

ARIZONA BLM
Arizona Strip District
FIRE MANAGEMENT PLAN



Bureau of Land Management
2013





FIRE MANAGEMENT PLAN

**United States Department of the Interior
Bureau of Land Management**

Arizona Strip Fire Planning Unit

**Arizona Strip District
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GSA Contract #GS-10F-0236X
Delivery Order #L12PD00755

2013

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ACRONYMS

AA	Administrative Action
ACEC	Area of Critical Environmental Concern
ADEQ	Arizona Department of Environmental Quality
AMP	Allotment Management Plan
AOP	Annual Operating Plan
ASD	Arizona Strip District
ASDO	Arizona Strip District Office
ASD-FMP	Arizona Strip District Fire Management Plan
ASDM	Arizona Strip District Manager
ASFD	Arizona State Forestry Division
ASFO	Arizona Strip Field Office
ASFORMP	Arizona Strip Field Office Resource Management Plan
AWP	Annual Work Plan
BA	Biological Assessment
BAR	Burned Area Rehabilitation
BAER	Burned Area Emergency Response
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best Management Practice
BO	Biological Opinion
BOR	Bureau of Reclamation
CAA	Clean Air Act
CAR	Communities at Risk
CCIFC	Color Country Interagency Fire Center
CCIFMA	Color Country Interagency Fire Management Area
CFR	Code of Federal Regulations
CREC	Coconino Rural Environmental Corps
CWA	Clean Water Act
CWPP	Community Wildfire Protection Plan
DFC	Desired Future Condition
DPA	Direct Protection Area
DPC	Desired Plant Community
EA	Environmental Assessment
EERA	Emergency Equipment Rental Agreements
EIS	Environmental Impact Statement
EROS	Earth Resources Observation Systems
ESA	Endangered Species Act
ESR	Emergency Stabilization and Rehabilitation
EVT	Existing Vegetation Types
FBFM	Fire Behavior Fuel Model

FFI	FEAT/FIREMON Integrated
FLAME	Federal Land Assistance, Management and Enhancement Act of 2009
FLPMA	Federal Land Policy and Management Act
FMO	Fire Management Officer
FMP	Fire Management Plan
FMU	Fire Management Unit
FPA	Fire Program Analysis
FPU	Fire Planning Unit
FRCC	Fire Regime Condition Class
FRI	Fire Return Interval
FTE	Full Time Equivalent
FWFMP	Federal Wildland Fire Management Policy
GCPNM	Grand Canyon-Parashant National Monument
GCPNMRMP	Grand Canyon-Parashant National Monument Record of Decision and Resource Management Plan
GIS	Geographic Information System
HAZMAT	Hazardous Materials
HFI	Healthy Forests Initiative
HFPAS	Hazardous Fuels Prioritization and Allocation System
HFR	Historic Fire Regime
HUC	Hydrologic Unit Code
IA	Initial Attack
IC	Incident Commander
IDIQ	Indefinite Delivery/Indefinite Quantity
LA	Land Use Allocation
LAKE	Lake Mead National Recreation Area
LTIP	Long-Term Implementation Plan
LUP	Land Use Plan
LUPA	2004 Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Management
MA	Management Action
MAP	Mandatory Availability Period
MIST	Minimum Impact Suppression Tactics
MOU	Memorandum of Understanding
NEPA	National Environmental Policy Act
NF	National Forest
NFDRS	National Fire Danger Rating System
NFP	National Fire Plan
NFPORS	National Fire Plan Operations and Reporting System
NIFC	National Interagency Fire Center
NHPA	National Historic Preservation Act of 1966
NLCD	National Land Cover Data

NOAA	National Oceanic Atmospheric Administration
NPS	National Park Service
NVCS	National Vegetation Classification Standard
NWCG	National Wildfire Coordination Group
PFT	Permanent Full Time
POW	Program of Work
RAMS	Risk Assessment and Mitigation Strategies
RAWS	Remote Automated Weather Station
READ	Resource Advisor
RFA	Rural Fire Assistance
RIPS	Rangeland Improvement Project System
RMP	Resource Management Plan
ROMAN	Real Time Observation Monitor and Analysis Network
ROSS	Resource Ordering and Status System
SEAT	Single Engine Air Tanker
SIP	Strategic Implementation Plan
T&E	Threatened and Endangered
TNC	The Nature Conservancy
UAM	Unit Aviation Manager
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VCNM	Vermillion Cliffs National Monument
VCNMRMP	Vermillion Cliffs National Monument Record of Decision and Resource Management Plan
VM	Vegetation Management
VRM	Visual Resource Management
WF	Wildland Fire
WFDSS	Wildland Fire Decision Support System
WFMI	Wildland Fire Management Information System
WIMS	Weather Information Management System
WSA	Wilderness Study Area
WUI	Wildland Urban Interface

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1 INTRODUCTION

1.1 Purpose

The purpose of the Bureau of Land Management (BLM) Arizona Strip District Fire Management Plan (ASD-FMP) is to identify and integrate all wildland fire management guidance, direction, and activities required to implement national fire policy and fire management direction. Overall direction from the *2008 Arizona Strip Field Office Record of Decision and Resource Management Plan* (ASFORMP), the *2008 Grand Canyon-Parashant National Monument Record of Decision and Resource Management Plan* (GCPNMRMP), and the *2008 Vermillion Cliffs National Monument Record of Decision and Resource Management Plan* (VCNMRMP), allows fire to be restored as an integral part of an ecosystem function to meet resource management objectives, desired future conditions, and to improve protection of human life and property through the reduction of hazardous fuels. The ASD-FMP allows management direction to be easily accessible by fire and resource personnel; it directs activities for fire and resource personnel to improve protection of human life and property, suppression, reduction of hazardous fuels, restoration of fire damaged ecosystems, and incorporation of fire to achieve resource management goals. It highlights management direction to facilitate development and implementation of fire management strategies. A Glossary of Terms is provided at the end of this document to assist in clarifying technical terms.

This Fire Management Plan (FMP) was developed around a District wildland fire management program and addresses all aspects of it, including Wildland Urban Interface (WUI), rural/community fire assistance and protection, prescribed fire, fuels management, prevention, Emergency Stabilization and Rehabilitation (ESR), aviation, and suppression. The FMP identifies a fire program that meets identified fire management objectives. This plan covers all burnable public land acres within the Arizona Strip District (ASD) and is a strategic document.

The fire management organization outlined in this FMP will be utilized in the development of annual budget requests and the Annual Work Plan (AWP). Proposed actions, alternatives, and environmental analyses, in compliance with the National Environmental Policy Act (NEPA) developed for implementation of site-specific projects will be based on goals and objectives identified in approved ASD RMPs. In addition, this FMP lays the foundation for future collaborative efforts involving interagency partners and state and local cooperators.

This FMP provides information for the Fire Program Analysis (FPA) model, based on anticipated fire management activities. FPA is the interagency software program that is intended to help determine annual fire management budget and personnel needs for the ASD and all other fire management organizations administered by the U.S. Departments of the Interior (USDI) and Agriculture (USDA). The FPA model is being implemented in phases. Additional information regarding FPA is available at <http://fpa.nifc.gov>.

The fire management information presented in this FMP will be reviewed and updated annually to ensure that the most current information is available for use in the FPA resource and budget allocation process. The fire management strategies and priorities recommended in this FMP will be used in FPA-Phase I and II when determining fire management objectives, fuels treatment priorities, suppression priorities, resource objectives, and Fire Management Unit (FMU) weighting. Figures 1-1 and 1-2 show the administrative boundaries of the ASD Fire Planning Unit (FPU) and the Land Use Plans (LUP) associated with the ASD FPU.

1.2 National Direction for Fire Management Planning

This FMP has been prepared in accordance with the *1995 Federal Wildland Fire Management Policy* (FWFMP) (USDA and USDI 1995) and the *2001 FWFMP Update* (USDA and USDI 2001), directing all federal agencies managing burnable vegetation to develop and implement an FMP. This FMP also follows the interagency template that ensures FMPs prepared by the USDA and USDI have a consistent format and content (found in H-9211-1 *BLM Fire Planning Handbook*, Appendix E – BLM FMP Supplemental Information).

As per the *BLM Fire Planning Handbook* (H-9211-1, September 2012, pg. 3-10, Section D. Part 1), FMPs are required to be reviewed annually. The annual review will meet FMP monitoring requirements (see *BLM Fire Planning Handbook*, Chapter V.). To complete an annual FMP review, a number of questions in checklist form (Appendix C) must be answered. If the answer is “yes” to any question, then the process to update the FMP must be initiated. If all questions can be answered with a “no,” then documentation that the FMP has been reviewed and determined to be adequate must be completed and filed locally.

The checklist must be used and retained by the Fire Management Officer (FMO) or designated authority as the annual documentation tracking sheet. The checklist must be signed by the unit (District/Field Office) FMO and District/Field Office Manager. Any other plan maintenance procedures used by the local office to track minor changes should also be followed.

Figure 1-1. BLM Administrative Boundaries and the Arizona Strip District FPU

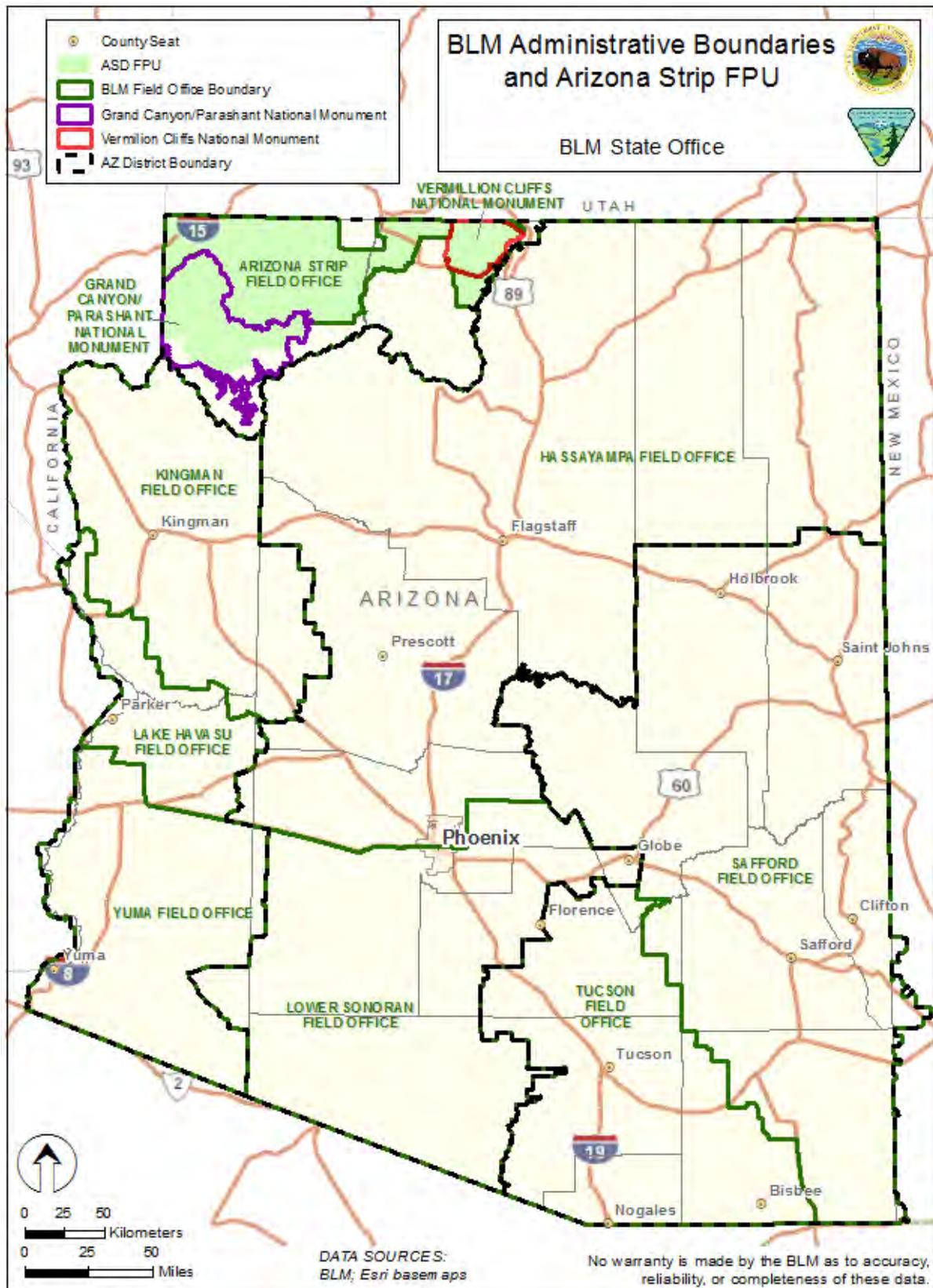
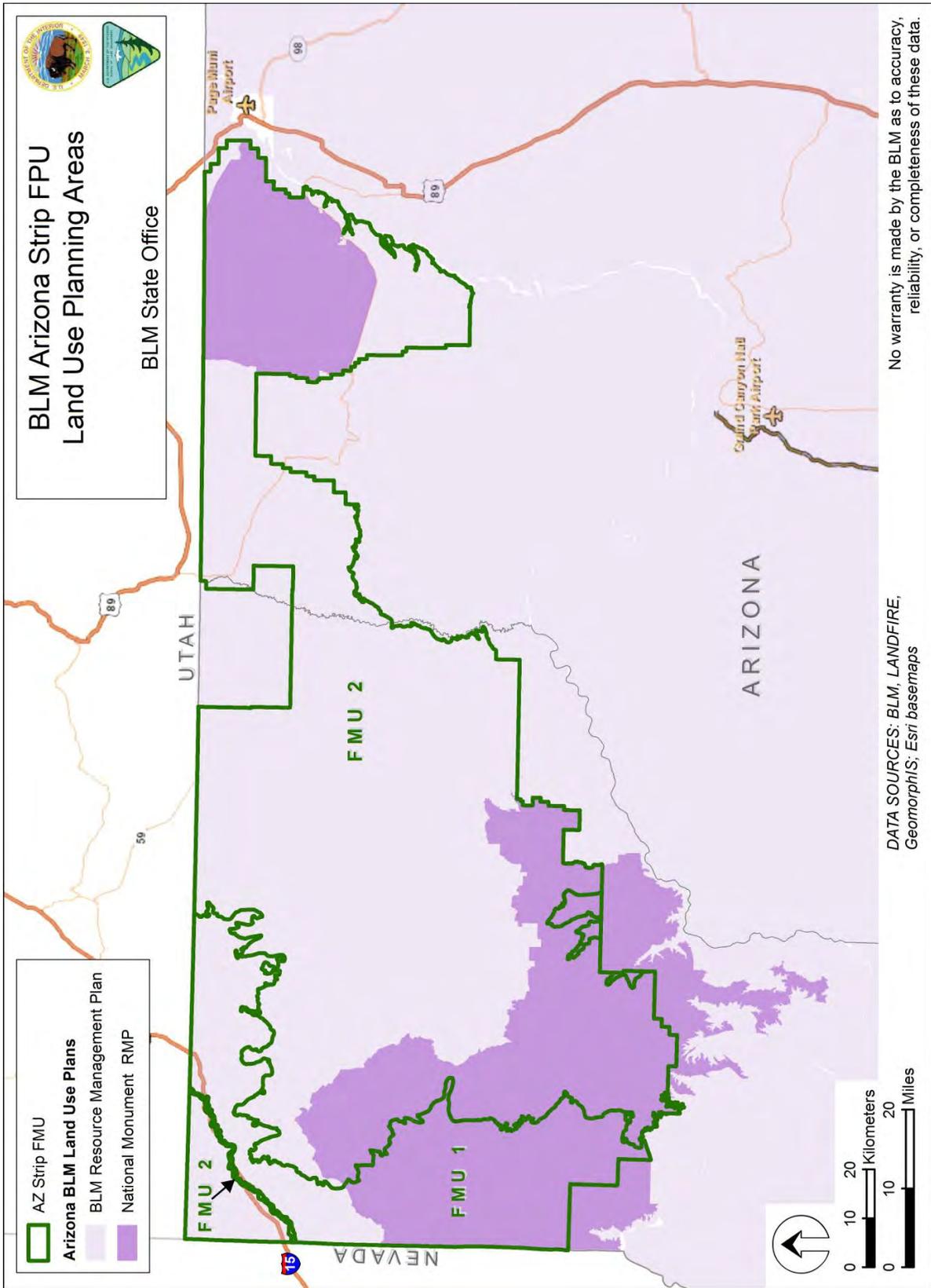


Figure 1-2. Land Use Plans Associated with the Arizona Strip District FPU



1.3 Relationship to Environmental Compliance

All fire management objectives, constraints, and activities contained within this plan are consistent and in conformance with the 2008 ASFORMP, the 2008 GCPNMRMP, and the 2008 VCNMRMP and associated Environmental Impact Statements (EIS) and Environmental Assessments (EA). These RMPs and associated NEPA documents estimate the effects of integrated decisions on all affected resources at the planning area level. The recommended strategies in this document are consistent with decisions and direction in the RMPs and do not make any further land use plan-level decisions.

The recommended strategies are also consistent with conservation measures outlined in pertinent programmatic Biological Opinions (BO), as well as conservation measures and agreements resulting from formal consultation pursuant to the Endangered Species Act (ESA). Future actions potentially affecting ESA-listed species will be subject to consultation as needed.

In addition to formal and informal consultation, the Counterpart Regulations, issued in 2003, complement the consultation process by providing an alternative process for completing Section 7 consultation for National Fire Plan (NFP) projects. The process allows the BLM to proceed with proposed actions that support the NFP and which are “not likely to adversely affect” listed species or designated critical habitat, without consulting with or obtaining written concurrence from the U.S. Fish and Wildlife Service (USFWS) and/or National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service. The process must follow the interagency agreement, which details requirements for BLM staff training and certification, and project documentation and reporting (for details, refer to: *Alternative Consultation Agreement to Implement Section 7 Counterpart Regulations, BLM, National Marine Fisheries Service, and USFWS*).

1.4 Collaboration and Cooperative Management Efforts

This FMP is for the BLM ASD which encompasses approximately 2,769,736 acres of BLM-managed lands within the ASD FPU. The ASD-FMP is a strategic document identifying approved fire management direction determined by the RMPs and analyzed in the final EISs for these plans. As the boundaries of the ASD encompass federal, state, and private lands, an effective fire management program requires close coordination among local and regional jurisdictions. Figure 1-3 displays fire protection responsibilities within the ASD FPU. Information in this FMP will refine and strengthen the ongoing fire management coordination efforts of the BLM, the United States Forest Service (USFS), and other agencies. These RMPs were developed with input from and consultation with representatives from the Bureau of Indian Affairs (BIA), USFWS, USFS, the State of Arizona, and interested citizens. The ASD-FMP meets the national requirement that all BLM-administered lands subject to wildland fires are managed under a current FMP. Prior to implementing fire management treatments on the ground, additional environmental analysis and compliance with other federal and state regulatory requirements such as the National Historic Preservation Act (NHPA), the ESA, the Clean Water Act (CWA), and the Clean Air Act (CAA) will be required.

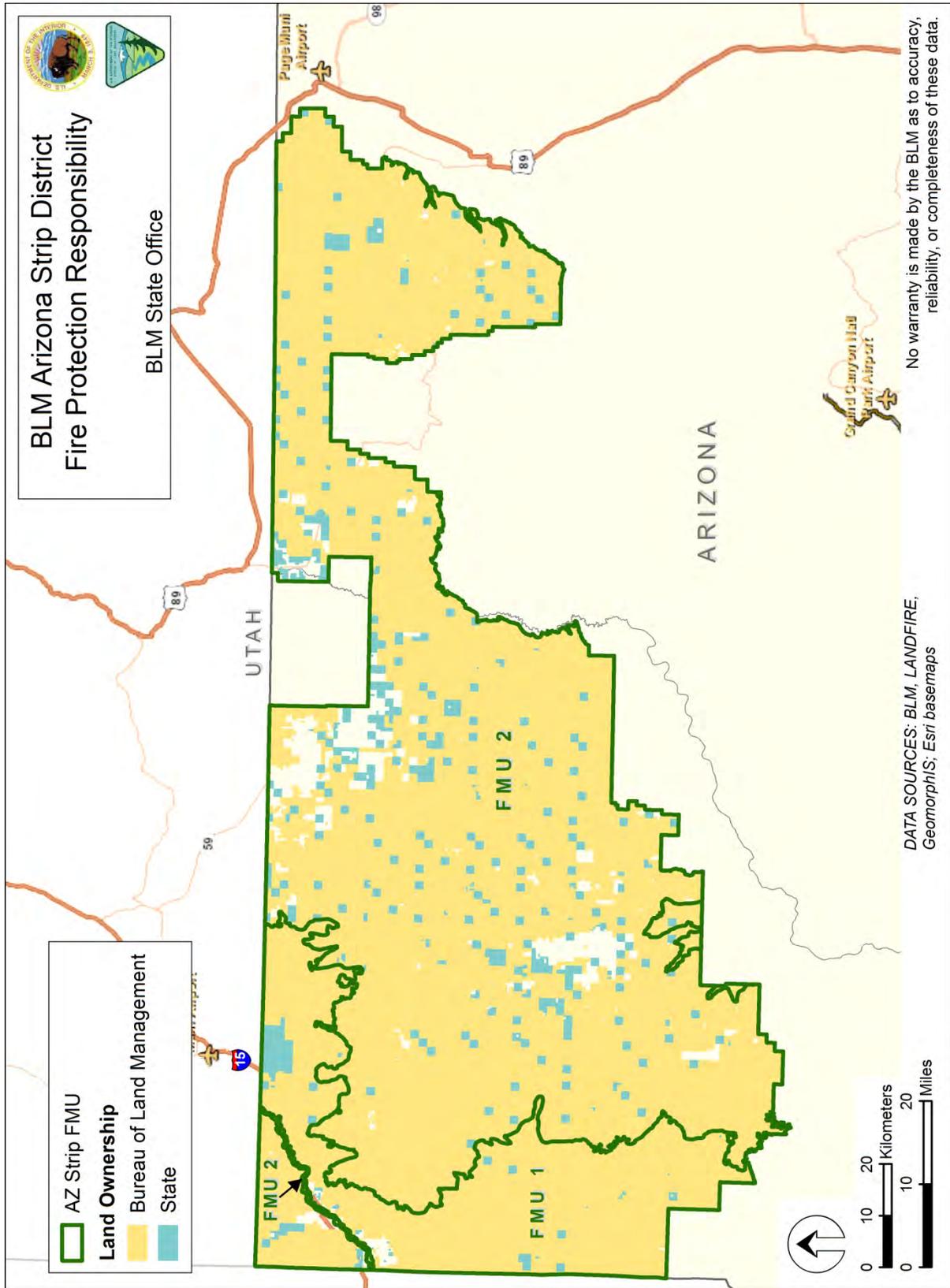
The Color Country is an interagency wildland fire management area that covers approximately 14 million acres of public lands in southwestern Utah and northwestern Arizona. This interagency fire organization administers fire management responsibilities (e.g., preparedness, suppression, extended attack), with dispatching occurring from the Color Country Interagency Fire Center (CCIFC) in Cedar City, Utah. The Color Country Interagency Fire Management Area (CCIFMA) includes public lands managed by the BLM (Color Country Field Office, St. George Field Office, Arizona Strip Field Office, and Kanab Field Office); Arizona State Lands (fire protection responsibility of the Arizona Strip District Office); Grand Staircase Escalante National Monument, VCNM, and GCPNM (jointly administered by BLM and the NPS) and the Escalante Field Station; U.S. Forest Service (Pine Valley, Cedar City, Powell, Escalante, and Teasdale Ranger Districts); NPS (Zion and Bryce Canyon National Parks, Cedar Breaks and Pipe Spring National Monuments, and Glen Canyon National Recreation Area); Utah Division of Forestry, Fire and State Lands Southwest State Area; and the Bureau of Indian Affairs Southern Paiute Agency. The Color Country South Zone Interagency Logistic Center provides logistical support for BLM lands administered by the Arizona Strip District Office and St. George Field Office, lands administered by the Pine Valley Ranger District of the Dixie National Forest (NF), Utah Forestry Fire and State Lands, and BIA lands identified as the Shivwits and North Kaibab Paiute Reservations. The interagency fire organization does not manage prescribed fire for the Arizona Strip District jurisdiction. Each agency is responsible for the management of prescribed fire on its own jurisdiction.

The GCPNM is located on public lands administered by BLM and the NPS. The monument is jointly managed by two managers, one representing the BLM and one representing the NPS. The NPS lands associated with the monument are a portion of the Lake Mead National Recreation Area (LAKE). As such, they have their own fire management program for management of those lands. Cooperative fuels treatment projects may be implemented across agency boundaries within the monument. The ASD and LAKE cooperate and provide assistance on wildland fire management actions as needed.

1.5 Authorities

The statutes, directives, and management plans cited in Appendix B authorize and provide the means for fire management activities in the ASD FPU.

Figure 1-3. Fire Protection Responsibilities (excludes private land) within the Arizona Strip FPU



2 RELATIONSHIP TO LAND MANAGEMENT PLANNING/FIRE POLICY

This chapter outlines national policy, regional guidance, state BLM policy, and guidance from the ASD RMPs. The direction for this FMP will be updated annually according to the ASD RMPs.

2.1 National Fire Policy

This FMP obtains guidance from the following:

Guidance for Implementation of FWFMP (February 2009):

1. **Safety:** Firefighter and public safety is the first priority. All Fire Management Plans and activities must reflect this commitment.
2. **Fire Management and Ecosystem Sustainability:** The full range of fire management activities will be used to help achieve ecosystem sustainability, including its interrelated ecological, economic, and social components.
3. **Response to Wildland Fire:** Fire, as a critical natural process, will be integrated into land and resource management plans and activities on a landscape scale, and across agency boundaries. Response to wildland fire is based on ecological, social, and legal consequences of the fire. The circumstances under which a fire occurs and the likely consequences on firefighter and public safety and welfare, natural and cultural resources, and values to be protected dictate the proper response to the fire.
4. **Use of Wildland Fire:** Wildland fire will be used to protect, maintain, and enhance resources and, as nearly as possible, be allowed to function in its natural ecological role. Use of fire will be based on approved Fire Management Plans and will follow specific prescriptions contained in operational plans.
5. **Rehabilitation and Restoration:** Rehabilitation and restoration efforts will be undertaken to protect and sustain ecosystems, public health, and safety, and to help communities protect infrastructure.
6. **Protection Priorities:** The protection of human life is the single, overriding priority. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources will be based on the values to be protected, human health and safety, and the costs of protection. Once people have been committed to an incident, these human resources become the highest value to be protected.
7. **Wildland Urban Interface:** The operational roles of federal agencies as partners in the Wildland Urban Interface are wildland firefighting, hazardous fuels reduction, cooperative prevention and education, and technical assistance. Structural fire suppression is the responsibility of tribal, State, or local governments. Federal agencies may assist with exterior structural protection activities under formal Fire Protection Agreements that specify the mutual responsibilities of the partners, including funding. (Some federal agencies have full structural protection authority for their facilities on lands they administer, and may also enter into formal agreements to assist State and local governments with full structural protection.)
8. **Planning:** Every area with burnable vegetation must have an approved Fire Management Plan. Fire Management Plans are strategic plans that define a program to manage wildland and prescribed fires based on the area's approved land management plan. Fire Management Plans must provide for firefighter and public safety; include fire management strategies, tactics, and alternatives; address values to be protected and public health issues; and be consistent with resource management objectives, activities of the area, and environmental laws and regulations.
9. **Science:** Fire Management Plans and programs will be based on a foundation of sound science. Research will support ongoing efforts to increase our scientific knowledge of biological, physical, and sociological factors. Information needed to support fire management will be developed through an integrated interagency fire science program. Scientific results must be made available to managers in a timely manner and must be used in the development of land management plans, Fire Management Plans, and implementation plans.
10. **Preparedness:** Agencies will ensure their capability to provide safe, cost-effective fire management programs in support of land and resource management plans through appropriate planning, staffing, training, equipment, and management oversight.

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11. **Suppression:** Fires are suppressed at minimum cost, considering firefighter and public safety, benefits, and values to be protected, consistent with resource objectives.
 12. **Prevention:** Agencies will work together and with their partners and other affected groups and individuals to prevent unauthorized ignition of wildland fires.
 13. **Standardization:** Agencies will use compatible planning processes, funding mechanisms, training and qualification requirements, operational procedures, values-to-be-protected methodologies, and public education programs for all fire management activities.
 14. **Interagency Cooperation and Coordination:** Fire management planning, preparedness, prevention, incident management, restoration and rehabilitation, monitoring, research, and education will be conducted on an interagency basis with the involvement of cooperators and partners.
 15. **Communication and Education:** Agencies will enhance knowledge and understanding of wildland fire management policies and practices through internal and external communication and education programs. These programs will be continuously improved through the timely and effective exchange of information among all affected agencies and organizations.
 16. **Agency Administrator and Employee Roles:** Agency administrators will be held accountable for ensuring that their employees are trained, certified, and made available to participate in the wildland fire program locally, regionally, and nationally as the situation demands. Employees with operational, administrative, or other skills will support the wildland fire program as necessary.
 17. **Evaluation:** Agencies will develop and implement a systematic method of evaluation to determine effectiveness of projects through implementation of the 2001 Federal Fire Policy. The evaluation will assure accountability, facilitate resolution of areas of conflict, and identify resource shortages and agency priorities.

The ASD-FMP also establishes program guidance based on the following information:

- 1998 BLM Handbook 9214, *Prescribed Fire Management* describes authority and policy for prescribed fire use on public lands administered by the BLM.
- September 2000, *Managing the Impacts of Wildfires on Communities and the Environment*
- October 2000, *National Cohesive Strategy* goal is to coordinate an aggressive, collaborative approach to reduce the threat of wildland fire to communities and to restore and maintain land health.
- May 2002, *Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment -10 Year Comprehensive Strategy* provides a foundation for wildland agencies to work closely with all levels of government, tribes, conservation, and commodity groups and community-based restoration groups to reduce wildland fire risk to communities and the environment.
- May 2002, *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: 10-Year Comprehensive Strategy Implementation Plan*
- August 2002, *Healthy Forests - An Initiative for Wildfire Prevention and Stronger Communities*
- February 2008 *Arizona Strip Field Office Record of Decision and Resource Management Plan*
- February 2008, *Grand Canyon-Parashant National Monument Record of Decision and Resource Management Plan*
- February 2008, *Vermillion Cliffs National Monument Record of Decision and Resource Management Plan*
- June 1995, *Mt. Trumbull Resource Conservation Area Plan*
- 1991, *Cottonwood Point Wilderness Management Plan*
- 1990, *Grand Wash Cliffs Wilderness Management Plan*
- 1990, *Paiute and Beaver Dam Mountains Wilderness Management Plan*
- 1990, *Paria Canyon-Vermillion Cliffs Wilderness Management Plan*
- 1990, *Mt. Trumbull and Mt. Logan Wilderness Management Plan*
- 2000, *Proclamations for the Grand Canyon-Parashant and Vermillion Cliffs National Monuments*
- October 1997, *Parashant Interdisciplinary Management Plan, Arizona Strip Field Office and Lake Mead National Recreation Area*
- 2003, *Healthy Forest Restoration Act*
- 1998, 620 DM 1

This FMP meets the policy and direction in the NFP because it emphasizes the following primary goals of the *10-Year Comprehensive Strategy and Cohesive Strategy for Protecting People and Sustaining Natural Resources*:

- Improving fire prevention and suppression
- Reducing hazardous fuels
- Restoring fire-adapted ecosystems
- Promoting community assistance

This FMP also meets USDI policy found in 620 DM 1 by making full use of wildland fire and prescribed fire both as a natural process and as a tool in the planning process.

2.2 Land/Resource Management Planning

The FMP has been tiered to decisions contained within the approved ASD RMPs and associated EISs and EAs. These plans provide the basis for fire management goals and objectives.

This FMP complies with the NEPA completed at the LUP level in 2007; Decision Records for the ASD RMPs were signed on January 29, 2008. Additionally, a Biological Assessment (BA) was completed and submitted to the USFWS in 2007. A Biological Opinion (BO), issued to the BLM on November 7, 2007, concluded that approved ASD RMP decisions were not likely to result in jeopardy to listed species or destruction or adverse modification of critical habitat.

