be affected by the increased presence of livestock and wild horses, in areas they have not commonly occupied following the Steens Act, and around the new water developments. Depending on the individual’s values, this affect may be negative or positive. In addition, it is expected livestock would be better distributed, in smaller groups over entire pastures, rather than concentrated in larger numbers around a few water sources. This may decrease possible negative perception if a visitor feels large groups of livestock are more disturbing than small groups. Even with the presence of livestock, some visitors may find the areas around water developments desirable due to the increased chance of observing wildlife and wild horses.

With the exception of reservoirs, all proposed developments would be considered to be temporary facilities, and even reservoirs can be removed or abandoned and over the long-term (decades) return to natural, unnoticeable conditions. Monitoring and maintenance of the proposed developments would be done using motorized vehicle on existing roads and ways, or conducted by horseback or foot. Motorized equipment would be used in maintenance of reservoirs on a very infrequent (10 to 20 years) basis. Effects associated with replacement of any developments would be

infrequent (10 to 20 years) and would be the same as that described for construction of the development.

To the extent possible, nearby juniper trees that help screen the proposed developments or dispersed campsites would be left intact when juniper treatments occur under the North Steens Project.

Alternative A: No Action Alternative

No changes to naturalness, solitude, primitive and unconfined recreation, or supplemental values within the existing Blitzen River, Home Creek, and South Fork Donner und Blitzen River WSAs are expected. Current impacts include surface disturbance to the uplands and negative effects to solitude and primitive and unconfined recreation within the WSAs from wild horses and livestock concentrating around limited, existing facilities, would continue. Livestock and wild horses would continue to have limited access to areas outside of their use areas. In addition, current impacts include surface disturbance to the riparian area, negative effects to solitude and primitive and unconfined recreation within the Steens Mountain Wilderness from wild horses and livestock as well as incursions into the Wild & Scenic River, would continue.

Alternative B: Proposed Action

Table 32 summarizes the estimated area where naturalness would be influenced by developments proposed under this alternative. In many cases, the disturbance associated with wells, pipelines, troughs, and spring developments, may overlap, resulting in the total disturbance being overestimated.

Table 32: Estimate of Acres in each WSA affected by Alternative B

WSA	Proposed Improvement	#/Length	Acres Affected per Development or Length of Development	Total Acres Affected	% of WSA
Blitzen River (31,901 acres)	Existing Reservoir Maintenance	1	0.1	0.1	0.0003
	New Reservoirs	3	31	93	0.29
	Spring Development	1	30	30	0.09
	Troughs	1	31	31	0.10
			Blitzen River WSA Total	**154.1**	**0.48**
Home Creek (1,165 acres)	Existing Reservoir Maintenance	2	0.1	0.2	0.02
			Home Creek WSA Total	**0.2**	**0.02**
South Fork Donner und Blitzen (27,968 acres)	Existing Reservoir Maintenance	6	0.1	0.6	0.002
	New Reservoirs	6	31	186	0.67
	Spring Development	1	30	30	0.11
	Spring Protection	2	30	60	0.21
	Troughs	1	31	31	0.11
	Route Realignment - New	1 - 250 Feet	0.03/ft.	7.5	0.03
	Route Realignment - Abandoned[68]	1 - 200 Feet	-0.03/ft.	-6.0	-0.02
	Exclosure	1 - 0.3 Mile	60/mile	18	0.06
			South Fork Donner und Blitzen WSA Total	**327.1**	**1.17**

[68] Since this portion of the old route would be abandoned and allowed to naturalize in the short-term (one to five years), it has a positive effect on naturalness, as seen by the negative acres of disturbance.

The total area influenced by existing and proposed developments in Blitzen River WSA would be approximately 10.25% (3,269 acres) for this alternative. The total area influenced by existing and proposed developments in Home Creek WSA would be approximately 162 acres (13.92%), and in South Fork Donner und Blitzen WSA would be 2,002 acres (10.59%). These values include all existing and proposed water developments, exclosures, fences, and pipelines; however, they do not take into account the acres of restoration that would be removed in the future following reservoir abandonment and naturalization.

The area influenced by existing unnatural features in Home Creek WSA would not be increased following implementation of the Proposed Action. In comparison, Blitzen River and South Fork Donner und Blitzen WSAs would still have less area influenced by unnatural features than two nearby WSAs (Bridge Creek and Stonehouse WSAs), both of which had approximately 12% of total area influenced by unnatural features at the time they were established (Volume I of the Oregon BLM Wilderness Study Report, 1991). While the total area influenced by developments appear to be staying at the same level within the Home Creek WSA as it would be prior to the proposed developments, the total affected area would actually decrease. Over time, the three abandoned reservoirs would appear more natural and overall wilderness values would be enhanced.

The same thing would happen within South Fork Donner und Blitzen WSA; however, in this WSA, the abandonment of six reservoirs would just offset the construction of new reservoirs, decreasing the actual net acres of naturalness affected from what is predicted within the table above, making the total acres affected of existing and proposed improvements slightly lower.

Under this alternative, there would be ecological benefits associated with better distribution of water resulting in better distribution of livestock and wild horses throughout the allotment. Following the construction of the water developments, health and vigor of key forage species and other upland grasses would be maintained or in some areas improved due to decreased areas of heavy grazing around the previously limited reliable water sources and increased grazing of areas that have not been grazed regularly following the removal of the Donner und Blitzen River from within the allotment (see Vegetation and Grazing Management & Rangelands sections for further discussion on ecological benefits).

The more reliable water sources available for watering, the less time livestock and wild horses would spend at any given water source, reducing the average level of disturbance around each water source. The spring developments/exclosures would protect riparian areas by eliminating hoof-shear and grazing so riparian vegetation can move towards, or achieve, potential levels and species composition, which would improve the habitat for riparian-associated wildlife and avian species. By protecting riparian areas, these areas would increase in naturalness.

At the proposed spring S3, the route realignment would result in some soil and vegetation disturbance related to clearing of rocks and vegetation, as needed. The segment to be realigned is short (approximately 250 feet), would not be bladed, would remain naturally surfaced, and would be offset by a similar length of former vehicle route segment being closed. As a result, overall appearance of the route as a whole would not be expected to change or become more noticeable. Overall, this realignment would enhance wilderness values by moving the route a short distance to avoid and help protect a sensitive spring area.

While the route realignment and spring development are unnatural features, the overall naturalness of the riparian areas would be enhanced by allowing them to reach PFC. Allowing the riparian areas to achieve PFC would also benefit supplemental features such as Greater Sage-Grouse and other wildlife species.

The effects of other developments, individually, can be found under Effects Common to all Action Alternatives section above.

<u>Alternative C: Maximum Water Distribution</u>

Table 33 summarizes the estimated area where naturalness would be influenced by developments proposed under this. In many cases, the disturbance associated with wells, pipelines and troughs, and spring developments and troughs, may overlap, resulting in the total disturbance being overestimated.

Table 33: **Estimate of Acres in each WSA affected by Alternative C**

WSA	Proposed Improvement	#/Length	Acres Affected per Development or Length of Development	Total Acres Affected	% of WSA
Blitzen River (31,901 acres)	Existing Reservoir Maintenance	1	0.1	0.1	0.0003
	New Reservoirs	6	31	186	0.58
	Spring Development	1	30	30	0.09
	Well	1	56	56	0.18
	Pipeline	4 – 4.7 miles	0.97/mile	4.56	0.01
	Troughs	7	31	217	0.68
			Blitzen River WSA Total	**493.7**	**1.55**
Home Creek (1,165 acres)	Existing Reservoir Maintenance	2	0.1	0.2	0.02
			Home Creek WSA Total	**0.2**	**0.02**
South Fork Donner und Blitzen (27,968 acres)	Existing Reservoir Maintenance	10	0.1	1.0	0.004
	New Reservoirs	11	31	341	1.22
	Spring Development	3	30	90	0.32
	Well	3	56	168	0.60
	Pipeline	3 – 4.9 miles	0.97/mile	4.8	0.02
	Troughs	7	31	217	0.78
	Route Realignment - New	1 – 250 Feet	0.03/ft.	7.5	0.03
	Route Realignment - Abandoned[69]	1 – 200 Feet	-0.03/ft.	-6.0	-0.02
			South Fork Donner und Blitzen WSA TOTAL	**823.3**	**2.94**

[69] Since this portion of the old route would be abandoned and allowed to naturalize in the short-term (one to five years), it has a positive effect on naturalness, as seen by the negative acres of disturbance.

The total area influenced by existing and proposed developments in Blitzen River WSA would be approximately 3,609 acres (11.3%) for this alternative. The total area influenced by existing and proposed developments in the Home Creek WSA would be approximately 162 acres (13.9%), and in the South Fork Donner und Blitzen WSA would be 3,459 acres (12.4%). These values include all existing and proposed water developments, exclosures, fences, and pipelines. However, they do not take into account the acres of restoration following reservoir abandonment and naturalization. The area influenced by existing unnatural features in Home Creek WSA would not be substantially increased following implementation of Alternative C. In comparison, the Blitzen River WSA would have about the same number of acres influenced by unnatural features as the two nearby WSAs (Bridge Creek and Stonehouse WSAs), both of which have approximately 12% of total area had influenced by unnatural features at the time

they were established (Volume I of the Oregon BLM Wilderness Study Report, 1991).

While the total area influence by developments appear to be staying at the same level within the Home Creek WSA as it would be prior to the proposed developments, the total affected area would actually decrease. Over time, the three abandoned reservoirs would appear more natural and overall wilderness values would be enhanced. The same thing would happen within the South Fork Donner und Blitzen WSA; however, in this WSA, the abandonment of five reservoirs would just offset the construction of new reservoirs, decreasing the actual net acres of naturalness affected from what is predicted within the table above, making the total acres affected of existing and proposed improvements slightly lower.

Under this alternative, the ecological benefits associated with better distribution of water and therefore livestock and wild horses, throughout the allotment would be similar to the Proposed Action. However, due to the increased number of developments under this alternative as compared to the Proposed Action, the ecological benefits to the area within the WSAs would be greater due to more even distribution. The effects of the route realignment at S3 would be the same as under the Proposed Action. The effects of other developments, individually, can be found under Effects Common to all Action Alternatives section above.

Alternative D: Along Road Development

Table 34 summarizes the estimated area where naturalness would be influenced by developments proposed under this alternative. In many cases, the disturbance associated with wells, pipelines and troughs, and spring developments and troughs, may overlap, resulting in the total disturbance being overestimated.

Table 34: Estimate of Acres in each WSA affected by Alternative D

WSA	Proposed Improvement	#/Length	Acres Affected per Development or Length of Development	Total Acres Affected	% of WSA
Blitzen River (31,901 acres)	New Reservoirs	1	31	31	0.10
	Spring Protection	1	30	30	0.09
	Well	1	56	56	0.18
	Pipeline	3 – 3.8 Miles	0.97/mile	3.7	0.01
	Troughs	5	31	155	0.49
			Blitzen River WSA Total	**275.7**	**0.86**
Home Creek (1,165 acres)	Existing Reservoir Maintenance	1	0.1	0.1	0.009
			Home Creek WSA Total	**0.1**	**0.009**
South Fork Donner und Blitzen (27,968 acres)	Existing Reservoir Maintenance	4	0.1	0.4	0.001
	Spring Development	2	30	30	0.11
	Spring Protection	1	30	30	0.11
	Well	3	56	168	0.60
	Pipeline	6 – 6.5 Miles	0.97/mile	6.3	0.02
	Troughs	7	31	217	0.78
	Fence Removal[70]	1 - 2.1 Miles	-60/mile	-126	-0.45
	Fence Construction	1-3.0 Miles	60/mile	180	0.64
	Route Realignment - New	1 – 250 Feet	0.03/ft.	7.5	0.03
	Route Realignment - Abandoned[71]	1 – 200 Feet	-0.03/ft.	-6.0	-0.02
			South Fork Donner und Blitzen WSA Total	**507.2**	**1.81**

[70] Since fence removal would make the area appear natural in the short-term (less than two years), it has a positive effect on naturalness, as seen by the negative acres of disturbance.
[71] Since this portion of the old route would be abandoned and allowed to naturalize in the short-term (one to five years), it has a positive effect on naturalness, as seen by the negative acres of disturbance.

The total area influenced by existing and proposed developments in Blitzen River WSA would be approximately 10.6% (3,391 acres) for this alternative. The total area influenced by existing and proposed developments in the Home Creek WSA would be approximately 162 acres (13.9%), and in the South Fork Donner und Blitzen WSA would be 3,143 acres (11.2%). These values include all existing and proposed water developments, exclosures, fences, and pipelines. However, they do not take into account the acres of restoration that would occur in the future following reservoir abandonment and naturalization. The area influenced by existing unnatural features in Home Creek WSA would not be substantially increased following implementation of this alternative. In comparison, the Blitzen River WSA would have about the same number of acres influenced by unnatural features as the two nearby WSAs (Bridge Creek and Stonehouse WSAs), both of which approximately 12% of total area had influenced by unnatural features at the time they were established (Volume I of the Oregon BLM Wilderness Study Report, 1991). While the total area influenced by developments appear to be staying at the same level within the Home Creek WSA, as it would be prior to the proposed developments, it is actually expected that the total affected area would decrease, and naturalness would increase within

this WSA in response to the abandonment of a reservoir, slightly decreasing the actual net acres of naturalness affected from what is predicted within the table above. The same thing would happen within the South Fork Donner und Blitzen WSA; however, in this WSA, the abandonment of one reservoir would just offset the construction of one new trough.

Under this alternative, the ecological benefits associated with better distribution of water, and therefore livestock and wild horses, throughout the allotment would be similar as under the Proposed Action. However, due to the increased number of developments under this alternative as compared to the Proposed Action (specifically more pipelines and troughs), the ecological benefits to the area within the WSAs would be greater; as would the total effects to naturalness (approximately 1% more of the WSAs would be affected under this alternative compared to the Proposed Action). The effects of the route realignment at S3 would be the same as under the Proposed Action.

Except for the proposed fence removal, and 0.5 mile of the fence construction, all work would occur within 30 feet of existing roads, ways, or closed roads, so minimal cross-country travel would be needed for installation and maintenance of the developments.

The pipeline that would be constructed within Home Creek Pasture in South Fork Donner und Blitzen WSA would utilize two existing reservoirs rather than new troughs. Therefore, little visual changes to naturalness are expected around the reservoirs. Using existing reservoirs would not change livestock and wild horse's distribution within this area, and should not result in any decrease to a visitor's perception of solitude or recreation experience.

Alternative E: Edge Development

Table 35 summarizes the estimated area where naturalness would be influenced by developments proposed under this alternative. Under this alternative, all proposed improvements, with the exception of the two spring protections, are located near the edge of WSAs. Therefore, the core of each WSA would remain intact under this alternative. In many cases, the disturbance associated with wells, pipelines and troughs, and spring developments and troughs, may overlap, resulting in the total disturbance being overestimated.

Table 35: **Estimate of Acres in each WSA affected by Alternative E**

WSA	Proposed Improvement	#/Length	Acres Affected per Development or Length of Development	Total Acres Affected	% of WSA
Blitzen River (31,901 acres)	Spring Protection	1	30	30	0.09
	Fence Construction (Water Gap)	1-0.1 Miles[72]	60/mile	6	0.02
			Blitzen River WSA Total	**36**	**0.11**
Home Creek (1,165 acres)	Fence Construction	1-1.0 Miles	60/mile	60	5.2
			Home Creek WSA Total	**60**	**5.2**
South Fork Donner und Blitzen (27,968 acres)	Spring Development	1	30	30	0.11
	Spring Protection	2	30	60	0.21
	Well	1	56	56	0.20
	Pipeline	1 - 0.6 Miles	0.97/mile	0.58	.002
	Fence Removal[73]	2 - 4.6 Miles	-60/mile	-276	-0.99
	Fence Construction (includes Water Gap)	2 - 1.7 Miles[74]	60/mile	102	0.36
			South Fork Donner und Blitzen WSA Total	**-27.42**	**-0.10**

[72] The remaining 0.1-0.2 mile of this fence would be located within the Steens Mountain Wilderness.
[73] Since fence removal would make the area appear natural in the short-term (less than two years), it has a positive effect on naturalness, as seen by the negative acres of disturbance.
[74] The remaining 0.8 mile of this fence associated with F5 would be located within the Steens Mountain Wilderness.

The total area influenced by existing and proposed developments in Blitzen River WSA would be approximately 9.9% (3,151 acres) for this alternative. The total area in the Home Creek WSA influenced by existing and proposed developments would be 222 acres (19.1%) under this alternative. The total area influenced by existing and proposed developments in the South Fork Donner und Blitzen WSA is approximately 2,608.6 acres (9.3%). This is actually an increase in naturalness (decrease in disturbance) which comes as a result of removing 4.6 miles of fence from within the WSA. These values include all existing and proposed water developments, exclosures, fences, and pipelines. The proposed new fenceline F7 would follow a road that separates the Home Creek portion of Steens Mountain Wilderness from South Fork Donner und Blitzen and Home Creek WSAs. Depending on the exact location of the fenceline, it is expected portions of the fenceline would be placed within the 30 foot wilderness road buffer of the Lauserica Road; therefore, the total fence distance within the WSAs would be less than shown above. In comparison, the Blitzen River and South Fork Donner und Blitzen WSAs would still have less area influenced by unnatural features than two nearby WSAs (Bridge Creek and Stonehouse WSAs), both of which had approximately 12% of total area influenced by unnatural features at the time they were established (Volume I of the Oregon BLM Wilderness Study Report, 1991).

Under this alternative, there would be ecological benefits associated with the proposed water developments, resulting in slightly better (an increase in use area of 13.9%) distribution of livestock and wild horses, throughout the allotment, due to the increased size of the estimated use area. This improvement would mainly be due to the water gaps along the Donner und Blitzen River. Following the construction of the water developments proposed under this alternative, health and vigor of key forage species and other upland grasses would be maintained, or in some areas improved, due to decreased levels of heavy grazing around some of the previously limited reliable water sources and moderate grazing of areas that have not been grazed regularly (following the removal of the Donner und Blitzen River from within the allotment). By allowing access to the Donner und Blitzen River, wild horses and livestock would have three additional sources of free flowing, year-round water. The spring protection would help protect riparian areas by eliminating hoof-shear so riparian vegetation can reach potential, PFC can be achieved, and habitat can be improved for riparian-associated wildlife species, increasing naturalness at these sites.

The majority of the proposed developments would occur within 30 feet of existing roads, ways, or closed roads, or outside WSAs (the exception being the protection fence of S4 and the proposed water gaps), so minimal cross-country travel would be needed for installation and maintenance of the developments within WSAs.

Alternative F: Reduced Grazing with No Development

The effects under this alternative would be the same as under the No Action Alternative; however, the pressure from livestock trying to access the river may be reduced due to the decreased permitted AUMs as compared to the number of AUMs currently permitted.

Alternative G: Complete Livestock Removal

With complete removal of livestock, ranching operations would no longer occur within the WSAs; therefore, there would be positives effects to solitude and primitive and unconfined recreation. In addition, over time naturalness would improve as the range improvements would no longer be maintained unless needed for wild horses.

13. Wildlife and Locally Important Species

Affected Environment: Wildlife and Locally Important Species

Wildlife, other than migratory birds and SSS, include mule deer, elk, pronghorn antelope, badger, black-tailed jackrabbit, cottontails, magpies, ground squirrels, pocket gophers, deer mouse, cougar, bobcat, coyote, ducks, geese, swans, chukar, California quail, mountain quail, yellow-bellied marmot, wood rats, voles, chipmunks, bats, reptiles, and amphibians.

Mule deer, elk, pronghorn, and predators use the area most of the year. Deep snows may force big game animals, upland birds, and some small animals to lower elevations of the allotment. Other small mammals are not as mobile and may remain underground or stay active near the ground's surface throughout winter. Wild horses present throughout the allotment may exclude other wildlife use from water sources, especially in late summer when water sources are limited. Miller (1983) found that when antelope could get to water while being no closer than three meters from a wild horse or cow, they were able to water; otherwise, they would only circle the waterhole, leave, and return later to try again.

Mule deer use bitterbrush as a fall and winter browse. There are several areas throughout the allotment with extensive stands of bitterbrush. Currently, there is estimated to be only six reliable late-season water sources near main bitterbrush areas. These water sources allow for later use, mainly in Tombstone Pasture, but usually only until the end of July. Although bitterbrush stands in the allotment appear healthy for the most part, juniper encroachment into these stands is expected to affect the continued health of these plants.

The increase in wildfires in the Great Basin has resulted in loss of important big game winter ranges in the Great Basin (Pellant 1990; Updike et al. 1990), habitat supporting North America's densest concentration of nesting raptors (Kochert and Pellant 1986), native sensitive plant species (Rosentreter 1994) and nongame bird occurrence (Dobler 1994). In addition, plant diversity is reduced at both the local and landscape levels with frequent wildfires (Whisenant 1990). Not only is cheatgrass a permanent component of many Intermountain ecosystems, including within South Steens Allotment, it is the focal point for the disruption of many ecosystem processes and functions. Wildfire cycles are shorter, and severity and extent of the area of fire impacts are greater with cheatgrass in the ecosystem. Wildlife species are affected both directly by alteration of habitat due to cheatgrass invasion and indirectly by the loss of habitat due to increased wildfires. In addition, the diversity and cover of microbiotic crusts are diminished with cheatgrass in the ecosystem allowing additional entry of cheatgrass and other weeds. The rangeland health of cheatgrass infested communities is either at risk or already in the unhealthy category with even more undesirable weeds invading some cheatgrass communities (Pellant 1996). Currently, no areas of the allotment are dominated by cheatgrass, but there would be a risk of dominance following wildfire due to cheatgrass presence. More discussion of cheatgrass within the allotment can be found in the *Upland Vegetation* section.

Livestock grazing at moderate utilization levels has been found to leave an abundance of forage for wild ungulates (Anderson et al. 1990). Anderson and McCuistion (2008) suggest livestock grazing can improve grazing conditions for elk by removing the dead, unpalatable material from bunchgrasses (especially under deferred grazing conditions) allowing elk to utilize more nutritious green vegetation.

Environmental Consequences: Wildlife and Locally Important Species

Effects Common to All Alternatives

For the purposes of this analysis, the CEAA for wildlife extends up to 10 miles beyond the allotment boundary to encompass regular movements of most animals that may use the allotment. The CEAA does not incorporate the entire annual use area for some animals, such as elk and mule deer, because this information is not available nor is it expected to change the analysis. Vegetation communities present in the allotment are representative of those in the CEAA.

Past and present actions, such as those described in *Affected Environment*, have influenced the existing environment within the CEAA. RFFAs in the CEAA that may contribute to cumulative effects to wildlife and habitat include livestock grazing, hunting and other recreational pursuits, and North Steens Project. While the North Steens 230-kV Transmission Line ROW and Echanis Project are outside of the CEAA (it is more than 15 miles from the allotment at the nearest point), some effects that it may have on further ranging wildlife is mentioned below. Several thousand acres of treatments are proposed in the CEAA under the North Steens Project, but funding, weather conditions, and other factors will affect timing of implementation. Past and RFFAs that have affected wildlife or wildlife habitat in the CEAA are found in Table 36.

Table 36: Wildlife Past and RFFAs

ACTION	PAST ACTIONS			FUTURE ACTIONS		
	ACRES	MILES	NUMBER	ACRES	MILES	NUMBER
Wildfire Starts	---	---	224	---	---	Unknown
Wildfires	107,266.7	---	56	Unknown	---	Unknown
Known Primitive Campsites	---	---	84	---	---	Unknown
Trails	---	95.0	---	---	38.5	---
Trailhead	---	---	4	---	---	None
Recreation Sites	---	---	9	---	---	None
Open Roads	---	785.0	---	---	None	---
Closed Roads	---	180.8	---	---	None	---
Fences	---	457.4	---	---	6.2	---
Pipeline	---	4.3	---	---	0.11	---
Exclosures	141.2	---	6	16.9	---	2
Water Developments	---	---	235	---	---	None
Gravel Pit	688.9	---	11	None	---	None
Cutting	8,264.0	---	32	17,062.8	---	21
Piling	3,736.8	---	12	2,975.6	---	25
RX Burning	54,304.6	---	62	16,555.3	---	21
Seeding	32,542.4	---	43	1,960.4	---	4

There will be cumulative effects to wildlife habitat from the North Steens Project due to changes in habitat types from the use of mechanical removal or fire to reduce expansion juniper. Grassland habitat would increase as broadcast burn

treatments are applied with reductions in sagebrush and woodland habitats. Depending on the type of treatment (cut and broadcast burn, cut and pile, etc.) some areas of sagebrush would return quicker to canopy cover that would support sagebrush dependent species throughout the duration of the project. Most bitterbrush stands would not be targeted for broadcast burning so sufficient bitterbrush would still be available for mule deer use in the fall and early winter months. Woodland habitat would decrease for a longer period of time, as juniper reduction is a major purpose of the North Steens Project. There would still be woodland habitat available throughout the area, as not all junipers would be removed, and juniper trees in wilderness would not be treated unless other NEPA analysis is completed.

While outside the CEAA for wildlife, effects to elk from the North Steens 230-kV Transmission Line ROW and the Echanis Project would be expected during construction since this action would affect elk movement in the area. Elk may move into some of the South Steens Allotment area during construction of the wind farm, powerline, and roads, and may avoid that area due to increased vehicle traffic, but this would occur in the short-term (weeks to months). Any effects from elk into the South Steens Allotment would be temporary and immeasurable.

Effects Common to All Action Alternatives

Wildlife in general would be affected by noise and human presence during construction of projects. This disturbance would be localized and temporary in nature, and wildlife would return to these areas after the disturbance ceased. Different species of wildlife would be affected differently by human presence, construction noise, and ground disturbance. Elk would be most affected and move out of the area while the disturbance is ongoing. Mule deer and pronghorn would initially move from the disturbance (but not as far as elk since elk are more sensitive to disturbance) and may become accustomed to the noise depending on the duration. Other smaller less mobile animals such as rodents and rabbits would lose some habitat depending on the type of construction activity (trough installation, burying pipeline, waterhole construction, etc.). Certain species of wildlife, such as pronghorn antelope, could benefit from increased water sources but there would not be any increase in population numbers since wildlife populations have additional habitat requirements. This would also apply to most species of wildlife. Small mammals, which are not as mobile, could experience loss of habitat near new water sources since there would be a loss of vegetation around them due to increased utilization at the watering sites.

With the protection of spring sources, there would be some benefit to wildlife from increased vegetation at these spring sources, which would not be available to livestock or wild horses due to exclosures. Although predators, such as coyotes and cougars, have access to plenty of water, new water sources would attract predators to those locations (Prasad 1986). This could affect other species of wildlife by exposing them to predation at these new water sources.

Bitterbrush stands could be affected by the increase of water sources near these stands. As the growing season progresses and grasses mature, livestock diets include bitterbrush, starting as early as June, with use of bitterbrush and the proportion of bitterbrush in the diet increasing through September (Ganskopp et al. 1999). The closer bitterbrush is to the water source, the more use would occur. Livestock use of bitterbrush during the graze and defer treatments (Table 2: Proposed Grazing System) would increase. This would affect availability of current year's growth of bitterbrush for mule deer during fall and winter, at a time when nutrition from other sources is low.

Alternative A: No Action

Wildlife would have the same resources available as are currently present in the allotment. Some areas of the allotment near perennial water sources, such as springs, would continue to be affected by concentrated livestock and wild horse use. Wildlife would still have access to Donner und Blitzen River for watering purposes. Areas with bitterbrush would not be affected by late-season grazing since late-season water sources are limited and no new water sources would be developed to attract animals to other currently unaffected bitterbrush stands. Mule deer would have the same amount of bitterbrush available later in the fall and winter.

Alternative B: Proposed Action

Small, less mobile mammals would be affected most through loss of habitat near new water troughs and reservoirs. Up to two acres of vegetation would be removed around each new trough, mainly through use by livestock and wild horses. Vegetation would be removed during construction of reservoirs (approximately two acres) and use by livestock and wild horses would reduce grass and forb cover near the reservoirs, but would not remove many more shrubs than removed during construction. With nine new reservoirs constructed and five new troughs installed, approximately 28 acres of vegetation would be removed around new water sources. Areas within 0.25 mile of water sources (about 1,750 acres) would show some reduced grasses and forbs so wildlife would have to search other areas for sufficient food. However, this effect would not be measureable since grasses and forbs would remain in the area. Spring sources and riparian areas fenced (about 27 acres) and returned to a more natural state would benefit wildlife for watering purposes as well as increase available riparian forage for them. New and maintained existing reservoirs would also provide watering sources for wildlife as long as water remains throughout the year.

Overall, effects of development on different wildlife species would be minimal and should not affect habitat. About 1,750 acres (about 1.8%) of habitat in the allotment would have some reduced vegetation that might affect use. Other areas that surround the allotment, such as the wilderness area to the east, would also

provide habitat for larger more mobile wildlife so the amount of habitat affected would be less than 1% of available habitat within the CEAA. Since these projects are spread throughout the allotment and would occur over a number of years, there should be no effects on wildlife population numbers or species diversity.

Alternative C: Maximum Water Distribution

The effects under this alternative, in any one year, would be similar to the Proposed Action; however, there would be more disturbances over the years due to the increased number of developments proposed under this alternative. Disturbance from well drilling would be the greatest in this alternative since 10 wells are proposed. Initially, there would be about 0.25 acre disturbed by well drilling at each location which would be rehabilitated after the well drilling was complete so that an area about 0.01 acre would disturbed around the well site. Noise from well drilling and reservoir construction would reduce wildlife use of the immediate area for the time of the disturbance. Most wells and reservoirs would be constructed during the year when access in not restricted by snow or wet soil conditions. Most wildlife would be able to move away from the disturbance with little effort being expended so there should be no mortality directly related to the disturbance. The increased number of wells and spring developments would result in 24 troughs being installed; seventeen new reservoirs would be constructed as well. This would increase the total area of vegetation removal (80 acres) compared to the Proposed Action. At least 19 new water sources would be constructed near bitterbrush stands under this alternative. There would be more water troughs (11) associated with wells and more reservoirs (eight) constructed to maintain late-season water near bitterbrush stands. Late-season use would affect bitterbrush resources the most under this alternative. If the reservoirs dry up during the late-season, then livestock use of bitterbrush would decrease in these areas but increase where developments still have water available.

Once all reservoirs are constructed, and wells, troughs, and pipelines installed, approximately 5,100 acres (about 5%) of the allotment would have some reduced vegetation that would affect wildlife habitat. Other areas such as the wilderness area to the east that surround the allotment would also provide habitat for larger more mobile wildlife so the amount of habitat affected would be less than 2% of available habitat within the CEAA. Since these projects are spread throughout the allotment and over a number of years, there should be no effects on population numbers of the different species. While this alternative proposes the maximum number of water developments, this would not necessarily lead to increased wildlife populations since carrying capacity of wildlife populations is not based on water availability alone.

Alternative D: Along Road Development

The effects under this alternative, in any one year, would be similar to Alternative C; however, there would be fewer disturbances over the years due to the decreased number of developments proposed under this alternative. Disturbance from well drilling would be the same as in Alternative C since 10 wells are proposed. There are twenty troughs proposed under this alternative, which is four less than Alternative C, so effects of installing toughs would be about eight acres less than in Alternative C. Effects of new reservoir construction would be less than under Alternative B or C since only one new reservoir is proposed for construction. There would be a gain of approximately one mile of new fence construction, which is not expected to have any measurable effect on wildlife. At least 12 new water sources would be constructed near bitterbrush stands under this alternative. There would be 11 water troughs associated with wells and one reservoir constructed to maintain late-season water near bitterbrush stands so late-season use would affect bitterbrush resources. If the existing reservoirs dry up during the late-season, then livestock use of bitterbrush would decrease in these areas but increase where developments still have water available.

Overall, there would be 42 acres of disturbance from installation of the trough and the one new reservoir. The affected area around reservoirs and troughs would amount to about 2,625 acres or 2.8% of the allotment. Other areas such as the wilderness area to the east that surround the allotment would also provide habitat for larger more mobile wildlife; the amount of habitat affected would be less than 1% of available habitat within the CEAA. Since these projects are spread throughout the allotment and construction would occur over a number of years, there should be no effects on wildlife population numbers.

Alternative E: Edge Development

The effects under this alternative would be comparable to the Proposed Action since the number of new developments would be similar. One difference would be more troughs (13) and no new reservoirs. Vegetative loss would occur at these sites as previously described. Under this alternative, there would be an addition of about seven miles of fence and removal of about five miles due to fence realignment for a net gain of two miles of fence. The net gain of two miles of fence would have no effect on wildlife populations. This alternative would develop the least amount of new water sources (six) near bitterbrush stands compared to Alternatives C and D, so late-season use by livestock would not affect availability of bitterbrush for mule deer fall and winter use as much as those alternatives although bitterbrush use by livestock would increase in the areas around the troughs. Depending on the ability of new reservoirs to hold late-season water, there would be similar affects to bitterbrush as in the Proposed Action.

Overall, there would be about 26 acres of disturbance from trough installation and the affected area would be about 1,625 acres or about 1.6% of the allotment. Other areas such as the wilderness area to the east that surround the allotment would also provide habitat for wildlife so the amount of habitat affected would be less than 1% of available habitat within the CEAA. Since these projects are spread throughout the allotment and construction would occur over a number of years, there should be no effects on population numbers of the different species

Alternative F: Reduced Grazing with No Development

Under this alternative, livestock grazing would be authorized at a lower level than currently allowed but higher than the average actual use (5,102 AUMs, 2003-2010) that has been occurring. With the current water developments, use may still average lower than the permitted AUMs due to the lack of water on some years. Levels of bitterbrush use would be expected to be similar to use currently observed, though it would be slightly less due to fewer livestock AUMs permitted. There would still be heavy use at the limited reliable water sources by livestock and wild horses but this affect would be slightly less than the No Action since fewer livestock would be present. Competition for water would also be slightly decreased. Overall, the effects of this alternative similar to the No Action Alternative.

Alternative G: Complete Livestock Removal

Under this alternative, livestock grazing would no longer be authorized. Use of bitterbrush would be limited to use by wildlife since no livestock would graze it and wild horses rarely utilize it, which would benefit wildlife that use it. There would still be heavy use at those water sources being heavily used by wild horses since they have yearlong access. However, the level of use would be less at these congregation sites since livestock would not be present. Competition for water within the allotment would also be reduced, due to the lack of livestock, increasing the amount available for wildlife. Other effects of this alternative would be similar to the No Action Alternative.

B. Cumulative Effects

As the CEQ, in guidance issued on June 24, 2005, points out, the "environmental analysis required under NEPA is forward-looking," and review of past actions is required only "to the extent that this review informs agency decision-making regarding the Proposed Action." Use of information on the effects of past action may be useful in two ways according to the CEQ guidance. One is for consideration of the Proposed Action's cumulative effects, and secondly as a basis for identifying the Proposed Action's effects.

The CEQ stated in this guidance that "Generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions." This is because a

description of the current state of the environment inherently includes the effects of past actions. The CEQ guidance specifies that the "CEQ regulations do not require the consideration of the individual effects of all past actions to determine the present effects of past actions." Our information on the current environmental condition is more comprehensive and more accurate for establishing a useful starting point for a cumulative effects analysis, than attempting to establish such a starting point by adding up the described effects of individual past actions to some environmental baseline condition in the past that, unlike current conditions, can no longer be verified by direct examination.

The second area in which the CEQ guidance states that information on past actions may be useful is in "illuminating or predicting the direct and indirect effects of a Proposed Action." The usefulness of such information is limited by the fact that it is anecdotal only, and extrapolation of data from such singular experiences is not generally accepted as a reliable predictor of effects.

However, "experience with and information about past direct and indirect effects of individual past actions" have been found useful in "illuminating or predicting the direct and indirect effects" of the Proposed Action in the following instances: the basis for predicting the effects of the Proposed Action and its alternatives is based on the general accumulated experience of the resource professionals in the agency with similar actions.

The environmental consequences discussion described all expected effects, including direct, indirect, and cumulative, on resources from enacting the proposed alternatives. Direct and indirect effects plus past actions becomes part of the cumulative effects analysis; therefore, use of these words may not appear. In addition, the introduction section of this EA, specifically the *Background* and *Purpose of and Need for Action*, identifies past actions creating the current situation.

RFFAs, also relevant to cumulative effects, include those Federal and non-Federal activities not yet undertaken, but sufficiently likely to occur, that a Responsible Official of ordinary prudence would take such activities into account in reaching a decision. These Federal and non-Federal activities that must be taken into account in the analysis of cumulative impact include, but are not limited to, activities for which there are existing decisions, funding, or proposals identified by the bureau. These RFFAs must fall within the geographic scope and timeframe of the analysis being prepared. Continued livestock grazing, weed treatments, road maintenance, recreation activities, wild horse gathers, and North Steens Project, are all RFFAs. In addition, the Echanis Project and the associated North Steens 230-kV Transmission Line were considered, but were found to be located outside the cumulative effects analysis area of this EA. The cumulative effects of these actions were thoroughly addressed throughout Chapter III, by resource, as applicable.

CHAPTER IV: CONSULTATION AND COORDINATION

A. Agencies and Individuals Consulted

Grazing Permittee
Oregon Department of Fish and Wildlife, Hines, Oregon
Steens Mountain Advisory Council
Steens Mountain Landowner Group
Oregon Natural Desert Association

B. Interdisciplinary Team

Daryl Bingham, Fisheries and Riparian Specialist (Riparian, Water Quality, Fisheries)
Andy Daniels, Wildlife Biologist (SSS-Animals, Migratory Birds, Wildlife)
Lisa Grant, Wild Horse Specialist (Wild Horses)
Eric Haakenson, Outdoor Recreation Planner (Wilderness, WSR, WSAs, Recreation, VRM)
Tara McLain, Lands and Realty (Lands and Realty)
Caryn Meinicke, Natural Resource Specialist (Vegetation, Soils, BSCs, SSS-Plants)
Matt Obradovich, District Wildlife Biologist (SSS-Animals, Migratory Birds, Wildlife)
Holly Orr, District Planning and Environmental Coordinator (Social and Economics Values)
Lesley Richman, District Weed Specialist (Noxious Weeds)
Rob Sharp, Wild Horse Specialist (Wild Horses)
Scott Thomas, Archaeologist (Cultural Heritage)
Autumn Toelle, Rangeland Management Specialist (Lead Preparer, Grazing, GIS)

C. Advisory

Stacy Fenton, GIS Specialist
Charlie Fifield, State Rangeland Management Specialist
Bob Hopper, State Rangeland Management Specialist
Rhonda Karges, Andrews/Steens Resource Area Field Manager
Jerry Magee, State Recreation and Wilderness Specialist
Bill Pieratt, District Range Lead
Cam Swisher, Supervisory Natural Resource Specialist
Joe Toelle, Civil Engineering Technician
Maggie Langlas Ward, State Planning and Environmental Coordinator
Brenda Lincoln-Wojtanik, State Planning and Environmental Coordinator

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APPENDICES

Appendix A: Grazing Treatment Descriptions

Early – (approximately March 1 to April 30) – This treatment provides the plants an opportunity to recover after utilization of early plant growth. By removing livestock before all spring and summer precipitation occurs, the plants will be able to store carbohydrates, set seed, and maintain their vigor. This "Early" treatment can be used every year with little effect on the plant.

The dates of March 1 to April 30 are a guideline for the "Early" treatment. Early use must take place before most grass plants are in the boot stage. There must also be enough soil moisture in the ground to provide for regrowth after grazing. Therefore, flexibility in the early treatment will allow for use outside of the approximate dates and will depend on annual precipitation.

Graze – (approximately May 1 to July 1-15) – This treatment allows for grazing during the critical growth period of most plants. Carbohydrate reserves are utilized when the plant grows or regrows because the green parts of the plants are removed by a grazing animal. The pastures currently under the "Graze" treatment will generally experience some other treatment the following year so as not to repeat Graze treatments.

Defer – (approximately July 1 to October 15) – Grazing during this treatment will not begin until after most plants have reached seed ripe and have stored adequate carbohydrate reserves. This treatment will assist in meeting the objectives by providing all plants an opportunity to complete their life cycles and produce the maximum amount of cover and forage.

Winter – Grazing during this treatment will occur when most plant species are dormant. Most plants will have completed their life cycles and stored maximum carbohydrates for the next growing season.

Rest – This treatment provides the plants a full year of growth in the absence of grazing. They are allowed to store maximum carbohydrate reserves, set seed, and provide carryover herbage for the following year's turnout.

These dates are approximation based on general plant phenology. Year-to-year variation in phenology will occur based on climatological phenology.

Appendix B: Trend Analysis

Within the South Steens Allotment, there are currently seven historic upland trend monitoring sites, which have more than one-year' worth of data, and an additional eleven plots, which were established and read in 2012. Data was periodically collected between 1976 and 2012. All of the plots are currently associated with Pace 180° transects and photo points. The analysis of the data collected from each of these is shown in the tables below. Percentages are based on the Pace 180º data (Johnson and Sharp 2012). For data on the ecological sites, refer to the NRCS Rangeland Ecological Site Information System found on the internet at: https://esis.sc.egov.usda.gov/Default.aspx.

- ***Plot 6002-001, Hollywood Pasture***

This plot is located in the Loamy 10-12" ecological site, ID R023XY212OR. This ecological site typically occurs on rolling uplands and lake basin terraces with slopes of 2-20% and elevations of 4,000-6,000 feet.

Table 37: Data from Plot 6002-001 in Hollywood Pasture

	% Ground Cover				% Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	47	22	4	27	95	0	5	Stable	Upward	---	Stable
1976	---	---	---	---	---	---	---	---	---	---	---
REFERENCE STATE	15-20%				80	5	15	N/A	N/A	N/A	N/A

This site is dominated by perennial grasses that currently make up 95% of the plant community. No forbs were documented in the transect, and shrubs made up only 5% of the plant community. The reference plant community for this ecological site would be approximately 80% grasses, 5% forbs, and 15% shrubs. This site was read late in the year, during a drought year, which may be at least partially responsible for the lack of forbs. The low percentage of shrub cover suggests that some disturbance has occurred in the past that has reduced and/or limited shrub production. This area gets heavy use by wild horses, especially in the winter, and that may be partially responsible for the low shrub presence in the site. The dominant species at this site was Thurber's needlegrass (46%) and Sandberg's bluegrass (48%). The ESD has Thurber's needlegrass as being the dominant grass species on this site, with Sandberg's bluegrass being an important component. Bluebunch wheatgrass, green rabbitbrush [*Chrysothamnus viscidiflorus* (Hook.) Nutt.], grey rabbitbrush [*Ericameria nauseosa* (Pall. ex Pursh) G.L. Nesom & Baird], and big sagebrush were also present at 2% composition or lower. Wyoming sagebrush should be the dominant shrub according to the ESD. The reference state for this ecological site has approximate ground cover of 15-25%. There is some cheatgrass present, but it does not dominate the area. Based on the trend data, this plot is showing cover data consistent with the reference state. In comparison of this data with the ESD State and Transition Model (STM), it is believed that this site is still in the reference state, but may be at risk of transitioning to State 2 – Shrub Steppe with Annuals.

The photos from 1976 suggest a site with numerous small perennial bunchgrasses being present, but also appear to have large amounts of both cheatgrass and tumble mustard (Thelypodiopsis Rydb.) present. The 2012 picture, though showing heavier use in the area, also has small perennial bunchgrasses present, but there is little sign of annual grasses or weeds. Photos from both years show a decadent sagebrush stand. Based on these comparisons, it is believe that overall the photo trend is stable at this site.

- ***Plot 6002-005, Hollywood Pasture***

This plot is located in the Loamy 10-12" ecological site, ID R023XY212OR. This ecological site typically occurs on rolling uplands and lake basin terraces with slopes of 2-20% and elevations of 4,000-6,000 feet.

Table 38: Data from Plot 6002-005 in Hollywood Pasture

	% Ground Cover				% Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	47	25	0	28	85	0	15	Stable	Upward	Upward	Stable
2004	70	14	0	16	80	0	20	Stable	Stable	Stable	Down
1993	64	20	0	16	83	0	17	---	---	Down	Stable
1989	25	38	0	37	92	0	8	---	---	---	Stable
1976	---	---	---	---	---	---	---	---	---	---	Stable
1975*	---	---	---	---	---	---	---	---	---	---	---
REFERENCE STATE	15-20%				80	5	15	N/A	N/A	N/A	N/A

*Range trend plot data was collected in 1975; however, the method used is not comparable to the Pace 180° data and no comparison is available.

The site is dominated by perennial grasses that currently make up 85% of the plant community. While this is an increase from 80% in 2004, the change is not enough to suggest an upward trend. Shrubs seemed to have increased since 1989 and remained relatively stable since 1993. Some of the decrease in shrubs is potentially due to the aroga moth infestation that has occurred in the area over the past three years. Forbs have not been documented in any of the transects; however, all the transects were read in mid-August to September, after many forbs would have matured, and after grazing. Therefore, it is likely that forbs are present in higher numbers than the data suggests, and they were not present in the transects due to having previously completed their lifecycle and withered or grazed. Observer remarks from the 1993 data estimate that forb cover is approximately 10%, based of visual observances. Species composition within each growth form was relatively consistent between 1993 and 2004. Composition is relatively consistent with what would be expected of the reference state, based on the ESD, which would be 80% grass, 5% forbs, and 15% shrubs. Thurber's needlegrass and Wyoming big sagebrush are the dominant species on this site, which match the reference state. Cover at the site was calculated and found bare ground was 70%, litter 14%, and vegetation 16%. This plot has cover levels in line with the reference state range of 15-20%. By comparing these numbers to previous years' data, it appears that a decrease in vegetation of over one-half occurred between 1989 and 1993, and vegetation cover was stable from 1993 to 2004, but has shown an increase in 2012, which was also associated with a decrease in bare ground and in increase in litter. Due to these changes between 2004 and 2012, it is believed that the data trend at this site is upward.

It appears that the number and size of plants was similar between 2004 and 2012. However, it does appear that there is more cover in 2012 than there was in 2004. Overall, it is estimated that the photo trend on this site is stable, with an upward lean.

Note: Hollywood Pasture was utilized in 2004, largely by wild horses, which were at peak numbers, above AML of 304. Heavy utilization by wild horses in the area of the trend plot (as noted under observer remarks on the 2004 form) most likely played a large factor in the downward photo trend at the site.

- ***Plot 6002-002, Tombstone Pasture***

This plot is located in the Claypan 10-12" ecological site, ID R023XY214OR. This site occurs on nearly level to moderately steep tablelands and alluvial fans. Slope ranges from 0-70%, but is commonly less than 30%. Elevations for this ecological site range from 4,200-6,200 feet.

Table 39: Data from Plot 6002-002 in Tombstone Pasture

	% Ground Cover				%Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	26	16	13	39	72	12	16	Stable	Stable	Stable	Stable
2004	36	32	16	16	72	0	28	Stable	Upward	Stable	Stable
2001	19	54	12	15	81	12	7	---	---	Down	Stable
1993	20	34	17	29	60	10	30	---	---	Stable	Stable
1989	18	30	27	25	79	0	21	---	---	---	Stable
1976	---	---	---	---	---	---	---	---	---	---	---
REFERENCE STATE	20-35%				65	10	25	N/A	N/A	N/A	N/A

The site is dominated by perennial grasses that currently make up 72% of the plant community. This is the same as in 2004. While it appears that sagebrush decreased between 2004 and 2012, this is probably due to the increased presence of forbs on the site. Sandberg's bluegrass accounted for approximately 70% while bottlebrush squirreltail accounted for 2%. The major difference is that bluebunch wheatgrass and Idaho fescue were not documented in the 2012 transect, but were present in 2004. One potential reason for this change is that the exact plot location was not found in 2012, so it was reestablished as close to the original location as possible using previous photos. Low sagebrush makes up the entire shrub component on the site. Cover at the site shows a large increase in vegetation while there was a decrease in litter of one-half, a small decrease in rock cover, and a 10% decrease in bare ground. When you compare the trend data to the reference state for this ESD, the site is favoring grasses more than shrubs, with the forb component being as expected. Ground cover at the site is also appropriate.

No comparison can be made between plot photos, since the exact plot location was not found in 2012. However, the landscape photos have been taken in the same vicinity and can be compared. The most obvious difference in the photos is that in 2012 there was a large amount of fine fuels accumulating on site. It is difficult to determine if the number of plants also increased, though it is possible since the area went through a wet cycle in 2010 and 2011. Overall, it is estimated that the trend on this site is stable.

- ***Plot 6002-004, Tombstone Pasture***

This plot is located in the transition area between Claypan 12-16" ecological site, ID R023XY216OR and Juniper Tableland 12-16", ID R023XY217OR. The Claypan site occurs on various landforms, ranging from nearly level tablelands and alluvial fans to moderately steep escarpments. Slopes on this ecological site range from 2-30%, but generally less than 20%, at elevations from 4,500-6,500 feet. The Juniper Tableland site generally occurs on hills, ridges, and tablelands with slopes of 2-30% and elevations of 4,000-6,000 feet.

Table 40: Data from Plot 6002-004 in Tombstone Pasture

	% Ground Cover				% Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	33	16	10	41	76	16	8	Slight	Stable	Stable	Stable
2004	45	23	17	15	89	1	10	Stable	Stable	Stable	Down
2001	11	42	29	18	69	26	4	---	---	Stable	Stable
1993	22	33	20	25	69	4	27	---	---	Down	Stable
1989	23	18	27	32	96	0	4	---	---	---	Stable
1976	---	---	---	---	---	---	---	---	---	---	---
REFERENCE STATE	20-30% Claypan 35-45% Juniper Tableland				55-60	10	30-35	N/A	N/A	N/A	N/A

The site is dominated by perennial grasses that currently make up 76% of the plant community. While this is a decrease from 89% in 2001, it is likely that the majority of this increase is due to the lack of forbs that were found in the transect in 2004. Sandberg's bluegrass accounted for approximately 64% while bottlebrush squirreltail and onespike danthonia [*Danthonia unispicata* (Thurb.) Munro ex Macoun] comprised approximately 9% and 3% of the plant community, respectively. The main difference between these numbers and the 2004 numbers is that in 2004, Idaho fescue was recorded. However, it was not recorded in 2001, which may suggest an error in the reading. Low sagebrush makes up 8% of the plant composition, which is an increase from 2004 when no low sagebrush (only big sagebrush) was in the data. However, in 2001, 4% low sagebrush was present and no big sagebrush, but 1993 data shows big sagebrush at 8% and low sagebrush at 19%. These changes in sagebrush type in the transect may be due to reading error, but may also be due to the site being located in a transition zone, and slight changes in how the transect is read may cause some inconsistencies with the shrub canopy. By comparing the shrub data, it appears that there was some disturbance to the shrub component between 1993 and 2001, most likely a wildfire. Cover at the site was calculated and found that bare ground was 33%, litter 16%, rock 10%, and vegetation 41%. By comparing these numbers to previous years' data, it appears that an increase in vegetation of almost three times occurred between 2004 and 2012, but only some of that was associated with a decrease in bare ground, while the rest was due to a decrease in rock and litter. By comparing these values to that of the ESD reference state, it is determined that while the amount of cover is appropriate to the site, the site is favoring grasses and is lacking in the shrub component. In addition, the perennial grass species that should be dominant (Idaho fescue and bluebunch wheatgrass) were not present on the site.

The landscape photos, show increased sagebrush loss; however, while there is evidence of wildfire sometime in the past, the recent shrub loss was not a result of fire, but likely a result of

aroga infestation which has occurred in the past few years within the allotment and across the Burns District. The plot photo, while showing an increase in the number and vigor of grass plants also shows a decrease in the shrub component; no living shrubs are visible in the 2012 photo when at least four different plants were visible in 2004. Overall, it is estimated that the trend on this site is stable, though moving more towards a grass site than a shrub site.

- ***Plot 6002-007, Tombstone Pasture***

This plot is located in the Claypan 10-12" ecological site, ID R023XY214OR. This site occurs on nearly level to moderately steep tablelands and alluvial fans. Slope ranges from 0-70%, but is commonly less than 30%. Elevations for this ecological site range from 4,200-6,200 feet.

Table 41: Data from Plot 6002-007 in Tombstone Pasture

	% Ground Cover				% Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	27	21	5	47	80	4	16	Stable	Stable	Stable	Stable
2004	37	33	13	17	67	0	33	Stable	Stable	Stable	Stable
2001	21	48	9	22	79	10	11	---	Upward	Stable	Stable
1993	41	22	10	27	63	1	36	---	---	---	Stable
1976	---	---	---	---	---	---	---	---	---	---	---
REFERENCE STATE	20-35%				65	10	25	N/A	N/A	N/A	N/A

The site is dominated by perennial grasses that currently make up 80% of the plant community. This is an increase from 67% in 2004, but is similar to the 2001 data. While the 2004 data did not record any forbs, the photos show that the site had been grazed prior to reading the transect and the data was not collected until mid-August, after many forbs would have matured. The 2012 data, even though read late, found that forbs made up 4% of the plant community. Shrubs showed a decrease of 17% between 20012 and 2004, however, this number is much closer to the 2001 number of 11%, while the 2004 data was similar to the 1993 data. This may suggest some slight differences in how the transect was read. Low sagebrush was the only shrub found in the plot. Sandberg's bluegrass accounted for approximately 76% while bottlebrush squirreltail comprised approximately 4% of the plant community. However, unlike in 2004, no Idaho fescue was documented at the site; but that was also true in 2001 when Sandberg's bluegrass was found to make up 75% of the vegetation and bottlebrush squirreltail, not Idaho fescue, made up 4%. Cover at the site appears to have increase due to an increase in vegetation and decrease in litter, rock, and bare ground. Some of these minor fluctuations are likely partly due to slight differences in how the transect was read. When comparing this data to the reference state, the cover is adequate, but the site has a larger grass component and smaller shrub component than what would be expected. While bluebunch wheatgrass, which should be the dominant species, was not located in the plot, the other species sub-dominant in the reference state suggesting that based on composition, there site is similar to expected.

The landscape photos suggest that while there was some sagebrush decadence in 2004, it has continued to increase in 2013. It is likely this decrease is a result of aroga moth infestation that has occurred within the allotment and across the Burns district. The 2012 photo shows numerous

large perennial grass plants; however, these plants may have been present in 2004, just not obvious in the photo since grazing had already occurred. The plot photo shows a small change in size and vigor of vegetation, but it is not large enough to suggest an upward photo trend, especially since the shrub component within the plot appears to have become more decadent from 2004. Both photos show an increase in fuels, both fine and woody. Overall, it is estimated that the trend on this site is stable.

- ***Plot 6002-008, Tombstone Pasture***

This plot is located in the transition area between Claypan 12-16" ecological site, ID R023XY216OR and Juniper Tableland 12-16", ID R023XY217OR. The Claypan site occurs on various landforms, ranging from nearly level tablelands and alluvial fans to moderately steep escarpments. Slopes on this ecological site range from 2-30%, but generally less than 20%, at elevations of 4,500-6,500 feet. The Juniper Tableland site generally occurs on hills, ridges, and tablelands with slopes of 2-30% and elevations of 4,000-6,000 feet.

Table 42: Data from Plot 6002-008 in Tombstone Pasture

	% Ground Cover				% Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	40	25	1	34	76	13	11	Stable	Upward	---	---
REFERENCE STATE	20-30% Claypan 35-45% Juniper Tableland				55-60	10	30-35	N/A	N/A	N/A	N/A

This site is dominated by perennial grasses that currently make up 76% of the plant community. Sandberg's bluegrass dominated this site at 64%, with bottlebrush squirreltail (8%), Thurber's needlegrass (2%) and Idaho fescue (2%) also present. Forbs made up 13%, despite the late reading of the plot, and shrubs made up 11% of the plant community, with low sagebrush being the only shrub present. When compared to the reference plant community, this site has more grasses and not as many shrubs. The low percentage of shrub cover suggests that some disturbance has occurred in the past that has reduced and/or limited shrub production. Based on the ESDs associated with this site, Idaho Fescue and low sagebrush should be dominant on this site; however, Sandberg's bluegrass would also be prominent on the site. All of the forb species are species that would be present in the reference state. The reference state for this ecological site has approximate ground cover of 20-45%; vegetation cover alone is within this range. Based on the trend data, this plot is showing cover data consistent with the reference state. In comparison of this data with the ESD STM, it is believed that this site is in the reference state, but it is most likely in the perennial grass and forb phase versus the reference plant community phase.

Plot photo from this site shows numerous vigorous perennial bunchgrasses within the plot with an accumulation of fine fuels. There is no sagebrush within the plot, or the entire photo, with only a small amount of woody litter in one corner of the photo. The landscape photo also shows good vigorous herbaceous cover. However, the sagebrush component at this site is minimal, with the majority of the shrubs appearing to be decadent. This may be due to a recent aroga moth infestation that has occurred across the allotment and district. The photo also shows some juniper trees in the background; however, they are far enough in the background that it is not

likely juniper encroachment is an issue on this site. Due to the lack of woody litter in this photo (other than decadent shrubs) it is likely this site burned in the past, removing a large portion of the sagebrush.

- ***Plot 6002-009, Tombstone Pasture***

This plot is located in the transition area between Claypan 12-16" ecological site, ID R023XY216OR and Juniper Tableland 12-16", ID R023XY217OR. The Claypan site occurs on various landforms, ranging from nearly level tablelands and alluvial fans to moderately steep escarpments. Slopes on this ecological site range from 2-30%, but generally less than 20%, at elevations from 4,500-6,500 feet. The Juniper Tableland site generally occurs on hills, ridges, and tablelands with slopes of 2-30% and elevations of 4,000-6,000 feet.

Table 43: Data from Plot 6002-009 in Tombstone Pasture

	% Ground Cover				% Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	18	14	11	57	49	4	47	Stable	Upward	---	---
REFERENCE STATE	20-30% Claypan 35-45% Juniper Tableland				55-60	10	30-35	N/A	N/A	N/A	N/A

This site is appears to be co-dominated by perennial grasses and shrubs. The site is dominated by Sandberg's bluegrass (22%) and bluebunch wheatgrass (18%), with bottlebrush squirreltail (5%), Thurber's needlegrass (2%), and Idaho fescue (2%) present on the site. Forbs made up 4% composition, despite the late reading of the plot. Antelope bitterbrush and low sagebrush are the dominant shrubs on the site at 25% and 20%, respectively. When compared to the reference plant community, this site has more shrubs and fewer grasses, with forbs also being slightly lower (though this could just be due to the late-season reading). Due to the high percentage of shrubs on the site, it is expected that they are suppressing the grasses due to increased competition. Based on the ESDs associated with this site, Idaho Fescue and low sagebrush should be dominant on this site; however, Sandberg's bluegrass would also be prominent on the site. All of the forb species are species that would be present in the reference state. The reference state for this ecological site has approximate ground cover of 20-45%; vegetation cover alone exceeds this. Based on the trend data, this plot is showing cover data consistent with the reference state. In comparison of this data with the ESD STM, it is believed that this site is still in the reference state; however, lack of disturbance has resulted in shrubs dominating the site.

Plot photo from this site shows numerous vigorous perennial bunchgrasses within the plot with some decadent shrubs outside of the plot. Some of the bunchgrasses within the plot appear to be accumulating fine fuels within the crown of the plant. The landscape photo also shows good cover, with the shrubs being fairly healthy, though there is some decadence. The photo also shows some juniper trees in the background, as well as some cut trees. This plot is located within an area that was originally proposed for a prescribed burn, but has been changed to a cut and pile area. Due to the nearness of juniper to this plot, it is expected that this site is at high risk of juniper encroachment, though juniper treatments should help slow encroachment down, minimizing the effects of juniper on this site.

- ***Plot 6002-003, Steens Pasture***

This plot is located in the Claypan 12-16" ecological site, ID R023XY216OR. This site occurs on various landforms, ranging from nearly level tablelands and alluvial fans to moderately steep escarpments. Slopes on this ecological site range from 2-30%, but generally less than 20%, at elevations of 4,500-6,500 feet.

Table 44: Data from Plot 6002-003 in Steens Pasture

	% Ground Cover				%Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	35	5	37	23	91	9	0	Stable	Upward	Stable	Stable
2004	21	6	61	12	91	4	5	Stable	Stable	Stable	Stable
2001	21	24	40	15	95	1	4	---	Upward	Stable	Stable
1993	20	11	52	17	88	2	10	---	---	Stable	Stable
1989	16	2	35	47	96	0	4	---	---	---	Stable
1976	---	---	---	---	---	---	---	---	---	---	---
REFERENCE STATE	20-30%				60	10	30	N/A	N/A	N/A	N/A

The site is dominated by perennial grasses that currently make up 91% of the plant community. Sandberg's bluegrass accounted for approximately 73% while bottlebrush squirreltail and Idaho fescue comprised approximately 14% and 4% of the plant community, respectively. This is consistent with the 2004 data. The major difference between 2004 and 2012 is that no shrubs were documented in 2012. One inconsistency is that in 2012 rock cover decreased from 61% to 37%. This suggests a slight variation in the direction the transect was read; however, this appears to have occurred in the past as well. Bare ground on the site showed an increase of 35%, but vegetation also increased to 23%, while litter stayed relatively the same. The decrease in rock cover is probably the main cause for the increase in vegetation and bare ground. When the data from all years is compared, it suggests that since 1976, this site has remained relatively stable, with only minor fluctuations in cover and composition. When compared to the reference plant community, this has a large grass component and is missing the shrub component. The reference state for this ecological site has approximate ground cover of 20-30%; vegetation cover alone at this site exceeds this. Based on the trend data, this plot is showing cover data consistent with the reference state. In comparison of this data with the ESD STM, it is believed that this site is in the reference state, though it is not likely in the reference plant community phase, but in the perennial grass and forb phase.

The plot photo comparison between 2004 and 2012 shows a large increase in the production of perennial grasses on the site as well as three shrubs that have since died. There is a large amount of herbaceous and woody litter accumulating within the plot. The landscape photos also show that the site has a larger herbaceous component and smaller shrub component. Since it does not appear that a fire occurred on this site recently, it is believe the at least a portion of shrub loss was caused by the recent aroga moth infestation that has occurred within the allotment and across the district. While there is some obvious shrub loss, the shrub component on the site was minor in 2004. Therefore, overall, it is estimated that the trend on this site is stable.

- ***Plot 6002-006, Steens Pasture***

This plot is located in the Claypan 12-16" ecological site, ID R023XY216OR. This site occurs on various landforms, ranging from nearly level tablelands and alluvial fans to moderately steep escarpments. Slopes on this ecological site range from 2-30%, but generally less than 20%, at elevations of 4,500-6,500 feet.

Table 45: Data from Plot 6002-006 in Steens Pasture

	% Ground Cover				% Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	44	2	14	40	79	16	5	Stable	Stable	Stable	Down
2004	53	28	6	13	84	0	16	Slight	Upward	Down	Down
2001	26	41	7	25	72	23	4	---	Upward	Up	---
1993	39	28	13	20	78	5	17	---	---	Stable	Up
1989	31	30	13	26	92	0	8	---	---	---	Up
1976	---	---	---	---	---	---	---	---	---	---	Stable
1975	---	---	---	---	---	---	---	---	---	---	---
REFERENCE STATE	20-30%				60	10	30	N/A	N/A	N/A	N/A

The site is dominated by perennial grasses that currently make up 79% of the plant community. This is a decrease from 84% in 2004, but an increase from 72% in 2001. Overall, since 1989 it appears that grasses have been relatively stable and have dominated the site. Shrubs also show a decrease from 2004, and are similar to the 2001 reading. The shrub values have fluctuated over the life of this plot, and that may suggest a slight difference in the reading of the transect. The 2004 data did not record any forbs. The photos for that year show that the site had been grazed prior to reading the transect, and the data was not collected until mid-August, after many forbs would have matured. While the plot was read late in 2012, forbs still made up a large component of the site; however, only one forb, big-headed clover [*Trifolium macrocephalum* (Pursh) Poir.] was recorded. This is a small forb species. In 2001, big-headed clover was the dominant forb, but four other species were also present. It is likely that forbs are present in higher numbers than the most current data suggests, and they were not present due to the late-season reading of the plot and/or the fact that 2012 was a drought year. Sandberg's bluegrass accounted for approximately 68% (which is what it was in 2004), while bottlebrush squirreltail comprised approximately 11% of the plant community. Low sagebrush was the only shrub recorded. The increase in forbs may account for the decrease in composition of both shrubs and grasses since 2004. This is supported by the fact that while grasses and forbs decreased, overall ground cover on the site increased, with vegetation making up 40%, a substantial increase from 2004 when it was only 13%. While bare ground has decreased since 2004, it is still higher than it had been in all other readings. However, there was hardly any litter documented in the transect in 2012 and it was found to make up only 2% of the ground cover, while in previous years it had ranged from 28-40%. Some of the litter cover from previous years was most likely considered bare ground in 2012. When compared to the reference plant community, this has a larger grass component and does not have the expected shrubs. Low sagebrush, which dominates the reference community, is the dominant shrub on this site. The reference state for this ecological site has approximate ground cover of 20-30%; vegetation cover alone at this site exceeds this. Based on the trend

data, this plot is showing cover data consistent with the reference state. In comparison of this data with the ESD STM, it is believed that this site is in the reference state, though it is not likely in the reference plant community phase, but in the perennial grass and forb phase.

No photos were taken in 2001; therefore, no photo trend for 1993 to 2001 or 2001 to 2004 can be determined. The photo trend in the 2004 row was determined using the 1993 and 2004 photos. The trend from the landscape photos of 1993 and 2004 show a decrease in shrub abundance and vigor across the site. This is also visible when comparing the plot photos for the two years. The increase in bare ground is also obvious when comparing the 1993 and 2004 photos. In comparing the plot photos between 2004 and 2012, it appears that there has been shrub mortality at the site and in increase in the herbaceous component. The landscape photo comparison shows a site that tends to get moderate to heavy use and is dominated by small perennial bunchgrasses. The sagebrush component at this site shows an obvious decrease in abundance and health from 2004 to 2012. This is likely due to the aroga moth infestation that has occurred in the past few years. However, since the site appears to receive livestock and wild horse use, some of the sagebrush loss could be due to trampling effects. While this site is over one-quarter mile from any reservoir, it is located near the beginning of an intermittent drainage. If this site has an increased level of ground water, there may be some green vegetation later in the year, after large precipitation events, that would attract grazing animals.

- ***Plot 6002-010, Steens Pasture***

This plot is located in the Claypan 10-12" ecological site, ID R023XY214OR. This site occurs on nearly level to moderately steep tablelands and alluvial fans. Slopes range from 0-70%, but are commonly less than 30%. Elevations for this ecological site range from 4,200-6,200 feet.

Table 46: Data from Plot 6002-010 in Steens Pasture

	% Ground Cover				% Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	38	14	8	38	96	0	4	Stable	Upward	---	---
REFERENCE STATE	20-35%				65	10	25	N/A	N/A	N/A	N/A

This site is largely dominated by grasses, which make up 96% of the plant composition, with shrubs making up the other 4%. No forbs were documented within this transect, but that is probably at least in part due to the late-season in which this plot was read. The grass component at this site was dominated by Sandberg's bluegrass (72%), with bluebunch wheatgrass (20%) and bottlebrush squirreltail (4%) also present. According to the ESD, as the soil surfaces become thinner, the proportion of Sandberg's bluegrass increases (thicker soils favor Idaho fescue). Low sagebrush was the only shrub present. There is no specific STM developed by the NRCS for this ecological site.

The plot photo for this site shows large perennial bunchgrasses, with a large level of fine fuel accumulation. There are no shrubs in the photo. The landscape photo shows a site with good ground cover and fine fuel accumulation. Many of the shrubs that are present appear to be at least partially decadent. The lack of shrubs across the site, decadent or healthy, suggests that this

site burned in the past and the shrub component has been unable to recover. There are some juniper trees in the distance, but there do not appear to be any present on the site.

- ***Plot 6002-011, Steens Pasture***

This plot is located in the transition area between Claypan 12-16" ecological site, ID R023XY216OR and Juniper Tableland 12-16", ID R023XY217OR. The Claypan site occurs on various landforms, ranging from nearly level tablelands and alluvial fans to moderately steep escarpments. Slopes on this ecological site range from 2-30%, but generally less than 20%, at elevations from 4,500-6,500 feet. The Juniper Tableland site generally occurs on hills, ridges, and tablelands with slopes of 2-30% and elevations of 4,000-6,000 feet.

Table 47: Data from Plot 6002-011 in Steens Pasture

	% Ground Cover				% Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	18	7	41	32	96	3	1	Stable	Stable	---	---
REFERENCE STATE	20-30% Claypan 35-45% Juniper Tableland				55-60	10	30-35	N/A	N/A	N/A	N/A

This site is dominated by perennial grasses that currently make up 96% of the plant community. Forbs made up 3%, despite the late reading of the plot, and shrubs made up only 1% of the plant community. When compared to the reference plant community, this site has more grasses and not as many shrubs. The low percentage of shrub cover suggests that some disturbance has occurred in the past that has reduced and/or limited shrub production. Sandberg's blue grass was the dominant grass on this site, making up 66% of the composition, followed by bottlebrush squirreltail (14%), Thurber's needlegrass (10%), Idaho fescue (14%), and onespike danthonia (2%). Based on the ESDs associated with this site, Idaho Fescue and bluebunch wheatgrasses should be dominant on this site; however, Sandberg's bluegrass would be more common as the soil surface becomes thinner. The dominant shrub on this site should be low sagebrush; however, the only shrub documented was juniper. Phlox (*Phlox* L.) was the only forb present, and would be found in the reference state. The reference state for this ecological site has approximate ground cover of 20-45%; vegetation cover alone is within this range. There is an abundance of Japanese brome (*Bromus arvensis* L.) present on the site. Based on the trend data, this plot is showing cover data consistent with the Low Sagebrush – Bunchgrass with Annuals State. In comparison of this data with the ESD STM, it is believed that this site is in the Low Sagebrush – Sandberg Bluegrass Phase due to the presence of Japanese brome.

Plot photo from this site shows numerous perennial bunchgrasses, though they are mostly small and likely Sandberg's bluegrass. There is also a lot of fine fuel accumulating on the site. Within the plot, there is a sagebrush seedling, showing that some sagebrush recruitment is occurring. The landscape photo also shows good herbaceous cover; however, there are very few shrubs visible, with the exception of juniper. The juniper, though posing a risk to the site, is still Phase I and it is not expected that it is causing degradation on this site. This site is located in the vicinity of a spring and reservoir, both of which get frequented by grazing animals (livestock and wild horses). It is possible that this has resulted in increased use at this site.