Wildland fire management activities within the ASD will assist in meeting the following management goals, standards, and guidelines from the following plans: *2008 Arizona Strip Field Office Record of Decision and Resource Management Plan, 2008 Grand Canyon-Parashant National Monument Record of Decision and Resource Management Plan, 2008 Vermillion Cliffs National Monument Record of Decision and Resource Management Plan, 1995 Mt. Trumbull Resource Conservation Area Plan, 1991 Cottonwood Point Wilderness Management Plan, 1990 Grand Wash Cliffs Wilderness Management Plan, 1990 Paiute and Beaver Dam Mountains Wilderness Management Plan, 1990 Paria Canyon-Vermillion Cliffs Wilderness Management Plan, 1990 Mt. Trumbull and Mt. Logan Wilderness Management Plan, 2000 Proclamations for the Grand Canyon-Parashant and Vermillion Cliffs National Monuments, and 1997 Parashant Interdisciplinary Management Plan, Arizona Strip Field Office and Lake Mead National Recreation Area.*

2.2.1 Goals, Standards, Objectives, and/or Desired Future Condition (DFC)

- Protect human life (public and firefighters). This is the single, overriding priority in fire management.
- Protect human communities, their infrastructure, and the natural resources on which they depend.
- Promote resource management activities that encourage upland soils to promote infiltration, permeability, and erosion rates that are appropriate to soil type, climate, and landform.
- Protect riparian and wetland areas in Properly Functioning Condition and improve degraded vegetation for long-term health.
- Support the existence and maintenance of productive and diverse native species in upland and riparian-wetland plant communities.
- Protect sensitive areas from fire intrusion.
- Maintain air quality to meet or exceed applicable federal and state standards and regulations.
- Reduce fire risk to WUI communities.
- Manage for healthy and balanced populations of native wildlife species in their natural habitat.
- Manage the habitat for Threatened and Endangered (T&E) species of plants and animals to keep viable populations in their natural ecosystems.
- Promote greater diversity within plant communities of the ASD through the use of fire as a resource management tool.
- Employ the use of management tools such as mechanical thinning, prescribed fire, biological, cultural, and/or chemical treatments to make forests dominated by shade-intolerant species more resilient to fire, insects, and disease.
- Manage land treatments to conserve site moisture and to protect long-term stream health from damage through increased runoff.

-
- Establish a fire effects monitoring system that inventories pre-burn species composition and resulting post fire response, over time.
 - Employ fire prevention strategies that reduce human ignition occurrence in campgrounds and transportation corridors.

The ASD will conduct all wildland fire management actions in compliance with the *1995 Federal Wildland Fire Policy* and the *2001 Federal Wildland Fire Policy Update* guiding principles. These principles are:

- Firefighter and public safety are the highest priority in every fire management activity.
- Assess risk to communities in terms of direct wildfire impact and economic values, and implement effective programs to mitigate that risk through collaborative planning and projects.
- Implement the full range of wildland fire and fuels management practices, including prescribed fire, use of wildland fire, mechanical, chemical, biological, and cultural treatments that will move all affected landscapes toward desired future condition as described in the GCPNM, Arizona Strip Field Office (ASFO), and VCNM RMPs.
- Establish partnerships with all interagency cooperators to facilitate coordinated fire management activities.
- Maintain an efficient and effective organization for the management of wildland fires consistent with the values at risk.
- Encourage close coordination and collaboration among specialists within the ASFO, GCPNM, VCNM and federal, interested organizations, private landowners, state, and local partners.
- Develop and use the best scientific information available to deliver technical and community assistance to support ecological, economic, and social sustainability.
- Allow wildland fire to protect, maintain, and enhance resources, and as nearly as possible be allowed to function in its ecological role when appropriate for the site and situation.
- Create an integrated approach to fire and resource management.

Specific fire and fuels programmatic direction for each FMU in the ASD-FMP is outlined in chapter 3.

2.2.2 Standards

- Air: Meet federal and state air quality standards through proper management of emissions.
- Flora and Fauna–T&E Species: Ensure that BLM actions will not reduce the likelihood of survival or recovery of any listed species or destroy or adversely affect or modify designated critical habitat to those species.
- Water: Meet Federal and State water quality standards and prevent degradation through Best Management Practices (BMP) during and after fires and vegetative treatments.
- Visual: Meet established Visual Resource Management (VRM) class objectives through appropriately planning fuel reduction treatments. VRM will be a consideration for any post-fire erosion control and other burned area rehabilitation and restoration needs.
- Public Lands Health: Apply management strategies within this management unit to comply with *Arizona Standards and Guidelines for Achieving Rangeland Health and Guidelines for Grazing Administration* (BLM, 1997) through appropriately planning fuel reduction treatment projects.

2.2.3 Resource Use Objectives

Fire and fuels management and related actions will strive to improve areas within the ASD that are characterized as Fire Regime Condition Class (FRCC) II or III and working toward FRCC I. Areas classified as FRCC II and III can be characterized as areas:

- Where fire regimes have been moderately to significantly altered from their historical ranges.
- Where there is a moderate to high risk of losing key ecosystem components.
- Where vegetative attributes have been significantly altered from their historical range.
- Where fire return frequencies have departed from their historical frequencies by more than one return interval.

Wilderness: Fire and fuels management actions will meet the wilderness non-impairment mandate for Wilderness Areas. The ultimate goal would be to allow fire to play its natural role in fire-dependent ecosystems.

3 FIRE MANAGEMENT UNIT CHARACTERISTICS

This section summarizes fire management conditions and presents management recommendations in the form of priorities, objectives, and strategies. These FMUs are areas definable by similar vegetation type and condition, predominate Historic Fire Regime (HFR) groups, management constraints, objectives, and strategies (Figure 3-1). For each FMU, recommendations are provided for the following fire management programs: wildland fire suppression, managing fire for multiple objectives, fuels treatments, ESR, and community assistance/protection.

3.1 Description of the Arizona Strip District FPU

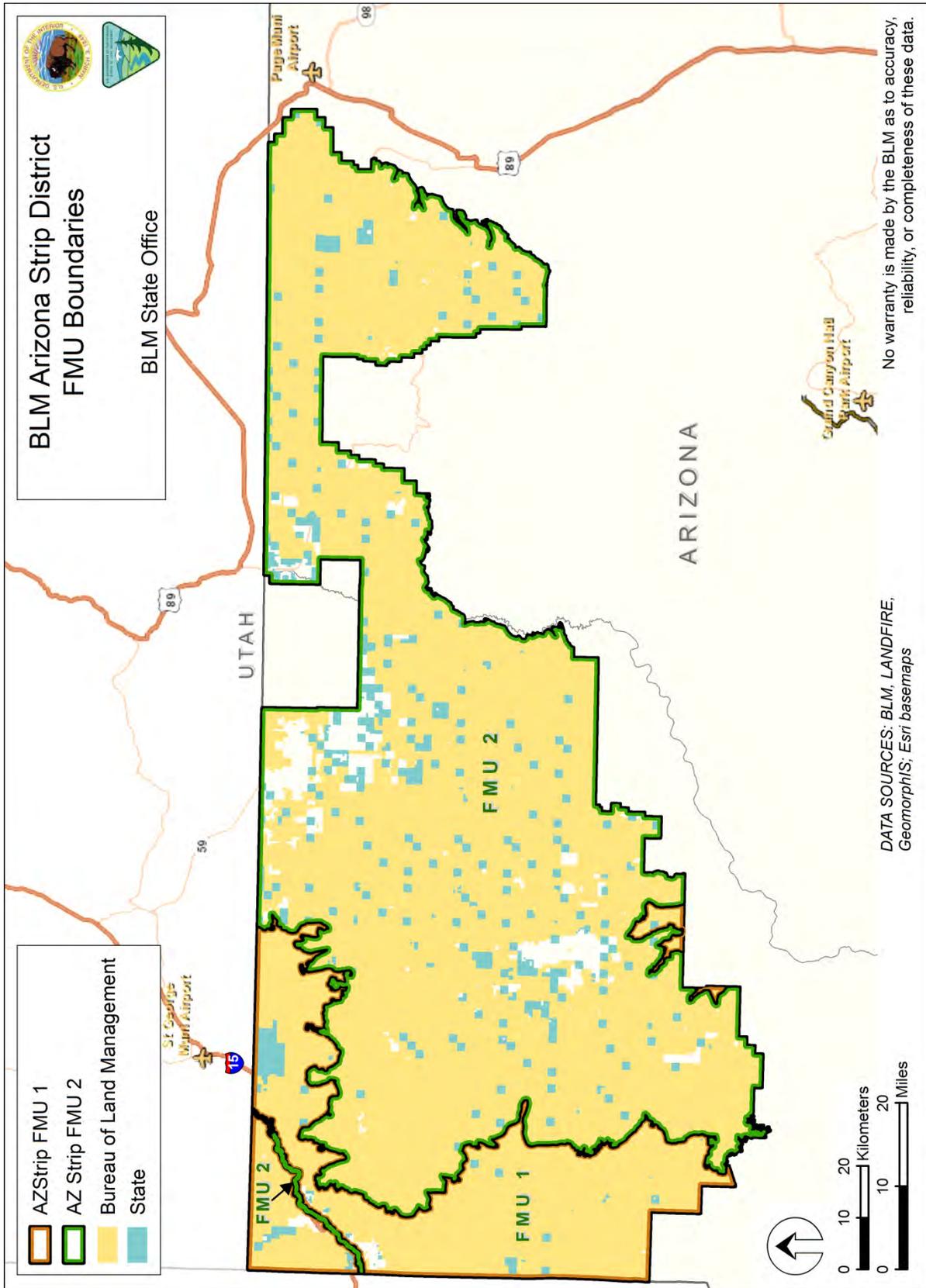
The ASD FPU includes Coconino and Mohave Counties. The FPU covers approximately 3,113,791 acres of BLM, state, National Park Service (NPS), and private land, of which approximately 2,769,736 acres is BLM-managed land. Two FMUs have been identified in the ASD FPU.

3.2 Area-Wide Management Considerations

In order to implement the direction provided in the current *Guidance for Implementation of Federal Wildland Fire Management Policy* (February, 2009), *2008 Arizona Strip Field Office Record of Decision and Resource Management Plan*, *2008 Grand Canyon-Parashant National Monument Record of Decision and Resource Management Plan*, *2008 Vermillion Cliffs National Monument Record of Decision and Resource Management Plan*, *1995 Mt. Trumbull Resource Conservation Area Plan*, *1991 Cottonwood Point Wilderness Management Plan*, *1990 Grand Wash Cliffs Wilderness Management Plan*, *1990 Paiute and Beaver Dam Mountains Wilderness Management Plan*, *1990 Paria Canyon-Vermillion Cliffs Wilderness Management Plan*, *1990 Mt. Trumbull and Mt. Logan Wilderness Management Plan*, *2000 Proclamations for the Grand Canyon-Parashant and Vermillion Cliffs National Monuments*, and *1997 Parashant Interdisciplinary Management Plan*, Arizona Strip Field Office and Lake Mead National Recreation Area, the ASD developed the following general wildland fire management guidance. The ASD will:

- Use fire to restore and/or sustain ecosystem health based on sound scientific principles and information, balanced with other societal goals, including public health and safety, and air quality.
- Apply reasonable management strategies and tactics on all wildland fires with emphasis on minimizing suppression costs, considering firefighter and public safety, managing wildland fires for multiple objectives when appropriate, ensuring the benefits and values to be protected are consistent with resource management objectives, standards, and guidelines.
- Identify appropriate goals, objectives, and constraints to manage wildfires by specific FMUs within the ASD-FMP.
- Employ fire prevention strategies that reduce human ignitions with special emphasis in campgrounds and transportation corridors.
- Use fire as a management tool to improve the ecological condition of range ecosystems and maintain natural plant community diversity.
- Meet management goals and objectives through the use of prescribed fire, mechanical treatments, wildland fire managed for resource benefit, chemical treatments, biological treatments, and cultural treatments. Allow fire to function in its ecological role when appropriate for the site and situation.
- Work collaboratively with Communities at Risk (CAR) within the WUI to develop plans for risk reduction. The Federal Register Notice list is located at: <http://www.gpo.gov/fdsys/pkg/FR-2001-08-17/pdf/01-20592.pdf> and is not inclusive of all communities. The Arizona website for CAR is <http://www.azsf.az.gov>.
- Work collaboratively with federal, state, and local partners to develop cross boundary management strategies and prioritize cross-agency fire management actions.

Figure 3-1. FMUs of the Arizona Strip District FPU



3.2.1 Wildland Fire Management Goals

The ASD will conduct all wildland fire management actions in compliance with the *Guidance for Implementation of Federal Wildland Fire Management Policy* (February, 2009); this FMP is consistent with the fire management goals and objectives from national, state, and local fire management guidance and policy presented in Section II. The intent of this FMP is to recommend suppression priorities and objectives, and fuels treatments to achieve NFP and RMP guidance. These principles are:

- Firefighter and public safety are the highest priority in every fire management activity.
- The role of wildland fire as an essential ecological process and natural change agent will be incorporated into the planning process.
- FMPs, programs, and activities support land and Resource Management Plans (RMP) and their implementation.
- Sound risk management is the foundation for all fire management activities.
- Fire management programs and activities are economically viable, based upon values to be protected, costs, and land and resource management considerations.
- FMPs and activities are based upon the best available science.
- FMPs and activities incorporate public health and environmental quality considerations.
- Federal, state, tribal, local, interagency, and international coordination and cooperation are essential.
- Standardization of policies and procedures among federal wildland fire management agencies is an ongoing objective.

3.2.2 Wildland Fire Management Options

3.2.2.1 Summary of FMU Priorities

The ASD will utilize approved management strategies and tactics on all wildland fires, with emphasis on minimizing suppression costs, considering firefighter and public safety, managing wildland fires for multiple objectives when appropriate, ensuring the benefits and values to be protected are consistent with resource management objectives, standards, and guidelines. Responses to each wildland fire will be initiated in a timely manner using the appropriate available resources, based upon established fire management direction. All fire management actions will adhere to the standards outlined in the *Interagency Standards for Fire and Aviation Operations*.

All BLM-administered lands in the ASD are assigned one of the two following land use allocations:

- Allocation 1: Management of wildland fire to meet multiple objectives (areas suitable for managing fires to achieve resource objectives) is allowed.
- Allocation 2: Initial action is suppression (areas not suitable for managing fires to achieve resource objectives). These lands are not typically fire-adapted. Therefore, using wildfire to meet resource objectives is not an appropriate action on these lands.

The allocation of lands is based on the DFC of vegetation communities, ecological conditions, and ecological risks. The allocation of lands is determined by contrasting current and historical conditions and ecological risks associated with any changes. The condition class concept helps describe alterations in key ecosystem components such as species composition, structural stage, stand age, canopy closure, and fuel loadings.

The ASD-FMP refers to these two land use allocations and identifies areas where wildland fires can be managed for more than one fire management objective, and with mechanical, biological, or chemical means to maintain non-hazardous levels of fuels to reduce the hazardous effects of wildfires and meet resource objectives.

Wildland fire and fuels management options for the ASD will include the following:

- Prescribed fire.
- The full range of options from direct aggressive perimeter control to monitoring of the fire.

-
- The use of wildland fire to achieve multiple objectives and management goals. The ASD-FMP identifies FMUs where objectives other than full aggressive perimeter control will be considered.
 - Non-fire fuels treatments and ecological restoration– mechanical, manual, chemical, and biological.
 - Post-fire rehabilitation.
 - Community protection, community assistance, and rural fire assistance.

3.2.2.2 Characteristics Common to All FMUs

Fire Management Objectives Common to All Management Areas

- Reduce hazardous fuels by using mechanical, prescribed fire and other means where applicable around CAR from wildfire.
- Determine the appropriate management strategies and tactics to manage all fires in accordance with management objectives based on current conditions and locations.
- Review all cooperative agreements annually; update or modify as necessary to promote full cooperation in mutual fire management.

Fire Management Strategies Common to All Management Areas

- Utilize approved management strategies and tactics to manage wildfires in accordance with natural resource management objectives based on applicable management authorities and plan objectives.
- Implement monitoring and holding actions to check or confine spread.
- Implement monitoring with pre-planned contingency actions.

Criteria to Use for Developing Management Strategies and Tactics:

- Risk to firefighters and public health and safety
- Land and resource management objectives
- Technical information provided through the use of fire behavior or fire effects modeling programs
- Weather
- Fuel conditions
- Threats and values to be protected
- Cost efficiencies

Management strategies and action points will be based on fire activity, location, and values at risk. Normally, specific actions or combinations of actions will be determined on site by the Incident Commander consistent with direction in this FMP and firefighter and public safety.

Fire and fuels management related actions may improve sites within the various management areas that may be classified as FRCC II or III and working toward FRCC I. Areas classified as FRCC II and III can be characterized as areas:

- Where fire regimes have been moderately or significantly altered from their historical ranges.
- Where there is a moderate to high risk of losing key ecosystem components.
- Where vegetative attributes have been significantly altered from their historical range.
- Where fire return frequencies have departed from their historical frequencies by more than one return interval.

Upland vegetation on public lands within the ASD will be managed for watershed protection, livestock use, recreational use, reduction of non-point source pollution, T&E species protection, priority wildlife habitat, firewood, and other incidental human uses. BMPs and vegetation manipulation will be used to achieve desired plant community management objectives (Table 3-1). Management strategies within this management unit will be applied to comply with *Arizona Standards and Guidelines for Achieving Rangeland Health and Guidelines for Grazing Administration* (BLM, 1997).

Table 3-1. Current and Projected Range of Annual Fuels Treatment Acres for the ASD FPU

Applicable BLM Acres		Non-Fire Fuels Acres			Prescribed Fire Acres	Total Treatment Acres
FMU	Acres	Mechanical	Chemical	Biological		
FMU 2	0-838	0-470	0	0	368	838

3.3 Fire Management Unit—Specific Descriptions

The following sections contain a description of each management area stating fire management objectives, constraints, and planned actions for that management area. These descriptions also contain information regarding ownership, vegetation, fire ecology, fire history, and CAR.

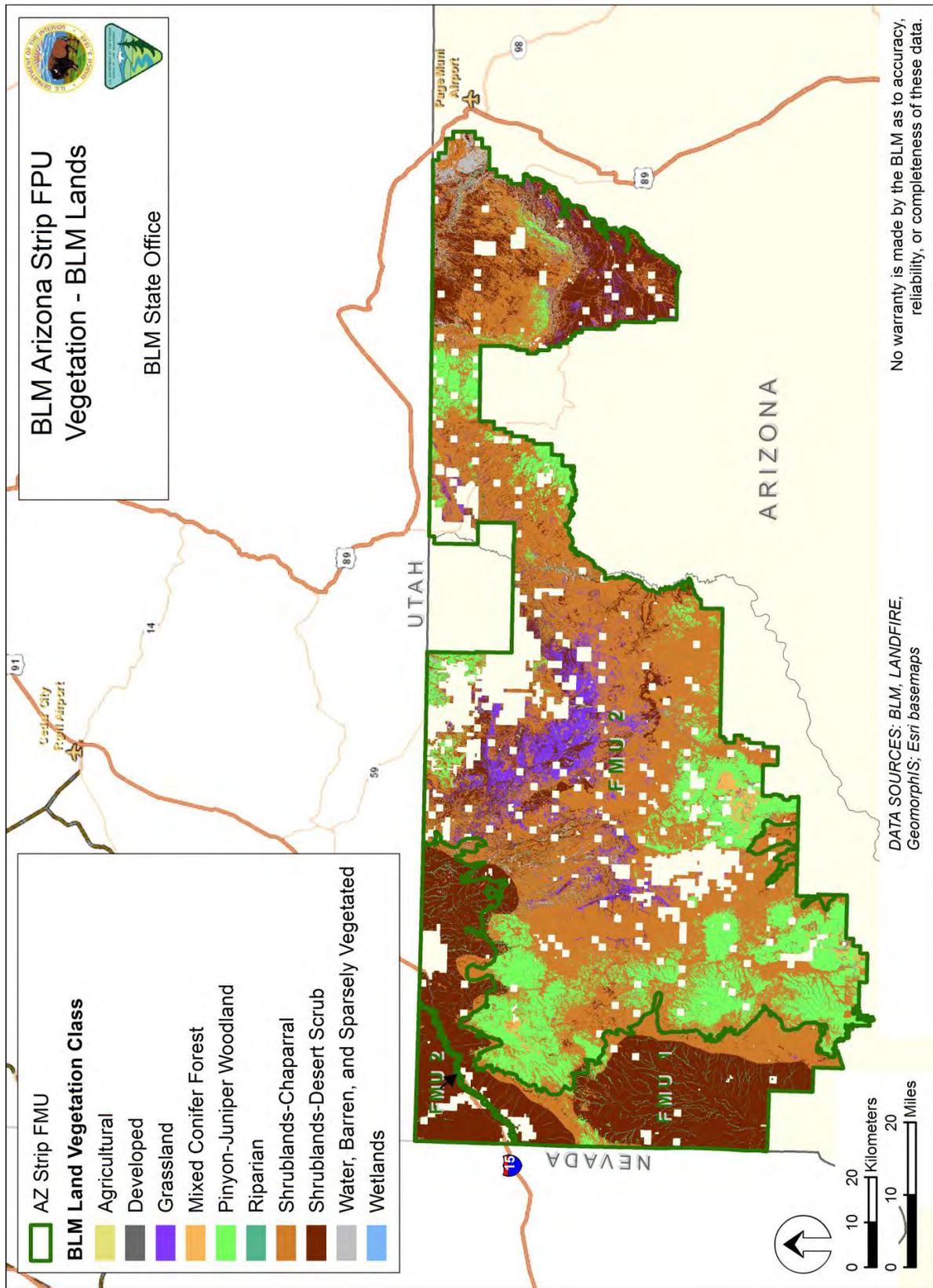
Vegetation data for the ASD FPU were acquired online in Geographic Information System (GIS) format from the LANDFIRE Wildland Fire Science service. The LANDFIRE data were developed by teams at both United States Geological Survey (USGS) Earth Resources Observation Systems (EROS), Sioux Falls, SD, and the USFS, Rocky Mountain Research Station, Missoula, MT and are delivered as 30-meter raster imagery (LANDFIRE Refresh 2001). Figure 3-2 displays vegetation types for the ASD FPU.

Due to slight discrepancies between the various GIS data sources, conversion from raster to vector format for some datasets, and slight mismatching at the Arizona state borders, FMU acreage calculations between datasets differ slightly. However, these differences are minor and do not negatively impact final analysis output.

Fire start information for the period 1980-2012 was provided by the BLM from the Wildland Fire Management Information System (WFMI). The data are derived from interagency GIS point data, which includes information on acres burned by each fire, fire start and end dates, and fire cause.

Within each FMU, an interdisciplinary team identified resource considerations affecting fire management planning and treatment recommendations to achieve resource management objectives. Recommendations apply solely to BLM-managed land within the FMUs.

Figure 3-2. Vegetation Types for the Arizona Strip District FPU



3.3.1 FMU 1

Fire Management Priority Ranking

The protection of human life is the single, overriding priority in the management of any wildland fire. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources will be done based on the values to be protected, human health and safety, and the costs of protection. Once people have been committed to an incident, these human resources become the highest value to be protected (*Guidance for Implementation of Federal Wildland Fire Management Policy*, February 2009, pg. 11).

Geographic and local area coordination groups will establish a process to set protection priorities (*Guidance for Implementation of Federal Wildland Fire Management Policy*, February 2009, pg. 11).

The Agency Administrator will convey protection priorities, based on the RMP and FMP, to the geographic and national groups through an incident status report and ensure that protection priorities are known and carried out by the Incident Commander(s) (*Guidance for Implementation of Federal Wildland Fire Management Policy*, February 2009, pg. 11).

Location

This FMU is bordered by the Utah BLM to the north; ASD FMU 2 to the east; Lake Mead National Recreation Area to the south; and Nevada BLM to the west. The land status and communities at risk in FMU 1 are provided in Table 3-2.

Table 3-2. Land Status and Communities at Risk for FMU 1

FMU Number	FMU 1		
Total Acres	628,630		
Manage Fires for Resource Benefit	No		
Land Status by Acreage and Percentage	BLM	588,678	94%
	State/Local	27,395	4%
	Private	12,554	2%
	Other (no data, military, tribal, etc.)	0	0%
Communities at Risk	Beaver Dam, Littlefield, Scenic		

Characteristics

FMU 1 contains (ecological zones) Mojave Desert and Mojave-Great Basin Transition vegetation. Designated wilderness areas include the Beaver Dam Mountains, Grand Wash Cliffs, and Paiute. Areas of Critical Environmental Concern (ACEC) include Beaver Dam Slope, Virgin Slope Ft. Pierce, Black Knolls, and Little Black Mountain. Desert tortoise habitat encompasses approximately half of this FMU. The desert tortoise (Mojave population) is a threatened species.

Fire can cause rapid and profound changes to vegetation in this FMU as most desert plants are not adapted to large disturbances by fire (Esque et al. 2003). Exotic annual grasses including *Bromus* spp. and *Schimus arabicus* have invaded much of the Mojave Desert. These grasses cure standing, creating continuous fuels that allow fires to spread. The fires often kill native vegetation and allow these exotic annual grasses to dominate the landscape and thus increase the number and size of fires and proliferation of these exotic annuals. This fire/grass cycle can lead to type conversions from vegetation that provides desert tortoise habitat to exotic annual grasslands (Brooks 1999, Esque et al. 2003). The remaining Joshua tree forests and pockets of native vegetation are considered important resources to protect.

Low shrubs dominate this FMU, with creosote bush being the most common shrub. Creosote bush communities are typically open and species-poor, and occur in areas with considerable amounts of bare ground. Native grasses are relatively rare and cacti relatively common. Joshua tree communities are found near the bases of mountain ranges and are rare in the eastern Mojave Desert. Other common species include Mormon tea, broom snakeweed, blackbrush, white bursage, California buckwheat, Wright eriogonum, galleta, and bush muhly.

Blackbrush communities occur in the transition between Mojave Desert and Great Basin. Blackbrush is typically found on gentle slopes above creosote bush communities and below the interior chaparral or big sagebrush/pinyon-juniper communities (Bradley and Deacon 1967, Randall 1972, Beatley 1976). Blackbrush communities are characterized by relatively high cover (50%) of low stature (50 cm tall) evergreen woody shrubs, dominated by blackbrush, which can comprise 90 to 95% of the total plant cover (Shreve 1942). Blackbrush is usually killed by fire and may take over 100 years to re-establish itself. It is co-dominant with other native species such as creosote, juniper, desert almond, Anderson wolfberry, and yucca. Dominant exotic species include cheatgrass and filaree. These communities change little over several decades, exhibiting very low reproductive rates and very slow growth.

Fire can impact tortoises directly by killing animals and eliminating vegetation cover. Indirect effects include changes in diet composition and loss of vegetation cover, leading to increased predation and loss of protection from temperature extremes (Esque et al. 2003). Additionally, other wildlife species associated with creosote and blackbrush vegetation communities are negatively affected by fire.

Fire Ecology

Four major vegetation communities have been mapped within FMU 1: pinyon/juniper woodland, riparian, shrublands-chaparral, and shrublands-desert scrub (Figure 3-3 and Table 3-3). The LANDFIRE system identifies 27 different Existing Vegetation Types (EVT) in FMU 1. The EVT layer represents the species composition currently present at a given site. Vegetation map units are primarily derived from NatureServe's Ecological Systems classification, which is a nationally consistent set of mid-scale ecological units. Additional units are derived from National Land Cover Data (NLCD), National Vegetation Classification Standard (NVCS) Alliances, and LANDFIRE-specific types.

The vegetation on BLM lands within this management unit is comprised mainly of shrublands-desert scrub (73% coverage) and shrublands-chaparral (20% coverage), pinyon/juniper woodlands (2% coverage), and the riparian group (4% coverage).

Fuel models for FMU 1 were identified using the standard 40 fuel models (Scott and Burgan, 2005) and data from LANDFIRE (Figure 3-4). The shrublands-desert scrub vegetation group is characterized by three fuel types including shrub fuel model SH2, grass model GR1, and grass-shrub model GS1. The shrublands-chaparral vegetation group is characterized by three fuel types including grass model GR1, and grass-shrub models GS1 and GS2. The pinyon/juniper woodlands vegetation group is characterized by two fuel types which are the grass model GR1 and the grass-shrub model GS2. The riparian vegetation group is characterized by two fuel types including grass model GR1 and timber-understory fuel type model TU1.

Fire Regime Condition Class

The FRCC classes are listed below by percentage of total acres in FMU 1:

- FRCC 1 (ecosystems with low departure from historic conditions): 1%
- FRCC 2 (ecosystems with moderate departure from historic conditions): 19%
- FRCC 3 (ecosystems with high departure from historic conditions): 80%

HFRs vary widely depending upon the vegetative type (Figure 3-5). The vegetation groups are summarized below.

Blackbrush: Temporally, FRIs were >100s of years. Spatially, fires were 10s to 100s of acres and low complete burns. Magnitudes were of high intensity and severity and active crown fires (Matt Brooks, USGS).

Creosote Scrub: Temporally, FRIs were 100 to 100s of years. Spatially, fires were less than 15 hectares and burned patchy. Magnitudes were of low intensity, moderate severity and fire types were surface to passive crown fires (Matt Brooks, USGS).

Grassland: This type is generally grouped into HFR Group I, which has a ≤ 35 -year Fire Return Interval (FRI) and generally a low to mixed severity. Naturally this system had frequent fire, dominated by replacement fires associated with productive grass fuels and cycles of moisture and drought.

Pinyon/Juniper: This type is generally grouped into HFR Group III-IV with a 35-200 year FRI and a variable severity from low, mixed, to stand replacement. Fire regimes for pinyon-juniper woodlands are difficult to reconstruct due to scant fire scar evidence. Fire regimes in pinyon-juniper are dominated by very infrequent replacement fire, but in some cases may have somewhat frequent mixed severity fire (top-kill of 25-75% of overstory vegetation).

Shrublands-Chaparral and Shrublands-Desert Scrub: These types are generally grouped into HFR Group III-IV, which has a 35-200 year FRI and a mixed to low severity. Most disturbances are naturally occurring and drought-dependent. During drought conditions, replacement fires are more likely. The mean fire interval is generally greater than 75 years with high variation due to year-to-year variation in drying of shrub foliage, shrub mortality, grass, and forb production related to drought and moisture cycles combined with variation in ignitions and associated fire weather. Fire sizes are generally small due to discontinuous fuels.

Riparian: This type is grouped into HFR Group IV, which has a 35-200 year FRI and a mixed to high severity.

Figure 3-3. Vegetation Types for FMU 1

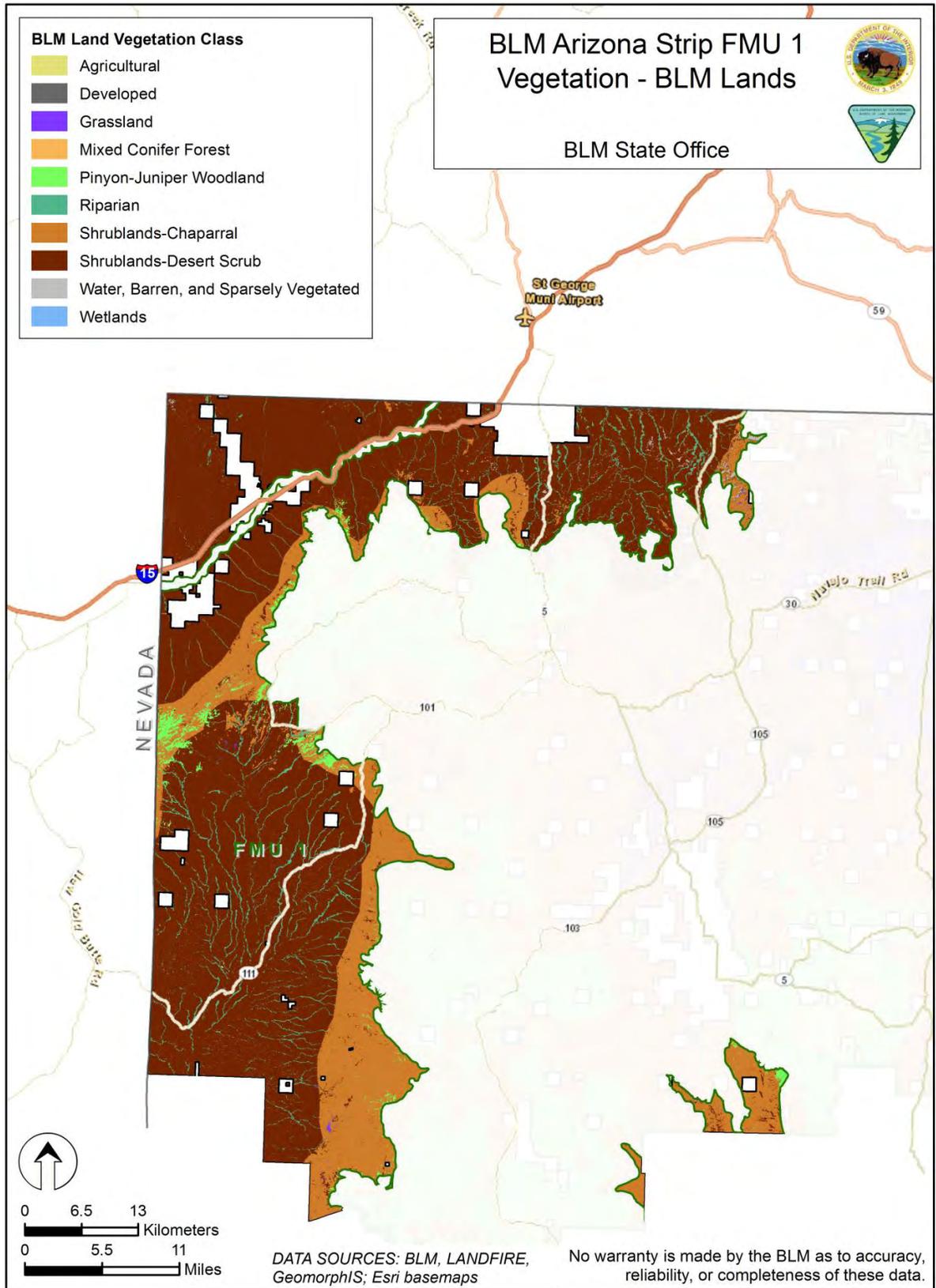


Figure 3-5. Fire Regime Condition Class for FMU 1

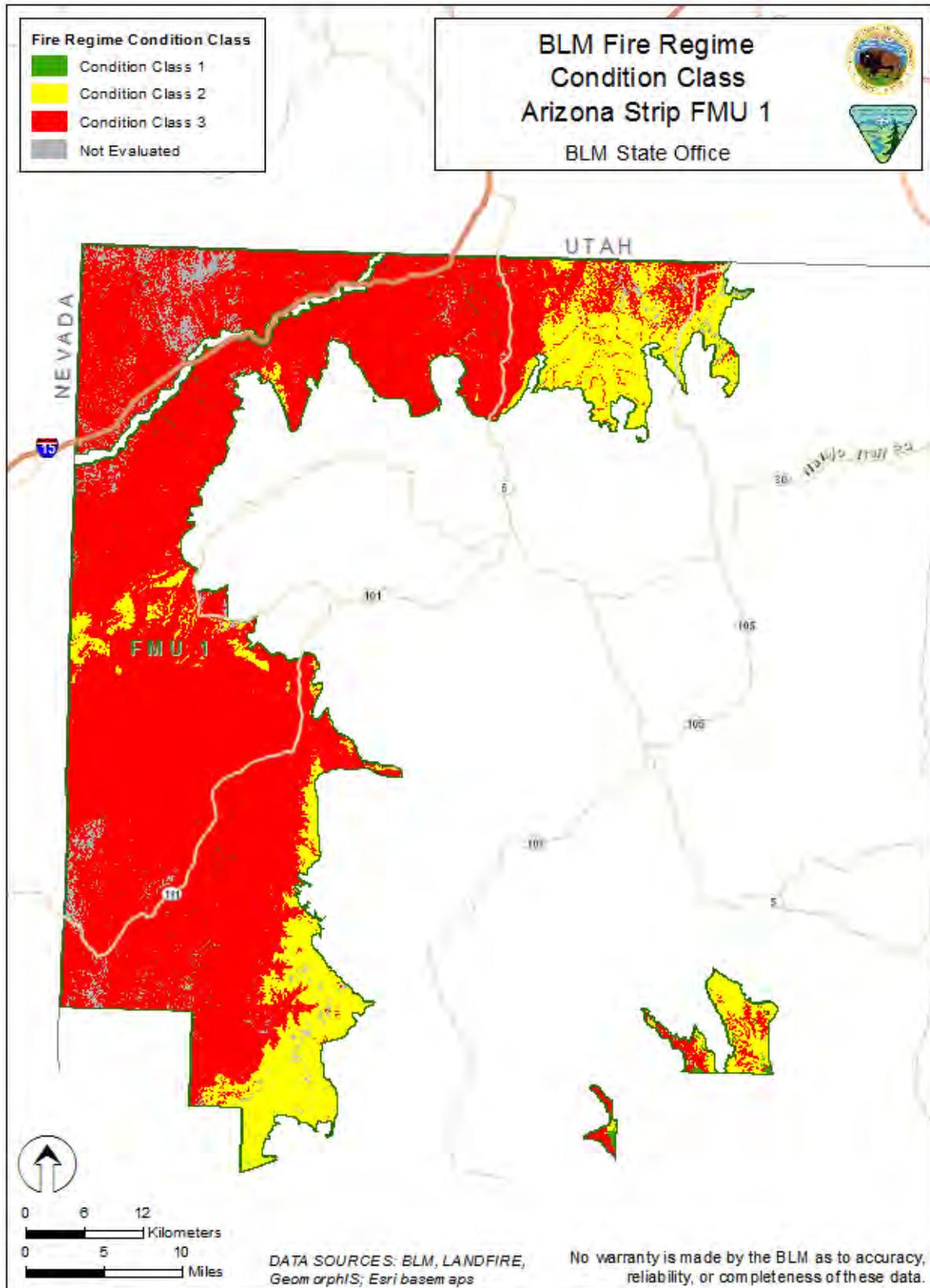


Table 3-3. FMU Vegetation Cover Type Acres for FMU 1

GAP Cover Type	Total FMU Acres	% of Total FMU	BLM Acres	% of BLM	FMU Acres by Condition Class	BLM Acres by Condition Class	Historic Fire Regime Group (I – V)	Fuel Models (FBFM 40)	Fire Starts on BLM
Grassland	746	<1	673	<1	10 Con. Class 1	29 Con. Class 1	I	GR1 GS2	0
					14 Con. Class 2	336 Con. Class 2			
					140 Con. Class 3	127 Con. Class 3			
Pinyon-Juniper Woodland	10,352	2	10,238	2	0 Con. Class 1	68 Con. Class 1	III	GR1 GS2	16
					4 Con. Class 2	4,592 Con. Class 2			
					109 Con. Class 3	5,522 Con. Class 3			
Riparian	23,996	4	21,452	4	32 Con. Class 1	232 Con. Class 1	V	GR1 TU1	26
					7 Con. Class 2	481 Con. Class 2			
					2,464 Con. Class 3	20,551 Con. Class 3			
Shrublands-Chaparral	126,660	20	124,742	21	292 Con. Class 1	1,678 Con. Class 1	IV	GR1 GS1 GS2	150
					687 Con. Class 2	58,705 Con. Class 2			
					930 Con. Class 3	61,957 Con. Class 3			
Shrublands-Desert Scrub	461,840	73	428,529	73	13 Con. Class 1	315 Con. Class 1	IV	SH2 GR1 GS1	485
					187 Con. Class 2	43,888 Con. Class 2			
					30,270 Con. Class 3	364,515 Con. Class 3			
Urban/Developed	2,076	<1	835	<1	N/A Con. Class 2	N/A Con. Class 2	N/A	NB1	30
					N/A Con. Class 3	N/A Con. Class 5			
Agricultural	923	<1	262	<1	N/A Con. Class 2	N/A Con. Class 2	N/A	NB3	1
					N/A Con. Class 3	N/A Con. Class 3			
Water, Barren, and Sparsely Vegetated	2,034	<1	1,944	<1	N/A Con. Class 1	N/A Con. Class 1	N/A	NB8 NB9	2
					N/A Con. Class 2	N/A Con. Class 2			
					N/A Con. Class 3	N/A Con. Class 3			
Total	628,630		588,678						710

Fire History

Since 1980, 710 fires have been recorded, burning a total of 291,849 acres. The average fire size is 411 acres, with an average of 22 fires occurring each year (Tables 3-4 and 3-5). The largest fire to date was the Cow Fire in 2005, which burned 44,707 acres. Ten other fires have occurred that burned 5,000 or more acres.

Table 3-4. Fire History for FMU 1 (1980-present)

Number of Fire Starts on Federal Lands					
Total FMU (including state & private lands, no other federal lands within FMU)	A (0-0.2)	336	BLM only	A (0-0.2)	333
	B (0.3-9.9)	158		B (0.3-9.9)	157
	C (10-99.9)	93		C (10-99.9)	93
	D (100-299.9)	42		D (100-299.9)	42
	E (300-999.9)	41		E (300-999.9)	41
	F 1,000-4999.9)	30		F 1,000-4999.9)	30
	G (5,000+)	14		G (5,000+)	14
	Total	714		Total	710
	Lightning Starts	490		Lightning Starts	490
	Human Starts	196		Human Starts	192
Unknown Cause	28	Unknown Cause	28		
Total FMU Acres Burned		291,852	Total BLM Acres Burned		291,849
Average Fire Size (acres)		409	Average Fire Size (acres)		411

Table 3-5. 10-Year Fire History for FMU 1 (2003-2012)

Number of Fire Starts on Federal Lands					
Total FMU	A (0-0.2)	101	BLM	A (0-0.2)	101
	B (0.3-9.9)	68		B (0.3-9.9)	68
	C (10-99.9)	26		C (10-99.9)	26
	D (100-299.9)	17		D (100-299.9)	17
	E (300-999.9)	17		E (300-999.9)	17
	F 1,000-4999.9)	9		F 1,000-4999.9)	9
	G (5,000+)	6		G (5,000+)	6
	Total	244		Total	244
	Lightning Starts	151		Lightning Starts	151
	Human Starts	93		Human Starts	93
Unknown Cause	0	Unknown Cause	0		
Total FMU Acres Burned		159,370	Total BLM Acres Burned		159,370
Average Fire Size (acres)		653	Average Fire Size (acres)		653

Values at Risk

FMU 1 contains multiple WUI and WUI infrastructure concerns. Some of these areas are of concern are listed in Table 3-6 and depicted in Figure 3-6.

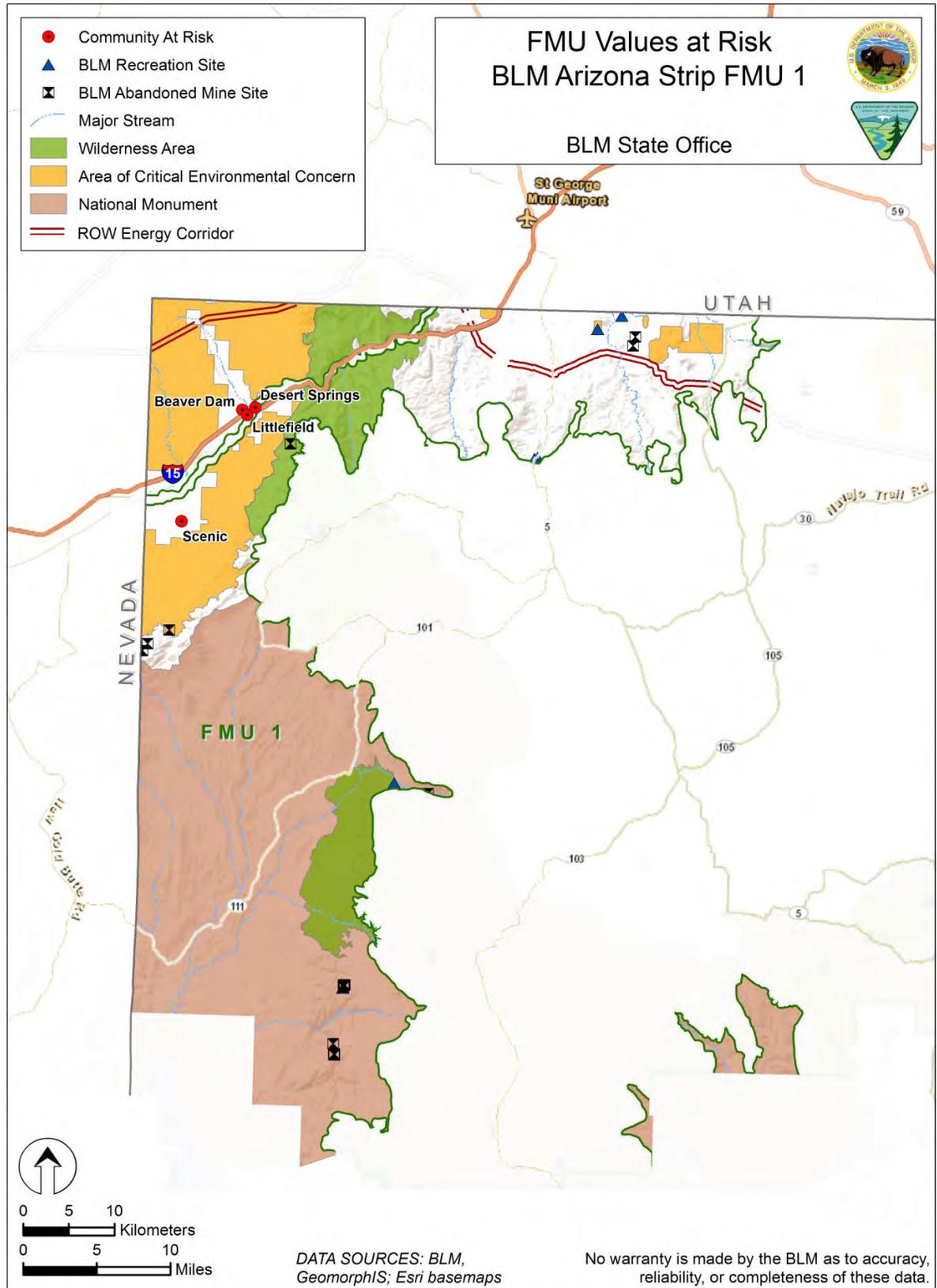
Table 3-6. FMU Values at Risk for FMU 1

WUI, Public Health, and Safety	The following communities are listed as Communities at Risk (CAR) within this FMU: <ul style="list-style-type: none"> • Beaver Dam • Littlefield (including Arvada) • Scenic (including Desert Springs)
	The following CWPPs are completed within this FMU: <ul style="list-style-type: none"> • Mohave County CWPP: This plan includes Littlefield, Beaver Dam, and Scenic.
	Scattered private lands and structures occur throughout this FMU.
	Air quality concerns as smoke may affect Class I Airsheds in Grand Canyon National Park (AZ) and cities/towns.

	<p>Navajo-McCullough and Nevada Power Company power transmission lines. These power transmission lines feed the city of Las Vegas, NV.</p> <p>Range improvement structures (e.g. fences, water lines, tanks) are at risk from damage by wildfire.</p> <p><u>High Visitor Use Areas:</u> None</p> <p><u>Dispersed Recreation:</u></p> <ul style="list-style-type: none"> • Hunting-both archery and rifle • Camping • Hiking • Four wheeling <p>Special Safety Concerns for Firefighters</p> <p><u>Military:</u></p> <ul style="list-style-type: none"> • Military training routes for use by the US Air Force <p><u>Mining:</u></p> <ul style="list-style-type: none"> • Abandoned mines/mines/vertical mine shafts <p><u>HAZMAT/Urban Waste:</u></p> <ul style="list-style-type: none"> • Garbage dumps • Drug manufacturing materials • Recreational shooting 		
Special Status Species	Plants	<ul style="list-style-type: none"> • Mt. Trumbull beardtongue • Beaver Dam breadroot • Three hearts • Holmgren milk vetch • Sandhollow milk vetch 	<ul style="list-style-type: none"> • Sticky wild buckwheat • Gierisch mallow • Brady pincushion cactus • Welsh's milk vetch • Paradino (Kaibab) plains cactus
	Mammals	<ul style="list-style-type: none"> • California leaf-nosed bat • Spotted bat • Townsend's big-eared bat 	
	Fish, Reptiles, & Amphibians	<ul style="list-style-type: none"> • Desert tortoise (Mojave population) • Northern leopard frog 	
	Birds	<ul style="list-style-type: none"> • California condor • Southwestern willow flycatcher • Yellow-billed cuckoo 	<ul style="list-style-type: none"> • Bald eagle • American peregrine falcon •
	Invertebrates	<ul style="list-style-type: none"> • Desert springsnail • Hydrobiid springsnails 	
Other Important Wildlife Values		<ul style="list-style-type: none"> • BLM Sensitive Species (see 2008 <i>BLM Manual 6840-Special Status Species Management</i> and the 2010 <i>Updated Bureau of Land Management (BLM) Sensitive Species List for Arizona</i>) • Mojave Desert • Critical Desert tortoise habitat (approximately half of this FMU) 	
Special Management Areas (e.g., ACEC, Wilderness)		<ul style="list-style-type: none"> • Grand Canyon-Parashant National Monument • Beaver Dam Mountains Wilderness • Grand Wash Cliffs Wilderness • Paiute Wilderness 	

	<ul style="list-style-type: none"> • Beaver Dam Slope ACEC • Virgin Slope ACEC • Ft. Pierce ACEC • Black Knolls ACEC • Little Black Mountain ACEC 		
Cultural Resources	Cultural and paleontological resources are abundant within this FMU.		
Watershed Values	<table border="1"> <tr> <td> <p><u>The following 4th Level Hydrologic Unit Code (HUC) watersheds are found within this FMU:</u></p> <ul style="list-style-type: none"> • Fort Pierce Wash • Lower Virgin • Grand Wash • Lake Mead • Grand Canyon </td> <td> <p><u>Noxious weeds:</u></p> <ul style="list-style-type: none"> • Cheatgrass • Halogeton • Malta starthistle • Salt cedar • Silverleaf nightshade </td> </tr> </table>	<p><u>The following 4th Level Hydrologic Unit Code (HUC) watersheds are found within this FMU:</u></p> <ul style="list-style-type: none"> • Fort Pierce Wash • Lower Virgin • Grand Wash • Lake Mead • Grand Canyon 	<p><u>Noxious weeds:</u></p> <ul style="list-style-type: none"> • Cheatgrass • Halogeton • Malta starthistle • Salt cedar • Silverleaf nightshade
<p><u>The following 4th Level Hydrologic Unit Code (HUC) watersheds are found within this FMU:</u></p> <ul style="list-style-type: none"> • Fort Pierce Wash • Lower Virgin • Grand Wash • Lake Mead • Grand Canyon 	<p><u>Noxious weeds:</u></p> <ul style="list-style-type: none"> • Cheatgrass • Halogeton • Malta starthistle • Salt cedar • Silverleaf nightshade 		

Figure 3-6. Values at Risk for FMU 1



Priorities, Objectives, and Strategies

Table 3-7 summarizes the priorities, objectives, and strategies for FMU 1.

Table 3-7. Summary of Priorities, Objectives, and Strategies by Fire Management Components for FMU 1

FMU 1		Suppression
Priorities with Supporting Rationale	<ul style="list-style-type: none"> • Firefighter and public safety is the primary concern. • There are no areas approved in FMU 1 to allow management of wildfire to meet multiple objectives. • Suppression tactics will be utilized that limit damage or disturbance to the habitat and landscape. • Full suppression actions will be initiated on all BLM-managed lands within this FMU. This includes a Direct Protection Agreement (DPA) with the Arizona State Forestry Division. Arizona BLM has the personnel, expertise, equipment, and communications to provide adequate fire prevention, incident dispatch, and fire suppression. 	
Recommended Objectives and Strategies	<ul style="list-style-type: none"> • Full suppression; fire is not recognized as a natural process here. No multiple objective fire is based on approved RMPs. • Resources for this FMU are available from St. George, UT during the off-season months. In the height of fire season (June, July, and August), resources are staged at the out stations to quicken the response to this FMU. • Additional suppression resources from the Color Country Interagency Fire Management Area, the surrounding districts, and nationally may be available for assistance. 	
FMU 1		Manage Fire for Multiple Objectives
Priorities with Supporting Rationale	There are no areas approved in FMU 1 to allow management of wildfire to meet multiple objectives. Suppression tactics will be utilized that limit damage or disturbance to the habitat and landscape.	
Recommended Objectives and Strategies	Full suppression; fire is not recognized as a natural process here. No multiple objective fire is based on approved RMPs.	
FMU 1		Fuels Treatment
Priorities with Supporting Rationale	<p>ASD Fire/Fuels Staff will implement a science based, integrated vegetation management program that is consistent with DOI and BLM policy and direction, and meets the goals and objectives of the NFP.</p> <p>ASD Fire/Fuels Staff develops out-year program planning and budgeting information for treatments (prescribed fire, mechanical, and chemical) and activities (planning, monitoring, and cultural surveys) in accordance with the RMPs. Project areas, treatments, and activities are identified and developed in the National Fire Plan Operations and Reporting System (NFPORS). The ASD Fire/Fuels Staff, in coordination with resource managers, determines priorities for the annual Program of Work (POW). POWs are composed of treatments and activities that best meet DOI and BLM priorities.</p> <p>Rationale used during prioritizing treatments and activities in NFPORS for WUI and non-WUI areas include:</p> <ol style="list-style-type: none"> 1. Firefighter and public safety 2. Hazardous fuels reduction within/near WUI 3. Watershed improvement 4. Wildlife habitat improvement 5. Range improvement 6. Maintenance of ecosystems currently in fire condition class 1. <p><u>National Fire Plan</u>- Prioritize hazardous fuels program planning, funding, and implementation based on the NFP priorities (<i>Guidance for Implementation of Federal Wildland Fire Management Policy</i>, February 2009).</p>	

	<p><u>Mojave Desert Ecological Zone</u>: The DFCs are for an adequate cover and mix of natural plant species that have good vigor. In terms of fire management and fire ecology, the DFCs are for fire to control or reduce the exotic annual weeds such as red brome and to limit woody vegetation to non-hazardous levels (<i>Grand Canyon-Parashant NM, Arizona Strip Field Office, Resource Management Plans</i>, February 2008, Chapter 2).</p> <p><u>Mojave-Great Basin Transition Ecological Zone</u>: The DFCs are for fire to naturally reduce annual weed densities and cover, limit or reduce the invasion of juniper, and for the densities of shrubs, such as big sagebrush, to be maintained within their historic range of variability (<i>Grand Canyon-Parashant NM, Arizona Strip Field Office, Resource Management Plans</i>, February 2008, Chapter 2).</p> <p><u>Interior Chaparral Ecological Zone</u>: The DFCs are that fire naturally maintains shrub cover while reducing annual grass cover, the invasion of woody plants such as juniper and pinyon pine are controlled, and the average age of chaparral stands is reduced through controlled fire or mechanical treatment (<i>Grand Canyon-Parashant NM, Arizona Strip Field Office, Resource Management Plans</i>, February 2008, Chapter 2).</p> <p><u>Riparian Ecological Zone</u>: The DFCs are that annual weed cover and density is controlled and ladder fuels and downed woody debris are limited or not present. Disturbances that can potentially reduce natural vegetation cover are managed to maintain adequate cover and mix of natural plant species (<i>Grand Canyon-Parashant NM, Arizona Strip Field Office, and February 2008, Chapter 2</i>).</p>
<p>Recommended Objectives and Strategies</p>	<p>ASD Fire Staff will work with Resource Management Specialists to identify opportunities and implement an effective integrated vegetation management program in those areas not identified as sensitive vegetation communities (e.g., Peeble’s Navajo cactus) to achieve resource management objectives.</p> <p>ASD Fire/Fuels Staff will implement a science-based, integrated vegetation management program that is consistent with DOI and BLM policy and direction, and meets the goals and objectives of the NFP.</p> <p>ASD fire staff will work with Resource Management Specialists to identify opportunities and implement effective non-fire treatments to achieve resource management objectives.</p> <p>Applicable DFCs, Management Actions (MA), Land use Allocations (LA), and Administrative Actions (AA) for Vegetation Management (VM) and Wildland Fire (WF) are identified in the following RMPs:</p> <p style="text-align: center;"><u>Grand-Canyon Parashant National Monument</u> Record of Decision and Management Plan-2008 Chapter 2, Pages 2-1 to 2-31.</p> <p style="text-align: center;"><u>Arizona Strip Field Office</u> Record of Decision and Resource Management Plan-2008 Chapter 2, Pages 2-1 to 2-27.</p>
<p>FMU 1</p>	<p>ESR</p>
<p>Priorities with Supporting Rationale</p>	<p>For ESR guidance, refer to:</p> <ul style="list-style-type: none"> • <i>DOI-BLM Burned Area Emergency Stabilization and Rehabilitation Handbook</i>, H-1742-1 • <i>BLM AZ Programmatic Emergency Stabilization and Rehabilitation Plan</i>, BLM-AZ-EA-934-2006-0001
<p>Recommended Objectives and Strategies</p>	<p>Burned areas will be assessed by the approved/delegated resource specialists to determine suitable and effective ESR needs to meet current and anticipated environmental conditions. Rehabilitation and restoration activities will be evaluated to assess effectiveness of treatments.</p>
<p>FMU 1</p>	<p>Community Assistance/Protection</p>

<p>Priorities with Supporting Rationale</p>	<p>To reduce human-caused fires, BLM will undertake education, enforcement, and administrative fire prevention mitigation measures. Education measures will include various media information including a signing program, information as to the natural role of fire within local ecosystems, and participation in fairs, in parades, and with the public. Enforcement will be accomplished utilizing fully qualified fire investigators to investigate human-caused wildfires. Employees interested in fire cause determination will be provided training opportunities to become fully qualified fire investigators. Administration includes expanded prevention and education programs with other cooperator agencies.</p>
<p>Recommended Objectives and Strategies</p>	<p>Community assistance/protection objectives include identifying hazardous fuel reduction projects, public and firefighter safety issues, and partnering opportunities with local Firewise groups.</p> <ul style="list-style-type: none"> • Accomplished by acting upon CWPPs with all federal, state, county, city, private, and local partners in compliance with the guidelines established in: <ul style="list-style-type: none"> ○ <i>Preparing a Community Wildfire Protection Plan-A Handbook for Wildland-Urban Interface communities</i>, 2004 ○ <i>Best Management Practices for Creating a Community Wildfire Protection Plan</i>, GTR-NRS-89, 2012 ○ <i>Southwest Community Wildfire Protection Plan Guide</i>, Southwest Strategy ○ <i>The Federal Land Assistance, Management and Enhancement Act (FLAME) of 2009</i> • Implement recommended actions within completed CWPPs or agency-equivalent prevention and mitigation plans. Coordinate and collaborate with CWPP partners during hazardous fuels treatment implementation. <ul style="list-style-type: none"> ○ Includes reducing risks to WUI, WUI infrastructure, agency administrative sites, high visitor use areas, and access/egress corridors. <p>The Arizona Firewise Communities program is the primary tool to achieve wildland fire hazards awareness to the public. Technical assistance is being provided by the BLM allowing Firewise groups to develop local plans that meet mutual goals with the BLM.</p>

3.3.2 FMU 2

Fire Management Priority Ranking

The protection of human life is the single, overriding priority. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources will be done based on the values to be protected, human health and safety, and the costs of protection. Once people have been committed to an incident, these human resources become the highest value to be protected (*Guidance for Implementation of Federal Wildland Fire Management Policy*, February 2009, pg. 11).

Geographic and local area coordination groups will establish a process to set protection priorities (*Guidance for Implementation of Federal Wildland Fire Management Policy*, February 2009, pg. 11).

The Agency Administrator will convey protection priorities, based on the L/RMP and FMP, to the geographic and national groups through an incident status report and ensure that protection priorities are known and carried out by the Incident Commander(s) (*Guidance for Implementation of Federal Wildland Fire Management Policy*, February 2009, pg. 11).

Location

This FMU is primarily bordered by the Utah BLM, Kaibab Paiute Indian Reservation, Grand Staircase Escalante National Monument to the north; Grand Canyon National Park and Glen Canyon National Recreation Area to the east; Lake Mead National Recreation Area and Grand Canyon National Park to the south; ASD FMU 1 to the west (Table 3-8).

Table 3-8. Land Status and Communities at Risk for FMU 2

FMU Number	FMU 2		
Total Acres	2,485,161		
Manage Fires for Resource Benefit	Yes		
Land Status by Acreage and Percentage	BLM	2,181,058	88%
	Other (Monument, Park/Site, BOR, USFWS, military, tribal, no data, etc.)	4	<1%
	State/Local	178,806	7%
	Private	125,252	5%
Communities at Risk	Colorado City, White Sage, Fredonia, Potato Valley, Cane Beds		

Characteristics

FMU 2 contains (ecological zones) Plains Grassland, Interior Chaparral, Great Basin, Ponderosa Pine Forest, Colorado Plateau Transition, Forest Land, and Riparian. Designated wilderness areas include the Grand Wash Cliffs, Cottonwood Point, Mt Logan, Mt Trumbull, Kanab Creek, Paria Canyon Vermillion Cliffs, and Paiute. ACECs include Lost Spring Mountain, Moonshine Ridge, Lone Butte, Kanab Creek, Shinarump, Johnson Spring, Coyote Valley, and Marble Canyon.

Fire as a critical natural process will be integrated into land and RMPs and activities on a landscape scale, and across agency boundaries. Response to wildland fire is based on ecological, social, and legal consequences of the fire. The circumstances under which a fire occurs, and the likely consequences on firefighter and public safety and welfare, natural and cultural resources, and values to be protected dictate the response to a wildfire.

Fire Ecology

Four major vegetation communities have been mapped within FMU 2: pinyon/juniper woodland, grassland, shrublands-chaparral, and shrublands-desert scrub (Figure 3-7 and Table 3-9). The LANDFIRE system identifies about 44 different EVT in FMU 2. The EVT layer represents the species composition currently present at a given site. Vegetation map units are primarily derived from NatureServe's Ecological Systems classification, which is a nationally consistent set of mid-scale ecological units. Additional units are derived from NLCD, NVCS Alliances, and LANDFIRE-specific types.

The vegetation on BLM lands within this management unit is comprised mainly of shrublands-desert scrub (15% coverage), shrublands-chaparral (54% coverage), pinyon/juniper woodlands (19% coverage), and the grassland group (6 % coverage). Ponderosa pine forest comprises a small but significant vegetation community within this management unit.

Fuel models for FMU 2 were identified using the standard 40 fuel models (Scott and Burgan, 2005) and data from LANDFIRE (Figure 3-8 and Table 3-9). The shrublands-desert scrub vegetation group is characterized by four fuel types including shrub fuel model SH1, grass fuel models GR1 and GR2, and grass-shrub fuel model GS1. The shrublands-chaparral vegetation group is characterized by four fuel types including grass fuel model GR1, grass-shrub fuel models GS1 and GS2, and shrub fuel model SH1. The pinyon/juniper woodlands vegetation group is characterized by three fuel types which are the grass-shrub fuel models GS1 and GS2, and the timber-litter fuel model TL3. The grassland vegetation group is characterized by two fuel types including grass fuel model GR1 and grass-shrub fuel model GS2.

Fire Regime/Condition Class (FRCC)

The FRCC classes are listed below by percentage of total acres in the FMU (Figure 3-9):

- FRCC 1 (ecosystems with low departure from historic conditions): 10%
- FRCC 2 (ecosystems with moderate departure from historic conditions): 80%
- FRCC 3 (ecosystems with high departure from historic conditions): 10%

HFRs vary widely depending upon the vegetative type (Figure 3-9 and Table 3-9). The vegetation groups are summarized below.

Grassland: This type is generally grouped into HFR Group I, which has a ≤ 35 year FRI and generally a low to mixed severity. Naturally this system had frequent fire, dominated by replacement fires associated with productive grass fuels and cycles of moisture and drought.