- ***Plot 6002-012, Steens Pasture***

This plot is located in the transition area between Claypan 12-16" ecological site, ID R023XY216OR and Juniper Tableland 12-16", ID R023XY217OR. The Claypan site occurs on various landforms, ranging from nearly level tablelands and alluvial fans to moderately steep escarpments. Slopes on this ecological site range from 2-30%, but generally less than 20%, at elevations of 4,500-6,500 feet. The Juniper Tableland site generally occurs on hills, ridges, and tablelands with slopes of 2-30% and elevations of 4,000-6,000 feet.

Table 48: Data from Plot 6002-012 in Steens Pasture

	% Ground Cover				% Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	42	12	9	37	88	5	7	Stable	Upward	---	---
REFERENCE STATE	20-30% Claypan 35-45% Juniper Tableland				55-60	10	30-35	N/A	N/A	N/A	N/A

This site is dominated by perennial grasses that currently make up 88% of the plant community. Forbs made up 5%, despite the late reading of the plot, and shrubs made up only 7% of the plant community. When compared to the reference plant community, this site has more grasses and not as many shrubs. The low percentage of shrub cover suggests that some disturbance has occurred in the past that has reduced and/or limited shrub production. Sandberg's blue grass was the dominant grass on this site, making up 65% of the composition, followed by Idaho fescue at 14%. Based on the ESDs associated with this site, Idaho Fescue and bluebunch wheatgrasses should be dominant on this site; however, Sandberg's bluegrass would be more common as the soil surface becomes thinner. The dominant shrub on this site should be low sagebrush, which was the only shrub found in the transect. All of the forb species are species that would be present in the reference state. The reference state for this ecological site has approximate ground cover of 20-45%; vegetation cover alone is within this range. There is some Japanese brome present on the site. Based on the trend data, this plot is showing cover data consistent with the reference state. In comparison of this data with the ESD STM, it is believed that this site is still in the reference state, but may be at risk of transitioning to State 2 – Low Sagebrush – Bunchgrass with Annuals due to the presence of Japanese brome.

Plot photo from this site shows numerous perennial bunchgrasses within the plot with large amounts of litter accumulation, especially woody litter. There are also some small low sagebrush plants becoming established. The landscape photo shows good herbaceous cover; however, the low sagebrush at this site appears to be decadent. This may be due to a recent aroga moth infestation that has occurred across the district.

- ***Plot 6002-013, Steens Pasture***

This plot is located in the transition area between Claypan 12-16" ecological site, ID R023XY216OR and Loamy 12-16", ID R023XY318OR. The Claypan site occurs on various landforms, ranging from nearly level tablelands and alluvial fans to moderately steep escarpments. Slopes on this ecological site range from 2-30%, but generally less than 20%, at elevations of 4,500-6,500 feet. The Loamy site occurs in mountainous terrain on ridges and

mountain shoulders, with slopes ranging from 2-35%, but typically no more than 20%, in an elevation range of 4,500-8,000 feet.

Table 49: Data from Plot 6002-013 in Steens Pasture

	% Ground Cover				% Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	35	10	17	38	75	10	15	Stable	Upward	---	---
REFERENCE STATE	20-30%				60-75	10	15-30	N/A	N/A	N/A	N/A

This site is dominated by perennial grasses and has eight species currently making up 75% of the plant community. Forbs made up 10%, despite the late reading of the plot, and shrubs made up 15% of the plant community. When compared to the reference plant community, this site has a similar functional group composition. Sandberg's bluegrass was the dominant grass on this site, making up 47% of the composition, with bottlebrush squirreltail and Idaho fescue at 9% and 7%, respectively. Based on the ESDs associated with this site, Idaho Fescue and bluebunch wheatgrasses should be dominant on this site; however, Thurber's needlegrass, bottlebrush squirreltail, and Sandberg's bluegrass should be subdominant. No bluebunch wheatgrass was documented at this site. The dominant shrub on this site should be, and is, low sagebrush. Antelope bitterbrush and juniper were also documented in the transect. All of the forb species are species that would be present in the reference state. The reference state for this ecological site has approximate ground cover of 20-30%; vegetation cover alone at this site exceeds this. Based on the trend data, this plot is showing cover data consistent with the reference state. In comparison of this data with the ESD STM, it is believed that this site is in the reference state.

Plot photo from this site shows perennial bunchgrasses within the plot with large amounts of herbaceous litter accumulation. No landscape photo was taken.

- ***Plot 6002-014, Steens Pasture***

This plot is located in the transition area between Claypan 12-16" ecological site, ID R023XY216OR and Loamy 12-16", ID R023XY318OR. The Claypan site occurs on various landforms, ranging from nearly level tablelands and alluvial fans to moderately steep escarpments. Slopes on this ecological site range from 2-30%, but generally less than 20%, at elevations of 4,500-6,500 feet. The Loamy site occurs in mountainous terrain on ridges and mountain shoulders, with slopes ranging from 2-35%, but typically no more than 20%, in an elevation range of 4,500-8,000 feet.

Table 50: Data from Plot 6002-014 in Steens Pasture

	% Ground Cover				% Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	42	9	5	44	74	5	21	Stable	Upward	---	---
REFERENCE STATE	20-30%				60-75	10	15-30	N/A	N/A	N/A	N/A

This site is dominated by perennial grasses and has four species [Sandberg's bluegrass (38%), bottlebrush squirreltail (19%), Idaho fescue (14%), and Thurber's needlegrass (3%)] currently making up 74% of the plant community. Forbs, specifically lupine (*Lupinus* L.), made up 5%, despite the late reading of the plot, and shrubs made up 21% of the plant community. When compared to the reference plant community, this site almost fits the functional group composition, with only forbs being fewer than the reference state. Based on the ESDs associated with this site, Idaho Fescue and bluebunch wheatgrasses should be dominant on this site; however, Thurber's needlegrass, bottlebrush squirreltail, and Sandberg's bluegrass should be subdominant. No bluebunch wheatgrass was documented at this site. The dominant shrub on this site should be, and is, low sagebrush (8%). Antelope bitterbrush, green rabbitbrush, big sagebrush, grey rabbitbrush, and juniper were also documented in the transect. All of the forb species are species that would be present in the reference state. The reference state for this ecological site has approximate ground cover of 20-30%; vegetation cover alone at this site exceeds this. Based on the trend data, this plot is showing cover data consistent with the reference site. In comparison of this data with the ESD STM, it is believed that this site is in the reference state.

Plot photo from this site shows perennial bunchgrasses within the plot with some herbaceous and woody litter accumulation. Landscape photo shows that this area was burned in the past (juniper skeletons in background), and a variety of shrubs. A range of perennial bunchgrasses is also visible.

- ***Plot 6002-015, Steens Pasture***

This plot is located in the transition area between Claypan 12-16" ecological site, ID R023XY216OR and Loamy 12-16", ID R023XY318OR. The Claypan site occurs on various landforms, ranging from nearly level tablelands and alluvial fans to moderately steep escarpments. Slopes on this ecological site range from 2-30%, but generally less than 20%, at elevations of 4,500-6,500 feet. The Loamy site occurs in mountainous terrain on ridges and mountain shoulders, with slopes ranging from 2-35%, but typically no more than 20%, in an elevation range of 4,500-8,000 feet.

Table 51: Data from Plot 6002-015 in Steens Pasture

	% Ground Cover				% Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	55	3	6	36	81	12	7	Stable	Upward	---	---
REFERENCE STATE	20-30%				60-75	10	15-30	N/A	N/A	N/A	N/A

This site is dominated by perennial grasses and has four species [Sandberg's bluegrass (56%), bottlebrush squirreltail (6%), Idaho fescue (10%), and Thurber's needlegrass (9%)] currently making up 81% of the plant community. Forbs, mainly lupine, made up 12% composition, despite the late reading of the plot, and shrubs made up 7% of the plant community. When compared to the reference plant community, this has a larger grass component and is lacking the expected shrubs. Based on the ESDs associated with this site, Idaho Fescue and bluebunch wheatgrass should be dominant on this site; however, Thurber's needlegrass, bottlebrush

squirreltail, and Sandberg's bluegrass should be subdominant. No bluebunch wheatgrass was documented at this site. The dominant shrub on this site should be low or big sagebrush; however, big sagebrush makes up only 1% of the species composition, while antelope bitterbrush and juniper make up 3% each, with no low sagebrush in the transect. Ceanothus (*Ceanothus* L.) and both gray and green rabbitbrush was documented on the site. All of the forb species are species that would be present in the reference state. The reference state for this ecological site has approximate ground cover of 20-30%; vegetation cover alone at this site exceeds this. Based on the trend data, this plot is showing cover data consistent with the reference state. In comparison of this data with the ESD STM, it is believed that this site is in the reference state, though it is not likely in the reference plant community phase, but in the perennial grass and forb phase.

Plot photo from this site shows small perennial bunchgrasses and some forbs within the plot. Landscape photo shows that this area was burned in the past (juniper skeletons in background). From the photos, it is obvious that this site has received heavy use, which was probably a combination of livestock and wild horse use. Four wild horses were in the plot area when the transect was read.

- ***Plot 6002-016, Home Creek Pasture***

This plot is located in the transition area between Claypan 12-16" ecological site, ID R023XY216OR and Loamy 12-16", ID R023XY318OR. The Claypan site occurs on various landforms, ranging from nearly level tablelands and alluvial fans to moderately steep escarpments. Slopes on this ecological site range from 2-30%, but generally less than 20%, at elevations of 4,500-6,500 feet. The Loamy site occurs in mountainous terrain on ridges and mountain shoulders, with slopes ranging from 2-35%, but typically no more than 20%, in an elevation range of 4,500-8,000 feet.

Table 52: Data from Plot 6002-016 in Home Creek Pasture

	% Ground Cover				% Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	31	6	8	55	63	15	22	Stable	Upward	---	---
REFERENCE STATE	20-30%				60-75	10	15-30	N/A	N/A	N/A	N/A

This site is dominated by perennial grasses and has four species [Sandberg's bluegrass (13%), bottlebrush squirreltail (12%), Idaho fescue (34%), and needle and thread grass (4%)] currently making up 63% of the plant community. Forbs, mainly lupine and buckwheat (*Eriogonum* Michx.), made up 15% composition, despite the late reading of the plot, and shrubs made up 22% of the plant community. When compared to the reference plant community, this site has the appropriate grass and forb composition. While percentage wise, this site has an appropriate shrub component, antelope bitterbrush is the dominant shrub at 11% composition, while low sagebrush makes up only 6%, big sagebrush 1%, and juniper 4%. The dominant shrub on this site should be low or big sagebrush. All of the forb species are species that would be present in the reference state. The reference state for this ecological site has approximate ground cover of 20-30%; vegetation cover alone at this site exceeds this. Based on the trend data, this plot is

showing cover data consistent with the reference state. In comparison of this data with the ESD State and Transition Model (STM) it is believed that this site is in the reference state, and most similar to the reference plant community phase.

Plot photo from this site shows some perennial bunchgrasses and some forbs within the plot, along with a sagebrush seedling. The grasses are dormant, and there is some fine and woody litter accumulating. Other small sagebrush seedlings are seen in the photo, though outside the plot. Landscape photo shows that this area is becoming dominated by juniper; many different age classes of juniper are visible. While numerous shrubs are present in this photo, it appears that there is a large amount of decadent sagebrush. While some of this may be caused by the juniper encroachment, it is more likely that it is due either to old age or to aroga moth, which has infested many areas within the allotment and across the district.

- ***Plot 6002-017, Home Creek Pasture***

This plot is located in the Claypan 12-16" ecological site, ID R023XY216OR. This site occurs on various landforms, ranging from nearly level tablelands and alluvial fans to moderately steep escarpments. Slopes on this ecological site range from 2-30%, but generally less than 20%, at elevations of 4,500-6,500 feet.

Table 53: Data from Plot 6002-017 in Home Creek Pasture

	% Ground Cover				% Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	36	3	20	41	82	6	12	Stable	Upward	---	---
REFERENCE STATE	20-30%				60	10	30	N/A	N/A	N/A	N/A

This site is dominated by perennial grasses and has five species [Sandberg's bluegrass (35%), bottlebrush squirreltail (9%), Idaho fescue (36%), bluebunch wheatgrass (1%), and Thurber's needlegrass (1%)] currently making up 82% of the plant community. Forbs, mainly lupine, made up 6% composition, despite the late reading of the plot, and shrubs made up 12% of the plant community. When compared to the reference plant community, this site has a larger grass component and does not have the expected shrubs. As expected, Idaho Fescue is dominant on this site. Low sagebrush, which dominates the reference community, is the dominant shrub on this site, at 10% composition; green rabbitbrush is the other shrub documented on the site. The reference state for this ecological site has approximate ground cover of 20-30%; vegetation cover alone at this site exceeds this. Based on the trend data, this plot is showing cover data consistent with the reference state. In comparison of this data with the ESD STM, it is believed that this site is in the reference state, though it is not likely in the reference plant community phase, but in the perennial grass and forb phase.

Plot photo from this site shows some vigorous perennial bunchgrasses and some decadent sagebrush, and a large amount of woody litter; there is very good groundcover within the plot. Landscape photo shows that this area has some decadent low sagebrush (potentially due to aroga moth) and is at risk of being encroached by juniper since it is in the vicinity. However, its scattered presence and the lack of small trees in the photo suggests that juniper is not yet causing

any degradation on the site. The landscape photo also shows numerous vigorous, deep-rooted bunchgrasses spread across the site.

- ***Plot 6002-018, Home Creek Pasture***

This plot is located in the transition area between Claypan 12-16" ecological site, ID R023XY216OR and Juniper Tableland 12-16", ID R023XY217OR. The Claypan site occurs on various landforms, ranging from nearly level tablelands and alluvial fans to moderately steep escarpments. Slopes on this ecological site range from 2-30%, but generally less than 20%, at elevations of 4,500-6,500 feet. The Juniper Tableland site generally occurs on hills, ridges, and tablelands with slopes of 2-30% and elevations of 4,000-6,000 feet.

Table 54: Data from Plot 6002-018 in Home Creek Pasture

	% Ground Cover				% Composition			Trend			
Year	**Bare Grd.**	**Litter**	**Rock**	**Veg.**	**Grass**	**Forbs**	**Shrubs**	**SSF**	**OAT**	**Data**	**Photo**
2012	28	15	25	32	89	9	2	Stable	Stable	---	---
REFERENCE STATE	20-30% Claypan 35-45% Juniper Tableland				55-60	10	30-35	N/A	N/A	N/A	N/A

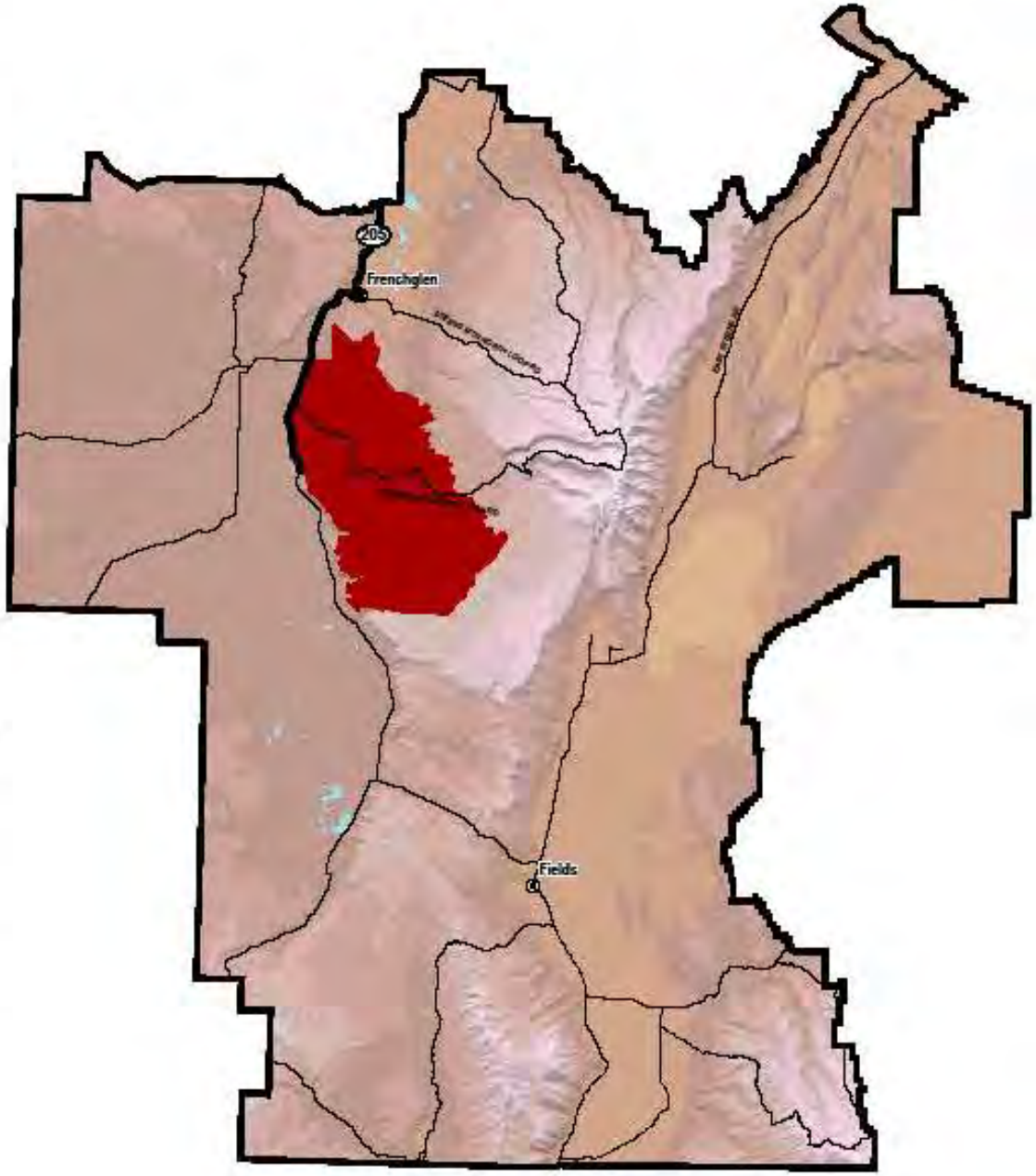
This site is dominated by perennial grasses that currently make up 89% of the plant community. It is dominated by Sandberg's bluegrass (53%) and bottlebrush squirreltail (28%). Forbs made up 9% composition, despite the late reading of the plot, and shrubs made up only 2% of the plant community, with low sagebrush being the only shrub present. When compared to the reference plant community, this site has more grasses and not as many shrubs. The low percentage of shrub cover suggests that some disturbance has occurred in the past that has reduced and/or limited shrub production. Based on the ESDs associated with this site, Idaho Fescue and low sagebrush should be dominant on this site; however, Sandberg's bluegrass would also be prominent on the site. All of the forb species are species that would be present in the reference state. The reference state for this ecological site has approximate ground cover of 20-45%; vegetation cover alone is within this range. Based on the trend data, this plot is showing cover data consistent with the reference state. In comparison of this data with the ESD STM, it is believed that this site is still in the reference state, but it most likely in the perennial grass and forb phase than the reference plant community phase.

Plot photo from this site shows numerous perennial bunchgrasses within the plot with some decadent shrubs outside of the plot. The landscape photo also shows good herbaceous cover; however, the low sagebrush at this site appears to be very decadent with only some portions of some plants still alive. This may be due to a recent aroga moth infestation that has occurred across the allotment and district. The photo also shows some juniper trees in the background; however, they appear to be large older trees and it does not appear that juniper encroachment is an issue on this site.

Appendix C: Maps

1. Vicinity C-2
2. Land Status.....C-3
3. Current Range Improvements C-4
4. Reliable Water Sources.....C-5
5. Use Area Based on Reliable Water.....C-6
6. Use Area Based on Reliable Water on Public Land Only C-7
7. Alternative B: Proposed Range Improvements.....C-8
8. Alternative C: Proposed Range Improvements.....C-9
9. Alternative D: Proposed Range Improvements C-10
10. Alternative E: Proposed Range Improvements.....C-11
11. Alternative B: Proposed Use Area with Proposed Range Improvements.....C-12
12. Alternative C: Proposed Use Area with Proposed Range Improvements.....C-13
13. Alternative D: Proposed Use Area with Proposed Range Improvements C-14
14. Alternative E: Proposed Use Area with Proposed Range Improvements.....C-15
15. Alternative B: Estimated Viewshed Disturbance C-16
16. Alternative C: Estimated Viewshed Disturbance C-17
17. Alternative D: Estimated Viewshed Disturbance C-18
18. Alternative E: Estimated Viewshed Disturbance.....C-19

South Steens Allotment
Map 1 - Vicinity Map
Andrews Resource Area



Legend

- Allotment Boundary
- Andrews Resource Area Boundary
- Highways
- Major Roads

Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability or completeness of these data for individual or aggregate use with other data. Original data was compiled from various sources and may be updated without notification.

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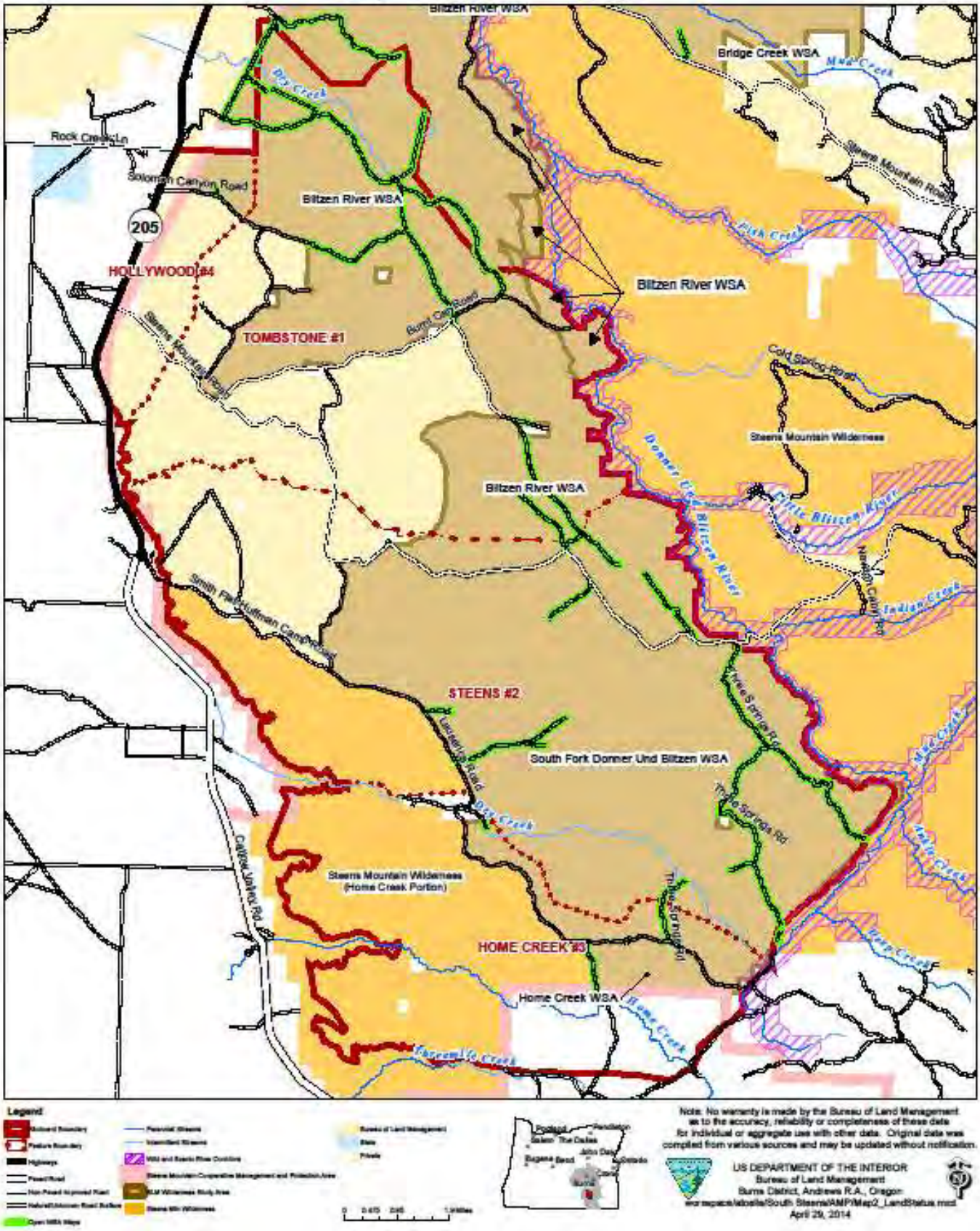
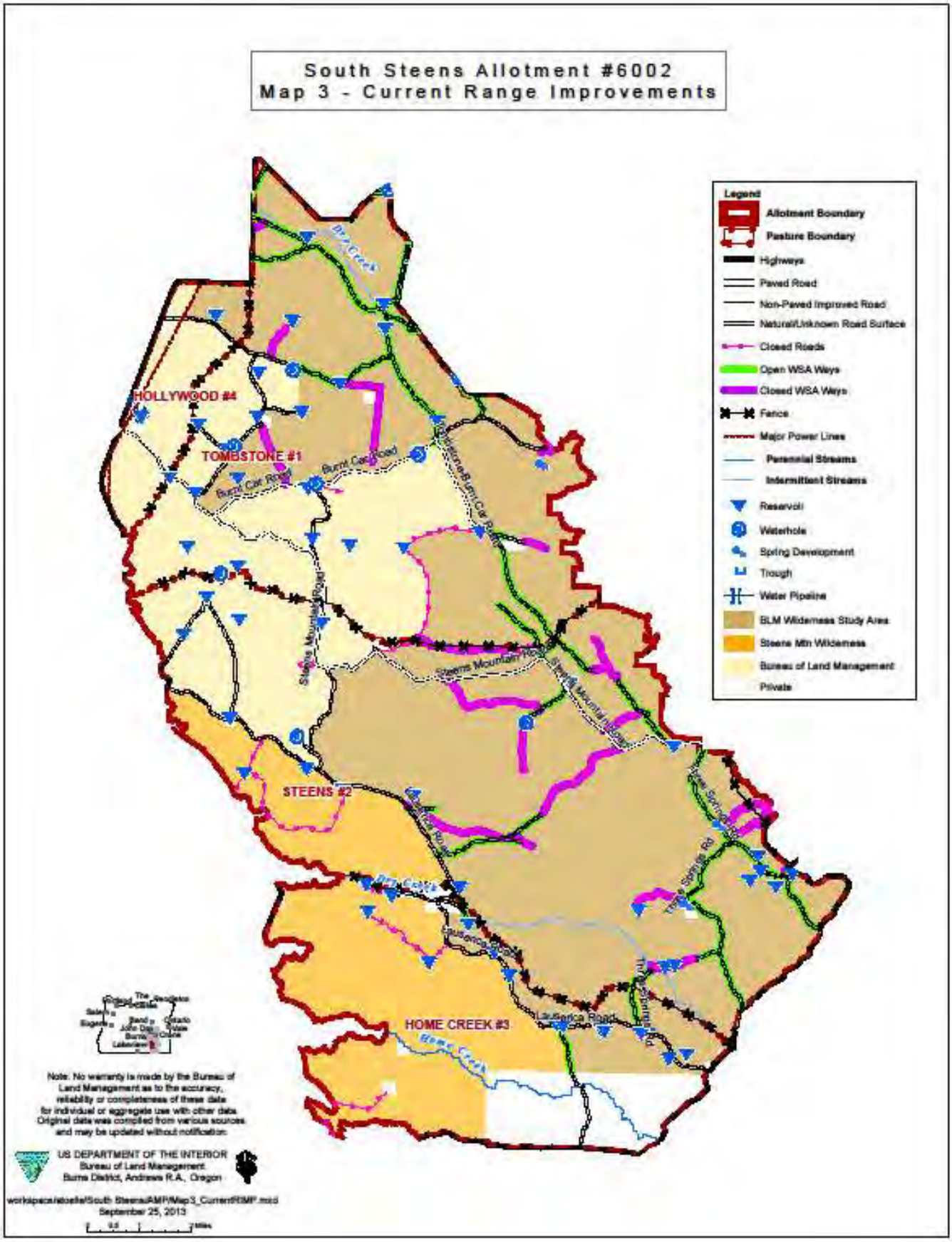
/workspace/atowle/South Steens/AMP/Map1-Vicinity.mxd
September 9, 2011

South Steens Allotment #6002
Map 2 - Land Status




South Steens Allotment #6002
Map 3 - Current Range Improvements
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Closed Roads
Open WSA Ways
Closed WSA Ways
Fence
Major Power Lines
Perennial Streams
Intermittent Streams
Reservoir
Waterhole
Spring Development
Trough
Water Pipeline
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
Dry Creek
Burns Car Road
Steens Mountain Road
Home Creek
Lawrence Road
Home Springs Rd
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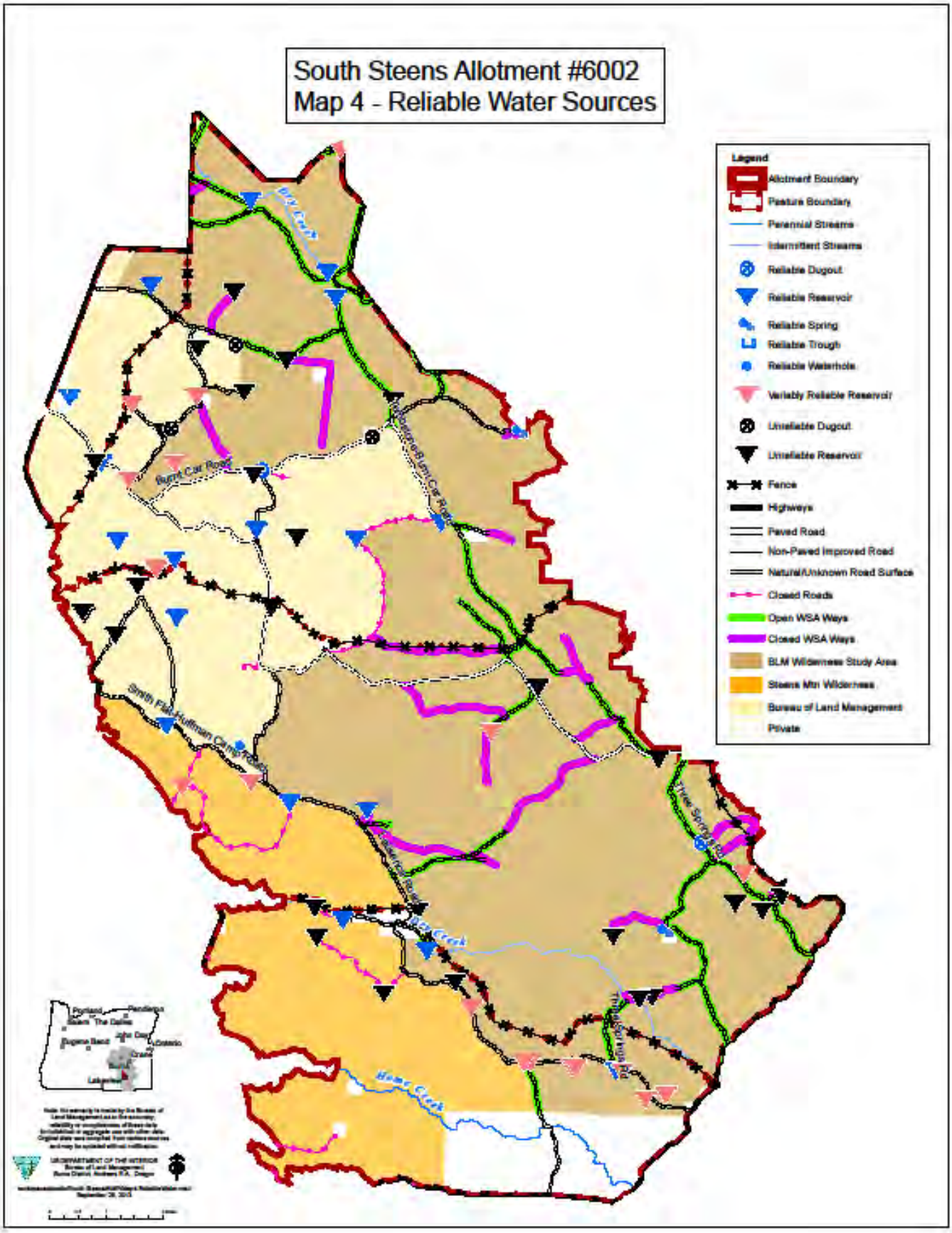
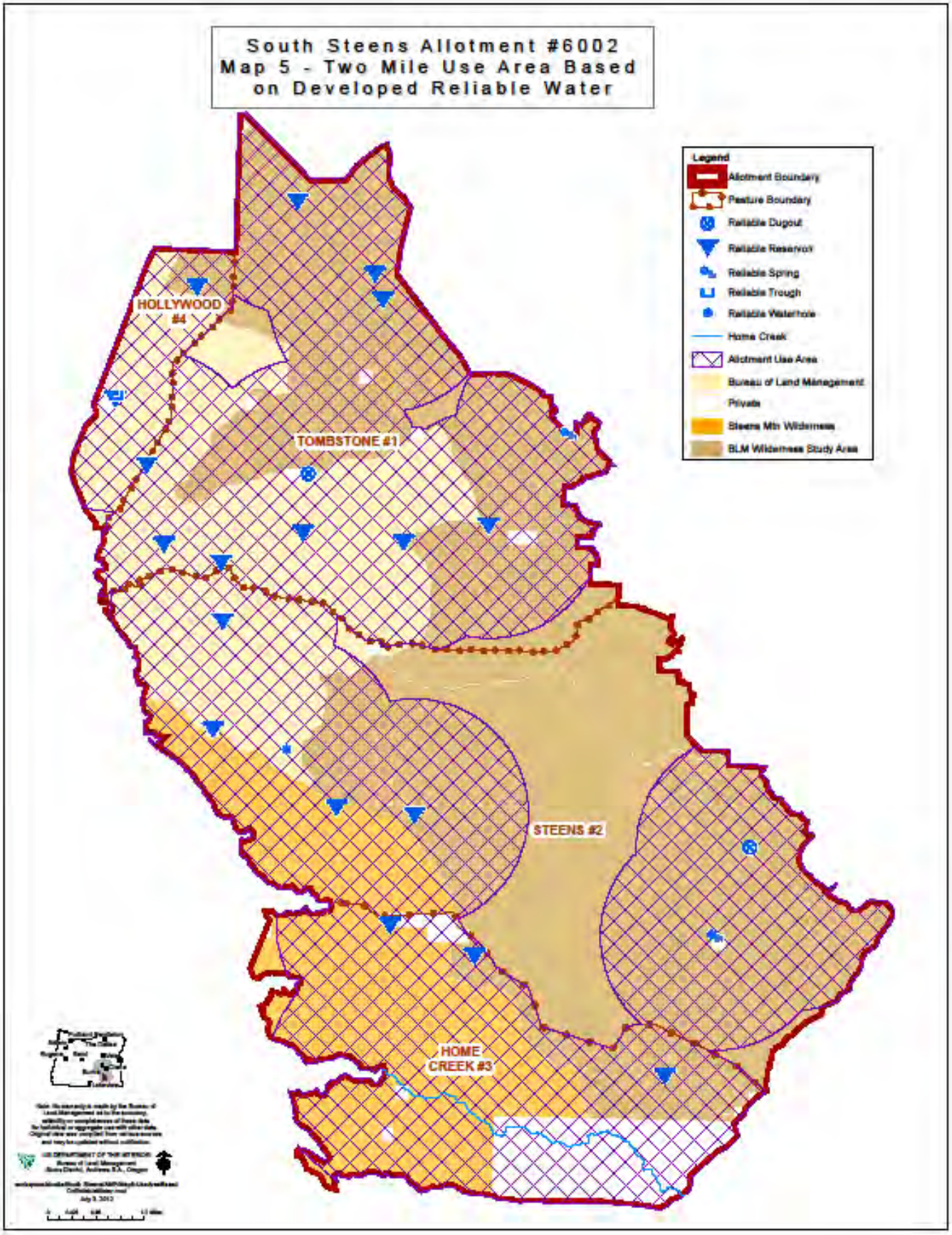
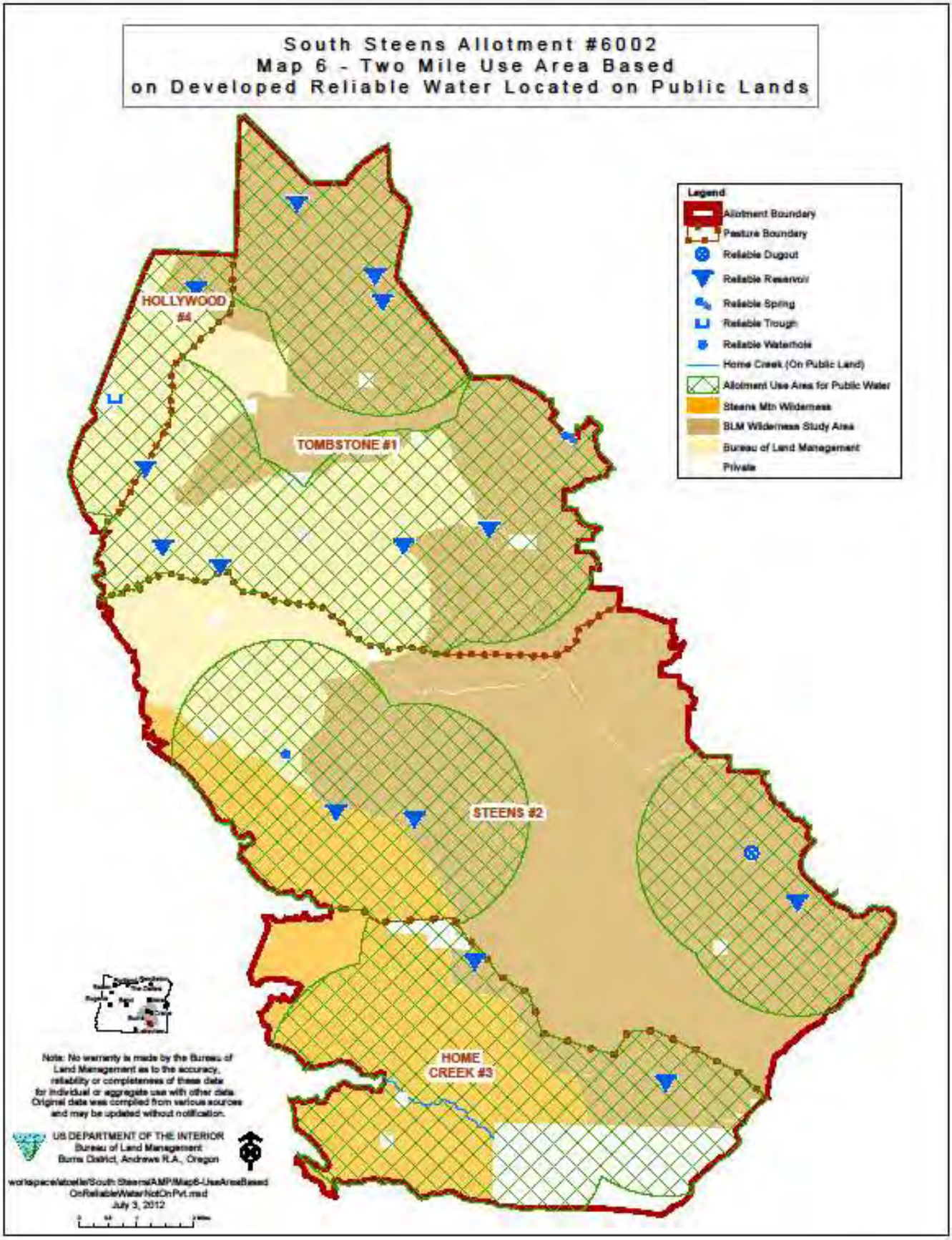
September 25, 2013


South Steens Allotment #6002
Map 4 - Reliable Water Sources
Legend
Allotment Boundary
Pasture Boundary
Perennial Streams
Intermittent Streams
Reliable Dugout
Reliable Reservoir
Reliable Spring
Reliable Trough
Reliable Waterhole
Variably Reliable Reservoir
Unreliable Dugout
Unreliable Reservoir
Fence
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Closed Roads
Open WSA Ways
Closed WSA Ways
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
Private
Big Creek
Burnt Car Road
Smith Fork Hullman Camp Road
Roberts Road
Beal Creek
Home Creek
Portland
Pendleton
Salem
The Dalles
John Day
Eugene
Bend
Ontario
Grants
Medford
Klamath Falls
Lakeview


South Steens Allotment #6002
Map 5 - Two Mile Use Area Based on Developed Reliable Water
Legend
Allotment Boundary
Pasture Boundary
Reliable Dugout
Reliable Reservoir
Reliable Spring
Reliable Trough
Reliable Waterhole
Home Creek
Allotment Use Area
Bureau of Land Management
Private
Steens Mtn Wilderness
BLM Wilderness Study Area
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3


South Steens Allotment #6002
Map 6 - Two Mile Use Area Based
on Developed Reliable Water Located on Public Lands
Legend
Allotment Boundary
Pasture Boundary
Reliable Dugout
Reliable Reservoir
Reliable Spring
Reliable Trough
Reliable Waterhole
Home Creek (On Public Land)
Allotment Use Area for Public Water
Steens Mtn Wilderness
BLM Wilderness Study Area
Bureau of Land Management
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
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workspace/atoelle/South Steens/AMP/Map6-UseAreaBased OnReliableWaterNotOnPvt.mxd
July 3, 2012

South Steens Allotment #6002
Map 7 - Alternative B: Proposed Action, Proposed Range Improvements
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Open WSA Ways
Perennial Streams
Intermittent Streams
Reservoir
Waterhole
Spring Development
Water Tank
Trough
Water Pipeline
Proposed Riparian Exclosure
Proposed Pipeline
Proposed Reservoir Maintenance
Proposed Reservoir Abandonment
Proposed Reservoir
Proposed Spring Protection
Proposed Spring Development
Proposed Trough
Proposed Well
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
Private
T32S-R32E
T33S-R32E
T33S-R32.5E
T34S-R32E
T34S-R32.5E
T35S-R32.5E
Burns Car Road
Steens Mountain Road
Solomon Canyon Road
ER1
ER2
ER3
ER5
ER6
ER7
ER8
ER9
ER10
ER11
ER12
ER13
ER14
ER15
ER17
ER18
ER19
ER20
ER21
ER22
ER23
ER24
W3
T18
T6
T7
S4
R4
R5
R6
R7
R11
R12
R13
R14
R15
P8
W6
T11
W13
S2
S3
T24
S1
US DEPARTMENT OF THE INTERIOR
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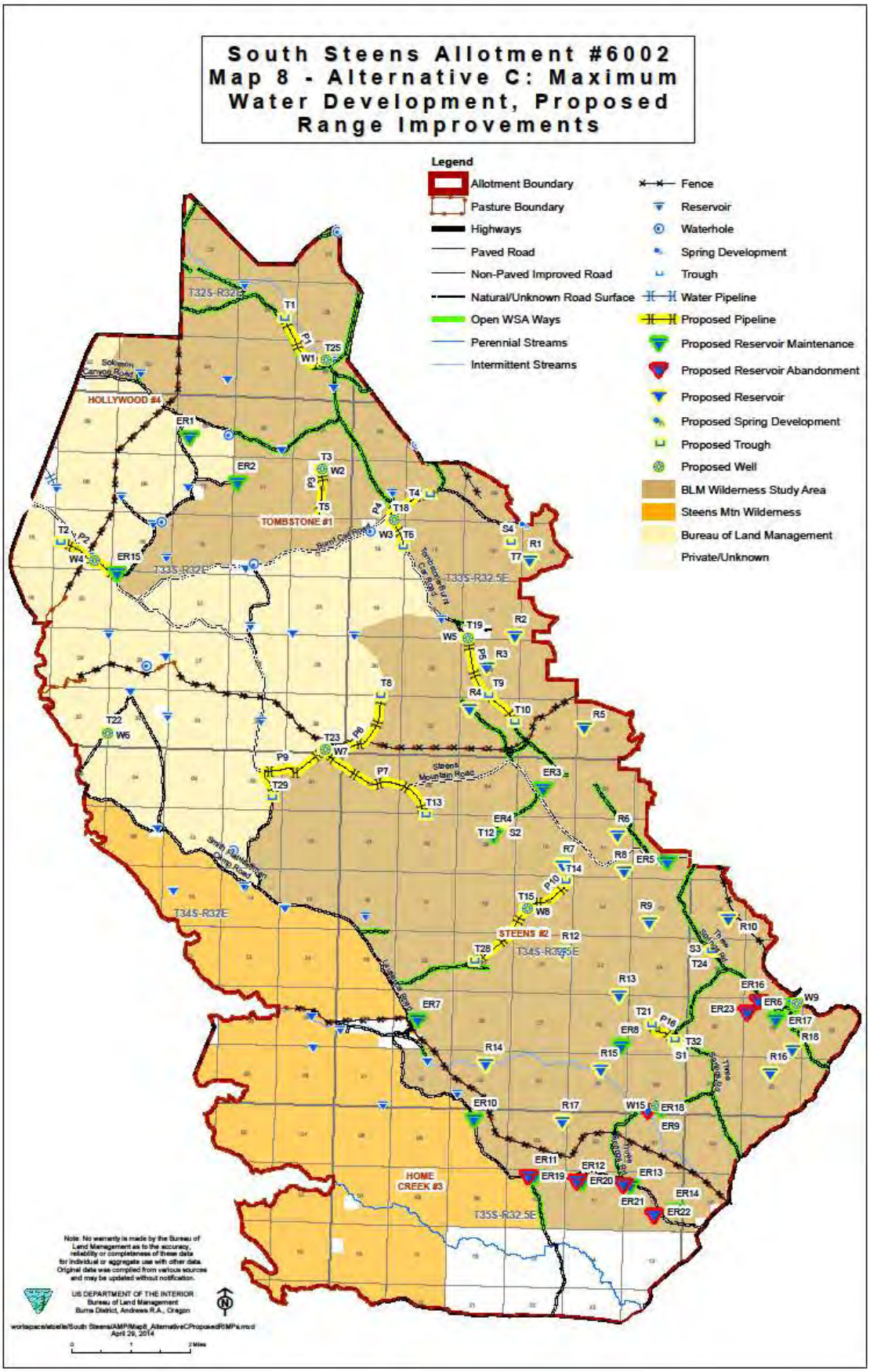
Burns District, Andrews R.A., Oregon
April 28, 2014


South Steens Allotment #6002
Map 8 - Alternative C: Maximum Water Development, Proposed Range Improvements
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Open WSA Ways
Perennial Streams
Intermittent Streams
Fence
Reservoir
Waterhole
Spring Development
Trough
Water Pipeline
Proposed Pipeline
Proposed Reservoir Maintenance
Proposed Reservoir Abandonment
Proposed Reservoir
Proposed Spring Development
Proposed Trough
Proposed Well
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
Private/Unknown
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T32S-R32E
T33S-R32E
T33S-R32.5E
T34S-R32E
T34S-R32.5E
T35S-R32.5E
Steens Mountain Road
Small Plantation Camp Road
Solomon Canyon Road
Burnt Cow Road
Tombstone Burn
Home Creek Road
Steens Mountain Road
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April 29, 2014

South Steens Allotment #6002 Map 9 - Alternative D:
Along Road Development, Proposed Range Improvements
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Open WSA Ways
Fence
Reservoir
Waterhole
Spring Development
Trough
Water Pipeline
Perennial Streams
Intermittent Streams
Proposed Fence
Proposed Pipeline
Proposed Fence Removal
Proposed Reservoir Maintenance
Proposed Reservoir Abandonment
Proposed Reservoir
Proposed Spring Protection
Proposed Spring Development
Proposed Trough
Proposed Well
Proposed Reservoir Maintenance
Proposed Reservoir Abandonment
Proposed Reservoir
Proposed Spring Protection
Proposed Spring Development
Proposed Trough
Proposed Well
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
Private
T32S-R32E
T33S-R32E
T33S-R32.5E
T34S-R32E
T34S-R32.5E
T35S-R32.5E
Solomon Canyon Road
Burns Creek Road
Steens Mountain Road
Smith Rancheria Camp Road
Little Blitzen Road
Blitzen River
Fenceline Burns Creek Road
T1
T2
T3
T4
T5
T6
T8
T9
T10
T13
T14
T15
T16
T18
T19
T22
T23
T24
T25
T26
T29
T31
T32
W1
W2
W3
W4
W5
W6
W7
W8
W12
W15
ER2
ER4
ER5
ER10
ER11
ER13
ER15
ER19
ER21
S1
S2
S3
S4
P1
P2
P3
P4
P5
P6
P7
P8
P9
P10
P12
P14
P19
P20
P22
F6
RF1
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Burns District, Andrews R.A., Oregon
April 29, 2014
0 0.75 1.5 Miles

South Steens Allotment #6002 Map 10-Alternative E: Edge Development, Proposed Range Improvements
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Open WSA Ways
Fence
Perennial Streams
Intermittent Streams
Reservoir
Waterhole
Spring Development
Trough
Water Pipeline
Proposed Fence
Proposed Pipeline
Proposed Fence Removal
Proposed Reservoir Maintenance
Proposed Reservoir Abandonment
Proposed Spring Protection
Proposed Spring Development
Proposed Trough
Proposed Well
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
Private
Highways
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability or completeness of these data for individual or aggregate use with other data. Original data was compiled from various sources and may be updated without notification.
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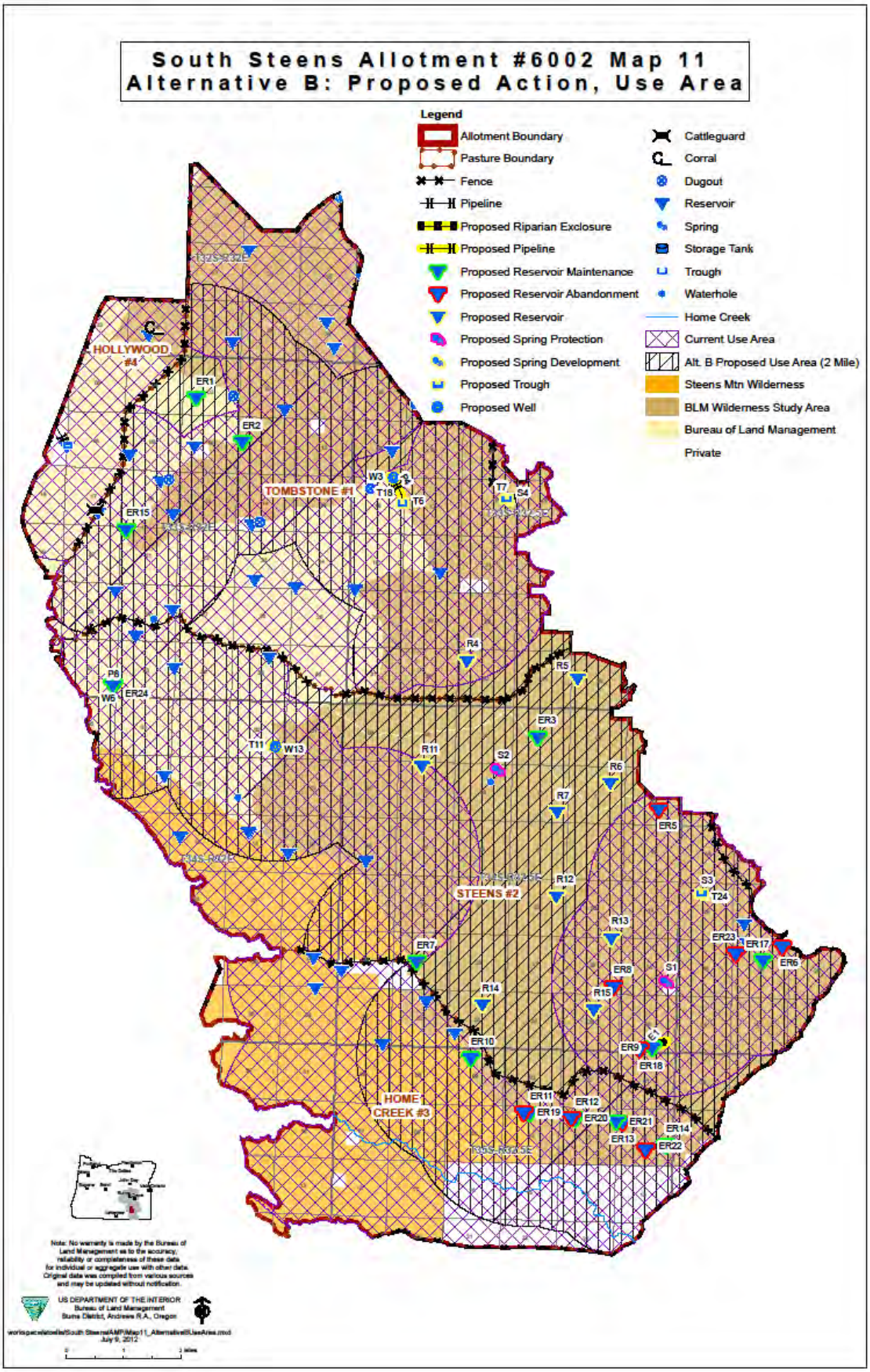
Bureau of Land Management
Burns District, Andrews R.A., Oregon
workspace/alcelle/South Steens/IAMP/Map10_AlternativeEProposedRIMPs.mxd
April 29, 2014
0 1 2 Miles
T32S-R32E
T33S-R32E
T33S-R32.5E
T34S-R32E
T34S-R32.5E
T35S-R32.5E
Solomon Canyon Road
Burns Creek Road
Steens Mountain Road
Little Blitzen River
Donner Und Blitzen River
ER1
ER2
ER15
W2
T3
W3
T18
T6
S4
T2
W4
W5
T19
T8
W6
T22
W7
T23
P9
T29
S2
F2
S3
S1
T32
W10
T34
W12
RF3
T17
W14
P21
T27


South Steens Allotment #6002 Map 11
Alternative B: Proposed Action, Use Area
Legend
Allotment Boundary
Pasture Boundary
Fence
Pipeline
Proposed Riparian Exclosure
Proposed Pipeline
Proposed Reservoir Maintenance
Proposed Reservoir Abandonment
Proposed Reservoir
Proposed Spring Protection
Proposed Spring Development
Proposed Trough
Proposed Well
Cattleguard
Corral
Dugout
Reservoir
Spring
Storage Tank
Trough
Waterhole
Home Creek
Current Use Area
Alt. B Proposed Use Area (2 Mile)
Steens Mtn Wilderness
BLM Wilderness Study Area
Bureau of Land Management
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
ER1
ER2
ER3
ER5
ER6
ER7
ER8
ER9
ER10
ER11
ER12
ER13
ER14
ER15
ER17
ER18
ER19
ER20
ER21
ER22
ER23
ER24
R4
R5
R6
R7
R11
R12
R13
R14
R15
W3
W6
W13
T6
T7
T11
T18
T24
S1
S2
S3
S4
P8
US DEPARTMENT OF THE INTERIOR
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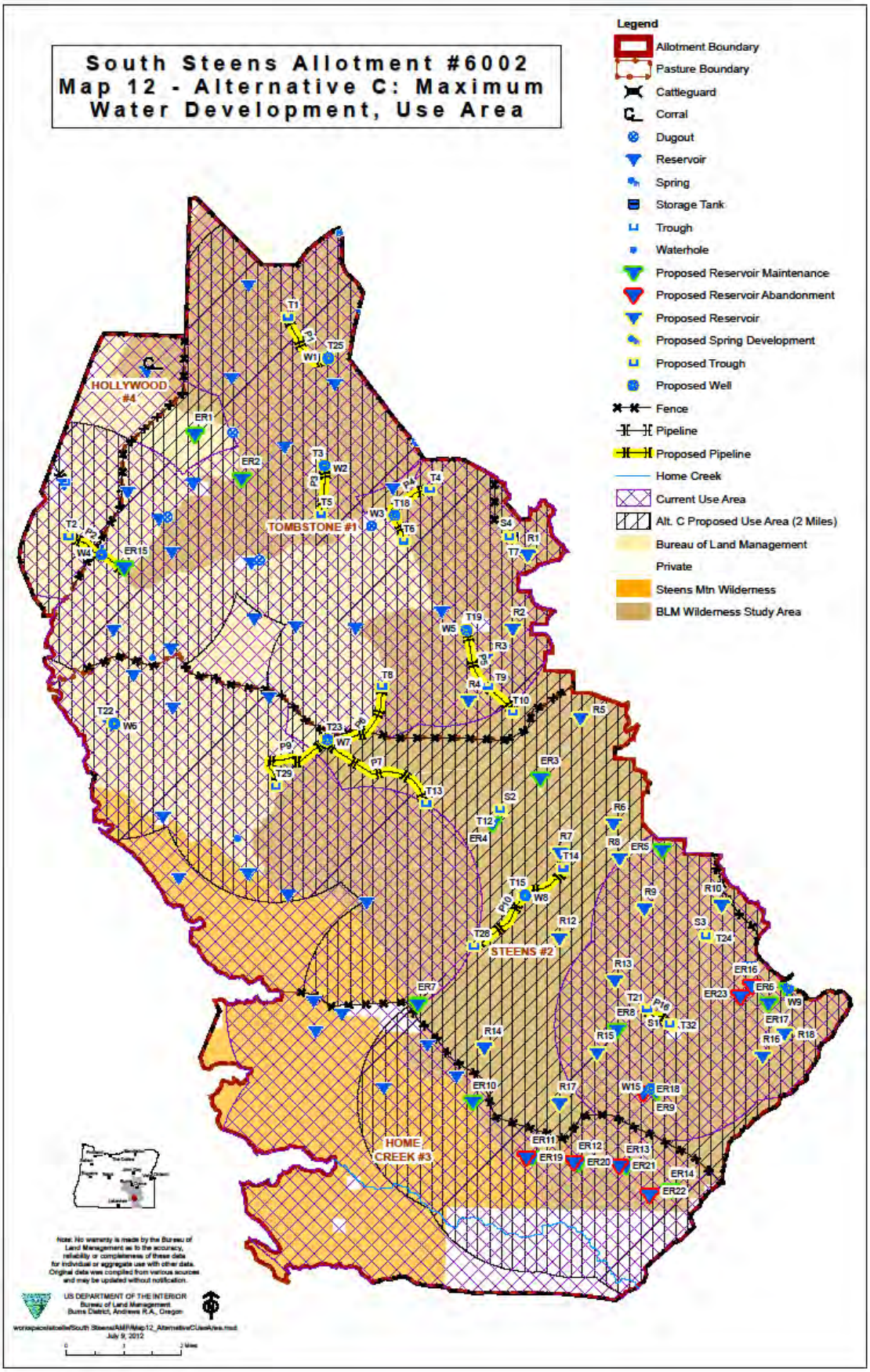
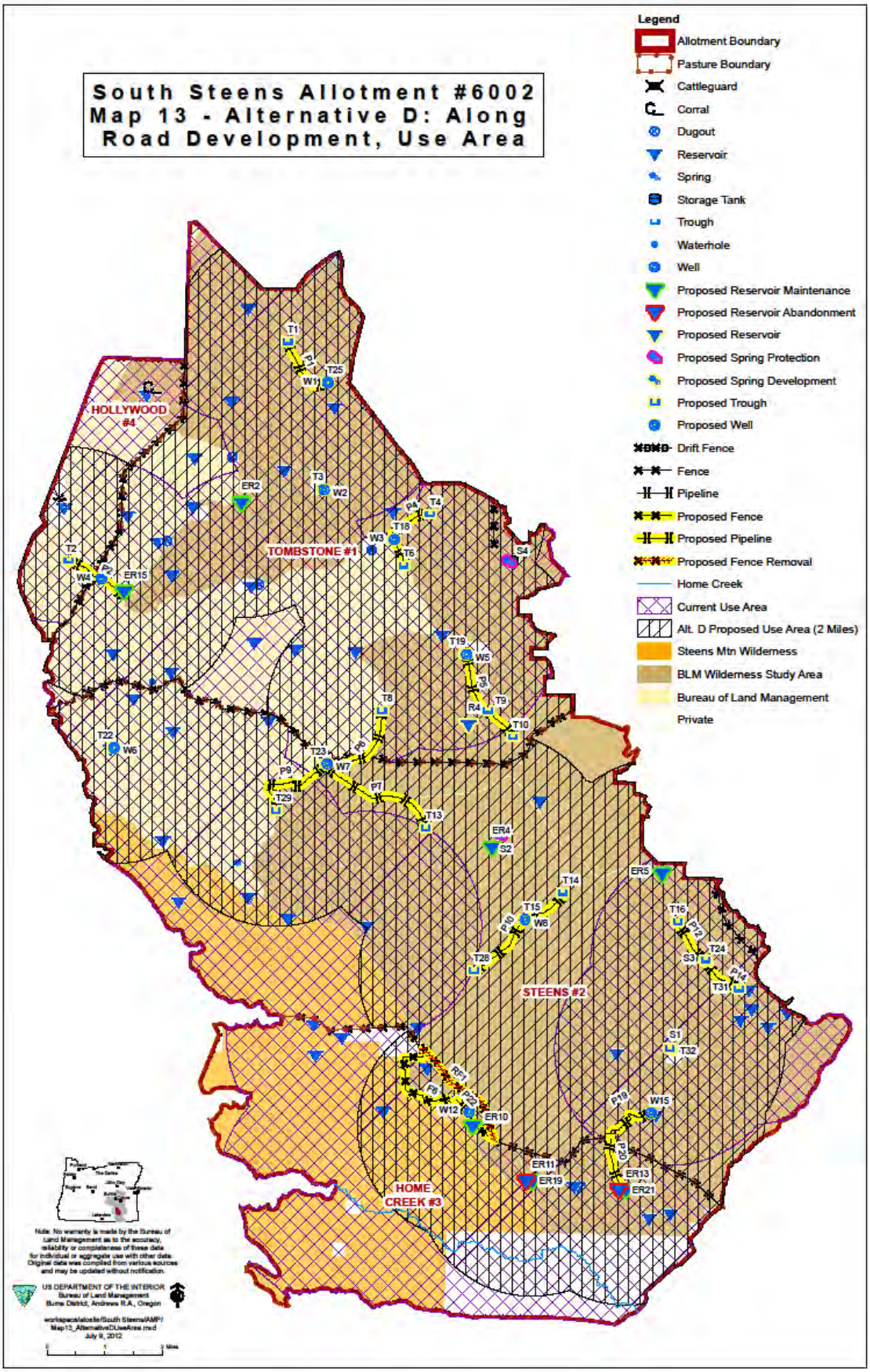
Burns District, Andrews R.A., Oregon
July 9, 2012


South Steens Allotment #6002
Map 12 - Alternative C: Maximum Water Development, Use Area
Legend
Allotment Boundary
Pasture Boundary
Cattleguard
Corral
Dugout
Reservoir
Spring
Storage Tank
Trough
Waterhole
Proposed Reservoir Maintenance
Proposed Reservoir Abandonment
Proposed Reservoir
Proposed Spring Development
Proposed Trough
Proposed Well
Fence
Pipeline
Proposed Pipeline
Home Creek
Current Use Area
Alt. C Proposed Use Area (2 Miles)
Bureau of Land Management
Private
Steens Mtn Wilderness
BLM Wilderness Study Area
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
US DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Burns District, Andrews R.A., Oregon
July 9, 2012


South Steens Allotment #6002
Map 13 - Alternative D: Along Road Development, Use Area
Legend
Allotment Boundary
Pasture Boundary
Cattleguard
Corral
Dugout
Reservoir
Spring
Storage Tank
Trough
Waterhole
Well
Proposed Reservoir Maintenance
Proposed Reservoir Abandonment
Proposed Reservoir
Proposed Spring Protection
Proposed Spring Development
Proposed Trough
Proposed Well
Drift Fence
Fence
Pipeline
Proposed Fence
Proposed Pipeline
Proposed Fence Removal
Home Creek
Current Use Area
Alt. D Proposed Use Area (2 Miles)
Steens Mtn Wilderness
BLM Wilderness Study Area
Bureau of Land Management
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T1
T25
W1
T3
W2
ER2
T4
T18
W3
T5
S4
T2
W4
ER15
T19
W5
T9
R4
T10
T8
T22
W6
T23
W7
T29
T13
ER4
S2
ER5
T14
T15
W8
T16
T24
S3
T31
T28
S1
T32
W12
ER10
W15
ER11
ER19
ER13
ER21
US DEPARTMENT OF THE INTERIOR
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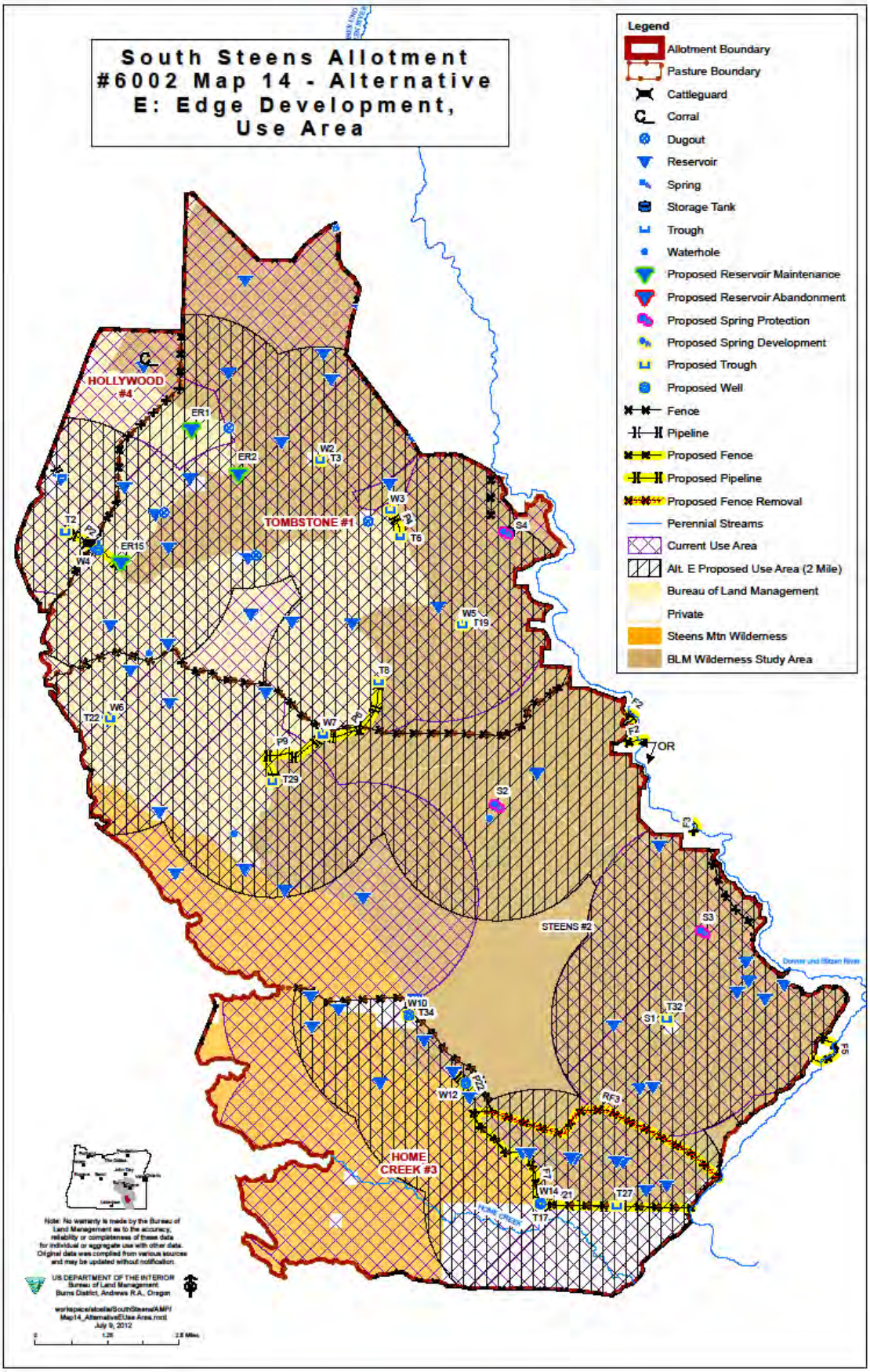
Burns District, Andrews R.A., Oregon