Pinyon/Juniper: This type is generally grouped into HFR Group III-IV with a 35-200 year FRI and a variable severity from low, mixed, to stand replacement. Fire regimes for pinyon-juniper woodlands are difficult to reconstruct due to scant fire scar evidence. Fire regimes in pinyon-juniper are dominated by very infrequent replacement fire, but in some cases may have somewhat frequent mixed severity fire (top-kill of 25-75% of overstory vegetation). The scale of fire severity that occurs is likely determined by what stage of development the community is at, open or closed.

Shrublands-Chaparral and Shrublands-Desert Scrub: These types are generally grouped into HFR Group III-IV, which has a 35-200 year FRI and a mixed to low severity. Most disturbances are naturally occurring and drought-dependent. During drought conditions, replacement fires are more likely. The mean fire interval is generally greater than 75 years with high variation due to year-to-year variation in drying of shrub foliage, shrub mortality, grass, and forb production related to drought and moisture cycles combined with variation in ignitions and associated fire weather. Fire sizes are generally small due to discontinuous fuels.

Riparian: This type is grouped into HFR Group IV, which has a 35-200 year FRI and a mixed to high severity.

Figure 3-7. Vegetation Types for FMU 2

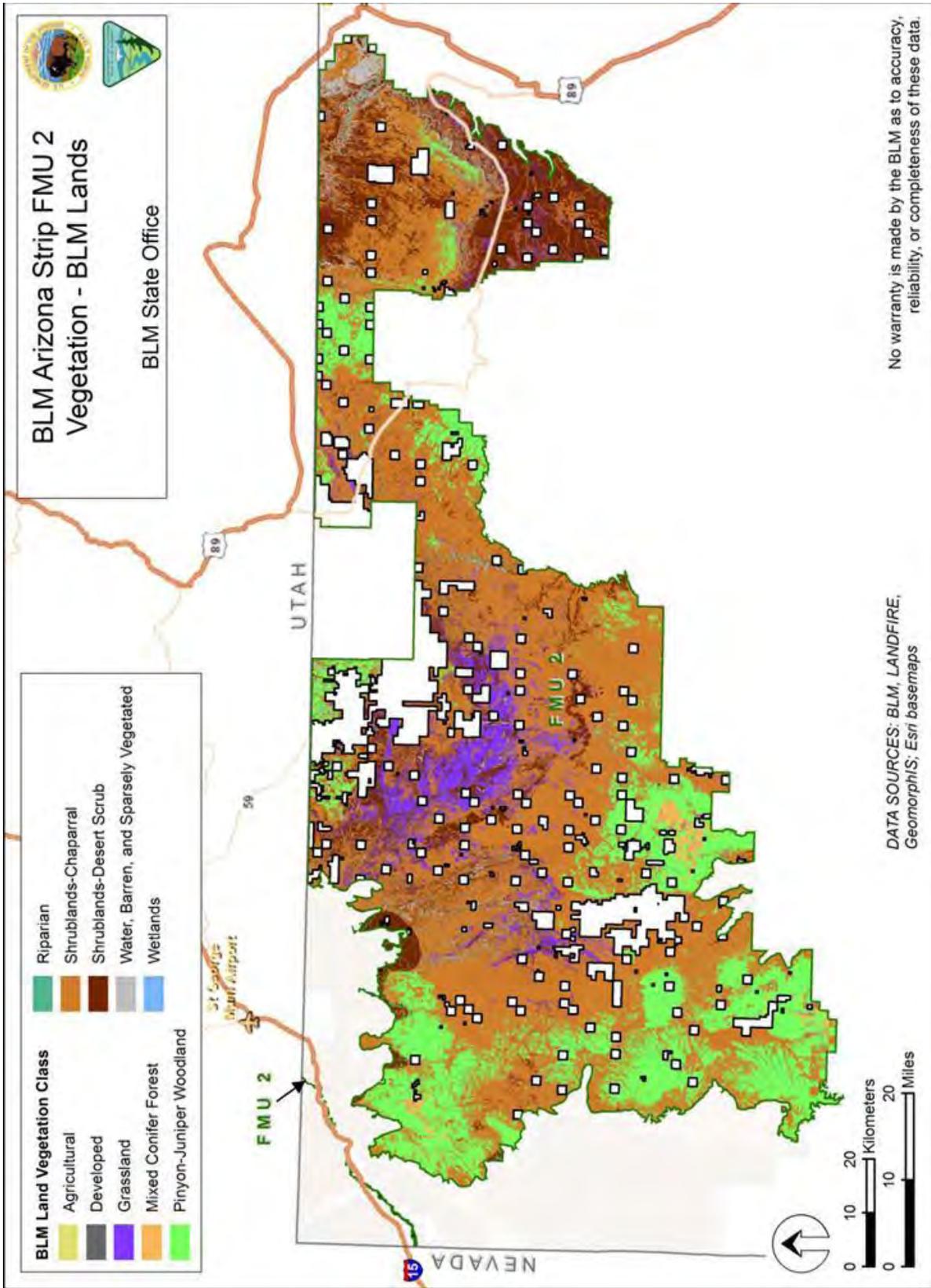


Figure 3-8. Fuel Models for FMU 2

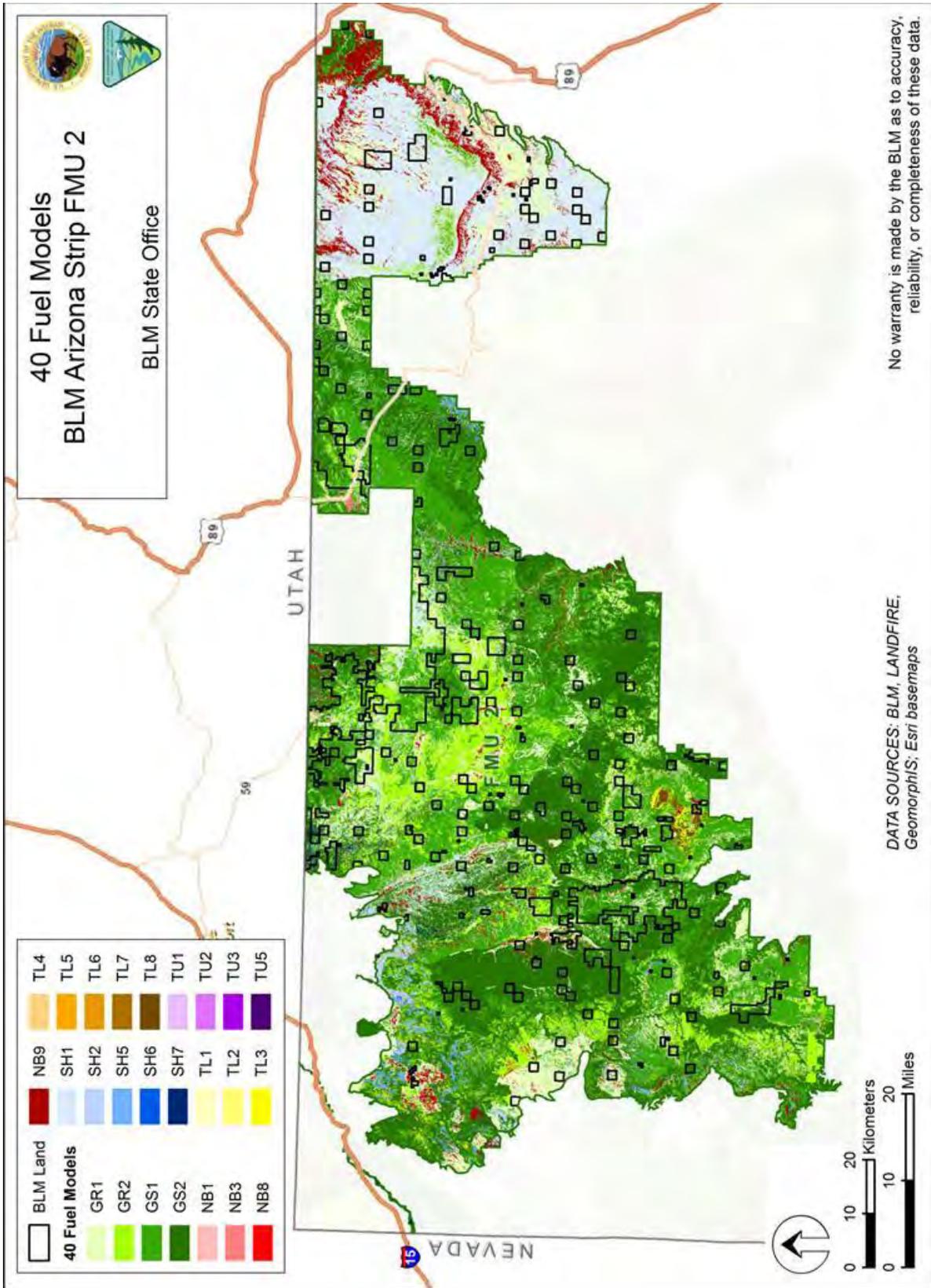


Figure 3-9. Fire Regime Condition Class for FMU 2

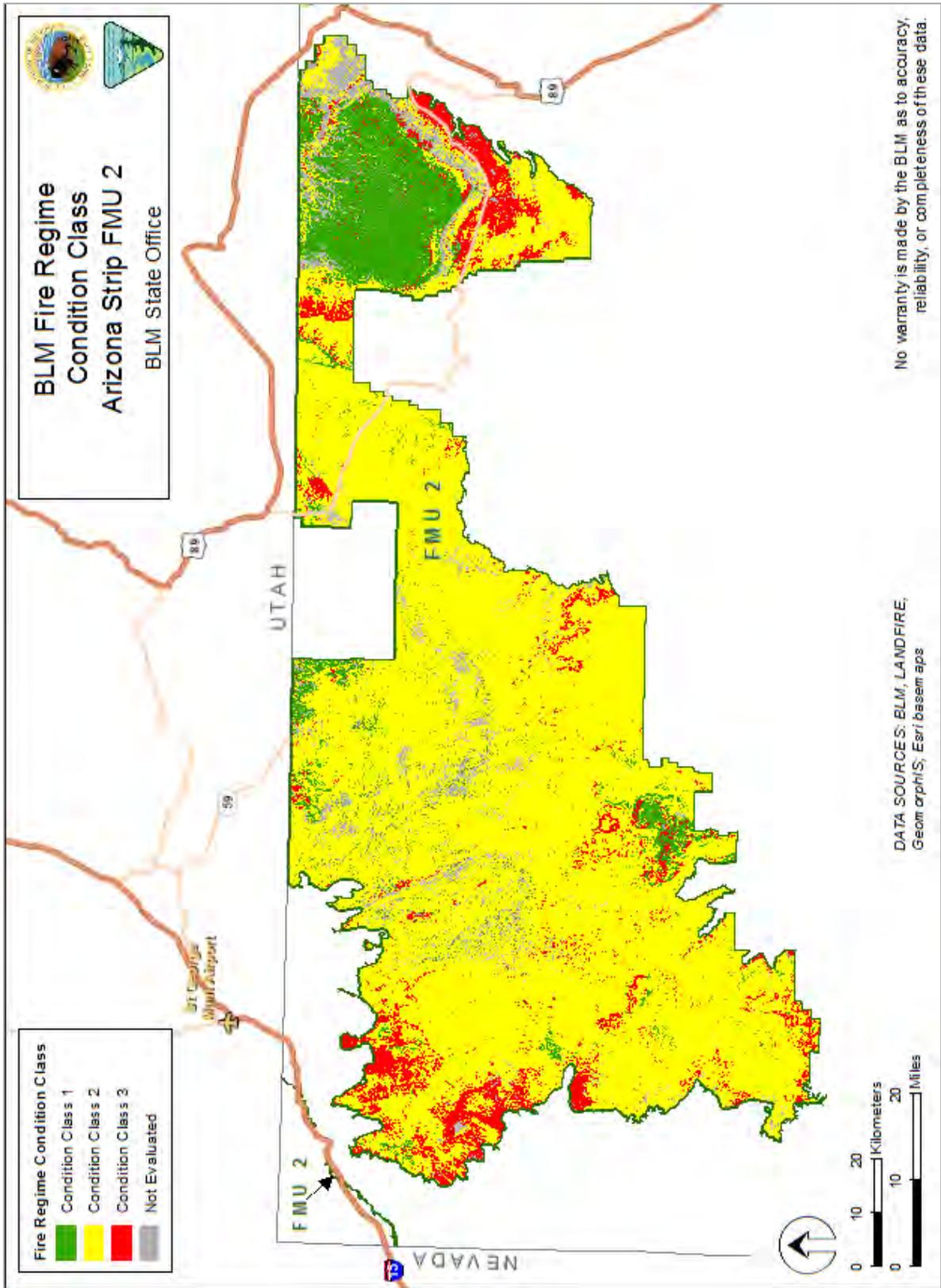


Table 3-9. FMU Vegetation Cover Type Acres for FMU 2

GAP Cover Type	Total FMU Acres	% of Total FMU	BLM Acres	% of BLM	FMU Acres by Condition Class	BLM Acres by Condition Class	Historic Fire Regime Group (I – V)	Fuel Models (FBFM 40)	Fire Starts on BLM
Grassland	170,544	7	133,916	6	1,867 Con. Class 1	10,358 Con. Class 1	I	GR1 GS2	32
					32,580 Con. Class 2	111,558 Con. Class 2			
					1,939 Con. Class 3	10,670 Con. Class 3			
Mixed Conifer Forest (Ponderosa Pine Forest)	19,639	1	18,623	1	559 Con. Class 1	11,402 Con. Class 1	III	TL8	157
					610 Con. Class 2	5,946 Con. Class 2			
					178 Con. Class 3	4,417 Con. Class 3			
Pinyon-Juniper Woodland	447,361	18	423,352	19	2,849 Con. Class 1	34,288 Con. Class 1	III	GS1 GS2 TL3	832
					18,084 Con. Class 2	328,950 Con. Class 2			
					2,956 Con. Class 3	59,815 Con. Class 3			
Riparian	44,258	2	38,161	2	2,617 Con. Class 1	10,675 Con. Class 1	V	GS1 TU1	43
					2,427 Con. Class 2	21,870 Con. Class 2			
					705 Con. Class 3	4,813 Con. Class 3			
Shrublands-Chaparral	1,359,268	55	1,183,453	54	7,909 Con. Class 1	104,294 Con. Class 1	IV	GR1 GS1 GS2 SH1	1,117
					162,124 Con. Class 2	987,256 Con. Class 2			
					5,200 Con. Class 3	82,447 Con. Class 3			
Shrublands-Desert Scrub	385,314	16	330,986	15	5,447 Con. Class 1	53,319 Con. Class 1	IV	GR1 GR2 GS1 SH1	103
					38,880 Con. Class 2	170,511 Con. Class 2			
					3,149 Con. Class 3	37,667 Con. Class 3			
Urban/Developed	3,683	<1	1,262	<1	N/A Con. Class 1	N/A Con. Class 1	N/A	NB1	9
					N/A Con. Class 2	N/A Con. Class 2			
					N/A Con. Class 3	N/A Con. Class 3			
Agricultural	1,453	<1	235	<1	N/A Con. Class 1	N/A Con. Class 1	N/A	NB3	1
					N/A Con. Class 2	N/A Con. Class 2			
					N/A Con. Class 3	N/A Con. Class 3			
Water, Barren, and Sparsely Vegetated	53,641	2	51,069	2	N/A Con. Class 1	N/A Con. Class 1	N/A	NB8 NB9	5
					N/A Con. Class 2	N/A Con. Class 2			
					N/A Con. Class 3	N/A Con. Class 3			
					N/A Con. Class 3	N/A Con. Class 3			
Total	2,485,161		2,181,057						2,299

Fire History

Since 1980, 2,288 fires have been recorded, burning a total of 229,391 acres. The average fire size is 100 acres, with an average of 72 fires occurring each year. The largest fire to occur to date is the Tweedy Complex in

2005, which burned 41,314 acres. Seven other fires have occurred that burned 5,000 or more acres. Tables 3-10 and 3-11 summarize the fire history of FMU 2.

Table 3-10. Fire History for FMU 2 (1980-present)

Number of Fire Starts on Federal Lands					
Total FMU (including state & private lands, no other federal lands within FMU)	A (0-0.2)	1,827	BLM (only)	A (0-0.2)	1,809
	B (0.3-9.9)	318		B (0.3-9.9)	311
	C (10-99.9)	91		C (10-99.9)	89
	D (100-299.9)	34		D (100-299.9)	34
	E (300-999.9)	24		E (300-999.9)	24
	F 1,000-4999.9)	13		F 1,000-4999.9)	13
	G (5,000+)	8		G (5,000+)	8
	Total	2,315		Total	2,288
	Lightning Starts	1,987		Lightning Starts	1,967
	Human Starts	158		Human Starts	151
	Unknown Cause	170		Unknown Cause	170
	Total FMU Acres Burned			229,525	Total BLM Acres Burned
Average Fire Size (acres)		99	Average Fire Size (acres)		100

Table 3-11. 10-Year Fire History for FMU 2 (2003-2012)

Number of Fire Starts on Federal Lands					
Total FMU	A (0-0.2)	650	BLM	A (0-0.2)	650
	B (0.3-9.9)	123		B (0.3-9.9)	123
	C (10-99.9)	35		C (10-99.9)	35
	D (100-299.9)	16		D (100-299.9)	16
	E (300-999.9)	14		E (300-999.9)	14
	F 1,000-4999.9)	8		F 1,000-4999.9)	8
	G (5,000+)	6		G (5,000+)	6
	Total	852		Total	852
	Lightning Starts	789		Lightning Starts	789
	Human Starts	63		Human Starts	63
	Unknown Cause	0		Unknown Cause	0
	Total FMU Acres Burned			184,825	Total BLM Acres Burned
Average Fire Size (acres)		217	Average Fire Size (acres)		217

Values at Risk

Values at risk in FMU 2 are listed in Table 3-12 and depicted in Figure 3-10.

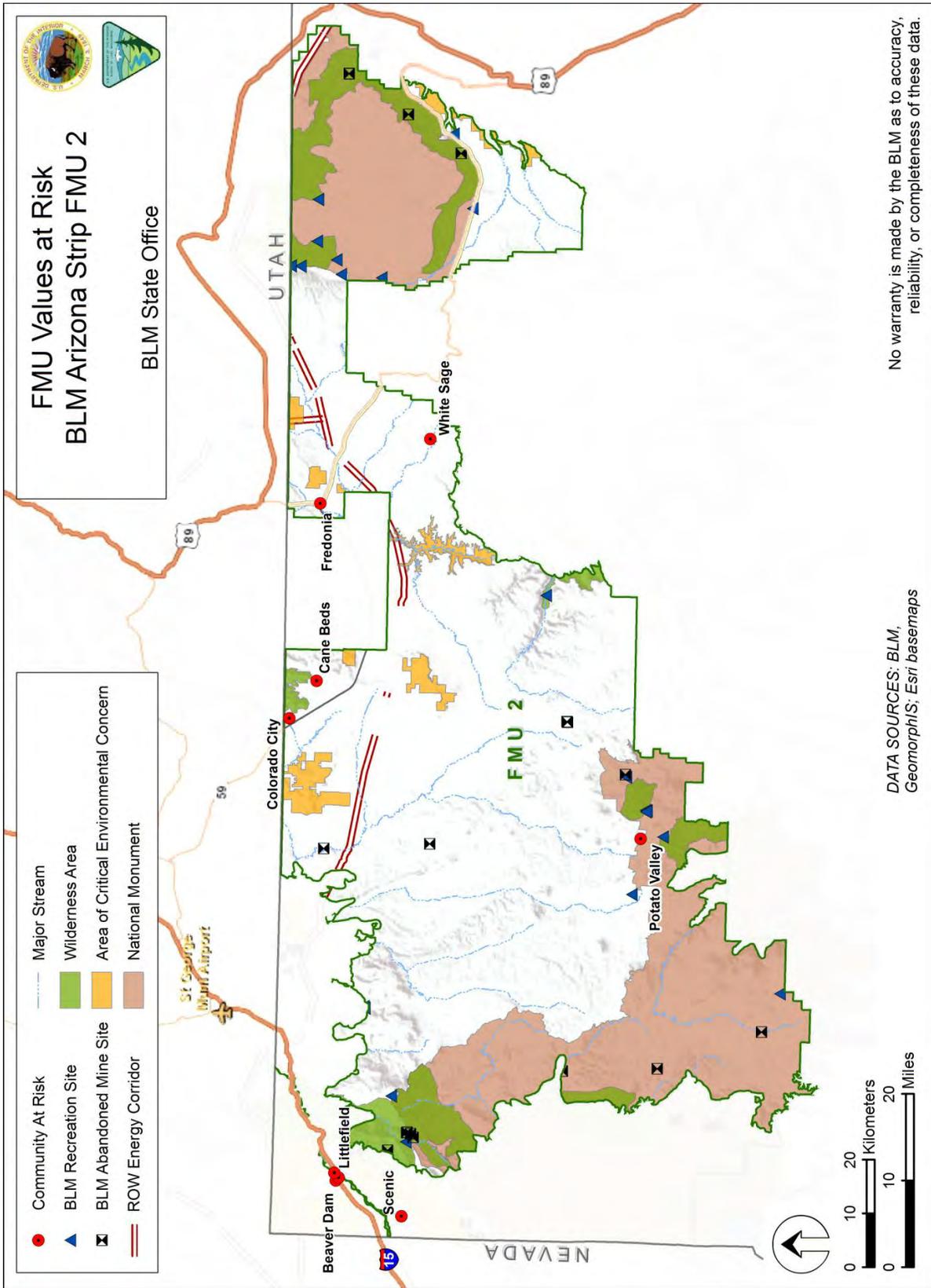
Table 3-12. FMU Values at Risk for FMU 2

WUI, Public Health, and Safety	Arizona Identified CAR:
	<ul style="list-style-type: none"> • Colorado City • White Sage • Fredonia • Potato Valley • Cane Beds
	CWPPs found within this FMU include: <ul style="list-style-type: none"> • Mohave County CWPP
Scattered private lands and structures occur throughout this FMU.	

	<p>Air quality concerns as smoke may affect Class I Airsheds in Grand Canyon National Park (AZ) and cities/towns.</p> <p>Navajo-McCullough and Nevada Power Company power transmission lines. These power transmission lines are a component of the regional power grid providing electrical power to large areas of the west.</p> <p>Numerous communication towers that need protection from wildfire events.</p> <p>Range improvement structures (e.g., fences, waterlines, tanks) are at risk from damage by wildfire.</p> <p><u>High Visitor Use Areas:</u></p> <ul style="list-style-type: none"> • Mt. Trumbull and Mt. Logan • Paria Canyon • Coyote Buttes <p><u>Dispersed Recreation:</u></p> <ul style="list-style-type: none"> • Hunting-both archery and rifle • Hiking in high visitor use areas • Camping • Four wheeling <p>Special Safety Concerns for Firefighters</p> <p><u>Military:</u></p> <ul style="list-style-type: none"> • Military training routes <p><u>Mining:</u></p> <ul style="list-style-type: none"> • Abandoned mines/vertical mine shafts <p><u>HAZMAT/Urban Waste:</u></p> <ul style="list-style-type: none"> • Garbage dumps • Drug manufacturing materials • Recreational shooting 		
Special Status Species	Plants	<ul style="list-style-type: none"> • Grand Canyon rose • Mt Trumbull beardtongue • September 11 stickleaf • Fickeisen plains cactus • Siler pincushion cactus • Paradino (Kaibab) plains cactus • Diamond Butte milkvetch 	<ul style="list-style-type: none"> • Silverleaf sunray • Brady pincushion cactus • Welsh’s milkweed • Cliff milkvetch • Crevice penstemon • Toana milkvetch • Mojave panic
	Mammals	<ul style="list-style-type: none"> • California leaf-nosed bat • Houserock Valley chisel-toothed kangaroo rat • Spotted bat • Townsend’s big-eared bat 	
	Fish, Reptiles, & Amphibians	<p><u>Virgin River:</u></p> <ul style="list-style-type: none"> • Bluehead, Desert, and Flannelmouth sucker • Speckled dace • Virgin Spinedace • Northern leopard frog • Virgin River chub • Woundfin 	

	Birds	<ul style="list-style-type: none"> California condor Southwestern willow flycatcher Yellow-billed cuckoo Mexican spotted owl habitat (riparian Lower Kanab Creek) 	<ul style="list-style-type: none"> American peregrine falcon Yuma clapper rail Ferruginous hawk Northern goshawk Pinyon jay
	Invertebrates	<ul style="list-style-type: none"> Desert springsnail Hydrobiid springsnails 	
	Other Important Wildlife Values	<ul style="list-style-type: none"> BLM Sensitive Species (see 2008 <i>BLM Manual 6840-Special Status Species Management</i> and the 2010 <i>Updated Bureau of Land Management (BLM) Sensitive Species List for Arizona</i>) Riparian (Virgin River, Kanab Creek) 	
	Special Management Areas (e.g., ACEC, Wilderness, Wildlife Habitat Area, Vegetation Habitat Area)	<ul style="list-style-type: none"> Grand Wash Cliffs Wilderness Area Paiute Wilderness Area Beaver Dam Mountain Wilderness Area Hurricane Cliffs Wildlife Habitat Area Kanab Creek Wildlife Habitat Area Paria-Vermillion Cliffs Wildlife Habitat Area Vermillion Cliffs Wildlife Habitat Areas Trumbull-Logan Wildlife Habitat Areas Grand Wash Cliffs Wildlife Habitat Areas Lost Spring Mountain ACEC Moonshine Ridge ACEC Lone Butte ACEC Kanab Creek ACEC Shinarump ACEC Johnson Spring ACEC Coyote Valley ACEC Marble Canyon ACEC Twist Hills Vegetation Habitat Area Clayhole Vegetation Habitat Area 	
	Cultural Resources	Cultural and paleontological resources are abundant within this FMU:	
	Watershed Values	<p><u>The following 4th Level HUC watersheds are found within this FMU:</u></p> <ul style="list-style-type: none"> Lower Virgin Grand Wash Lake Mead Grand Canyon Fort Pierce Wash Kanab Paria Lower Colorado-Marble Canyon Lower Lake Powell 	<p><u>Noxious weeds:</u></p> <ul style="list-style-type: none"> Cheatgrass Russian, Spotted, Diffuse and Squarros knapweed Malta starthistle Bull, Musk, and Scotch thistle Salt cedar Silverleaf nightshade Russian olive Morning-glory Leafy spurge Hoary cress Halogeton Camelthorn Tall whitetop

Figure 3-10. Values at Risk for FMU 2



Priorities, Objectives, and Strategies

Table 3-13 summarizes the priorities, objectives, and strategies for FMU 2.

Table 3-13. Summary of Priorities, Objectives, and Strategies by Fire Mgt. Components for FMU 2

FMU 2		Suppression
Priorities with Supporting Rationale	<p>Firefighter and public safety is the primary concern.</p> <p>All lands are approved in FMU 2 to allow management of wildfire to meet multiple objectives.</p> <p>Suppression tactics will be utilized that limit damage or disturbance to the habitat and landscape.</p> <p>Multiple objective actions may be initiated on all BLM-managed lands within this FMU. This includes a DPA with the Arizona State Forestry Division. Arizona BLM has the personnel, expertise, equipment and communications to provide adequate fire management, incident dispatch, and fire suppression.</p> <p>Fire in this FMU is not full suppression, but suppression strategies may be chosen if the Agency Administrator determines it necessary. Fire and resource staff will make their recommendations to the Agency Administrator on various existing conditions.</p>	
Recommended Objectives and Strategies	<p>Fire is recognized as a natural process here. Multiple objective fire is based on approved RMPs.</p> <p>Resources for this FMU are available from St. George, UT during the off-season months. In the height of fire season (June, July, and August), resources are staged at the out stations to quicken the response to this FMU.</p> <p>Additional suppression resources from the Color Country Interagency Fire Management Area, the surrounding districts, and nationally may be available for assistance.</p>	
FMU 2		Manage Fire for Multiple Objectives
Priorities with Supporting Rationale	<p>Firefighter and public safety is the primary concern.</p> <p>All lands are approved in FMU 2 to allow management of wildfire to meet multiple objectives.</p> <p>Suppression tactics will be utilized that limit damage or disturbance to the habitat and landscape.</p> <p>Multiple objective actions may be initiated on all BLM-managed lands within this FMU. This includes a DPA with the Arizona State Forestry Division. Arizona BLM has the personnel, expertise, equipment and communications to provide adequate fire management, incident dispatch, and fire suppression.</p> <p>Fire in this FMU is not full suppression, but suppression strategies may be chosen if the Agency Administrator if determines necessary. Fire and resource staff will make their recommendations to the Agency Administrator on various existing conditions.</p>	
Recommended Objectives and Strategies	<p>Incident objectives will identify resource objectives for wildfires managed to achieve resource objectives.</p> <p>Follow the Decision Criteria Checklist (Appendix D) to ensure the following:</p> <ul style="list-style-type: none"> • Threats to life, property, or public and firefighter safety are mitigated. • Review of the existing fire regime and condition class in the planning area is conducted to evaluate the conditions for managing a wildfire for multiple objectives. • An adopted monitoring plan in the ASD-FMP is followed. • Incident objectives identify resource objectives for wildfires managed to achieve resource objectives. 	

	<ul style="list-style-type: none"> • Beneficial accomplishments will be measured through specific quantified objectives. • No heavy equipment (such as dozers) will be used unless approved by the Agency Administrator. • Smoke in neighboring sensitive areas and communities is limited. • Visual Resources will be considered when fire management activities are being taken. • Cultural/paleontological resources are conserved and protected. • Strategies and tactics are developed to minimize the impacts or damage to rangeland, wildlife, and other improvements/developments. • Beneficial accomplishments will be measured through specific quantifiable objectives. • Impacts to special status species and their habitat are limited. • Spread of non-native species is minimized through the use of BMPs. • Resource Advisors (READ) are utilized. • The use of suppression tactics will be done so as to minimize soil disturbance. • Minimum impact suppression tactics (MIST) will be used in designated wilderness, ACECs, and riparian habitat. • In National Monuments, the objects identified in the Presidential Proclamation will be protected. • Late succession ponderosa pine stands are paramount to this FMU. Fires exhibiting a range of intensity are desirable to achieve DFCs.
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FMU 2	Fuels Treatment
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Priorities with Supporting Rationale	<p>ASD Fire/Fuels Staff will implement a science based, integrated vegetation management program that is consistent with DOI and BLM policy and direction, and meets the goals and objectives of the NFP.</p> <p>ASD Fire/Fuels Staff develops out-year program planning and budgeting information for treatments (prescribed fire, mechanical, and chemical) and activities (planning, monitoring, and cultural surveys) in accordance with the RMPs. Project areas, treatments, and activities are identified and developed in NFPORS. The ASD Fire/Fuels Staff, in coordination with resource managers, determines priorities for the annual POW. POWs are composed of treatments and activities that best meet DOI and BLM priorities.</p> <p>Rationale used during prioritizing treatments and activities in NFPORS for WUI and non-WUI areas include:</p> <ol style="list-style-type: none"> 1. Firefighter and public safety 2. Hazardous fuels reduction within/near WUI 3. Restoration of fire-dependent ecosystems (primarily condition class 2 areas) 4. Watershed improvement 5. Wildlife habitat improvement 6. Range improvement 7. Maintenance of ecosystems currently in fire condition class 1. <p><u>National Fire Plan</u>- Prioritize hazardous fuels program planning, funding, and implementation based on the NFP priorities (<i>Guidance for Implementation of Federal Wildland Fire Management Policy</i>, February 2009).</p> <p><u>Great Basin Pinyon-Juniper Woodland Ecological Zone</u>: The DFCs are that annual weeds such as cheatgrass are controlled, ladder fuels and downed woody debris are limited or not present, and juniper and piñon pine tree densities and cover occur at their historic range of variation. (<i>Grand Canyon-Parashant NM, Arizona Strip Field Office, and Vermillion Cliffs NM, Resource Management Plans</i>, February 2008, Chapter 2).</p>
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	<p><u>Mojave-Great Basin Transition Ecological Zone</u>: The DFCs are for fire to naturally reduce annual weed densities and cover, limit or reduce the invasion of juniper, and for the densities of shrubs, such as big sagebrush, to be maintained within their historic range of variability (<i>Grand Canyon-Parashant NM, Arizona Strip Field Office, and Vermillion Cliffs NM, Resource Management Plans, February 2008, Chapter 2</i>).</p> <p><u>Plains- Grassland Ecological Zone</u>: The DFCs are for a predominance of perennial grass cover, reduced cover of annual grasses, and for fire to naturally inhibit the invasion of woody shrubs such as rabbitbrush, snakeweed, and big sagebrush (<i>Grand Canyon-Parashant NM, Arizona Strip Field Office, and Vermillion Cliffs NM, Resource Management Plans, February 2008, Chapter 2</i>).</p> <p><u>Interior Chaparral Ecological Zone</u>: The DFCs are that fire naturally maintains shrub cover while reducing annual grass cover, the invasion of woody plants such as juniper and pinyon pine are controlled and the average age of chaparral stands is reduced through controlled fire or mechanical treatment (<i>Grand Canyon-Parashant NM, Arizona Strip Field Office, and Vermillion Cliffs NM, Resource Management Plans, February 2008, Chapter 2</i>).</p> <p><u>Riparian Ecological Zone</u>: The DFCs are that annual weed cover and density is controlled and ladder fuels and downed woody debris are limited or not present. Disturbances that can potentially reduce natural vegetation cover are managed to maintain adequate cover and mix of natural plant species (<i>Grand Canyon-Parashant NM, Arizona Strip Field Office, and Vermillion Cliffs NM, Resource Management Plans, February 2008, Chapter 2</i>).</p> <p><u>Ponderosa Pine Ecological Zone</u>: The DFCs are that “dog-hair thickets” are controlled, ladder fuels and downed woody debris are limited or not present, a high percent of large trees are maintained, and tree stand vigor is maintained through controlled fire and mechanical treatments (<i>Grand Canyon-Parashant NM, Arizona Strip Field Office, and Vermillion Cliffs NM, Resource Management Plans, February 2008, Chapter 2</i>).</p>
<p>Recommended Objectives and Strategies</p>	<p>ASD Fire Staff will work with Resource Management Specialists to identify opportunities and implement an effective integrated vegetation management program to achieve resource management objectives.</p> <p>ASD Fire/Fuels Staff will implement a science-based, integrated vegetation management program that is consistent with USDI and BLM policy and direction, and meets the goals and objectives of the NFP.</p> <p>ASD Fire Staff will work with Resource Management Specialists to identify opportunities and implement effective fire and non-fire treatments to achieve resource management objectives.</p> <p>Applicable DFCs, Management Actions (MA), Land use Allocations (LA), and Administrative Actions (AA) for Vegetation Management (VM) and Wildland Fire (WF) are identified in the following RMPs:</p> <p><u>Grand-Canyon Parashant National Monument</u> Record of Decision and Management Plan-2008 Chapter 2, Pages 2-1 to 2-31.</p> <p><u>Arizona Strip Field Office</u> Record of Decision and Resource Management Plan-2008 Chapter 2, Pages 2-1 to 2-27.</p> <p><u>Vermilion Cliffs National Monument</u></p>

	Record of Decision and Management Plan-2008 Chapter 2, Pages 2-1 to 2-23.
FMU 2	ESR
Priorities with Supporting Rationale	Natural recovery appears to be the preferred method of post-fire recovery. For ESR guidance, refer to: <ul style="list-style-type: none"> • <i>DOI-BLM Burned Area Emergency Stabilization and Rehabilitation Handbook</i>, H-1742-1 • <i>BLM AZ Programmatic Emergency Stabilization and Rehabilitation Plan</i>, BLM-AZ-EA-934-2006-0001, 2006
Recommended Objectives and Strategies	Burned areas will be assessed by the approved/delegated resource specialists to determine suitable and effective ESR needs to meet current and anticipated environmental conditions. Rehabilitation and restoration activities will be evaluated to assess effectiveness of treatments.
FMU 2	Community Assistance/Protection
Priorities with Supporting Rationale	To reduce human-caused fires, BLM will undertake education, enforcement, and administrative fire prevention mitigation measures. Education measures will include various media information including a signing program, information as to the natural role of fire within local ecosystems, and participation in fairs, in parades, and with the public. Enforcement will be accomplished utilizing fully qualified fire investigators to investigate human-caused wildfires. Employees interested in fire cause determination will be provided training opportunities to become fully qualified fire investigators. Administration includes expanded prevention and education programs with other cooperator agencies (<i>BLM Arizona Statewide Land Use Plan Amendment for Fire, Fuels and Air Quality Management</i> , September 2004, pg. 9).
Recommended Objectives and Strategies	Community assistance/protection objectives include identifying hazardous fuel reduction projects, public and firefighter safety issues, and partnering opportunities with local Firewise groups. <ul style="list-style-type: none"> • Accomplished by acting upon CWPPs with all federal, state, county, city, private, and local partners in compliance with the guidelines established in: <ul style="list-style-type: none"> ○ <i>Preparing a Community Wildfire Protection Plan-A Handbook for Wildland-Urban Interface communities</i>, 2004 ○ <i>Best Management Practices for Creating a Community Wildfire Protection Plan</i>, GTR-NRS-89, 2012 ○ <i>Southwest Community Wildfire Protection Plan Guide</i>, Southwest Strategy ○ <i>The Federal Land Assistance, Management and Enhancement Act (FLAME) of 2009</i> • Implement recommended actions within completed CWPPs or agency-equivalent prevention and mitigation plans. Coordinate and collaborate with CWPP partners during hazardous fuels treatment implementation. <ul style="list-style-type: none"> ○ Includes reducing risks to WUI, WUI infrastructure, agency administrative sites, high visitor use areas, and access/egress corridors. <p>The Arizona Firewise Communities program is the primary tool to achieve wildland fire hazards awareness to the public. Technical assistance is being provided by the BLM allowing Firewise groups to develop local plans that meet mutual goals with the BLM.</p>

4 WILDLAND FIRE OPERATIONAL GUIDANCE

4.1 Management of Unplanned Ignitions

4.1.1 Fire History

From 1980 through 2012, the ASD responded to 2,998 action type fires on BLM-managed lands as well as numerous assist fires on USFS and Arizona State Lands. The ASD averages 94 BLM fires and 16,289 acres burned per year. The fire season is usually May through early October, with the number of starts peaking in July and August. The majority of fires are class C or smaller in size. The ASD experiences multiple fire days 27% of the time for the current fire history period. Multiple fire days are identified by ASD as four or more fires in a day as this level of activity becomes a significant workload. Lightning was the most common cause of fires, accounting for approximately 85% of starts. Fires less than 10 acres accounted for 87% of the total, with only 2% burning over 1,000 acres.

Annual precipitation and the resulting fine fuel production create a significant impact on fire ignitions and resistance to control. The effect, however, is different between the fuel types when comparing brush and forested areas to the predominant grassland areas.

4.1.2 Suppression/Preparedness Actions

The ASD will manage all fires in accordance with management objectives based on current conditions and fire location. Firefighter and public safety is the first priority in all fire management and suppression actions. Strategies and tactics will be tailored to address areas of significant constraints including WUI, Wilderness, ACECs, critical habitat for T&E species, and areas of other resource constraints. Management responses are based on firefighter and public safety, FMU objectives, relative risk of resources, potential complexity, the ability to defend management boundaries, current conditions, and potential costs.

The document *Guidance for Implementation of Federal Wildland Fire Management Policy* (February 2009) states:

The current policy clearly states that wildland fire analysis will carefully consider the long-term benefits in relation to risks both in the short and long term:

Fire, as a critical natural process, will be integrated into land and resource management plans and activities on a landscape scale, and across agency boundaries. Response to wildland fire is based on ecological, social, and legal consequences of fire. The circumstances under which a fire occurs, and the likely consequences on firefighter and public safety and welfare, natural and cultural resources, and values to be protected dictate the Appropriate Management Response (AMR) to fire.

The intent of the *2009 Guidance for Implementation of Federal Wildland Fire Management Policy* is to solidify that the full range of strategic and tactical options are available and considered in the response to every wildland fire. These options are to be used to achieve objectives as described in Land/Resource Management Plans and/or FMPs, subject to clear processes defined to manage fire that crosses jurisdictional boundaries. Mutually developed objectives with adjoining jurisdictions for managing fires that cross jurisdictional boundaries will also be recognized.

This guidance also calls for increased dialogue and collaboration between federal agencies and tribal, local, and state agencies as plans are updated and implemented to manage wildfires in order to accomplish resource and protection objectives.

Required fire operations/suppression plans can be found in the *Interagency Standard for Fire and Fire Aviation Operations* (Red Book) and the Office of Fire and Aviation website at <http://www.fire.blm.gov/>. All plans for the ASD are located in the South Zone Interagency Logistics Center.

The operational role of the BLM in the wildland/urban interface is wildland firefighting, hazard fuels reduction, cooperative prevention and education, and technical assistance. Structural fire suppression is the responsibility

of tribal, state, or local governments as described in the *Interagency Standards for Fire and Fire Aviation Operations Manual*, Chapter 1, Federal Fire Program Policy and Guidance Overview, Elements of the Federal Wildland Fire Management Policy, #7 Wildland Urban Interface, pp. 1-3. Federal agencies may assist with exterior structural protection activities under formal interagency agreements that specify the mutual responsibilities of the partners, including funding (*Interagency Standards for Fire and Fire Aviation Operations Manual*).

Agency Administrators will ensure that their employees are trained, certified, and made available to participate in the wildland fire program locally, regionally, and nationally as the situation demands as described in the *Interagency Standards for Fire and Fire Aviation Operations Manual*, Chapter 1, Federal Fire Program Policy and Guidance Overview, Elements of the Federal Wildland Fire Management Policy, # 16 Agency Administrator and Employees Roles, pp. 1-4. Employees with a valid Red Card or other requested skills will support the wildland fire program as necessary. Agency Administrators are responsible and accountable for making employees available (*Interagency Standards for Fire and Fire Aviation Operations Manual*).

Emergency section 7 consultation protocol: The following protocol was originally developed with the USFWS as part of the Arizona Statewide LUPA and is now incorporated into the RMPs. It applies to unplanned ignitions that may impact federally-listed species or their habitats. Reporting requirements are described in Appendix F.

BLM will contact the regional USFWS office as soon as practical once an unplanned ignition starts if they determine that a listed species or critical habitat could be affected by the fire or fire management activities. USFWS will work with BLM during the emergency response to apply the approved conservation measures and make other site-specific recommendations. If the general framework for fire management actions as described in this consultation cannot be applied during the management activities (e.g., conservation measures, terms and conditions, standard operating procedures), BLM will consult on an emergency basis after the fire on any activities that may have affected the listed species or habitat. If this framework is followed, BLM will report to USFWS on the actions taken and effects to the species and its habitat following the fire, but no further consultation on that incident would be required. A BLM-USFWS Wildfire Suppression Documentation form is available. This form is used to document actions taken on a wildfire that may affect threatened or endangered species, their habitat, or designated critical habitat. This form constitutes the report to the USFWS on this wildfire suppression action. Please note that additional consultation may be required if conservation measures cannot be followed or if incidental take is exceeded (see FWS File # 02-21-03-F-0210). Depending upon scope and effects, separate consultation may be needed for Burned Area Emergency Response (BAER) activities. This form is included in Appendix F.

4.1.3 Training Activities: Qualifications and Fireline Refresher

Only qualified personnel will participate in wildland firefighting activities, prescribed fire implementation projects, and support functions. A list of qualified personal, training records, and annual requirements are maintained at the ASDO, in accordance to the *Interagency Standard for Fire and Fire Aviation Operations Manual* (Red Book) and Bureau policy.

4.1.4 Fire Season Readiness

Preparedness reviews will be completed each year prior to the onset of fire season. Established fire season on the ASD varies, based on precipitation amounts and the onset of lightning events. The ASD can expect the fire season to last from May through late September or October with activity peaking in July.

4.1.5 Detection

The ASD maintains a lookout at Black Rock Mountain during the established fire season. Two lookout points on Mt. Logan and a lookout at Whitney Pass Administrative Site are staffed as needed, based on lightning and weather patterns. Daily monitoring of weather and lightning patterns may trigger ASD-wide aerial reconnaissance by helicopter or fixed-wing aircraft. The ASD fire management program also relies on reports from other agencies, field office employees, and the public.

Whenever possible, all wildland fires within the ASD FPU will be reported immediately to Color Country Interagency Fire Center. Detection and fire reporting follow the statewide and local operating plans.

4.1.6 Fire Weather and Fire Danger

The fire season generally starts in mid-May and peaks in July and August, and rapidly tapers off by October, as shown by the number of historic fires by month. The fire danger as measured by Burning Index peaks in July. Normally in early July, a monsoonal pattern establishes itself over the southwestern United States, bringing higher humidities and scattered thunderstorm rains. Specific monthly climate summaries and area weather observations may be obtained at <http://www.wrcc.dri.edu/summary/climsmaz.html>.

The ASD is included in the Color Country Interagency National Fire Danger Rating System (NFDRS) Operating Plan, which is updated at least every five years. This plan is available in the South Zone Interagency Logistics Center. The calculation of daily and forecasted outputs in the Weather Information Management System (WIMS) is completed by the CCIFC.

Weather data from Remote Automated Weather Stations (RAWS) is very useful for strategic and tactical planning and operations. There are basically two types of weather data—historical and transient. Historical weather data is permanently stored and can be downloaded from WIMS. The historical data is formatted in different types of standard files (FWX, Fw9 etc.), and can be imported into such programs as Fire Family Plus. The other type of weather data is transient because it isn't stored permanently but can be viewed in several different websites. These include the Wildland Fire Management Information System (WFMI), National Weather Service websites, and the Real Time Observation Monitor and Analysis Network (ROMAN).

Table 4-1 lists 14 remote automated weather stations (RAWS) that are located within the FPU.

Table 4-1. RAWS Stations Used for the ASD FPU

Weather Station Name	Owner	Elevation (ft.)	NWS Station Number	Location	Years Data	FMU	NFDRS Station
Black Rock	BLM	7,080	020114	36.7944, - 113.757	1992-2012	2	No
Tweeds Point	BLM	5,200	020109	36.5819, -113.732	1985-2012	2	Yes
Olaf Knolls	BLM	2,900	020108	36.5072, -113.816	1985-2012	1	No
Yellow John Mountain	BLM	6,160	020217	36.155, -113.549	1987-2012	2	Yes
Mount Logan	BLM	7,605	020107	36.3531, -113.199	1985-2012	2	Yes
Nixon Flats	BLM	6,500	020113	36.3883, -113.158	1987-2012	2	No
Hurricane	BLM	5,445	020117	36.6992, -113.207	1994-2012	2	Yes
Robinson Tank	BLM	5,560	020111	36.4775, -112.842	1986-2012	2	No
Gunsight	BLM	5,280	020223	36.7044, -112.583	2006-2012	2	No
Buckskin Mountain	BLM	6,400	020224	36.9181, -112.2	2006-2012	2	No
Four Springs	BLM	6,560	020227	36.7936, -112.043	No data	2	No
Houserock	BLM	5,400	020225	36.5628, -111.983	No data	2	No
Paria Point	BLM	7,235	020226	36.7278, -111.822	No data	2	No
St. George	BLM	2,665	422809	37.0111, -113.613	2006-2012	1	No

4.1.7 Aviation Management

The ASD hosts one 90-day Mandatory Availability Period (MAP) exclusive use contract type III helicopter with a designated base at the St. George, UT airport. The helicopter module is managed by a fully qualified helitack crew. The ASD provides the helicopter supervisor, assistant helicopter supervisor, fire helicopter squad boss, and helitack crewmembers. In addition to the ASD staff, the Dixie NF may provide up to five helitack crewmembers and the BIA may provide one helitack crewmember.

The ASD hosts one 60-day MAP exclusive use contract Single Engine Airtanker (SEAT) with a designated base at the Mesquite, NV airport.

The current ASD aviation plan is available in the South Zone Interagency Logistics Office.

Aviation program oversight is provided by the ASD Unit Aviation Manager (UAM) or designee. This position oversees all aviation operations including fire and resource management aviation needs and reports to the ASD FMO.

4.1.8 Initial Attack (IA)

4.1.8.1 Management Area Suppression Priorities

The protection of human life is the single, overriding priority. Setting priorities among protecting human communities and community infrastructure, other property and improvements, and natural and cultural resources will be done based on the values to be protected, human health and safety, and the costs of protection. Once people have been committed to an incident, these human resources become the highest value to be protected (*Guidance for Implementation of Federal Wildland Fire Management Policy*, February 2009, pg. 11).

Geographic and local area coordination groups will establish a process to set protection priorities (*Guidance for Implementation of Federal Wildland Fire Management Policy*, February 2009, pg. 11). All unplanned ignitions in the ASD will be managed with actions consistent with preplanned dispatch protocols in conformance with resource management objectives identified in this FMP. Tactics and strategies will be based on the current and predicted weather and fire behavior. As fire complexity increases, additional staffing will be requested consistent with incident complexity.

The Agency Administrator will convey protection priorities, based on the RMP and FMP, to the geographic and national groups through an incident status report and ensure that protection priorities are known and carried out by the Incident Commander(s) (*Guidance for Implementation of Federal Wildland Fire Management Policy*, February 2009, pg. 11).

4.1.8.2 Dispatch Procedures

Normal dispatch hours from June 1 through September 30 are 0700 to 1900 hours, seven days a week. As activity warrants, CCIFC will staff as long as necessary.

All fire incidents are reported to the CCIFC. The CCIFC dispatches resources to incidents. Once on scene, all resources report to CCIFC for all resource and logistical needs. Logistical support will come from the South Zone Logistics Office once notified of the need by the CCIFC. Initial Attack (IA) dispatch and fire reporting procedures for the CCIFMA are located in the CCIFC.

Dispatchers will initiate dispatch response based on Run Cards and dispatch modification protocol approved by the Color Country FMO group. The “closest resource concept” will be the guiding principle in all ASD dispatch operations. ASD resources are not allowed to self-dispatch. Additional resources may be re-located as the situation requires. The IA IC has the responsibility to assess the situation and adjust the type and quantity of resources being dispatched. When in high to extreme fire danger or when ASD resources are not available, additional resources can also be ordered from adjacent federal, state, or local cooperators while in the IA phase of the fire, and from the Great Basin Geographic Coordination Center, through the CCIFC, for extended attack fires.

The CCIFMA has local logistics centers at the ASD Office (South Zone Interagency Logistics Center) and Cedar City, UT. Normal hours of operation for the South Zone Interagency Logistics Center, located in St. George, UT, are 0800 to 1800 hours from June 1 through September 30. As activity warrants, the center is staffed as long as necessary.

The CCIFC enters the dispatch-related information for all fires into Wildland Fire Decision Support System (WFDSS). The WFDSS process was developed to improve decision documentation, risk assessment/decision support, and operational implementation. The WFDSS process replaces the Wildland Fire Situation Analysis (WFSAs), Wildland Fire Implementation Plan (WFIP), Long-Term Implementation Plan (LTIP), and Strategic Implementation Plan (SIP), and enhances managers’ abilities to analyze fire conditions and develop risk-informed strategies and tactics.

4.1.8.3 Criteria for Initial Attack Response

The intensity of IA and the priority between competing incidents will vary based on the following considerations:

- Threats to human life
- Threats to high value private property and natural resources
- Fuel type
- Predicted fire behavior
- Natural resource and fire management objectives

4.1.8.4 Equipment

The IA resources for the ASD currently are 1 helicopter, 4 engines, 1 tactical water tender, and 1 reserve engine. The State of Arizona has been allocated one exclusive use SEAT for a period of 60 days. The Arizona State Office has elected to place the SEAT in the ASD where it will be staged at the Mesquite, Nevada airport. This places the SEAT in closer proximity to the high priority concerns for the ASD. Additionally, the cooperative relationship the ASD has with the Southern Nevada District allows for the best use of the Mesquite Airport, SEAT Managers, and UAMS. All engines used by the ASD have utility trucks. The Fuels and Prevention Program also maintains a Type 6 engine to provide support for these functions.

4.1.9 Extended Attack and Large Fire Suppression

A WFDSS documentation process is completed to evaluate management responses to wildfires that have exceeded IA response, exceeded planned management capability, and managed to achieve resource management objectives.

A complexity analysis is completed as part of the fire management process to determine the management level for the incident. Procedures and documentation requirements for transitioning to Type III, II, or I Teams will adhere to the protocol in the *Interagency Standards for Fire and Fire Aviation Operations Manual* (Appendices C through H).

The CCIFMA has three Type III- Incident Management Teams available.

4.1.10 Other Fire Management Considerations

Management area-specific considerations are identified in the individual management area descriptions within this document (Chapter 3).

4.1.11 Managing Wildfire for Multiple Objectives

The document *Guidance for Implementation of Federal Wildland Fire Management Policy* (February 2009) states:

“A wildland fire may be concurrently managed for one or more objectives and objectives can change as the fire spreads across the landscape. Objectives are affected by changes in fuels, weather, topography; varying social understanding and tolerance; and involvement of other governmental jurisdictions having different missions and objectives.”

Managers will use a decision support process (e.g., WFDSS) to guide and document wildfire management decisions. The process will provide situational assessment, analyze hazards and risk, define implementation actions, and document decisions and rationale for those decisions.

4.1.12 Emergency Equipment Rental Agreements (EERA)

See the South Zone Interagency Logistics Center Incident Service and Supply Plan, available in the South Zone Interagency Logistics Center. This plan is a supplement to the CCIFC Service and Supply Plan.

4.1.13 Assistance Agreements and Intra/Interagency Agreements

The Interagency Agreement for Fire Management states:

...that among the Federal Wildland Fire Management Agencies, the Interagency Agreement for Fire Management provides the framework and authority for cooperative arrangements for initial attack efforts by fire suppression forces that can arrive at a fire first, regardless of agency ownership. A Federal agency performing the initial attack will notify the agency that is responsible for the land as soon as ownership is determined, and will continue suppression pursuant to the procedures outlined in the Federal National Interagency Mobilization Guide. Additional provisions for fire suppression efforts are provided for emergency or a declared major disaster through United States Code Assistance Agreements, which includes Cooperative Agreements and Grants with state, local and non-profit entities provides for mutual or reciprocal fire protection assistance.

Interagency cooperation is vital in attaining fire management program objectives, coordination, and cooperation with other federal and state fire agencies. The ASD is a cooperative party and participates in the following local agreements.

- Joint Powers Agreement - A Joint Powers Agreement between the State of Arizona and various federal agencies is in effect. This agreement provides mutual wildfire suppression assistance and cooperation between the State Forester as the agent of all cooperating state agencies, and federal fire agencies.
- Joint Powers Operating Agreement - This plan, updated yearly, establishes fiscal operational procedures, including suppression billings, methods and contracts.
- Interagency Agreement between USDI, BLM, ASFO and Cedar City Field Office; USDI, NPS, Zion National Park; and USDA, USFS, Dixie NF R4 Region for Joint Occupancy of Owned Office and Related Space - This interagency agreement establishes the policy framework for coordinating occupancy by the USFS, BLM, and NPS into dispatch office, shop/warehouse, and related space located in Cedar City, Utah.
- Colorado Plateau Fire Management Area Annual Operating Plan: Color Country and Arizona Strip BLM District Offices, Bryce Canyon and Zion National Parks, Glen Canyon National Recreation Area, Southern Paiute BIA Field Office, Dixie and Kaibab NFs, 2010 - This operating plan includes guidance for detecting and reporting fires, wildland fire management (policy, large fire coordination, contacts between units, radio communication, and public use restrictions), obligations, and mobilization plan and unit aviation plan distribution.
- Memorandum of Understanding (MOU) between USDI Arizona Strip and Color Country BLM District Offices, Bryce Canyon and Zion National Parks, Glen Canyon National Recreation Area, Southern Paiute BIA Field Office and USDA Forest Service Dixie NF, Intermountain Region and Kaibab NF, Southwest Region, 2010 - This MOU states that the participating units may use the “closest forces” concept regardless of administrative boundaries; request or provide initial action, extended attack, detection, and prescribed fire resources to participating units; cooperate in compiling a Type III Incident Management Team with available qualified personnel for use on fires within their protection areas; cooperate in achieving training objectives; coordinate fire prevention operations, including the implementation of public use restrictions; coordinate any boundary air operations between the units; and agree to follow any limitations or requirements on ordering resources established within the Great Basin and Southwest Area Mobilization Guides.
- Direct Protection Agreement between the State of Arizona and the Arizona BLM - This agreement identifies protection responsibilities and procedures the two agencies will follow. The state lands located on the Arizona Strip not included in a fire protection district shall be protected by the ASD.
- Color Country Interagency Fire Management Annual Operating Plan (AOP), 2012 - The purpose of this (AOP) is to document agreement and commitment to fire management assistance and cooperation. This plan is also designed to set forth a framework for building and assessing an interagency organization and approach to all aspects of fire management within the Color Country Interagency Fire Management Area. This (AOP) covers the lands administered by the following agencies: Dixie NF, Color Country District Office BLM, Grand Staircase Escalante National Monument BLM, Arizona Strip District Office including Grand Canyon-Parashant and Vermilion Cliffs National Monuments BLM, Zion National Park, Bryce Canyon National Park, Cedar Breaks National Monument, Pipe Spring National Monument, Glen Canyon National Recreation Area, Southern Paiute Field Office of Bureau of Indian Affairs, and State of Utah, Division of Forestry, Fire and State Lands acting for Kane, Beaver, Garfield, Iron, Wayne, Piute and Washington Counties.

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- Color Country Interagency Fire Management Area Interagency Fire Managers Charter, October 29, 2003 - The purpose of this charter is to enhance and coordinate integration of wildland fire management activities and plans on an interagency regional basis in southwest Utah and northwest Arizona.
 - Color Country Interagency Fire Center Mobilization Guide - This guide describes how the CCIFC will position and use established resources to meet anticipated and existing fire protection needs within the CCIFMA to best serve the public.
 - MOU between Arizona and The Nature Conservancy (TNC) - This MOU establishes the frame work of cooperation and coordination between the BLM and TNC in Arizona concerning (a) management of public lands of mutual interest to both parties, including conservation and protection of resource values and maintenance and restoration of biological diversity, and (b) identifying, evaluating and protecting private lands that have exceptional natural resource values by placing in public ownership or other appropriate status.

4.1.14 Contract Suppression and Prescribed Fire Resources

The Coconino County (CREC) crew based in Flagstaff, Arizona and the Veterans Green Corps are used as a fuels management resource.

Contract suppression resources are available through the normal resource ordering process. Contract resources for prescribed fire and fuels work are available through the DOI Indefinite Delivery/Indefinite Quantity (IDIQ) contract located at: http://www.nifc.gov/fuelsreductionidiq/dsp_frames.php?state=az.

4.2 Emergency Stabilization and Rehabilitation (ESR)

An ESR Handbook is available and provides operational guidance for applying ESR policy. It includes a common cost-effectiveness analysis for evaluating proposed actions, a standard project accomplishment report format, and a mechanism for archiving and broadly disseminating the results of monitoring treatment effectiveness. Additional Departmental guidance and procedures are contained in 620 DM 3. For information, see the *BLM Supplemental Emergency Stabilization and Rehabilitation Guidance*. This supplement provides specific BLM guidance and is tiered to the *2002 Department of the Interior (DOI) ESR Handbook* http://www.blm.gov/pgdata/etc/medialib/blm/wo/Information_Resources_Management/policy/blm_handbook.P ar.52739.File.dat/h1742-1.pdf relative to planning and implementing ESR projects on public lands administered by the BLM. Treatment activities must conform to the *BLM Supplemental Emergency Stabilization and Rehabilitation Guidance*, the RMP.

The ASD does not have a formal Fire Rehabilitation Plan. If ESR is needed, an interdisciplinary Burned Area Rehabilitation (BAR) team will be formed or ordered through the Resource Ordering and Status System (ROSS) through the CCIFC. Specific ESR actions may be considered on a case-by-case basis depending on the severity of the burn, vegetation type, and resource values at risk.

4.3 Management of Planned Treatments

4.3.1 Prescribed Fire

It is anticipated that the ASD will conduct fuels treatments on 4,000-14,000 acres of BLM-administered lands annually, based on current out-year planning and available funding.

4.3.1.1 Planning and Documentation

Projects to treat areas outside the WUI are prioritized as follows:

1. Fuels reduction near federally listed CAR from wildfire, as needed.
2. Fuels reduction around other communities of interest, as needed.
3. Treatment of FRCC 3 and FRCC 2 lands.
4. Maintenance of FRCC 1 lands.

Project-level analysis through the NEPA process and other state and federal regulatory compliance processes document the purpose and need for treatment and identifies the goals and objectives that the prescribed fire treatment is intended to realize. The direction for the management areas identified in the RMPs permits the application of prescribed fire in various management areas.

Fuels and Fire Staff will coordinate with Resource Staff Specialists, agency cooperators, and the affected public during project planning and development. All prescribed fire projects will have approved NEPA documentation and an approved burn plan prior to implementation. Treatment units must have archaeological and wildlife clearances.

Prescribed burning is conducted throughout the year. Broadcast burning of ponderosa pine is typically conducted from fall through early spring. Broadcast burning of sagebrush and pinyon-juniper is conducted from late spring through fall. Pile burning may be conducted at any time in some locations, though most burning occurs during the winter, spring, or fall to reduce the risk of an escaped fire. A list of proposed fuels treatment projects for a minimum of three years beyond the current fiscal year is maintained in the NFPORS program. This program will be updated annually to ensure that fuels treatment projects are identified for out-years.

The BLM will implement the conservation measures as stated in the RMPs.

All prescribed fire implementation will be completed according to the *2008 Interagency Prescribed Fire Planning and Procedures Implementation Guide* (July 2008) and the *BLM Supplement to the Guide*.

Prescribed Fire Burn Bosses are required to evaluate prescribed burns each day upon completion of burning to assess results and effectiveness of the burn as implemented. These evaluations are maintained as part of the project file. Long-term effectiveness monitoring is accomplished by the resource staff through analysis of study transects (photo plots, Brown's transects, FEAT/FIREMON Integrated [FFI]) established prior to treatment. These transects are subsequently re-assessed at scheduled intervals and the data is stored in electronic format.

Maps displaying prescribed fire treatments since 1998 are maintained in Geographical Information System (GIS) by the local fuels staff in the ASD. Future prescribed fire treatments will also be listed in the GIS database for the ASD.

The following Cultural Resource BMPs will occur on all treatments identified in a proposed action:

- All ground disturbing activities will follow Section 106 NHPA guidelines which state that all ground disturbing activities will be surveyed at Class III levels prior to treatment implementation. All cultural resource sites located on the survey will be avoided as well as avoidance of all previously recorded sites. These sites will be flagged and identified as no entry buffer areas by an ASD Archaeologist prior to treatment implementation.
- All field personnel will be briefed on the location and avoidance tactics to be utilized during ground disturbing activities.
- All non-ground disturbing activities will be coordinated with the ASD Archeologist prior to treatment implementation.
- A Class I record search will be completed for all treatments prior to project implementation.
- Class III surveys, following Section 106 guidelines, will be completed for all treatments that involve ground disturbing activities.

The following Cultural Resource Mitigation Stipulations will apply if new sites are unearthed during project implementation (all treatment types):

- Any archaeological or historical artifacts or remains, or vertebrate fossils discovered during operations shall be left intact and undisturbed; all work in the area shall stop immediately and an ASD Archaeologist shall be notified. Commencement of operations shall be allowed upon clearance by the Agency Administrator.
- An additional cultural and paleontological resource survey may be required in the event the project location is changed or additional surface-disturbing operations are added to the project after the initial survey. Any such survey would have to be completed prior to commencement of operations.

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- If in connection with operations under this authorization, any human remains, funerary objects, sacred objects or objects of cultural patrimony as defined in the Native American Graves Protection and Repatriation Act (L. 101-601; Stat. 3048; 25 U. S. C. 3001) are discovered, the Prescribed Fire Burn Boss, Project Manager, or Crew Supervisor shall stop operations in the immediate area of the discovery, protect the remains and objects, and immediately notify an ASD Archaeologist and the Agency Administrator of the discovery. The Prescribed Fire Burn Boss or Crew Supervisor shall continue to protect the immediate area of the discovery until notified by the ASD Archaeologist and the Agency Administrator that operations may resume.
 - Section 106 of the NHPA (1966) requires government agencies to take into account the effect of an undertaking on all federal lands. Since the proposed project involves an undertaking that may require ground-disturbing activities—for example, hand-line construction, mechanical grubbing, vehicle and equipment use—the project area will be surveyed (Class I and Class III) for cultural resources prior to implementation of the fireline and infrastructure preparation work.
 - Upon completion of the Class III cultural resource survey, the ASD Archaeologist will supervise the implementation phase, which includes protection and preservation of the cultural resource sites discovered on the survey. This task will be accomplished by the installation of flagged buffer areas that will serve as avoidance areas during all phases of project implementation. The Fuels Program Manager shall review the prescribed cultural resource protection treatments with an ASD Archaeologist and ensure that a copy of the cultural resource report summary is placed in the project folder.
 - All identified cultural sites will be avoided during ground-disturbing activities such as line construction, clearance around infrastructure, and certain types of vehicle travel. The ASD Archaeologist will be consulted during control line scouting and placement and will have the opportunity to visit proposed control lines with Fuels Program Manager/Project lead prior to construction.