South Steens Allotment #6002 Map 14 - Alternative E: Edge Development, Use Area
Legend
Allotment Boundary
Pasture Boundary
Cattleguard
Corral
Dugout
Reservoir
Spring
Storage Tank
Trough
Waterhole
Proposed Reservoir Maintenance
Proposed Reservoir Abandonment
Proposed Spring Protection
Proposed Spring Development
Proposed Trough
Proposed Well
Fence
Pipeline
Proposed Fence
Proposed Pipeline
Proposed Fence Removal
Perennial Streams
Current Use Area
Alt. E Proposed Use Area (2 Mile)
Bureau of Land Management
Private
Steens Mtn Wilderness
BLM Wilderness Study Area
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
ER1
ER2
ER15
W2
T3
W3
T6
S4
T2
W4
W5
T19
T8
W6
T22
W7
P9
T29
S2
F2
OR
S3
W10
T34
S1
T32
W12
RF3
W14
T17
T27
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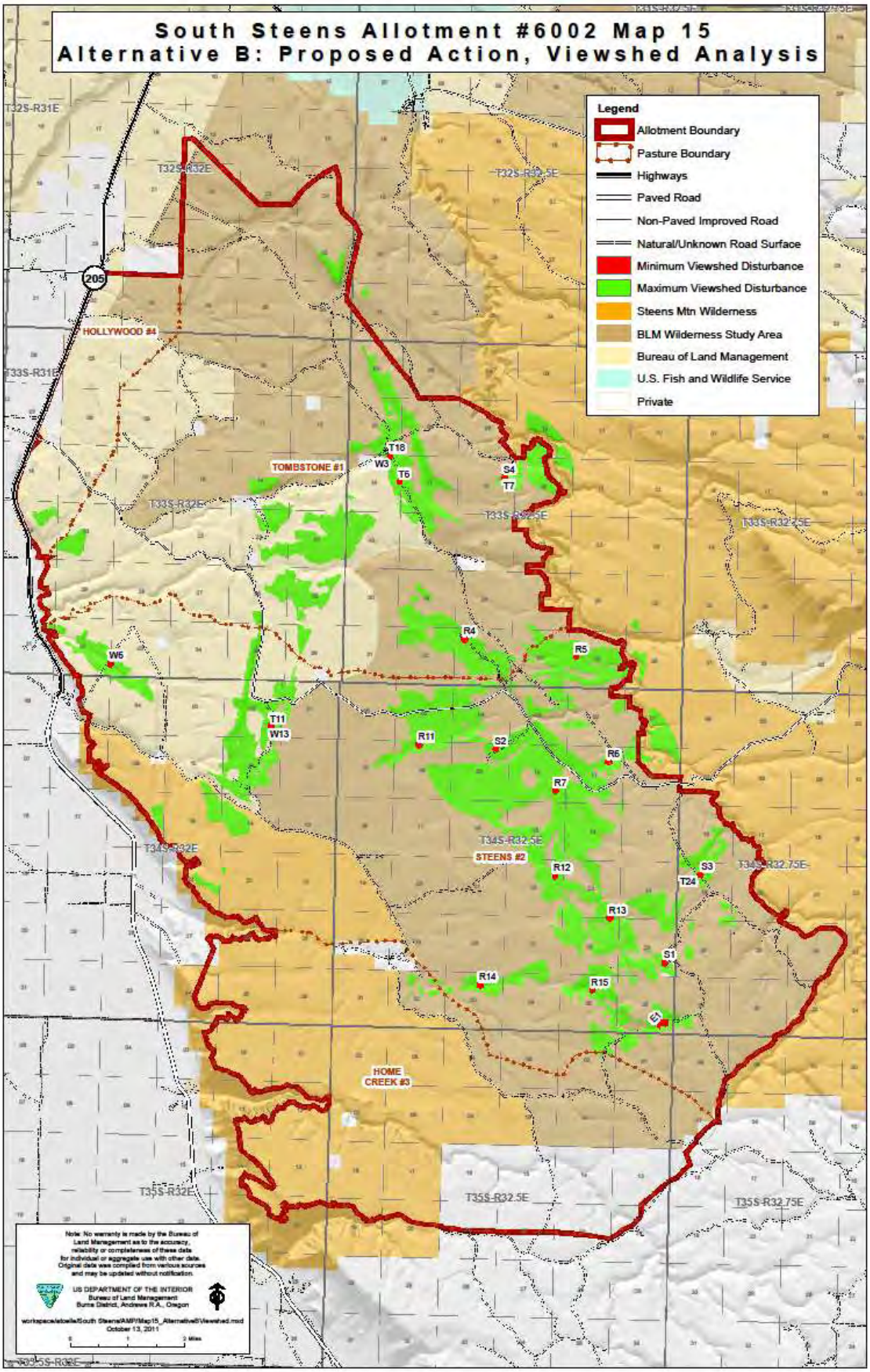
July 9, 2012


South Steens Allotment #6002 Map 15
Alternative B: Proposed Action, Viewshed Analysis
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
Steens Mtn Wilderness
BLM Wilderness Study Area
Bureau of Land Management
U.S. Fish and Wildlife Service
Private
T32S-R31E
T32S-R32E
T32S-R32.5E
205
HOLLYWOOD #4
T33S-R31E
T33S-R32E
T33S-R32.5E
T33S-R32.75E
TOMBSTONE #1
T18
W3
T6
S4
T7
R4
R5
W6
T11
W13
R11
S2
R6
R7
T34S-R32E
T34S-R32.5E
STEENS #2
R12
S3
T24
T34S-R32.75E
R13
S1
R14
R15
E1
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability or completeness of these data for individual or aggregate use with other data. Original data was compiled from various sources and may be updated without notification.
US DEPARTMENT OF THE INTERIOR
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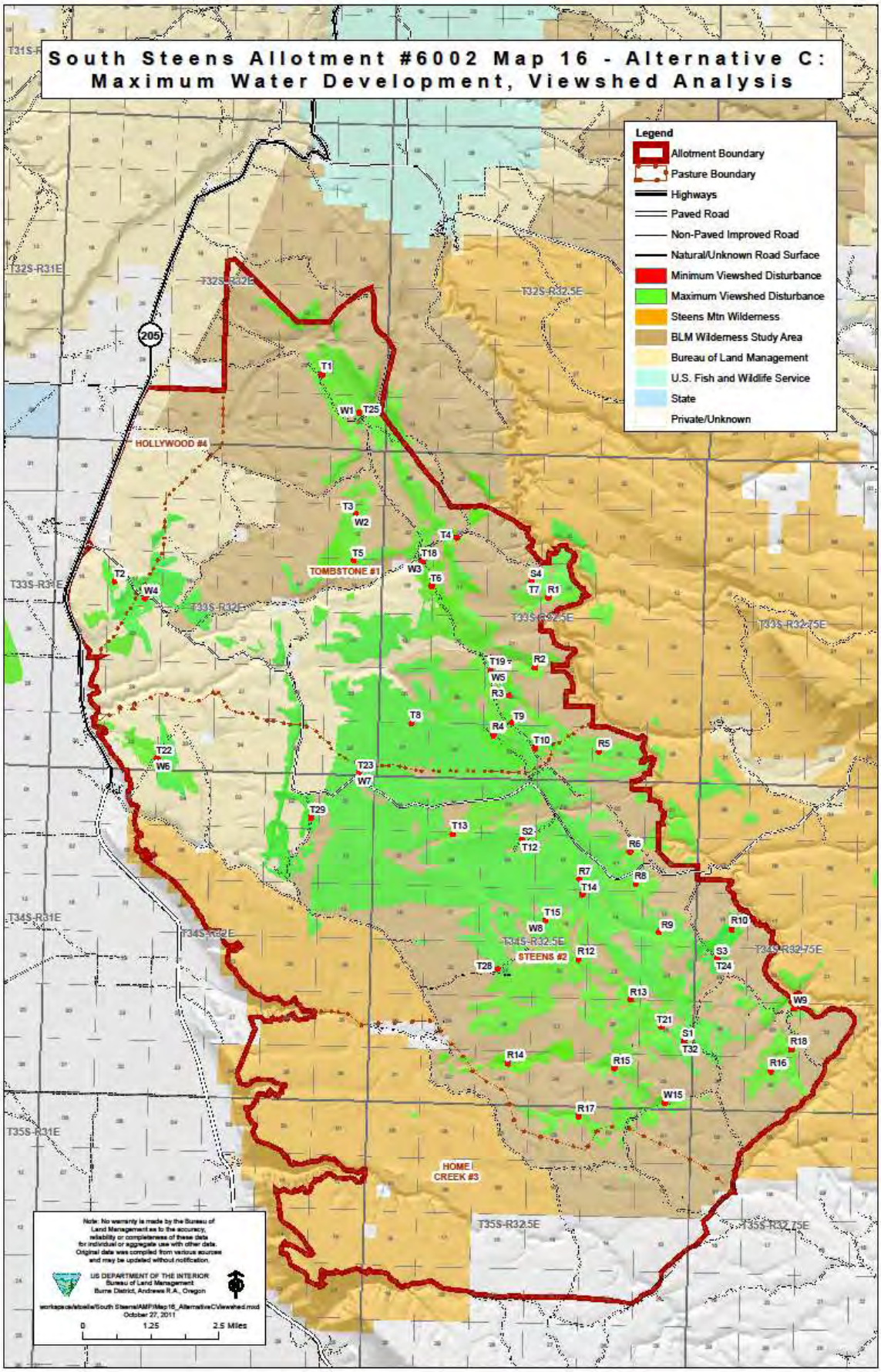
Burns District, Andrews R.A., Oregon
October 13, 2011


South Steens Allotment #6002 Map 16 - Alternative C:
Maximum Water Development, Viewshed Analysis
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
Steens Mtn Wilderness
BLM Wilderness Study Area
Bureau of Land Management
U.S. Fish and Wildlife Service
State
Private/Unknown
T31S-R
T32S-R31E
T32S-R32E
T32S-R32.5E
205
T1
W1
T25
HOLLYWOOD #4
T3
W2
T4
T5
T18
TOMBSTONE #1
W3
T6
T2
W4
T33S-R31E
T33S-R32E
T33S-R32.5E
T33S-R32.75E
S4
T7
R1
T19
R2
W5
R3
T8
R4
T9
T10
R5
T22
W6
T23
W7
T29
T13
S2
T12
R6
R7
T14
R8
T34S-R31E
T15
W8
R9
R10
T34S-R32E
T34S-R32.5E
STEENS #2
R12
S3
T24
T34S-R32.75E
T28
R13
W9
T21
S1
T32
R18
R14
R15
R16
W15
R17
T35S-R31E
HOME CREEK #3
T35S-R32.5E
T35S-R32.75E
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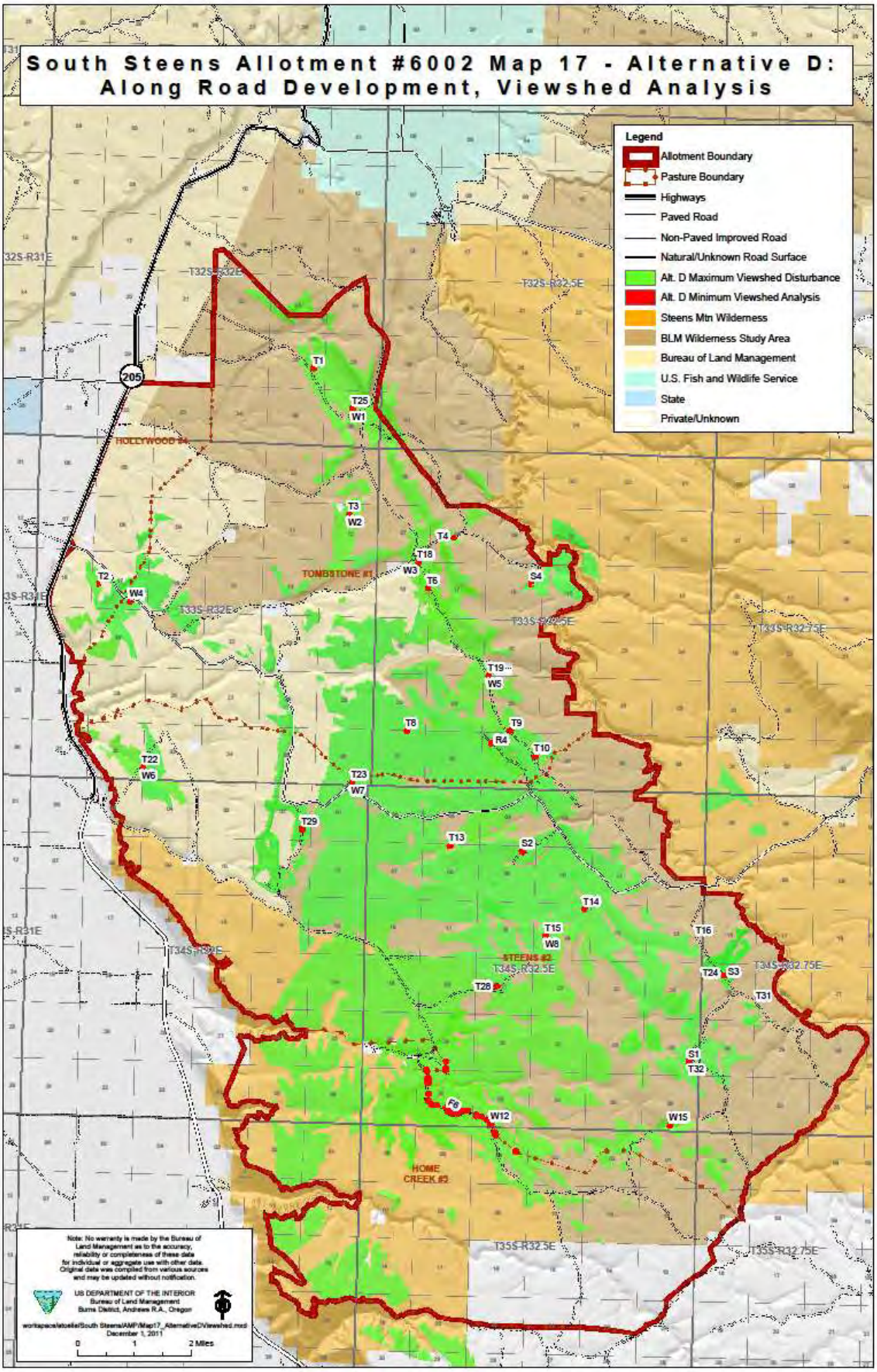
US DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Burns District, Andrews R.A., Oregon
workspace/sbelle/South Steens/AMP/Map16_AlternativeC/viewshed.mxd
October 27, 2011
0
1.25
2.5 Miles


South Steens Allotment #6002 Map 17 - Alternative D:
Along Road Development, Viewshed Analysis
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Alt. D Maximum Viewshed Disturbance
Alt. D Minimum Viewshed Analysis
Steens Mtn Wilderness
BLM Wilderness Study Area
Bureau of Land Management
U.S. Fish and Wildlife Service
State
Private/Unknown
205
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T32S-R32.5E
T33S-R32E
T33S-R32.5E
T33S-R32.75E
T34S-R32.5E
T34S-R32.75E
T35S-R32.5E
T35S-R32.75E
T1
T25
W1
T3
W2
T4
T18
W3
T6
S4
T2
W4
T19
W5
T8
T9
R4
T10
T22
W6
T23
W7
T29
T13
S2
T14
T15
W8
T16
T24
S3
T31
T26
S1
T32
F8
W12
W15
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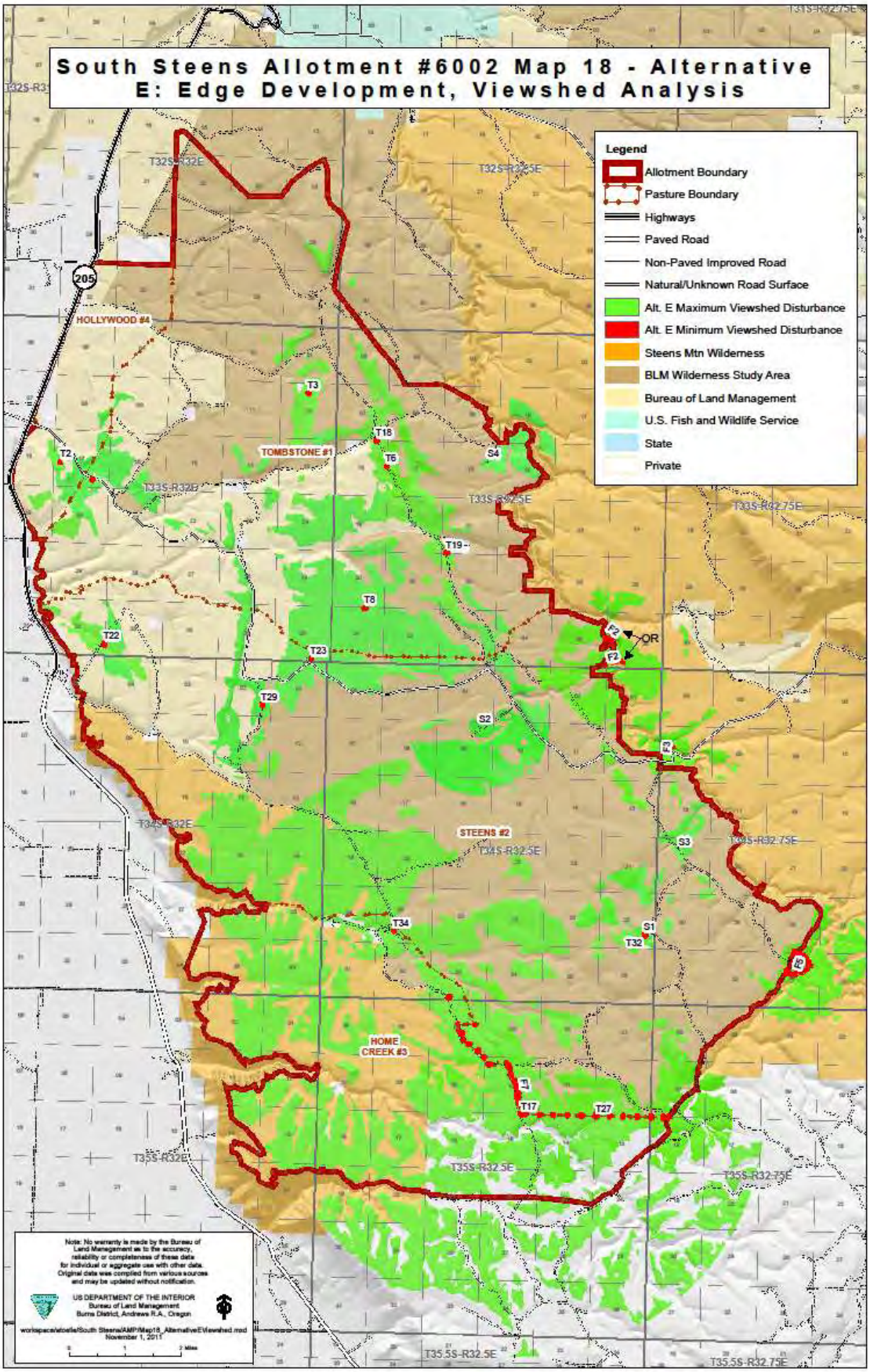
US DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Burns District, Andrews R.A., Oregon
December 1, 2011
0 1 2 Miles


South Steens Allotment #6002 Map 18 - Alternative E: Edge Development, Viewshed Analysis
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Alt. E Maximum Viewshed Disturbance
Alt. E Minimum Viewshed Disturbance
Steens Mtn Wilderness
BLM Wilderness Study Area
Bureau of Land Management
U.S. Fish and Wildlife Service
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T3
T18
T6
T2
S4
T19
T8
T22
T23
T29
S2
F2
OR
S3
T34
S1
T32
T17
T27
205
T32S-R32E
T32S-R32.5E
T33S-R32E
T33S-R32.5E
T33S-R32.75E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32.5E
T35.5S-R32.75E
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability or completeness of these data for individual or aggregate use with other data. Original data was compiled from various sources and may be updated without notification.
US DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Burns District, Andrews R.A., Oregon
November 1, 2011

Appendix D: Individual Estimated Viewshed Analysis Maps

A Viewshed Analysis was completed for all proposed developments with the exception of pipelines. Pipelines were not included in this analysis due to the fact that they will be buried, with only valve covers periodically visible above ground; a viewshed analysis of the entire pipeline would inaccurately show a much larger viewshed disturbance than would actually occur.

The goal of this analysis was to estimate both the maximum and minimum visual disturbance of the proposed developments within the allotment and surrounding area. A viewshed analysis shows all possible locations, based on the input data, that a knowing observer would likely be able to see an object. A knowing observer is someone who knows to look for the object; a casual observer would not know to look for the object and may not notice it and be able to identify it from far distances. All values used to conduct the analysis were the best estimates based on professional judgment. It is important to note that this analysis is based on estimated numbers and only takes into consideration the information discussed below with the topography of the site. It does not take into account vegetation or rockiness, which would reduce the viewshed disturbance or PDEs, which generally decrease the visual disturbance of developments. The estimated maximum and minimum viewshed disturbance areas are estimates and should be treated as such. In most cases, the actual visual disturbance of these proposed developments is closer to the minimum than the maximum disturbance, due the presence of vegetation and the associated PDEs.

These viewshed analysis maps were created using the ESRI ArcMap Viewshed Tool (Arc Toolbox→ 3D Analyst Tools→ Raster Surface→ Viewshed). The input raster was dem10bigbox; the input point was the individual proposed improvement. The output raster was labeled so that it would be identifiable by the appropriate proposed development; default Z Factor of one was used. In order for the viewshed analysis to occur, the height of the proposed development (OFFSETA), the height of the observer (OFFSETB), an outer radius to limit the analysis area based on the maximum distance it is estimated the development would be visible at (RADIUS2), and the upper and lower limits to the vertical angles to be included in the analysis (VERT1, VERT2) had to be determined. For all analysis's, the height of the observer (OFFSETB) was set at six feet (1.83 meters), and VERT1 was set at 90° while VERT2 was set at -90° in order to include all areas above and below the proposed development within the analysis.

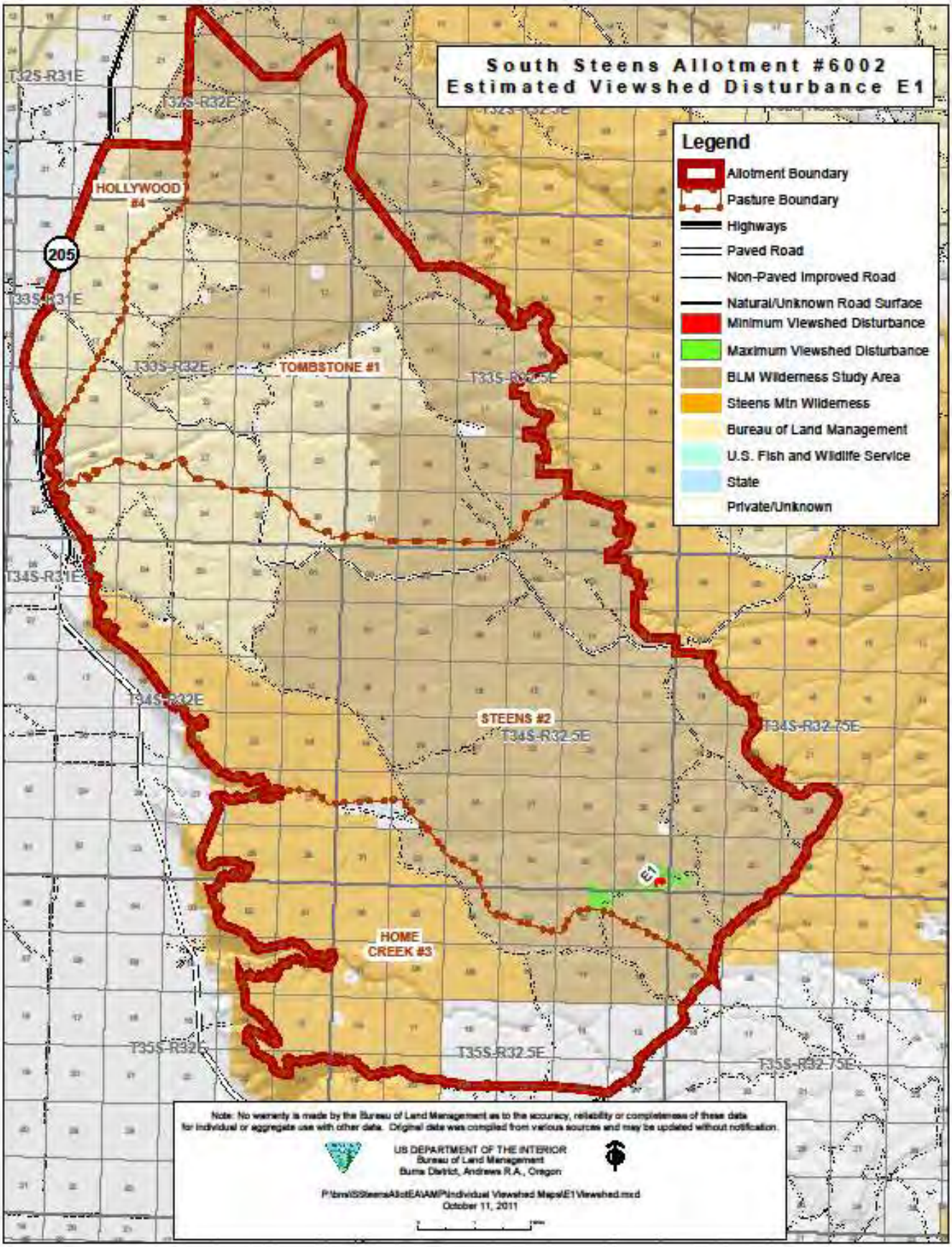
Maximum Viewshed Disturbance Analysis: The values for OFFSETA varied depending on the type of development. For proposed reservoirs, OFFSETA was set at six meters (19.69 feet) which is the estimated maximum height of any portion of a new reservoir. For proposed springs, OFFSETA was set at 1.68 meters (5.5 feet) which would be the maximum height of the protection fence, which is the tallest part of the spring development. The proposed exclosure had the same OFFSETA as the proposed springs since it would only include a fence. Proposed fences used the same value. For proposed wells, OFFSETA was set at six meters (19.69 feet) since it was determined that this would be the maximum height of any power source at the well. Proposed troughs were assigned an OFFSETA of 0.92 meters (3.02 feet), which would be the maximum height of any trough. For the proposed reservoirs, spring development/protection, troughs, exclosure, and fences RADIUS2 was set to 2000 meters (6,561.68 feet, 1.24 miles), for

proposed wells, it was set to 7000 meters (22,965.88 feet, 4.35 meters). These are the distances determined to be the maximum distance these developments would be visible at.

Minimum Viewshed Disturbance Analysis: The values for OFFSETA were the same as for the Maximum Viewshed Disturbance Analysis, with the exception of wells, since the minimum analysis would have a shorter power source, making the OFFSETA value lower. For proposed wells, OFFSETA was set at 1.6 meters (5.25 feet). RADIUS2 was decreased for all developments to 100 meters (328.08 feet) since it is likely that shrubs, grasses, and rocks would often hide the proposed development at this distance, especially when PDEs are utilized. On the ground, in areas of dense juniper trees, this number could be lower.

E1 ..... D-4
R1 ..... D-5
R2 ..... D-6
R3 ..... D-7
R4 ..... D-8
R5 ..... D-9
R6 ..... D-10
R7 ..... D-11
R8 ..... D-12
R9 ..... D-13
R10 ..... D-14
R11 ..... D-15
R12 ..... D-16
R13 ..... D-17
R14 ..... D-18
R15 ..... D-19
R16 ..... D-20
R17 ..... D-21
R18 ..... D-22
S1 ..... D-23
S2 ..... D-24
S3 ..... D-25
S4 ..... D-26
T1 ..... D-27
T2 ..... D-28
T3 ..... D-29
T4 ..... D-30
T5 ..... D-31
T6 ..... D-32
T7 ..... D-33
T8 ..... D-34
T9 ..... D-35
T10 ..... D-36
T11 ..... D-37
T12 ..... D-38

T13 ..... D-39
T14 ..... D-40
T15 ..... D-41
T16 ..... D-42
T17 ..... D-43
T18 ..... D-44
T19 ..... D-45
T21 ..... D-46
T22 ..... D-47
T23 ..... D-48
T24 ..... D-49
T25 ..... D-50
T27 ..... D-51
T28 ..... D-52
T29 ..... D-53
T31 ..... D-54
T32 ..... D-55
T34 ..... D-56
W1 ..... D-57
W2 ..... D-58
W3 ..... D-59
W4 ..... D-60
W5 ..... D-61
W6 ..... D-62
W7 ..... D-63
W8 ..... D-64
W9 ..... D-65
W10 ..... D-66
W12 ..... D-67
W13 ..... D-68
W14 ..... D-69
W15 ..... D-70
F2 ..... D-71
F3 ..... D-72
F5 ..... D-73
F6 ..... D-74
F7 ..... D-75


South Steens Allotment #6002
Estimated Viewshed Disturbance E1
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
U.S. Fish and Wildlife Service
State
Private/Unknown
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.5E
T34S-R32.75E
E1
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
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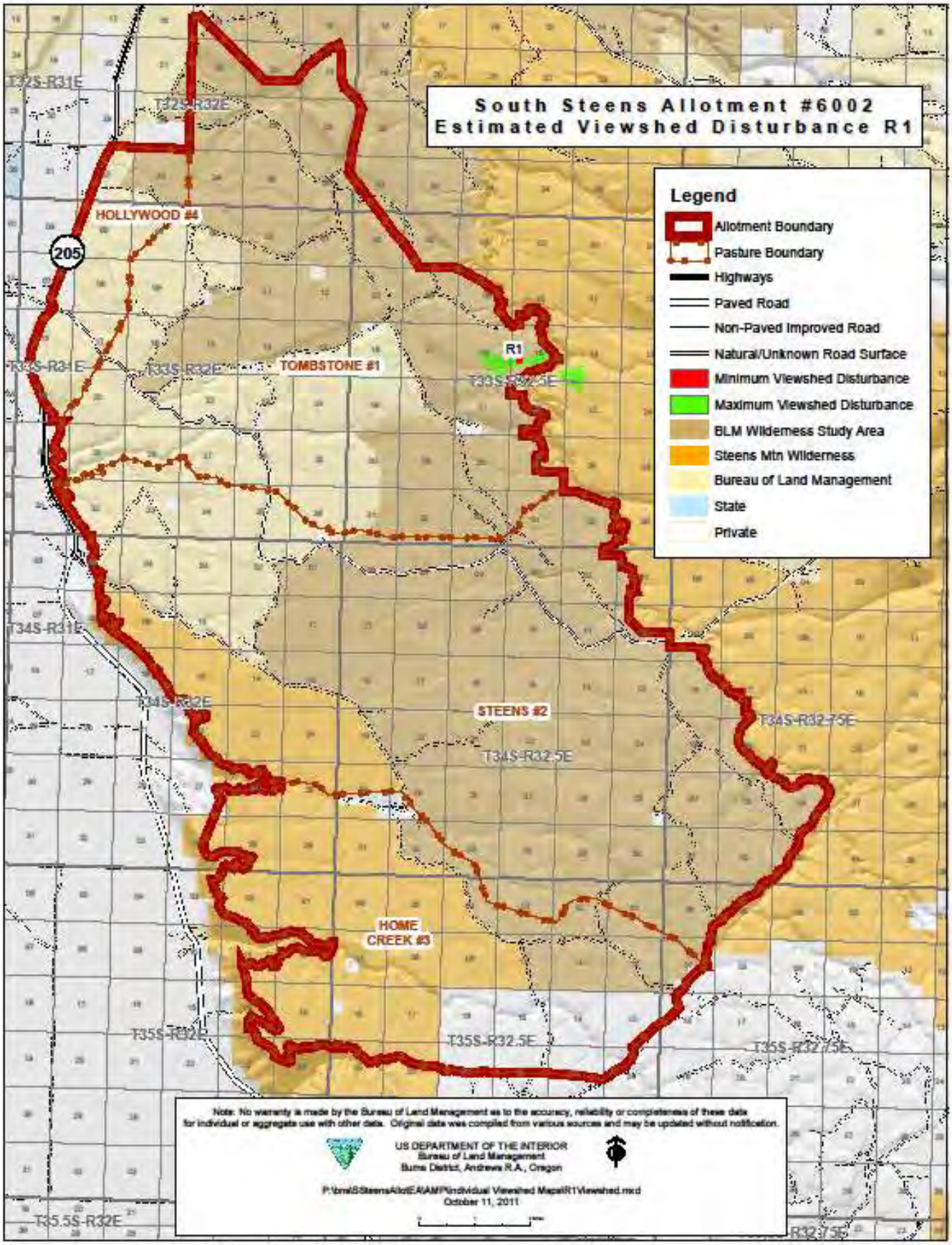
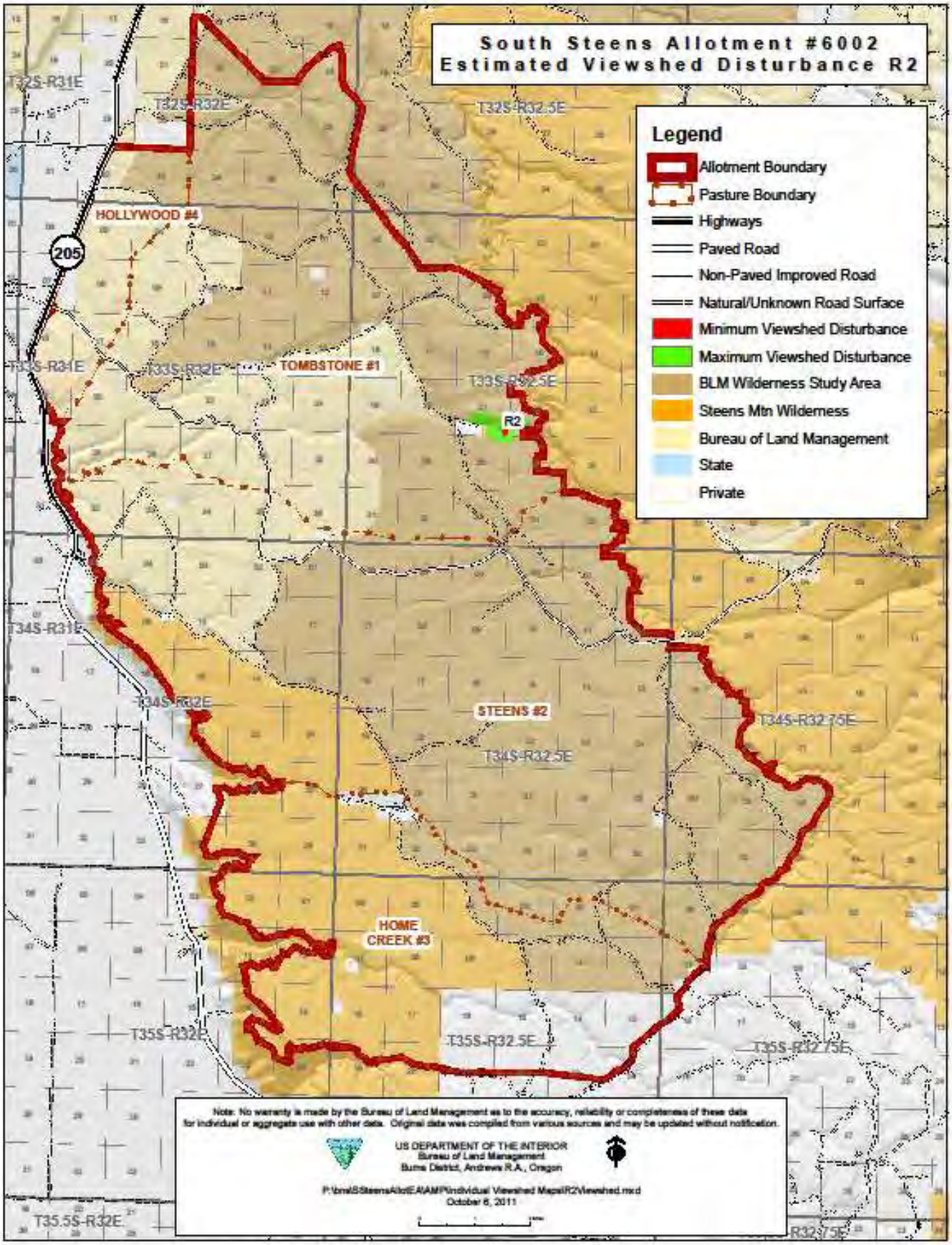
Burns District, Andrews R.A., Oregon
October 11, 2011


South Steens Allotment #6002
Estimated Viewshed Disturbance R1
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
R1
205
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability or completeness of these data for individual or aggregate use with other data. Original data was compiled from various sources and may be updated without notification.
US DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Burns District, Andrews R.A., Oregon
October 11, 2011


South Steens Allotment #6002
Estimated Viewshed Disturbance R2
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
T32S-R32.5E
HOLLYWOOD #4
205
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
R2
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.75E
T34S-R32.5E
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability or completeness of these data for individual or aggregate use with other data. Original data was compiled from various sources and may be updated without notification.
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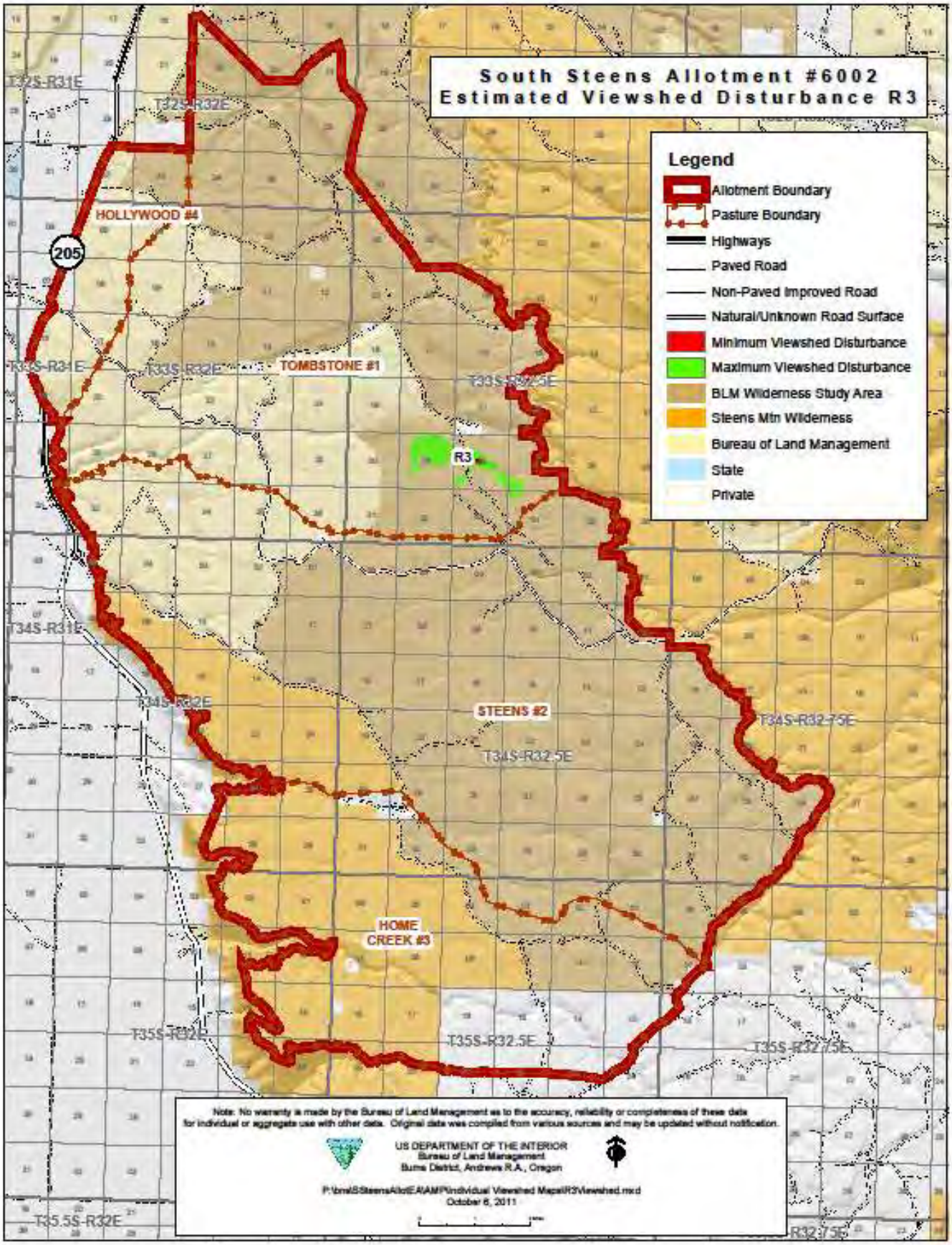
Burns District, Andrews R.A., Oregon
October 6, 2011


South Steens Allotment #6002
Estimated Viewshed Disturbance R3
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
R3
205
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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US DEPARTMENT OF THE INTERIOR
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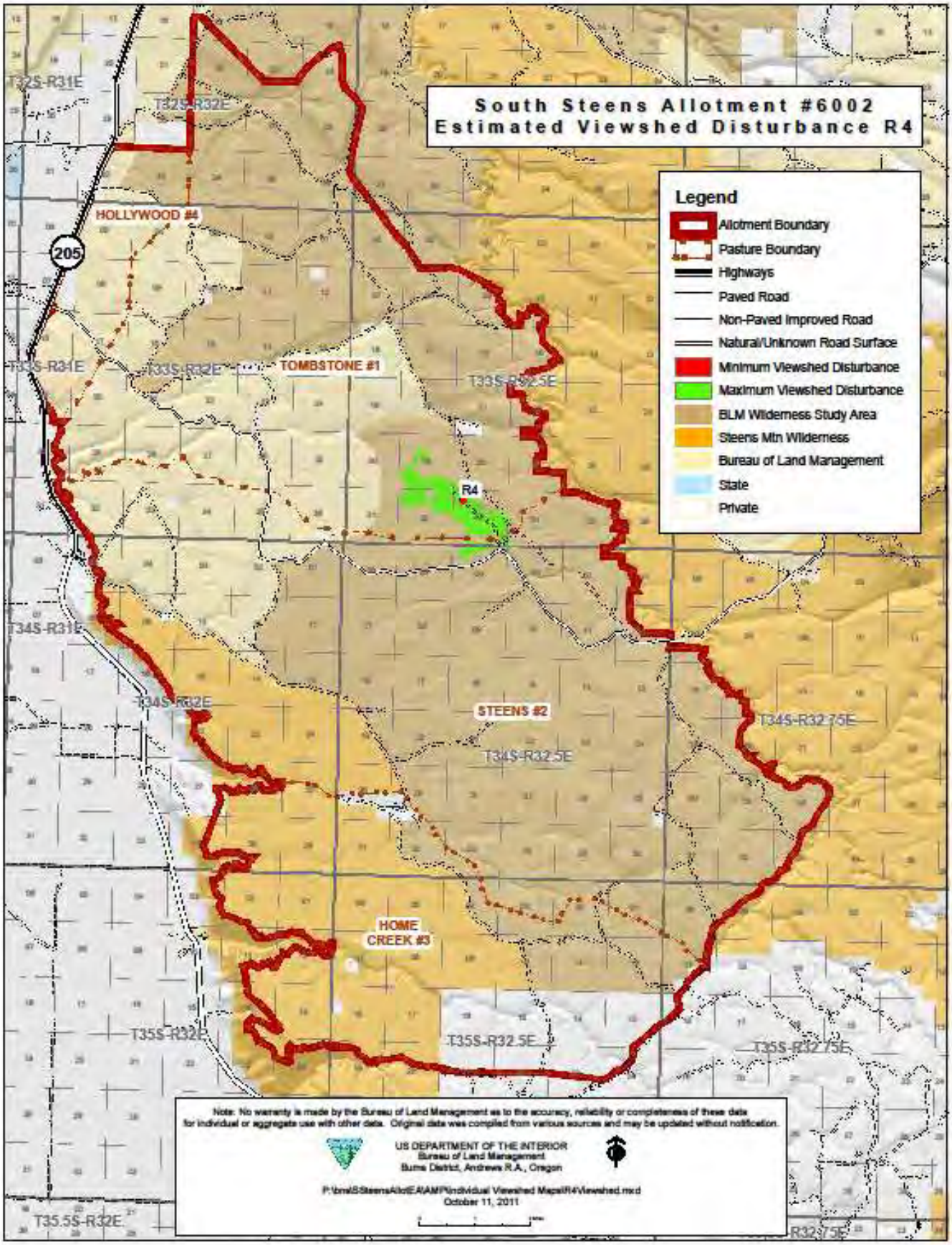
Burns District, Andrews R.A., Oregon
October 6, 2011


South Steens Allotment #6002
Estimated Viewshed Disturbance R4
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
R4
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.75E
T34S-R32.5E
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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US DEPARTMENT OF THE INTERIOR
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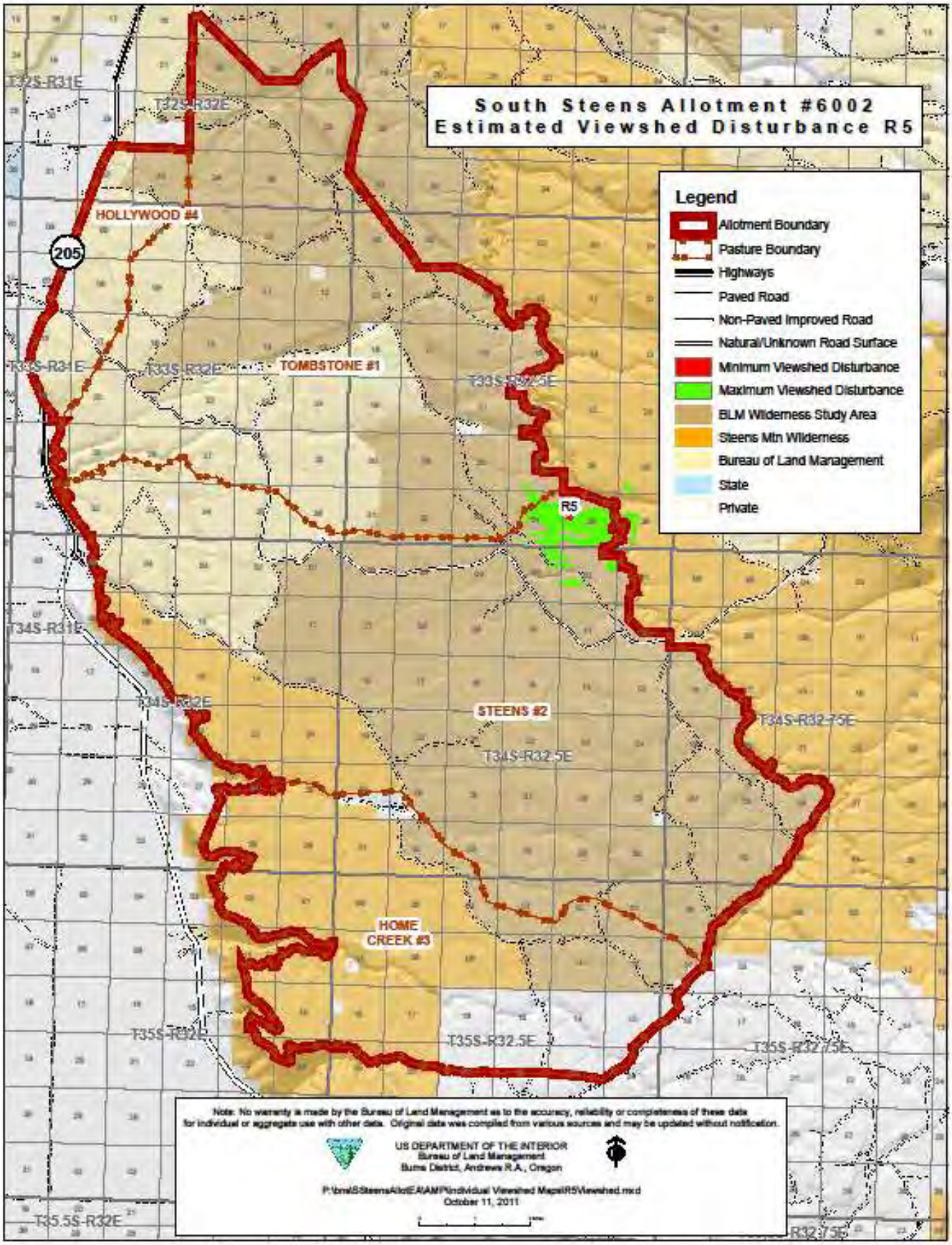
October 11, 2011