4.3.1.2 Air Quality and Smoke Management

In accordance with the project plan and smoke management permits, a monitoring plan will be established and reviewed for conformance. A Smoke Permit from the Arizona Department of Environmental Quality (ADEQ) will be obtained. Lists of proposed projects must be submitted to the state by February 1st of each year. Permits are issued by March 1st. Prior day approval for each burn is required the day before planned ignition from the ADEQ. BMPs from *the Interagency Smoke Management Guide* are incorporated into individual prescribed burn plans. Regulations enforced by ADEQ meet all national and regional air quality standards.

There are no air quality non-attainment areas in the ASD.

The WFDSS website has links that allow the user to model smoke production and also provides a valuable monitoring tool. All wildland fires will be managed in compliance with the ADEQ regulations.

4.3.2 Non-Fire Fuels Treatments

4.3.2.1 Annual Activities for Implementation

The ASD develops out-year program planning and budgeting information for treatments in accordance with the preferred alternative in the RMP. Projects are identified and developed in NFPORS.

The development of treatment proposals is typically accomplished one to three years in advance of planned treatments. Field reconnaissance and interdisciplinary analysis are completed one to two years in advance of project implementation. All specific non-fire fuels treatment project plans include pre/post project criteria. For specific action items, refer to each individual project plan.

Fuels projects are prioritized using the Hazardous Fuels Prioritization and Allocation System (HFPAS) at the Department level. The ASD follows the NFP/Hazardous Fuels and Community Assistance guidelines. The ASD determines priorities for the annual POW. POWs are composed of treatments and activities that best meet USDI and BLM priorities.

Most treatments are either manual or mechanical thinning treatments, pre-treatments for prescribed burns, or the application of herbicide. Manual and mechanical treatments include thinning with chainsaws or vehicle-mounted cutters, piling, mowing, crushing, chaining, and contracted logging. Mechanical treatments also may be used where prescribed fire is not safe or viable. Chemical treatments are typically proposed by the range and wildlife staffs. Non-fire fuels treatments require NEPA analysis and documentation. Project areas must have archaeological and wildlife inventories.

The ASD has implemented biomass utilization stewardship contract projects including a combination of logging and firewood removal. Contract crews and equipment may be used for mechanical fuels reduction projects such as thinning and preparation work prior to prescribe burning. Implementation of non-fire fuels treatments may be conducted by contracting non-federal resources. Contract resources are currently being used for mechanical and chemical fuels reductions treatments.

4.3.2.2 Reporting and Documentation Requirements

Project-level reporting requirements have been established and include submissions in Rangeland Improvement Project System (RIPS), AWP, and NFPORS. Documentation requirements including weather, monitoring, and project notes are completed or reviewed by the project manager. For information on the requirements, refer to the individual project plans.

4.4 Fire Prevention, Community Education, Community Risk Assessment, and other Community Assistance Activities

4.4.1 Annual Prevention Program

The ASD Fire Prevention Program strives to develop and apply efficient and effective prevention efforts to minimize unwanted human-caused wildfires. The prevention program focuses on mitigation through education, aimed at changing people's behavior through awareness and knowledge. This is accomplished through printed materials, mass media, personal contacts, group and school presentations, signing, events, and parades.

The fire prevention program is also focused on reducing the risk from wildfire in WUI areas. A primary goal is to work collaboratively and cooperatively with communities, agencies, groups, organizations and private homeowners to develop and implement citizen-driven solutions for mitigating wildfire hazards and risks. The mitigation, fire, and fuels staff is developing and will continue to develop cohesive partnerships with community stakeholders. Those partnerships will increase community and public awareness and help them to understand and appreciate the importance of hazardous fuel reduction and risk mitigation. Additionally, ASD fire staff works in collaboration with the Arizona State Forestry Division (ASFD), local fire departments, counties, and other cooperators in preparing CWPPs which will establish guidelines and procedures for managing incidents with high risk or catastrophic potential. The Fire Prevention Plan was developed with Risk Assessment and Mitigation Strategies (RAMS) and is available through the Fire Prevention Staff.

4.4.2 Special Orders and Closures

During times of high fire danger, restrictions and/or closures may be imposed to mitigate the risk of wildland fires. Emergency closures have a substantial impact on the public and are only used under the most severe conditions. All special orders and closures will be coordinated with local cooperators and regional agencies.

The ASD FMO will make recommendations to the Arizona Strip District Manager (ASDM) for the approval of restrictions and/or closures. Those restrictions and/or closures recommendations will follow the guidelines outlined in the *Interagency Closures and Restriction Tool Box* and will be implemented in the interest of public safety.

4.4.3 Industrial Operations and Fire Precautions

Industrial operations are limited and have very little impact on BLM public lands as a source of unplanned human ignitions on the ASD. Some commercial mining operations are active on the ASD.

4.4.4 Community Assistance, Mitigation, and Prevention Education

Fire mitigation and prevention are an active part of the ASD fire management program. Details of the prevention program may be found in the *Arizona Strip District Wildland Fire Prevention Plan*. Current mitigation projects can be found on the Arizona BLM website (under fire management), or through the national BLM Fire and Aviation website (under Snapshots).

The operational roles of the BLM in the WUI entail wildland firefighting, hazardous fuels reduction, cooperative interagency mitigation and prevention education, as well as technical assistance provided to individual landowners and communities in the WUI. Structural fire suppression is the responsibility of tribal, state, and/or local governments, as described in *the Interagency Standards for Fire and Fire Aviation Operations Manual*.

Public awareness programs (Arizona Firewise Communities) are a major emphasis of the zone's fire mitigation program, while prevention messages are also delivered at public functions and through various field messages (signs) and through dissemination of literature at public functions.

4.4.5 Community Assistance/Protection

There are 8 communities within the FPU that are listed as CAR, 6 of which have a CWPP in place. Table 4-2 lists these communities and their CWPP status:

Table 4-2. Communities at Risk and CWPP Status

Community	FMU Number/ Name	WUI Risk Rating	Federal Lands	CWPP Status	CWPP Date
Beaver Dam	1	Moderate	BLM	Mohave County CWPP	6/2009
Littlefield	1	Moderate	BLM	Mohave County CWPP	6/2009
Scenic	1	Low	BLM	Mohave County CWPP	6/2009
Colorado City	2	Moderate	BLM	Mohave County CWPP	6/2009
White Sage	2	Moderate	BLM	None listed.	
Fredonia	2	Moderate	BLM	None listed.	
Potato Valley	2	High	BLM	Mohave County CWPP	6/2009
Cane Bed	2	Moderate	BLM	Mohave County CWPP	6/2009

The Rural Fire Assistance (RFA) Program was a new initiative in 2001 under NFP Community Assurances. The RFA Program improves the local fire capability by assisting rural fire departments in meeting basic needs for wildland fire equipment, training, organization, and prevention activities. Of greater importance, the safety of both rural and federal firefighters is enhanced when local departments are fully equipped with proper wildland safety equipment, updated radios, well rounded training curriculum, and other essential tools for wildland firefighting.

BLM has built the RFA Program around interagency cooperation and collaboration with the state, local fire departments, and other federal wildland agencies.

Through collaboration, a one-stop process has been established for both the USDA and the USDI RFA grants. One application is sent out and made available on the web to fire departments. The Fire Education and Mitigation Specialist and FMO have contacted local rural fire chiefs to explain the benefits of the program and provide assistance on grant preparation.

An interagency panel made up of federal, state, state fire marshal, and rural fire district association representatives review and make selections for grants.

BLM established an agreement with ASFD to collectively manage the award of RFA grants. This provides needed funding to ASFD, saves BLM FTE, and ensures funding for grants are carried out.

5 MONITORING AND EVALUATION

FMPs describe fire management forces, equipment, support and administrative personnel and associated budgets needed to manage the fire program. FMPs do not make new decisions or land use allocations and do not qualify as documents constituting discretionary federal actions.

The ASD-FMP is a working reference for wildland fire management within the ASD. The plan will be reviewed annually and revised as needed to ensure that the strategic guidance provided in the plan is assisting the ASD in meeting its resource management and fire management goals and objectives. The review will also ensure that the fire program is being implemented in a safe, cost effective manner. As national wildland fire performance measures are issued, monitoring and evaluation protocols will be developed to meet those requirements and follow USDI and BLM guidelines.

When implementation level plans (e.g., Fuels Management Plans) are prepared, additional environmental analysis and documentation will be required. This will include ESA Section 7 consultation (Appendix G) and Section 106 cultural consultation according to IB 2004-112.

Monitoring and evaluation of the fire program will occur to determine if the program and associated projects are meeting resource plan direction and to determine if the costs of implementing the fire program are occurring as predicted.

Monitoring related to wildland fire or fire-related projects falls under the general monitoring and evaluation guidelines outlined in the ASFO, GCPNM, and VCNM RMPs. Site-specific monitoring needs are identified in analysis for individual fire-related projects. Project level plans will be evaluated to ensure that the treatment/actions meet the resource objectives for the project as identified in the ASD Wildland Fire Monitoring Plan (Appendix E).

GLOSSARY OF TERMS

Whenever possible, terms were taken from the National Interagency Fire Center's (NIFC) glossary of wildland fire-related terms. The remaining terms are from the glossaries of LUPs and related government documents.

Air Quality: The composition of air with respect to quantities of pollution therein; used most frequently in connection with "standards" of maximum acceptable pollutant concentrations. Used instead of "air pollution" when referring to programs.

Area of Critical Environmental Concern (ACEC): Acreage within BLM public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historical, cultural, or visual values; fish and wildlife resources, or other natural systems or processes; or to protect life and safety from natural hazards.

Best Management Practice (BMP): Site-focused actions that describe how to operate to ensure sustainability and minimization of impacts.

Biological Assessment (BA): A document prepared by an action agency for consultation on a proposed action. A BA defines the biological requirements, habitat utilization, baseline habitat conditions, and the probable project implementation (short-term) and post-project (long-term) effects of the proposed action for all ESA listed, proposed, and candidate species and/or their proposed or designated critical habitat that may be affected by the proposed action.

Biological Opinion (BO): Prepared by the USFWS when an action agency determines that a proposed action is "Likely to Adversely Affect" a listed, proposed, or candidate specie(s) and/or their proposed or designated critical habitat. A BO includes reasonable and prudent measures with nondiscretionary terms and conditions that are necessary to minimize the impact of incidental take associated with the action.

Clean Air Act (CAA): A federal law enacted to ensure that air quality standards are attained and maintained. Initially passed by Congress in 1963, it has been amended several times.

Communities at Risk (CAR): Also known as NFP Communities, CAR are WUI communities that are at risk from wildland fire due to potential loss of property, degradation of air or water quality, and risk to human life and health.

Community Wildfire Protection Plan (CWPP): A plan developed in the collaborative framework established by the Wildland Fire Leadership Council and agreed to by state, tribal, and local government, local fire department, other stakeholders, and federal land management agencies managing land in the vicinity of the planning area. A CWPP identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment on Federal and non-Federal land that will protect one or more at-risk communities and essential infrastructure and recommends measures to reduce structural ignitability throughout the at-risk community. A CWPP may address issues such as wildfire response, hazard mitigation, community preparedness, structure protection, or all of the above.

Critical Habitat: Under the ESA, critical habitat is defined as habitat of federally listed threatened or endangered species where those physical and biological features essential to conservation of the species are found and which may require special management considerations or protection. This habitat may currently be occupied or determined by the Secretary of the Interior to be essential for areas outside the species' current range.

Cultural Resources: Cultural resources are districts, sites, buildings, structures, and objects that contain evidence of past human activities. Cultural resources that are listed or eligible for listing on the National Register of Historic Places are called historic properties. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on all historic properties.

Desired Future Condition (DFC): Used to describe the future condition of federal forests and rangeland resources that meet management objectives. DFC is based on ecological, social, and economic considerations during the land and resource management planning process. DFC is usually expressed as ecological status or management status of vegetation and desired soil qualities.

Ecosystem: An interacting natural system including all the component organisms together with the abiotic environment and processes affecting them.

Emergency Stabilization and Rehabilitation (ESR): Emergency stabilization actions are initiated within one year of a fire to stabilize and prevent unacceptable damage of natural and cultural resources, minimize threats to life and property resulting from the effects of a fire, and repair/replace/construct physical improvements necessary to prevent degradation of land or resources. Rehabilitation actions are taken within three years of the fire to repair or improve lands that are unlikely to recover to a management-approved condition, and repair or replace minor facilities damaged by fire.

Endangered Species: Any species of animal or plant in danger of extinction throughout all or a significant portion of its range and so designated by the Secretary of Interior in accordance with the 1973 ESA.

Endangered Species Act (ESA): As amended, the ESA of 1973 establishes a national program for conserving T&E species of fish, wildlife, plants, and the habitat on which they depend. ESA is intended to protect species or subspecies of plants and animals that are of “aesthetic, ecological, educational, historical, recreational, and scientific value. It may also protect the listed species’ proposed or designated critical habitat, the geographic area occupied by or essential to the species.

Environmental Assessment (EA): Environmental Assessments were authorized by the NEPA of 1969. They are concise, analytical documents prepared with public participation that determine if an EIS is needed for a particular project or action. If an EA determines an EIS is not needed, the EA becomes the document allowing agency compliance with NEPA requirements.

Environmental Impact Statement (EIS): A detailed public document which complies with NEPA law and regulation; an EIS describes a major Federal action which significantly affects the quality of the human environment, provides alternatives to the proposed action, and analyzes the effects of the proposed action.

Extended Attack: When a wildland fire has not been contained or controlled by IA forces and more firefighting resources are arriving, en route, or being ordered by the IA Incident Commander. Extended Attack implies that the complexity level of the incident will increase beyond the capabilities of initial attack incident command.

Fire-Adapted Ecosystem: An ecosystem with the ability to survive and regenerate in a fire-prone environment.

Fire Frequency (Fire Return Interval) (FRI): The number of years between two successive fire events for a given area; also referred to as fire-free interval or fire-return interval.

Fire Management Plan (FMP): A plan which identifies and integrates all wildland fire management and related activities within the context of approved land/resource management plans. It defines a program to manage wildland fires (wildfire, prescribed fire, and WFU). The plan is supplemented by operational plans, including but not limited to preparedness plans, preplanned dispatch plans, and prevention plans. FMPs assure that wildland fire management goals and components are coordinated.

Fire Management Unit (FMU): A land management area definable by objectives, management constraints, topographic features, access, values to be protected, political boundaries, fuel types, major fire regime groups, etc. that set it apart from the characteristics of an adjacent FMU.

Fire Program Analysis (FPA): The new fire analysis software program that became available in October 2004. The first module analyzes IA resources at the FO level.

Fire Planning Unit: The geographic scope of the landscape defined for the fire management analysis. A FPU consists of one or more FMUs. FPUs may relate to a single administrative unit, a sub-unit, or any combination of units or sub-units. FPUs are scalable and may be contiguous or non-contiguous. FPUs are not predefined by agency administrative unit boundaries, and may relate to one or more agencies. They may be described spatially.

Fire Regime: Periodicity Description of the patterns of fire occurrences, frequency, size, severity, and sometimes vegetation and fire effects as well, in a given area or ecosystem. A fire regime is a generalization based on fire histories at individual sites. Fire regimes can often be described as cycles because some parts of the histories usually get repeated, and the repetitions can be counted and measured, such as FRI.

Fire Regime Condition Class (FRCC): A qualitative measure classified into three classes describing the relative degree of departure from historical fire regimes, possibly resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, canopy closure, and fuel loadings.

- Condition Class 1. For the most part, fire regimes in this Fire Condition Class are within historical ranges. Vegetation composition and structures are intact. Thus, the risk of losing key ecosystem components from the occurrence of fire remains relatively low.
- Condition Class 2. Fire regimes on these lands have been moderately altered from their historical range by either increased or decreased fire frequency.
- Condition Class 3. Fire regimes on these lands have been significantly altered from their historical return interval. The risk of losing key ecosystem components from fire is high. Fire frequencies have departed from historical ranges by multiple return intervals. Vegetation composition, structure and diversity have been significantly altered. Consequently, these lands verge on the greatest risk of ecological collapse.

Fire Severity: A qualitative assessment of the heat pulse directed toward the ground during a fire. Burn severity relates to soil heating, large fuel and duff consumption, consumption of the litter and organic layer beneath trees and isolated shrubs, and mortality of buried plant parts.

Fuel Model (FM): Simulated fuel complex (or combination of vegetation types) for which all fuel descriptors required for the solution of a mathematical rate of spread model have been specified.

Fuel Reduction: Manipulation, including combustion, or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control.

Fuel Type: An identifiable association of fuel elements of distinctive species, form, size, arrangement, or other characteristics that will cause a predictable rate of spread or resistance to control under specified weather conditions.

Hazardous Fuels: A fuel complex defined by kind, arrangement, volume, condition, and location that presents a threat of ignition and resistance to control.

Historic Fire Regime (HFR): Periodicity and pattern of naturally occurring fires in a particular area or vegetative type, described in terms of frequency, biological severity, and area of extent.

Initial Attack (IA): A planned response to a wildfire given the wildfire's potential fire behavior. The objective of IA is to stop the fire and put it out in a manner consistent with firefighter and public safety and values to be protected.

Land Use Plan (LUP): A set of decisions that establish management direction for land within an administrative area; an assimilation of land-use-plan-level decisions developed through the planning process regardless of the scale at which the decisions were developed.

Lightning Activity Level (LAL): Part of the National Fire Danger Rating System (NFDRS). A number, on a scale of 1 to 6, which reflects frequency and character of cloud-to-ground lightning (forecasted or observed). The scale for 1 to 5 is exponential, based on powers of 2 (i.e., LAL 3 indicates twice the lightning of LAL 2). LAL 6 is a special category for dry lightning and is closely equivalent to LAL 3 in strike frequency.

Memorandum of Understanding (MOU): An official written statement of an agreement between management agencies and/or other partners.

Minimum Impact Suppression Tactics (MIST): The concept of MIST is to use the minimum amount of force necessary to achieve wildland fire management protection objectives, consistent with land and resource management objectives. The application of strategy and tactics that effectively meet suppression and resource objectives with the least environmental, cultural and social impacts.

Multiple Fire Day: A day with both a weather observation and a number of fires equal to or greater than that determined to be a significant workload.

National Environmental Policy Act (NEPA): The NEPA of 1969 requires an environmental analysis and public disclosure of federal actions.

National Fire Danger Rating System (NFDRS): A uniform fire danger rating system that focuses on the environmental factors that control the moisture content of fuels.

National Fire Plan (NFP): The Secretaries of USDI and USDA initiated the NFP in 2000 to address the needs identified in the Federal Wildland Fire Mitigation Plan. The NFP is not an actual document, but a nationally coordinated effort to protect communities and natural resources from the harmful effects of increasing wildland fire occurrence and severity in the United States.

National Interagency Fire Center (NIFC): A facility located at Boise, Idaho, jointly operated by several federal agencies, dedicated to coordination, logistical support, and improved weather services in support of fire management operations throughout the United States.

National Wildfire Coordinating Group (NWCG): A group formed under the direction of the Secretaries of the Interior and Agriculture to improve the coordination and effectiveness of wildland fire activities and provide a forum to discuss, recommend appropriate action, or resolve issues and problems of substantive nature.

Noxious Weed: Any plant designated by a federal, state, or county government to be injurious to public health, agriculture, recreation, wildlife, or any public or private property. Noxious weeds generally possess one or more of the following characteristics: aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host for serious insects or diseases, and generally non-native.

Preparedness: Activities that lead to a safe, efficient, and cost-effective fire management program in support of land and resource management objectives through appropriate planning and coordination.

Preparedness Level (PL): Increments of planning and organization readiness commensurate with increasing fire danger.

Prescribed Fire: Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist and NEPA requirements must be met prior to ignition.

Prescribed Fire Plan (Burn Plan): A plan required for each fire application ignited by management. Plans are documents prepared by qualified personnel, approved by the agency administrator, and include criteria for the conditions under which the fire will be conducted (a prescription). Plan content varies among the agencies.

Prescription: Measurable criteria that define conditions under which a prescribed fire may be ignited, guide selection of AMR, and indicate other required actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.

Prevention: Activities directed at reducing the number of person-caused fires, including public education, law enforcement, dissemination of information, and the reduction of fuel hazards.

Rehabilitation: Efforts undertaken within three years of a wildland fire to repair or improve fire damaged lands unlikely to recover to a management approved conditions or to repair or replace minor facilities damaged by fire.

Remote Automatic Weather Station (RAWS): A weather station that transmits weather observations via GOES satellite to the WFMI system.

Resource Management Plan (RMP): A document prepared with public participation and approved by an agency administrator that provides general guidance and direction for land and resource management activities for an administrative area. The RMP identifies the need for fire's role in a particular area and for a specific benefit. The objectives in the RMP provide the basis for the development of fire management objective and the fire management program in the designated area.

Sensitive Species: Those plant and animal species identified by the BLM State Director as sensitive, usually in cooperation with the State Agency responsible for managing the species. Sensitive species are also defined as those (a) which are under status review by the USFWS or NOAA Fisheries; or (b) whose numbers are declining so rapidly that Federal listing may become necessary; or (c) with typically small and widely dispersed populations; or (d) inhabiting ecological refugia of other specialized or unique habitats.

Special Status Species: Collectively, federally listed or proposed and Bureau sensitive species, which include both Federal candidate species and delisted species within 5 years of delisting.

Suppression: The work involved in extinguishing or containing a wildland fire, beginning with its discovery.

Threatened Species: Any species that either is or is likely to become endangered within the near future throughout all or a significant portion of its range and that has been designated in the Federal Register by the Secretary of Interior as such.

Use of Wildland Fire: Management of either wildfire or prescribed fire to meet resource objectives specified in Land/Resource Management Plans (synonym: Fire Use).

Visual Resource Management (VRM): The inventory and planning actions taken to identify visual values and to establish objectives for managing those values; and the management actions taken to achieve the visual management objectives.

Watershed: The area of land bounded by a divide, that drains water, sediment, and dissolved materials to a common outlet at some point along a stream channel, or to a lake, reservoir, or other body of water; also called drainage basin or catchment.

Weather Information Management System (WIMS): A centralized weather data processing system at which daily fire danger ratings are produced.

Wilderness Study Area (WSA): A WSA must be managed in a manner so as not to impair suitability for preservation and designation as Wilderness. Within WSAs, fuels and vegetation treatments and wildland fire management activities should follow BLM Manual H-8550-1: *Interim Policy for Lands Under Wilderness Review* (USDI 1995).

Wildfire: An unplanned ignition caused by lightning, volcanoes, unauthorized, accidental human caused actions and escaped prescribed fires.

Wildland Fire: A general term describing any non-structure fire that occurs in the vegetation and/or natural fuels.

Wildland Urban Interface (WUI): The area, line, or zone where structures or other human development meet or intermingle with undeveloped wildland or vegetative fuels.

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Appendix A - Workforce and Equipment Identification

The wildland fire management organization is based on the Fire Program Decision Support System and approved NFP additions. The Program Labor Plan for the ASD is developed in accordance with the AZ BLM statewide and ASD workforce plan. Personnel who are funded for the entire year through fire/fuels program dollars are considered base staff. This base funding is allocated annually to the preparedness (LF1000000) and hazardous fuels (LF3100000) sub-activity management codes. Project-funded personnel are staff positions which receive fire/fuels funding for part of the work year. This level of funding for fire/fuels projects is required for specific project planning with implementation measured in work months. The fire management organization needed on the ASD to achieve the goals and objectives outlined in Land and Resource Management Plans are shown in Attachment 1.

Attachment 2 in Appendix A shows the fire organization implemented at the peak of fire season. By July 31st each year, the table in Attachment 2 (Appendix A) showing the fire organization implemented during the year will be updated to show the organization at the peak of the fire season.

Attachment 1 - Current Table of Organization: ASD

Position Title	Grade	Emp. Type (P, CS, T)	Vacant (V) Occupied (O) New (N)	Core Organization (Y, N)
FMO	12	P	O	Y
AFMO	11	P	O	Y
FOS	9	P	O	Y
Fuels Specialist	11	P	O	Y
Fire Ecologist	11	P	O	Y
Fire Mitigation Specialist	11	P	O	Y
Fuels Technician	7	CS	O	Y
Asst. Center Manager	9	P	O	Y
Unit Aviation Officer	9	P	V	Y
Fire Business Specialist/Logs Cord	9	P	O	Y
Engine Captain	7	CS	O	Y
Engine Captain	7	CS	O	Y
Engine Captain	7	CS	O	Y
Engine Captain	7	CS	O	Y
Engine Captain	7	CS	O	Y
Fuels Engine Captain	7	P	O	Y
Engine Operator	6	CS	O	Y
Engine Operator	6	CS	O	Y
Engine Operator	6	CS	V	Y
Engine Operator	5	CS	O	Y
Fuels Engine Operator	6	CS	O	Y
Fuels Senior Firefighter	5	CS	O	Y
Helitack Superintendent	9	P	O	Y
Helitack Assistant	8	CS	O	Y
Helitack Lead Firefighter	7	CS	O	Y
IA Dispatcher	5	T	V	N
Materials Handler	WG 5	T	V	N
Logistics Dispatcher	4	T	V	N
Fire Lookout	5	T	V	N
Firefighter	5	T	V	N
Firefighter	4	T	V	N
Firefighter	4	T	V	N

**Attachment 2¹ - Bureau of Land Management Implemented Fire Resources
Fire Organization Implemented at Peak Fire Season
(Update Annually – July)**

Office: ASD

Resources	Quantity	Number of Personnel	Total Work Months
Number of Engines:	6	12	66
Number of Water Tenders:	1	2	9
Number of Dozers:	0	0	0
Number of Tractors /Plows:	0	0	0
Number of Fire Boats:	0	0	0
Number of Type 1 Crews:	0	0	0
Number of Helitack Crews:	1	7	36
Number of Fuels Crews:	0	0	0
Number of Type 2 Crews sponsored:	0		0
Number of Smokejumpers (AK & NIFC only):	0		0
Number of FMOs:	1		12
Number of Assistant FMOs:	1		12
Number of PFT Engine Personnel:	0		0
Number of Fire Operations Specialists:	1		12
Number of Dispatchers:	0		0
Number of Other Aviation Staff (Aviation Mgr., SEAT Mgr, etc.):	1		12
Number of Mitigation/Education/Prevention Specialists/ Techs:	1		12
Number of Resource Specialists (Ecologist):	1		12
Number of Fuels Specialists:	1		12
Number of Other Fire Staff (Dist. Mgr.):	2		24
Number of PFT funded by Preparedness:	7		
Number of Career Seasonals funded by Preparedness:	11		
Number of Temporaries funded by Preparedness:	9		
Number of PFT funded by Fuels:	4		
Number of Career Seasonals funded by Fuels:	3		
Number of Temporaries funded by Fuels:	0		

* In completing this table, only include Preparedness resource numbers funded by Fire Preparedness (LF1000000) and reflect the peak fire organization resources for the year. Do not include resources funded under severity. The fuels related resources numbers are to include the resource funded by the non-WUI and WUI programs (LF3100000).

¹ Attachment 2 in Appendix A shows the fire organization implemented at the peak of fire season. By July 31st each year, the table in Attachment 2, Appendix A, showing the fire organization implemented during the year, will be updated to show the organization at the peak of the fire season.

Appendix B - Authorities

The *Principal Wildland Fire Laws* reference guide dated October 2003 consolidates in one guide applicable laws covering the BLM fire management program. Additional authorities were compiled from the BLM 9211 Fire Planning Manual dated September 2012.