South Steens Allotment #6002
Estimated Viewshed Disturbance R5
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
R5
205
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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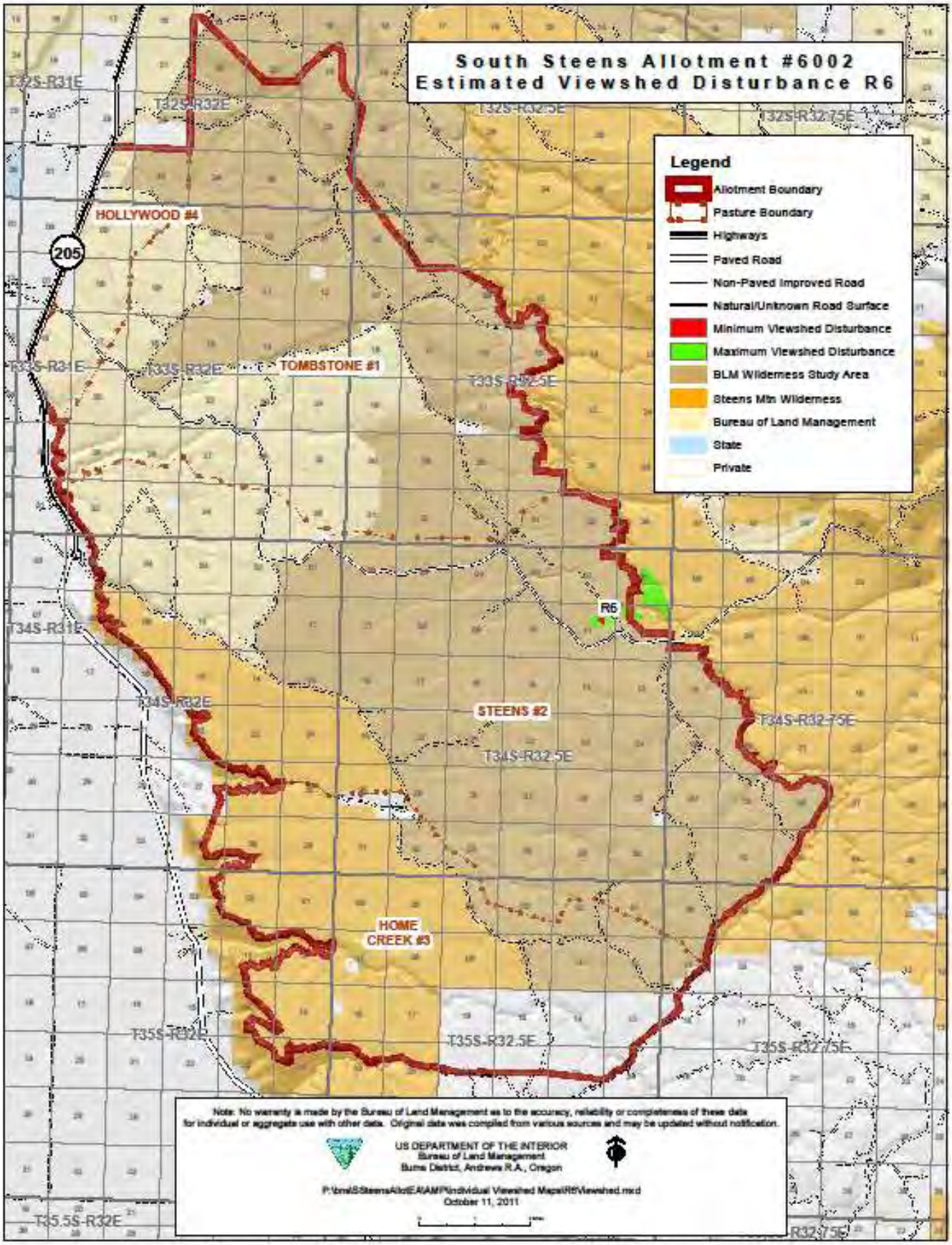
South Steens Allotment #6002
Estimated Viewshed Disturbance R6
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
R6
205
T32S-R31E
T32S-R32E
T32S-R32.5E
T32S-R32.75E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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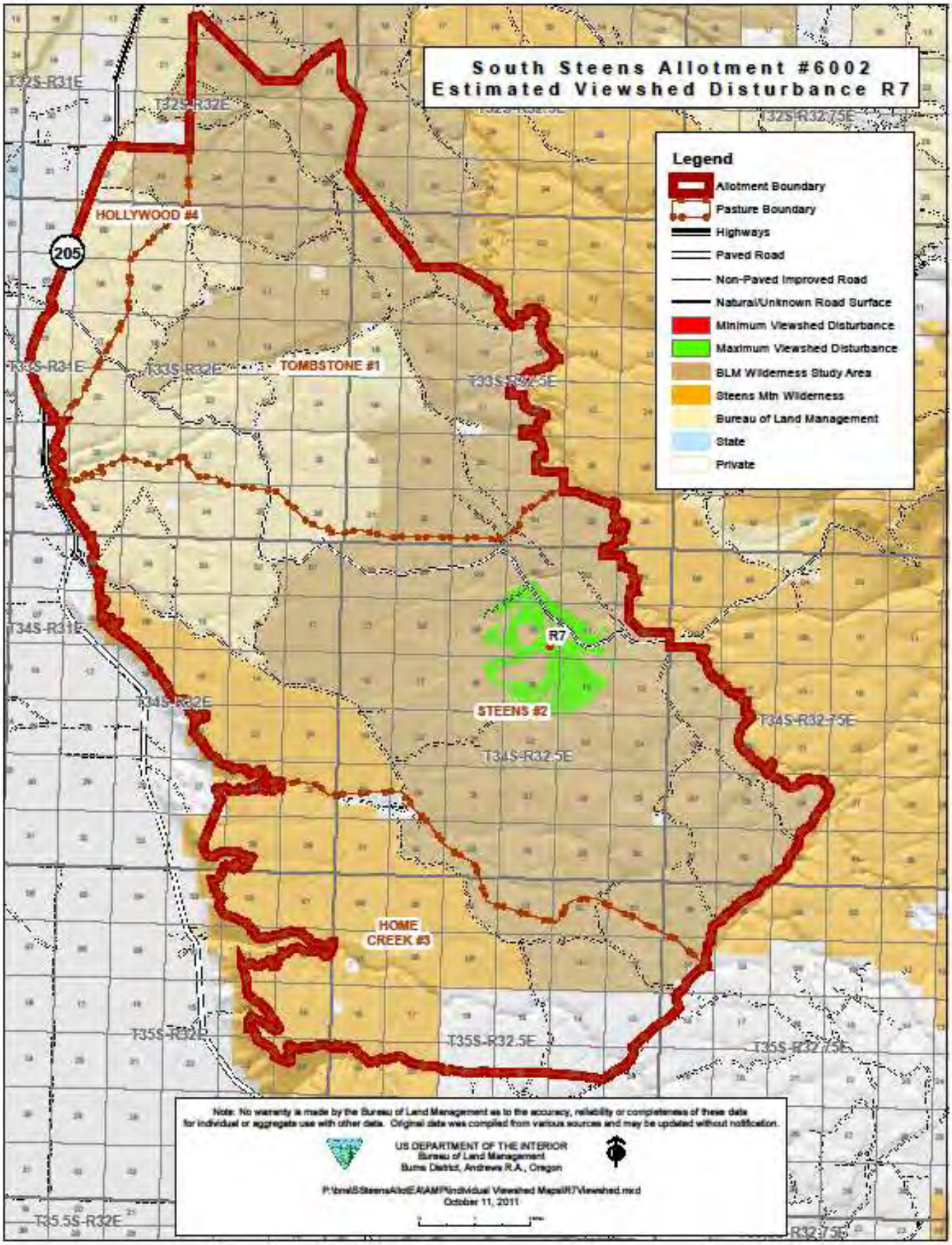
South Steens Allotment #6002
Estimated Viewshed Disturbance R7
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
R7
205
T32S-R31E
T32S-R32E
T32S-R32.75E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
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T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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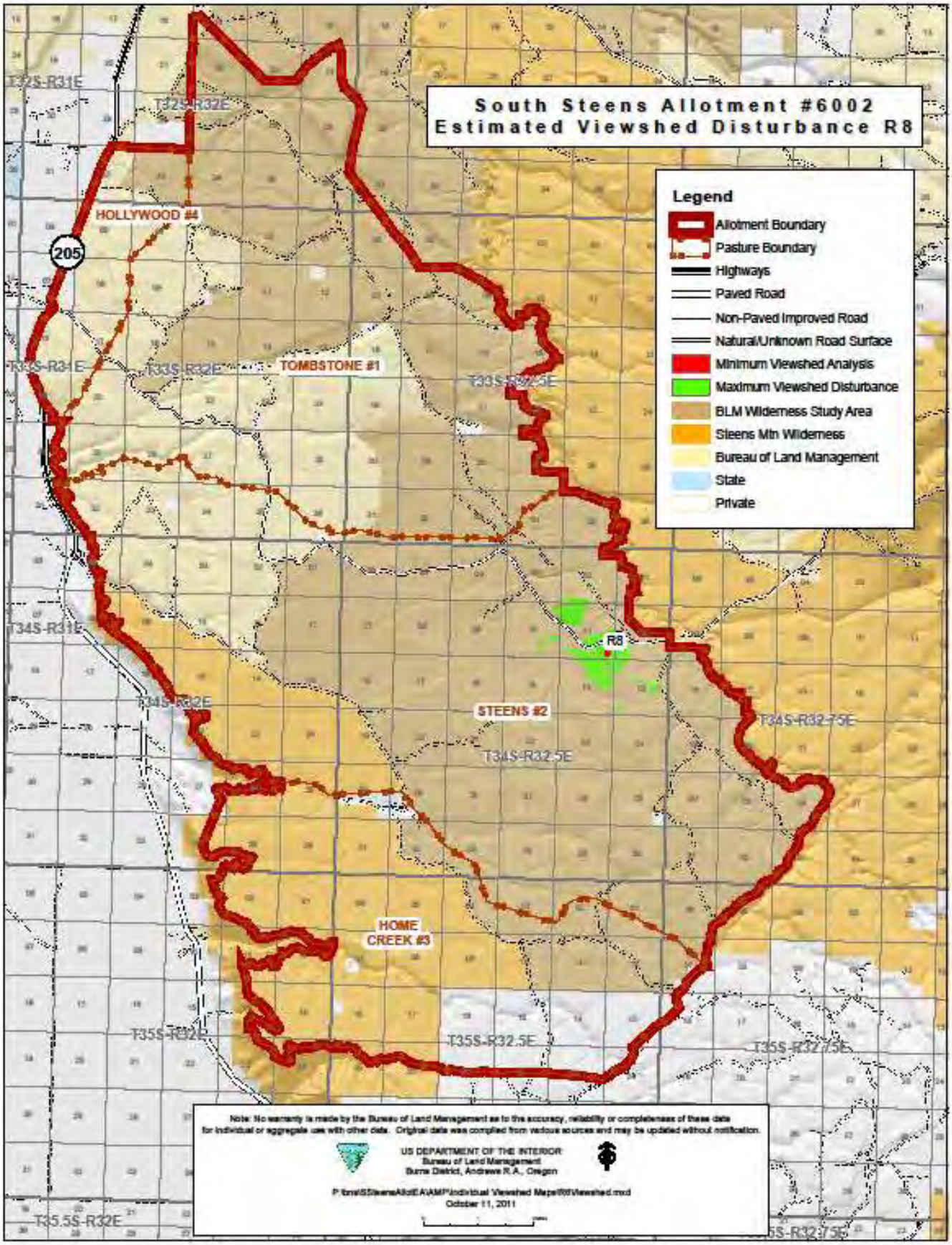
South Steens Allotment #6002
Estimated Viewshed Disturbance R8
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Analysis
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
205
R8
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
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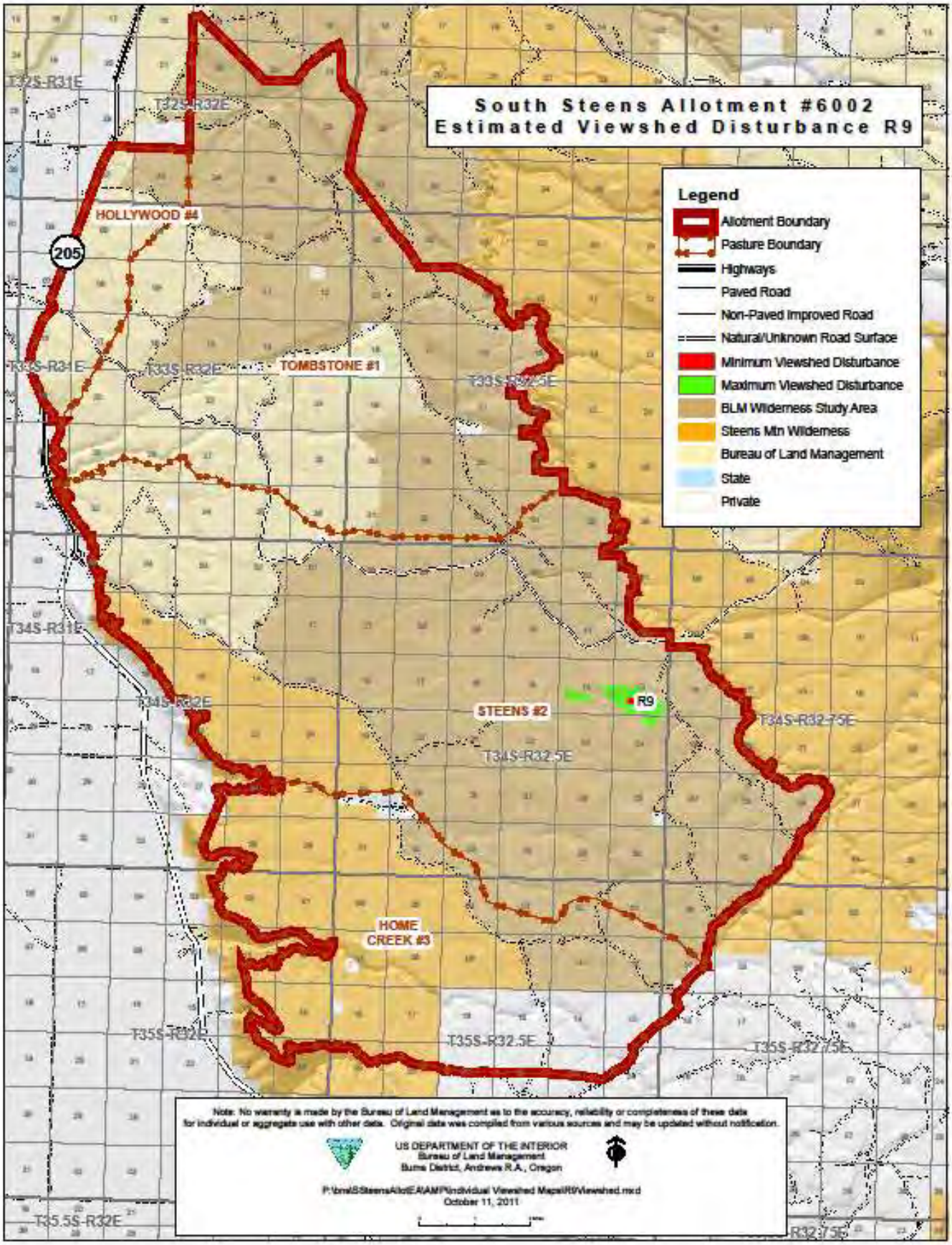
South Steens Allotment #6002
Estimated Viewshed Disturbance R9
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
R9
205
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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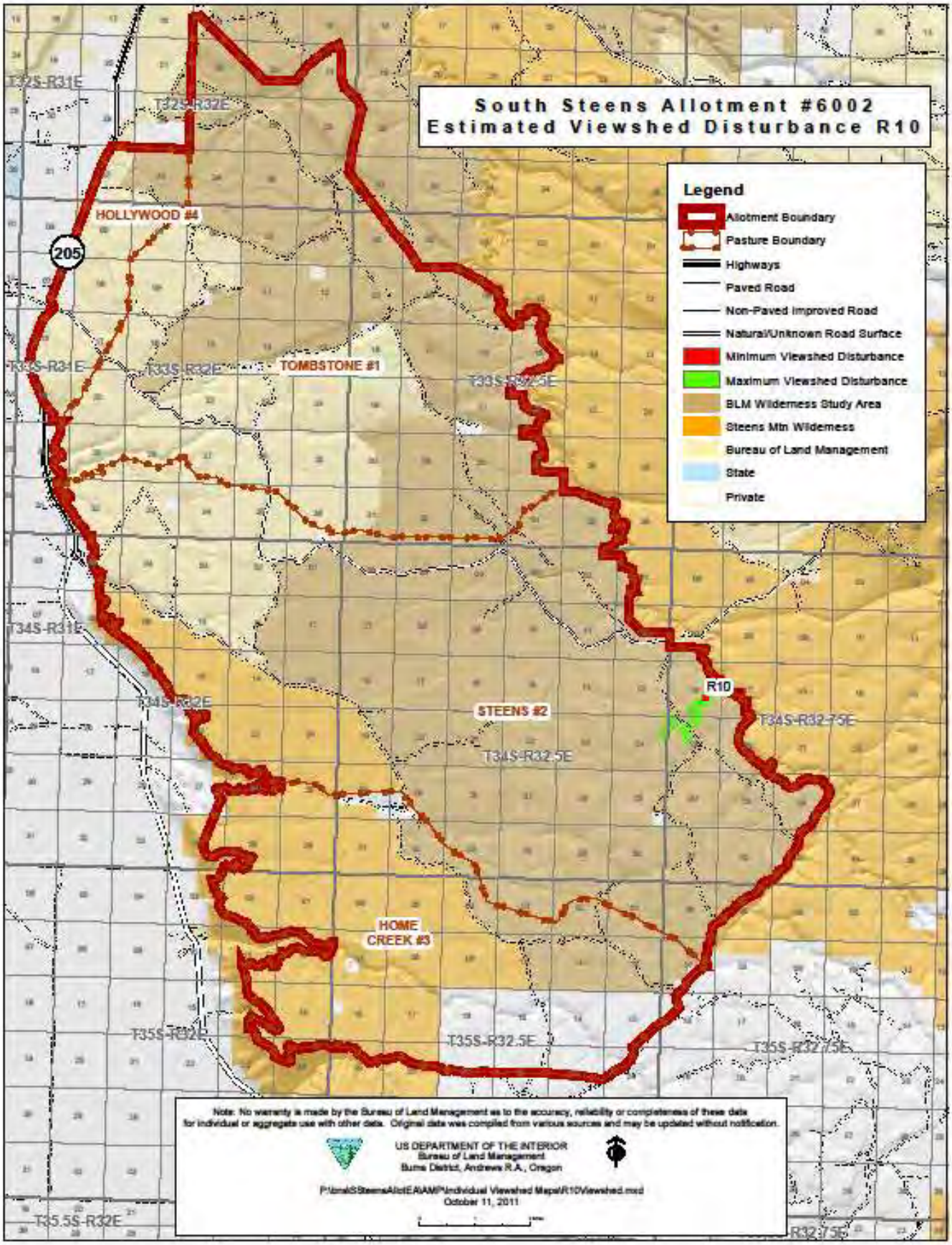
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Estimated Viewshed Disturbance R10
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
R10
205
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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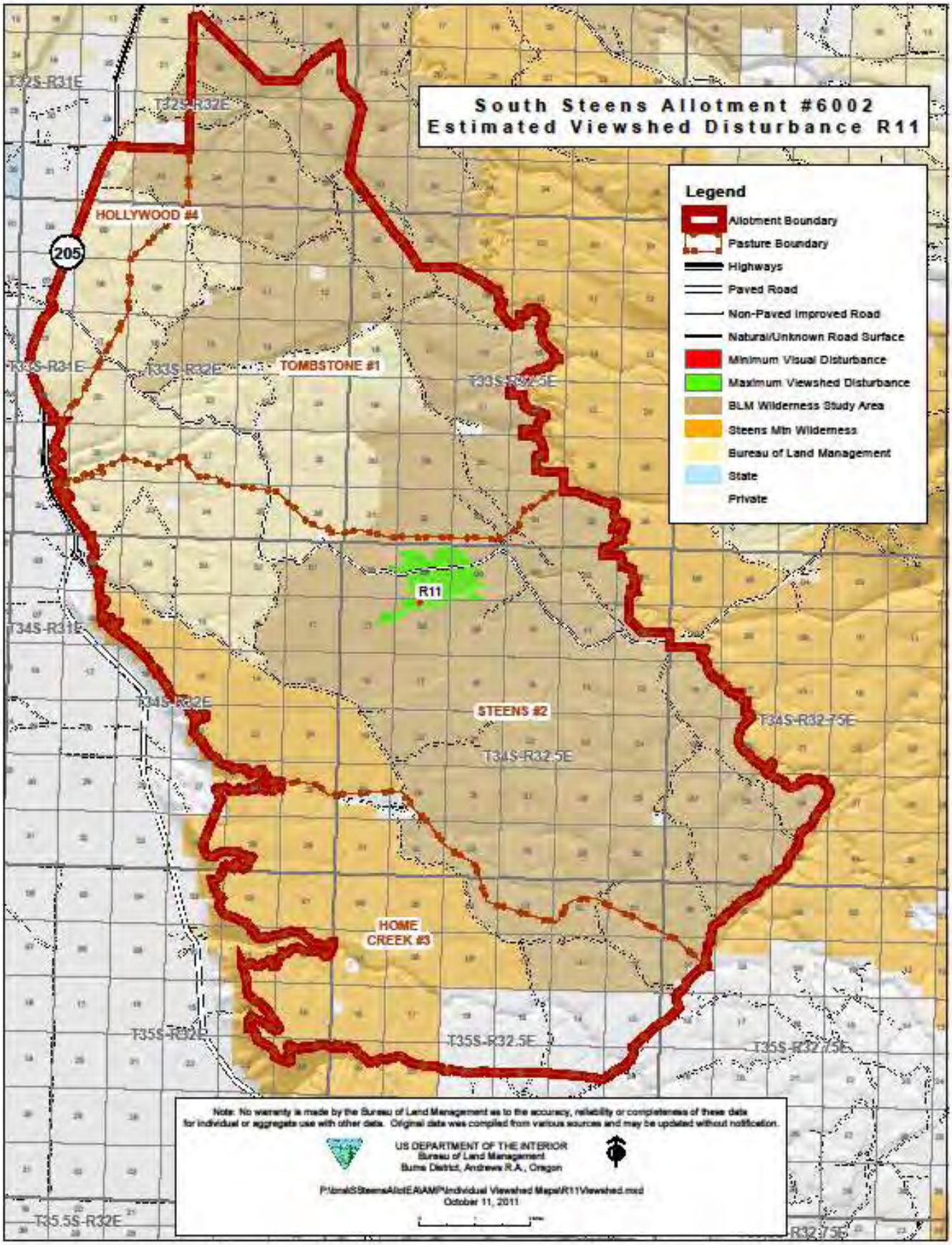
South Steens Allotment #6002
Estimated Viewshed Disturbance R11
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Visual Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
R11
205
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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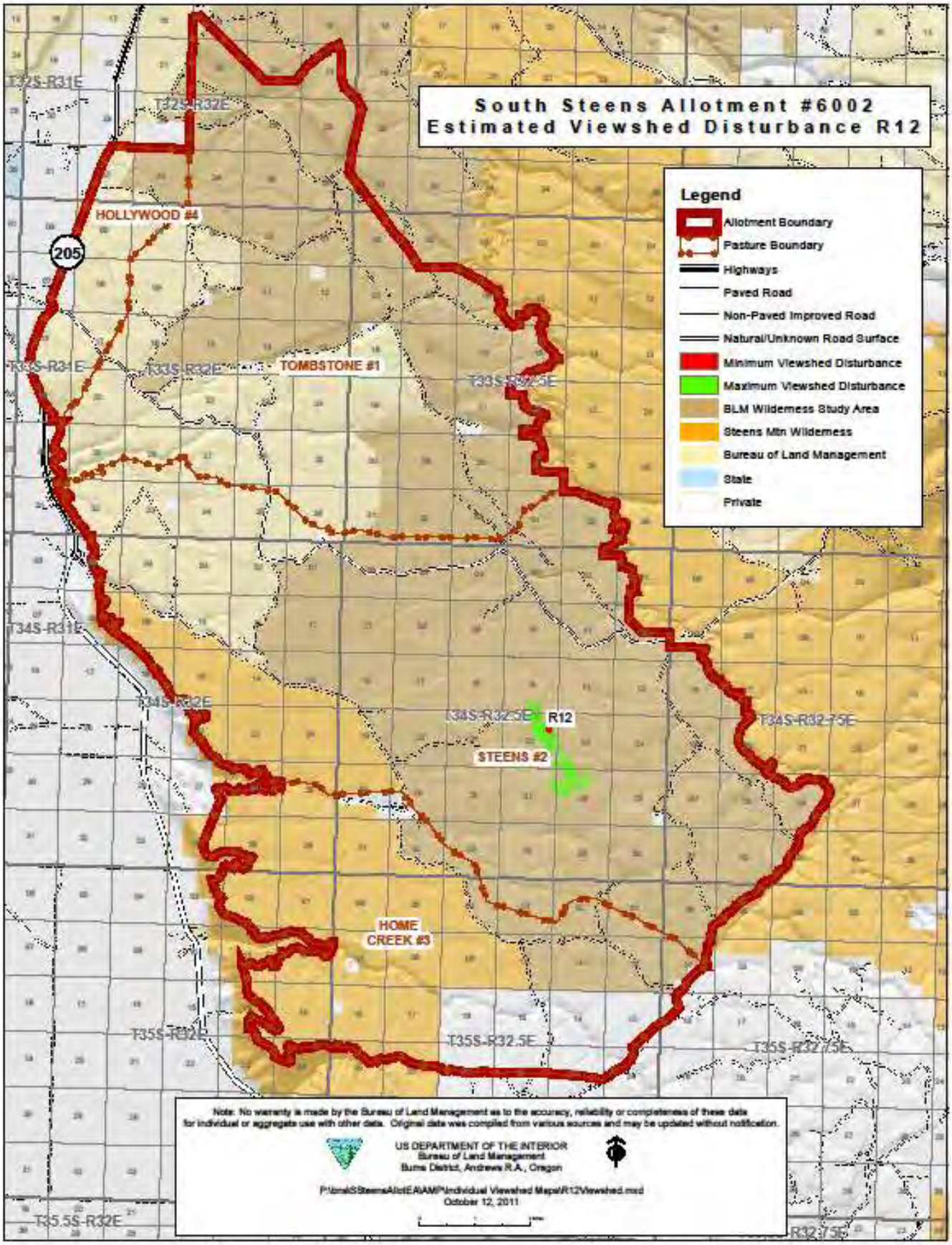
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Estimated Viewshed Disturbance R12
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
R12
205
T32S-R31E
T32S-R32E
T33S-R31E
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T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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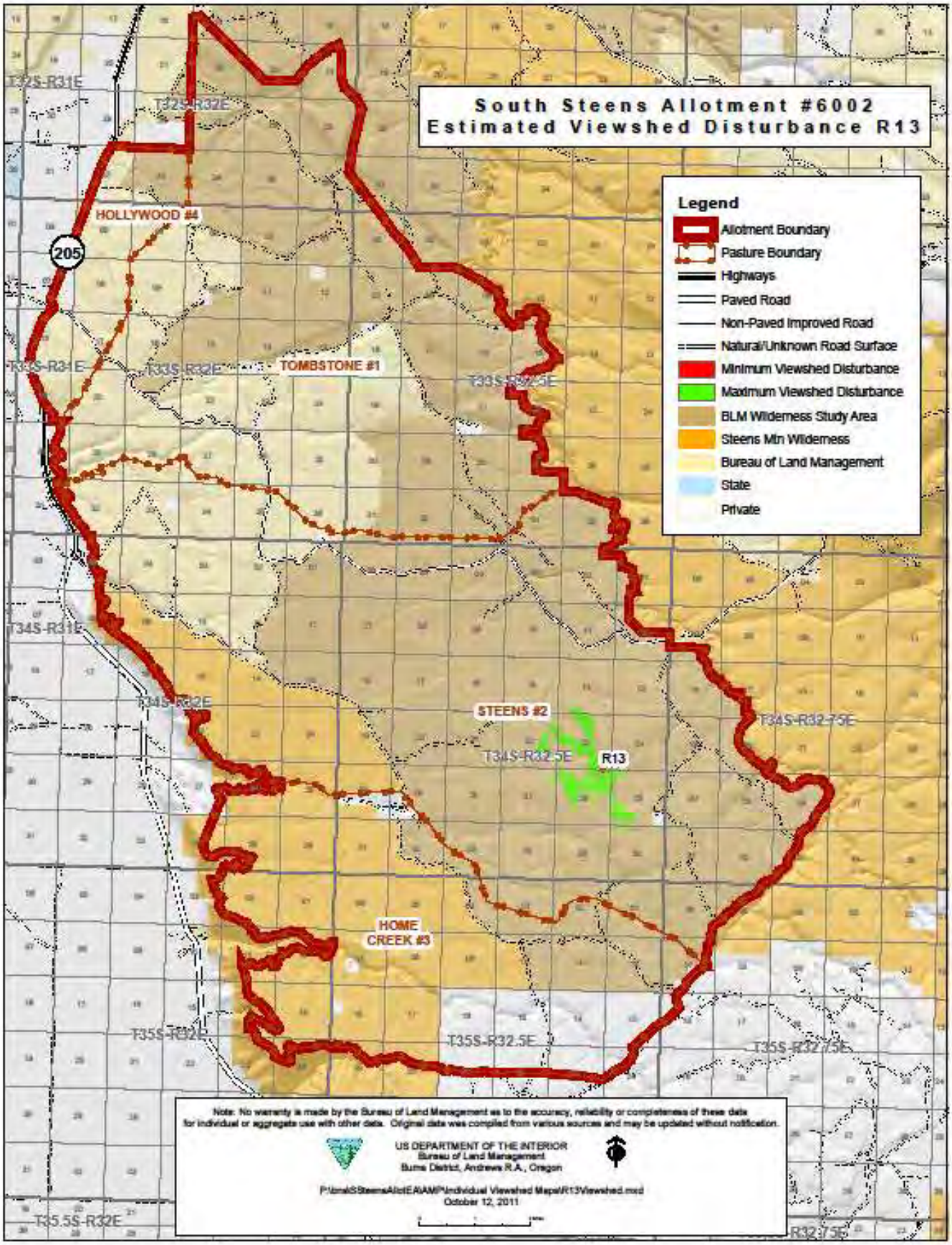
October 12, 2011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Estimated Viewshed Disturbance R13
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
R13
205
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
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T34S-R32E
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T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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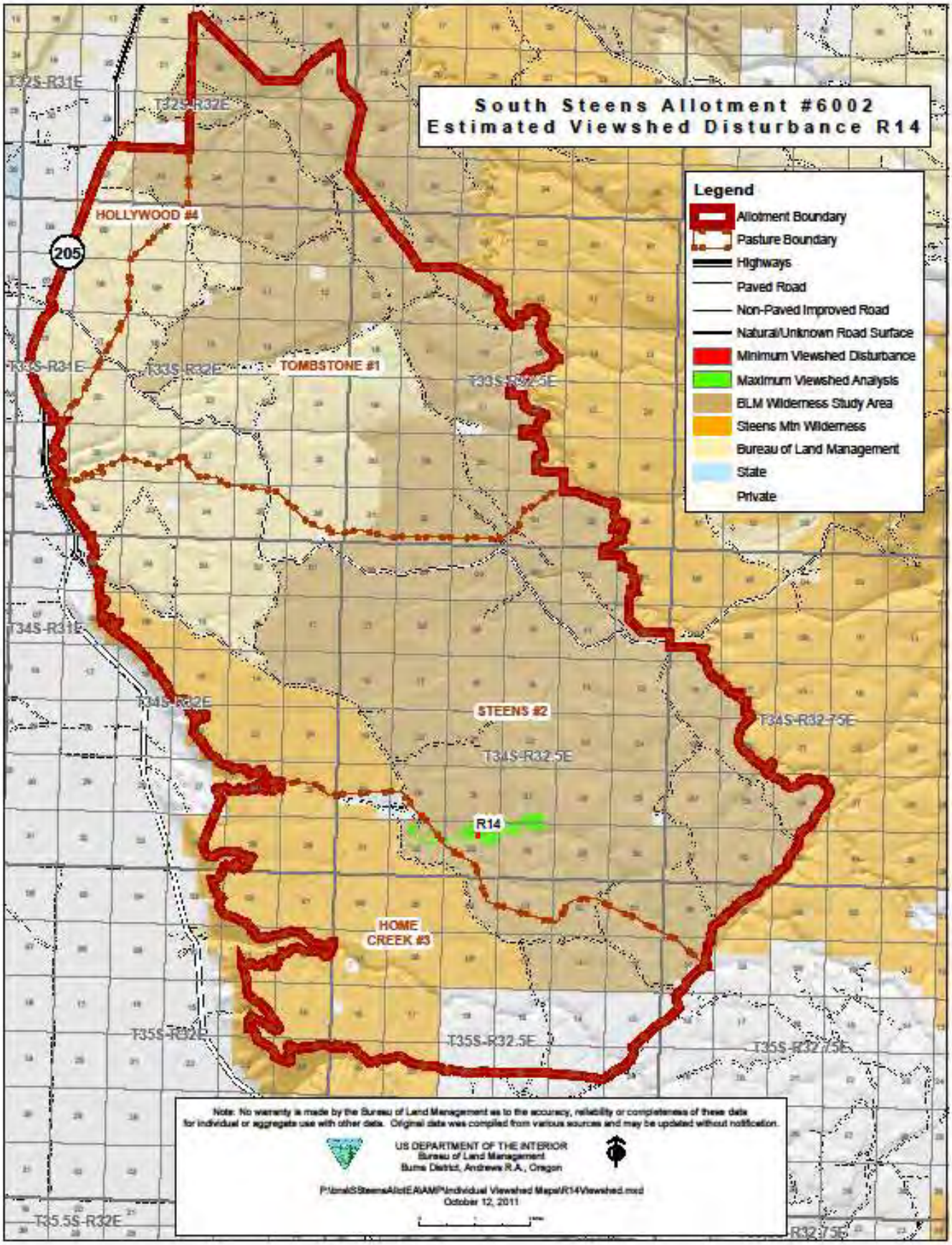
South Steens Allotment #6002
Estimated Viewshed Disturbance R14
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Analysis
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
R14
205
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T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
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R32.75E
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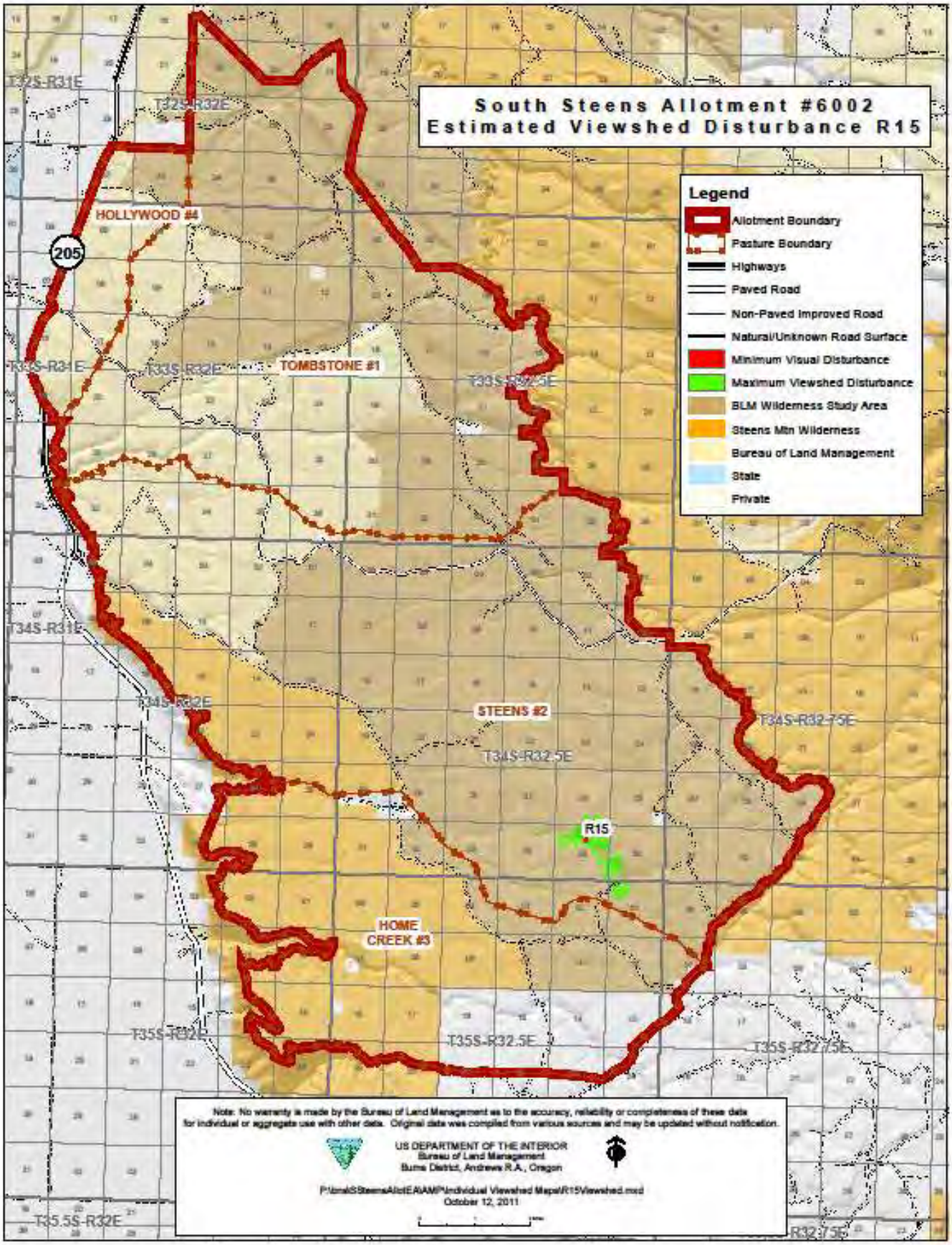
South Steens Allotment #6002
Estimated Viewshed Disturbance R15
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Visual Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
R15
205
T32S-R31E
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T33S-R31E
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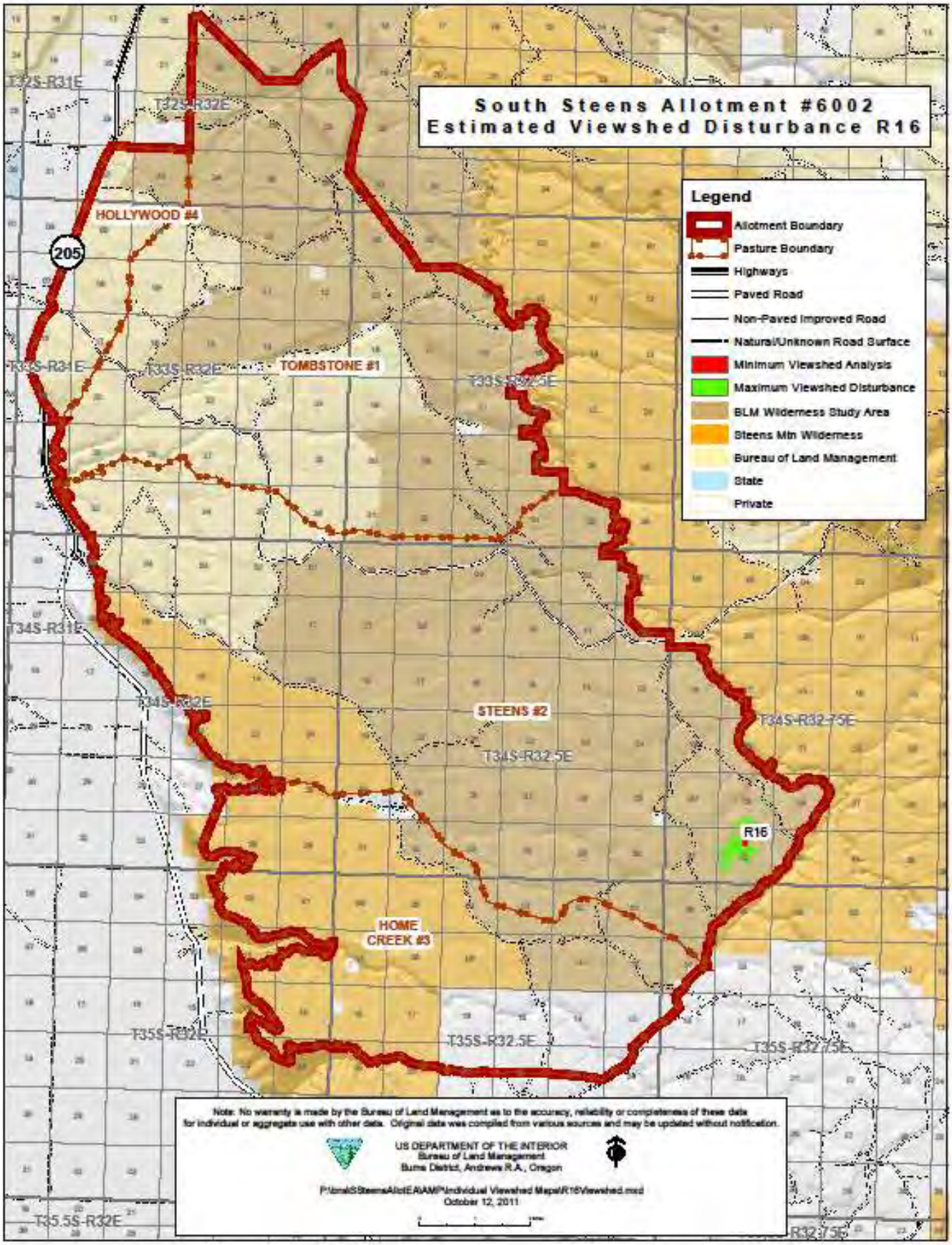
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Estimated Viewshed Disturbance R16
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Analysis
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
R16
205
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R32.75E
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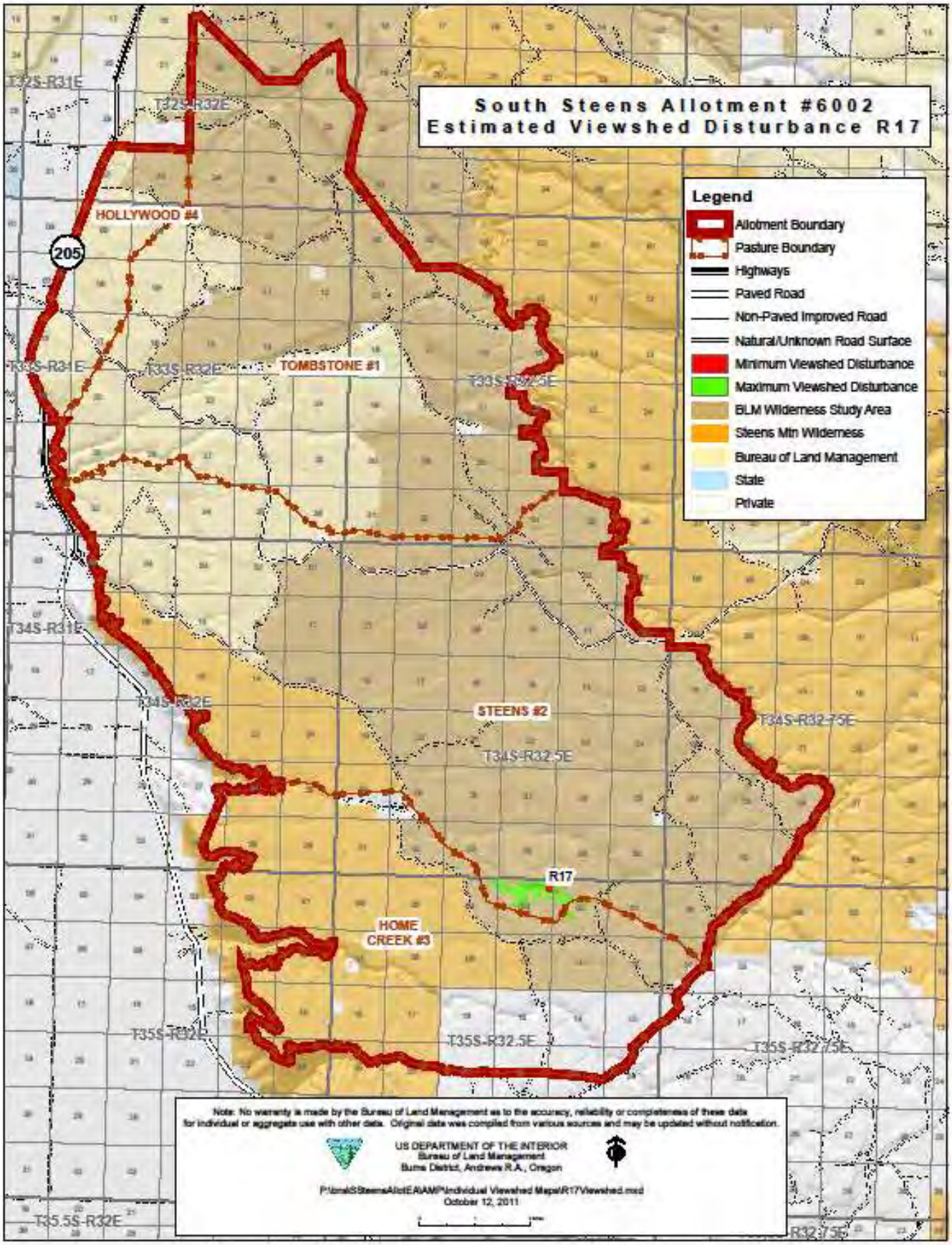
South Steens Allotment #6002
Estimated Viewshed Disturbance R17
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
R17
205
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T33S-R32E
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R32.75E
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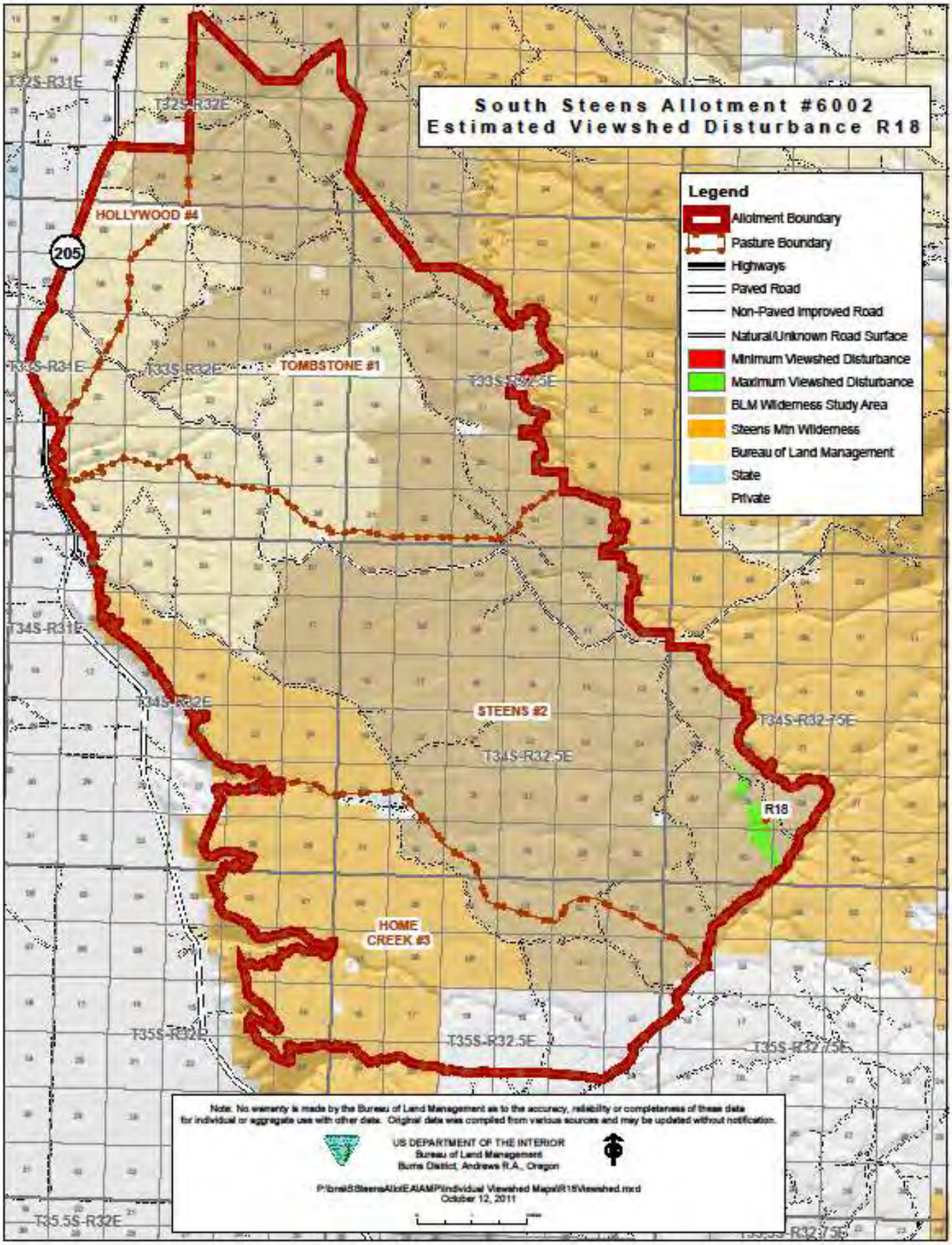
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Estimated Viewshed Disturbance R18
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
R18
205
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T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
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T35.5S-R32E
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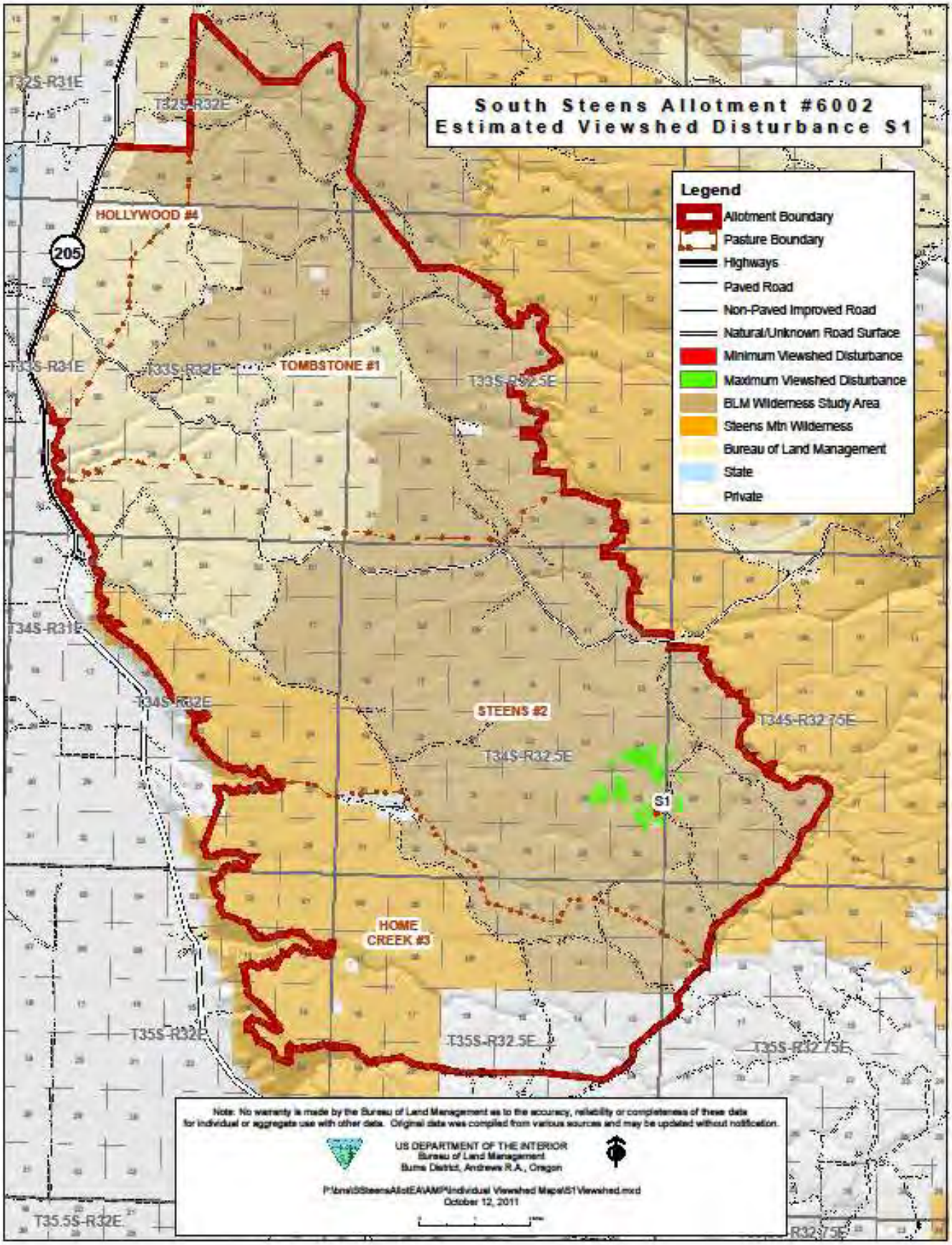
South Steens Allotment #6002
Estimated Viewshed Disturbance S1
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
205
TOMBSTONE #1
STEENS #2
HOME CREEK #3
S1
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
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R32.75E
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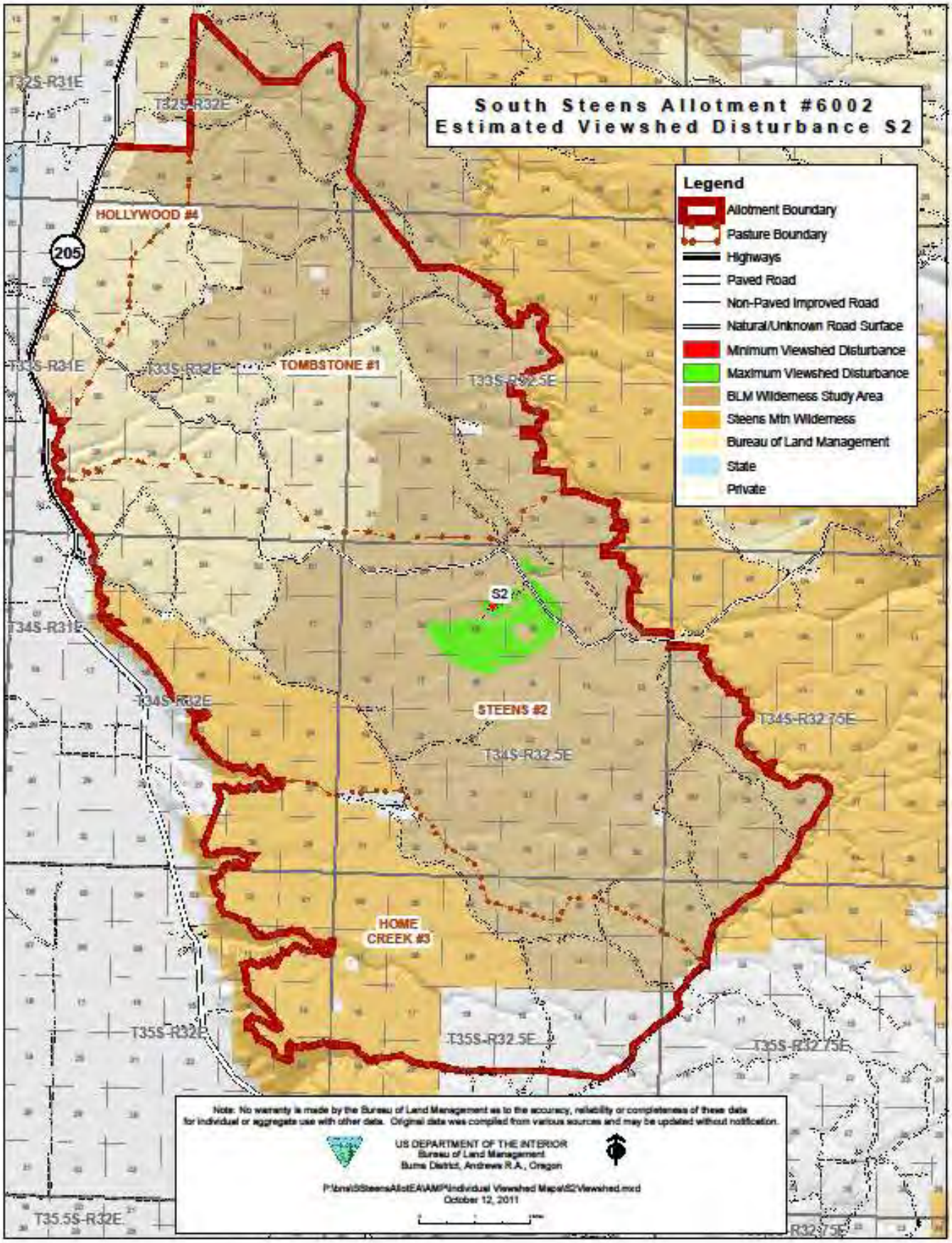
South Steens Allotment #6002
Estimated Viewshed Disturbance S2
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
S2
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.75E
T34S-R32.5E
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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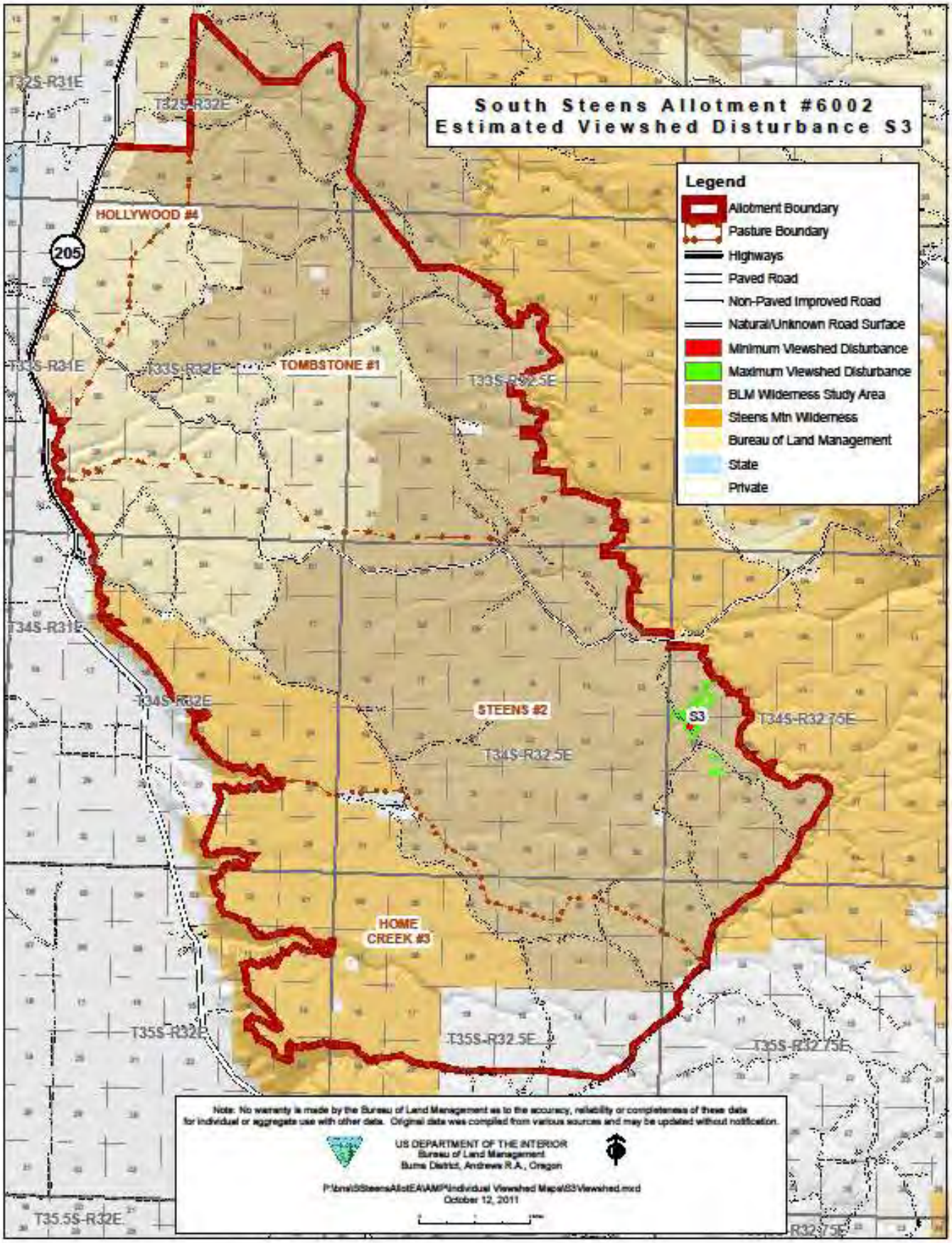
October 12, 2011


South Steens Allotment #6002
Estimated Viewshed Disturbance S3
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
T34S-R31E
T34S-R32E
STEENS #2
S3
T34S-R32.75E
T34S-R32.5E
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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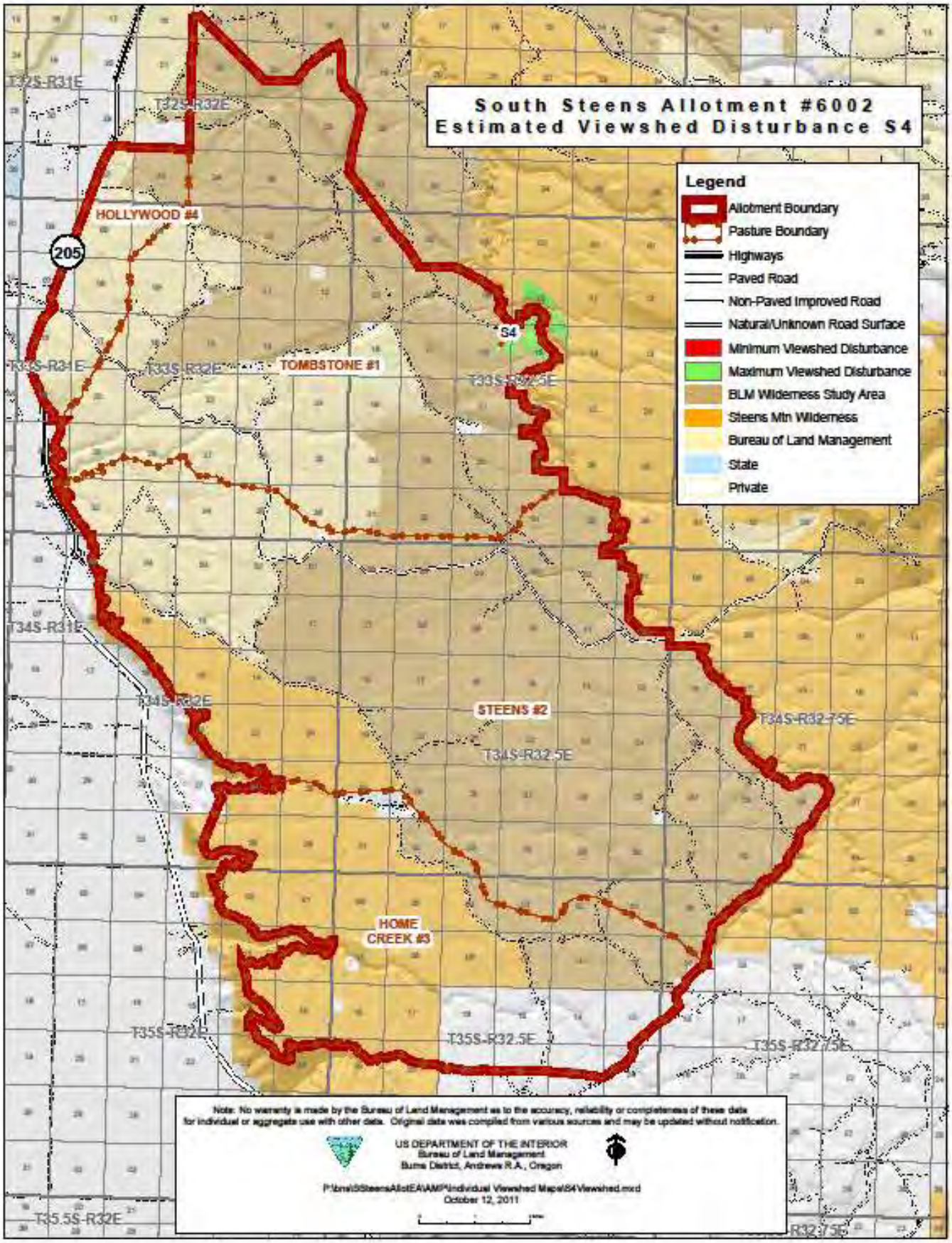
South Steens Allotment #6002
Estimated Viewshed Disturbance S4
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
205
S4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
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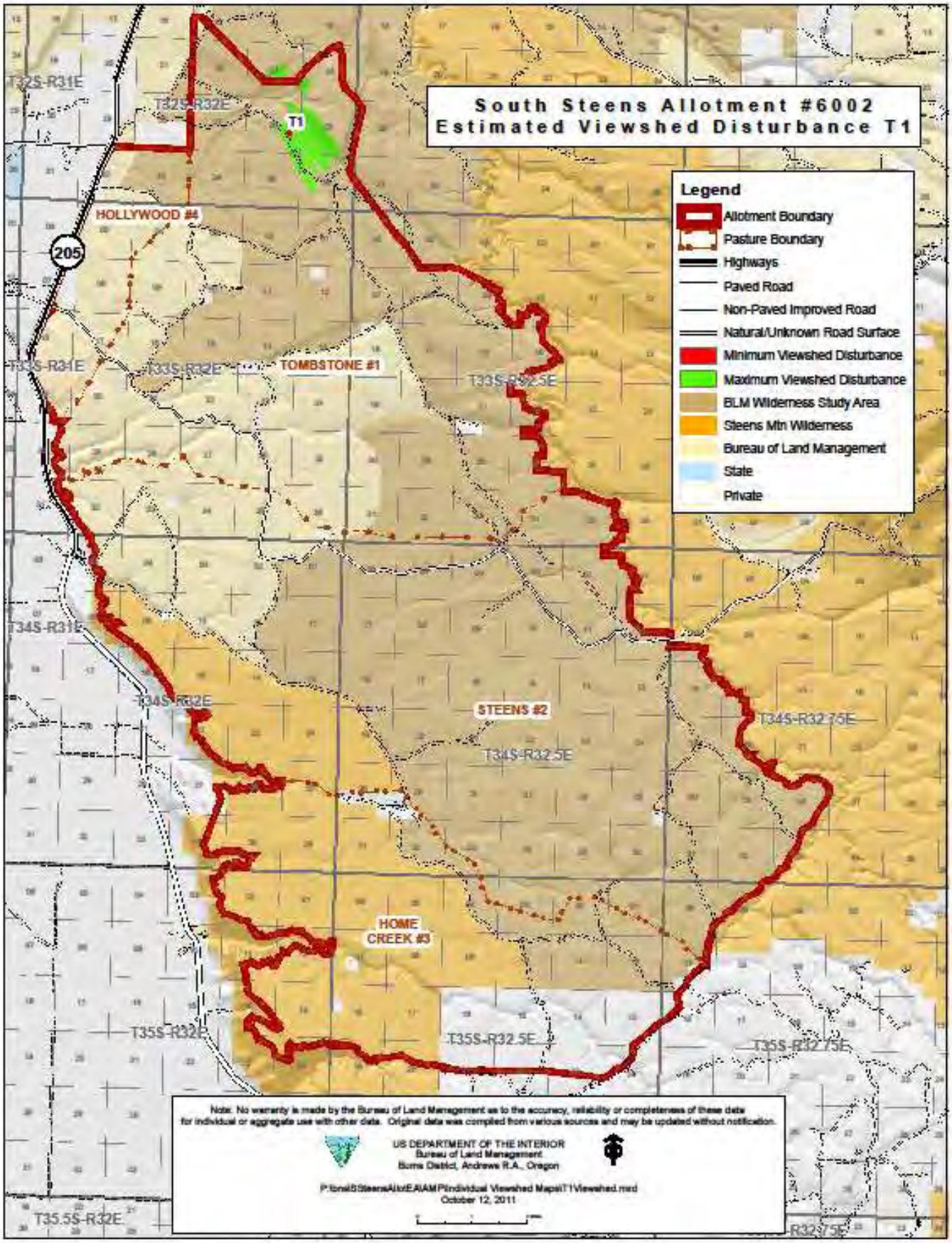
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Estimated Viewshed Disturbance T1
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T1
HOLLYWOOD #4
205
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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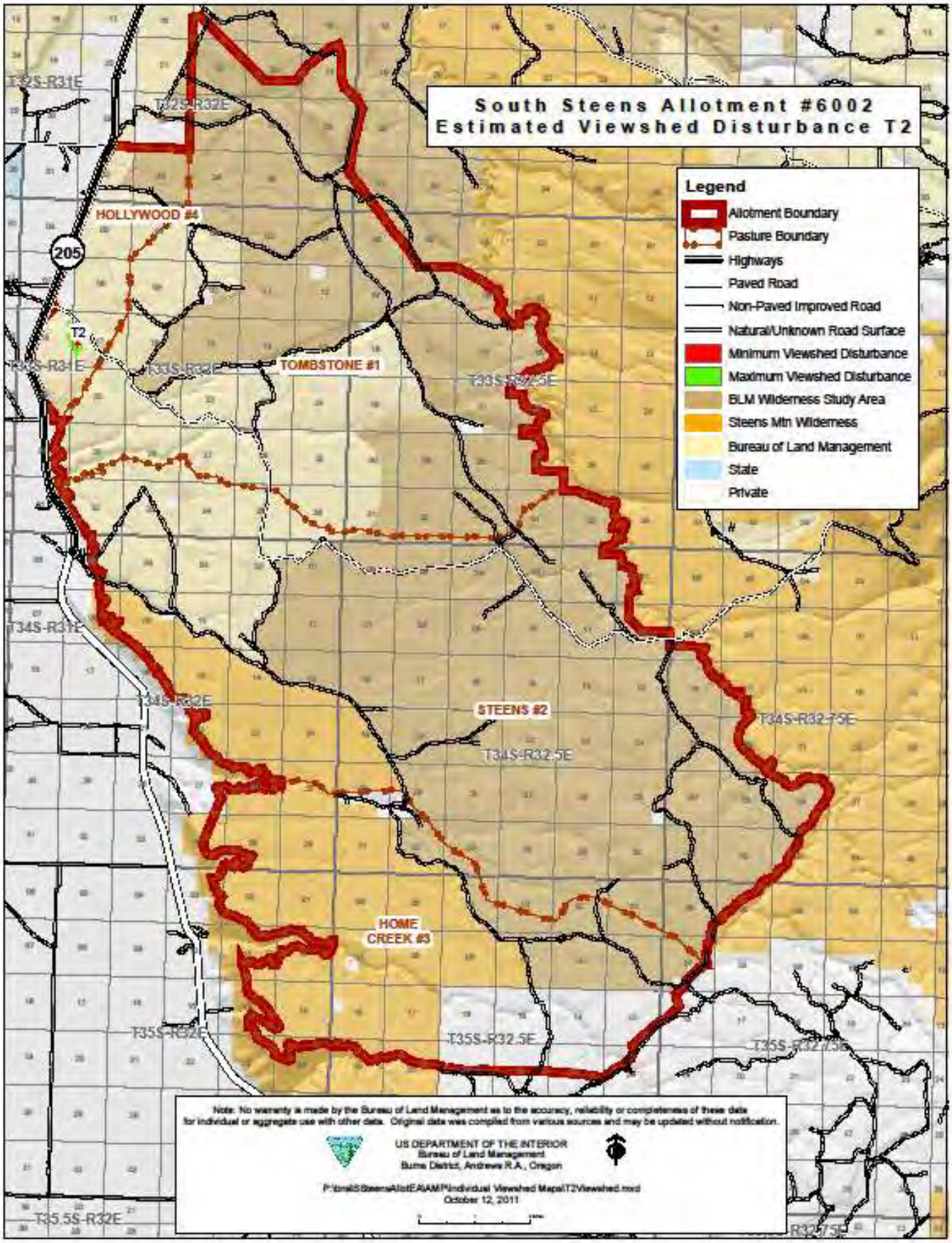
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Estimated Viewshed Disturbance T2
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
205
T2
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T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
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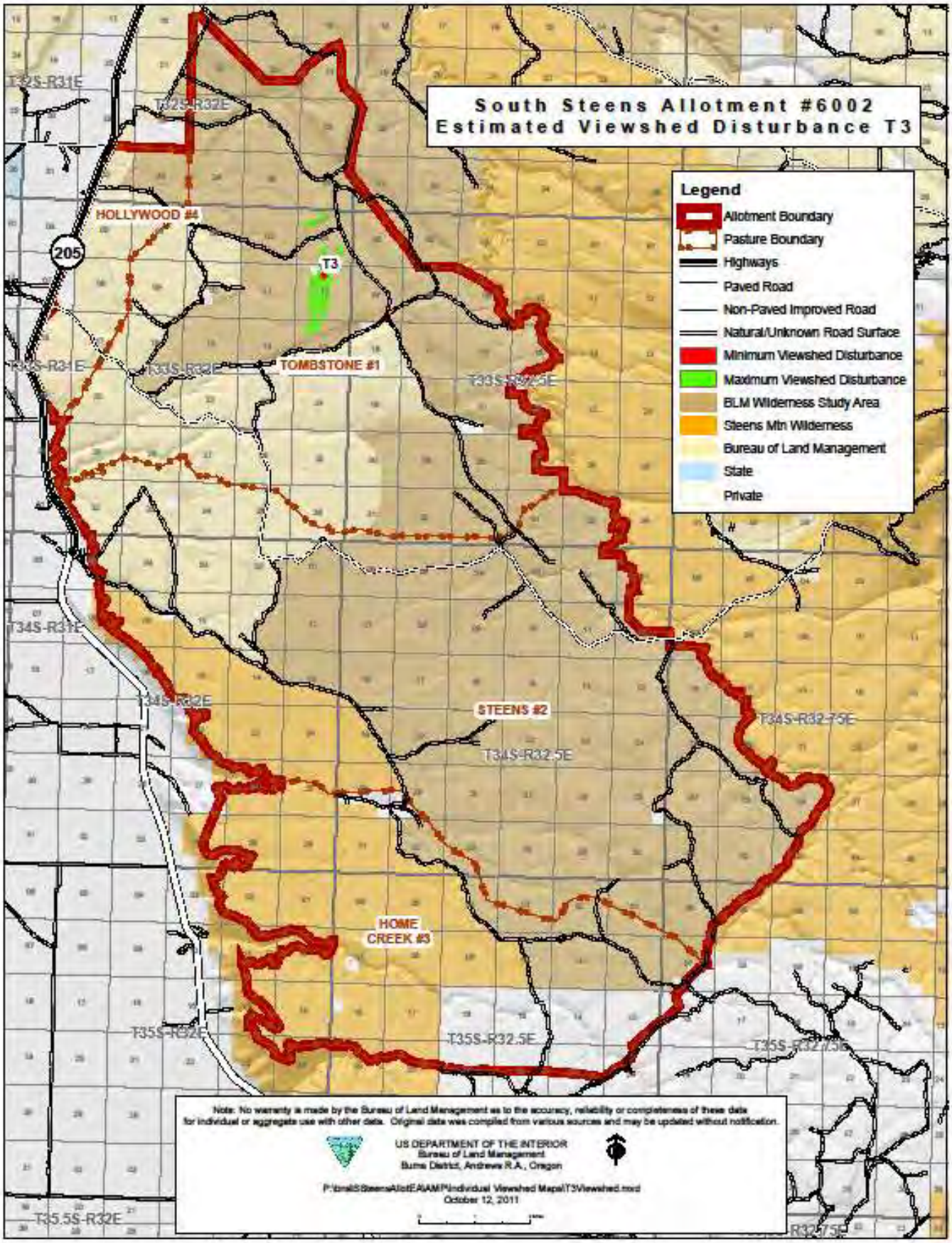
South Steens Allotment #6002
Estimated Viewshed Disturbance T3
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
205
T3
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
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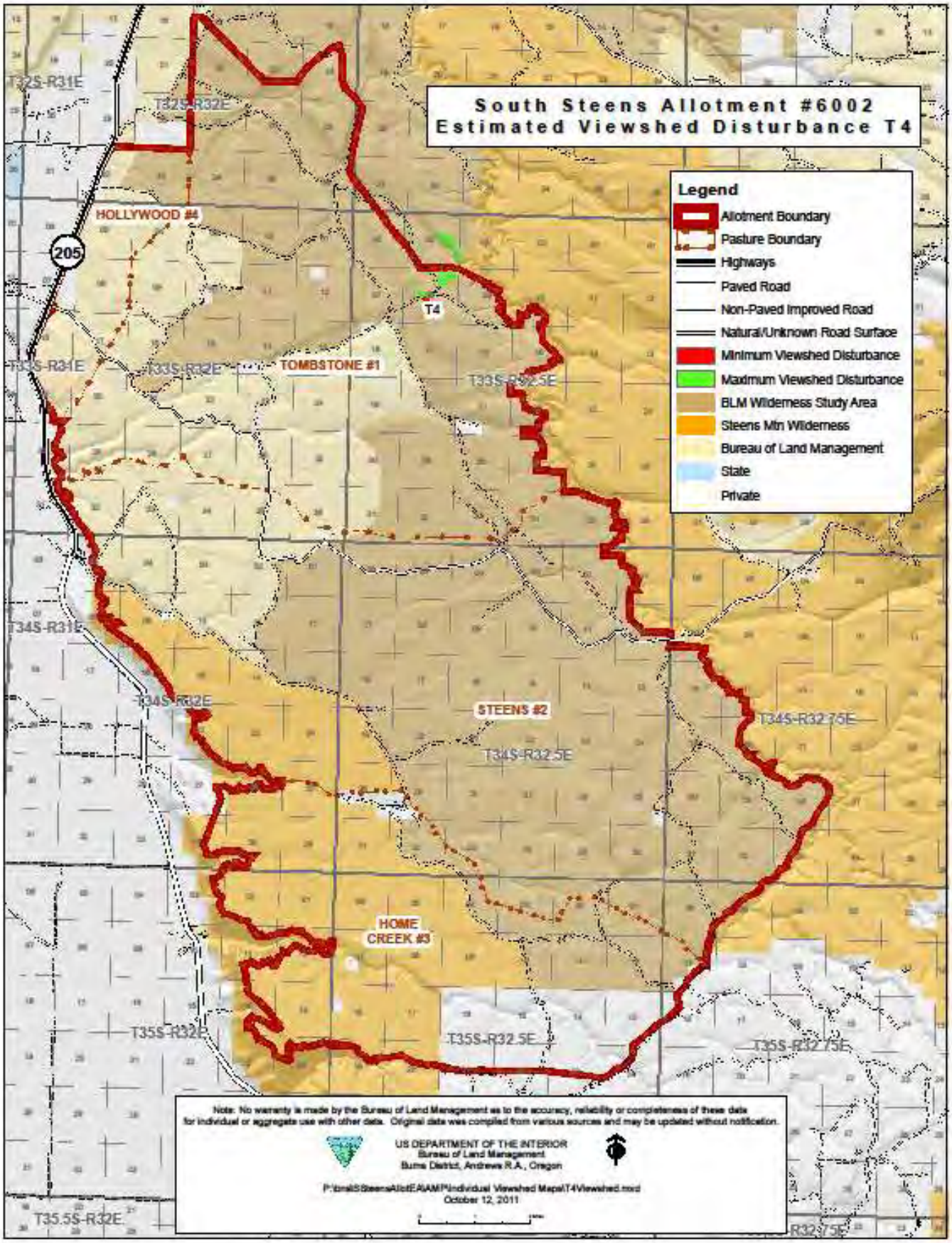
South Steens Allotment #6002
Estimated Viewshed Disturbance T4
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T4
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.5E
T34S-R32.75E
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
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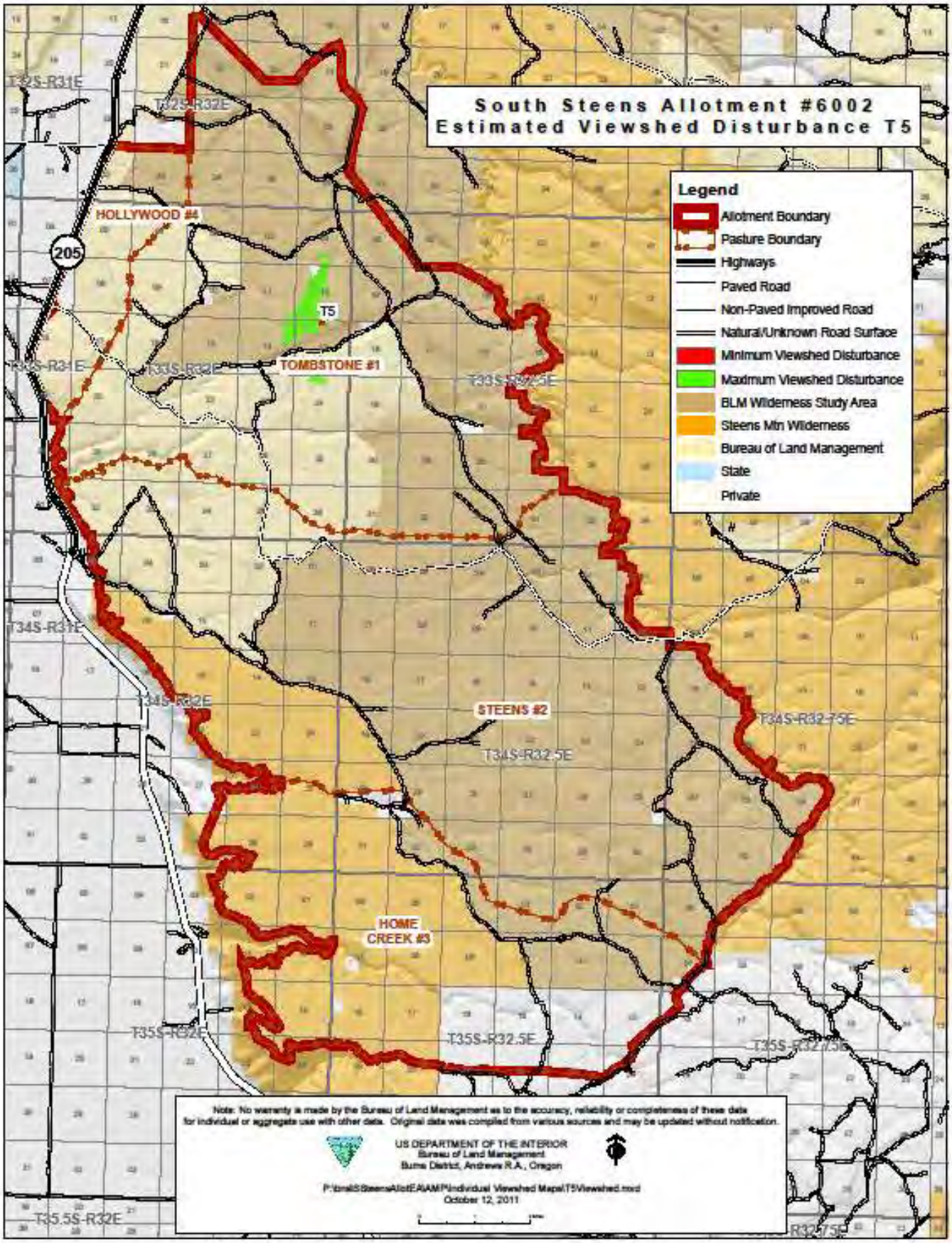
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Estimated Viewshed Disturbance T5
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
205
T5
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T32S-R31E
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T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
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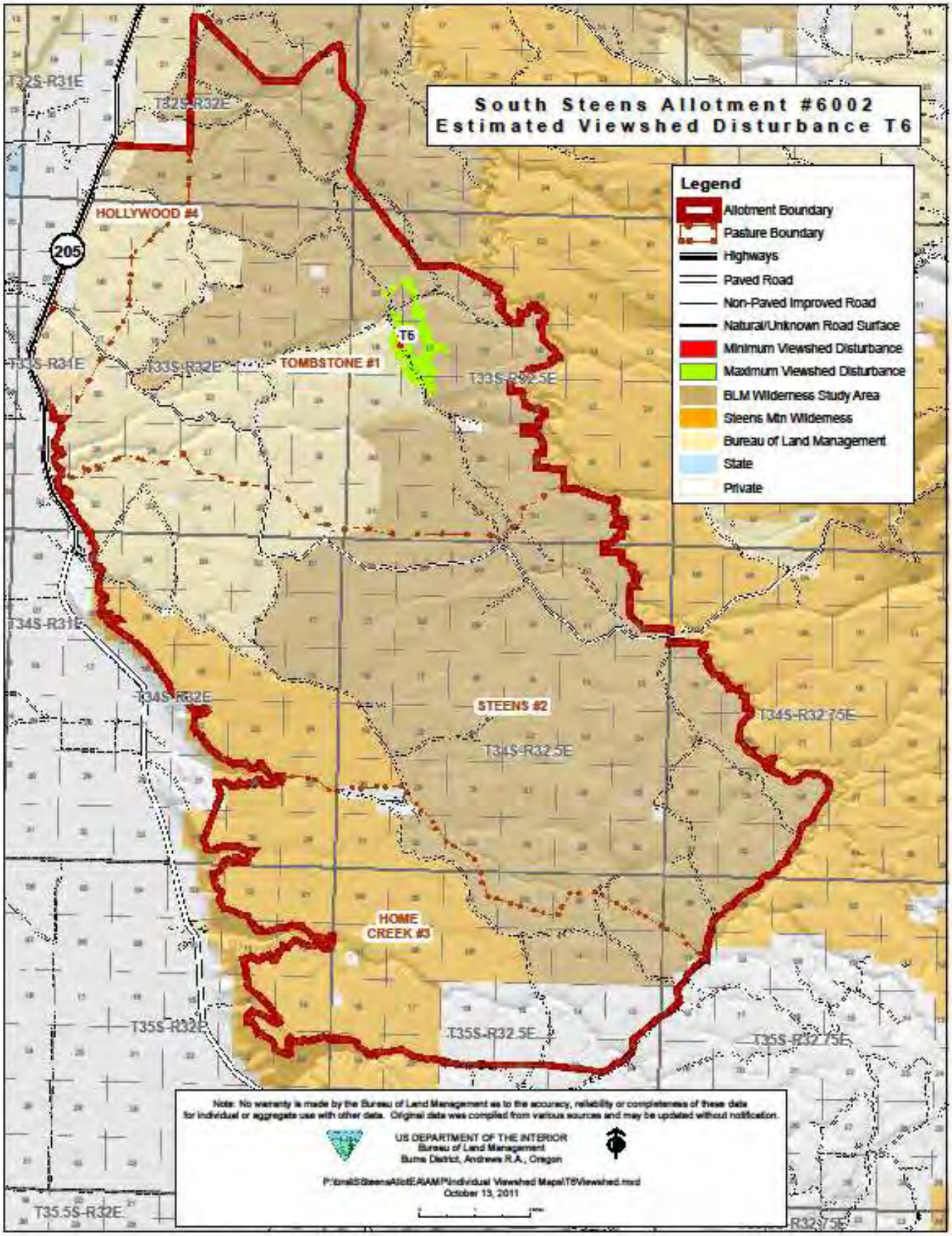
South Steens Allotment #6002
Estimated Viewshed Disturbance T6
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T6
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.75E
T34S-R32.5E
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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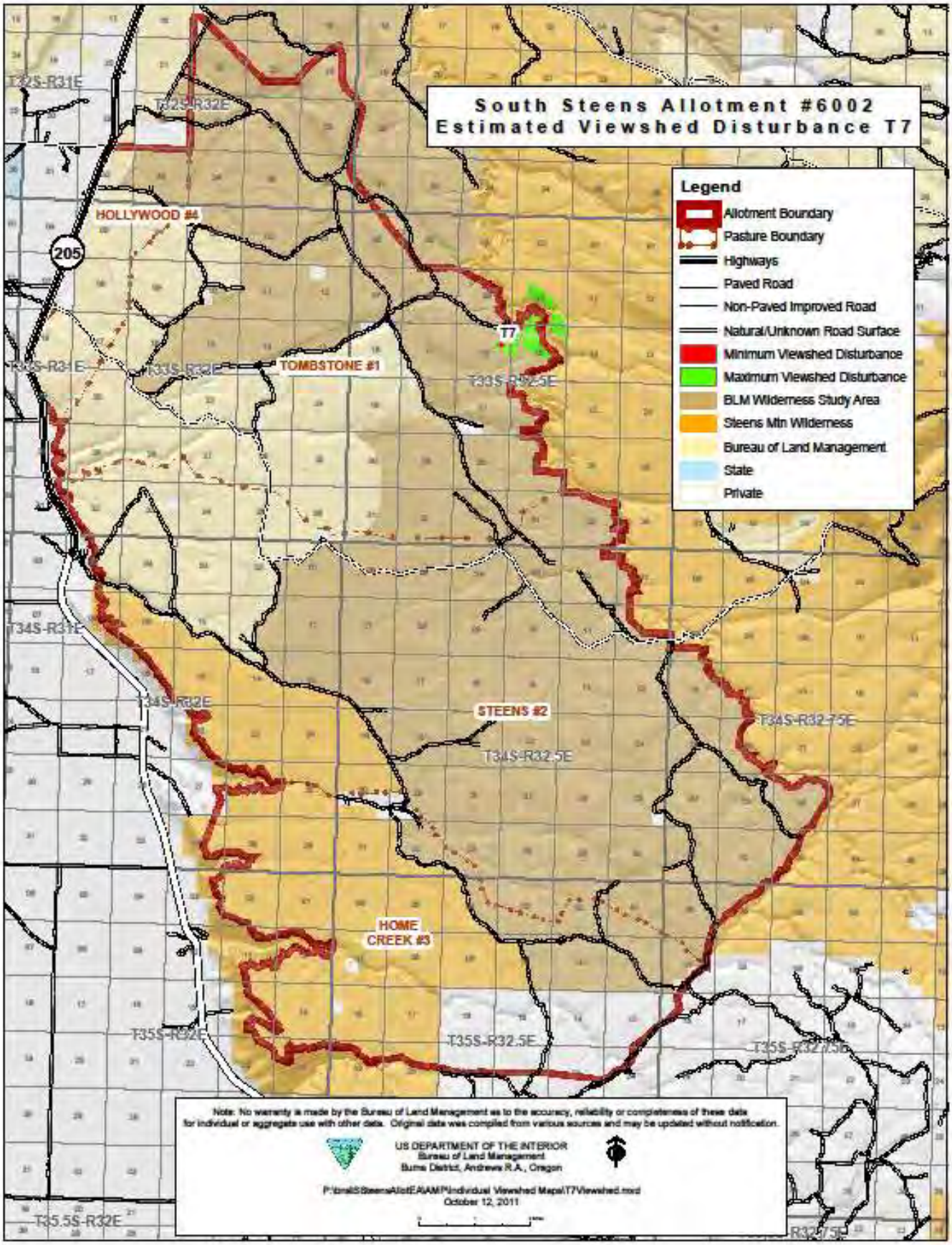
South Steens Allotment #6002
Estimated Viewshed Disturbance T7
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
205
T7
TOMBSTONE #1
T33S-R32.5E
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.5E
T34S-R32.75E
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
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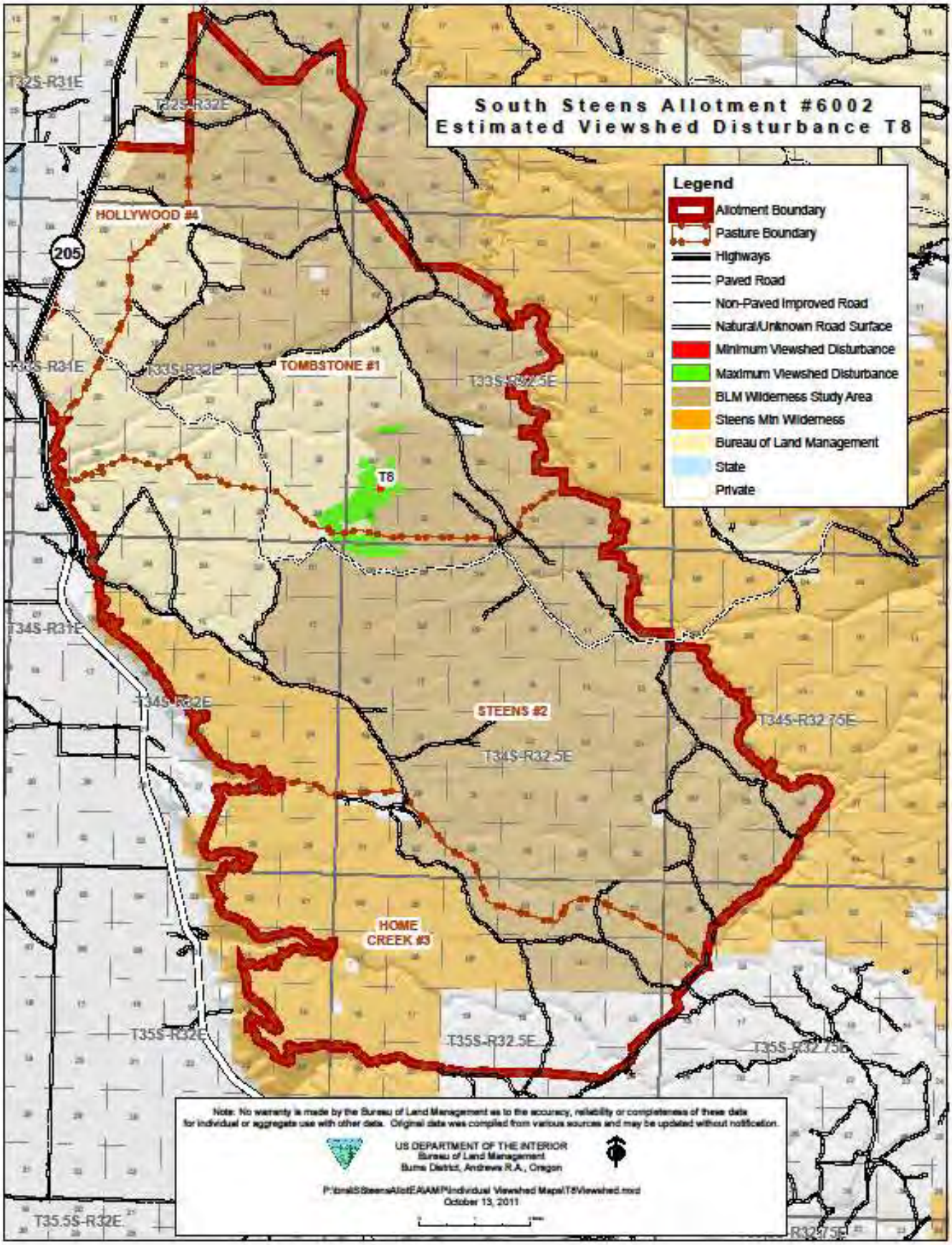
South Steens Allotment #6002
Estimated Viewshed Disturbance T8
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T8
205
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
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T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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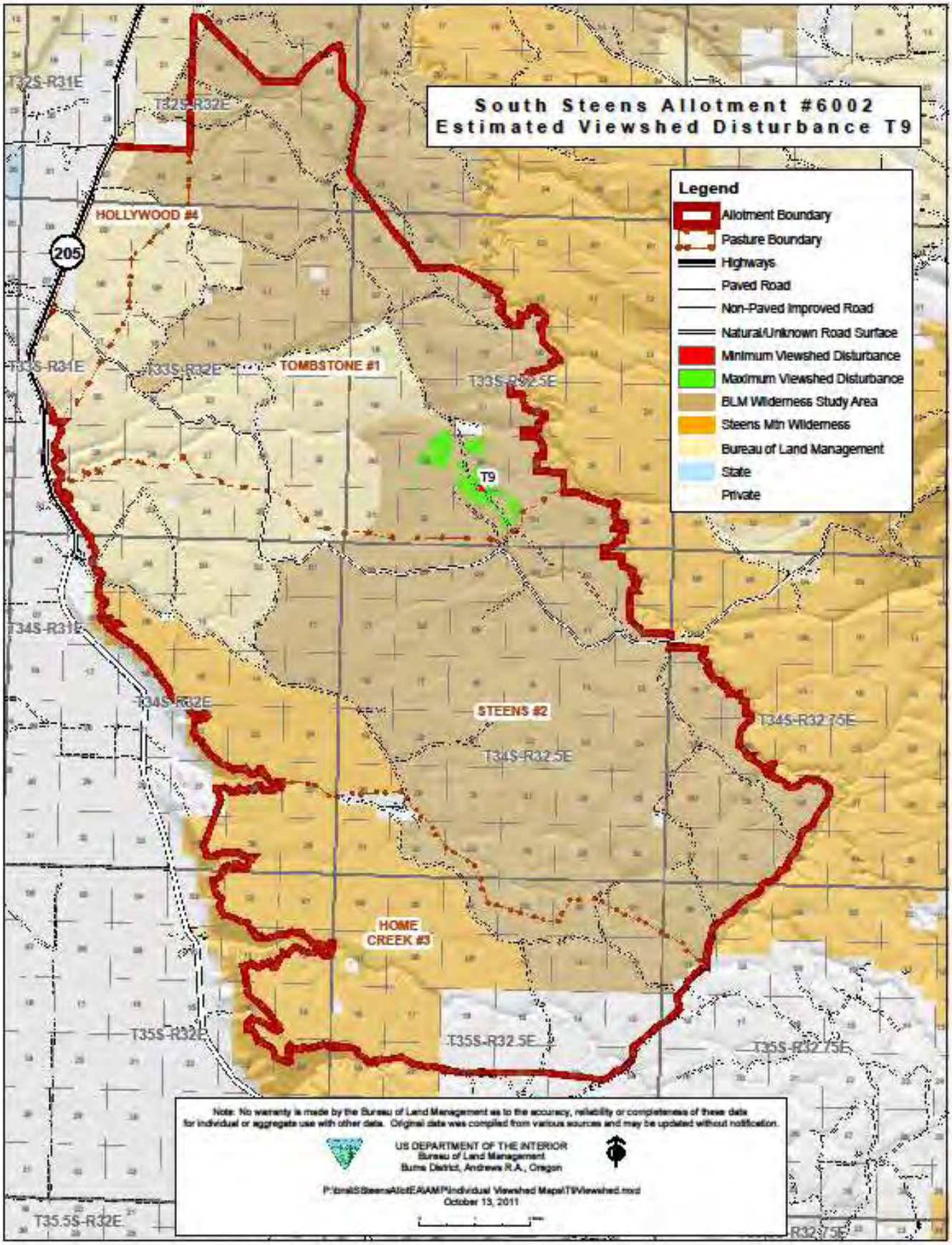
South Steens Allotment #6002
Estimated Viewshed Disturbance T9
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T9
205
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R32.75E
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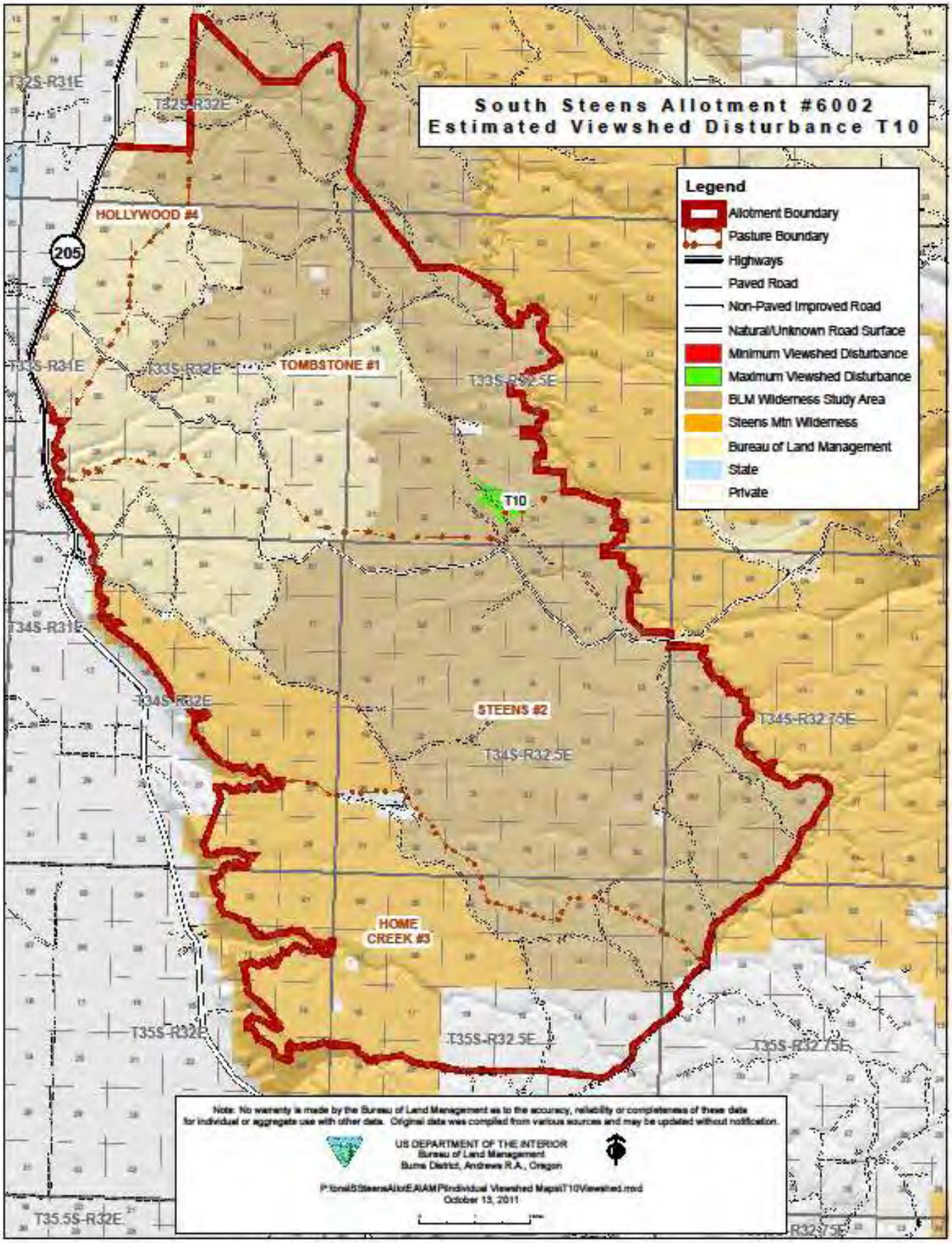
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Estimated Viewshed Disturbance T10
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T10
205
T32S-R31E
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T33S-R31E
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T33S-R32.5E
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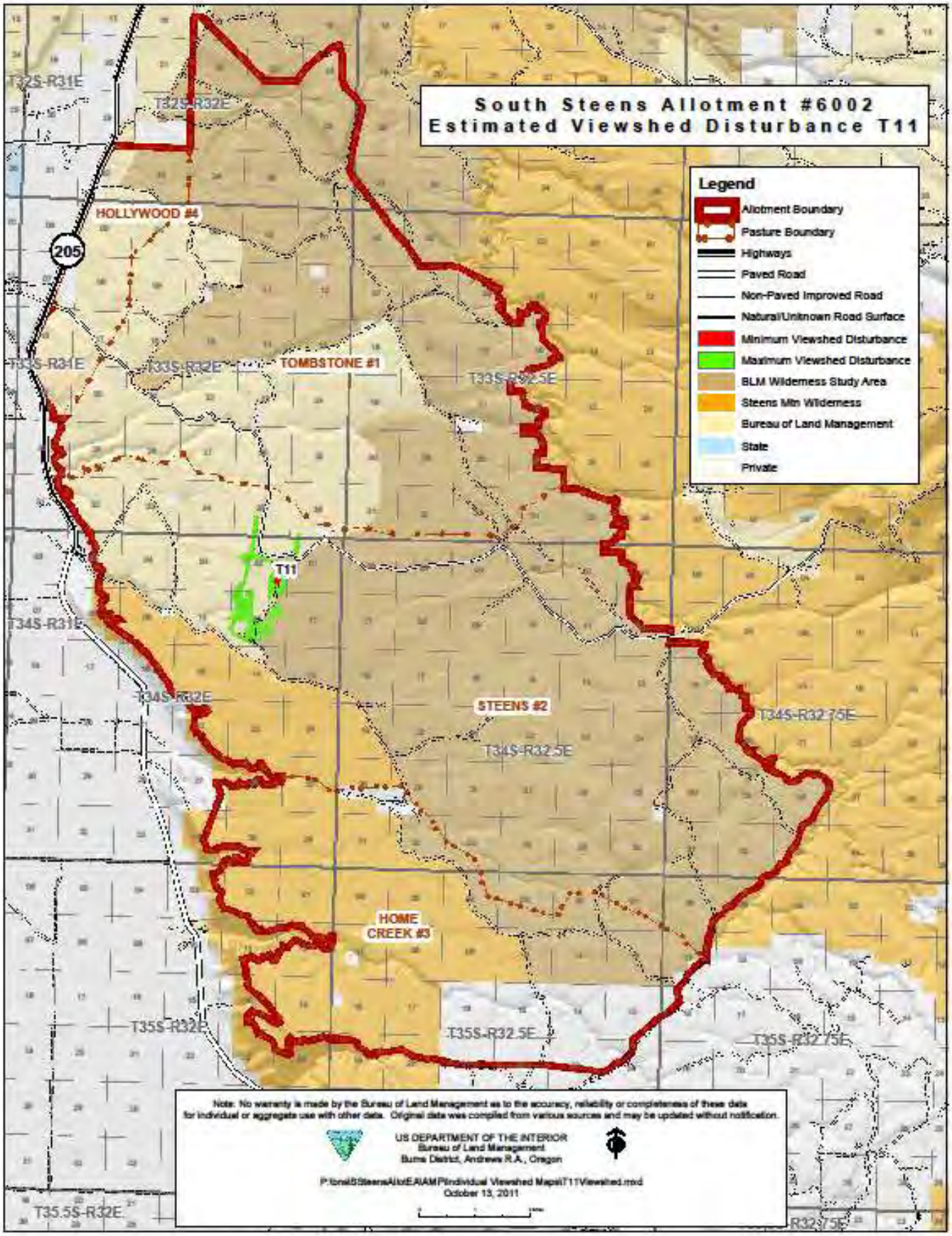
South Steens Allotment #6002
Estimated Viewshed Disturbance T11
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T11
205
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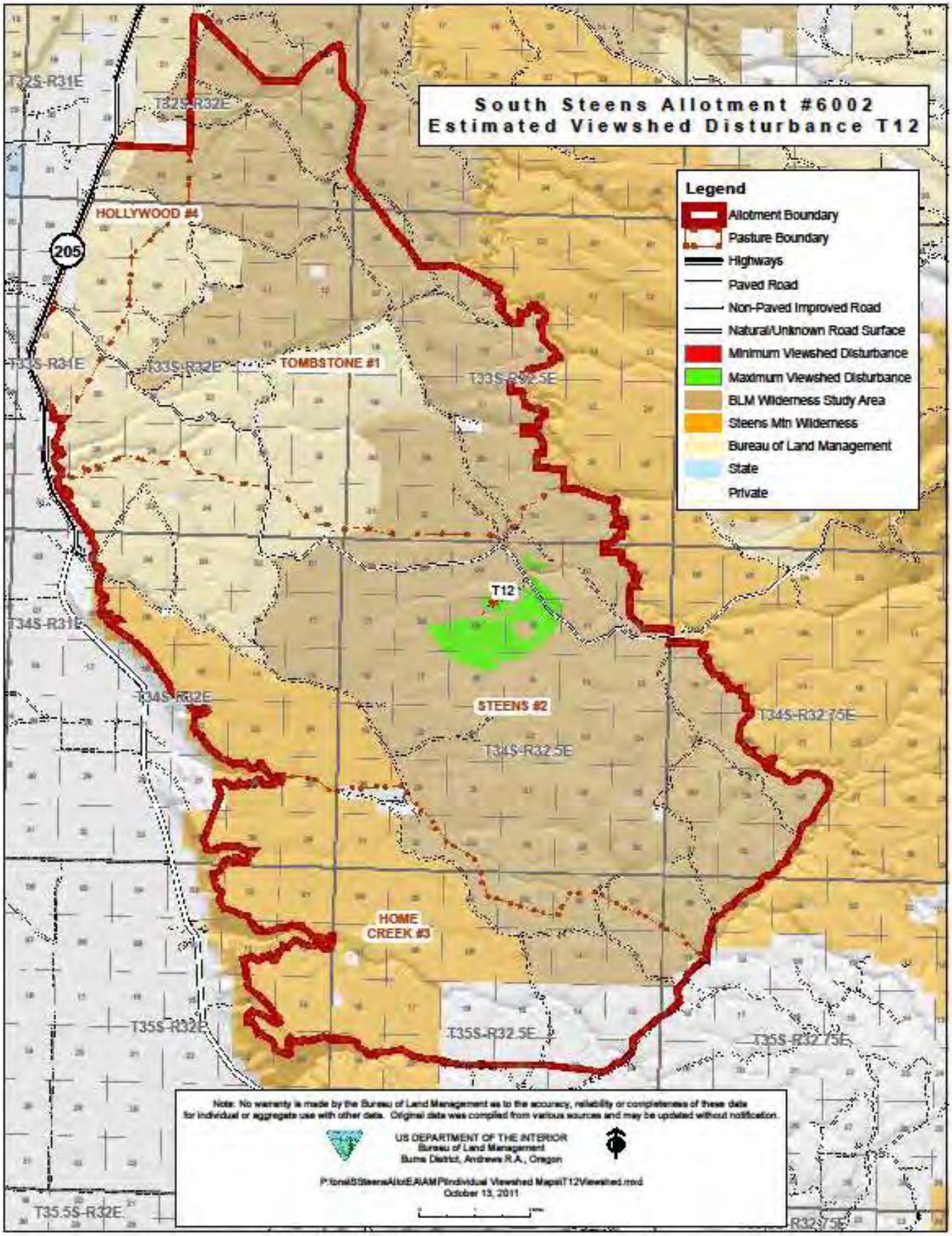
South Steens Allotment #6002
Estimated Viewshed Disturbance T12
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Pasture Boundary
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Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
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HOME CREEK #3
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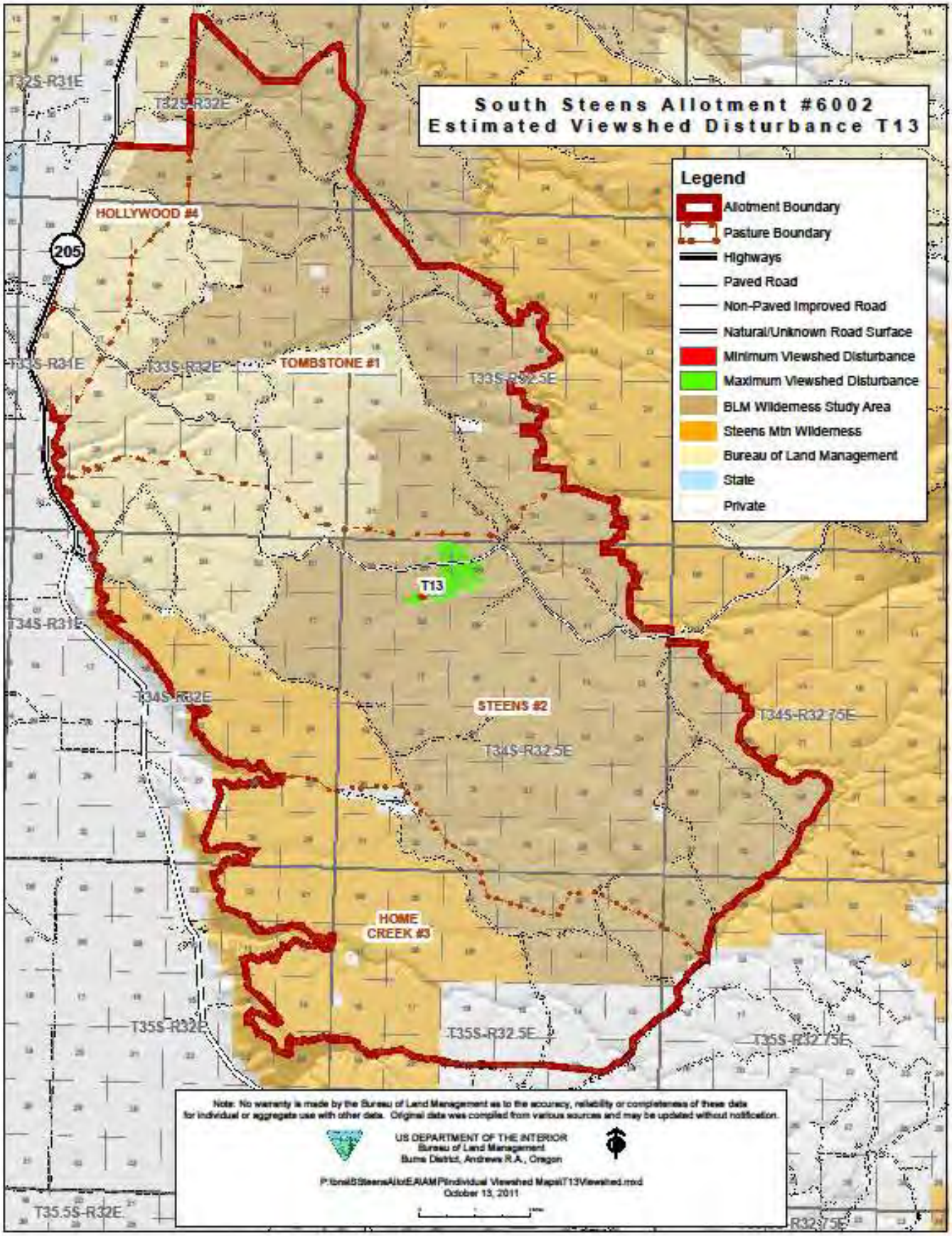
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Pasture Boundary
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Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
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T33S-R32.5E
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T34S-R32E
STEENS #2
T34S-R32.75E
T34S-R32.5E
HOME CREEK #3
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R32.75E
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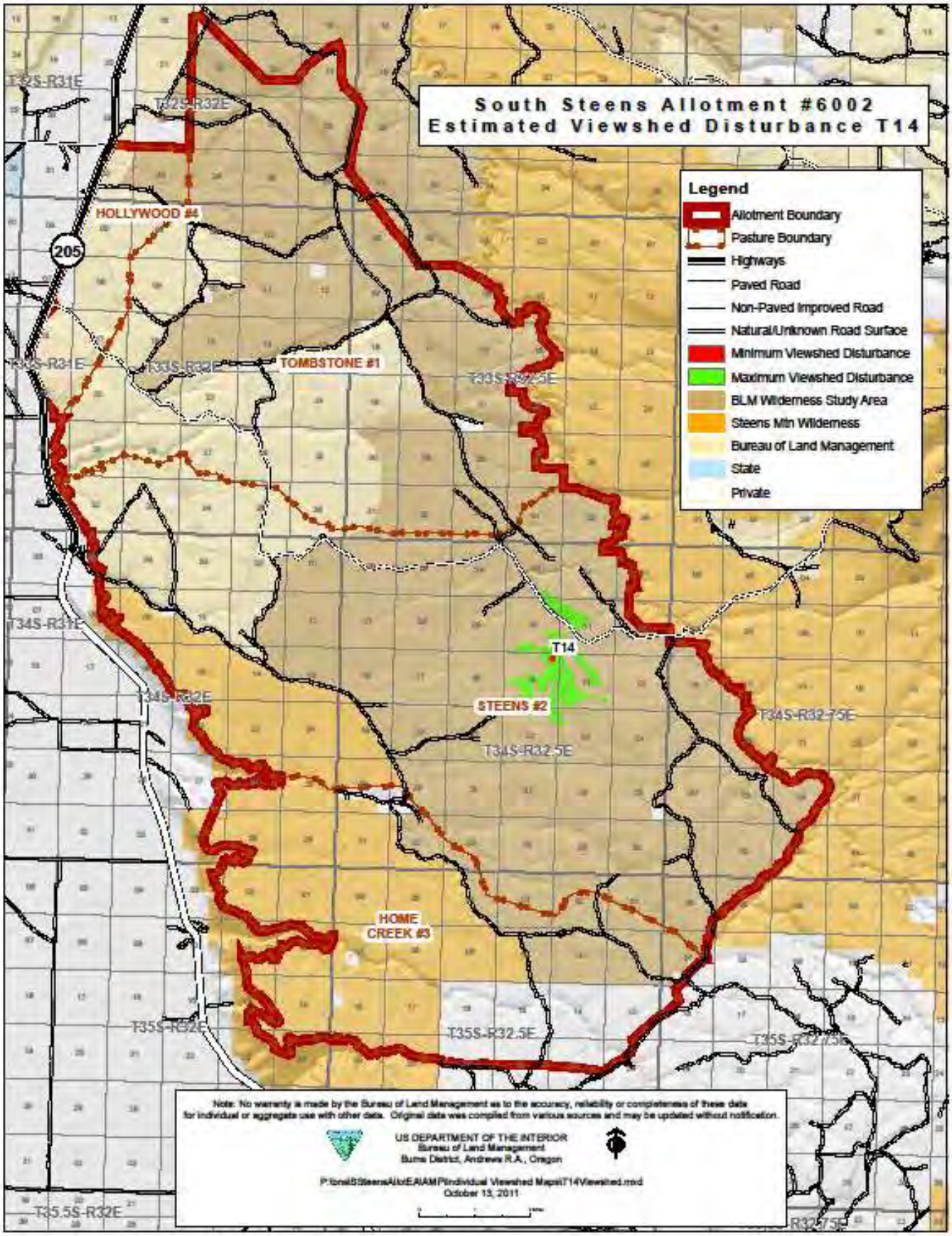
South Steens Allotment #6002
Estimated Viewshed Disturbance T14
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
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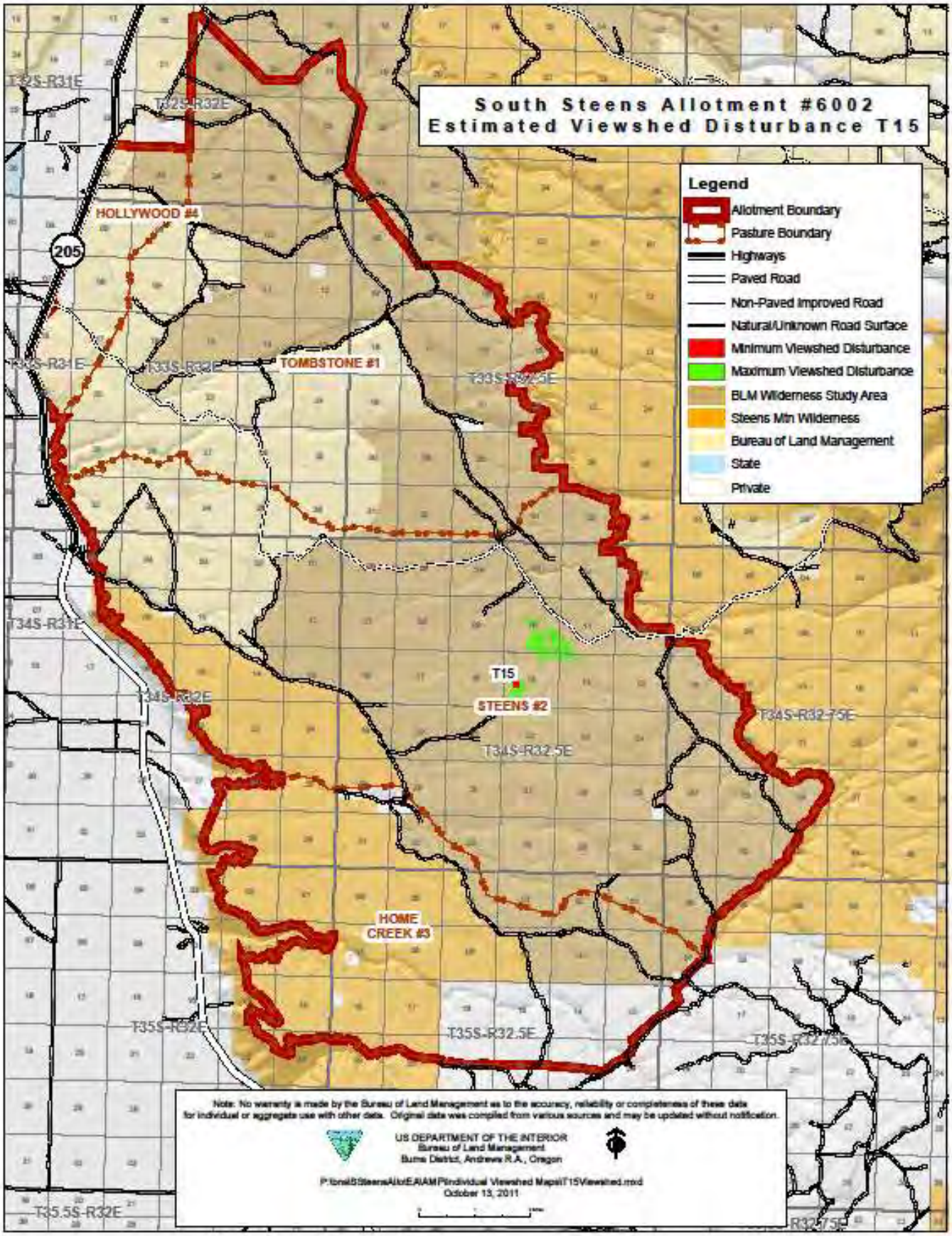
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Estimated Viewshed Disturbance T15
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T15
205
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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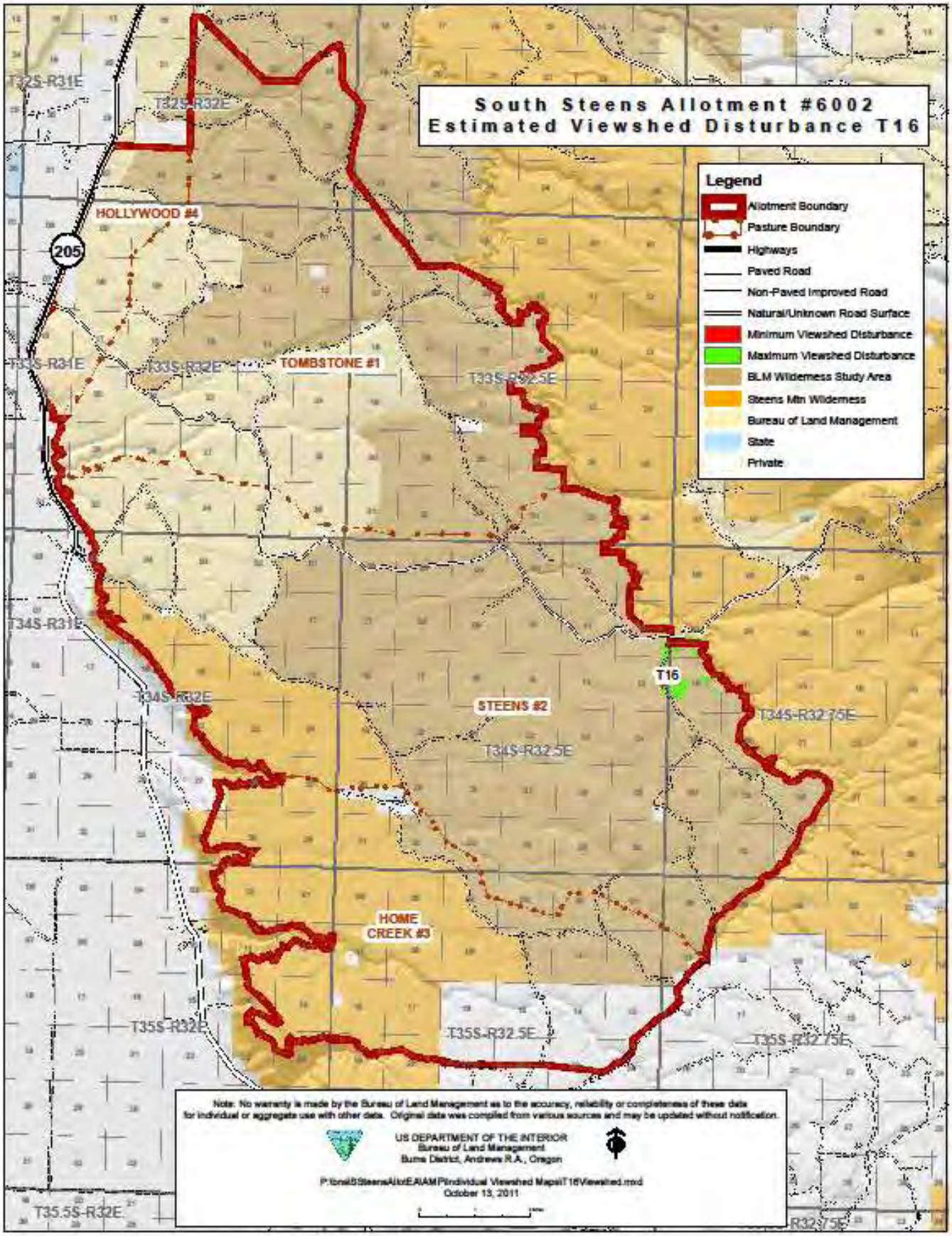
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Estimated Viewshed Disturbance T16
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
T34S-R31E
T34S-R32E
STEENS #2
T16
T34S-R32.75E
T34S-R32.5E
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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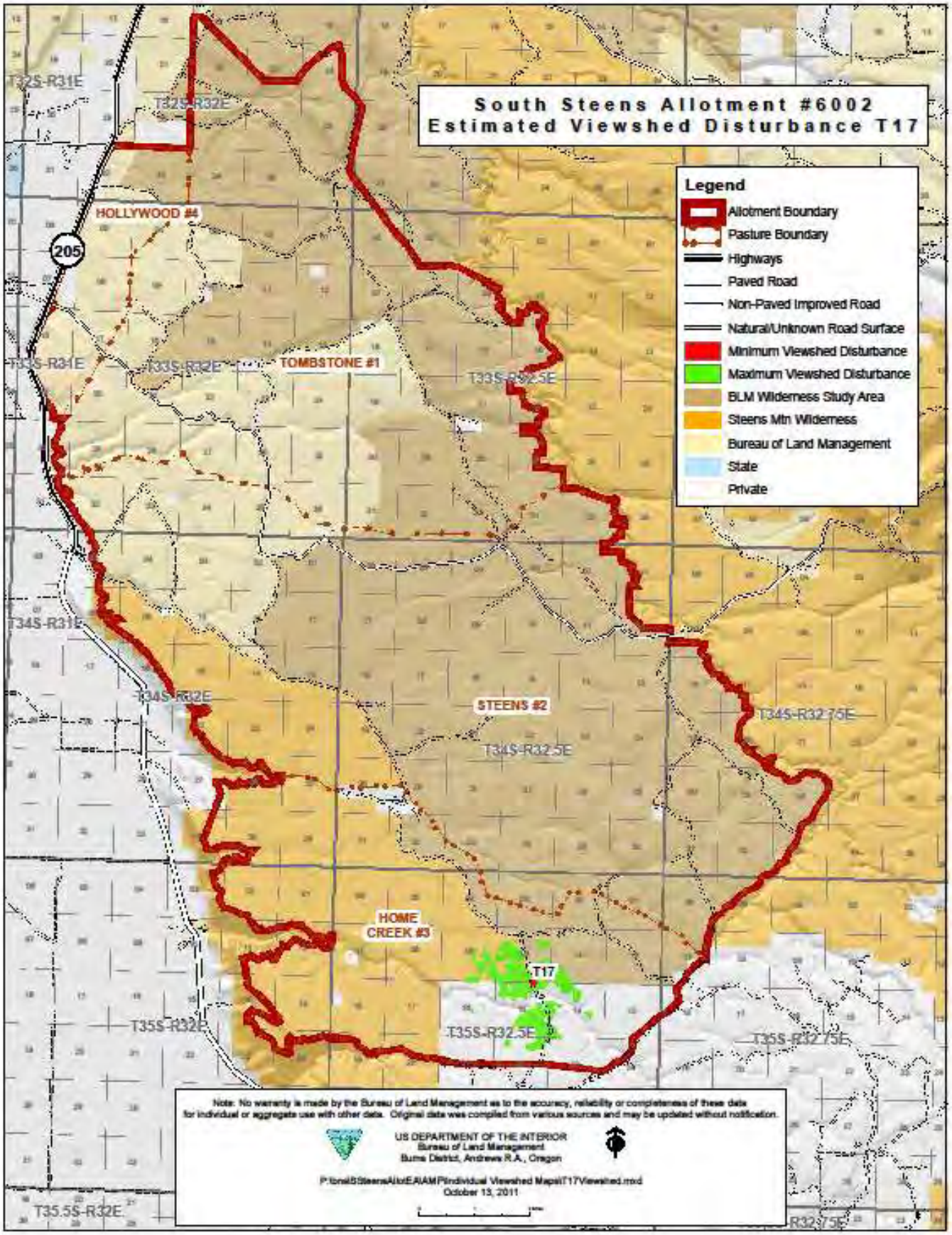
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Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T17
205
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
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T34S-R32.5E
T34S-R32.75E
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T35S-R32.75E
T35.5S-R32E
R32.75E
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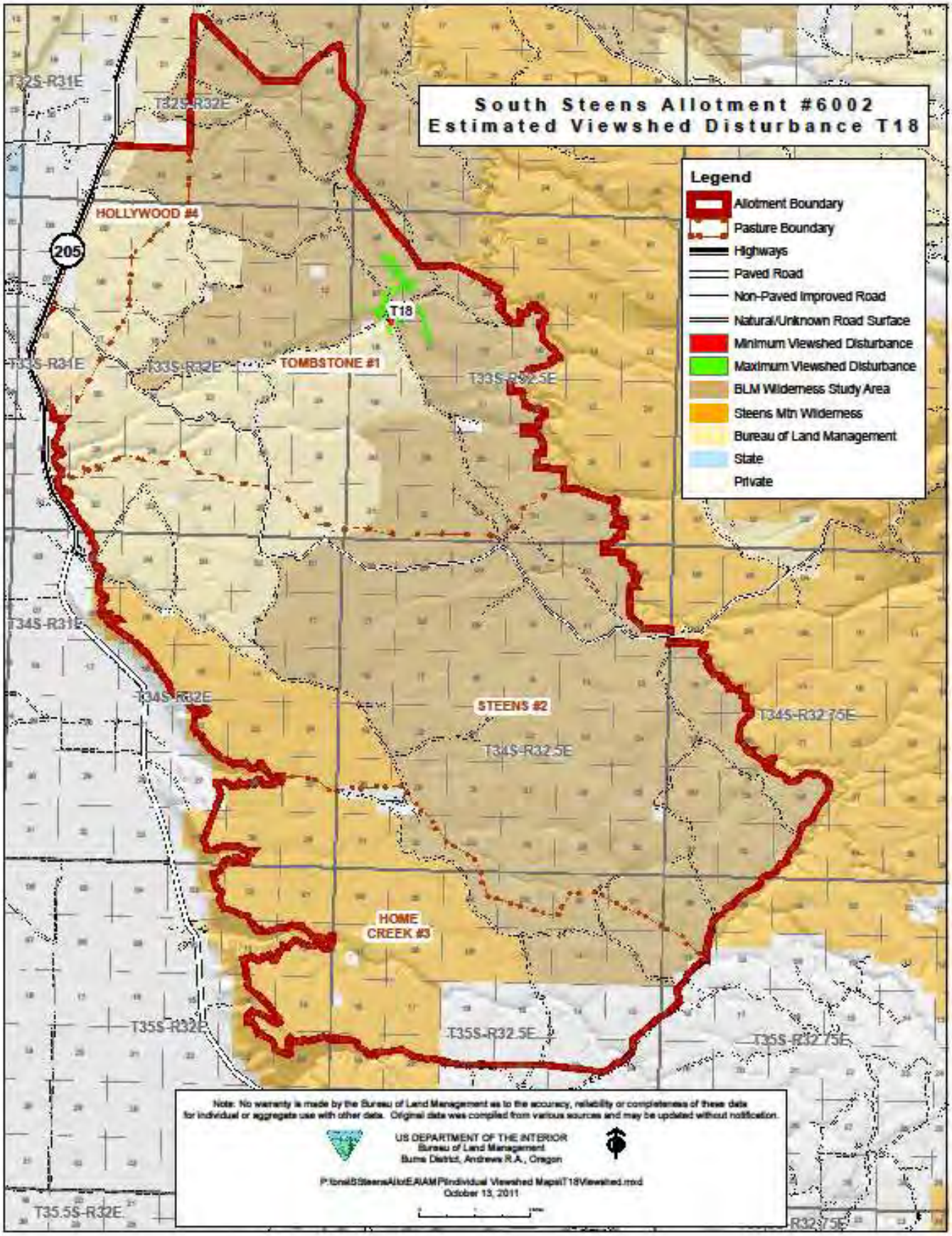
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Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T18
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.75E
T34S-R32.5E
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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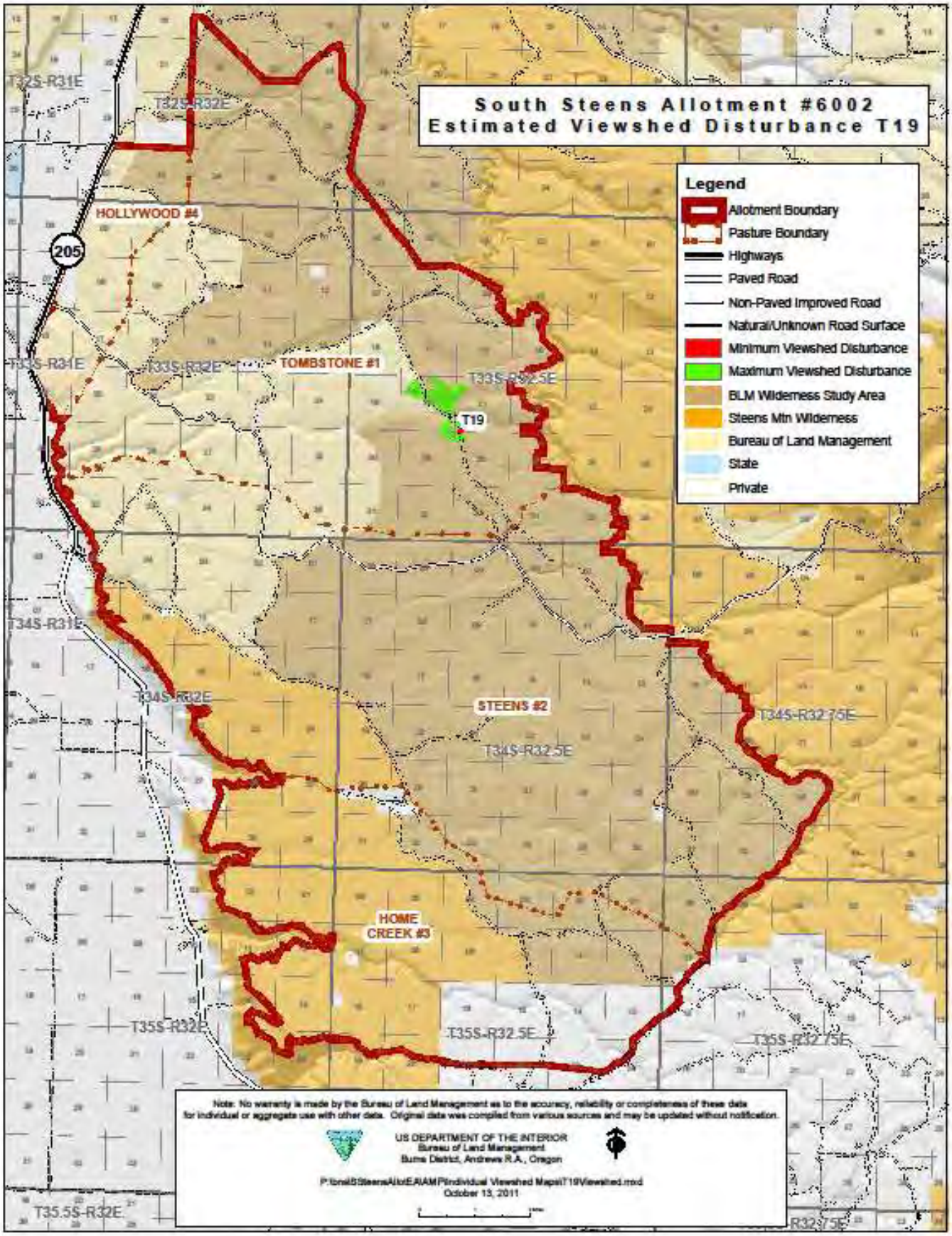
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Estimated Viewshed Disturbance T19
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
T19
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.75E
T34S-R32.5E
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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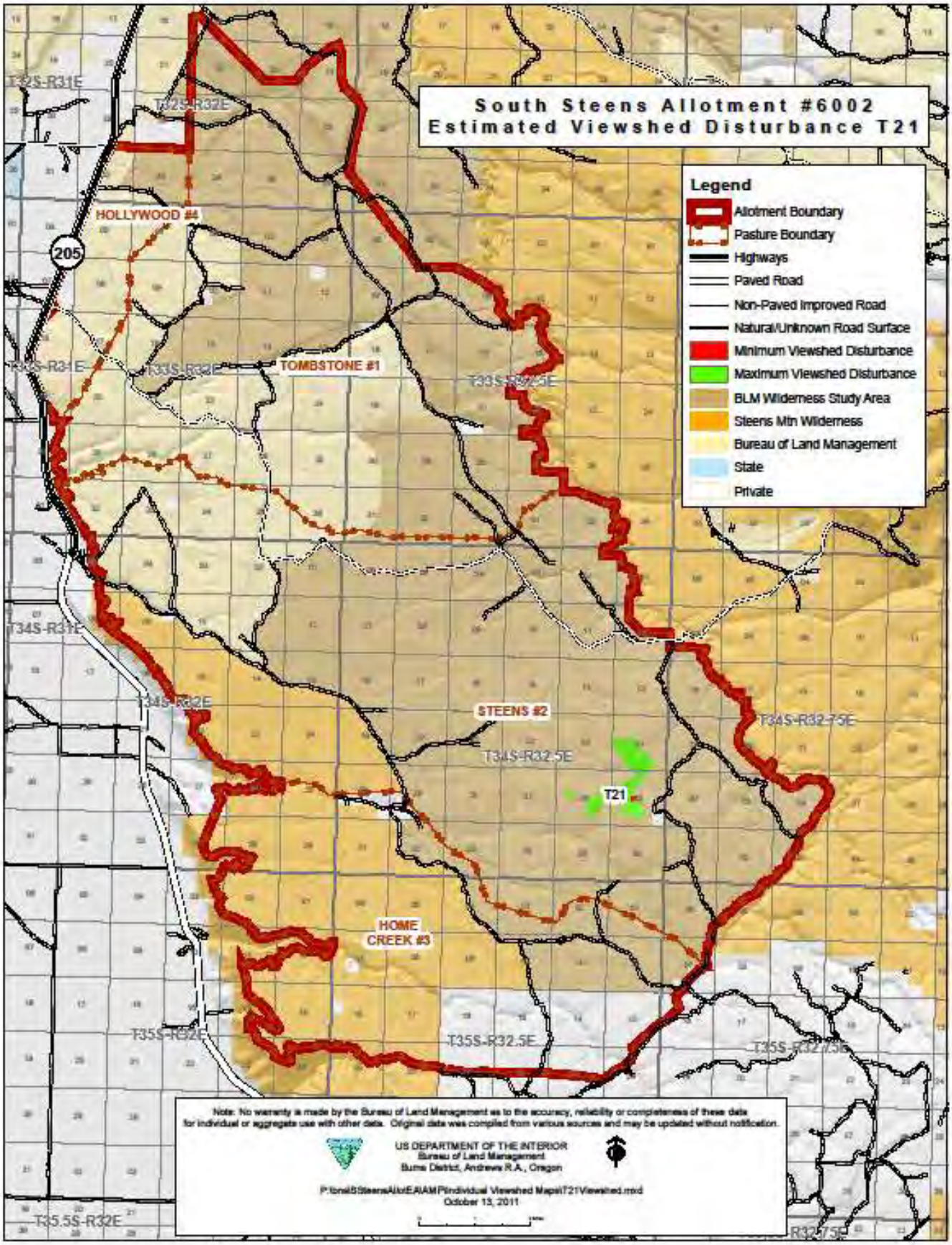
South Steens Allotment #6002
Estimated Viewshed Disturbance T21
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T21
205
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T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
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T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
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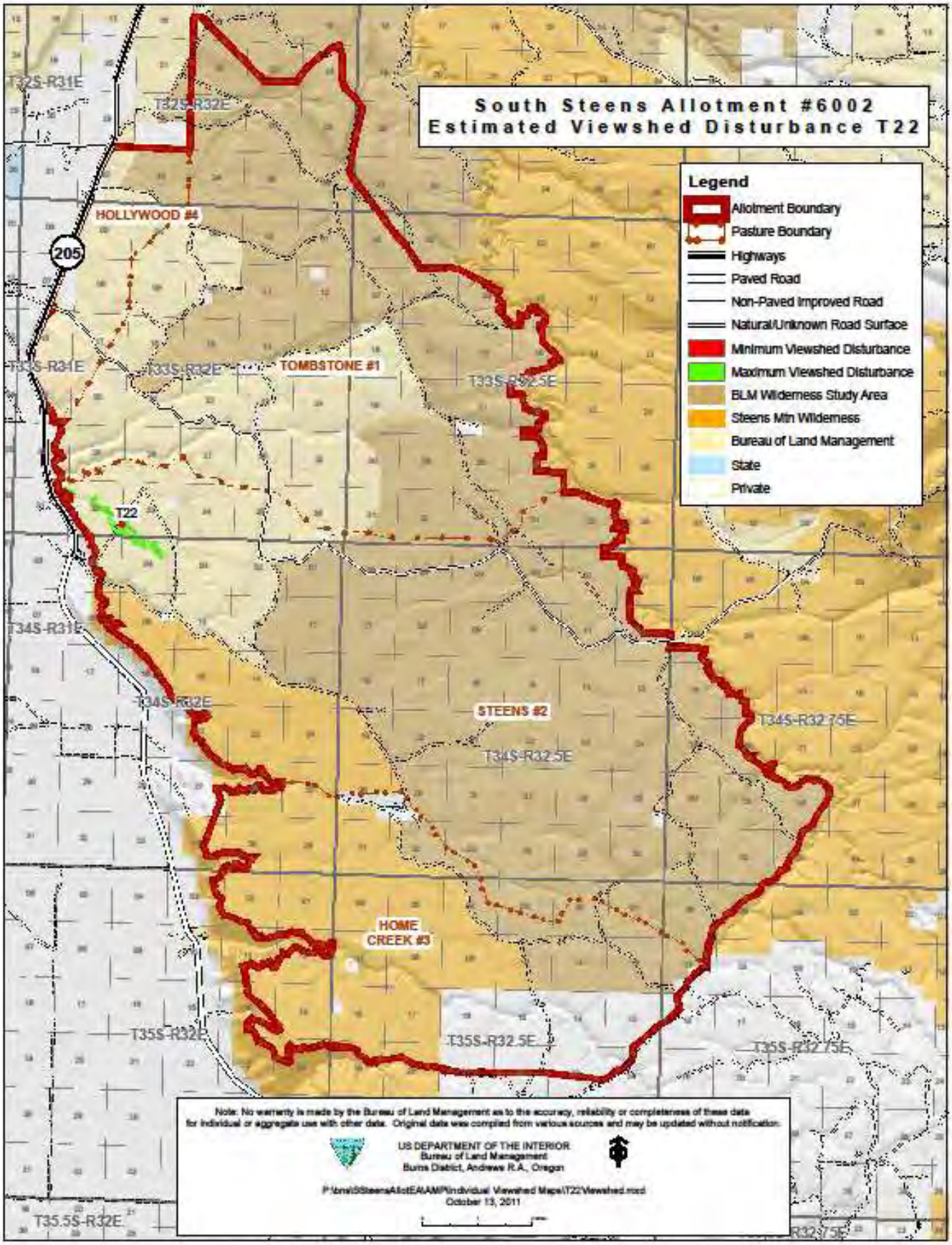
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Estimated Viewshed Disturbance T22
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T22
205
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T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
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T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
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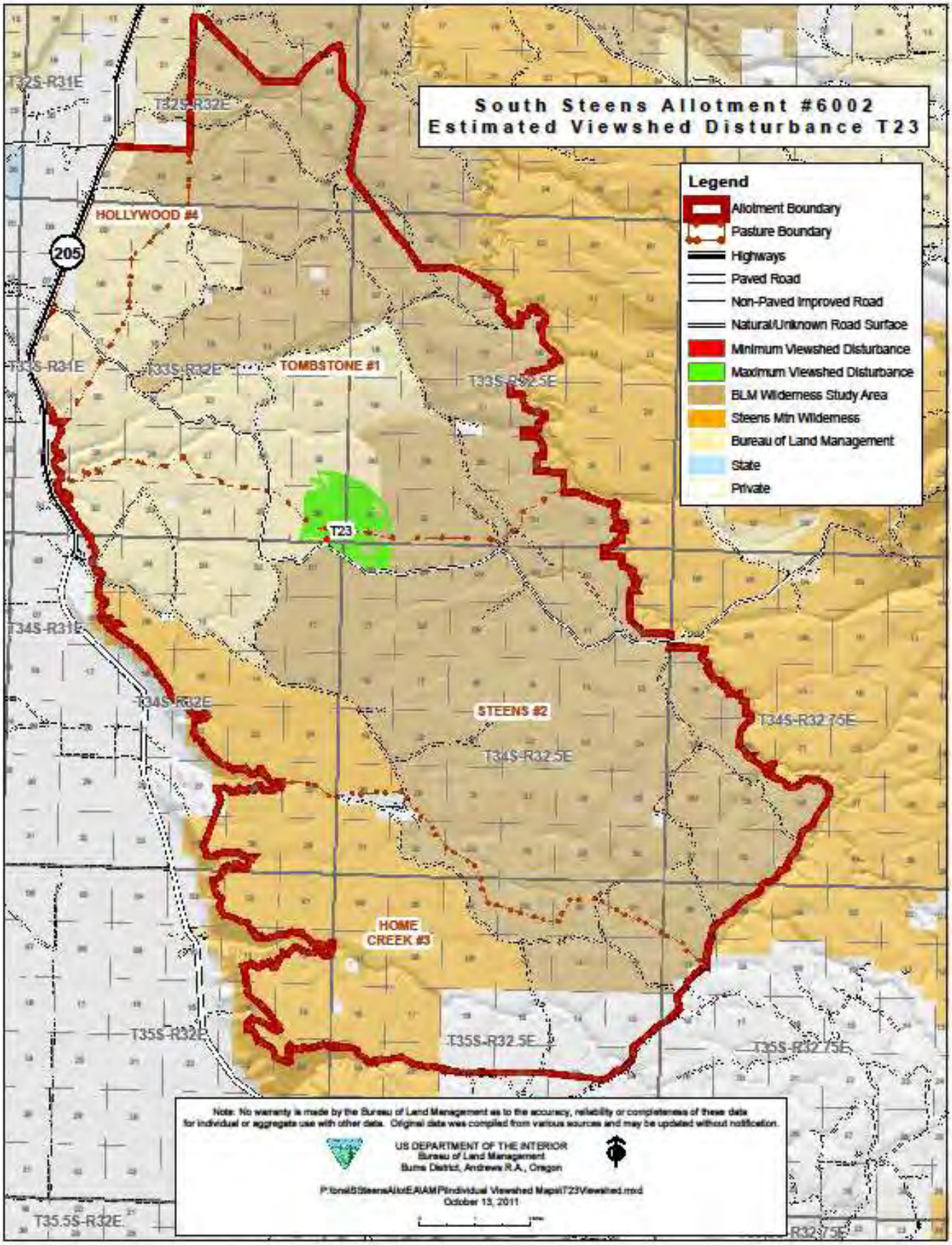
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Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
205
TOMBSTONE #1
T23
STEENS #2
HOME CREEK #3
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T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
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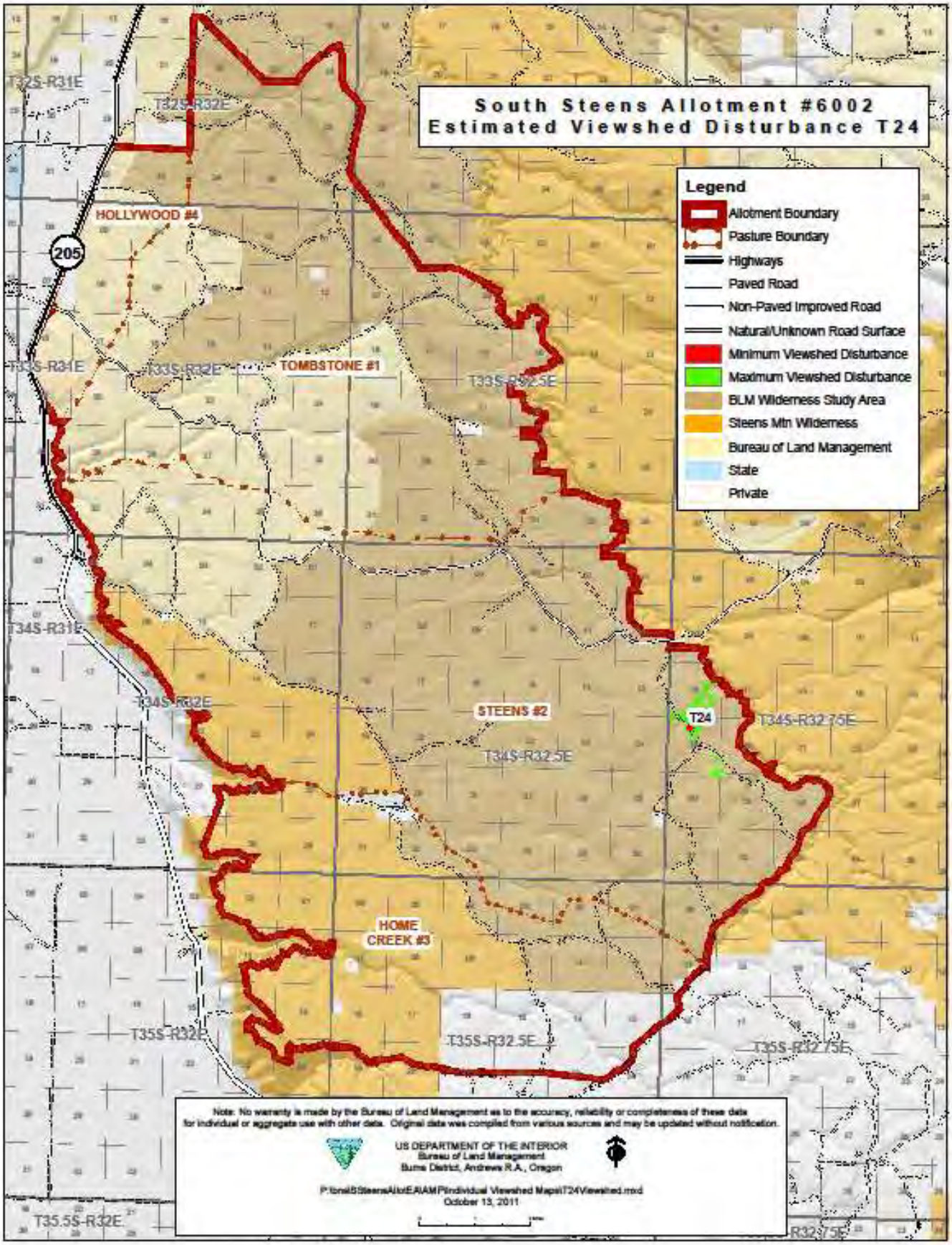
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Estimated Viewshed Disturbance T24
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T24
205
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T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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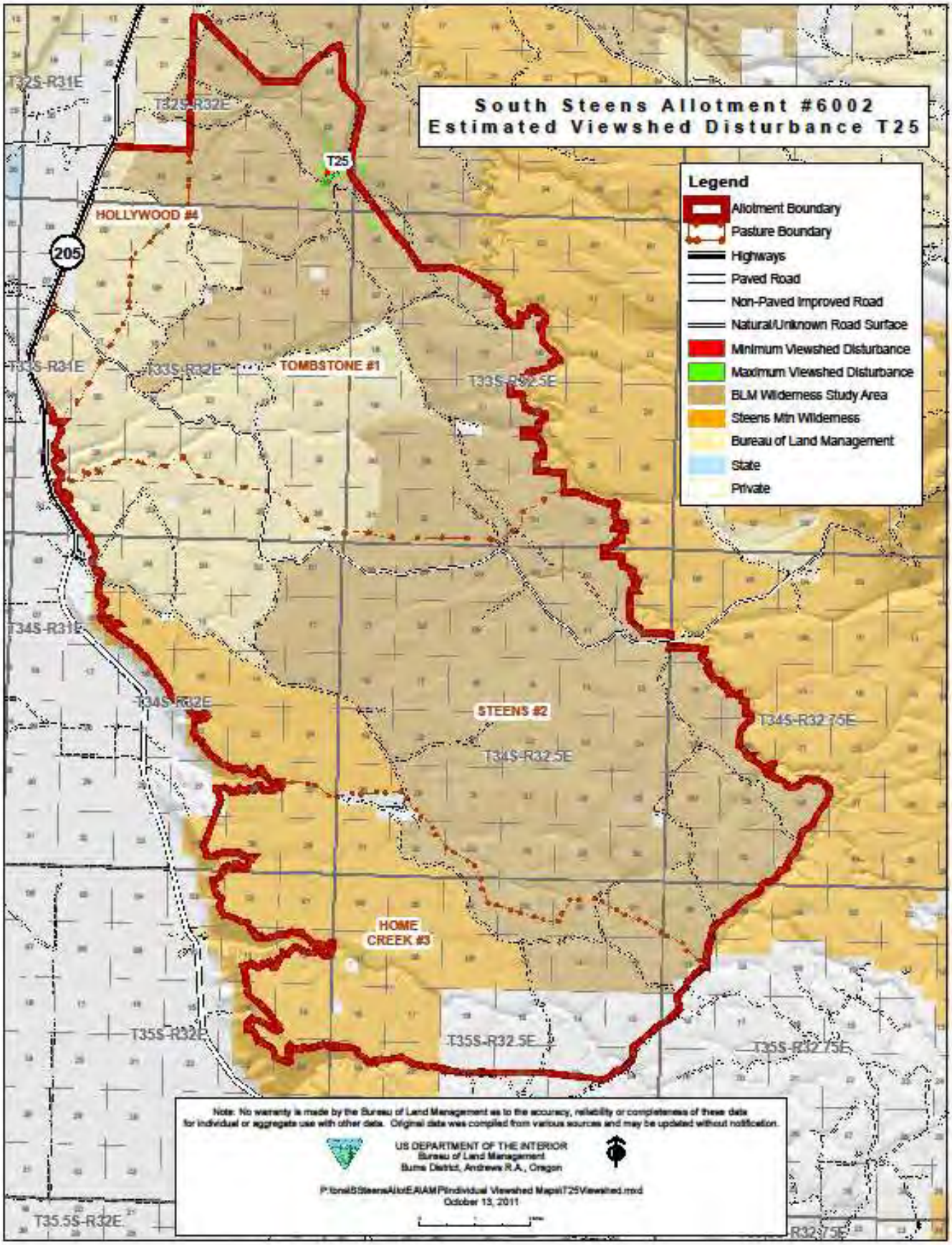
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Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T25
HOLLYWOOD #4
205
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
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T34S-R32E
T34S-R32.5E
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T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
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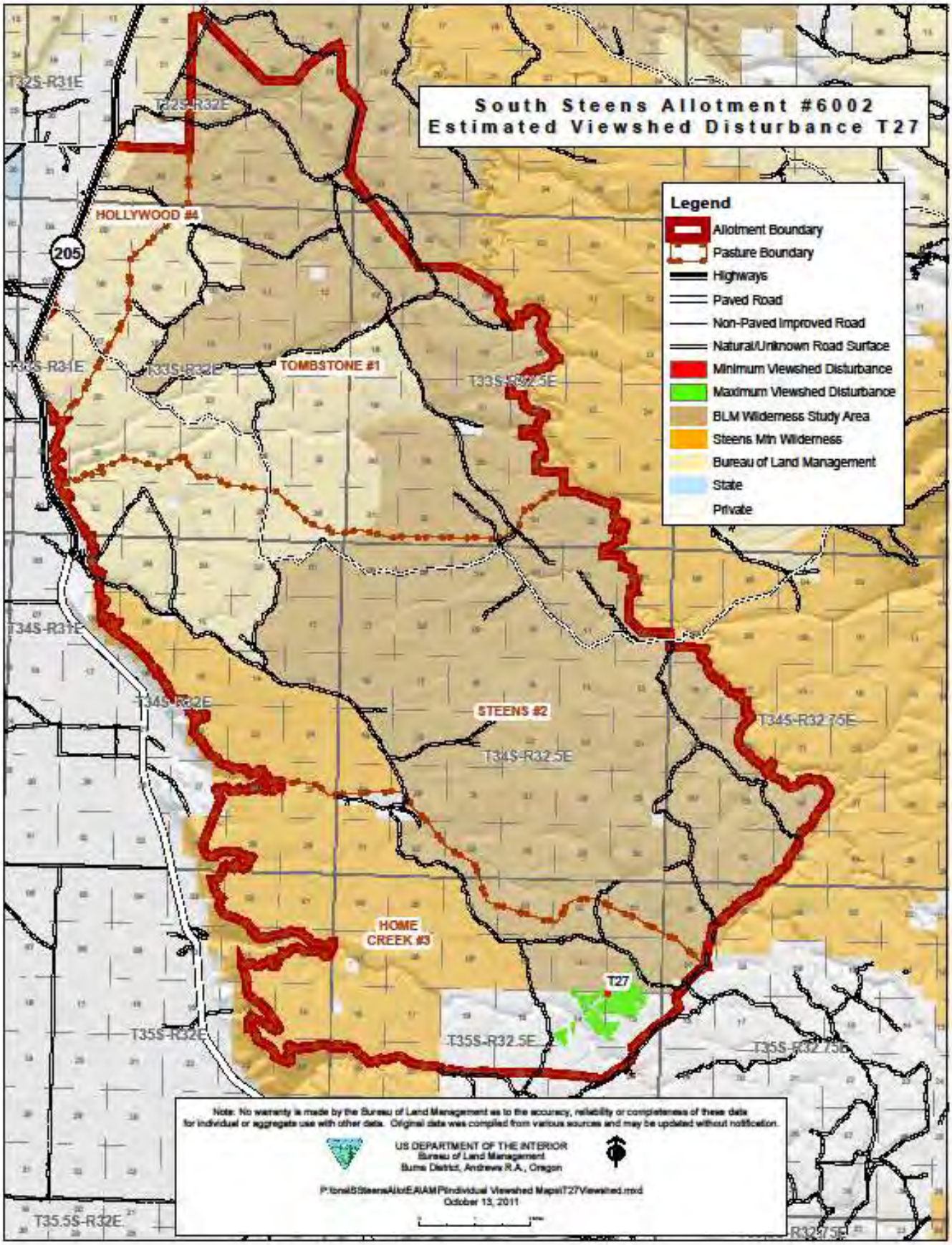
South Steens Allotment #6002
Estimated Viewshed Disturbance T27
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T27
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R32.75E
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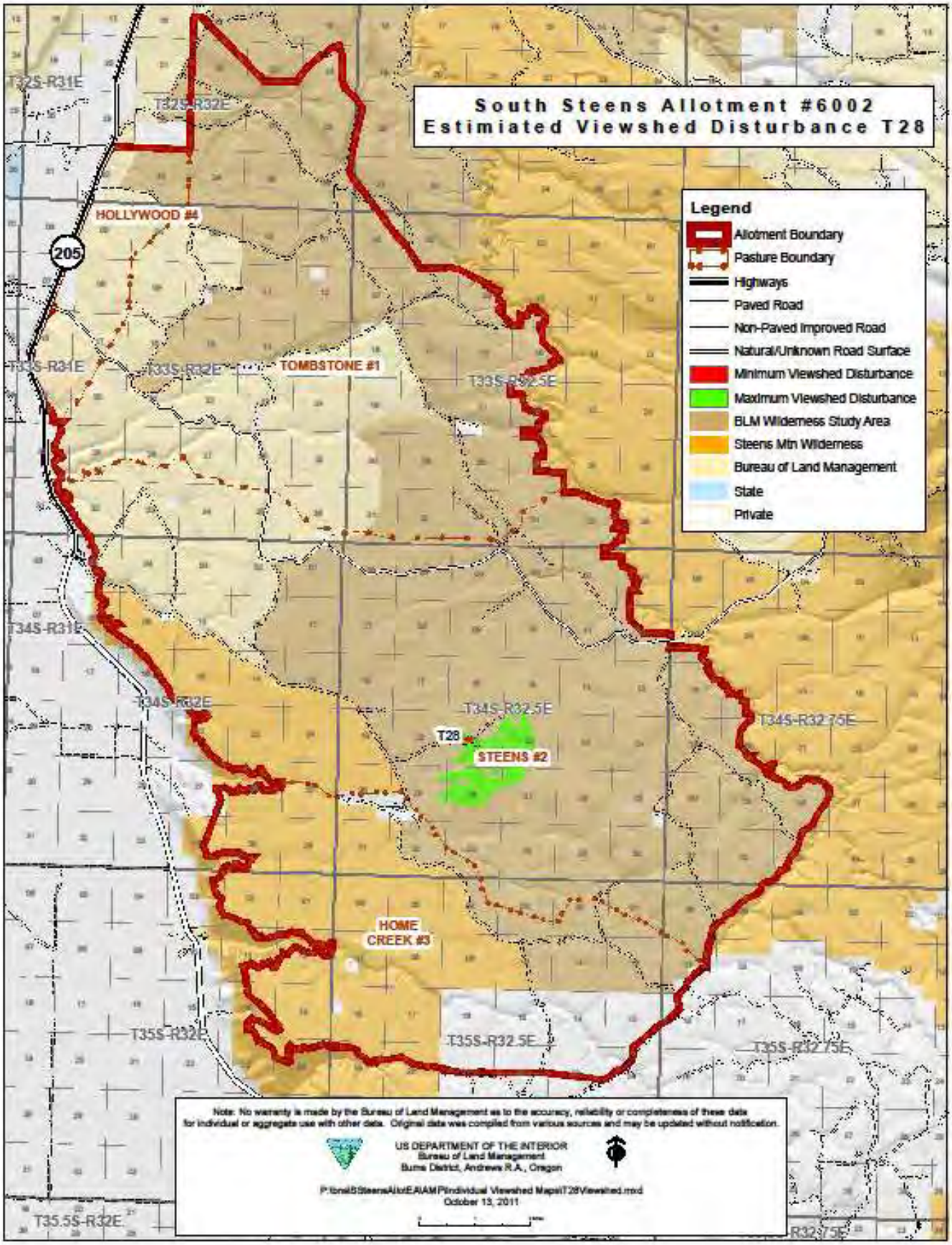
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Estimiated Viewshed Disturbance T28
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T33S-R31E
T33S-R32E
TOMBSTONE #1
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T34S-R31E
T34S-R32E
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T34S-R32.75E
T28
STEENS #2
HOME CREEK #3
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T35S-R32.5E
T35S-R32.75E
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R32.75E
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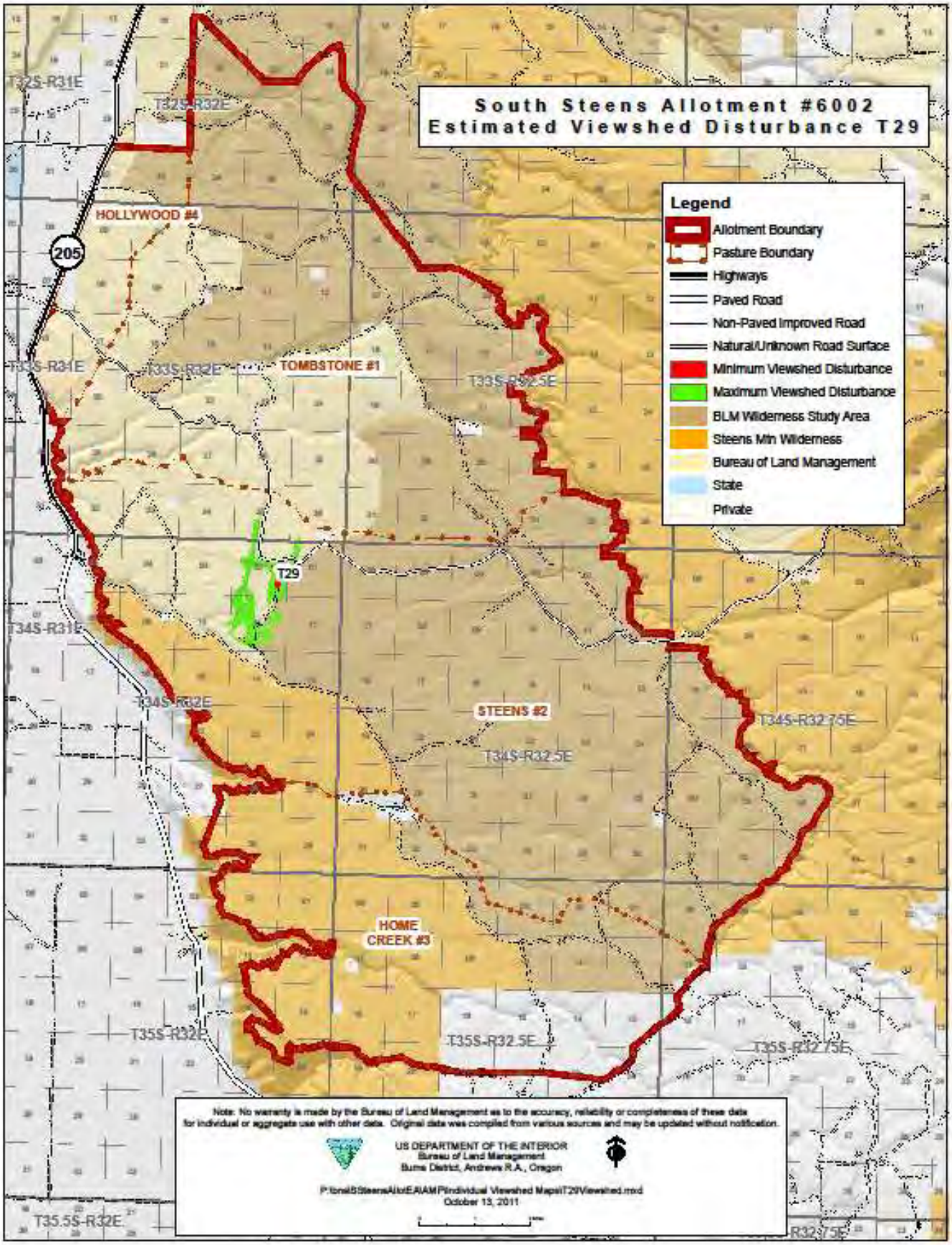
October 13, 2011