Authorities for the Fire Management program are listed below:

1. PROTECTION AND SUPPRESSION

a. BLM Lands Generally Statutory Law

- Protection Act of September 20, 1922: Protection of Timber Resource (16 U.S.C. § 594)
- Taylor Grazing Act: Protection of Grazing Districts and Other Interior Lands (43 U.S.C. § 315a)
- Federal Land Policy and Management Act (FLPMA): Preservation and Protection of BLM Lands (43 U.S.C. §§ 1701-52)
- Wildfire Disaster Recovery Act of 1989: Protection of National Forests: Reforestation; Management: Report on Rehabilitation Needs (16 U.S.C. § 551b)
- Wildfire Disaster Recovery Act of 1989: Protection of National Forests: Reforestation; Management: Planning for Fire Protection (16 U.S.C. § 551c)
- Appropriations Act: Wildland Fire Management, 2001 (HR 2217)

b. BLM Lands Generally Administrative Law

- Fire Management: Wildfire Prevention (43 C.F.R. § 9212.0 et seq.)
- Fire Management: Wildfire Prevention, Prohibited Acts on BLM Lands (43 C.F.R. § 9212.1)
- Fire Management: Wildfire Prevention, Fire Prevention Orders (43 C.F.R. § 9212.2)
- Fire Management: Wildfire Prevention, Permits (43 C.F.R. § 9212.3)
- Fire Management: Wildfire Prevention, Penalties (43 C.F.R. § 9212.4)
- Forest Management: Sales of Forest Products May Include Provisions for Fire Safety (43 C.F.R. § 5424.0-6)
- Visitor Services: Closures and Restriction Orders, Recreation Management (43 C.F.R. § 8364.1)
- Recreation Management: Temporary Closure of Lands (43 C.F.R. § 9268.3)
- State and Local Laws (43 C.F.R. § 8365.1-7) Executive Order No. 11644: Use of Off-Road Vehicles on Public Lands
- Public Lands: Interior, Land Use Planning Regulations (43 C.F.R. § 1600)
- Public Lands: Interior, Grazing Regulations (43 C.F.R. § 4190)

c. Specific BLM Lands: Administrative Law

National Wilderness Preservation System

- Regulations for Administration and Use of Wilderness Areas (43 C.F.R. § 19.6)
- Emergency Functions in Wilderness Areas (43 C.F.R. § 6303.1)
- Provisions to Control Fire, Insects, and Disease in Wilderness Areas (43 C.F.R. § 6304.22)
- Wild & Scenic Rivers and National Trails System Acts (1968)
- Emergency Motorized Vehicle Use on National Scenic Trails (43 C.F.R. § 8351.1-1)
- Special Rules Exempting Fire Fighters on Official Duty (43 C.F.R. § 8351.2-1)
- Prohibition on Fire within National Wild & Scenic River System (43 C.F.R. § 8351.2-1e)
- Public Lands: Interior, Wilderness Use Regulations (43 C.F.R. § 6302)

d. Other DOI Lands (Non-BLM): Statutory Law

- National Wildlife System Administration Act of 1966: Interagency Agreements (42 U.S.C. § 668dd)

2. PRESCRIBED FIRE AND MANAGING WILDLAND FIRE FOR RESOURCE BENEFIT [FIRE USE]

a. BLM Lands Generally: Statutory Law

- McSweeney-McNary Act (16 U.S.C. § 487) – repealed.
- Taylor Grazing Act (43 U.S.C. § 315a)

- Federal Land Policy and Management Act (FLPMA) (43 U.S.C. §§1701-52)
- Appropriations Act: Wildland Fire Management, 2001 (HR 2217)
- Healthy Forests Restoration Act of 2003 (HFRA) (P.L. 108-148)
- Protection of Environment: Ambient Air Quality Standards (40 C.F.R. § 50)
- Protection of Environment: Implementation Plans (40 C.F.R. § 51)
- Protection of Environment: Designation of Areas for Air Quality Planning (40 C.F.R. § 81)

b. State Lands: Statutory Law

- Pittman-Robertson Wildlife Restoration Act or Federal Aid in Wildlife Restoration (16 U.S.C. § 669)

3. CONTRACTS, COOPERATIVE AGREEMENTS, GRANTS AND COMMUNITY ASSISTANCE

a. BLM Generally: Statutory Law, Contracts

- Federal Property and Administrative Services Act: Guidelines for Contracting (40 U.S.C. § 471)
- Federal Land Policy and Management Act (FLPMA) (43 U.S.C. §§ 1701-52)
- Federal Grant and Cooperative Agreement Act of 1977: Using Procurement Contracts, Grants and Cooperative Agreements (31 U.S.C. §§ 6301-6307)
- Federal Grant and Cooperative Agreement Act of 1977: Intergovernmental Cooperation: Authority to Provide Specialized or Technical Services (31 U.S.C. § 6505)
- Federal Grant and Cooperative Agreement Act of 1977: Intergovernmental Cooperation (31 U.S.C. §§ 6501-6508)
- Economy Act of 1932: Interagency Orders for Goods and Services (31 U.S.C. § 1535)
- Federal Land Assistance, Management and Enhancement (FLAME) Act of 2009
- Omnibus Consolidated Appropriations Act of 1997 (P.L. 104-208)

b. BLM Generally: Statutory Law, Cooperative Agreements & Grants

- Federal Grant and Cooperative Agreement Act of 1977: Using Procurement Contracts, Grants and Cooperative Agreements (31 U.S.C. §§ 6301-6307)
- Federal Grant and Cooperative Agreement Act of 1977: Using Procurement Contracts and Grant and Cooperative Agreements: Authority to Vest Title in Tangible Personal Property for Research (31 U.S.C. § 6306)
- Federal Grant and Cooperative Agreement Act of 1977: Using Procurement Contracts and Grant and Cooperative Agreements: Use of Multiple Relationships for Different Parts of Jointly Financed Projects (31 U.S.C. § 6308)
- Reciprocal Fire Protection Act of 1955: Reciprocal Fire Protection Agreements (42 U.S.C. § 1856 (a)-(d))
- Fish and Wildlife Coordination Act: Protection and Conservation of Wildlife: Game, Fur-bearing Animals and Fish (16 U.S.C. § 661)
- Appropriations Act: Wildland Fire Management, 2001 (Public Law 107-63 (HR 2217)
- Supplemental Appropriations of 1982 (U.S.C.C.A.N. 96 Stat. 837)

c. State Lands: Statutory Law

- Conservation Programs on Government Lands (16 U.S.C. § 670(h))

d. International Agreements, Generally

- Wildfire Suppression Assistance Act of 1989 (42 U.S.C. § 1856(m) - (p))

e. Specific International Agreements, U.S./Canada and U.S./Mexico

- Wildfire Suppression Assistance Act of 1989 (42 U.S.C. § 1856(m) - (p))

f. Community Assistance

- Appropriations Act: Wildland Fire Management, 2001 (HR 2217)

g. Non-DOI Lands: Administrative Law

- Emergency Fire Protection Aid to Other Fire Departments Not Within DOI (43 C.F.R. § 28)

h. BLM Generally: Administrative Law, Grants

- Grants of Equipment and Supplies from DOI to State and Local Grantees (43 C.F.R. §§ 12.72 & 12.73)
- Enforcement of Grants (43 § C.F.R. 12.83)

4. MAJOR DISASTERS AND EMERGENCIES

a. Statutory Law

- Major Disaster Assistance Programs: Fire Management Assistance (42 U.S.C. § 5187)
- Federal Fire Prevention and Control Act of 1974 as amended: The Federal Emergency Management Administration's Ability to Engage BLM and Other Federal Agencies (15 U.S.C. § 2201)
- National Historic Preservation Act of 1966: Historic Sites, Buildings, etc. (16 U.S.C. § 464)
- Disaster Relief Act of 1974 (42 U.S.C. § 5121)

b. Administrative Law

- Emergency Management and Requested Assistance (44 C.F.R. § 10.13)
- Fire Prevention and Control: Assistance by Other Federal Agencies (44 C.F.R. § 206.5)
- Donation or Loan of Federal Equipment and Supplies (44 C.F.R. § 206.6)
- Implementation of Assistance from Other Federal Agencies (44 C.F.R. § 206.7)
- Reimbursement of Other Federal Agencies (44 C.F.R. § 206.8)
- Nonliability of Federal Government (44 C.F.R. § 206.9)
- Standards and Reviews (44 C.F.R. § 206.13)
- Recovery of Assistance: Liable Party (44 C.F.R. § 206.15)
- Audit and Investigations (44 C.F.R. § 206.16)
- Designation of Affected Areas and Eligible Assistance (44 C.F.R. § 206.40)
- Responsibilities of Coordinating Officers (44 C.F.R. § 206.42)
- Emergency Support Teams (44 C.F.R. § 206.43)
- Available Assistance under Emergency Declarations (44 C.F.R. § 206.62)
- Provision of Assistance Limited to the Immediate and Short Term (44 C.F.R. § 206.63)
- Coordination of Assistance under the Federal Coordinating Officer (44 C.F.R. § 206.64)
- Cost Sharing (44 C.F.R. § 206.65)
- Duplication of Benefits to Individuals and Families (44 C.F.R. § 206.191)
- Direct Federal Assistance (44 C.F.R. § 206.208)
- Fire Suppression Assistance (44 C.F.R. § 206.390)
- FEMA-State Agreement Governs Federal Assistance (44 C.F.R. § 206.391)
- Providing Assistance (44 C.F.R. § 206.393)
- Expense Recovery (44 C.F.R. § 206.394)

5. Other Federal Laws That May Apply

- National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. §§4321-4370e)
- Endangered Species Act of 1973 (ESA) (16 U.S.C. §§ 1531 - 1544)
- Clean Water Act of 1948, as amended 1966, 1972 (CWA) (33 U.S.C. §§ 1251 – 1387)
- The Clean Air Act of 1970 (CAA) as amended 1977, 1990, 2004 (42 U.S.C. §§ 7401 - 7671q)
- Wilderness Act of 1964 (16 U.S.C. §§ 1131-1136)
- Antiquities Act of 1906 (16 U.S.C. §§ 431-433)
- National Historic Preservation Act of 1966 (NHPA), as amended (1992) (16 U.S.C. §§ 470 et seq.)
- Tribal Forest Protection Act of 2004 (P.L. 108)

6. Other Guidance

- United States Department of the Interior Manual (910 DM 1.3)
- 1995 Federal Wildland Fire Management Policy
- 2001 Updated Federal Wildland Fire Management Policy (1995 Federal Wildland Fire Management Policy Update)
- 1998 Departmental Manual 620 Chapter 1, Wildland Fire Management General Policy and Procedures
- 2009 Instruction Memorandum No. FA IM-2009-011, Modifications to Federal Wildland Fire Policy Implementation Strategy (2003)
- BLM Fire Management Planning Handbook (H-9211-1)

- BLM Land Use Planning Handbook (H-1601-1)
- BLM National Environmental Policy Act (NEPA) Handbook (H-1790-1)
- Healthy Forests Initiative (HFI) and Healthy Forests Restoration Act Interim Field Guide, 2004
- Records and Information Management (BLM Manual 1220)
- External Access to BLM Information (BLM Manual 1278)

Disclaimers

No warranty is made by the BLM for use of this data for purposes not intended by BLM. BLM does not warranty the accuracy, reliability, or completeness of this data for individual use or aggregate use with other data. The surface management status (“land ownership”) should be used as a general guide only. Official land records, located at the BLM and other offices, should be checked for up-to-date information concerning any specific tract of land. Roads crossing public lands may be used unless closed by signs or notice by the land management agency. Public lands surrounded by private land may not be accessible. Permission is required from private landowner to cross private land, unless access is provided by a Federal, State or County road, or a BLM road with legal access.

Appendix C - Fire Management Plan (FMP) Annual Review Checklist

Annual FMP Review Questions	Yes	No
1. Has wildland fire or non-fire fuels treatment substantially changed a large enough acreage that fire management unit (FMU) objectives will require revising?		
2. Do any of the acres treated cross a threshold established by an FMU objective which, in turn, would lead to a change in management actions?		
3. Did the fuel model, fire regime condition class, or predicted fire behavior characteristics change substantially in any FMU (e.g., did a fire change a large portion of condition class 3 acres)?		
4. Did any of the FMU fire management objectives, values at risk, FMU priorities, or mitigation measures change substantially due to changes in any other program policies?		
5. Did federal, bureau, regional, state or local policy or land use plan (LUP) guidance (such as through LUP revisions) change in a way that substantially would alter FMP strategies or priorities?		
6. Did monitoring results show that management actions need to be changed to result in movement toward or achievement of objectives or desired outcomes?		
7. Has wildland fire or non-fire fuels treatments affected bureau-sensitive species with a conservation plan or strategy (e.g., sage-grouse) to a point that future wildland fire or fuels management strategies may need revising?		

Annual FMP review completed and minor plan maintenance documentation completed, or actions are planned to update the FMP.

DFMO or Designated Authority

Date

District/Field Office Manager

Date

Appendix D - Decision Criteria Checklist

DATE: _____

Fire Name	
Fire Number	
Fire Management Unit(s)	
Start Date	

Decision Element

Are threats to life, property, or public and firefighter safety mitigated?

Would the wildfire achieve specific NEPA objectives or LUP goals?

Have the Minerals, Land, and Resources Staffs been notified?

Are potential effects to cultural or natural resources within the range of acceptable effects?

Is the existing fire regime condition class in the WFDSS planning area favorable for managing a wildfire for multiple objectives?

Is the proximate wildfire activity low and are planning levels below PL4?

Has the proper monitoring been established?

Does managing this wildfire for multiple objectives preclude the use of Emergency Stabilization and Rehabilitation actions?

Yes	No

The Decision Criteria Checklist is a process to assess whether or not the situation warrants **initiating or continuing** managing a wildland fire management for multiple objectives. A “NO” response to any element on the checklist indicates that the appropriate response should be suppression-oriented.

Recommended by: _____
Fire Management Officer or Incident Commander

Date: _____

Approved by: _____
Agency Administrator

Date: _____

Approval Expires (date): _____

This checklist may be used on a daily basis to document situational changes.

Appendix E - BLM Arizona Strip District Wildland Fire Monitoring Plan

Bureau of Land Management (BLM), Arizona Strip District (ASD) Wildland Fire Monitoring Plan (WFMP)



Prepared by: Brian Bock, ASD Fire Ecologist

Date

Reviewed by: Mark Rosenthal, ASD Fire Management Officer

Date

Reviewed by: Mark Pater, Gila District Fire Ecologist

Date

Approved by: Scott Florence, ASD Manager

Date

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1 Introduction

Fire is a critical natural process that will be integrated into land and resource management plans on a landscape scale and across agency boundaries. Response to wildland fire is based on ecological, social and legal consequences of that fire. Under which circumstances a wildfire occurs, the consequences on firefighter safety, public safety and welfare, natural and cultural resources, and values to be protected, will dictate fire management actions.

Beneficial accomplishments from fire and treatments will be measured through specific quantified objectives. Agencies will integrate science:

1. planning and monitoring process
2. coordinate fire related research to improve WFMP capability
3. emphasize applied science including fire and fuels, physics, social science and operation research areas
4. seek to improve decision support tools through updated data sets and advances in technology

The ASD is a combination of the Arizona Strip Field Office (ASFO), Grand Canyon-Parashant National Monument (GCPNM), and Vermillion Cliffs National Monument (VCNM).

One of the central goals of ASD Fire Management is to promote a science-based program that relies on current and best-available information and incorporates adaptive management practices. The ASD is responsible for providing short-term and long-term data on vegetation-fuel changes and for generating burn severity mapping data. Working in collaboration with Prescribed Fire Burn Bosses and Fire Incident Commanders, the ASD also provides support for fire observation monitoring.

The ASD will maintain an active fire effects monitoring program that allows fire managers to evaluate the effectiveness of prescribed fire and wildfires that are managed for multiple resource objectives, and adapt future practices to better meet resource management objectives. This document serves as an appendix to the ASD Fire Management Plan (FMP).

Program goals and objectives originate from the current ASD FMP, ASFO Resource Management Plan (RMP), GCPNM RMP, VCNM RMP, Arizona Statewide Land Use Plan Amendment (LUPA) for Fire, Fuels and Air Quality Management (9/2004), current Interagency Standards for Fire and Fire Aviation Operations, current Federal Wildland Fire Management Policy, and Guidance for Implementation of Federal Wildland Fire Management Policy (February 13, 2009). This monitoring template is an approved DOI template.

Desert tortoise habitat has been designated within the ASD by the US Fish and Wildlife Service (USFWS). A Fire Ecologist position has been established to manage the Fire Ecology Program, and provide natural resource information to the fire program. Since 1995, the Ecological Restoration Institute (ERI) at Northern Arizona University (NAU) has worked in collaboration with the BLM, Arizona Game and Fish (AZGFD), and other research entities on the Mt Trumbull Ecosystem Restoration Project. This is a landscape-scale ponderosa pine forest restoration project. For the past 15 years, research on Mt. Trumbull has informed land management agencies and the scientific community on the effectiveness of ecological restoration treatments, mitigating the risk of stand replacing wildfires, enhancing biodiversity, and improving wildlife habitat. The research is unique as it is conducted as a working landscape in an operational context. This has been important as it allows researchers to test and adapt restoration treatments to complement and support the diverse objectives of public land management agencies.

The importance of ecological restoration research is reinforced by the Presidential Proclamation that established the GCPNM and VCNM.

As an appendix to the current ASD FMP, this monitoring plan describes the current and planned framework for collecting, managing, evaluating and integrating fire monitoring information into natural resource management. Fire monitoring is a critical component of fire management and is aimed at providing information on the effectiveness of the ASD WFMP. The primary focus of the ASD WFMP is the assessment of vegetation, fuel conditions, and the determination of how these conditions are affected by fire management. The program also monitors fire and weather conditions during prescribed and unplanned fires, conducts burn severity assessments

under the National Burn Severity Mapping Program, and facilitates the collection of site-specific information used for compliance and consultation requirements under the National Environmental Policy Act, Endangered Species Act, and National Historic Preservation Act.

Fire monitoring programs are intended to continuously inform managers about the effects of management activities so that fire management programs can adapt to changing conditions using the best available information. As new information and research results are obtained, relevant changes to the monitoring and/or fire management programs are made. These changes may include new or alternative monitoring techniques, changes in treatment prescriptions, or refinement of management objectives. Integration of fire monitoring data is a shared responsibility between the BLM's fire management, natural resource and cultural resource management staff. Changes to the ASD WFMP will be reflected in annual updates to this monitoring plan.

2 Fire and Fuel Management

The ASD WFMP uses a variety of strategies to achieve the goals of protecting human safety and property, restoring and maintaining ecosystems, and protecting all values. The ASD has used prescribed fire since the mid 1980's to meet resource management goals and objectives and has managed wildfires to meet multiple objectives since 2009. In addition to managing prescribed and unplanned fires, the ASD WFMP will employ manual, chemical and mechanical fuel treatments to protect human safety, property, cultural, and natural resource values. The role of fire management in meeting ASD stewardship goals and the strategies employed to meet management goals are discussed in detail in the ASD FMP.

To facilitate fire and fuel management planning, the ASD is divided into 2 Fire Management Units (FMUs) based on fuel characteristics, land status, and fire regimes. The 2 FMUs have dissimilar levels of development, meteorology, history, and values at risk (including cultural resources and species of concern) that are described in detail in the ASD FMP. The FMU division is used for strategic planning and management; however it is based on fire adapted ecosystems. The relationship between the 2 FMUs and the ASD's major vegetation types, fire history, and monitoring types is summarized in Table F.2.1.

Table 2.1. Relationship between the 2 FMUs and the ASDs major vegetation types, fire history, and monitoring types.

FMUs	Acres	Major Vegetation Types	Role of Fire	Fire Regime Alteration	Management Focus	Monitoring Focus ¹
FMU 1	628,630	creosote bush/ bursage Joshua tree Mormon tea broom snakeweed blackbrush cacti native grasses exotic annual grasses	Overall not fire adapted. Fires were rare and small in size. FRI generally >250 years. Bromus invasion has led to Mojave Desert Ecosystem collapse.	Estimate: FRCC 1 is 01% FRCC 2 is 19% FRCC 3 is 80% Data Source: BLM LANDFIRE	Restore and maintain native ecosystems	Levels 1, 2, 3, and 4, severity mapping, photo plots, Resource Advisor, fire effects, ecological site inventory, severity mapping
FMU 2	2,485,161	riparian grassland (savahana) chaparral sagebrush pinyon/juniper Ponderosa pine	Fire adapted. Historic fire regime groups I, III, IV, and V. Fire exclusion has led to p/j encroachment. Invasive annual grasses may increase fire frequencies.	Estimate: FRCC 1 is 10% FRCC 2 is 80% FRCC 3 is 10% Data Source: BLM LANDFIRE	Restore and maintain native ecosystems	Levels 1, 2, 3, and 4, severity mapping, photo plots, Resource Advisor, fire effects, ecological site inventory, severity mapping

4 Management Goals and Objectives

This fire monitoring plan is an appendix to the ASD FMP which is tiered to the ASFO, GCPNM and VCNM RMPs. The purpose of a fire monitoring plan is to outline specific procedures used to evaluate the goals and objectives of the FMP plus higher level resource management plans. The overall goal of the ASD WFMP is to provide information to fire and resource managers that allows them to evaluate whether ASD and fire management objectives are being met and, if necessary, to make program adjustments.

4.1 Resource Management, Fire Management, and Fire Ecology Goals

RMP monitoring strategies relating to fire management are summarized in:

ASFO RMP chapter 3 table 3.1

GCPNM RMP chapter 3 table 3.1

VCNM RMP chapter 3 table 3.1

Goal 1 - Promote a safe and effective fire monitoring program.

Objectives:

- Provide personnel with the equipment and information skills needed to manage risks, plus perform monitoring and fire activities safely.
- Provide training opportunities for crew members in the form of both formal classes, and ASD fire assignments plus off district fire assignments.

Goal 2 – Support a science-based fire management program.

Objectives:

- Establish and implement a peer-reviewed sampling design, data collection protocol, and data management protocol for vegetation communities to be treated with fire or non-fire fuel treatments.
- Record fire behavior and weather information during all wildland fire.
- Document and analyze short and long-term fire effects to vegetation and fuel.
- Provide information for adaptive management decisions related to treatment and management objectives, management strategies, and desired conditions.
- Review the ASD WFMP annually and make changes to reflect new information gained.
- Identify research needs and facilitate research on natural fire regimes as well as fire effects to natural and cultural resources.

Goal 3 - Facilitate communication within the district, neighboring agencies, public, and with the scientific community.

Objectives:

- As needed, analyze, report, and interpret fire monitoring data for fire and resource managers and interpretive staff.
- Present monitoring data at conferences and/or as journal publications, as appropriate.
- Participate in cross-training activities with fire management personnel and personnel from other agencies.

4.2 Treatment and Monitoring Objectives

Treatment objectives for individual prescribed fire units and non-fire fuel treatment projects will be outlined in specific treatment plans. Objectives for specific treatment units are expected to support the achievement of desired conditions for each vegetation type.

Table 4.2.1 Goals and objectives for the ASD prescribed fire built pre 2008 management plans, from NAU-ERI, AZGFD and the ASD.

Treatment Unit(s)	Goals	Objectives
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<p>Mt Trumbull RCA Ponderosa Pine Restoration (from EA-AZ- 010-99-08)</p>	<p>Re-create pre-settlement tree density by conserving all living pre-settlement trees (those trees of all species established prior to fire exclusion beginning in approximately 1870) and replacing dead presettlement trees with large post settlement trees.</p> <p>Restore the pre-settlement spatial pattern by retaining all living pre-settlement trees (pre 1870) and locating replacement trees in the close proximity of dead pre-settlement trees.</p> <p>Maintain a wide range of age classes by retaining all living pre-settlement trees, thereby conserving genetic variability to the greatest extent possible. By conserving all living pre-settlement trees as well as suitable replacement trees, an uneven age stand will be retained with trees of varying ages spanning several hundred years.</p> <p>Maintain tree health by selecting vigorous replacement trees.</p>	
<p>Mt Trumbull Ecosystem Restoration Project Phase II (Mt Trumbull RCA Ponderosa Pine Restoration reentry) & other ponderosa pine stands</p>	<p>Restore ecosystem function and condition</p> <p>Reintroduce fire into the ecosystem</p> <p>Remove, reduce hazardous fuels</p> <p>Protect nearby private lands and structures from wildfire (Wildland Urban Interface)</p> <p>Limit conflicts with visitors by avoiding burning during the hunting season</p> <p>Minimize impacts on cultural resources</p> <p>Minimize impacts on wildlife and special status species (plants and animals)</p>	<p>Reduce forest litter, duff, and dead and down wood by 30-70% immediately post burn</p> <p>Limit pre-settlement tree mortality from burn activity to less than 10% within five years post burn</p> <p>Limit post-settlement overstory tree mortality from burn activity to less than 25% within five years post burn</p> <p>Reduce live understory trees and shrubs by 10-40% within two years post burn</p> <p>Limit consumption of presettlement snags from burn activity to less than 25%</p> <p>Limit reduction of downed logs greater than 20" diameter to less than 40%</p> <p>Limit smoke impacts on Class I airsheds in the Grand Canyon, nearby private lands, and wilderness areas to levels permitted by ADEQ</p> <p>Limit damage to structures such as water catchments, signs, fences to less than 5%</p>

		Limit damage to pre-historic/historic structures, nearby private lands, and structures on private lands to 0%
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Table 4.2.2 Preliminary Monitoring Strategies from table 3.1 in the ASFO RMP, GCPNM RMP and VCNM RMP.

Location	Issue-objective	Indicator	Protocol	Frequency	Trigger-action
Wildfire and other selected areas	Assess the effects of disturbance and reclamation	Erosion or stabilization	Visual inspection	As needed	Large wildfire, Erosion and flooding
ASD	Management of authorized uses	Vegetative trend of key species, Precipitation	Permanent photo plots, Frequency transects, dry weight rank Rain gauge (Range has 49) and Remote Automated Weather Stations (RAWS)	Every 4-8 years Quarterly	Up or down trend for undesirable species Meeting or not meeting desired plant community objectives

Environmental monitoring

1. Monitor weather and fire danger rating as outlined in the annually updated Color Country Interagency Fire Danger Operating and Preparedness Plan (June 2009).
2. NEPA compliance for all ASD projects related to fire.
3. Coordinate with neighboring federal agencies and Arizona BLM. Complete monitoring for prescribed fire, fuels treatments, and wildfire as described in ASD FMP (as updated), Arizona Statewide Land Use Plan Amendment for Fire, Fuels and Air Quality Management (9/2004), management plans for the ASFO, VCNM and GCPNM.

Fire observation monitoring

1. Record information on weather and fire conditions for prescribed fires and wildfires that extend beyond initial attack on the ASD.
2. Record information on resource concerns and mitigation measures outlined in ASD FMP, Arizona Statewide LUPA and Management Plans for the ASFO, VCNM and GCPNM.

Short- and long-term vegetation and fuel monitoring

1. Provide high quality data that can be used by fire and resource managers to evaluate and refine treatment objectives and desired conditions.
2. Install permanent plots in each vegetation type according to the NPS Fire Monitoring Handbook (NPS 2003) as to reach the specified confidence that sample means are within the specified percentage of the true population mean for primary and secondary monitoring variables.
3. Establish photo plots in various locations in all ecological zones or FMUs.

Burn severity mapping

1. Obtain differenced Normalized Burn Ratio (dNBR) satellite imagery each year for all fires >300 acres in size that occur.
2. Validate assigned burn severity classes with field data during the year following fire events >300 acres in size.

4.3 Desired Future Conditions (from RMPs)

All Ecological Zones Desired future conditions include:

Ecological processes and functions will be protected, enhanced, and/or restored by allowing tools that are necessary and appropriate to mitigate adverse impacts. These tools will contribute to meeting the Standards for Rangeland Health and enhance monument values.

Each vegetation community is maintained within its natural range of variation in plant composition, structure, and function.

Fire return intervals and natural disturbances will be appropriate for the ecological site.

Fire is recognized as a natural process in fire-adapted ecosystems and is used to achieve objectives for other resources.

Fuel loads are maintained below levels that are considered to be hazardous.

Colorado Plateau Transition Desired future conditions include:

Endemic plant species and associated communities such as four-wing saltbush, shadscale, and black brush, will be present along with other shrubs, grasses, and forbs. These communities can include stands of young and old shrubs, sparse vegetation, scattered to larger expanses of four-wing saltbush and black brush.

There will be no net loss in acres of transition plant communities (i.e., long-term or permanent removal from the landscape). A no net loss objective will not preclude restoration, rehabilitation, or related management actions.

Great Basin Desired future conditions include:

Sagebrush (primarily *Artemisia tridentata*) communities will consist of a healthy, diverse mosaic of different height and age structures with a thriving community of native grasses and forbs. Mosaics may include stands of young and old sagebrush, openings (ranging from bare ground to short or sparse vegetation to high-density grasslands), wet meadows, seeps, healthy streamside (riparian) vegetation, and other interspersed shrub and woodland habitats.

Treatment objectives in sagebrush communities will focus on restoring natural disturbance processes, such as by using fire, increasing vegetative ground cover of native grasses and forbs, and removing invasive non-native plants.

Existing stands of sagebrush will have a balance between shrub and perennial grass cover, for open to moderate shrub canopy cover (5 to 25%), and multiple height classes. This mosaic will include young, sparse stands to support vesper and lark sparrows. Older and dense stands will benefit Brewer's, sage, and black-throated sparrows, plus gray flycatchers, and sage thrashers.

Sagebrush communities will include native grass and forb cover in balance with open to moderate (5 to 25%) shrub canopy cover and within ecological site potential. Perennial grass components will be at or above 10%. Native forb composition will be at or above 5%.

Healthy, diverse woodland communities will consist of a mosaic of trees, shrubs, grasses, and forbs. Mosaic patches can include stands of young and old pinyon-juniper, openings, wet meadows, seeps, and other interspersed shrub habitats. The communities will be composed of a variety of different height structures and age classes, with a thriving understory community of native grasses, forbs, and shrubs.

Stands of pinyon-juniper will include a balance between tree, shrub, and perennial grass cover to support pinyon jay and mule deer. This mosaic will include stands of old growth pinyon-juniper to support juniper titmouse. Large openings of grasses, forbs and shrubs will support mule deer and provide foraging habitat for raptors such as sharp-shinned, Cooper's, and red-tailed hawk, northern goshawk, and American kestrel. Areas of sparse to dense tree canopy will support pinyon jay.

Interior Chaparral Desired future conditions include:

The Interior Chaparral Ecological Zone will consist of diverse populations of endemic vegetative species, particularly shrubs, and a mosaic of age class distributions of these species.

Endemic plant species and associated communities such as manzanita, silk tassel, and live oak will be present, along with other shrubs, grasses, and forbs.

Endemic animal species such as black-chinned sparrow and mule deer will be present and thriving with more than adequate food, water, and cover resources.

Mojave Desert Desired future conditions include:

Endemic plant species and associated communities such as creosote bush, Joshua tree, Mojave yucca and cacti, will be present along with other shrubs, grasses, and wildflowers. These communities can include stands of young and old shrubs, sparse vegetation, scattered to larger expanses of creosote bush or Joshua trees, seeps, healthy streamside (riparian) vegetation, and other interspersed grassland and shrub habitats.

Endemic animal species such as desert tortoise and chuckwalla will be present and thriving with more than adequate food, water, and cover resources.

Mojave-Great Basin Transition Desired future conditions include:

Endemic plant species and associated communities such as blackbrush, Joshua tree, Mojave yucca, and cacti will be present along with other shrubs, grasses, and wildflowers. These communities can include stands of young and old shrubs, sparse vegetation, scattered to larger expanses of black brush to various mixes of blackbrush, Joshua trees, pinyon-juniper, yucca, and shrub habitats.

Endemic animal species such as desert tortoise, chuckwalla, and desert bighorn sheep will be present and thriving with more than adequate food, water, and cover resources.

Priority plant species and associated communities such as blackbrush, Joshua tree, Mojave yucca, and cacti will be present along with other shrubs, grasses, and wildflowers. These communities can include stands of young and old shrubs, sparse vegetation, scattered to larger expanses of blackbrush to various mixes of blackbrush, Joshua trees, pinyon-juniper, yucca, and shrub habitats.

Plains Grassland Desired conditions include:

Endemic plant species and associated communities such as galleta, sand dropseed, Indian ricegrass, blue grama, black grama, needle and thread grass, four-wing saltbush, shadescale, winterfat, and Mormon tea will be present, along with other shrubs, grasses, and forbs.

Endemic animal species such as pronghorn antelope, Cassin's, and Brewer's sparrow will be present and thriving with more than adequate food, water, and cover resources.

The Plains-Grassland Ecological Zone habitats will include a mosaic of grassland and shrub communities, varying age structure, sparse vegetation, scattered to larger expanses of separate grassland or shrub communities, or various mixes of these communities.

Ponderosa Pine Forest Desired future conditions include:

The Ponderosa Pine Ecological Zone will consist of a mosaic of tree densities, age classes, and openings (which may contain scattered trees), with healthy, diverse under stories of native shrubs, grasses, and forbs.

Ponderosa pine vegetation communities will be resilient to natural or human-caused disturbances, and losing key wildlife habitat components to wildfire will be minimized.

There will be no net loss of total acres within the ponderosa pine plant communities (i.e., long-term or permanent removal from the landscape). A no net loss objective will not preclude restoration, rehabilitation, or related management actions.

Patches of old and/or large trees and standing and fallen dead trees will be maintained and protected.

In addition to the above, ponderosa pine communities on NPS-administered lands will retain ecological integrity where natural processes maintain native plants and plant communities and are the principal influence on community and population fluctuation.

Riparian Desired future conditions include:

Ecological functions and processes will be intact with vegetative species composition and cover appropriate to the site.

Invasive plants such as tamarisk, Russian olive will be eliminated.

Table 4.3.1 Historical conditions in the Mt. Trumbull-Logan area.

1870 conditions for Mt. Trumbull Wilderness area (source NAU-ERI). Reconstructed forest density (trees/ha). Standard error (S.E.) is the standard deviation of the sampling distribution of a statistic.	
species	density (trees/ha)
ponderosa pine	mean 61.3 S.E. 8.8
Gambel oak	mean 0.5 S.E. 0.5
Utah juniper	mean 0.5 S.E. 0.5
pinyon pine	mean 0 S.E. 0
New Mexico locust	mean 0 S.E. 0

Pre-eurosettlement conditions for the Mt Trumbull Ponderosa Pine Ecosystem Restoration Project (source NAU-ERI) near Mt Logan	
category	measurement
All tree species	22 tree/acre
Average basal area	35 ft ² /acre
Forest floor fuels	3-5 tons/acre
Low intensity fire return interval	4 years
Site potential of forage that existed	500-1000 lbs/acre

5 Monitoring Design

ASD employs the Fire Monitoring Handbook (NPS 2003) standard four-level approach to fire monitoring. The ASD also delineates monitoring into two categories which are compliance and effectiveness. The remainder of this section provides details on how and when each monitoring variable is assessed. Each ASD fire management strategy has a defined monitoring approach. Monitoring elements measured for each fire management strategy are summarized in Table F.5.1.

Table 5.2. Four-level approach to fire monitoring and potential variables for each level.

Monitoring Level	Monitoring Variables
Level 1: Environmental	Weather, fire danger rating, fuel conditions, concerns and values to be protected, and other biological, geographical, or sociological data
Level 2: Fire Observation	Reconnaissance - fire cause, fire location and size, fuel and vegetation description, fire regime and condition class, current and predicted fire behavior, potential for spread, current and forecasted weather, resource or safety threats and constraints, and smoke volume and movement Fire Conditions - topographic variables, fire weather, fuel model, fire characteristics, smoke characteristics, Resource Advisor concerns
Level 3: Short-term Change	Change in fuel load, vegetation structure, and vegetation composition, or other objective-dependent variables, within 2 years post-burn
Level 4: Long-term Change	Trends in Level 3 variables over time (5+ years)

Table 5.3. Monitoring elements measured for each fire management strategy.