South Steens Allotment #6002
Estimated Viewshed Disturbance T29
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Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T29
205
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T33S-R32E
T33S-R32.5E
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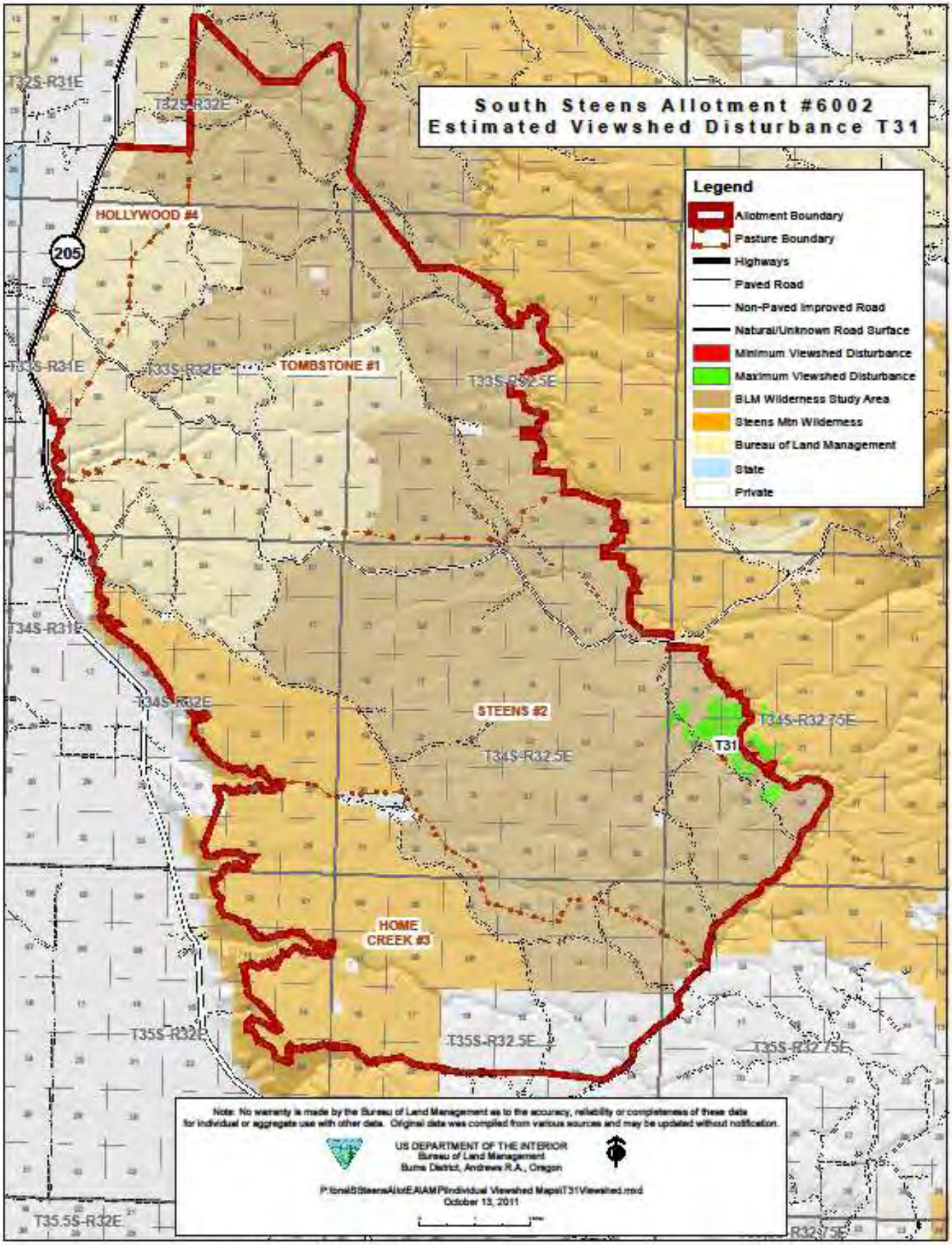
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Estimated Viewshed Disturbance T31
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
205
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T32S-R32E
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T33S-R32E
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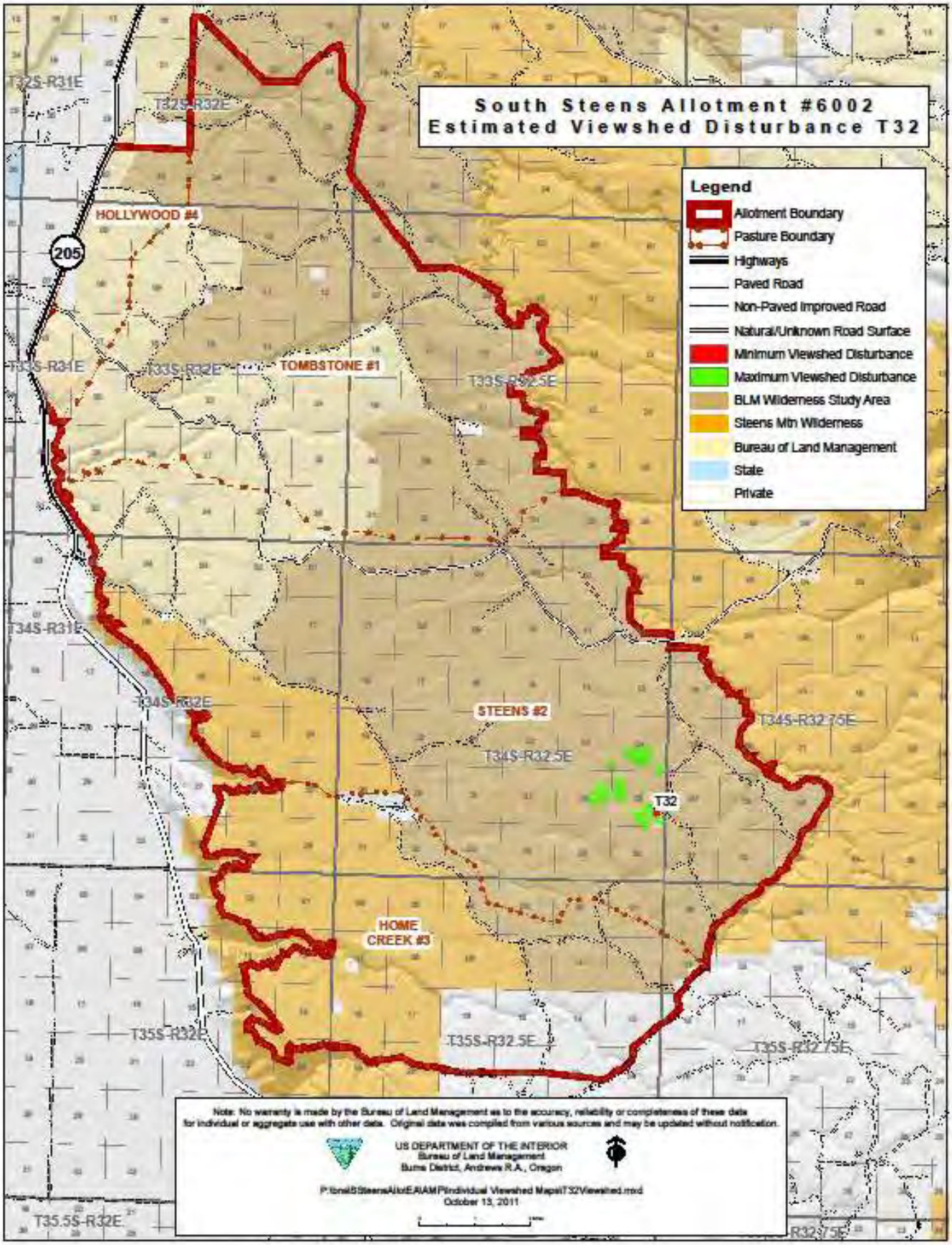
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Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
205
T32
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T33S-R31E
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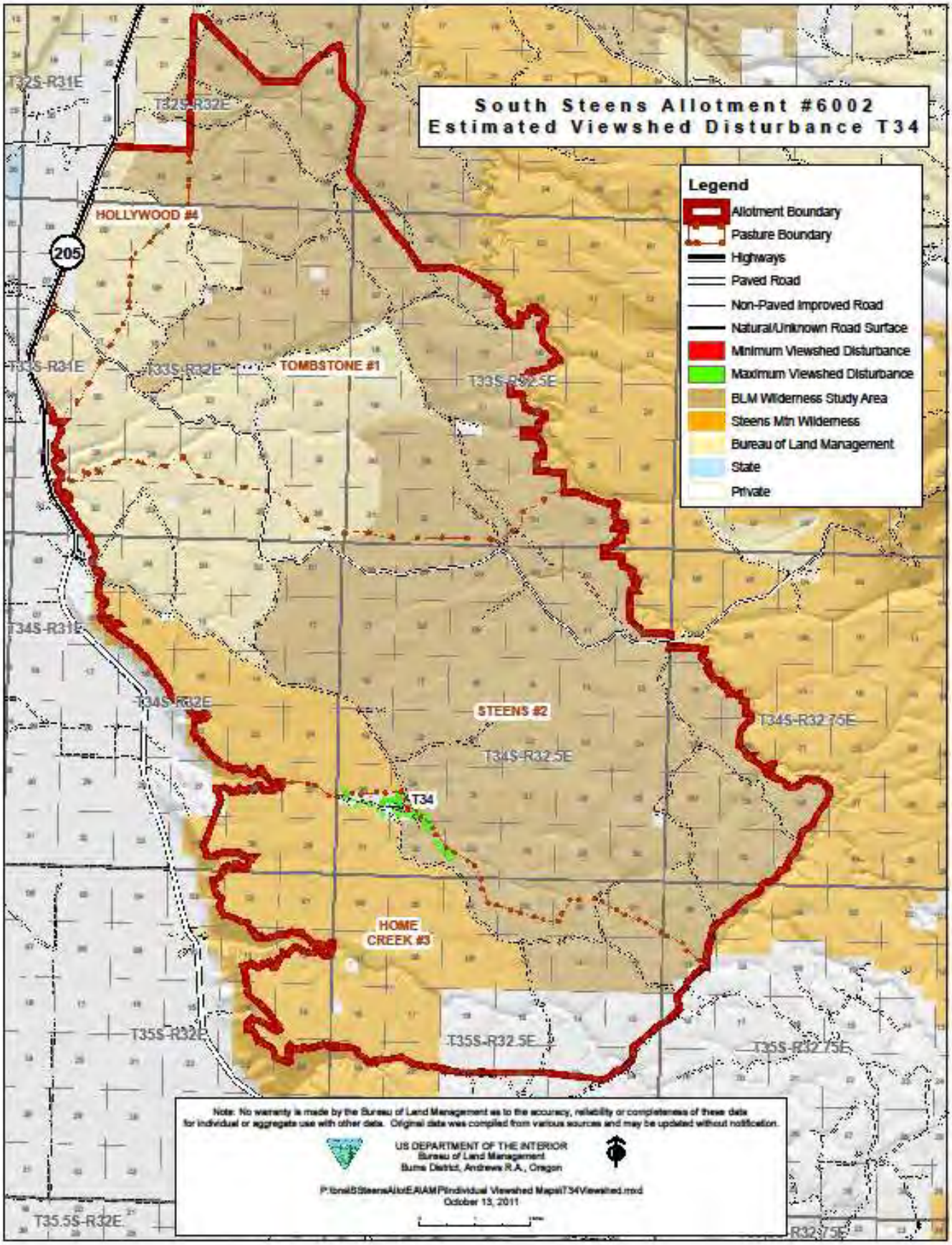
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Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T34
205
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
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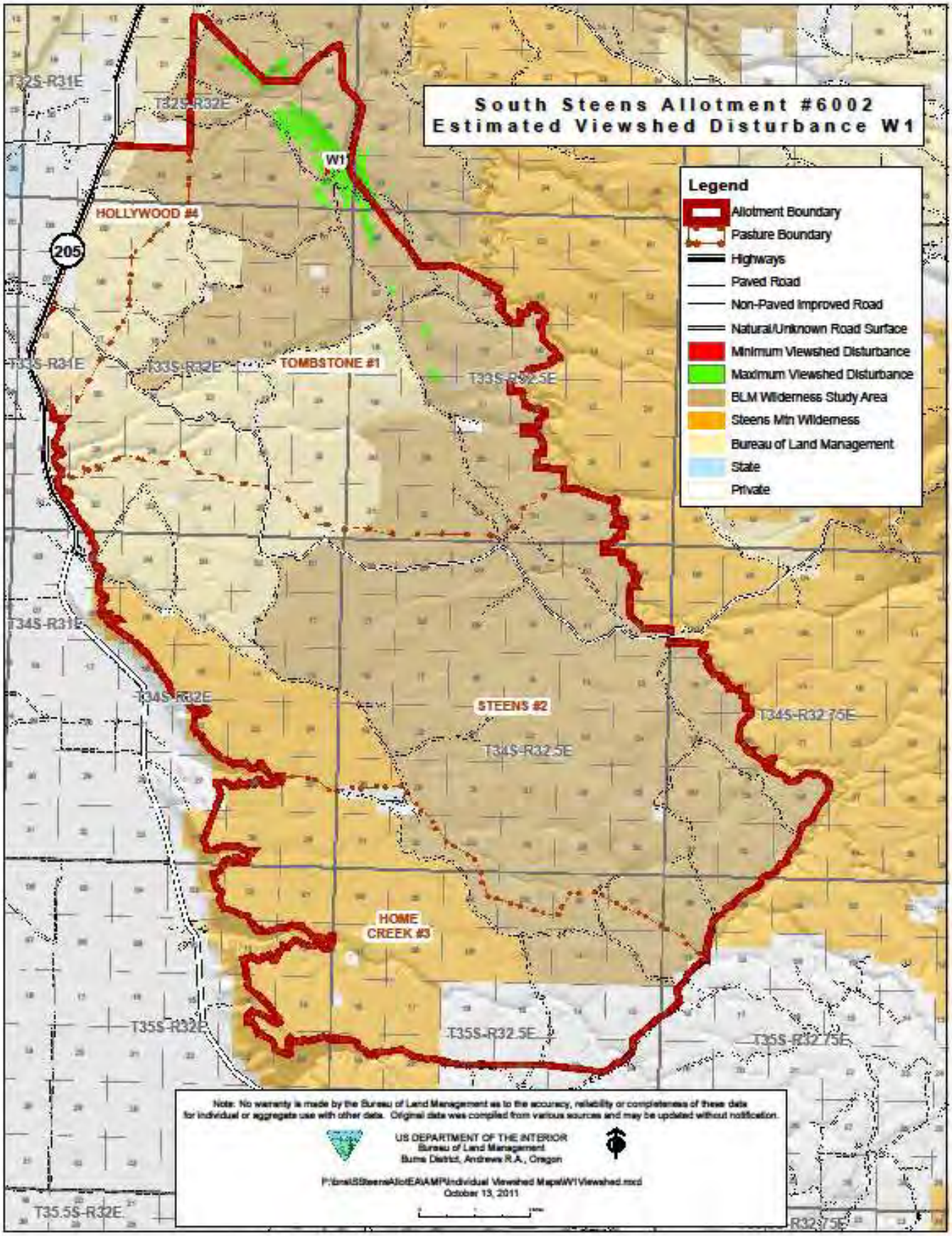
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Estimated Viewshed Disturbance W1
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Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
W1
HOLLYWOOD #4
205
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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US DEPARTMENT OF THE INTERIOR
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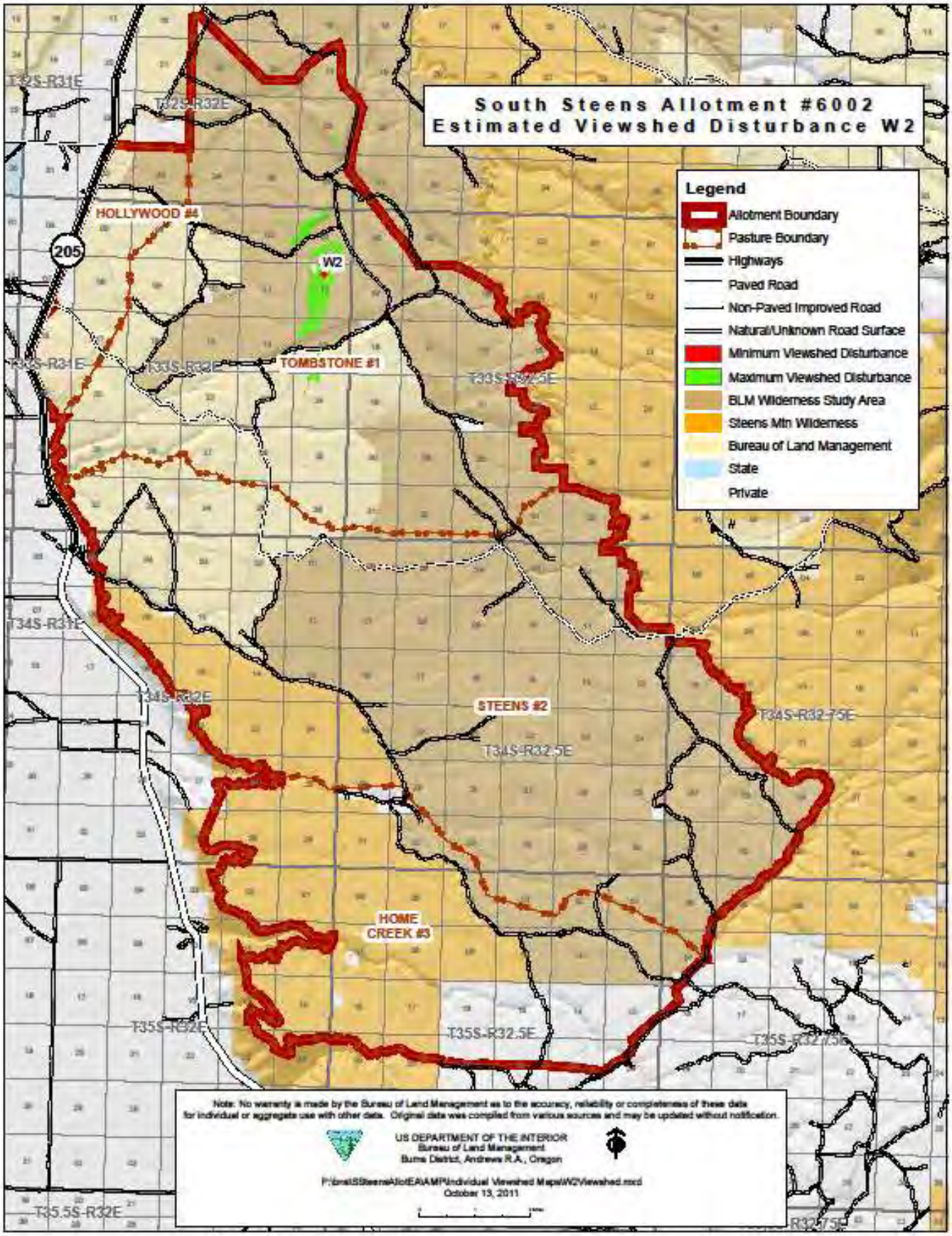
Burns District, Andrews R.A., Oregon
October 13, 2011


South Steens Allotment #6002
Estimated Viewshed Disturbance W2
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
205
W2
TOMBSTONE #1
STEENS #2
HOME CREEK #3
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
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T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
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T35.5S-R32E
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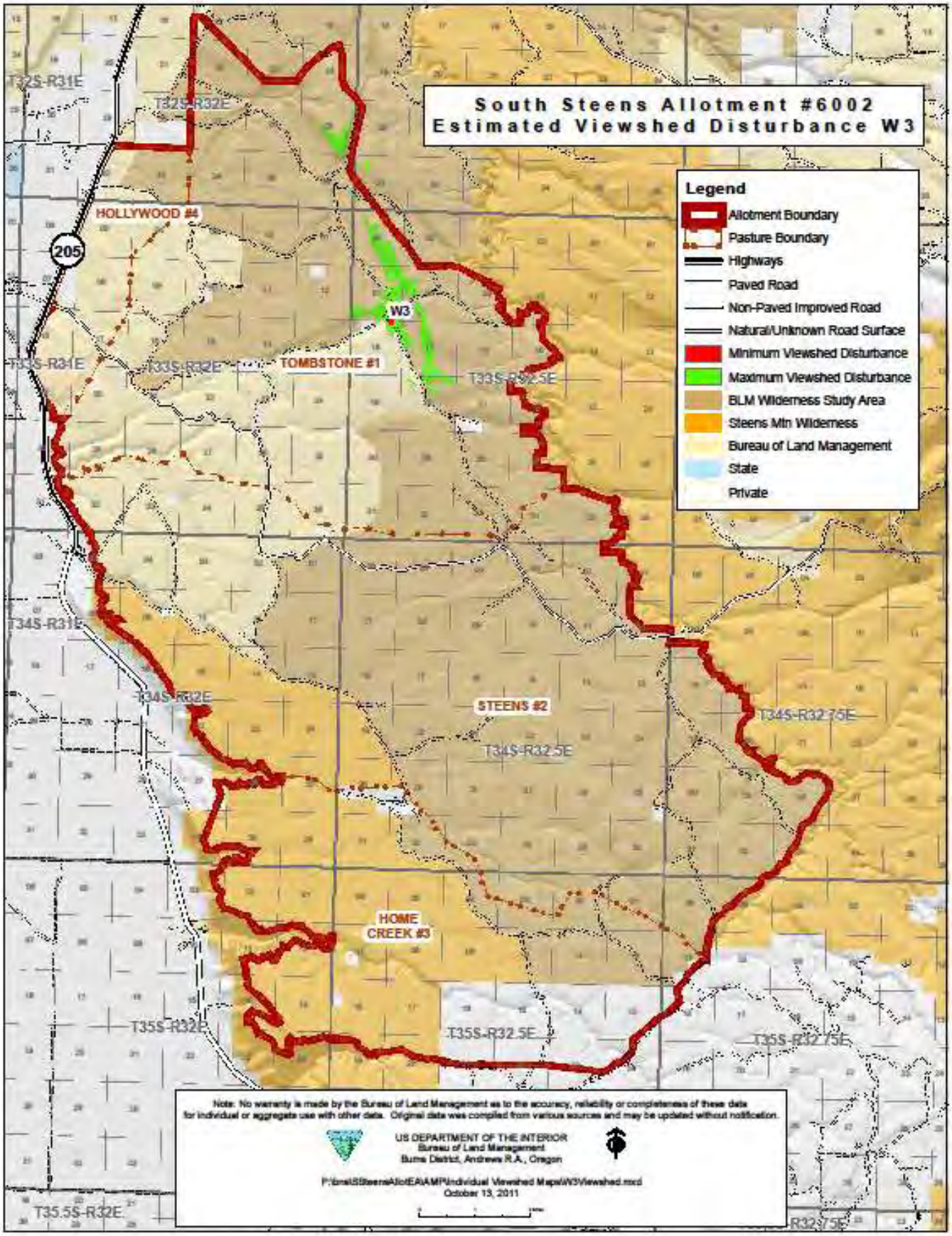
South Steens Allotment #6002
Estimated Viewshed Disturbance W3
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
W3
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.75E
T34S-R32.5E
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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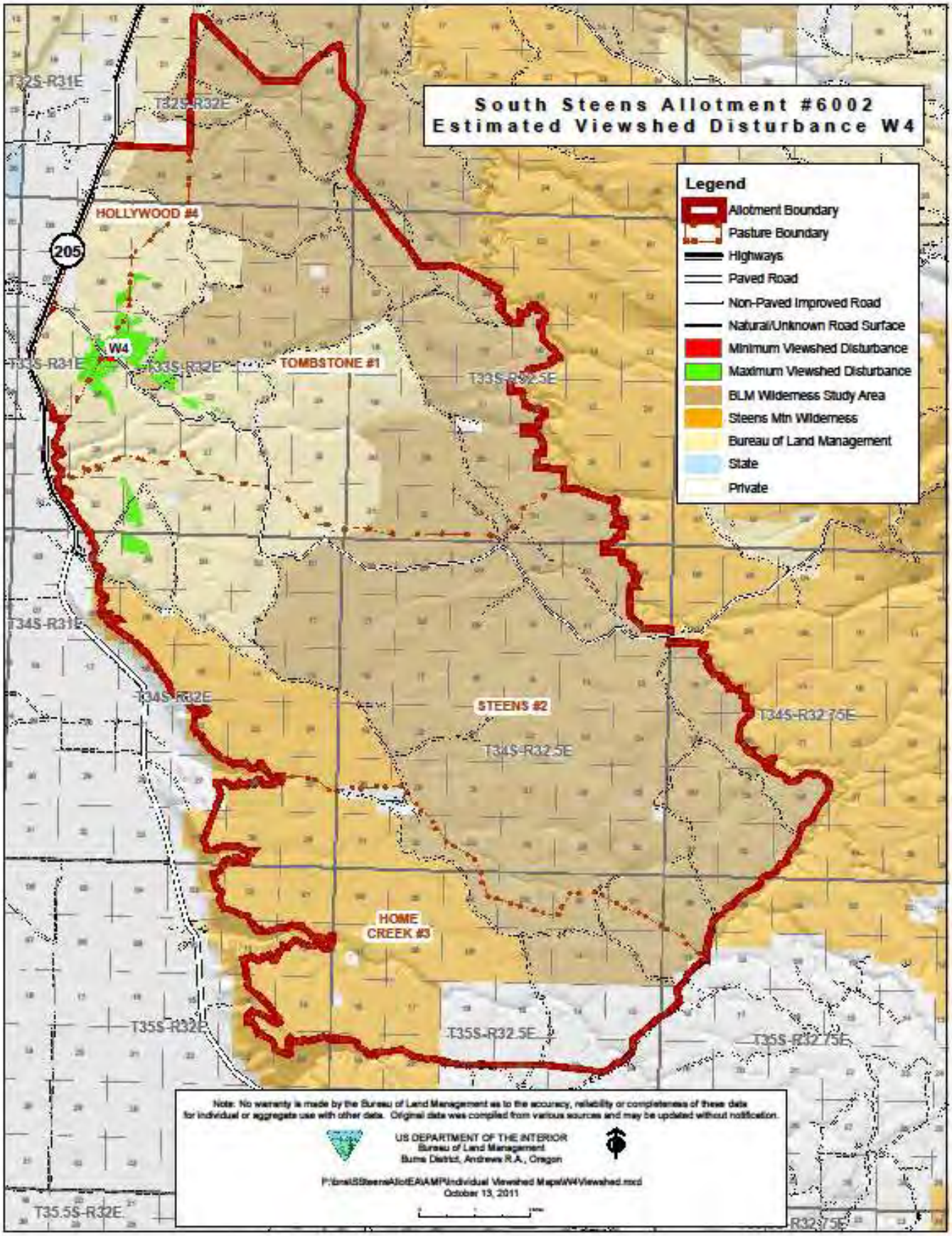
South Steens Allotment #6002
Estimated Viewshed Disturbance W4
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
W4
205
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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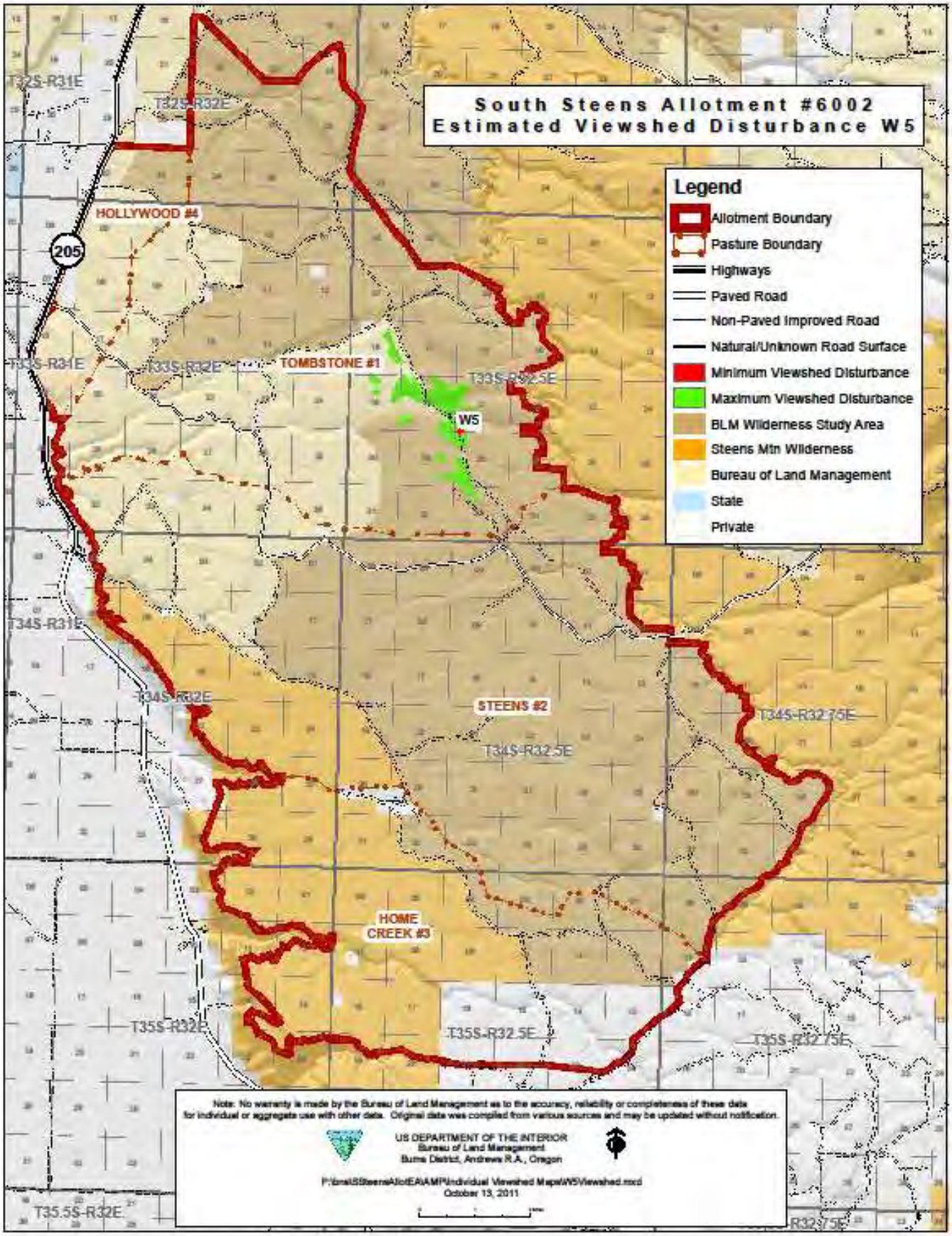
South Steens Allotment #6002
Estimated Viewshed Disturbance W5
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
W5
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.75E
T34S-R32.5E
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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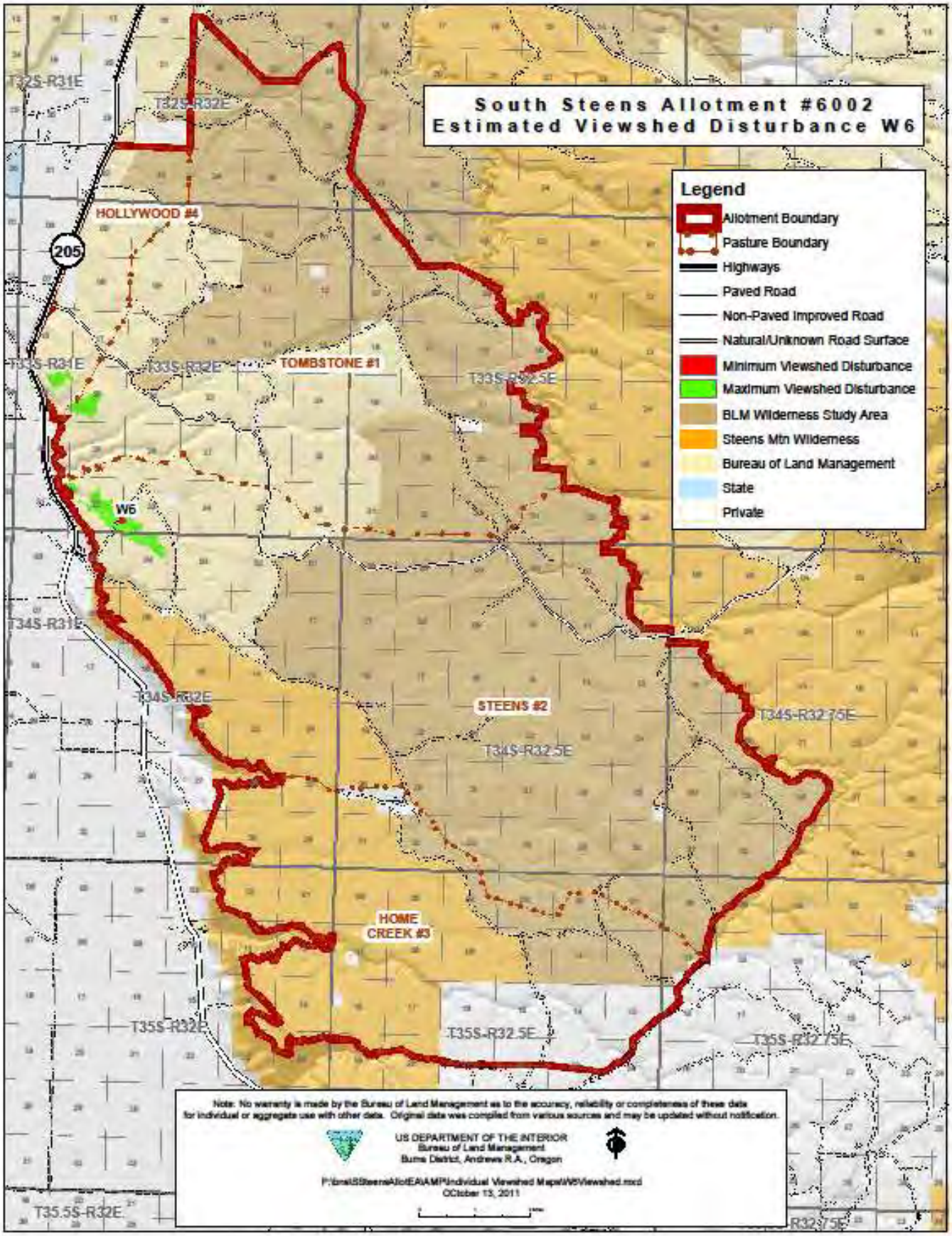
South Steens Allotment #6002
Estimated Viewshed Disturbance W6
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
W6
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.75E
T34S-R32.5E
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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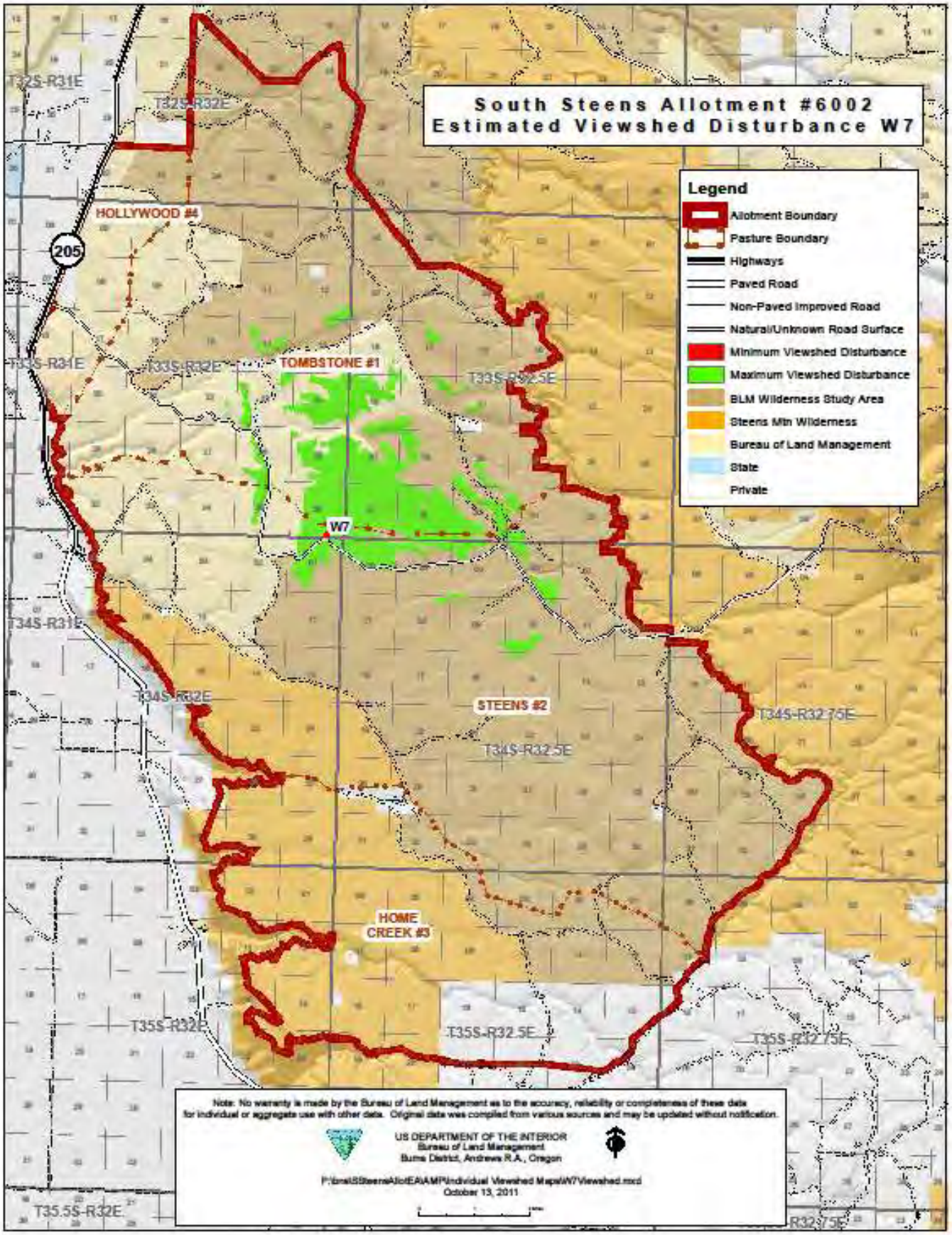
South Steens Allotment #6002
Estimated Viewshed Disturbance W7
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
W7
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.75E
T34S-R32.5E
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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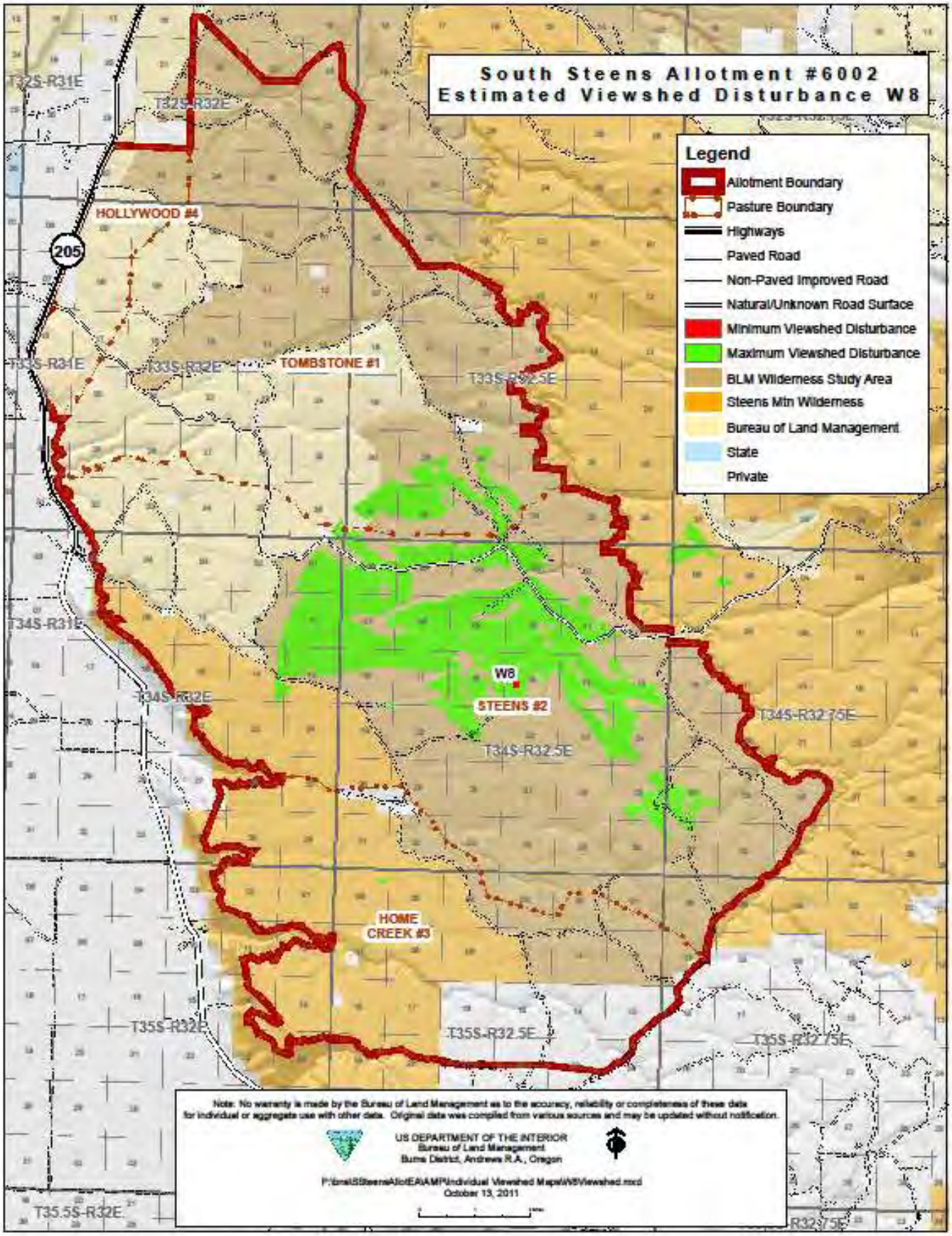
South Steens Allotment #6002
Estimated Viewshed Disturbance W8
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
T34S-R31E
T34S-R32E
W8
STEENS #2
T34S-R32.75E
T34S-R32.5E
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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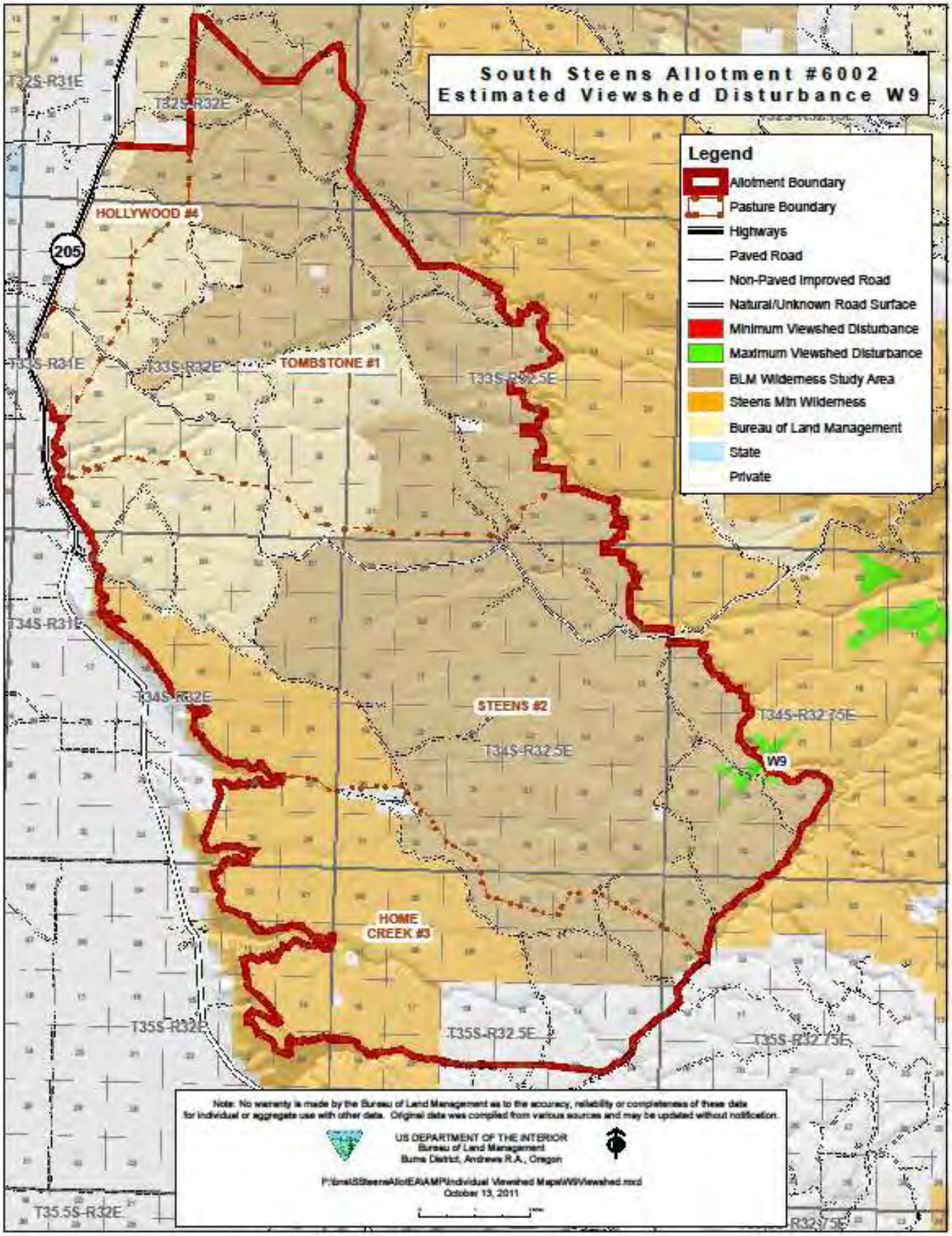
South Steens Allotment #6002
Estimated Viewshed Disturbance W9
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.5E
T34S-R32.75E
W9
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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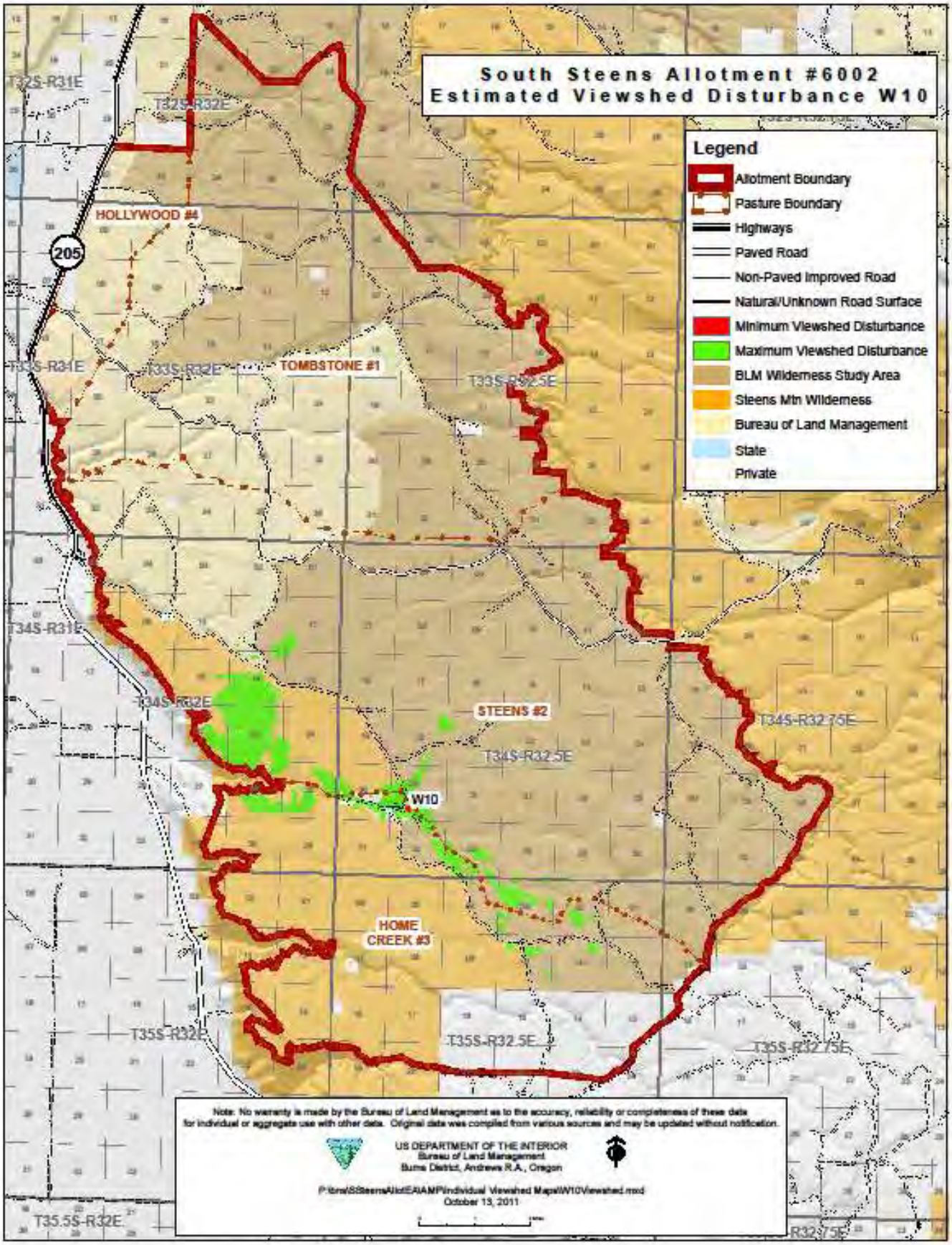
South Steens Allotment #6002
Estimated Viewshed Disturbance W10
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
W10
205
T32S-R31E
T32S-R32E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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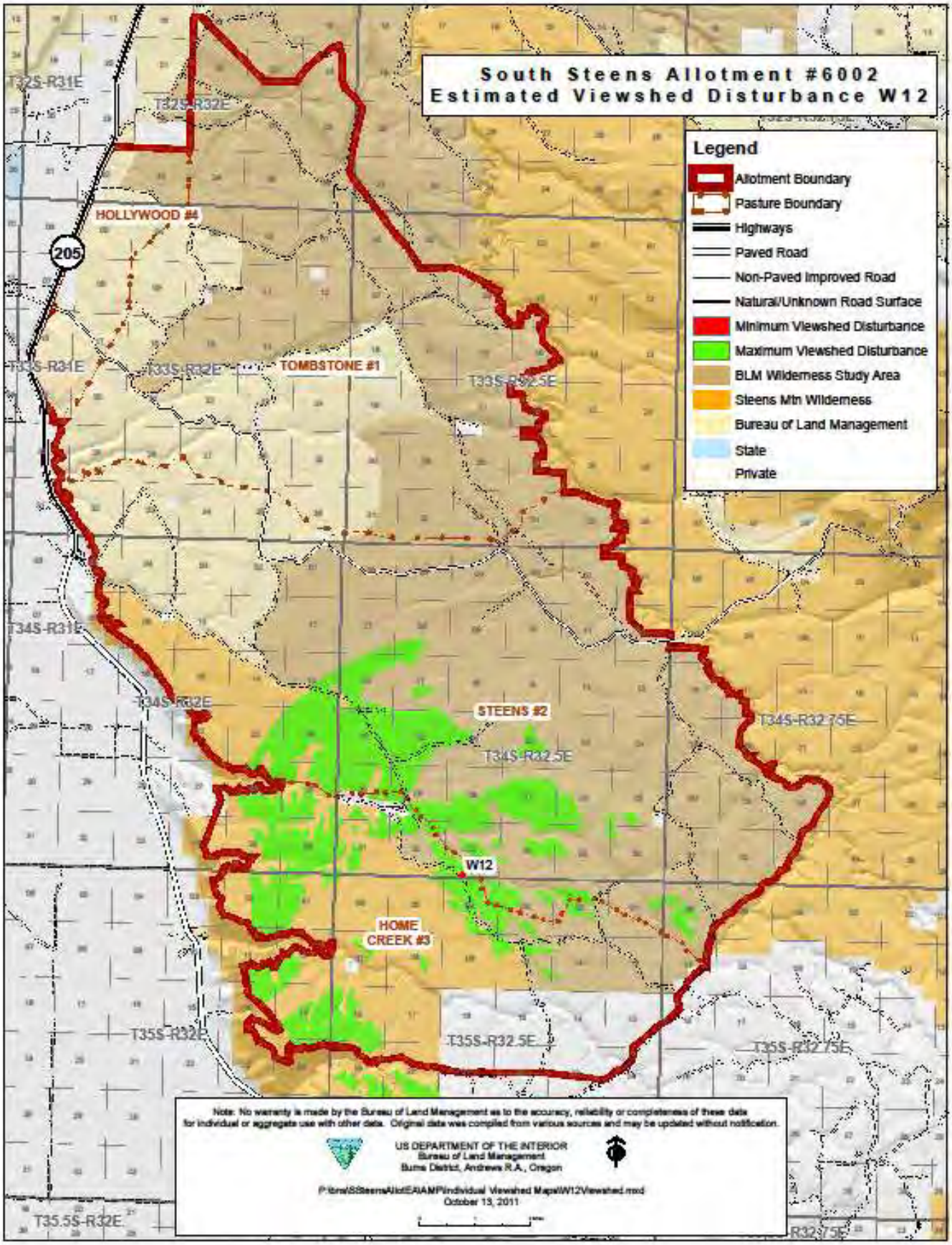
South Steens Allotment #6002
Estimated Viewshed Disturbance W12
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.5E
T34S-R32.75E
W12
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
T35.5S-R32E
R32.75E
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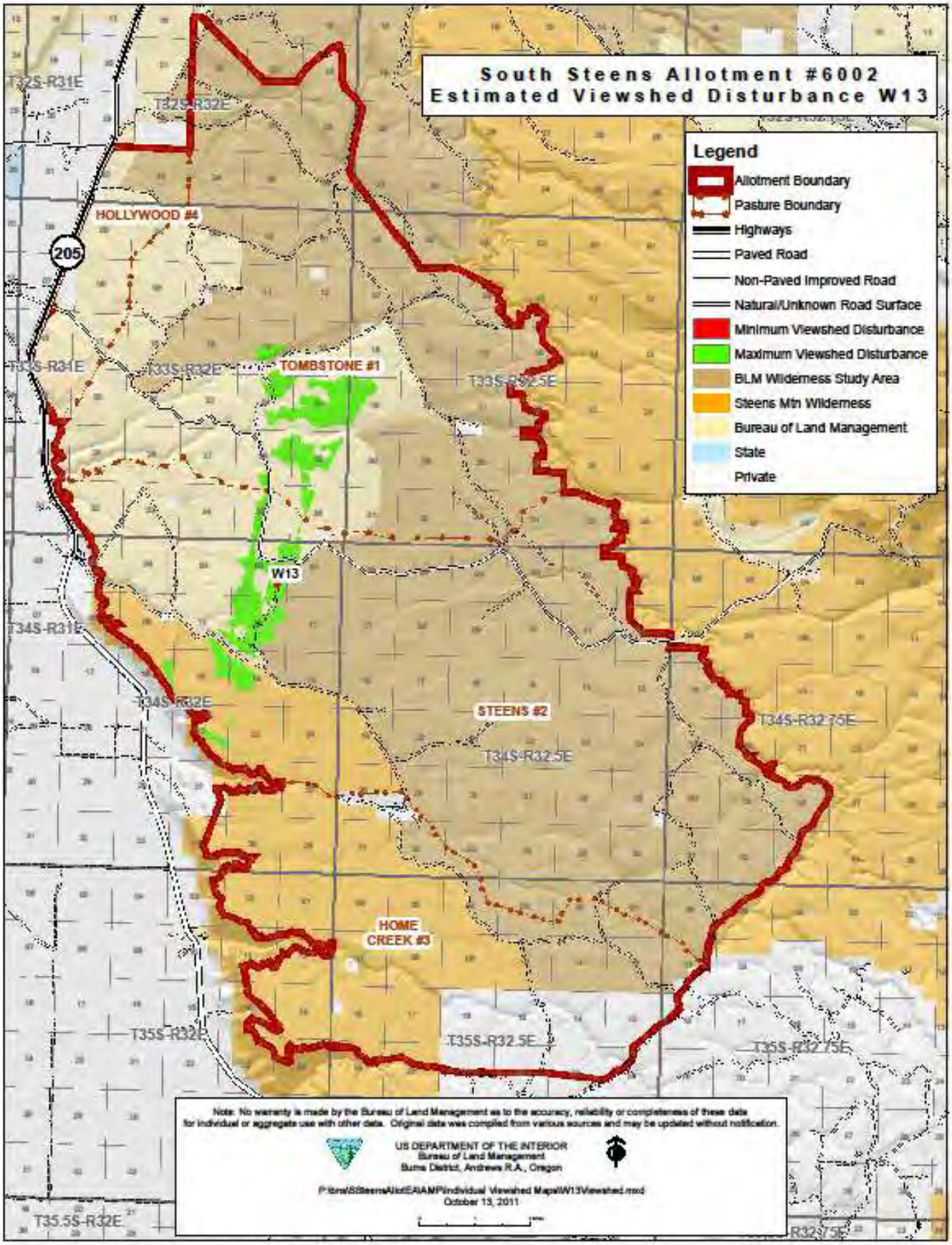
South Steens Allotment #6002
Estimated Viewshed Disturbance W13
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
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T33S-R32E
TOMBSTONE #1
T33S-R32.5E
W13
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T34S-R32E
STEENS #2
T34S-R32.75E
T34S-R32.5E
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
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R32.75E
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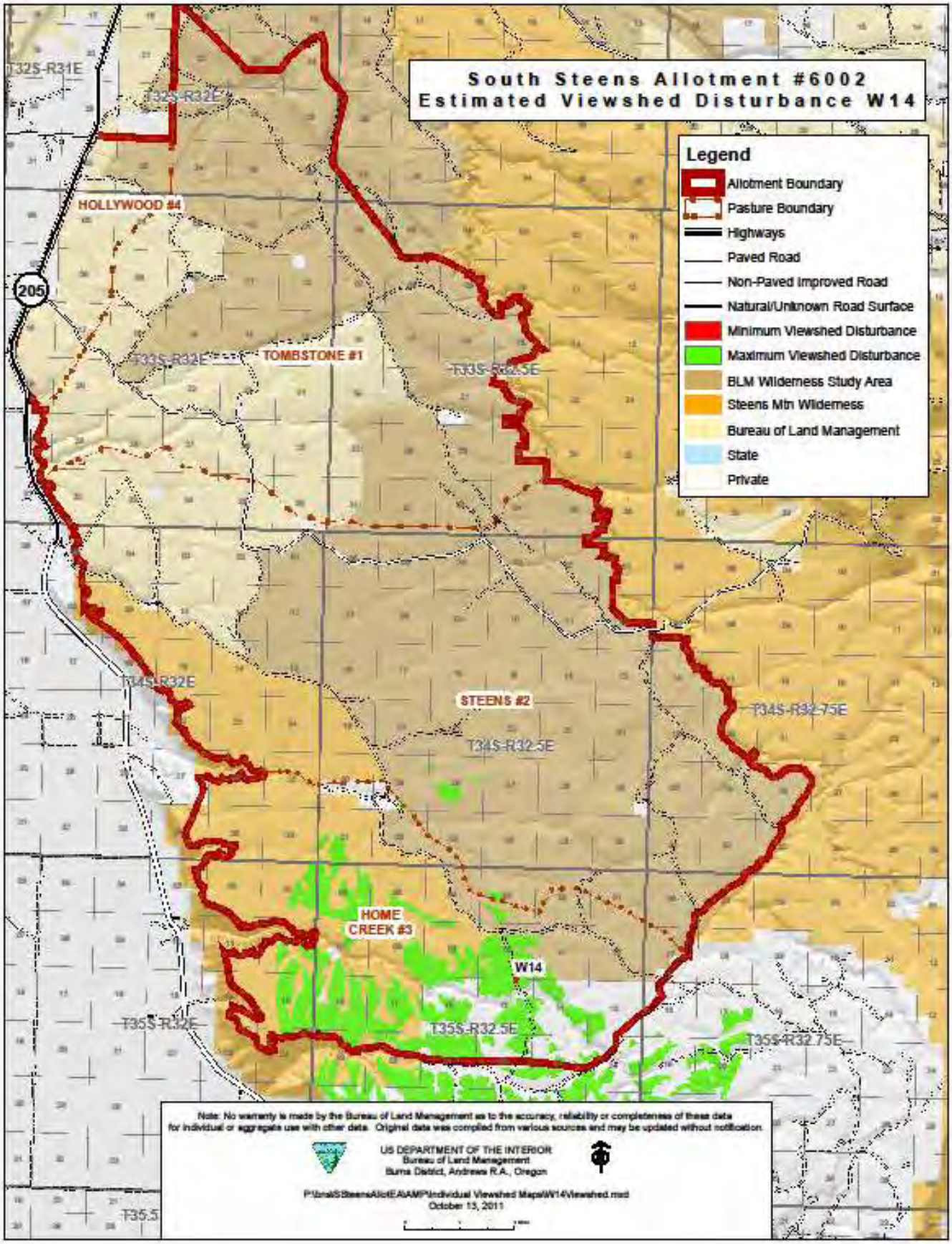
South Steens Allotment #6002
Estimated Viewshed Disturbance W14
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
T34S-R32E
STEENS #2
T34S-R32.5E
T34S-R32.75E
HOME CREEK #3
W14
T35S-R32E
T35S-R32.5E
T35S-R32.75E
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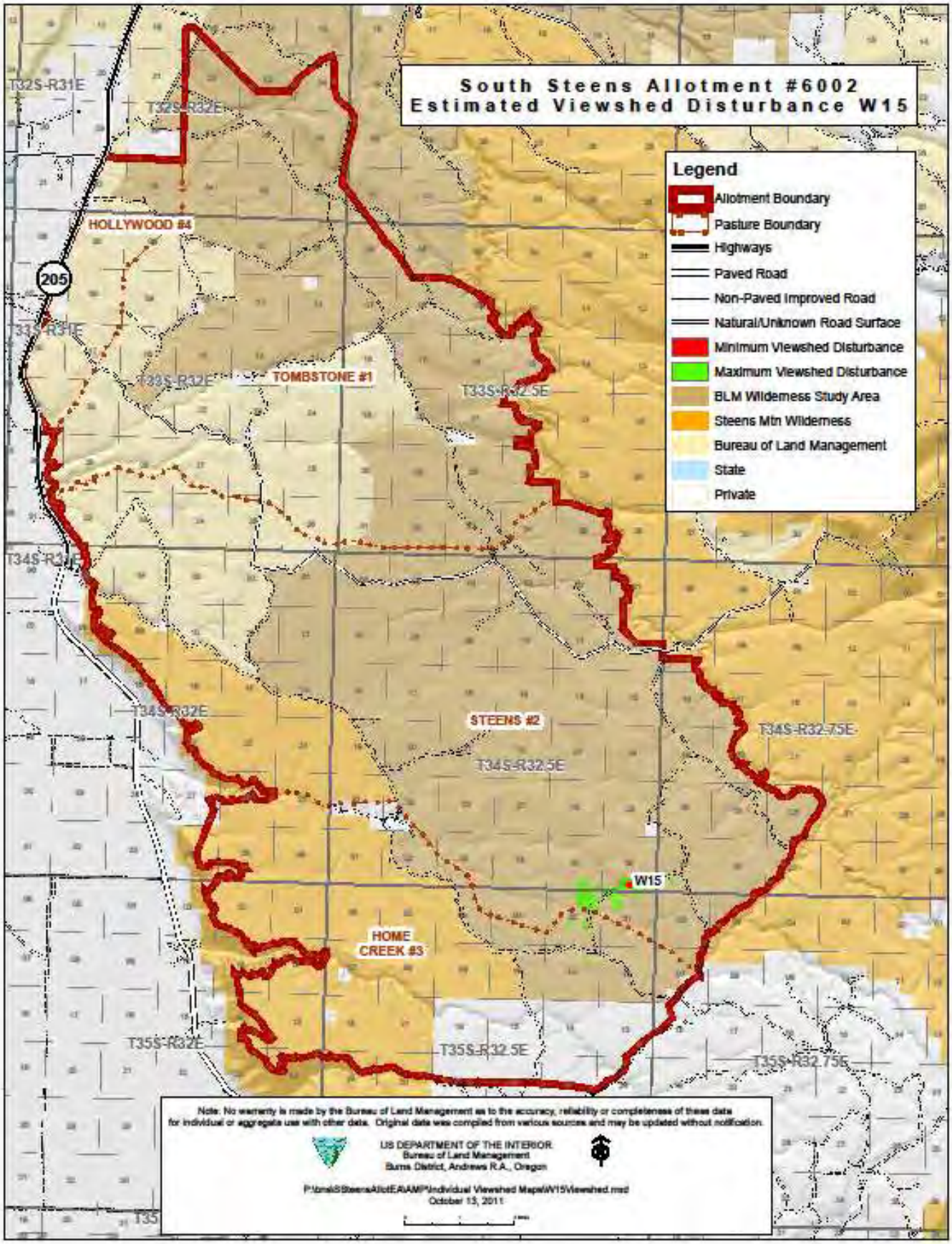
South Steens Allotment #6002
Estimated Viewshed Disturbance W15
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
205
T33S-R31E
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.5E
T34S-R32.75E
W15
HOME CREEK #3
T35S-R32E
T35S-R32.5E
T35S-R32.75E
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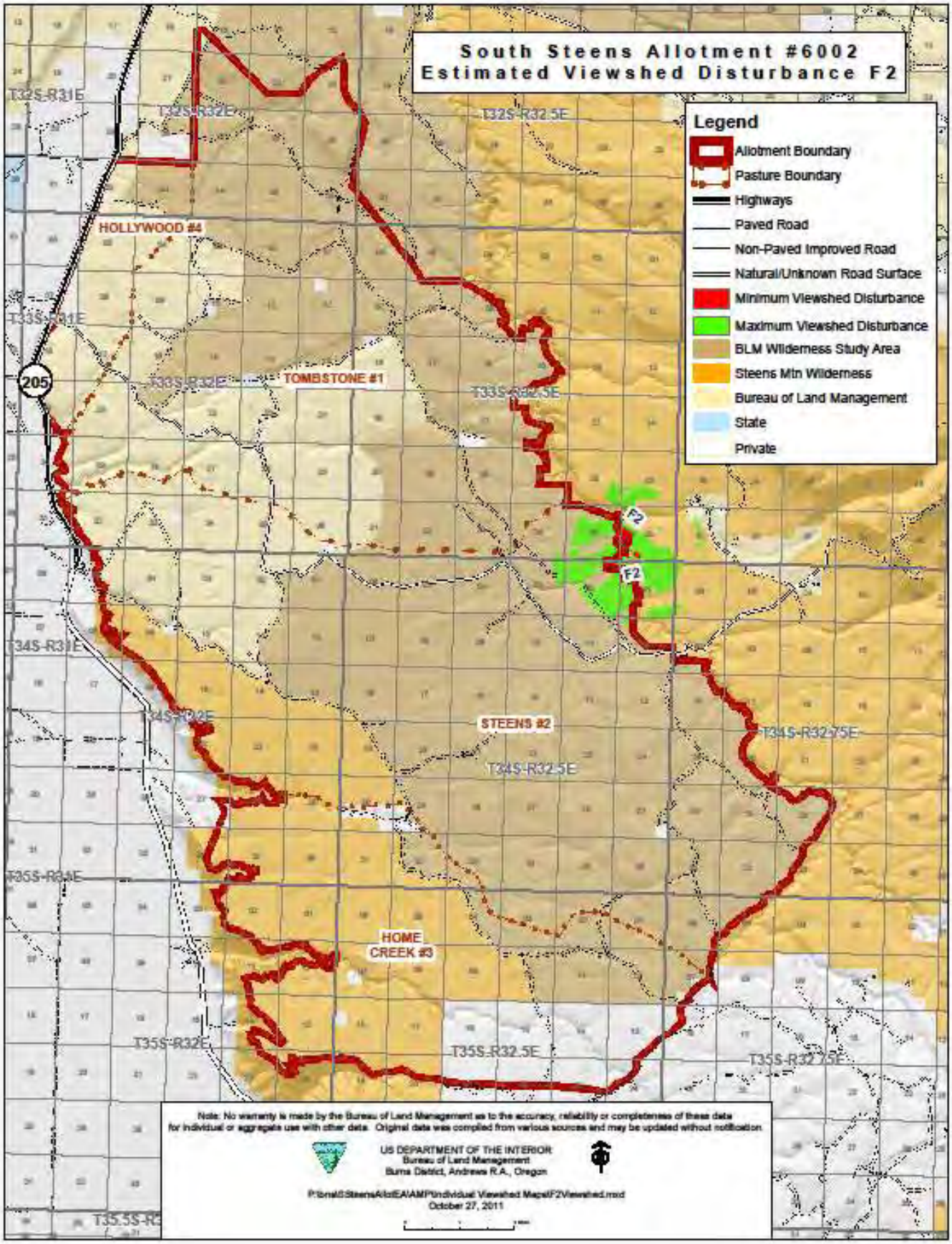
South Steens Allotment #6002
Estimated Viewshed Disturbance F2
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
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Minimum Viewshed Disturbance
Maximum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
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T32S-R32E
T32S-R32.5E
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205
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
F2
F2
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.75E
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HOME
CREEK #3
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T35S-R32.75E
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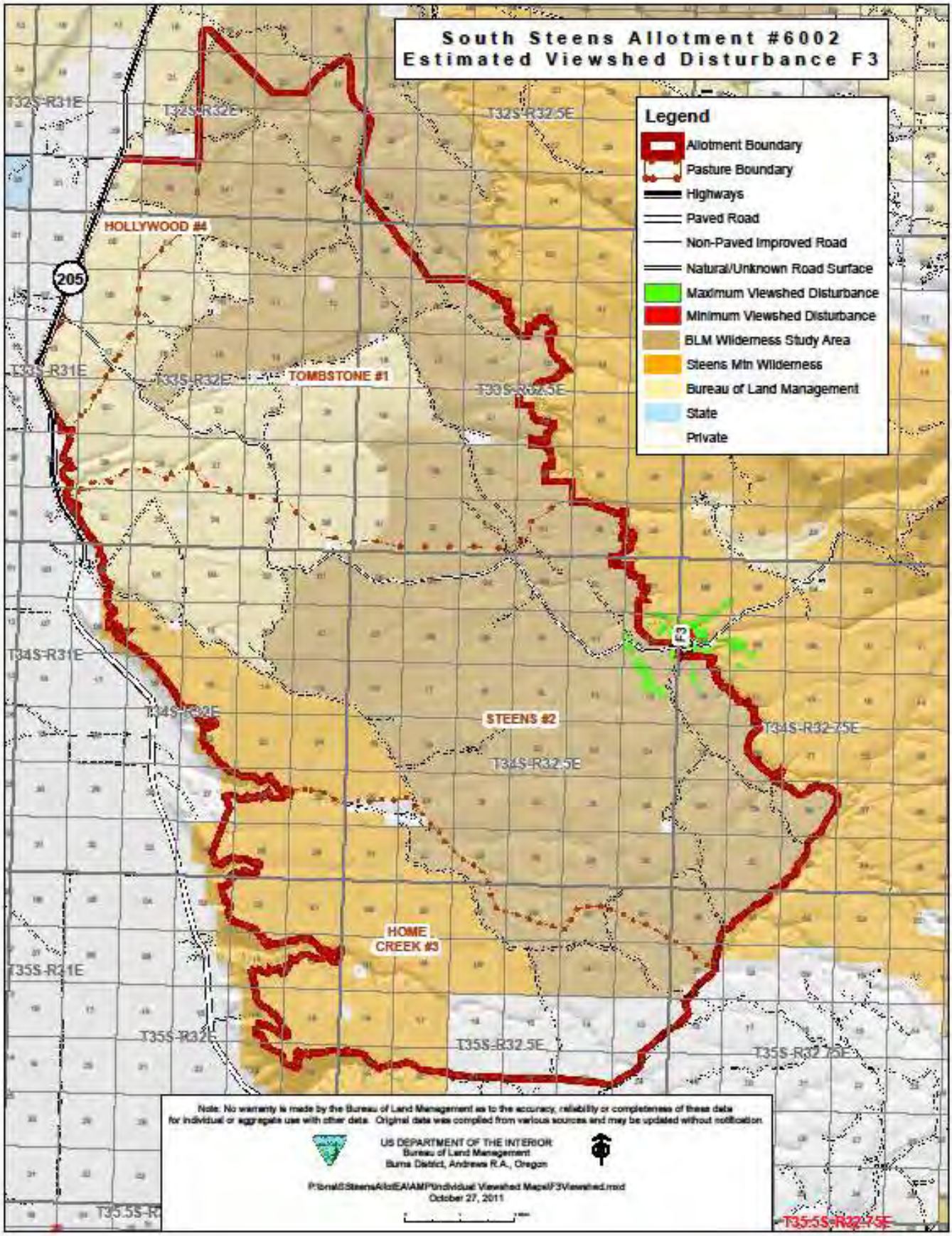
South Steens Allotment #6002
Estimated Viewshed Disturbance F3
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Maximum Viewshed Disturbance
Minimum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
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HOLLYWOOD #4
205
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T33S-R32E
TOMBSTONE #1
T33S-R32.5E
T34S-R31E
T34S-R32E
STEENS #2
T34S-R32.5E
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HOME CREEK #3
T35S-R31E
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T35S-R32.75E
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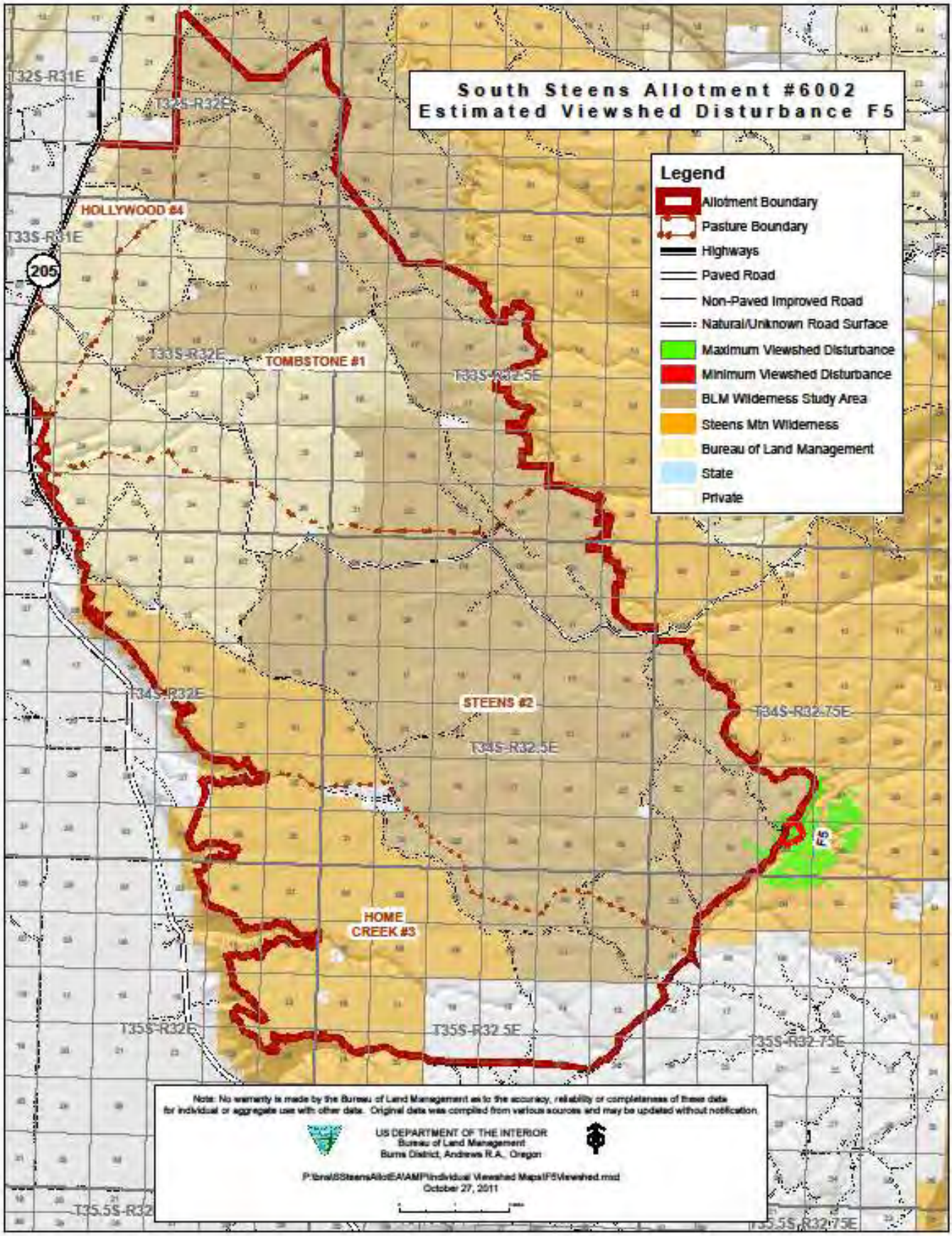
South Steens Allotment #6002
Estimated Viewshed Disturbance F5
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Maximum Viewshed Disturbance
Minimum Viewshed Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
T32S-R31E
T32S-R32E
HOLLYWOOD #4
T33S-R31E
205
T33S-R32E
TOMBSTONE #1
T33S-R32.5E
T34S-R32E
STEENS #2
T34S-R32.5E
T34S-R32.75E
F5
HOME CREEK #3
T35S-R32E
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T35S-R32.75E
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T35.5S-R32.75E
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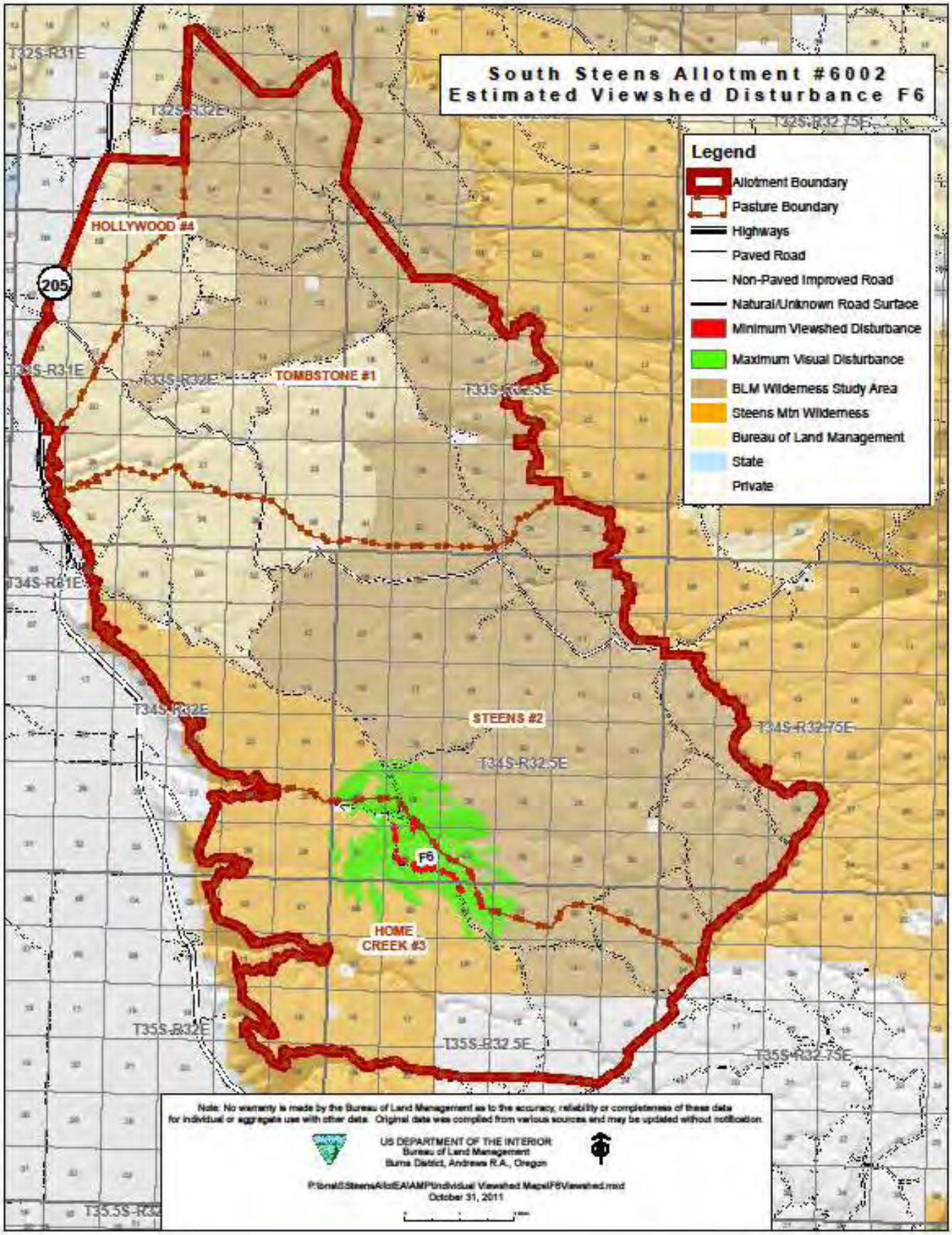
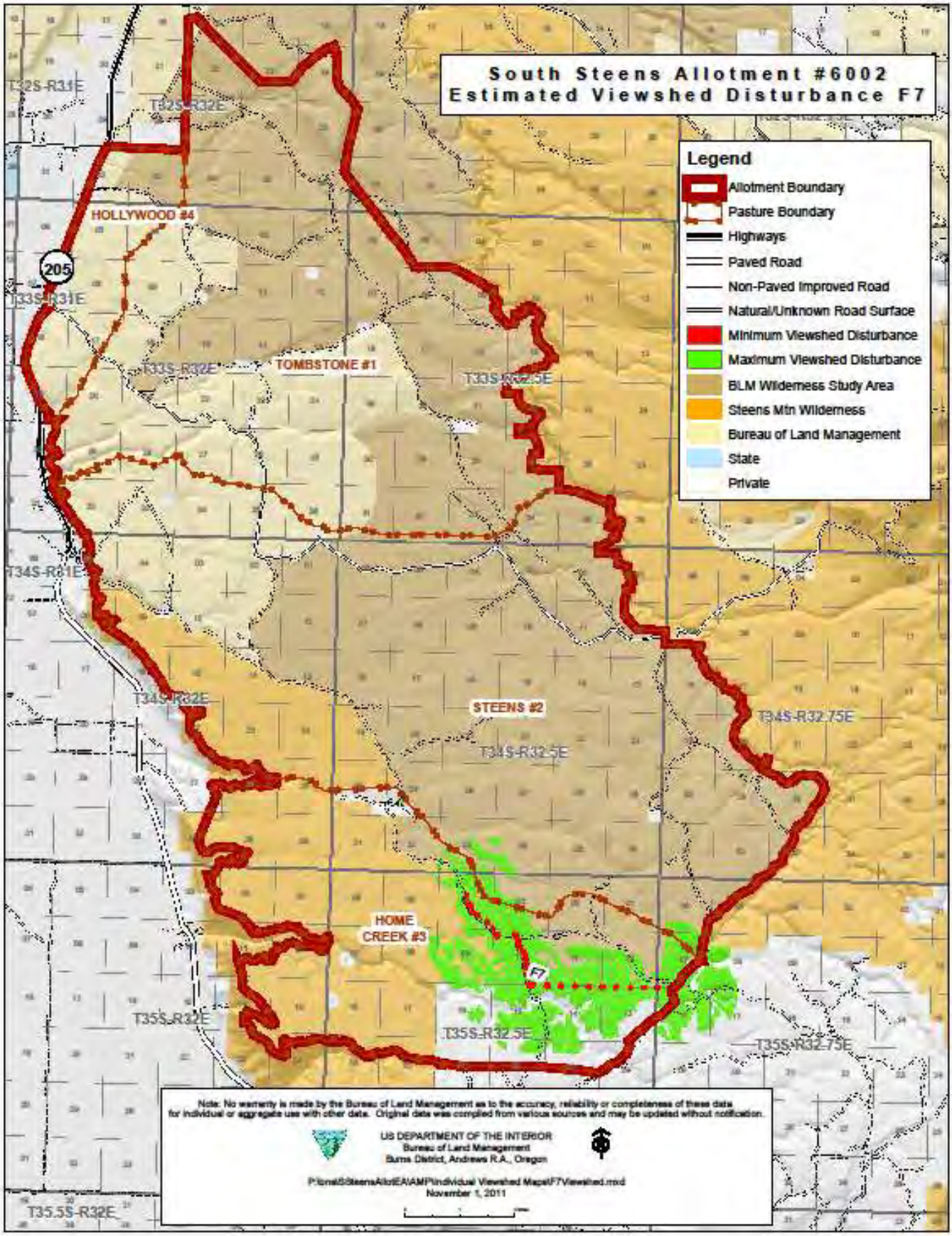
October 27, 2011


South Steens Allotment #6002
Estimated Viewshed Disturbance F6
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
Minimum Viewshed Disturbance
Maximum Visual Disturbance
BLM Wilderness Study Area
Steens Mtn Wilderness
Bureau of Land Management
State
Private
HOLLYWOOD #4
TOMBSTONE #1
STEENS #2
HOME CREEK #3
F6
205
T32S-R31E
T32S-R32E
T32S-R32.75E
T33S-R31E
T33S-R32E
T33S-R32.5E
T34S-R31E
T34S-R32E
T34S-R32.5E
T34S-R32.75E
T35S-R32E
T35S-R32.5E
T35S-R32.75E
Note: No warranty is made by the Bureau of Land Management as to the accuracy, reliability or completeness of these data for individual or aggregate use with other data. Original data was compiled from various sources and may be updated without notification.
US DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Burns District, Andrews R.A., Oregon
October 31, 2011


South Steens Allotment #6002
Estimated Viewshed Disturbance F7
Legend
Allotment Boundary
Pasture Boundary
Highways
Paved Road
Non-Paved Improved Road
Natural/Unknown Road Surface
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US DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Burns District, Andrews R.A., Oregon
November 1, 2011

Appendix E: BLM Responses to Public Comments Received

A scoping letter was mailed to 241 agencies, organizations and individuals on December 22, 2006. The BLM received 49 scoping letters. A version of this EA was released for public comments in 2008 five comments were received. In July of 2013, an updated version of the EA was released. A letter informing Interested Parties that a copy of the EA and unsigned FONSI were available, online at http://www.blm.gov/or/districts/burns/plans/index.php or at the Burns District Office, was mailed to 57 agencies, organizations, and individuals, including all of those that provided an address during scoping. In addition, all members of the SMAC also received the letter. A notice was posted in the *Burns Times-Herald* newspaper on July 10, 2013 informing the public that the documents were posted at the public website mentioned above, and available for review. The Burns District BLM received a request to extend the comment period, which was granted with the comment period being extended from 30 to 47 days. The Burns District BLM received ten comments in the form of both letters and email communications. All comments were accepted. In addition, all comments from the 2008 version of the document were considered in the revision of the EA. The September 23, 2008 SMAC recommendation was also considered, as were more recent unofficial recommendations[75] made during discussions of the South Steens AMP at numerous meetings. Comments have been broken up by resource.

Cultural Heritage

- ***Comment 1:*** BLM's environmental review lacks basic, baseline information, such as the locations and integrity of known sites, and how the existing and proposed grazing and projects have and will be expected to churn and destroy soil and cultural resources.

  Response 1: Site location information is not released in EAs because it is confidential.

  In addition, the 1998 BLM Protocol with the Oregon SHPO provides guidance for Section 106 activities associated with AMPs, see below:

  > <u>Livestock Use Allocation Procedures</u>
  >
  > It is recognized that grazing level decisions, as documented in AMP, AMP amendments, and allotment evaluations, do constitute undertakings as defined in 36 CFR 800. Given the large number of such actions by the BLM in Oregon, and the normally low level of definable threat to cultural resource values associated with such actions, the following procedure shall be applied:
  >
  > Allotment Management Plans (AMP), AMP amendments, allotment evaluations and similar actions associated with dispersed livestock grazing decisions shall be exempted from the Section 106 procedures except for locations within the allotments where specific land disturbing developments are initiated by that action or where sites particularly sensitive to increased grazing levels are known. Subsequent site-specific concerns may be identified by the BLM, SHPO, or a

[75] A new official recommendation has not been possible due to lack of a SMAC quorum.

third party. Where sites are potentially being adversely affected by grazing, consultation between the BLM and SHPO shall be initiated to determine site significance, document grazing effects, and evaluate means for site protection in accordance with procedures specified in the Oregon Protocol Agreement.

As discussed in the Cultural Heritage Affected Environment portion of this EA (page 65), current dispersed livestock grazing is not further affecting cultural resources sites because the effects of grazing to approximately 12 inches in depth occurred prior to the 1960s when livestock grazing was not controlled as it is today. Only in congregation areas are grazing impacts a concern. It is in those places, either existing or newly proposed developments, where Section 106 procedures apply. *General PDEs* (EA page 29) EA discusses requirements for consultation with SHPO as well as other requirements related to cultural resources.

- ***Comment 2:*** BLM's EA and FONSI may run counter to the National Historic Preservation Act and its implementing regulations. Section 106 requires Federal agencies to consider the impact of their "undertakings" on historical properties. The EA and FONSI lack evidence that BLM complied with Section 106.

  Response 2: Our compliance with the National Historic Preservation Act and its implementing regulations is guided by the Oregon Protocol Agreement between the BLM and SHPO, *Protocol for Managing Cultural Resources on Lands Administered by the Bureau of Land Management in Oregon*. No significant impact to cultural resources is expected in dispersed grazing areas within the allotment as stated in response to Comment 1. Potential impacts to cultural resources within or adjacent to existing or proposed grazing developments or where sites particularly sensitive to increased grazing levels are known will be identified and assessed according to the Protocol. See pages 29 and 64 in the EA.

- ***Comment 3:*** The Archaeological Resources Protection Act (ARPA) prohibits any person, including the United States of America, from excavating, removing, damaging, or otherwise altering or defacing any archaeological resource located on public lands or Indian lands unless such activity is pursuant to a permit or covered under an exemption. The EA does not appear to recognize that this law may apply to the Proposed Action.

  Response 3: See responses 1 and 2 above. The BLM employs staff archaeologists that meet or exceed the qualifications set out in the Secretary of Interior standards for professional archaeologists. Because the BLM is the permitting agency under ARPA and our staff archaeologists meet the Secretary of Interior standards, we are qualified to excavate and evaluate archaeological resources on BLM lands for research or Section 106 purposes in consultation with the Oregon SHPO and applicable Native American tribe(s).

  Following Section 106 rules and the BLM Protocol with the Oregon SHPO requires BLM to evaluate potentially affected historic properties in order to determine their NRHP significance. If the property is found not eligible for nomination to the NRHP, the determination of effect does not apply. If the property is found eligible, the BLM, in

consultation with the Oregon SHPO and applicable Native American tribe(s), will seek to mitigate the effects of the undertaking through various means. Because of PDEs, the resulting finding of effect will be a "no adverse effect", essentially negating a violation of ARPA. See pages 29 and 64 in the EA.

Grazing

- ***Comment 4:*** BLM must make clear in its Purpose and Need statement that the *objective* of providing for sustainable grazing does not trump—indeed, it is not even "coequal" with—the *purpose* of protecting the long-term ecological integrity of Steens Mountain.

  Response 4: To protect and manage the long-term ecological integrity, while promoting viable and sustainable grazing operations, are both purposes of the Steens Act [Steens Act, Section 1 (b) (11) (12)]. Nothing in Section I of the Steens Act weights the importance of one purpose over another. However, if they are listed in order of importance, promoting viable and sustainable grazing and recreation operations are listed before protecting ecological integrity. We do not believe this was Congress' intent. BLM must follow all applicable laws, including the Steens Act.

- ***Comment 5:*** Home Creek Pasture does not need growing season rest every year, one in four is sufficient. The plan currently states that Home Creek Pasture will be grazed "Early" three of four years and rested the 4th year. "Early" is defined as March l5 to April 15. However, the proposed action has a season of use beginning on April 15, making "Early" use as defined impossible. Home Creek Pasture should be managed with a focus on riparian health and livestock should be removed early enough three out of four years to allow some recovery of riparian species.

  Response 5: Appendix A (pg. A-1) of the EA provides the general definitions of grazing treatments. It defines "Early" grazing as:

  > Approximately March 1 to April 30 – This treatment provides the plants an opportunity to recover after utilization of early plant growth. By removing livestock before all spring and summer precipitation occurs, the plants will be able to store carbohydrates, set seed, and maintain their vigor. This "Early" treatment can be used every year with little effect on the plant.
  >
  > The dates of March 1 to April 30 are a guideline for the "Early" treatment. Early use must take place before most grass plants are in the boot stage. There must also be enough soil moisture in the ground to provide for regrowth after grazing. Therefore, flexibility in the early treatment will allow for use outside of the approximate dates and will depend on annual climatic conditions.

  As this definition explains, an early treatment occurs prior to most plants entering the boot stage. Due to the high elevation of South Steens Allotment, grasses often enter this stage later than in other areas across the district; therefore, the dates provided in Appendix A, which are general guidelines for grazing treatments across the Burns

District, are likely to be earlier than what will occur on the ground in South Steens Allotment. This flexibility, in addition to the flexibility and adaptive management written into the EA on page 24, allows the BLM, in cooperation with the grazing permittee to ensure grazing management is meeting objectives and allowing for healthy riparian areas. Appendix A provides the approximate dates that apply only to the definition of the specific grazing treatments and in no way modify the proposed permitted season of use that will be a term and condition on the grazing permit.

- ***Comment 6:*** The season of use for livestock grazing should remain April 1 and not be permanently delayed until April 15 since environmental conditions may need this additional flexibility for proper management. The season of use should be extended through the end of November for the same reason. With adequate water, late fall, early winter, or early spring grazing would be beneficial to enhance ecological conditions.

  Response 6**:** Due to the location of this allotment on Steens Mountain, annual use earlier than April 15 and later than October 31 would generally be difficult to manage due to weather conditions. While late fall, early winter, or early spring grazing has been known to enhance ecological conditions on rangelands, BLM does not believe these treatments would regularly be a viable option due to limited access and the increased risk of animal loss due to poor climatic conditions. The Proposed Action does allow for flexibility and adaptive management, as well as a 14-day, non-renewable, non-guaranteed extension of the season of use for years when environmental conditions make it beneficial (this extension will not allow for any AUMs to be used above the 9,577 AUMs permitted). See EA page 25. The season of use as currently authorized, beginning on April 1, is analyzed as part of the No Action Alternative. See EA page 39.

- ***Comment 7:*** There are things in the AMP/EA that should not be a term and condition of the grazing permit because they are out of the purview of the permittee's and/or BLM's management. Terms and conditions should be limited to basic permit elements.

  Response 7: While the entire AMP will become a term and condition of the grazing permit, only the components within the grazing permittee's management ability will be the grazing permittee's responsibility. Clarification was made on page 40 of the EA.

- ***Comment 8:*** BLM often asserts that the effects of no livestock grazing are the same as No Action Alternative. Complete removal of livestock would in most areas result in improvement for resources such as BSCs, Greater Sage-Grouse, cheatgrass invasion, range conditions, and so forth.

  Response 8: The EA states the effects of Alternative G (complete removal of livestock) are the same as the no action for some resources, but not all.

  For example, the EA states the effect of livestock removal on BSCs and Greater Sage-Grouse are similar to the No Action Alternative, and the differences are described (EA pgs. 134 and 151, respectively). Cheatgrass invasion and range conditions are not resources that are analyzed within this EA, but are components of other resources.

Cheatgrass is discussed on pages 39, 77, 128, 152, 155, 156, and 196 of the EA. Page 156 of the EA discuss literature that states livestock exclusion or removal does not necessarily prevent or slow down the spread of cheatgrass invasion. For many resources, the EA states that removal of livestock would eliminate effects of livestock grazing; however, the continued occurrence of grazing by other animals, namely wild horses, would reduce the benefit of the removal of livestock grazing on range conditions.

Throughout the document, there are places where a specific component of analysis is the same as already described under other alternatives. This is stated to reduce the repetitiveness of the document.

- ***Comment 9:*** The BLM continuously uses bias language to talk about livestock in a positive way. For instance, building water troughs, pipelines, new fencing, etc. is called a "range improvement." This does not improve anything except conditions for livestock grazing. They detract from many public values. A more neutral term like range development might be a more appropriate term.

  Response 9: Developments needed for grazing management have historically been called "range improvements." The BLM grazing regulations (43 CFR Part 4100) officially defines a range improvement as:

  > An authorized physical modification or treatment which is designed to improve production of forage; change vegetation composition; control patterns of use; provide water; stabilize soil and water conditions; restore, protect and improve the condition of rangeland ecosystems to benefit livestock, WH&Bs, and fish and wildlife. The term includes, but is not limited to, structures, treatment projects, and use of mechanical devices or modifications achieved through mechanical means.

  Section 4120.2 of the grazing regulations is titled "Range Improvements" and provides the BLM with related policy. The form used to establish cooperative agreements for constructing these developments, is called *Cooperative Range Improvement Agreement* and is an official BLM form (#4120-6). All instances of the term "range improvement" found within the document meet the above-mentioned official definition, or are referring to the general improvement of the range.

- ***Comment 10:*** We urge BLM to consider alternative forage allocations on the South Steens Allotment, which it fails to do in the EA. BLM refused to consider meaningful changes in forage allocations at the land use plan level; therefore, the full permitted use level for the allotment must be addressed at the AMP level. One reasonable alternative the BLM should have considered in this NEPA process would include *some* reduction in actual forage allocated to domestic livestock grazing. Instead, BLM only considers alternatives that include identical forage "preference" allocations—and some alternatives, including the Proposed Action which actually *increases* AUMs over the current management situation. BLM is obligated to propose serious reductions or elimination of

grazing in light of the South Steens Allotment's violation of key Standards, its possessing core Greater Sage-Grouse habitat, and inclusion within the Steens Mountain CMPA.

Response 10: The No Action Alternative analyzed the current situation in which the grazing permittee has recently used fewer AUMs than currently authorized due to lack of reliable water (as well as other circumstances) but can still request full permitted use of 9,577 AUMs. As water is just one circumstance that has resulted in fewer than permitted AUMs being used in the recent past, there is potential in some years, conditions may allow for full use to be taken under this alternative. All alternatives, including the No Action Alternative, include a utilization maximum that would require livestock to be removed when utilization (livestock and wild horse) reaches 50%, even if full use of authorized AUMs has not been taken. This limitation on utilization requires livestock to be removed when this threshold is hit, even if permitted AUMs have not been used; therefore, acting as a check and balance to ensure AUMs are not over-allocated and long-term ecological damage does not occur even in years of low production or drought. This direction would apply to all alternatives that involve any level of grazing. Utilization is discussed throughout the EA. Therefore, the No Action Alternative addresses what has occurred in the recent past, as well as what would be expected to occur if the grazing permittee were to request full permitted use. See page 39 in the EA for a description of the No Action Alternative.

Alternatives B through E all continue the current permitted use of 9,577 AUMs. The action alternatives seek to improve usability of forage available to support allocated livestock grazing. Since there is a 50% utilization target under all alternatives, there will be no increase in AUMs over what is currently being allowed. See pages 40-53 in the EA for descriptions of Alternatives B through E.

Alternative F considers a reduction of permitted AUMs equal to the maximum use between 2003 and 2012, which was 7,875 AUMs. See page 54 in the EA for a description of the alternative.

Alternative G considers complete removal of livestock grazing. See page 54 of the EA for a description of this alternative.

None of the alternatives increases authorized AUMs, or allows any increased use of AUMs above what may already be authorized. Alternatives B through E just increase the likelihood (over the No Action Alternative) that full use of AUMs would be utilized on a regular basis. See Table 8 Comparison of Alternatives on page 55 in the EA for an overview of all alternatives. These alternatives provide for a range of permitted AUMs analyzed within this document.

A Standard can be achieved or not achieved, and can make progress toward or away from a set of indicators. Regulations found in 43 CFR 4180 require the BLM to take "appropriate action" if "grazing management practices or levels of grazing use on public lands are significant factors in failing to achieve the standards." The EA (page 7; Table 1)

describes the reasons for failure to achieve PFC of two springs as site-specific and limited to small areas (a few acres at each site).

The EA (pages 7 and 110) describes the current condition of springs as being heavily used by livestock (periodically) and wild horses (continuously) within pastures, resulting in concentrated hoof chiseling on saturated soils and grazing on wetland vegetation. Livestock are in part responsible for this condition, although it is difficult to determine the relative impact of livestock versus wild horses. Livestock are only in the allotment during their permitted season of use, and are rotated through pastures, so the time spent in the area of the springs is limited. Wild horses are present within the allotment and pasture year-round, have been regularly documented in the area of the springs, especially Three Springs, and are expected to be a major factor in the failure to achieve PFC at these sites.

With respect to reducing stocking rates to affect overuse of small riparian areas in large pastures, BLM TR 1737-20 states: "Reducing stocking rates may reduce the percentage of area in unsatisfactory condition, but impacts around the foci of highly used areas (e.g., riparian areas or other water) will remain the same until few, if any, animals remain." Due to the presence of wild horses within the allotment, the BLM does not believe a large reduction in livestock AUMs would be sufficient to meet the Standards.

BLM has addressed moving towards achieving Standards within the EA through the use of riparian exclosures. BLM TR 1737-20 describes springs within large pastures as generally difficult to manage effectively without the use of exclosures. Neither the presence of Greater Sage-Grouse habitat nor the location of the allotment within the CMPA requires an EA to consider a reduction or elimination of grazing. NEPA only requires a reasonable range of alternatives to address issues.

- ***Comment 11:*** The EA must study the consequences of increased grazing at the current allocation level of 9,577 AUMs, as well as decreasing AUMs consumed by domestic livestock—something it still fails to do. There is no analysis of the environmental consequences of doubling forage consumption on the allotment.

  Response 11: The Environmental Consequences of the No Action Alternative show both what would occur if the grazing permittee continued to use a reduced number of AUMs, as well as what would occur if the permittee used all 9,577 permitted AUMs. None of the alternatives double forage consumption on the allotment. See Table 8 under Comparison of Alternatives section of page 55 of the EA for an overview of all alternatives.

  Alternative F analysis provides information on a reduction in permitted AUMs and Alternative G analysis provides information on complete removal of livestock grazing. See response to Comment 10 for more information.

- ***Comment 12:*** Alternative F: Reduced Grazing with no Development provides no justification for still greatly increasing the amount of forage actually consumed by cattle.

  Response 12: Alternative F analyzes a reduction of permitted AUMs from 9,577 AUMs to 7,875 AUMs, which was determined using the maximum actual use between 2003 and 2012. Alternative F does not increase the amount of forage actually consumed by cattle. See page 54 of the EA for a description of the alternative and response to Comment 10 for more information.

- ***Comment 13:*** The EA swiftly dismisses Alternative G: Complete Removal of Livestock Grazing based on the unsupported position that the remaining horses would still wreak the same amount of damage.

  Response 13: The EA fully analyzes Alternative G, and analysis of the environmental consequences of this alternative can be found under each resource section in Chapter III of the EA. The EA does not dismiss or accept alternatives but merely provides the authorized officer with the necessary information to make an informed decision. As discussed in the EA (pages 7, 94, and 110) BLM TR 1737-20 states: "Reducing stocking rates may reduce the percentage of area in unsatisfactory condition, but impacts around the foci of highly used areas (e.g., riparian areas or other water) will remain the same until few, if any, animals remain." While this reference is specifically addressing livestock, it would also apply to wild horses. Therefore, BLM management does not believe that just changing management of livestock, or livestock removal, would result in significant progress towards the achievement of these Standards within the allotment.

- ***Comment 14:*** The BLM also cites the 2006 Cooperative Range Improvement Agreement as a basis for these proposed water developments. This is incorrect as the agreement must tier from and comport with overall direction in the Steens Act and the WSA management guidelines.

  Response 14: The 2006 Cooperative Range Improvement Agreement with Roaring Springs Ranch shows the BLM agreed to write an EA to analyze the effects of constructing new water developments. The agreement in no way commits the BLM to doing anything more than analyzing these developments. The agreement does comply with the Steens Act, which has a purpose to "maintain and enhance cooperative and innovative management practices between the public and private land managers in the Cooperative Management and Protection Area" [Steens Act, Section 1 (b) (10)]. All Cooperative Range Improvement Agreements must conform to current existing laws, regulations, and policy, including WSA management policy, Steens Act, and NEPA. See page 5 of the EA for a description of the 2006 Cooperative Range Improvement Agreement.

- ***Comment 15:*** The data in Table 13 is 23 years old, outdated, and inaccurate. Some of the pastures, specifically Hollywood Pasture, are in much better condition than the Table shows.

  Response 15: The range condition data in Table 13 is based on the most recent ESI available, which was completed in 1990 for the Burns District. The BLM recognizes this data are old, but it still provides valuable information on range condition. The BLM recognizes over time conditions may change, especially in areas of juniper encroachment, invasive annual weed establishment, and fire. The ESI information is just one source of information the BLM uses when making decisions, along with monitoring of utilization, trend, PFC, and Indicators of Rangeland Health, to name a few. Range condition determined during ESI was done following a specific protocol. While BLM has completed other monitoring within the allotment, including Hollywood Pasture, this specific methodology has not been repeated, and therefore, no updates to this table can be made at this time. The ESI data, taken in context along with other monitoring data (some of which is mentioned above), help provide a clearer picture of where the allotment was, is, and where it is going in terms of rangeland health. BLM feels it is important to provide this information as part of this document. See pages 6-9, 69-75 and Appendix B, for discussion of other information used by the BLM.

- ***Comment 16:*** Hollywood Pasture cannot be arbitrarily limited to a gather pasture – annual planning may decide to use the Hollywood Pasture in this manner but other grazing timing and duration should annually be considered and evaluated on a basis of grazing and management needs throughout the allotment.

  Response 16: Under the proposed grazing management (page 40 of the EA), Hollywood Pasture would receive an early/defer treatment in three of four years and it would generally be used as a turnout and gather pasture. Based on the small size of this pasture (4,170 acres total) in relation to the other three pastures (combined 90,427 acres total), and the fact wild horses typically use this pasture heavily, there is limited forage available for livestock within this pasture prior to utilization objectives being met. If you add in the large number of animals typically turned out into the allotment (1000-2000), the period of time the grazing permittee can spend in this allotment prior to meeting utilization objectives is limited. Therefore, it was determined the best use of this pasture will be to generally use it when turning out or gathering animals from the other pastures within the allotment. Due to the flexibility and adaptive management written into the AMP (EA pages 24-25), the annual use of this pasture can be modified in order to meet goals and objectives.

- ***Comment 17:*** BLM must discuss the allotment condition in terms of past actions and current rangeland health; issues largely absent or not studied in detail in the NEPA document.

  Response 17: The CEQ states: "Generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions." This is because a

description of the current state of the environment (Affected Environment by resource) inherently includes the effects of past actions. The allotment condition in terms of rangeland health is described throughout the EA, including in Chapter I, Section B (Background), under the Affected Environment for all resources, and specifically under sections for Grazing Management and Rangelands; Noxious Weeds; Riparian Zones, Wetlands, and Water Quality; and Upland Vegetation resources.

- ***Comment 18:*** Please provide information defining, and the data that established and supports, the carrying capacity, AUM levels, and stocking rates used previously, as well as the rates considered and selected in this AMP.

  Response 18: Based on the S&G Assessment, it was determined, with the exception of small riparian areas, the allotment was achieving S&Gs. This, in addition to other monitoring data found in the EA under the Grazing Management and Rangelands Sections Affected Environment (pages 69-75), as well as under Appendix B: Trend Analysis, further supports the current AUM level can be sustained within the allotment. This is done by using utilization monitoring and requiring livestock animals to be removed when utilization reaches 50% within the available use area (EA pages 25, 39-41, and 72) and through cooperation and adaptive management with the grazing permittee and private landowner. The 2005 Steens Mountain CMPA ROD and RMP (Appendix J-10) allocated 9,577 AUMs to South Steens Allotment. This is the carrying capacity determined through monitoring, after removing the AUMs needed for wild horses and wildlife, the allotment is able to support, while utilizing no more than 50% of the annual production. The 1995 South Steens AMP, Appendix H (available upon request) shows how grazing capacity estimates were derived at that time.

Juniper Management

- ***Comment 19:*** The BLM has previously analyzed juniper treatment through the North Steens Project. The BLM needs to go forward and implement these practices to fully address priority issues, and those activities need to be coordinated through this AMP, including site-specific planning and timeframes.

  Response 19: The BLM plans to continue to treat juniper through the North Steens Project (based on available funding). The coordination of these activities is outside the scope of this document, and are only included in this document as a RFFA for analysis purposes (EA pages 10, 24, 61, and under multiple resources Environmental Effects Sections).

- ***Comment 20:*** A landscape burn is necessary to burn enough of the small trees, seedlings, and to regenerate bitterbrush areas on large enough areas to ensure success. Cutting, piling, and burning are not appropriate methods to meet objectives and should not be used. BLM must accelerate the juniper management actions necessary to protect and enhance sagebrush communities. If you contend that area is Greater Sage-Grouse habitat then you must put forth an intensive timeline and detail the plan of prescribed burning the

whole allotment with a burn percentage and corresponding mosaic pattern (85% burn and juniper remaining in historic rims and rocky areas).

Response 20: As mentioned in this EA, the BLM recognizes juniper encroachment in the allotment has affects to overall rangeland health. All treatments for large-scale juniper removal will be coordinated through the North Steens Project and are outside the scope of this document. See response to Comment 19.

- ***Comment 21:*** Table 15 does not show the total amount of acres that need juniper treatment, the actual amount is a lot higher.

  Response 21: Table 15 (EA page 76) only shows the acres of juniper treatment currently planned and expected to occur within the allotment. These actions will occur under the North Steens Project. As mentioned in this EA (pages 6-8, 75, 142, 153, 166, and Appendix B), the BLM recognizes juniper encroachment in the allotment has affects to overall rangeland health.

- ***Comment 22:*** The BLM refers to juniper as "invasion" and uses old references to justify destroying juniper forests. New research is challenging the older perception that juniper are "invading" and rather take the position that juniper is recolonizing lands or may be experiencing a natural range expansion driven by changing climate. The old school assumed that sagebrush burned much more frequently 25-30 year intervals and thus reasoned that fires in adjacent sagebrush communities periodically killed juniper. However, new studies suggest that sagebrush community's burn at much longer intervals—up to 200 years, and thus it is quite reasonable for juniper to recover and recolonize lands where stand replacement fires may have eliminated them for a period of time.

  Response 22: The BLM acknowledges that since juniper is a species native to the area, it does not invade, but encroaches into new areas. There was one instance where the EA referred to juniper as invasive, and this has been changed. The BLM considers current, peer-reviewed information within the EA. While research within the Burns District has indicated a fire-return interval within sagebrush communities as being less than 100 years, the BLM acknowledges other research suggests these fire-return intervals may have been longer and the true historic fire-return interval can only be hypothesized but never proven (EA page 153). Large-scale juniper treatment is not part of any alternative as it was covered under the North Steens Project. Therefore, the historic fire return interval and discussion of the natural juniper cycle is outside the scope of this document. Despite the historic juniper cycle, research does agree on the effects of juniper encroachment on other biotic and abiotic factors, and these are discussed within the Affected Environment throughout the EA.

Lands and Realty

- ***Comment 23:*** All agreements with private landowners should be voluntary and cooperative. Easements and other access across private land cannot be leveraged in the permit renewal process or in the AMP.

  Response 23: All easements discussed in the South Steens AMP/EA will still need to be negotiated with the private landowner (EA page 29). All easements are voluntary and BLM will work with the private landowner to ensure any agreement reached was advantageous for all parties involved. They are analyzed in this document to comply with the NEPA process. The BLM will not withhold a grazing permit in order to obtain an easement.

NEPA

- ***Comment 24:*** ONDA requests that BLM consider an alternative that will eliminate all artificial open-water sources on South Steens to prevent the spread of WNV and protect imperiled Greater Sage-Grouse on Steens Mountain.

  Response 24: Eliminating all artificial open-water sources in South Steens Allotment would not meet the Purpose and Need of the EA because it would remove sources of water (both reliable and non-reliable) for both wild horses and livestock, reducing distribution, increasing use of any remaining, natural water sources, damaging those areas, and requiring them all to be exclosed in order to protect them and achieve S&Gs. In addition, it would not meet the requirements of numerous laws and policies, including the Steens Act. FLPMA requires the BLM to manage public lands for multiple-uses. While some may consider removing all artificial open-water sources beneficial to Greater Sage-Grouse, it would be expected to affect other resources such as Grazing and Wild Horse Management. Currently, water developments are not a limiting factor for WNV within the area as large amounts of mosquitoes are common and no outbreaks have ever been reported in Harney County. If WNV were present in the area, Malheur Lake and other natural water sources near the allotment, which consistently have large amounts of standing water, would be of more concern than existing water sources within the allotment, the majority of which only contain seasonal water. It is not expected artificial water sources within the allotment substantially increase the risk of WNV in the area. Discussion on WNV can be found beginning on page 140 in the EA.

- ***Comment 25:*** WWP recommends that the BLM develop an additional alternative for the EIS that would focus on the most beneficial choice of actions for protecting, restoring and insuring the long-term sustaining of Greater Sage-Grouse habitat on this landscape. Such an alternative would necessarily greatly reduce all anthropogenic impacts on Greater Sage-Grouse habitat by reducing or eliminating most livestock grazing, by removing existing livestock developments including water developments and fencing and by requiring specific terms and conditions for livestock grazing that would optimize Greater Sage-Grouse habitat needs including adequate hiding cover for nesting and brood

rearing as well as an optimum level of sage brush cover to ensure ideal Greater Sage-Grouse habitat.

Response 25: BLM fully analyzed the effects of all alternatives on Greater Sage-Grouse and their habitat, and included PDEs to address concerns. An alternative such as described would not meet the Purpose and Need of this EA because it would not address wild horses as a causal factor in S&Gs not being achieved. The allotment is also part of an HMA. Removing livestock developments would also result in decreased distribution and increased concentration of wild horses and livestock at natural water sources, moving those areas further away from achieving S&Gs. Removing artificial water sources would violate FLPMA, as well as the Taylor Grazing Act of 1934 and the Steens Act since it would reduce the BLM's ability to manage for these resources as mandated. Nationally, the BLM is currently in the process of developing EISs to address concerns related to Greater Sage-Grouse and their habitat.

- ***Comment 26:*** We are concerned with this proposal's potential impacts to wilderness values, wildlife habitat, and other resource values. Due to the highly controversial nature of the extraordinary number and kind of livestock development proposed by the BLM, the agency must carry out a full EIS for South Steens Allotment. The BLM cannot comply with NEPA without completing an EIS.

  Taken collectively—but in particular based upon the presence of wilderness values and characteristics, as well as serious potential impacts to existing WSAs and Greater Sage-Grouse populations and habitat, including habitat connectivity—BLM must undertake a more robust environmental analysis or EIS, as this proposal clearly will have a significant impact on the human environment.

  Response 26: The analysis of the Proposed Action in the EA did not reveal any significant effects on the human environment that would warrant preparation of an EIS. The FONSI considered the CEQs criteria for significance (40 CFR 1508.27), both with regard to context and intensity of impacts and found the environmental effects, together with an extensive list of PDEs (EA pages 29-39), against the tests of significance did not constitute a major Federal action having a significant effect on the human environment. Therefore, an EIS will not be prepared.

- ***Comment 27:*** The BLM says it can find no significant impact. Yet throughout the document it talks about impacts from livestock to riparian areas, Greater Sage-Grouse, redband trout, noxious weeds, soil crusts, wilderness values, and visitor experience. How can they say no "significant" impact?

  Response 27: While the effects to certain resources may be considered negative, these effects are not significant. If the effects were determined to be significant, then an EIS would have been undertaken for this project. See BLM response to Comment 26.

- ***Comment 28:*** The EA fails to provide any concrete analysis of cumulative impacts, and it lacks a true cumulative impacts section, purporting to incorporate study of cumulative effects into the environmental consequences section and even stating: "use of these words ['cumulative impact'] may not appear." This fails to satisfy the requirements of NEPA, which requires an analysis of the cumulative effects of the Proposed Action. The EA fails to study cumulative impacts to, among other things, Greater Sage-Grouse populations and habitat with respect to invasive species (in particular, cheatgrass), juniper expansion, and WNV on a landscape level. For example, although the EA includes some discussion of the direct impacts with respect to these issues, there is no discussion of Greater Sage-Grouse population viability on the lands adjacent to the project area (e.g., on Pueblo Mountain).

  Response 28: The CEQ states: "Generally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions." This is because a description of the current state of the environment (Affected Environment by resource) inherently includes the effects of past actions.

  RFFAs include those Federal and non-Federal activities not yet undertaken, but sufficiently likely to occur, that a Responsible Official of ordinary prudence would take such activities into account in reaching a decision. These Federal and non-Federal activities that must be taken into account in the analysis of cumulative impact include, but are not limited to, activities for which there are existing decisions, funding, or proposals identified by the bureau. RFFAs are those for which there are existing decisions, funding, formal proposals, or which are highly probable, based on known opportunities or trends. These RFFAs must fall within the geographic scope and timeframe of the analysis being prepared. The known RFFA within the geographic scope and timeframe of this analysis are addressed at the beginning of Chapter III of the EA, as well as under individual resources.

  There is no requirement to have a separate cumulative impacts section. Regulations require agencies to describe and analyze the impacts but not to labor over which category to place them under.

- ***Comment 29:*** The NEPA document must also include a useful analysis of the cumulative impacts of past, present and future projects. This means a discussion and an analysis in sufficient detail to assist BLM in deciding whether, or how, to alter the project to lessen cumulative impacts. That is not present in this EA.

  Response 29: See BLM response to Comment 28.

- ***Comment 30:*** BLM has not undertaken any meaningful analysis of the cumulative effects to Greater Sage-Grouse populations in conjunction with existing, pending, or planned projects and actions that also may impact Greater Sage-Grouse—for example, ongoing grazing and existing and planned rangeland developments and other projects on neighboring public land areas. BLM thus has not undertaken sufficient analysis of the

current environmental impacts of the proposed developments to make an informed decision regarding where best to site them, or whether to implement this project at all. The level of generality in the cumulative effects analysis, combined with the lack of meaningful alternatives, suggests that the EA cumulative impacts analysis, to the extent it exists, may be a *pro-forma* exercise designed to justify a previously-made decision. This is impermissible under NEPA.

Response 30: See BLM response to Comment 28.

- ***Comment 31:*** In Chapter I, Section A., the second to last sentence states: "possible management actions," which infers that those management actions might not occur. We believe this statement should state: "proposed and developed management actions" of permit renewal, grazing management and proposed range improvements.

  Response 31: Chapter I, Section A provides a short summary of what can be expected within this EA. The analysis of management actions within this document does not ensure that any or all of them will occur. Therefore, "possible" is an appropriate descriptor.

- ***Comment 32:*** Under the Need for Action, we disagree with the sentence stating: "the BLM has a responsibility to respond to an external request for renewal of the grazing permit," because it is an ongoing activity and regular responsibility of BLM. The problem is outside parties are trying to change the requirements of permit renewal and the process of doing so. Changing the standards and terms to include all factors and ongoing activities is not and was not the intent of permit renewal.

  Response 32: The BLM grazing regulation (43 CFR Part 4100), Section 4110.1(d) states: "Applicants shall submit an application and any other relevant information requested by the authorized officer in order to determine that all qualifications have been met" and (b) states: "Applicants for the renewal or issuance of new permits and leases and any affiliates must be determined by the authorized officer to have a satisfactory record of performance." Any application to renew a grazing permit is considered an external request. The BLM must *respond* to the request, because if the authorized officer does not determine that the permittee has a satisfactory record, a permit cannot be renewed. Section 4130.2(a) does state: "Grazing permits or leases shall be issued to qualified applicants to authorize use on the public lands and other lands under the administration of the Bureau of Land Management that are designated as available for livestock grazing through land use plans." Therefore, while grazing permit renewal is a regular responsibility of the BLM and an ongoing activity, it is not automatic and the authorized officer must ensure all components of the grazing regulations are implemented, as well as conformance to NEPA.

- ***Comment 33:*** We have visited most of the proposed project sites in the field and assessed these areas for wildlife habitat values and structure, current grazing pressure from livestock and wild horses on native bunchgrasses and other vegetation, hydrologic impacts, and unique vegetation communities and other ecological considerations. In

2008, we provided you with a field report summarizing our site review at that time. The EA does not mention that report and there is no indication that BLM considered it.

Response 33: The BLM has reviewed the 2008 Field Report submitted by ONDA. While it is not specifically mentioned in the EA, the BLM considered the report and feels that it provides an accurate representation of the variability within the allotment. This includes the poor livestock and wild horse distribution that results in some areas not being used while others are used heavily; the results of congregation at the limited reservoirs that provide late-season water; and the damage currently occurring at spring locations, including damage being caused at S3 by the current way location. In fact, the Field Report largely appears to support the Purpose of and Need for Action of this EA (page 9-12). While sites for proposed developments are not always individually addressed within the EA, the Grazing Management/Rangelands, Recreation and Visual Resources, Riparian Zones/Wetlands, and Water Quality, SSS, Upland Vegetation, and Wildlife and Locally Important Species all address the issues mentioned in your report.

- ***Comment 34:*** The EA is missing key documents and information—for example, the underlying rangeland health assessment and environmental site characterization documents. ONDA requests that these documents be made available. Please provide the written assessments (including the referenced photos) to us so we may review BLM's work and evaluate the conclusions stated in the EA. Also, provide us with the WQRP referenced at page 96 of the EA, as well as any PFC assessments, including the status of pending and proposed assessments.

  Response 34: All of the documents mentioned or referenced within this document are available through the Burns BLM office and will be made available following an official FOIA request. On September 24, 2008, ONDA was provided ESDs, Indicators of Rangeland Health Assessments, riparian assessments and photos, including PFC determinations and maps, and S&Gs. S&Gs were again provided on July 17, 2013.

Noxious Weeds

- ***Comment 35:*** The EA admits that building new reservoirs and other range developments, not to mention the mere presence of livestock, contributes to the spread of noxious weeds. Yet the BLM fails to consider how increasing disturbance is a cost of livestock production that will have ramifications for long into the future. Once established, weeds are very difficult to eliminate. New developments will only create more vectors where weeds can be established and spread from.

  Response 35: The EA discusses the effects livestock have on noxious weeds in the Noxious Weed Section of the EA (beginning on page 95), which recognizes livestock as one of the vectors responsible for spreading noxious weeds. The section also recognizes that once a noxious weed becomes present, it can spread quickly into disturbed areas, by livestock or other vectors such as wildlife, recreationists, and vehicles. The EA also recognizes that increased number and size of infestations result in increased need for monitoring and treatment. Though not explicitly stated, it can be surmised any increase

in monitoring and treatment will result in increased costs. The BLM places high importance on monitoring and treatment of noxious weeds, and recognizes noxious weed infestations can be hard to eliminate and may have long lasting ramifications if no treatment occurs or is unsuccessful. The PDEs specific to weeds can be found on page 30 of the EA.

Range Development

- ***Comment 36:*** The EA contains flawed analysis regarding the TP required under the Steens Act. The EA provides that certain routes would be "upgraded" as necessary in accordance with the TP and TMP and that ways may receive spot maintenance in accordance with those plans. The EA references the Steens Mountain TMP but does not mention that a federal district court has ruled that BLM's TMP is unlawful under the Steens Act and other laws and has partially enjoined route maintenance authorized under the plan, and that the Department of the Interior's own Board of Land Appeals (IBLA) already partially enjoined the TMP and is now considering further relief as part of a remand from the district court. It is likely BLM will be required to undertake further environmental review of its TMP and make new or revised decisions as to routes designated as available for motorized travel and mechanical maintenance. Because the Proposed Action relies heavily upon motorized access for construction, rehabilitation, monitoring, and maintenance, these travel plan rulings are not insignificant. BLM must not authorize route maintenance and motorized vehicle use to implement projects such as those proposed in this EA until it has complied with the Steens Act's TP requirement and completed a lawful TMP.

  Response 36: There is only one location in the EA where the term "upgraded" is used. This is on page 59, under Water Hauling, in the Alternatives Considered but not Fully Analyzed section of the document. None of the fully analyzed alternatives would upgrade any roads.

  The court in *ONDA v. Shuford,* No. 06-242-AA, declined ONDA's request that the TP be vacated in an Order of July 8, 2008. The Court noted that BLM should be afforded the opportunity to utilize the information in the TP and TMP to comply with the Court's Opinion. The Order of July 8, 2008 does not make a ruling on the merits of the TMP nor does it provide for stopping TMP implementation. In addition, the Interior Board of Land Appeals has yet to make a final ruling on the TMP and has only closed the Obscure Routes. See *ONDA et al.*, 176 IBLA 371 (February 19, 2009). BLM is complying with the IBLA and United States District Court rulings concerning the TMP. See *ONDA v. McDaniel*, No. 09-369-PK (D.Or.). BLM has already noted that Obscure Routes closed under the IBLA Decision are no longer available for use. BLM is also following the District Court injunction on maintaining certain TMP routes. The present EA does not contemplate using Obscure Routes closed by IBLA or conducting maintenance enjoined by the District Court.

- ***Comment 37:*** Page 31, item (f) should be modified to be no more restrictive and match the language in the TMP and TP, which allow blading and maintenance with heavy equipment so there is no need for a different standard in this plan. We believe that roads must be maintained in a "watershed friendly manner" including blading for slope and preventing water from following road ruts. Off road or route travel should be kept as an option but the route should be selected as the best option for the type of equipment and for land and soil conditions at the time, resulting in the least amount of disturbance. Tracks should be landscaped and naturalized with equipment, if necessary and if there is excessive disturbance that will not naturalize on its own.

  Response 37: Road maintenance would occur in accordance with the TP and TMP (page 34 of the EA). Any other information provided related to road maintenance is to provide the reader with a general idea of what this road maintenance would consist of. The BLM always strives to maintain roads in a "watershed friendly manner" and properly engineered method. The EA does provide for some off-road travel for range improvement construction as well as for naturalizing any resultant track to "deter the establishment of unauthorized routes" (EA pages 32-33). See Chapter II, Section 7 PDEs Specifically for Proposed Range Improvements for more information.

- ***Comment 38:*** On page 25, BLM discusses criteria for determining the success of the developments, the criteria that they can support a larger number of animals (200 to 500 head of cattle and horses), and development of a hard surface at water's edge which can handle heavy use and mud wallow activity that occurs during the heavy fly season. In addition, a larger capacity development will not have conflicts among all other uses and will blend into the natural environment better. This will also decrease the amount of maintenance and in some cases how often maintenance is necessary.

  Response 38: Though not explicitly stated, providing a hard surface at water related range improvements is an important component of range improvement design in order to provide the most functional development requiring the least amount of maintenance. See Chapter II, Section 7 *PDEs Specifically for Proposed Range Improvements* (beginning on EA page 31) for more information. While in some instances large numbers of animals (200-500) may be present at a given water source, the intent of proposing additional water developments is to increase the number of water sources that can provide late-season water to animals, and spread them out more across the allotment, rather than congregate in such large groups at only a few water sources. The criterion that any new water developments can support 20-100 animals meets the purpose and need of this EA.

- ***Comment 39:*** The Steens Act required SMAC to find unique solutions and the committee recognized the need for water. The SMAC's design ideas need to be considered and included in the EA.

  Response 39: The SMAC has provided numerous design ideas to the BLM throughout this process. The BLM has included all design ideas determined to be feasible within the specific limitations associated with the allotment and location of proposed range improvements. See Chapter II, Section 7 *PDEs Specifically for Proposed Range*

Improvements (beginning on EA page 31) for more information on proposed development design.

- ***Comment 40:*** for the benefit of Greater Sage-Grouse and a number of other species, we recommend a steel panel fence 48-54 inches high for spring developments and exclosures, depending on slope and how rocky the site is. Round treated posts should be used to hold the panels in place with small cable used to keep the panels from being lifted up. One or two deer crawls, 29 inches high, should be used on each corner, and along at least three sides, every fifth panel as needed for fawns to crawl in and out of the protective fence. A three-wire fence is not sufficient and wildlife passage with a panel fence is better with a solid fence. We do not recommend a wood fence at this time due to the necessary landscape prescribed burn. Green wire is not beneficial to the objectives and may be detrimental to wildlife (birds) seeing the fences and will add expense to the project. It is also, unnecessary, unreasonable and expensive to ask that wire by any permit holder to be green coated. Wire installed by BLM could follow that standard but should not be imposed. In addition, the specificity of size of posts, or limits on materials is unreasonable and adds to inflated costs, such as green barbwire. I do not want "green barb wire" because that type of attribute will get in the way of purchasing the right amount of materials and getting the job done.

  Response 40: In the Proposed Decision, options for fencing of all exclosures will include using wooden posts and poles (split rail juniper), cut juniper obtained from the immediate area, barbed wire, or a combination of types. Fencing will be determined site-specifically based on terrain and availability of juniper in the immediate area. See EA pages 31-32 for PDEs related to fencing. While the BLM recognizes many of the areas around the springs have become encroached with juniper and could use juniper treatment, the BLM is not planning a large-scale broadcast burn in this area; therefore, wood is a viable option for a fence. Fences will be designed to allow wildlife access to the riparian areas. If a wire fence were selected for spring areas, it would be four-strand fence (not three-strand) to increase effectiveness. The EA states that green wire *may* be used in construction of wire fences; however, its use would not be required.

- ***Comment 41:*** BLM should retain the flexibility for using natural materials from the area close to the project area or haul materials in, depending on what is best for completing the project with the most effective construction and design.

  Response 41: Since a large portion of the proposed range improvements are located within WSAs, the BLM would require material needed, in excess of what is available due to excavation, to be hauled in to limit ground disturbance in the area. See Specific PDEs in the EA beginning on page 31.

- ***Comment 42:*** BLM's use of non-native plant species outside of WSAs would not protect the areas' long-term ecological integrity.

Response 42: The use of desirable non-native plant species will only be used outside of WSAs and in areas where BLM determines the site is unlikely to recover naturally or native species will not be effective enough to become established and compete with undesirable non-native species, such as annual grasses. Desirable non-native species can provide the same ecological role/function as native perennial species. The BLM will only seed desirable non-natives as one component of a seed mix, in which additional native species will be present. Since the BLM will not be seeding with the intent of developing a monoculture of any species, the presence of these desirable non-native species will not be obvious to the casual observer and will not damage the long-term ecological integrity of these areas. See Chapter II, Section 7 *PDEs Specifically for Proposed Range Improvements*, Seeding/Rehabilitation on page 39 for more information.

- ***Comment 43:*** BLM must prepare a more detailed project design plan as part of the NEPA process before decisions are made. Leaving these things to be decided or "adaptively managed" during the project is a strategy that has proven problematic.

  Response 43: Under Chapter II, Section 7 *PDEs Specifically for Proposed Range Improvements* (beginning on EA page 31) describes components of project design, and all of the components that can be planned for prior to onsite work occurring. All work that occurs will follow these PDEs, as well as current regulations, laws, and policy. The BLM believes the EA provides a sufficient project design plan for development of the proposed range improvements.

- ***Comment 44:*** It is not practicable to expect a three-strand wire fence to exclude cattle from an enclosure (much less deer or elk). The construction needs to be to an adequate standard to hold up over time and require a minimum amount of maintenance, as all of the areas are very remote with limited access.

  Response 44: Only wire fences around wells and solar panels were proposed as three-strand. These areas would be in the uplands, and would not have the draw of riparian vegetation to entice animals into the exclosure. The exclosures will be the smallest size possible, which will also deter wildlife from these areas. If these three-strand fences were to become a maintenance issue, the BLM would consider other styles of fence at that time, ensuring NEPA compliance prior to changes occurring. See Chapter II, Section 7 *PDEs Specifically for Proposed Range Improvements*, Fences (pages 31-32) for more information.

- ***Comment 45:*** Hand raking should not be a part of this plan as it is unnecessary and too expensive.

  Response 45: Hand raking is only proposed in locations where off-road travel was required, in order to "deter the establishment of unauthorized routes" (EA page 33). Hand raking will only be required for a short distance to prevent tracks from being obvious to members of the public travelling on adjacent roads. Due to the location of the proposed range improvements often within WSAs, the BLM feels hand raking is necessary to protect the wilderness characteristics of the area. See Chapter II, Section 7

PDEs Specifically for Proposed Range Improvements beginning on page 31 in the EA for more information.

- ***Comment 46:*** Pipelines should be buried at least 36 inches deep to avoid freezing problems, improve the longevity of the pipe integrity, and avoid maintenance costs. BLM must retain flexibility in laying pipeline because a combination of ripping and backhoe excavation is best on most sites. The depth should also be flexible based on site-specific conditions but 48 inches is better than shallow pipe in terms of both landscaping and maintenance due to freezing.

  Response 46: The BLM acknowledges pipelines buried deeper is more likely to avoid freezing problems, as well as maintenance issues. However, BLM engineers believe the rockiness of the area is likely to limit the depth of the pipeline, and in some cases, it is expected the pipeline may have to be laid aboveground. In addition, 36 inches is typically the maximum depth the available equipment can reach. Any pipelines will be appropriately engineered to drain water during the winter months in order to reduce the risk of damage due to freezing. See Chapter II, Section 7 *PDEs Specifically for Proposed Range Improvements*, Pipeline (EA page 36) for more information.

- **Comment 47:** We strongly disagree with the restrictive dates for construction and maintenance of developments. The best time to construct or maintain developments is when the weather and soil moisture are favorable to ingress or egress and for the type of construction specific to each development. For instance, too wet or too dry of soil makes more disturbances when excavating for a trough, pipeline or a water reservoir, and the same is true for access to the developments. Late summer or fall is fine because usually the weather and access is good, allowing the job to be completed in a timely manner.

  Response 47: The only dates restricting construction and major maintenance of range improvements are those dates during which Greater Sage-Grouse are nesting within the allotment (April 1 – June 15). This restriction should have minimal effect on construction or maintenance since conditions are not often conducive to construction or maintenance during this time or year. Summer, fall, and winter will still be options for construction and maintenance activities. See EA page 30 for more information.

Social and Economic Concerns

- ***Comment 48:*** The economic analysis on Alternative G (No Grazing) laid out in the EA (page 108) misses the point that there would be major overall economic impacts to the economy as the cow does a great job of converting sunlight energy through grass to a usable and marketable product. Assume a calf gains two pounds a day as it is nursing its mother on rangeland. There are 9,577 AUMs authorized, and assuming each AUM is one cow with calf, the calf would be nursing on its mother for 30 days (all AUMs getting used in one month simplifies the math but should provide the same result since each AUM includes a calf on the range for one month). Therefore, 9,577 AUMs x 30 days x 2 pounds per day could generate 574,620 pounds of calves. Current market value is $2 per pound. These 9,577 AUMs would generate up to $1,149,240 worth of value that is

multiplied into the economy. The conversion of renewable natural resources into usable and marketable products is the basis of any economy. Eliminating this use a cost to the overall economy, both local and national.

Response 48: The BLM added information to the Social and Economic section in the EA on page 126 to recognize the economic loss.

- ***Comment 49:*** The revenues anticipated are just a bit more than $12,000 a year. Yet the government admits just the range developments will cost taxpayers $260,000 dollars, not including personnel time devoted to monitoring. How is spending all this public funds on developments, which largely mitigate the negative impact of someone's private business operations, good public policy?

  Response 49: Estimated costs of development will not be the exclusive responsibility of the BLM (*taxpayers*) but development will be done through Cooperative Range Improvement Agreements with the grazing permittee. The amount identified as revenues are cash revenues. They do not include the amount of benefit of using the proposed developments to improve the ecological integrity of the allotment. Personnel time devoted to monitoring is not expected to change due to the implementation of any of the proposed projects. BLM is responsible to monitor BLM-managed land, no matter the numbers of developments present or if livestock are present (EA page 25). It is not the BLM's responsibility to "mitigate the negative impact of someone's private business" but the BLM does have the responsibility to acknowledge the potential social and economic effects that would occur as the result of a Proposed Action. Just because a project is analyzed in an EA does not guarantee the project will be selected in the decision, or that if it is selected, it will be funded.

- ***Comment 50:*** The BLM says it will monitor the allotment, but such promises are often made and the agency fails to have funds allotted for proper monitoring. I note that monitoring is a cost that would be avoided or reduced if there were no livestock on the allotment. Does the BLM actually have funds available to do the monitoring each year?

  Response 50: The BLM is responsible for and committed to providing adequate monitoring all of the land it manages, whether or not livestock are present. The BLM monitors this allotment as much as possible within its budgetary and personnel constraints and would continue to do so even if livestock were removed. Future funding for federal agencies cannot be predicted. EA page 25-27 discusses monitoring, while results of past monitoring can be found in the Grazing Management/Rangelands section beginning on page 69 and in Appendix B of the EA.

- ***Comment 51:*** Under economic values, it is almost laughable that the BLM can say: "The Proposed Action would allow the permittee to graze all 9,577 allotted AUMs, even during drought years, and increase the revenue generated to the Federal government." It costs more to manage this allotment than the revenues generated. What about the costs of range developments, monitoring, or even producing the EA? Any objective economic analysis looks at total costs and subtracts that from any revenues.

Response 51: The statement questioned would be true, since revenue generated by grazing public land is tied to the number of AUMs authorized. Therefore, if grazing were typically less than 9,577 AUMs (No Action Alternative) and proposed developments would allow the permittee to use all of the 9,577 AUMs on a regular basis, the dollar amount generated would be higher. The BLM recognizes there is a cost to monitor the allotment, develop an EA, and construct range improvements. See EA pages 25-27 for a discussion on monitoring. However, the BLM will incur many of these costs in order to follow current policy, regulations, and laws for managing public lands. The BLM is required to analyze the issues of proposed actions.

- ***Comment 52:*** You are not considering the alternative perspective that continued ranching may negatively impact all of the other people in Harney County as well as the rest of the owners of these public lands, who find feces spattered grounds, trampled riparian areas, and fences all over the land to be offensive. Once again, the BLM is only listing what it perceives to be justifications for continued ranching without providing an equally valid critique of the real costs of continued livestock production.

  Response 52: Effects of livestock grazing on other resources is addressed in the EA. In the Recreation/Visual Resources section, the BLM acknowledges livestock grazing may detract from some visitor experiences on public lands (EA pages 104). However, FLPMA mandates the BLM manage public lands for multiple uses, and BLM must comply with FLPMA. Ranching is not an action of the BLM, only permitting livestock grazing. Therefore, it is outside the scope of this document.

Soils and Biological Soil Crusts

- ***Comment 53:*** Livestock grazing is well established as an impact on biological crusts. Just noting that wild horses can trample crusts does not alleviate the BLM of considering how livestock production is destroying these valuable biological crusts.

  Response 53: Livestock utilization can be managed to have less of an impact on BSCs (grazing at times when soil crusts are less vulnerable to impacts), such as grazing sandy soils when wet, and clay soils when dry. Livestock dispersal is a tool utilized to minimize impacts to soil crusts. *Biological Soil Crusts: Ecology and Management,* BLM TR-1730-2, on page 67 states:

    - Rest/Rotation minimizes impacts across the allotments by allowing for rest periods from livestock utilization
    - Locating water and salt (other supplements) on sites with low potential for BSC development
    - Areas with high potential for BSCs generally are not areas that livestock will forage; however, they may trail through. Barriers can be established to minimize trailing.

Rangeland health indicators are a tool to ascertain whether or not grazing is having an impact on vegetation and, indirectly, BSC. Proper grazing management can also remove the threat of catastrophic wildfires, which will permanently remove BSCs from areas that can easily be in excess of tens of thousands of acres. A greater threat to BSCs is invasive grass species such as cheatgrass and medusahead rye. These species occupy the same habitat (interspaces) as BSCs. While livestock can be a vector for these species, other vectors such as introduction post-wildfire, recreation and other human-related activities have a greater influence on the establishment of these species (TR-1730-2, 4.2.2). This clarification has been added to the EA on page 128.

Water Quality/Riparian

- ***Comment 54:*** When discussing impacts to riparian areas, the document says even if livestock were removed, there would still be on-going damage from wild horses. The way this is written, and the tone implies that livestock removal would have little positive value. Yet I am willing to bet that livestock removal would result in a significant positive movement.

  Response 54: Cattle and wild horses share a common diet dominated by graminoids (Vallentine 1990), however, feeding mechanisms differ mechanically as cows eat by wrapping their thick rough tongue around a mouthful of grass, pulling it in, then swallowing. Wild horses graze by gathering grass by the lips then chopping it off close to the ground with top and bottom incisors (Vallentine 1990), occasionally pulling entire root systems from the ground, particularly in the wetted areas near streams and springs.

  Removal of livestock would only enhance recovery by the smaller of margins when considering wild horses and wild game species would remain uncontrolled year-round. Any "significant positive movement" with regard to livestock and riparian health would be marginalized by the continued presence of wild horses and wild animals. BLM TR 1737-20 states:

  > Reducing stocking rates may reduce the percentage of area in unsatisfactory condition, but impacts around the foci of highly used areas (e.g., riparian areas or other water) will remain the same until few, if any, animals remain.

  While this reference is specifically addressing livestock, it would also apply to wild horses.

  Soil compaction and bank shearing increases with the amount of trampling; however, the relationship is asymptotic (Cole 1987); as the number of animals causing damage increases, the actual damage caused by any individual, on average, decreases since there is a lesser amount of undisturbed area. If the amount of disturbance and the number of animals present were graphed, the curve would initially have a steep slope, which would eventually level out. From an ecological point of view, it is similar to the economic Law of Diminishing Returns.

Soil shearing and severing of roots are more likely when soils are wet (Vallentine 1990). In South Steens Allotment, the current season of use for livestock occurs between April 1 and October 31. Average annual precipitation in the region is between eight and 14 inches falling mostly as snow from November through February. Generally, the last spring frost occurs by May 30 and the first frost of autumn by September 2; however, frost may occur during any month of the year. As wild horses are present year-round, it is expected they cause damage to riparian areas prior to livestock being turned out in the spring.

This information was added to the Riparian Zones, Wetlands, and Water Quality section's Affected Environment (page 110) of the EA, as appropriate.

- ***Comment 55:*** Long-term watershed conditions should be emphasized in the EA, along with meeting livestock grazing and wild horse needs for water, with full implementation of the North Steens EIS.

  Response 55: The BLM recognizes the importance of promoting proper long-term watershed functioning, and understands one component of this is juniper control or removal. However, juniper treatments are outside the scope of this EA will occur under the North Steens Project.

  Proposed actions within the EA aim to promote long-term watershed functioning by managing the riparian areas and overall ecological condition within the allotment. Throughout this EA, there is discussion of monitoring data and methods that provide the BLM with the information needed to meet this goal.

- ***Comment 56:*** The water quality impacts of the range projects are inadequate in the EA. The previous version of the EA stated that the proposed developments would have a "non-measurable" effect on water quality. We (ONDA) expressed concern that water intercepted into reservoirs and other developments is water that is potentially diverted from the Blitzen River or Home Creek. BLM now claims that will not be the case, but does not provide the hydro-geologic or hydrologic assessment of two unnamed springs and one unmapped intermittent stream in the EA. As it stands, by failing to fully analyze impacts to water quality and quantity, we believe BLM may be acting on incomplete information, which is inconsistent with the CWA, FLPMA, the Steens Act, and NEPA. Plans such as this, authorizing livestock grazing, water project development, vegetation manipulation, roadwork, and fencing, fall within the gambit of "any activity resulting, or which may result, in the discharge or runoff of pollutants."

  Response 56: The unnamed springs and one unmapped intermittent stream mentioned in the EA flow into Dry Creek, and not toward the Donner und Blitzen River. Dry Creek is an ephemeral creek and for BLM to conduct continued monitoring a stream must be perennial in nature. ONDA offered no specific evidence in their comments to contradict BLM's analysis of the likely impacts of the project on the quality of water in the project area, and provides no evidence that the State would consider the project to be in violation of the CWA. South Fork Donner und Blitzen River (Donner und Blitzen Subbasin) and

Home Creek (Guano Subbasin) are included on ODEQ's 303(d) list (2004-2006 report) because both streams exceed the water temperature standard for salmonid fish (spawning, rearing, or presence). Stream shading from woody vegetation and changes to base flow (which augments stream flow with cool ground water) are the only ways any proposed project could influence water temperature. As discussed in the *Riparian Zones, Wetlands, and Water Quality* section of the EA (beginning on page 109), BLM's capacity to influence the water quality parameter (water temperature) that resulted in 303(d) listing of South Fork Donner und Blitzen River is non-measurable as a result of project implementation because:

- Less than 0.02 mile of South Fork Donner und Blitzen River is in the project area.
- The main stem and major tributaries of Donner und Blitzen River on the eastern border of the allotment are either fenced out of the allotment, or are not accessible due to steep rocky terrain, and these areas are part of the No Livestock Grazing Area of Steens Mountain Wilderness.
- No impact to streamside shading from riparian vegetation would occur.
- Reservoirs are proposed only for ephemeral streams.

Also stated in the EA (page 111), a WQRP has been completed and was implemented for the Guano Subbasin in 2007. The WQRP on page 20 states:

> The existing grazing management described under the Problem Description and Condition Assessment section (for Home Creek) has demonstrated maintenance and/or restoration of riparian vegetation communities and stream channel stability over historic management and condition.

Additional information has been added beginning on page 109 of the EA in the *Riparian Zones, Wetlands, and Water Quality* Section.

- ***Comment 57:*** The EA indicates that streams within the project area are on ODEQ's 303(d) list, and that no TMDLs have been prepared within the project area. In order to comply with its water quality mandates, BLM must provide for more concrete compliance with water quality standards until TMDLs and/or WQRPs are prepared for the planning area. Before BLM decides to do anything that will increase sedimentation, even if the Proposed Action should ultimately decrease long-term sedimentation, the agency must know how much the stream(s) can carry away. Under each alternative, there is a risk of sedimentation and potential for further elevated stream temperatures. Given the underlying chronic impairment of water quality throughout the planning area, BLM's authorization of the project, as currently envisioned, would violate the CWA until TMDLs are established. FLPMA and the Steens Act likewise require compliance with the CWA, including compliance with state water quality standards.

Response 57: BLM has no established TMDL's at this time. However, BLM continues to monitor ODEQ 303(d) listed streams for the temperature criteria that they have been listed for. The unnamed springs and one unmapped intermittent stream mentioned in the EA flow into Dry Creek, and not toward the Donner und Blitzen River. Dry Creek is an

ephemeral creek and typically, for BLM to conduct continued monitoring, a stream must be perennial in nature. Monitoring will continue to occur on the Donner und Blitzen for the 303(d) temperature criteria that it was listed for. Other projects now occurring on the Donner und Blitzen have created an ongoing need to monitor for water quality and water temperature.

In subbasins with 303(d) listed stream(s) and no TMDL scheduled, the BLM will follow the US*FS/BLM Protocol for Addressing CWA 303(d) Listed Waters* (ODEQ/BLM Memorandum of Understanding 2011, Item V. J., page 4). Since the EA (pages 96-104) demonstrates the project does not influence the water quality parameter (water temperature) that resulted in 303(d) listing, and ONDA has offered no new or specific information to the contrary, establishment of TMDLs for water temperature would not influence the analysis or any decision. No evidence was found during Standards assessment to indicate excessive sedimentation from uplands due to livestock grazing, and no streams in any of the affected subbasins on the ODEQ's 2010 Integrated Report and 303(d) List are listed for sediment. Additional information has been added beginning on page 109 of the EA in the *Riparian Zones, Wetlands, and Water Quality* Section.

Burns District currently monitors the Donner und Blitzen River for temperature, pH, oxidation-reduction potential, and other water quality parameters. Additional information has been added beginning on page 109 of the EA in the *Riparian Zones, Wetlands, and Water Quality* section.

- ***Comment 58:*** The BLM argues that by making more water developments it will "pull" livestock from riparian areas, thus reduce impacts. We challenge that assumption, in part, because cattle congregate in riparian areas for the lush feed as much as water. What evidence and documentation do you have to demonstrate that this is the case?

  Response 58: By providing reliable water sources off creeks and rivers, livestock are less likely to put large amounts of pressure on the riparian areas (Bailey 2004, DelCurto et al. 1999). A research review was found to support the view water developments outside of riparian areas reduces both grazing use and the amount of time spent in riparian areas (George et al. 2011). See EA beginning on page 119 for more information on this topic.

Wild Horses

- ***Comment 59:*** There are issues caused by other factors, such as juniper encroachment and wild horses, which are wrongly resulting in limitations to grazing. Grazing is being impacted because BLM has not met its requirements to limit the size of wild horse herds within AML or treat juniper as previously planned in the North Steens Ecosystem Restoration Project. Dealing with the wild horses and juniper should be the primary focus of improving and maintaining the pastures and allotment area. The AMP should include timeframe and coordination for these actions.

Response 59: Management of wild horse populations is not within the scope of the analysis of the EA. However, an EA is currently in progress to manage wild horse numbers within AML within South Steens HMA. This EA is scheduled to be out for public review in 2014. If you would like to receive a hard copy of the EA, please make the request by contacting the Burns District BLM. Managing wild horse numbers within AML is a priority for Burns District. South Steens HMA is identified on the national gather schedule; however, gathers for emergency situations and court orders take precedence over other gathers. The WH&B Program is severely limited in the amount of wild horses that can be removed from the range due to the lack of space available in short and long-term holding facilities; the cost to maintain the wild horses currently in holding; and due to the dwindling demand for wild horses through adoption. Juniper treatment under the North Steens Project is addressed in responses to Comments 19, 20, 21, 22, and 55.

- ***Comment 60:*** Wild Horse removal should be fully analyzed. The original HMA was at least three times larger than the current acreage. Another appropriate option includes moving wild horses from the allotment, at least during growing season. We believe that Permanently Relocating Wild Horses to Steens Mountain Wilderness Portion of the HMA should have been fully analyzed. To completely ignore the problem and to allow populations to be outside the AML is not proper management. We ask that BLM consider taking some additional steps toward wild horse management and include them in this document.

  Response 60: Management of current wild horse populations is not within the scope of this EA. In addition, the 2005 Steens Mountain CMPA RMP re-designated South Steens HMA, which already includes a portion of Steens Mountain Wilderness. An EA to gather wild horses and manage within AML in South Steens HMA is currently in progress. See response to Comment 59.

- ***Comment 61:*** The allotment as well as the HMA should be looked at in a collective, holistic approach rather than separately.

  Response 61: All affected resources are analyzed side by side in this EA. Changes to livestock grazing management are within the scope of this EA. Specific objectives designed for wild horse management (HMA boundaries, AML, etc…) would be addressed in a HMAP. While an AMP and an HMAP are separate documents, which may contain separate resource-specific objectives, both permitted livestock grazing and wild horse use are evaluated using the same S&Gs. Both livestock and wild horses were identified as causal factors for failing to achieve two of the Standards as discussed in the Purpose and Need for action in this EA. Therefore, all alternatives that address the purpose and need for action are inherently managing habitat for livestock and wild horses together.

- ***Comment 62:*** Unless there is a side-by-side comparison of all species that use the land, it is unclear what action needs to be implemented. Everything in an ecosystem is connected, and since cattle graze in the same habitat as horses, BLM needs to manage them together, not separately.

  Response 62: See response to Comment 61.

- ***Comment 63:*** The number of livestock AUMs in comparison to wild horses is unbalanced. Currently there are 9,577 livestock AUMs while wild horses are allocated 1,908-3,648 AUMs (based on the AML range). The Wild Free-Roaming Horses and Burros Act states that the range is "primarily, but not exclusively for wild horses." This means that wild horses should be allocated a minimum of 51% of the forage. Current allocation numbers do not reflect a fair balance, and the current livestock stocking numbers are unacceptable.

  Response 63: Within South Steens Allotment, wild horses are allocated 3,540 AUMs annually (EA pages 69 and 163); this number does not change with population. Adjustments to AML for wild horses are not within the scope of this EA. These adjustments must be completed through a HMAP EA, followed by a Land Use Plan Amendment. Chapter I, B. Background of the South Steens AMP EA (beginning on page 1) explains the history associated with livestock AUMs allocated to South Steens Allotment and explains the most recent reductions in livestock AUMs in the allotment. Chapter III, A, 10. Wild Horses section (beginning on EA page 162) explains effects of the Steens Act Land Exchanges on South Steens HMA.

  In regards to the portion of this comment citing the 1971 Wild Free-Roaming Horses and Burros Act, the Act defines range as: "the amount of land necessary to sustain an existing herd or herds of wild free-roaming horses and burros, which does not exceed their known territorial limits, and which is devoted principally but not necessarily exclusively to their welfare in keeping with the multiple-use management concept for the public lands" [Wild Free-Roaming Horses and Burros Act §1332(c)]. The law's language stating public lands where WH&Bs were found roaming in 1971 are to be managed "principally but not necessarily exclusively" for the welfare of these animals relates to the Interior Secretary's power to "designate and maintain *specific ranges* on public lands as sanctuaries for their protection and preservation [emphasis added]" [Wild Free-Roaming Horses and Burros Act §1333(a)]. At this time the only designated sanctuaries are the Pryor Mountain Wild Horse Range (in Montana and Wyoming), the Nevada Wild Horse Range (located within the north central portion of Nellis Air Force Range), the Little Book Cliffs Wild Horse Range (in Colorado), and the Marietta Wild Burro Range (in Nevada). The *principally but not necessarily exclusively* language applies to *specific wild horse ranges*, not to HMAs in general. The 43 CFR, Subpart 4710.3-2 states: "Herd management areas *may also be designated as wild horse or burro ranges* to be managed principally, but not necessarily exclusively, for wild horse or burro herds [emphasis added]."

  In addition, livestock use is limited by a 50% maximum utilization on native key species. This utilization amount includes wild horse utilization. When the 50% utilization

maximum is reached, livestock are required to be removed from the range, even if full use of authorized AUMs is not met. This ensures livestock will always be removed prior to utilizing all forage, allowing remaining forage to be utilized by wild horses and wildlife.

- ***Comment 64:*** There is no provision in the Court order or the Steens Act to provide "live, year-round" water for wild horses. However, there is a clear legal basis to reduce the wild horse population where resource damage is occurring. To this end, we urge the SMAC and BLM to drop the Proposed Action in the current EA and focus on reducing, or if need be eliminating, wild horses on the South Steens Allotment to more fully and expeditiously comport with S&Gs.

  Response 64: See response to comment 59.

Wildlife

- ***Comment 65:*** The EA fails to adequately consider WNV. The analysis focuses on describing the sources of water and the design features of the artificial water developments proposed, but simply dismisses the issue by stating WNV has not been documented in Harney County. This fails to address important ecologically and biologically based facts. Contrary to the assumptions in the EA, it is not a question of whether, but rather when, a WNV outbreak will cause a significant Greater Sage-Grouse die-off on Steens Mountain. The problem is not just the water developments in and of themselves—though it is clear that artificial water sources exacerbate existing natural baseline conditions conducive to WNV. Rather cattle grazing facilitated by the artificial water developments are the major threat to Greater Sage-Grouse since artificial water projects create mesic zones around stock tanks or ponds that may inadvertently contribute to the spread of WNV as mosquitoes breed in the water-filled hoof prints. Even one instance of a virus-carrying mosquito, colonizing a water-filled cattle hoof print near one of BLM's proposed and evenly distributed watering stations, could set off a viral outbreak with permanent or long-term harm to Greater Sage-Grouse populations on Steens Mountain. Thus, BLM's proposed plan will in all probability lead to the spread of WNV and possible demise of Greater Sage-Grouse on Steens Mountain.

  Response 65: Several permanently wet areas around BLM Burns District, closer to recent WNV outbreaks than the project area, have not had any recorded deaths in Greater Sage-Grouse populations. These areas were checked by ODFW for evidence of WNV associated mortalities in Greater Sage-Grouse populations but none was found. Reservoirs in and near the project area such as Long Dam and Desert Meadow Reservoirs, usually hold water yearlong and have not had any known WNV outbreaks. If WNV were prevalent in the area, such as around Malheur Lake, which consistently has water from year to year, then the probability of WNV carrying mosquitoes moving up the Donner und Blitzen drainage would be of more concern. The addition of the proposed water developments does not substantially increase the probability of WNV outbreak. There have only been a few studies researching vertical transmission (female to egg) or transovarial transmission. However, the studies that do show it occurring have been

conducted in laboratory conditions and vertical transmission was minimal, at most showing transmission occurring in 6.9 of 1,000 cases (Goddard et al. 2003). There is no evidence adult female mosquitos may overwinter by entering a diapause state (hibernation physiology and behavior) or WNV persists this way (CDC 2013). The conditions are such on Steens Mountain that all areas freeze every winter, not allowing infected adult mosquitoes to over winter. Based on research available and the conditions on Steens Mountain, professional opinion within the BLM is there is little risk in this area of vertical transmission occurring. This means that unless infected mosquitoes or birds are introduced to the Steens area, there will be no outbreak of WNV. For a complete discussion of WNV, see the EA beginning on page 140.

- ***Comment 66:*** The amount of water should have no effect on WNV and Greater Sage-Grouse in any circumstances. Greater Sage-Grouse need water to live, if WNV was to be present and have any effect on them, it would exist in the existing water currently within the allotment, which Greater Sage-Grouse utilize. More water in the allotment would not change the risk of Greater Sage-Grouse being infected with WNV.

  Response 66: The addition of water developments within the allotment does not increase the probability of WNV outbreak substantially. See response to comment 65.
- ***Comment 67:*** We dispute the acreage of PPH for Greater Sage-Grouse (74,755 acres) and PGH (16,409 acres) because large portions of this allotment have a high number of juniper trees. Reliance on the broad core area establishment, assessment, and ODFW Strategy fails to accurately define important Greater Sage-Grouse habitat or seasonal use areas. It especially fails to accurately identify sagebrush communities being replaced by juniper.

  Response 67: The BLM uses an approach to calculating PPH and PGH that was developed using the Core Area methodology provided by ODFW, with the assistance of a working group. It is done this way currently, lacking sufficient or better data availability. The BLM recognizes the model used to determine ODFW's Core and Low Density Areas; therefore, BLM's PPH and PGH include areas of unsuitable habitat. However, many of these unsuitable habitat areas have potential to be suitable habitat with management, such as juniper removal. See EA pages 2, 17-18, and 134 for information on PPH and PGH. The BLM has established an interim policy for Greater Sage-Grouse, which is defined in IM 2012-043 Greater Sage-Grouse Interim Management Policies and Procedures that includes conservation guidelines.

- ***Comment 68:*** The EA identifies active leks within the allotment and nearby but fails to provide maps of those lek locations in relation to proposed developments for livestock and other impacts in each alternative.

  Response 68: Lek data are the property of ODFW and as such would need to be obtained from them, especially since lek locations are sensitive to disturbance from public viewing and noise.

- ***Comment 69:*** Since 2008, new science and policies have emerged recognizing that the Greater Sage-Grouse is in danger of extinction due, at least in part, to the effects of habitat-fragmenting actions such as those proposed here. BLM's proposal would further fragment and degrade this landscape on Steens Mountain. The proposal fails to provide sufficient buffers of non-disturbed areas around essential Greater Sage-Grouse habitat areas or restore important seasonal habitats.

  Response 69: The Strategy (Hagen 2011) recognizes that grazing accomplished within regulations is consistent with Greater Sage-Grouse population maintenance and can be beneficial as it allows more abundance and diversity of forbs to be obtained. In addition, the USFWS 2010 determination that listing of Greater Sage-Grouse was warranted but precluded, USFWS determined *improperly* managed livestock grazing is a threat. However, they noted: "There are data to support both beneficial and detrimental aspects of grazing (Klebenow 1981, p. 122; Beck and Mitchell 2000, p. 993), suggesting that the risk of livestock grazing to Greater Sage-Grouse is dependent on site specific management" (75 FR 13998). The USFWS 2010 finding also stated: "For grazing, the regulatory mechanisms available to the BLM and USFS are adequate to protect sage-grouse habitats..." There is nothing being proposed that would alter or degrade sagebrush habitat, as a whole, within the allotment, and thus would not fragment Greater Sage-Grouse habitat. See EA pages 17-18, and 134-140 for more information.

- ***Comment 70:*** The impacts of continued grazing and range project development on Greater Sage-Grouse populations (and habitat) and other special status and important species present in the planning area have not been fully analyzed. The plan will fragment Greater Sage-Grouse habitat by creating new disturbances and sacrifice zones in the "dispersal" areas, both around new or redeveloped watering sources and in previously ungrazed upland habitat. The plan will increase reservoirs, troughs, fences, and other facilities substantially, which will fragment the landscape, provide new predator perches in essential habitat areas, and increase the probability of Greater Sage-Grouse collision deaths. Moreover, key information is missing, for example:
  1. How many historic Greater Sage-Grouse leks are present on the allotment, as well as the date(s) when BLM last surveyed for present and/or historic lek sites?
  2. What was the basis for classifying leks as active or inactive?
  3. What was the basis for classifying leks as occupied or unoccupied?
  4. What have the lek use patterns and trends been over the past twenty years (i.e. relating to Greater Sage-Grouse attendance at each lek)?
  5. What is the presence and importance of Greater Sage-Grouse connectivity?
  6. How will proposed wells and water developments affect Greater Sage-Grouse habitat in relation to water quality and quantity of springs, intermittent streams and wetlands?

  Response 70: As of 2007, there was only one known "historic" Greater Sage-Grouse lek (i.e. a lek known to be used in the past, but are no longer used by Greater Sage-Grouse) in South Steens Allotment as indicated through information received from the ODFW. In 2008, during annual trend lek monitoring completed by ODFW, male Greater Sage-Grouse were present at this lek. The ODFW has not indicated if this changes the lek

from historic to active status or whether more monitoring in future years is needed to determine status. The ODFW conducts systematic surveys for undiscovered active leks and completed the last survey of this area in 2007. It is not possible to survey for additional, previously unknown historic leks as the birds are not present any more during the breeding season. Known historic leks can be monitored on a yearly basis to determine if male Greater Sage-Grouse are using the lek again. The BLM helps monitor certain leks on an annual basis to help ODFW in their effort to maintain current information for population estimates.

BLM followed the rationale and definitions of the ODFW Strategy. Tthe following are definitions of active, inactive leks, occupied, and unoccupied leks.

- Active lek: A lek attended by ≥1 male Greater Sage-Grouse during the breeding season. Acceptable documentation of grouse presence includes observation of birds using the site or recent signs of lek attendance (e.g. fresh droppings, feathers). New leks found during ground counts or surveys are given an annual status of active.

- Inactive lek: A lek with sufficient survey data to suggest that there was no male attendance throughout a breeding season. Absence of male grouse during a single visit is insufficient documentation to establish that a lek is inactive. This designation requires documentation of either: 1) an absence of birds on the lek during at least two ground surveys separated by at least seven days. These surveys must be conducted under acceptable weather conditions (clear to partly cloudy and winds less than15 kph [10 mph]) and in the absence of obvious disturbance; or, 2) a ground check of the exact known lek site late in the strutting season that fails to find any sign (fresh droppings/feathers) of attendance. Data collected by aerial surveys alone may not be used to designate inactive status.

- Occupied lek: A regularly visited lek that has had at least one male counted in one or more of the last seven years. Designate and protect surrounding area as Category 1 habitat (see Hagen 2005 for lek count protocols).

- Unoccupied lek: A lek that has been counted annually and has had ZERO birds for eight or more consecutive years. Mitigation category based on habitat type and condition. Lek attendance and use trends over the years is stated in the ODFW Strategy as being relatively stable or a slight upward trend in this area from the 80's until 2010. Greater Sage-Grouse connectivity is currently unknown until further telemetry studies can be completed; anything else at this point is nothing more than supposition and cannot be backed with any scientific data or findings.

Actions proposed around springs and wetlands within this EA will improve Greater Sage-Grouse habitat by improving the riparian habitat, providing important habitat for Greater

Sage-Grouse brood rearing. Water quality at these sites will also be improved due to the removal of wild horses and livestock. Proposed reservoirs that may be located in intermittent streams would not affect overall Greater Sage-Grouse habitat in the area, as it relates to water quality and quantity, since these drainages do not regularly collect enough water to result in riparian vegetation and associated characteristics. The BLM has established an interim policy for Greater Sage-Grouse, which is defined in IM 2012-043 Greater Sage-Grouse Interim Management Policies and Procedures. All proposed developments would follow this direction. See EA page 134 for information on leks within the EA.

- ***Comment 71:*** The EA does not address the issue of predators. For example, it is well known that nesting success rates drop dramatically to 37% in disturbed habitats, from an already low 51% in undisturbed landscapes.

  Response 71: According to the ODFW Strategy (page 10):

  > Survival of sage-grouse is typically high with more than approximately 60% of a cohort surviving from year to year. Of the 40% of a grouse population that succumbs to mortality during a year predation accounts for approximately 85% of reported non-hunting mortalities and 79% of nest failures (Bergerud 1988). Specifically, predation on nests and young chicks can be high and affect populations (Gregg et al. 1994, Aldridge and Brigham 2001, Schroeder and Baydack 2001, Coates 2007). However, few studies have indicated that predation is a major limiting factor to sage-grouse.

  While predators are obviously a factor, the BLM is not responsible for predator control. PDEs are in place within the EA (beginning on EA page 29) to attempt to limit the number of new perches available for predators. However, since juniper trees are common within the allotment, perches for predators are not a major limiting factor to predation within this allotment.

- ***Comment 72:*** Emphasizing too small an area for evaluating the impacts of cattle grazing and range projects, such as water developments, on Greater Sage-Grouse will not ensure population viability. The EA uses a 0.6-mile buffer for water and other projects. This buffer is inconsistent with the agency's finding in its 1989 Wilderness EIS that most Greater Sage-Grouse in the WSAs within the project area nest up to *two miles* away from strutting grounds. The proposed developments, including all of the activities necessary to construct and maintain those developments, either directly or indirectly result in manipulation and reduced habitat for Greater Sage-Grouse. ONDA recommends, at a bare minimum, and based on emerging and best available science, a three to six mile buffer around leks, regardless of type of development proposed.

  Response 72: The recommendation of "at least" a one kilometer (0.6 mile) buffer included in the Strategy was based on Oregon BLM's "Greater Sage-Grouse and Sagebrush Steppe Ecosystems Management Guidelines" (2000) and other research (refer to the Strategy pages 104-116) which recommends at least one kilometer for construction

of new livestock facilities such as water troughs. Both documents were based on the best available science. The Strategy was originally completed five years after the BLM guidelines and updated in 2011 and it ascertained the one-kilometer buffer was appropriate. The BLM was a partner in the development of the 2005 Strategy and the Oregon/Washington BLM State Director signed a letter supporting the strategy. Therefore, the BLM is implementing many of the components of the Strategy, as referenced in the Steens Mountain CMPA ROD and RMP (page 36). Connelly et al. (2000) refers to vegetation manipulation within five kilometers (three miles) of a lek in the form of prescribed fire, herbicide use or other sagebrush control activities that would remove large acreages of sagebrush. Information was incorporated into the EA beginning on page 134.

- ***Comment 73:*** BLM downplays the anticipated degradation, measuring the impacts of the proposed water facilities by the projects' actual footprint on the ground. That spatial analysis is inadequate. While BLM provides for less than a mile of space between leks and water facilities, the most recent scientific literature shows that Greates Sage-Grouse require a far larger undisturbed area, thus the proposed buffers will likely impair mating, nesting, and brood-rearing success. In fact, recent studies show Greater Sage-Grouse persistence is directly influenced by landscape characteristics up to 33.5 miles from leks. BLM entirely ignores the presence and importance of connectivity corridors that provide for genetic dispersal necessary to ensure viable Greater Sage-Grouse populations. Thus, the negative impacts from this project could potentially extend far beyond the planning area.

  Response 73: See response 72 for discussion of the buffer around leks and the policy that BLM is following. The FWS has determined in its 2010 finding that proper grazing management, which includes the range improvements necessary for proper distribution of use, do not negatively impact GRSG. The BLM is not currently aware of any studies showing a cause-and-effect relationship between range improvements (troughs, fences, etc.) and lek persistence. Greater Sage-Grouse connectivity knowledge is currently limited and more telemetry studies need to be completed before scientifically based conclusions can be made; anything else at this point is nothing more than supposition and cannot be backed with any scientific data or findings. Information from a radio telemetry study completed between 1997-2000 (Crawford et al. 2000), shows that some females traveled short distances to nest while others traveled longer distances to suitable habitat in what is now the No Livestock Grazing Area/Steens Mountain Wilderness on the east side of Donner und Blitzen River. ODFW identified areas that may be used as connectivity corridors in the Strategy, using a habitat viability model, but specifics about Greater Sage-Grouse connectivity is limited. The BLM continues to monitor research related to connectivity. Information added to page 134 of the EA.

- ***Comment 74:*** The BLM has failed to adequately or completely analyze the impacts of all alternatives on Greater Sage-Grouse and Greater Sage-Grouse habitat. BLM's inadequate analysis of Greater Sage-Grouse habitat is made clear by the lack of discussion of habitat connectivity in the EA. Understanding the connections between Greater Sage-Grouse

habitat in the South Steens Allotment to habitat outside the allotment is critical to an informed analysis of the impacts of the proposed actions.

Response 74: See Reponses to Comments 72 and 73.

- ***Comment 75:*** Experts recommend that grazing should not be permitted around nests and leks in early spring, and that grazing impacts should be minimized or halted at least within 3.1 miles of leks.

  Response 75: See response 72 for discussion of the buffer around leks and the policy BLM is following. By limiting livestock grazing to a 50% maximum utilization, the BLM ensures there will be sufficient grass cover for nest concealment when nesting begins in the spring.

- ***Comment 76:*** The EA does not evaluate whether, or how, developing water projects and increasing forage consumption by cattle would comply with ODFW's "70/30" goal of conserving ≥70% of healthy sagebrush habitat. According to ODFW, the Burns District is already under the 70/30 threshold, with only 68% intact sagebrush and 32% disturbed habitats. In the EA, BLM offers no explanation as to how further fracturing and degrading the landscape with these developments, and increased grazing, will protect remaining unfragmented areas (*i.e.*, will not result in "no net loss" of remaining, intact sagebrush landscapes).

  Response 76: The ODFW Strategy (page 76) states:

  > As a mid-scale objective, 70% of an area in sagebrush does not describe the condition or quality of sagebrush communities (i.e., vegetation composition and structure). Ideally the majority of the 70% should be of high quality habitat; however, defining the appropriate proportion of quality habitat in a region is difficult at this time. This adaptive management strategy for sagebrush habitat will benefit sage-grouse and other species associated with sagebrush.

  Further discussion of this issue, specifically for the Burns District, is on page 59 of the ODFW Strategy and states:

  - *Current distribution and status of habitat.*—Sixty seven percent (1,236,629 ha or 3,055,778 acres) of this implementation team area was comprised of sagebrush, and 85% of that was high viability habitat (Table 17). Other shrub cover types encompassed a much larger area in 2005 than 2009, likely as a result of different land cover data (Table 18). Juniper and sage-juniper are the two largest risks to the estimated 3.1 million acres of sagebrush in the Burns Implementation Area.
  - *2005 status of habitat.*—Sagebrush habitats comprised 68% of this region (1,231,238 ha or 3,042,442 acres), most of which (80%) was ranked as high viability (Table 16). Reasonable habitat connectivity exists in this district (Figure 18) as evidenced by the inclusion of over half of the two

largest contiguous areas of sagebrush in the state (Figure 16). Sagebrush areas north of Highway 20 are impacted from juniper and ponderosa pine encroachment (7%) and likely contribute to the fragmentation in this portion of the district. Natural features (e.g., Malheur and Harney Lakes) and conversion to agriculture impact sagebrush connectivity between the town of Burns and Steens Mountain.

This means we are remarkably similar to the 2005 distribution that shows we were close to the same percentages and have actually increased in high viability habitat with management and juniper treatments in the last few years.

South Steens Allotment is only 94,598 acres of the 3,055,778 acres of the Burns District (ODFW Strategy page 59). This is less than 3.1% of the entire area, and this EA is only proposing development on a small number of acres within the allotment. The actions mentioned in this EA will not increase grazing (actual use AUMs will be no more than currently permitted), will not further fracture or degrade the landscape, and will result in *no net loss* of remaining, intact sagebrush landscapes. Information has been added to the EA beginning on page 134).

- ***Comment 77:*** Mule deer habitat, primarily bitterbrush, would be affected by the placement of new water sources near bitterbrush stands, which up until now have been largely inaccessible to livestock. Under BLM's proposal, livestock will start utilizing bitterbrush during the growing season with use affecting plant reproduction towards the end of the growing season.

  Response 77: Use of bitterbrush by livestock increases as seed heads ripen and as grasses and forbs enter dormancy. Therefore, early use, during spring through seed head formation, on grasses usually does not affect growth rates of bitterbrush. Moderate to heavy late-season use of bitterbrush by livestock affects availability of browse for wintering mule deer and continued moderate to heavy use, year after year, affects reproductive capabilities of these plants. Monitoring using the Cole Browse method will occur to determine livestock utilization and ensure this use is not affecting the long-term reproduction of the plant. The use of bitterbrush is limited to no more than 15%, leaving 85% of bitterbrush intact. One objective of the AMP is to maintain frequency and distribution of antelope bitterbrush in Steens and Tombstone pastures over the next 10 years. Bitterbrush is specifically discussed in the EA on pages 24, 26-28, 196, 198-202.

- ***Comment 78:*** Development of springs has significant negative impacts on native species that the BLM fails to even note. For instance, many snails, frogs, butterflies, aquatic insects, not to mention larger birds, mammals, etc. rely on springs for cover, water, and so forth. Development of springs tends to reduce access to these natural watering areas and/or concentrates cattle in these areas making them less suitable for wildlife use.

Response 78: While the effects to certain wildlife species may be negative, there was a determination these effects would not be significant. In any actions taken on the landscape there are trade-offs to any number of species; some will be beneficial while others may be negative to others and vice versa. Many can be mitigated and, while impacting an individual, will have no effect on a population level.

Spring development, as described in the EA page 38, would include spring protection to protect the spring source and the surrounding riparian areas. In addition, fences used for spring protection would be designed to allow wildlife access. The spring development would also employ the use of a float, to ensure no more water than is needed to fill the trough is pulled from the spring. As a secondary method, in the event the float fails, the trough would also have an overflow that piped the water back to the riparian area. These PDEs described in the EA would keep livestock from concentrating within the riparian area, protecting it for use by all wildlife species. The PDEs would also limit the amount of water removed from it, to ensure the area continues to provide riparian habitat valuable to many wildlife species.

- ***Comment 79:*** BLM greatly underestimates the threat of habitat fragmentation from wildfire, cheatgrass expansion, and climate change—issues that have been under great scrutiny in the scientific literature since 2008 and all issues for this area. In short, BLM's plan is likely to significantly affect Greater Sage-Grouse populations in ways and to a degree BLM has grossly underestimated.

  Response 79: These are natural occurrences and will occur regardless of an action taken under any of the alternatives. However, while livestock grazing can increase annual grasses; therefore, increasing the risk of catastrophic wildfire, it can also reduce fuel load, decreasing the risk of catastrophic wildfire. The exact role livestock play in these issues is variable and circumstance specific, but is addressed to the extent possible in the analysis for multiple issues, including *Grazing Management and Rangelands* (beginning EA page 69) and *Upland Vegetation* (beginning EA page 151) . Climate change is also addressed within the EA beginning on page 21.

- ***Comment 80:*** BLM's proposal to increase the impacts of cattle grazing in essential Greater Sage-Grouse habitat on Steens Mountain fails to meet the purpose of the Steens Act to protect the ecological integrity of the landscape and conserve and protect Greater Sage-Grouse and other SSS. If implemented, this project would degrade core and important seasonal Greater Sage-Grouse habitats, which further imperils the species.

  Response 80: Purpose number 12 of the Steens Act, Section I (b), lists protecting the long-term ecological integrity of Steens Mountain along with 12 other *purposes*. Nothing in Section I of the Steens Act weights the importance of one purpose over another. All projects are designed to aid in the ecological integrity of the landscape.

  According to the ODFW Strategy, appropriate livestock grazing can be compatible with Greater Sage-Grouse habitat needs. The ODFW Strategy has the following conservation guidelines for livestock grazing (pages 103-104):

1) Where livestock grazing management results in a level of forage use (use levels) that is consistent with Resource Management Plans, Allotment Management Plans, Terms and Conditions of Grazing Permits or Leases, other allotment specific direction, and regulations, no changes to use or management are recommended if habitat quality meets Rangeland Health Standard and Guidelines.

2) Where livestock grazing management results in a forage use level detrimental to habitat quality, it is recommended changes in grazing management be made as soon as possible to recover habitat quality. Adjustments to grazing management should be conducted in accordance with regulations of responsible land management agency.

a) Adaptive management that should be considered includes:
   i) changes in salting and/or watering locations,
   ii) change in the season, fencing, duration or intensity of use,
   iii) reducing grazing use levels,
   iv) temporary livestock non-use (rest), or
   v) extended livestock non-use until specific local objectives are met as identified by implementation group.

3) The timing and location of livestock turnout and trailing should not contribute to livestock concentrations on leks during the sage-grouse breeding season.

4) Measurement of grazing levels should be conducted on that portion of the pasture which is known to be sage-grouse habitat and would not be based on "average use" throughout the entire pasture.

5) Reduce physical disturbance to sage-grouse leks from livestock through managing locations of salt or mineral supplements by placing them greater than 1 km (0.6 mi) from lek locations.

Since BLM is consistent with the above guidance, and the Steens Act specifically allows for promoting viable and sustainable grazing and recreation operations on private and public lands (Purpose 11), the BLM complies with policy, regulations, and Greater Sage-Grouse recommendations. In addition, the EA does not propose increasing AUMs under any alternative; therefore, impacts would not be increased above what is currently allowed.

- ***Comment 81:*** ONDA objects to BLM limiting its analysis of Greater Sage-Grouse to confined nesting ranges in relation to active leks, especially in disturbed environments (*e.g.*, areas dissected by motorized vehicle routes, fences, pipelines and other water developments, as well as areas disturbed by juniper removal and similar projects). BLM not only may be limiting Greater Sage-Grouse reproductive capabilities during a time when their populations are at an all-time low (due to grazing and agricultural impacts),

but also may be exposing the birds' offspring to increased predation due to the confined areas where they may be found. BLM's failure to manage for breeding areas of sufficient size, according to the best available science, cumulatively represents a significant impact on the environment.

Response 81: The BLM is not restricting Greater Sage-Grouse to confined nesting ranges. Female Greater Sage-Grouse may nest within variable distances from a lek, from two to four miles or farther. Female Greater Sage-Grouse will nest wherever suitable nesting habitat exists, whether close to a lek or not. Information from a radio telemetry study completed between 1997-2000 (Crawford et al. 2000), shows some females traveled short distances to nest while others traveled longer distances to suitable habitat in what is now the No Livestock Grazing Area/Steens Mountain Wilderness on the east side of Donner und Blitzen River (EA page 134). Selection of nest sites may also be based on fidelity to past nest sites. Populations are more affected by continued disturbance in oil and gas development than by temporary disturbance of construction of water facilities in the project area. The project area is not the only place on Steens Mountain where Greater Sage-Grouse are found and the BLM is not confining Greater Sage-Grouse to any specific areas; therefore, predation of young is not expected to increase above what currently occurs. Agricultural impacts (meaning the conversion of sagebrush steppe into agricultural production fields) are indeed one of the leading causes of sagebrush habitat loss. Grazing, however, is acknowledged in the ODFW Strategy (and many other sources such as Anderson and McCuistion (2008), Vavra (2005), IM 2012-043, and NTTR), which states on page 79:

> [L]ivestock ranching operations which manage for ecological sustainable native rangelands is compatible with sage-grouse conservation, and necessary management activities to maintain a sustainable ranching operation are not considered "development actions" under the application of the Mitigation Policy to sage-grouse habitat.

- ***Comment 82:*** Although BLM provides no spatial analyses to evaluate effects on Greater Sage-Grouse seasonal habitats, it seems clear that BLM's range project configuration will geographically concentrate grazing on the most valuable nesting areas for Greater Sage-Grouse throughout this part of Steens Mountain.

Response 82: The purpose of adding water developments is to improve wild horse and livestock distribution and utilization throughout the entire allotment. There is no increase in AUM's and the permittee will continue to be limited to no more than 9,577 AUMs. This approach is to "even-out" the usage, not increase it; water developments distribute use over a large area, not concentrate it. Areas of livestock concentration would be within the immediate vicinity of the water development. The allotment has 74,755 acres of PPH within it and as such will have adequate amount of nesting habitat for Greater Sage-Grouse. The number of proposed new developments in PGH and PPH, per alternative, is discussed in the EA beginning on page 146.

- ***Comment 83:*** The plan would interfere with critical Greater Sage-Grouse life history stages, affecting the birds during their nesting and brood-rearing periods—in particular by shifting grazing to the places most critical to these stages.

  Response 83: See Responses to Comments 72, 81, and 82.

- ***Comment 84:*** The EA avoids mentioning key components of the Strategy, and that its proposed grazing is in fact not consistent with ODFW's recommendations. ODFW emphasizes the importance of protecting, *above all else*, core habitat areas like those that characterize the project area.

  Response 84: The Strategy states in the executive summary (pg. viii): "Although this strategy focuses on conservation of greater sage-grouse, the intent is to benefit conservation needs of other sagebrush-steppe species." Again, on page 3, the Strategy states:

  > This Plan, while it concentrates on the habitat needs of Greater Sage-Grouse, is intended to focus on maintenance and enhancement of sagebrush habitats, which are important to a number of other species (Maser et al. 1984, Rowland et al. 2005, Hanser and Knick 2011). The overarching goal of this Plan is to promote intact and functioning sagebrush landscapes. These landscapes typically support more wildlife species than monotypic grasslands (Maser et al. 1984).

  On page 79 the ODFW Strategy states:

  > This Plan recognizes that livestock ranching operations which manage for ecologically sustainable native rangelands are compatible with sage-grouse conservation, and necessary management activities to maintain a sustainable ranching operation are not considered "development actions" under the application of the Mitigation Policy to sage-grouse habitat. From a habitat fragmentation standpoint, ranching was the most environmentally benign land use and accumulated fewer human features than landscapes that also contained tillage agriculture, energy development, or both in Wyoming and Montana (Naugle et al 2011). Ranching as a land use generally supported greater biodiversity as measured by native plant species and shrub/grassland nesting birds than exurban developments or reserves (Stohlgren et al. 1999, Maestas et al. 2002; 2003). Per the Mitigation Framework, "development" is defined as a "development action" with some additional clarifying modifications.
  >
  > "Development action" means any activity subject to regulation by local, state, or federal agencies that could result in the loss of fish and wildlife habitat. Development actions may include, but are not limited to the planning and construction and operational activities of local, state and federal agencies. Development actions also include subsequent re-permitting for activities with new impacts or continued impacts that have not been mitigated consistent with current standards. Development action does not include activities associated with the

> continued maintenance and operation of livestock ranching operations which manage for sustainable native rangelands, as determined by BLMs Rangeland Health Assessment or other recognized monitoring techniques appropriate for shrub steppe habitats in Oregon.

Nowhere in the ODFW Strategy or the Mitigation Framework do the words, *above all else,* appear in conjunction with core area habitats or by itself. Rather the ODFW Strategy repeatedly states grazing and grazing improvements can be compatible with persistence and enhancement of Greater Sage-Grouse habitat. See EA pages 136-137.

- ***Comment 85:*** The document argues that there will be a reduction of livestock impacts on Greater Sage-Grouse because cattle will be distributed better. Yet it does not consider that any livestock impacts may be too much for Greater Sage-Grouse. The impacts from livestock on Greater Sage-Grouse are well documented and include the loss of hiding cover (which makes them vulnerable to predators), fences which they fly into, fences which are perches for avian predators, loss of wet meadows, seeps and riparian areas by cattle trampling, WNV facilitated by livestock troughs and so forth. Once again, the document is skewed trying to justify livestock production by suggesting that new water sources would "benefit" Greater Sage-Grouse, without looking at the cumulative negative impacts of just having cows there in the first place.

  Response 85: See Responses to Comments 65, 69, 72, 80, 81, and 82.

- ***Comment 86:*** Construction of new, or renovation of existing, water developments will accelerate the decline of Greater Sage-Grouse populations by, among other things, fragmenting habitat, degrading water quality and quantity, and providing new water sources for WNV-carrying mosquitoes. Likewise, increased grazing (*i.e.*, increasing the amount of grass removed, ostensibly habitat required by Greater Sage-Grouse for breeding and rearing) will accelerate the decline of the Greater Sage-Grouse.

  Response 86: See Responses to Previous Comments 56, 57, 65, 69, 70, 75, 79, 80, 81, 82, and 83.

- ***Comment 87:*** BLM's proposal is inconsistent with its own experts' guidance designed to halt the decline of Greater Sage-Grouse. In August 2011, BLM adopted the charter for its new National Greater Sage-grouse Planning Strategy (NTT Report) in response to USFWS's March 2010 "warranted" determination. The NTT Report outlines BLM's plan to adopt necessary conservation measures for Greater Sage-Grouse in BLM Land Use Plans before the 2015 listing decision. To achieve the NTT Report's goal to "maintain and/or enhance" Greater Sage-Grouse abundance and distribution "by conserving, enhancing or restoring the sagebrush ecosystem upon which populations depend," BLM adopted a "new paradigm" for Greater Sage-Grouse management:

  > Through the establishment of the National Sage-grouse Planning Strategy, the Bureau of Land Management has committed to a new paradigm in managing the sagebrush landscape. . . . *Land uses, habitat treatments, and anthropogenic*

disturbances will need to be managed below thresholds necessary to conserve not only local sage-grouse populations, but sagebrush communities and landscapes as well. Management priorities will need to be shifted and balanced to maximize benefits to sage-grouse habitats and populations in priority habitats.

Response 87: The stated goal of the NTT Report is to: "Maintain and/or increase sage-grouse abundance and distribution by conserving, enhancing or restoring the sagebrush ecosystem upon which populations depend in cooperation with other conservation partners." The part about cooperation with other conservation partners is an important component of the goal. The NTT Report goes on to say that the "overall objective is to protect priority sage-grouse habitats from anthropogenic disturbances that will reduce distribution or abundance of sage-grouse...these habitats have been, or will be identified by state fish and wildlife agencies". The NTT Report recommends capping human disturbance at 3%; however, this does not include fences, troughs, or storage tanks in the calculations. For the state of Oregon, ODFW has done so with the Strategy, as well as the local implementation team, and BLM is following appropriate recommendations set forth in the ODFW Strategy; thus, the BLM does fulfill the "new paradigm" for Greater Sage-Grouse management, and are in fact consistent with 'its own experts' guidance designed to halt the decline of Greater Sage-Grouse. See EA pages 17-18.

WSA/Wilderness/Steens Act

- ***Comment 88:*** The remnants of Home Creek and Blitzen River WSAs were deemed not suitable for wilderness, thus mitigation and use restrictions in place to maintain suitability on those portions are not appropriate and should not be a limiting factor. These areas have been deemed unsuitable already, so additional developments would not have any effect on suitability. It is conflicting policy for WSAs deemed unsuitable in original inventories to not be actively managed to meet the broad array of objectives specified by the Steens Act.

  Response 88: Title II of the Steens Act, Sec. 204 (a) Status Unaffected states: "any wilderness study area, or portion of a wilderness study area, within the boundaries of the Cooperative Management and Protection Area, but not included in the Wilderness Area, shall remain a wilderness study area notwithstanding the enactment of this Act." Home Creek WSA and Blitzen River WSA are still WSAs and will be managed as such until Congress either designates them as wilderness or releases them. The FLPMA's references to "suitability" in section 603(a) and in section 603(c) are two distinct concepts. Section 603(a) involves the Secretary's "recommendation as to the suitability," while Section 603(c) directs the Secretary to manage areas "identified during the inventory required by section 201(a) of this Act as having wilderness characteristics" in "a manner so as not to impair the suitability of such areas for preservation as wilderness". Congress ultimately decides what is and is not suitable.

- ***Comment 89:*** The Home Creek WSA, should be dropped as a WSA because it is separated from wilderness by a well-used, designated road, as well as private lands, and it does not meet the independent size criteria for WSA.

Response 89: See Response to Comment 88.

- ***Comment 90:*** The Steens Act specifically allows off road travel for construction of livestock facilities and developments, thus the requirement that fence removal be done only with pack animals is unreasonable and unnecessary. The Steens Act allows for equipment to access agricultural developments for maintenance and construction activities and this should be allowed for effective and efficient maintenance and construction of developments to better meet the objectives of the project.

  Response 90: Title I of the Steens Act, Subtitle B Management of Federal Lands, Sec. 112, (b) states that the use of motorized or mechanized vehicles on Federal lands included in the CMPA is prohibited off road and limited to such roads and trails as designated for that use in the management plans.

  An exception to the prohibition may be such use as needed for administrative purposes or to respond to an emergency, or is appropriate for the construction or maintenance of agricultural facilities, fish and wildlife management, or ecological restoration projects, except in areas designated as wilderness or managed under the provisions of section 603(c) of the FLPMA. Land Use Authorities are described in Sec. 113 of the Steens Act.

  Therefore, BLM will follow guidance as provided by the Steens Act, Wilderness Act, FLPMA, and the WSA Manual 6330.

- ***Comment 91:*** Alternative G (No Grazing) would violate the Steens Act and is not a realistic alternative. This alternative is not consistent with any section of the Steens Act, and juniper and wild horse issues would continue to impact long-term riparian and upland conditions within the allotment.

  Response 91: A purpose of the Steens Act is "[t]o promote viable and sustainable grazing". If grazing were found not to be sustainable, than eliminating grazing in the areas where it is not sustainable would be a valid option and remain consistent with the Steens Act. In addition, the inclusion of a “No Grazing” alternative helps inform the decision maker of possible consequences of an appropriate range of alternatives as required by NEPA.

- ***Comment 92:*** BLM appears to be operating under the premise that the Steens Act somehow limits its options—and specifically, that the Act requires BLM to provide for replacement forage and water. There is no continuing obligation to provide “replacement” forage or access to water through the Steens Act. As a result, the EA’s purpose and need statement undermines the entire document and planning process. Any “need” to provide for replacement of water for livestock and wild horses is only legitimate after BLM has ensured wilderness values are protected, not while preventing impairment to those values.

Response 92: Roaring Springs Ranch was compensated for lost forage for the pastures now located within the No Livestock Grazing Area. Except for a water gap at Tabor Cabin and a few small spots along the eastern allotment boundary fence South Steens Allotment is outside the No Livestock Grazing Area and the WSR corridor. A purpose of this project was to analyze the development of reliable late-season water for livestock and wild horses within the allotment, since the use area for livestock was decreased when the Donner und Blitzen River Corridor was fenced (EA page 9). In addition, this fence also limited water available to wild horses in South Steens HMA. The full effects of the Steens Act and subsequent fencing were not fully realized until implementation was complete. The *Projects for Implementation of the Steens Mountain Cooperative Management and Protection Act of 2000* EA OR-027-01-27, completed in 2001, did have the purpose to:

> [I]mplement the 'no livestock grazing area,' install and maintain fencing required for resource protection within this area, provide replacement forage within and outside the CMPA, and construct fencing and water systems to allow for viable livestock operations and sustainable livestock grazing which promotes the long-term ecological integrity within the CMPA and meets the Standards for Rangeland Health and the Guidelines for Livestock Management.

However, its completion did not limit the BLM's ability to propose additional actions (accompanied by NEPA analysis) that conform to the requirements of the Steens Act.

- ***Comment 93:*** The EA emphasizes maintaining "viable" ranching operations on Steens Mountain. There is nothing in the Steens Act about providing for "viable" ranching operations. The Steens Act refers to ecologically sustainable grazing, recreation, historic, and other uses—not to economically viable uses.

  Response 93: The BLM agrees there is nothing in the Act about "providing for economically viable ranching operations." The correct phrase, as stated under the purposes of the Steens Act in Section I (b) (11) is: "To promote viable and sustainable grazing and recreation operations on private and public lands." This change has been made throughout the EA as applicable.

- ***Comment 94:*** Developments for effective livestock management do not affect the suitability of wilderness designation. Grazing was a grandfathered use in wilderness, maintenance of livestock developments are allowed within wilderness as long as a minimal tool analysis is completed. Therefore, the proposed developments would not have any effect on whether a WSA is designated wilderness or not.

  Response 94: Developments in WSAs must meet the non-impairment standard in BLM's WSA Management Manual (6330) or one of the exceptions, such as protecting or enhancing wilderness characteristics. In this EA the purpose and need is to analyze the construction of water sources in areas for cattle and wild horses where there is a lack of water (EA page 9). Distribution of cattle can enhance the naturalness of the area by reducing the cumulative effects created by cattle concentrating in an area.

- ***Comment 95:*** On the naturalness argument, BLM appears to be ignoring the fact that not controlling juniper invasion and as a result having to engage in fire suppression is far more unnatural within WSAs than minor items such as grazing and development of watering holes.

  Response 95: Juniper Management in the Steens Act Sec. 113. Land Use Authorities (c) states:

  > The Secretary shall emphasize the restoration of the historic fire regime in the Cooperative Management and Protection Area and the resulting native vegetation communities through active management of Western Juniper on the landscape level. Management measures shall include the use of natural and prescribed burning.

  The BLM has complied with this through the development of the North Steens Project; however, implementation of this project is limited by funding and logistics. In addition, while natural fire can be used as a tool, the costs and benefits of not suppressing a wildfire are always considered in accordance with the appropriate Fire Use Plan. Juniper management can occur in WSAs; however, some limitations restrict implementation of juniper management activities within this allotment.

  Fire is considered an exception to the non-impairment requirement within WSAs under BLM Manual 6330-Management of BLM WSAs Section 1.6 C. 2. (a). Emergencies, which allows for "any action necessary to prevent loss of life or property, even if the action will impair wilderness suitability." The BLM is required to conduct fire suppression activities "in a manner that least impairs wilderness suitability while resolving the emergency, and the resulting impacts will be restored as soon as possible after the situation has been resolved." In addition, under Section 1.6 D. 2. The manual provides details on managing, biological constraints, management response, emergencies, suppression personnel, stabilization, rehabilitation, and restoration. It also includes specific details for prescribed fire and fuel treatment, both of which relate to juniper management.

  In determining whether a development meets the protecting or enhancing wilderness characteristics exception, the BLM will determine if the structure's benefits to the natural functioning of the ecosystem outweigh the increased presence of human developments and any loss of naturalness or outstanding recreational opportunities caused by the new development, as described in BLM Manual 6330, and in compliance with the Steens Act.

- ***Comment 96*****:** Water developments that benefit the goals and objectives of the Steens Act and watershed conditions need to be implemented and are not subject to "non-impairment criteria".

Response 96: The Steens Act does not override the BLM's responsibility to comply with the non-impairment management requirement of Section 603 of FLPMA or the policy BLM has set out to implement Section 603 of FLPMA as described in BLM Manual 6330 – Management of WSAs.

The BLM's management policy is to continue resource uses on lands designated as WSAs in a manner that maintains the area's suitability for preservation as wilderness. The BLM's policy will protect the wilderness characteristics of all WSAs in the same or better condition than they were on October 21, 1976, until Congress determines whether or not they should be designated as wilderness.

The BLM will review all proposals for uses and/or facilities within WSAs to ascertain whether the proposal would impair the suitability of the WSA for preservation as wilderness. Unless excepted under the "Exceptions to non-impairment" as listed in BLM Manual 6330, all uses and/or facilities must meet the non-impairment standard. Any developments constructed within the WSA areas of South Steens Allotment must comply with both BLM Manual 6330 and the Steens Act. Developments outside of WSAs do not have to comply with BLM Manual 6330. See Response to Comment 95.

- ***Comment 97:*** If implemented as proposed, the project would violate WSA management policy and would seriously degrade the essence of the Steens Mountain CMPA. If implemented the landscape on Steens Mountain would be converted from "an area where the earth and its community of life are untrammeled by man" to one where "man and his works dominate the land" by the nature and degree of proposed water developments that will create sacrifice zones throughout the allotment. For an activity to satisfy FLPMA's non-impairment mandate, and thus be permitted to proceed in a WSA, the activity must be temporary and must not cause surface disturbance. The proposed water development projects will result in significant surface disturbance and degradation of wilderness characteristics, impairing wilderness values. Construction activities associated with building and maintaining all of these developments, including the use of ATVs, trucks, heavy equipment, and other motorized vehicles, will involve extensive ground-disturbing activity, all requiring reclamation work, which is surface disturbing. Cross-country vehicle use off boundary roads and existing ways is surface disturbing because the tracks created by the vehicle leave depressions or ruts, compact the soils, and trample or compress vegetation. FLPMA requires that the Secretary of the Interior shall manage WSAs "in a manner so as not to impair the suitability of such areas for preservation as wilderness."

  Response 97: See Response to Comments 95 and 96.

- ***Comment 98:*** *S*age-grouse and their habitat are a key wilderness characteristic present in the project area, BLM is required to ensure this habitat is not impaired in order to protect wilderness values.

***Response 98*:** Greater Sage-grouse were identified as a supplemental value in the Wilderness EIS not a key value. As a supplemental value, Greater Sage-Grouse are important within the WSA portion of South Steens Allotment, but their presence does not require the BLM to ensure the habitat is not impaired, nor does it affect the ability of the WSA to be designated as wilderness. Greater Sage-Grouse are a BLM SSS, and as such the BLM believes the Greater Sage-Grouse are an important component of the area both within and outside of WSAs.

According to BLM Manual 6340—Management of BLM Wilderness, Section 1.6 D. 11., wildlife management within wilderness is guided by all relevant laws, including the Wilderness Act, acts designating specific wilderness areas, the Endangered Species Act, the Migratory Bird Treaty Act, Native American treaty rights, 43 CFR 6300 (Management of Designated Wilderness Areas), 43 CFR 24 (USDI Fish and Wildlife Policy: State-Federal Relationships), and applicable State laws and policies regarding wildlife. Fish and wildlife management activities should emphasize the protection of natural processes in a wilderness context. It is expected that nature, not human intervention, will play the dominant role. In some cases, active management of wildlife or habitat will be necessary to preserve the Natural quality of wilderness character, despite the impairing nature of these actions on the Untrammeled quality of wilderness character. Management activities will be guided by communication and cooperation with the State wildlife agencies and the principle of doing only the minimum necessary to manage the area as wilderness.

See EA beginning on page 135 of the EA for further details on Greater Sage-Grouse.

- ***Comment 99:*** BLM must study the impacts of its proposal on wilderness characteristics present in the planning area. As we explained in our 2008 comments, which provided a critique of BLMs 2003 internal wilderness as well as new wilderness inventory information, the wilderness review BLM conducted during its planning process for the Andrews-Steens Resource Management Plan contains many errors. BLM does not address the concerns we raised in our 2008 letter. That the Ninth Circuit concluded that BLM had adequately considered the impacts of its 2005 land use plan on wilderness values in the Andrews Resource Area is not pertinent to whether BLM has now adequately considered impacts to roadless areas and wilderness values for this site- and project-specific action. Any such documentation concerning your evaluation of wilderness values within the three citizen-identified wilderness areas must be included in the NEPA analysis for this project. BLM must fully analyze wilderness characteristics outside of WSA.

Response 99: An intensive inventory evaluating the presence or absence of wilderness character on the BLM-administered lands in the project area was completed in the early 1980s. The inventory found wilderness character was present on portions of the BLM-administered lands and not present on other portions within the allotment. In 2002, ONDA provided the BLM with information on three citizens proposed WSAs within the allotment. In 2003, an IDT reviewed and evaluated current conditions and information provided by ONDA. No changes to conditions were identified that would modify the

findings of the 1980 inventory. Based on that analysis, the BLM determined its 1980's inventory finding that BLM-administered lands within the project area do not possess wilderness character remains valid. As such, wilderness character was not analyzed further in the EA (pages 20-21).

In *ONDA v. Shuford* (June 2007), the U.S. District Court upheld BLM's methodology and findings under NEPA and FLPMA, regarding the update of its wilderness inventory that was part of the planning process for the Steens Mountain CMPA ROD/RMP (August 2005). The Court found BLM had evaluated existing information, as well as information submitted by ONDA, related to wilderness resources. The Interior Board of Land Appeals stated:

> There is no NEPA requirement that BLM include a wilderness resource discussion in an EA, unless the Proposed Action will result in environmental impacts to such a resource. When BLM has compiled the 'hard data' in satisfaction of its FLPMA inventory obligation that support its determination that the requisite wilderness characteristics are not found within the project area outside of existing WSAs, that 'hard data' need not be repeated in the EA concluding that no impact will occur to the wilderness resource. [ONDA, 173 IBLA 354 (2008)].

The comments and new information provided by ONDA as part of their comments in this document (2008) were found to be unpersuasive regarding wilderness characteristic conclusions and do not represent a significant change about on-the-ground conditions evaluated in 2003 for wilderness inventory units within the project area. The EA did address resources identified as being affected in the EA (EA Chapter III).

- ***Comment 100:*** The Steens Mountain CMPA management plan emphasized maintaining, restoring, and improving ecological integrity of vegetation and sensitive species habitats. To the extent a site-specific proposal, such as cattle grazing or broad-scale water development, conflicts with these priorities, the conflicting action must yield. The EA does not consider this problem.

  Response 100: Purpose number 12 of the Steens Act, Section I (b), lists protecting the long-term ecological integrity of Steens Mountain along with 12 other purposes. Nothing in Section I of the Steens Act weighs the importance of one purpose over another.

  Where grazing is allowed in the CMPA, some water developments may be necessary to help distribute cattle so they do not concentrate in the few areas that have natural water sources. While the increase in water sources increases the number of developments, a decrease in localized riparian damage and improved wild horse and livestock distribution would increase the naturalness of the environment; therefore, protecting the overall long-term ecological integrity of Steens Mountain.

- ***Comment 101:*** Section 113 of the Steens Act prohibits construction of new facilities on CMPA public lands unless, among other things, they are "minimal in nature" and consistent with the purposes of the Act.

  Response 101: Section 113 (e.) (1.) of the Steens Act specifies that unless specifically specified within the law, grazing would continue under existing law. Section 113 (f.) Prohibition on Construction of Facilities does state:

  > No new facilities may be constructed on Federal lands included in the Cooperative Management and Protection Area unless the Secretary determined that the structure- (1) will be minimal in nature; (2) is consistent with the purposes of this Act; and (3) is necessary- (A) for enhancing botanical, fish, wildlife, or watershed conditions; (B) for public information, health, or safety; (C) for the management of livestock; or (D) for the management of recreation, but not for the promotion of recreation.

  The developments proposed in this document are designed to be minimal in nature and would not be substantially noticeable from a long distance; therefore, meeting the first requirement. The proposed developments are consistent with the following purposes of the Steens Act: (1) To maintain the cultural, economic, ecological, and social health of the Steens Mountain area in Harney County, Oregon; (10) To maintain and enhance cooperative and innovative management practices between the public and private land managers in the CMPA; (11) To promote viable and sustainable grazing and recreation operations on private and public lands; and (12) To conserve, protect, and manage for healthy watersheds and the long-term ecological integrity of Steens Mountain. Therefore, the proposed developments meet the second requirement. The proposed developments are needed, as described in the Purpose and Need of the EA (pages 9-12), both to protect the ecological integrity of the site and to improve management of livestock, which meet requirement (3) parts (A) and (C). Therefore, these proposed developments comply with the Steens Act.

- ***Comment 102:*** To determine degradation for wilderness values, the standard of comparison is the "condition of the lands at the time the area was designated as a WSA, or the current condition, whichever is determined to be in better condition." Clearly, increased cattle use into new areas of a WSA will create degradation of the lands, and new reservoirs would extend the grazing season in drought years, which also constitutes a change in use.

  Response 102: At the time the areas were designated as WSAs, livestock had access to water at Donner und Blitzen River, as well as within all the other drainages currently fenced out of the allotment within Steens Mountain Wilderness. As a perennial river the Donner und Blitzen River, and well as some other drainages on the east side of the river, provided valuable, reliable, late-year water. Due to the ability of livestock to access this water, the availability of water was not a major limiting factor in the distribution of livestock and livestock were able to graze the majority of the Allotment.

Map 5- Two Mile Use Area Based on Developed Reliable Water shows the areas where livestock are most commonly found in the vicinity of reliable water sources only. However, there are eight additional water sources that are variably reliable or currently unreliable, which in wet years allow livestock and wild horses to actively graze all but a small portion of the allotment. While livestock will regularly be in the two-mile buffer around water sources, animals are not always predictable. Different classes (e.g., cow/calf pairs, yearlings, bulls, etc…) and breeds (Shorthorn, Hereford, Brangus, etc…) act differently and may graze outside of the modelled two-mile use area. In addition, there are no physical boundaries completely preventing movement within the allotment. Due to these factors, livestock and wild horses may be present in any area of the allotment at any given time. Therefore, these proposed developments would not introduce livestock grazing into areas not previously grazed in the past or extend the season of use beyond what it was upon designation of the WSAs. In addition, none of the alternatives within this EA proposes to extend the season of use for livestock grazing beyond what it currently is. The proposed developments within this EA have been analyzed for impacts to wilderness characteristics in comparison to the benefits of better livestock distribution to determine whether wilderness values have been protected.

- ***Comment 103:*** BLM needs to implement beneficial management practices to achieve healthy uplands and riparian areas. If a WSA is allowed to deteriorate ecologically/successionally, losing its sagebrush, forb, and grass components, then those WSA areas should be deemed unsuitable by BLM and necessary management practices implemented on a landscape scale to address those resource conditions. Those attributes should over-ride the perceived negative attribute of a water development.

  Response 103: With this document, the BLM analyzed alternatives to address current ecological issues within the allotment, allowing beneficial management practices to be implemented. BLM Manual 6330 discusses BLM management of WSAs. Once an area is designated as a WSA, only Congress can release it from that special designation. A WSA's ecological condition is a supplemental wilderness value. When analyzing projects, BLM compares potential ecological deterioration with the impacts of the projects designed to reverse the deterioration and determines whether the projects would protect or enhance wilderness values of the WSA.

- ***Comment 104:*** FLPMA's non-impairment mandate for WSAs grandfathers only that grazing use, including the number, kind, and class of livestock, and season of use authorized and used during the 1976 grazing fee year, including areas that were in the rest as part of a grazing system. How many AUMs were grazed that year? On what pastures? We asked for this information in 2008 and still have not received it.

  Response 104: In 1976, within South Steens Allotment, 16,225 AUMs were grazed with 5,264 AUMs not used due to high wild horse numbers. Grazing during that year occurred between April 1 and December 31 within South Steens Allotment. Utilization studies from that year show that the entire area currently within South Steens Allotment was grazed. FLPMA grandfathers in grazing use, as it was permitted in 1976, not what was specifically authorized for that grazing year. Therefore, the grazing permit for South

Steens at that time is what was grandfathered. The current grazing permit, and those proposed within this document, include fewer AUMs and a shorter season of use for the allotment than what was on the grazing permit in 1976. However, this allotment was much larger in 1976 than currently is, mostly due to changes following the Steens Act. Information added to the EA on page 69.

- ***Comment 105:*** In 2008, ONDA asked BLM to provide to us any documentation of any *field* inventory work the agency has undertaken to analyze ONDA's West Blitzen River, Roaring Springs, or Blitzen River South proposed WSAs or WSA Additions. We explained that reviewing any such record was important to the public's ability to participate in a meaningful manner in this decision making process. We reiterate that request today.

- ***Response 105:*** There is no requirement that wilderness inventory maintenance involve actual field inventory work. The 6330 manual allows use of agency on-the-ground knowledge and only encourages field visits if there are any questions or gaps in specialists' knowledge of the area as relates to wilderness criteria. ONDA can request any information needed through official procedures. See Response to Comment 99 for additional information about wilderness characteristics.