Monitoring Level	Fire Management Strategy		
	Wildfire	Prescribed Fire	Non-Fire Treatment
Level 1: Environmental	Yes	Yes	Yes
Level 2: Fire Observation	Yes	Yes	n/a
Level 3: Short-term Change	Yes ^{1,2}	Yes ^{1,2}	Yes ²
Level 4: Long-term Change	Yes ²	Yes ²	Yes ²

¹ burn severity mapping for fires >300 acres

² conducted using photo point monitoring

5.1 Environmental Monitoring

Level 1 environmental monitoring provides the information needed for decision-making before and during fire events. Depending on the variable of interest, environmental monitoring can occur throughout the year. Environmental monitoring at ASD is conducted by staff from both the fire and an interdisciplinary team.

5.2 Weather and Fire Danger Rating

Fire danger ratings are monitored by the Color Country Interagency Fire Management Dispatch Center as outlined in the annually updated Color Country Fire Danger Rating System (CCNFDRS) Operating Plan. The monitoring outlined in the CCNFDRS Operating Plan is designed to assist with planning and operational decisions relative to fire danger, preparedness, resource needs, personnel briefing, situational awareness, and implementing fire restrictions. The National Fire Danger Rating System (NFDRS) Operating Plan describes the six remote automatic weather station (RAWS) units used for fire management planning on the ASD. In addition, the CCNFDRS Operating Plan outlines the process for calculating and communicating the daily burning index (BI), energy release component (ERC), and adjective fire danger rating. The CCNFDRS Operating Plan also describes the process for preparing annual fire danger pocket cards.

5.3 Fuel Conditions

Fuel conditions are monitored by the ASD Fire Management Program. Sampling procedures follow those outlined in the Fuel Moisture Sampling Guide, April 2007, BLM, Utah State office (Pollet and Brown), Southwest Area Fuel Moisture Monitoring Program-Standard Methods and Procedures (SWCC 2004) and IM Monitoring of Fine Fuels and Fuel Moisture Memo 23 December 2010. Litter, 1-hr, 10-hr, 100-hr, and sound 1000-hr time lag fuel moisture (TLFM) class fuels are collected as needed. Live fuel moisture samples are collected based on the dominant species at the sampling site. These live fuel moistures are entered into the National Fuel Moisture Database. Information can be accessed by Eastern Great Basin Coordination Center (predictive services, fuels/fire danger) and double clicking on the state of Arizona or (<http://72.32.186.224/nfmd/public/>). The following RAWs stations and fuel types are sampled:

Yellow John:	Gambel oak (<i>Quercus gambelii</i>), pinyon pine (<i>Pinus edulis</i>), ponderosa pine (<i>Pinus ponderosa</i>), Utah juniper (<i>Juniperus osteosperma</i>)
Nixon Flats:	pinyon pine (<i>Pinus edulis</i>), ponderosa pine (<i>Pinus ponderosa</i>), Utah juniper (<i>Juniperus osteosperma</i>), big sagebrush (<i>Artemisia tridentate</i>)
Blackrock:	Gambel oak (<i>Quercus gambelii</i>), pinyon pine (<i>Pinus edulis</i>), ponderosa pine (<i>Pinus ponderosa</i>), Utah juniper (<i>Juniperus osteosperma</i>), manzanita spp. (<i>Arctostaphylos pungens</i> or <i>patula</i>)
Tweedy:	pinyon pine (<i>Pinus edulis</i>), Utah juniper (<i>Juniperus osteosperma</i>), big sagebrush (<i>Artemisia tridentate</i>)

5.4 Sensitive Natural Resources

Background monitoring of sensitive natural resources is the responsibility of the ASD. Pre-treatment project specific monitoring to identify sensitive natural resources in prescribed fire and non-fire fuel treatment units is coordinated by the ASD. Required pre-project monitoring activities are identified in the ASD RMPs and the FMP. Sensitive natural resources that occur within project units will be identified prior to project implementation and mitigation measures consistent with the RMP and FMP will be implemented as outlined in those documents. Sensitive natural resources will also be addressed in the event of multiple objective wildfire by consulting Line Officers, READs, and subject matter experts.

5.5 Cultural-archeological resources

Identification and background monitoring of cultural-archeological resources is the responsibility of the ASD. Required pre-project monitoring activities are identified in the RMPs, FMP and in the Programmatic Agreement (PA) with the State Historic Preservation Officer (SHPO). Sensitive cultural-archeological resources that occur within project units will be identified prior to project implementation and mitigation measures consistent with the RMPs, FMP and the PA will be implemented as outlined in those documents. Cultural-archeological resources will also be addressed and consistent with the RMPs and FMP in the event of multiple objective wildfire.

5.6 Fire Observation Monitoring

Level 2 fire observations provide the information needed for decision-making during and after fire events. Fire observation monitoring, which includes reconnaissance and fire conditions monitoring, occurs to some extent on all fires within the ASD; however, every element may not be recorded on each fire.

Fire behavior and weather observations are collected during each operational period on prescribed fires using FMH-1A, 2A, and 3A from the NPS Fire Monitoring Handbook (NPS 2003), or the forms found in the Interagency Fire Use Module Field Guide (2005) or the current Interagency Fire Use Module Field Guide. Smoke observations are recommended in wildland fire and required in prescribed fire. The fire observation information requested may differ between Prescribed Fire Burn Bosses. Guidelines within this monitoring plan are intended to provide monitors with information on how the requested information is typically collected at the ASD. For additional information on the variables collected during fire observation monitoring, see the NPS Fire Monitoring Handbook (NPS 2003).

5.7 Weather

Three weather observations are preferred prior to requesting a spot weather forecast, although the forecast can be obtained with only one observation or information from a RAWS station. Weather observations are recorded from a variety of locations (valley bottoms, ridge-tops, southwest slopes, etc.) and generally are taken one hour apart the afternoon preceding the prescribed fire or prior to ignition on the day of the prescribed fire. Spot weather forecasts can be taken several days in advance to help in identifying appropriate windows for burning. Cloud types can be important to fire weather forecasters, so monitors should attempt to identify cloud types and cloud cover. The following information is required by Color Country Interagency Fire Center (CCIFC) to complete a spot weather request: project name, fire type (wildfire or prescribed), fire ignition time (if prescribed), latitude, longitude, elevation (top and bottom) and aspect. The spot weather forecast is included in the daily monitoring report with other fire observation monitoring forms. Information on spot forecasts can be found at local National Weather Service Forecast Office websites.

The Prescribed Fire Burn Boss decides how often weather observations are taken and reported throughout the burn period. Monitors should be familiar with the fire prescription, indicate when critical levels are reached (low fuel moistures, gusty winds), and inform the Prescribed Fire Burn Boss if weather observations fall outside of desired conditions.

5.8 Fire Behavior

In general, monitors take a fire behavior observation around the same time and location as a weather observation; however, there is no set number of required fire behavior observations. Monitors attempt to capture an accurate representation of the range of fire behavior and fire types. For instance, if fire is burning in heavy fuel, creeping in litter, and smoldering in duff, separate observations are made for each fuel category. Additionally, if fire is backing, heading, and/or flanking, individual observations to capture different fire types are made. Notes should be made on how ignition methods affect fire behavior. On prescribed fires, monitors need to be familiar with the prescribed fire plan prescription and inform the Prescribed Fire Burn Boss when fire behavior and the prescriptive weather parameters are not within the identified burn prescription. Every effort should be made to have more than one FEMO, and train holding personnel to monitor the fire behavior and its effects.

5.9 Smoke Monitoring

A pilot balloon can be released before a prescribed fire to indicate where smoke will travel in relation to sensitive areas. Smoke observations are best recorded from a site removed from the fire with a good perspective of the entire smoke column and smoke impacts to the Grand Canyon National Park, visitor use areas, or other sensitive areas. During prescribed fires, monitors should consult with the Prescribed Fire Burn Boss and read the prescribed fire plan to understand smoke issues for the fire. Even if the fire is producing what is thought to be very little smoke, photos need to be taken, and smoke observation forms should be filled out.

If smoke is making a consistent impact on sensitive areas, photo points can be established where photos are taken repeatedly from the same location, in the same direction, and at approximately the same time of day. If time permits, monitors may take two sets of photos; one in the morning to capture nighttime subsidence and inversion impacts plus one in the afternoon to capture the height of smoke production. Observations from these locations are documented.

When it is important to obtain accurate particulate measurements, a DataRAM-4 or E-BAM should be borrowed from Arizona Department of Environmental Quality (ADEQ) or the Boise Fire Cache. Pre-established deployment sites will be established.

In the event a wildland fire is being managed for multiple objectives and requires ignition operations, the Arizona Department of Environmental Quality (ADEQ) needs to be contacted. Reference the Standard Operating Procedure (SOP) for smoke approval procedure. A copy is located on the share drive under S/Fire/WFDSS/Smoke Approval Procedure.

Pursuant to Arizona Revised Statute (ARS18-2-15) governing smoke emissions from forest and range management burns, federal and state land managers must submit a Daily Burn Accomplishment Form to ADEQ by 2:00 pm of the business day following the date of an approved ignition. A Daily Burn Accomplishment Form is not required if a burning operation is being managed as part of a wildland fire. Individual accomplishment reports must be submitted for projects that involve broadcast and pile burning operations.

Information submitted on the ADEQ Burn Plan and Daily Burn Accomplishment Forms will be used to satisfy the input requirements of the fuel consumption model Consume. The ADEQ Burn Plan form provides the model with the “default” fuel loading and fuel composition information; while the Daily Burn Accomplishment form provides the model with the acreage burned and fuel moisture information. The “supplemental” fuels information on the Daily Burn Accomplishment form should be completed if there is any deviation from the fuels information submitted on the ADEQ Burn Plan form. Examples include: a secondary fuel type within the project area becoming the primary fuel type burned on a particular date, or a unit within the project area changing from a first-entry burn to a maintenance burn.

5.10 Resource Concerns

Resource concerns for prescribed fires are addressed in the prescribed fire plan for a particular project unit. Resource concerns for unplanned fire events are identified by the ASD resource specialists. Monitoring and mitigation measures outlined in the RMPs and FMP will be followed during each fire event. READs will be assigned to prescribed fires and unplanned fires according to the FMP and that exceed initial attack to ensure that the monitoring and mitigation measures are implemented. Implementation of mitigation measures includes identification of rehabilitation needs.

5.11 Photographs-Videography

Photographs provide some of the best documentation of fire observations. Digital photographs for prescribed and multiple objective fires are to be filed in the appropriate project file (S/Fire/Fuels/projects/name of project) and the FEMO folder (S/Fire/FEMO). Monitors should take photographs to match fire behavior observations (i.e. not photograph big flames only but rather document the range of fire conditions). Comparable photos over time are very useful for documenting fuel treatments, fire conditions, and effects. If possible, monitors should establish photo points and photograph the area days and/or weeks after the fire to document fire effects. Photo points must be accompanied with white boards or a substitute with the plot number, date, direction, and location (UTM preferably). Video of wildland fire is highly useful for later reference especially for compliance monitoring. Monitors should video to match fire behavior observations (i.e. not filming big flames only but rather document the range of fire conditions). These videos should be stored in the same folders that photographs are stored in.

5.12 Reports

At the end of the monitoring period, all weather, fire behavior, and smoke observations from the fire are collected into a legible package for the burn plan project folder and the electronic folders mentioned in section F.5.11. In addition to forms with the raw data, a narrative summary needs to be written. This report includes a description of who monitored the fire, monitor activities during the monitoring period, a summary of observed fire behavior, a summary of observed weather, and any other pertinent information. Digital images to illustrate weather, smoke, and fire behavior will be included. Ideally, this form would be completed on the day of the observations.

Monitoring forms and notes generated by the assigned lead FEMO or lead Resource Advisor should be compiled at the end of each fire event. Resource Advisor information should be given to the Prescribed Fire Burn Boss, Incident Commander, or the appropriate specialists in the ASD. This information will be used to develop rehabilitation plans, if needed, and to generate the required annual reports to USFWS and SHPO. This information will also be stored in the appropriate project and FEMO folders. If documents are not digital, they need to be digitized or scanned into a digital form.

5.13 Short-term and Long-term Vegetation and Fuel Change

Monitoring short and long-term changes in vegetation and fuel characteristics is an essential part of the adaptive

management process. The goals of the short and long-term vegetation and fuel monitoring program are to provide managers with feedback on whether progress is being made toward achieving the desired conditions for a monitoring type and whether project objectives have been achieved. In order to adequately address both of these goals and the ASD monitoring program design for vegetation and fuel incorporates both landscape and project level monitoring. Project level monitoring began in the late 1990s with parameters developed by an interdisciplinary team (mostly BLM, AZGFD and NAU-ERI) for the Mount Trumbull Ponderosa Pine Ecosystem Restoration Project (MTRP). The BLM previously has been monitoring prescribed fire projects mostly at the first and second monitoring levels with some level three and four monitoring occurring occasionally. NAU-ERI monitors mostly at the third and fourth monitoring levels. Landscape-level short- and long-term change monitoring began in 2006 with the installation long term photo plots and of the first permanent FIREMON plots.

5.14 Compliance and Effectiveness Monitoring

To monitor for compliance, ASD will follow guidance of NEPA documents, RMPs, and the FMP. Within these documents, the ASD implements the Biological Opinions (BO), DOI, BLM, National Fire Program, and other monitoring requirements.

Effectiveness monitoring will be the tool used to determine if actions taken on the landscape are meeting requirements. Managers will be updated every year or when observations indicate that the actions taken to achieve management direction are or are not being achieved.

5.15 Monitoring Methods

FIREMON: FIREMON plots were developed by the fire ecologist in 2006 and 2007. They were located in ponderosa pine, pinyon-juniper, and sagebrush communities outside the MTRP. A Student Conservation Association crew was used to establish the plots.

FEMO Monitoring: Monitoring environmental and fire observation levels will be implemented when possible and when qualified individuals are available. If FEMOs are not available, fire crews will observe and document fire weather conditions as needed.

Monitoring: The majority of monitoring on the ASD was started in 1995 by NAU-ERI on the Mount Trumbull Ponderosa Pine Ecosystem Restoration Plan. The AZGFD joined the effort in 1996. NAU also has numerous graduate study research studies at the Mt. Trumbull and Mt. Logan area. Several other universities and the USGS also conduct research on the ASD.

Dry weight and pace frequency transects: Dry weight and pace frequency transects have been established on the ASD since 1980. The range program has established key areas that have been impacted by fire. The fire program has several pace frequency transects that were completed in the 1990s. This information can be used to determine if management direction is being achieved.

Photo Plots: Each plot is marked by a rebar stake as a reference point. The stake is painted yellow and pounded into the ground far enough so it cannot be pulled out by hand. The stake should not stand so high as to attract attention but high enough to be found. Each rebar stake is labeled with metal tags. The tag should have the plot name and number on it. For example, on the Kelly Dam prescribed fire, the first plot should be labeled Kelly Dam 1. Four photographs need to be taken at true north, south, east, and west. The rebar should be in the photo if possible. A white board or paper on a clip board should read the following information: plot name, plot number, date, UTM, and direction. A wide angle lens should be used to show tree tops and ground cover. The original photographs (hard copies) should be taken along so any person can reproduce that same photo. People in the photograph help reference the size and structure of vegetation. Survey rods may also be used for this purpose.

Burn severity mapping: Burn severity mapping incorporates remote sensing data, standard image processing techniques, and field validation plots to provide landscape-scale information on the magnitude of ecological change caused by fire. At this time, the ASD does not participate in the Monitoring Trends in Burn Severity

(MTBS) project. When funding and expertise are available, burn severity mapping data will be used in the future to determine whether fire severity objectives are met and to help determine whether landscape-scale fire effects are within the desired range of variability. For burn severity mapping, the sampling units will be initially identified by calculating the difference in the Normalized Burn Ratio (NBR) between pre-fire and post-fire Landsat Thematic Mapper (TM) and Enhanced Thematic Mapper Plus (ETM+) images (for information on the NBR and satellite image processing refer to the NBSMP website: <http://burnseverity.cr.usgs.gov/>). A maximum of five burn severity classes, or sampling units, are mapped within each fire >300 acres. The five burn severity classes distinguish areas of a fire that are unburned and areas that have undergone low, moderate-low, moderate-high, and high levels of ecological change (Table F.5.3) due to fire. Burn severity mapping is conducted during the peak growing season the first year after fire (generally 9-16 months post-fire), and the sampling units and field measurements for each year are determined based on the fires that occurred in the previous year.

Table 5.1. Severity classes and associated ecological changes described by the burn severity mapping program.

Burn severity class	Ecological change	Typical fire intensity
Unburned	none	N/A
Low	Fire was non-lethal to the dominant vegetation and did not alter the structure of the dominant vegetation. Scattered small, unburned patches intermixed within burn area. Scorching of vegetation generally limited to 1 meter high or less. Small organic material on ground scorched, but not entirely consumed. Most foliage and twigs intact. Mineral soil rarely exposed.	Usually results from low-intensity surface fire; torching is extremely rare.
Moderate-Low	Partial scorching with minimal consumption of foliage and fine materials on aboveground vegetation. Most green vegetation remains in overstory. Limited overstory tree mortality. Few, if any, unburned patches within the burn area. Most fine organic materials partially consumed, with minimal consumption of large logs. Rotten wood scorched to partially burned. Mineral soil intermittently exposed.	Usually results from low- to moderate-intensity surface fire with isolated single tree torching.
Moderate-High	Considerable scorching, with partial consumption, of foliage and fine materials on aboveground vegetation. Minimal green vegetation remains in overstory. Some overstory tree mortality likely. Consistent patches within burn area have large logs as well as all organic materials consumed to bare mineral soil. Most woody debris consumed. Mineral soil generally exposed but intact. May include up to 10% stand-replacing fire with extremely vigorous vegetative regrowth.	Usually results from moderate- to high-intensity surface fire with single tree and small-scale group torching.

Burn severity class	Ecological change	Typical fire intensity
High	Fire killed aboveground parts of all vegetation, resulting in stand-replacement and changing the forest structure substantially. All foliage and fine materials on vegetation consumed. Most large logs as well as all organic material on the ground consumed. All forest litter and duff consumed, exposing bare mineral soil.	Usually results from crown fire or large-scale group torching.

5.16 Sampling Design and Field Measurements/Burn Severity Mapping

The goal of field sampling in the burn severity mapping framework is to validate the severity classes initially identified by the difference in pre- and post-fire NBR (dNBR) calculation and to assist with refining the range of dNBR values that represent each severity class for a particular fire. From years of experience in mapping burn severity on other federal lands, we know that the range of dNBR values representing a severity class can differ between fires, especially if the fires occur in areas that have burned in the recent past. For this reason, we will conduct field validation for each severity class in every fire analyzed under the burn severity mapping program on the ASD.

Field validation is conducted using the Composite Burn Index (CBI) plots described in the FIREMON Landscape Assessment protocol (Key and Benson 2006). The number of 30-meter diameter CBI plots installed per fire depends on fire size and complexity. Since the primary purpose of these plots is to refine the severity classes identified from the dNBR values, the plots are not randomly placed within the fire. Instead, the locations of the CBI plots are strategically chosen to provide representative samples of each dNBR-identified severity class and are typically installed in the center of 60 × 60 meter blocks that are homogeneous in terms of burn severity. In addition, CBI plot locations may be targeted in areas representing the upper and lower dNBR values for a severity class in order to help refine the range of dNBR values that correspond to a severity class.

Using the CBI plot framework, monitors quantify burn severity as a function of the degree of surface fuel consumption, soil alteration, and fire effects to overstory, midstory, and understory vegetation. Under this protocol, 21 indices of fire severity are evaluated and rated on a scale of 0 to 3, from no effect to highest severity. The average rating of these indices is used as the plot CBI value. In addition to the severity ratings, digital photographs are taken from two different angles to visually document fire severity and notes on community type, percent mortality of trees, and percent ground area covered by dead and down trees from the fire are recorded.

6 Data Management and Analysis

The following describes the environmental monitoring, data analysis, and data sharing responsibilities of the WFMP with the ASD.

6.1 Environmental Monitoring

The CCIFC manages fire weather and fire danger rating data and is responsible for quality control of that data. The ASD WFMP is responsible for data management and quality control of fuel moisture monitoring data.

The assigned FEMO, Burn Boss, IC or Fire Ecologist is responsible for data management and quality control of burn-day fire observation data. Fire observation data can be collected with the standardized forms on either hardcopy sheets or other electronic devices. Finally, the information must be digitized or scanned for digital storage. All data collected must be turned over to the Fire Ecologist for electronic storage. Generally, the Fire Ecologist stores all data on the S:/Fire drive. Another copy should be at another location in case of information loss. A hard copy will be added to the appropriate fuels project folder.

The Fire Ecologist is responsible for ensuring that data quality checks are taking place for the vegetation and fuel monitoring program. The Fire Ecologist is also responsible for monitoring design and interpretation, ensuring plot visits are scheduled at the appropriate time of year, and ensuring monitoring crews are properly trained. The Fire Ecologist may direct these responsibilities to a FEMO.

Burn severity mapping data management and quality control is the joint responsibility of the GIS Specialist and the Fire Ecologist. Field data for burn severity mapping are collected and transferred to the GIS Specialist for analysis and backup. CBI field data collected in conjunction with burn severity mapping will be managed in Microsoft Excel files and are scheduled for conversion to FFI by national-level contractors. Digital field data, plot location points, and plot photographs are maintained by the Fire Ecologist and backed up on external hard drives.

The assigned lead READ is responsible for data management and quality control of natural and cultural resource observation data during fires. The assigned lead READ is also responsible for management of data collected during fires to fulfill year-end reporting requirements.

The Fuels Specialist is responsible for the final input of data into NFPORS for monitoring and Multiple Objective Wildfire.

6.2 Data Analysis

Trends in environmental monitoring data are assessed prior to a planned prescribed fire by the specialists (e.g. fire, wildlife, range) responsible for collecting the data. Long-term trend analysis occurs for weather, fire danger rating, and fuel moisture variables. Analysis of natural and cultural-archaeological resource variables is conducted by staff from the ASD.

The Fire Ecologist analyzes vegetation and fuel monitoring data for all management objectives in preparation of an ASD Fire Ecology Report as needed or requested by management. Analysis may be performed on variables not included in management objectives at the request of ASD staff or external partners. Prior to analysis, data are tested for normal distribution. If data are normally distributed, analyses are performed using either the parametric tests available in FFI (*F*-test and Dunnett's multiple comparison procedure) or appropriate tests available in external statistics software packages. If data are not normally distributed, the non-parametric tests available in FFI (Friedman's chi-square and non-parametric multiple comparisons based on Friedman's Rank Sums) or equivalent tests available in external statistics software packages are used for analysis.

The Fire GIS Specialist analyzes CBI field data for burn severity mapping. Based on the final CBI plot value, plots are categorized as unburned, low, moderate-low, moderate-high, and high severity. The data from the plots within each severity class are used to finalize the numerical cut-off points between severity classes on the dNBR image.

6.3 Data Sharing

Data relevant to fire management are collected by other programs (e.g. NAU-ERI or AZGFD), and by outside researchers (government and university). In addition, data collected by the Fire Ecologist may be relevant to addressing other resource management questions on the ASD. There is currently no formal mechanism to combine these data and use them in an integrated format to inform fire or resource management. However, intermittent data sharing has occurred between the ASD WFMP and other programs within and outside the area.

7 Reporting and Adaptive Management

Monitoring data provide the basis for adaptive management and communication of monitoring results. This is a key step in the process to determine whether treatments are meeting objectives or whether they need modification. Monitoring data are incorporated into ASD fire planning documents and used to evaluate and, if necessary, refine monitoring designs, treatment strategies, and/or monitoring and treatment objectives. Monitoring data may also raise additional questions about the effects of fire management on the ASD landscape and highlight the need for research projects.

The data analysis and communication step of adaptive management occurs on a number of time scales. Information may be available within the day (fire weather and behavior observations), at the completion of the treatment (overall treatment effectiveness or initial fire effects), or a year or more after treatment (burn severity, long-term effects on target or non-target vegetation). The evaluation step in adaptive management includes both targeted and synoptic assessment of the program. In some cases, this evaluation can be quantitative (comparing measured effects with predicted effects), while in other cases, a qualitative, or even subjective analysis may be required (for example, trade-offs between visibility impact and fuel reduction). An evaluation process occurs after each treatment in the form of After Action Reviews (AAR). These AARs can be used as a way to review monitoring reporting on a timely basis. Also, after each season there is an annual internal fire program review, and this also can be used as a way to review monitoring reporting. Based on the program evaluation, opportunities for improvement may become apparent. Monitoring and evaluation of different resources may occur on different time scales (ranging from days to a few years), so the adjustment phase may be ongoing, rather than a specific action. Overall, the adjustment phase is most likely to occur daily for tactical issues on a given fire, post-fire for immediate resource concerns, annually as part of the Fire Management Plan annual review, and as needed in the development or revision of prescribed fire plans.

Monitoring accomplishments and results from vegetation and fuel monitoring data analysis are reported as needed. In the future when funding and expertise is available, an annual report will be completed. This report includes a summary of monitoring activities from the year, results from data analysis, interpretation of data in the context of adaptive management, and discussion of the degree to which treatment objectives are being met. The annual report is shared with fire management staff, resource management staff, and upper division managers on the ASD as well as with state and national office staff and interested parties outside of the ASD. It also will be posted on <http://teamspace/sites-az/azfire/default.aspx> (Arizona BLM site). The information presented in the annual report will help guide the annual review of the monitoring plan.

When requested, an annual report to USFWS is required as part of the BO for the FMP. The report is completed each year by the Lead Wildlife Biologist and Fire Ecologist. The BO report outlines calendar year's actions in relation to listed species, documents effects to species and their habitat from fire management activities, documents the implementation and effectiveness of the terms and conditions of the BO, and outlines rehabilitation efforts.

ASD cultural resources must follow reporting guidelines stated in the National Historic Preservation Act (NHPA). References can be found in the Federal Historical Preservation Laws Book (U.S. Department of the Interior, National Park Service, and Cultural Resources Programs).

Reports are provided to internal and external stakeholders to aid in the evaluation of program activities. In addition to these reports, reporting occurs via conversation, phone, and email on a routine basis between the Fire Ecologist, lead FEMO, fire and management staff.

Monitoring results may be presented at conferences and other meetings or submitted for publication in journals. Results that both support and contradict published literature are of special interest.

8 Fire Research

Federal Wildland Fire Management Policy (U.S. Government 2001) states that fire management plans and programs will be based on a foundation of sound science. Research will support ongoing efforts to increase our scientific knowledge of biological, physical, and sociological factors, must be made available to managers in a timely manner, and must be used in the development of fire management plans, and implementation plans.

Conducting research that will help define natural fire regimes, refine prescriptions, provide data for fire behavior models, and effectively implement the ASD Wildland WFMP is an objective of the ASD FMP. In addition to understanding the historic and current role of fire in ecosystems, fire-related research on the ASD aims to acquire the knowledge necessary to improve fire management practices that affect the natural, cultural, and social values.

8.1 Past and Current Research

Past fire-related articles and publications within ASD:

- Abella, S.R. and i.D. Springer. 2009. Planting trials in northern Arizona ponderosa pine forests. *Ecological Restoration* 27: 290-299.
- Abella, S.R. 2008. Managing Gambel oak in southwestern ponderosa pine forests: the status of our knowledge. USDA Forest Service General Technical Report, RMRS-GTR-218.
- Brooks, M.L., C. Deuser, J.R. Matchett, H. Smith and H. Bastain. 2006. Effects of Fuel Management Treatments in Pinyon-Juniper Vegetation at a Site on three Colorado Plateau. JFSP Project Number 03-3-3-58
- Chambers, C.L. 2002. Forest management and the dead wood resource in ponderosa pine forests: effects on small mammals. USDA Forest Service General Technical Report, PSW GTR-181.
- Chambers, C.L., V. Aim, M.S. Siders, and M.J. Rabe. 2002. Use of artificial roosts by forest dwelling bats in northern Arizona. *Wildlife Society Bulletin* 30:1085-1091.
- Covington, W.W., T. Heinlein, P. Fule, A. Waltz, and J. Springer, 1999. Changes in ponderosa pine forests of the Mt. Trumbull Wilderness. Ecological Restoration Institute.
- Daniels, M.L., J. Springer, C. McGlone, and A. Wilkerson. 2008. Seeding as part of forest restoration promotes native species establishment in Grand Canyon-Parashant National Monument (Arizona). *Ecological Restoration* 26:188-190
- Diggins, C., P.Z. Fulé, J.P. Kaye, and W.W. Covington. 2010. Future climate affects management strategies for maintaining forest restoration treatments. *International Journal of Wildland Fire* 19:903-913.
- Elson, M.T. 1999. Tassel-eared squirrel foraging patterns and projected effects of ecological restoration treatments at Mt. Trumbull, Arizona. Thesis. Northern Arizona University School of Forestry.
- Fulé, P.Z. J.P. Roccaforte, W.W. Covington. 2007. Post treatment tree mortality after forest ecological restoration, Arizona, United States. *Environmental Management* 40:623-634.
- Fulé, P.Z., G. Verkamp, A.E.M. Waltz, and W.W. Covington. 2002. Burning under old-growth ponderosa pines on lava soils. *Fire Management Today* 62:47-49.
- Germaine, S.S., H.L. Germaine, and S. B. Boe. 2004. Characteristics of mule deer day-bed and forage sites in current-condition and restoration-treated ponderosa pine forest. *Wildlife Society Bulletin* 32:554-564.
- Germaine, S.S. and H.L. Germaine. 2003. Lizard distributions and reproductive success in a ponderosa pine forest. *Journal of Herpetology* 37:645-652.
- Germaine, H. and L.S. Germaine. 2002. Forest restoration treatment effects on the nesting success of Western Bluebirds (*Sialia mexicana*). *Restoration Ecology* 10:362-367.1
- Huffman, D.W., M.T. Stoddard, P.Z. Fulé, W.W. Covington, and H.B. Smith. 2008. A demonstration project to test ecological restoration of a pinyon-juniper ecosystem. USDA Forest Service Proceedings, RMRS-P-51. Pp. 12 1-133
- Hurteau, M., M. Stoddard, and B. Oberhart. 2001. Sampling method captures vegetation and wildlife data in a sagebrush grassland ecosystem. *Ecological Restoration* 19:268-269.
- Jerman, J.L., P.J. Gould, and P.Z. Fulé. 2004. Slash compression treatments reduced tree

- mortality from prescribed fire in southwestern ponderosa pine. *Western Journal of Applied Forestry* 19:149-153.
- Kalies, E.L. 2010. The effects of forest management on small mammal community dynamics in southwestern ponderosa pine ecosystems. Dissertation. Northern Arizona University School of Forestry.
- Kalies, E.L., C.L. Chambers, and W.W. Covington. 2010. Wildlife responses to thinning and burning treatments in southwestern conifer forests: a meta-analysis. *Forest Ecology and Management* 259: 333-342.
- Knox, S.C., C. Chambers, and S.S. Germaine. 2001. Habitat associations of the sagebrush lizard (*Sceloporus graciosus*): potential responses of an ectotherm to ponderosa pine forest restoration treatments. *USDA Forest Service Proceedings, RMRS-P-22*. Pp.95-98.
- Korb, J.E., J.Springer, S. Powers, and M. Moore. 2005. Soil seed banks in pinus ponderosa forests in Arizona: clues to site history and restoration potential. *Applied Vegetation Science* 8:103-112.
- Martin, S.I., T.C. Theimer, and P.Z. Fulé. 2005. Ponderosa pine restoration does not affect turkey roost site use in northern Arizona. *The Wildlife Society Bulletin* 33: 859-864.
- McGlone, C.M. and D. Egan. 2009. The role of fire in the establishment and spread of nonnative plants in Arizona ponderosa pine forests: a review. *Journal of the Arizona-Nevada Academy of Science* 41:75-86.
- McGlone, C.M., J.D. Springer, and W.W. Covington. 2009. Cheatgrass encroachment on a ponderosa pine forest ecological restoration project in northern Arizona. *Ecological Restoration* 27: 37-46.
- McGlone, C.M., J.D. Springer, D.C. Laughlin. 2009. Can pine forest restoration promote a diverse and abundant understory and simultaneously resist nonnative invasion? *Forest Ecology and Management* 258: 2638-2646.
- McGlone, C.M., C.H. Sieg, and T.E. Kolb. 2010. Invasion resistance and persistence: established plants win, even with disturbance and high propagule pressure. *Biological Invasions DCI* 10. 1007/s10530-010-9806-8.
- Mock, K. E., E. Latch, and O. Rhodes. 2004. Assessing losses of genetic diversity due to translocation: long-term case histories in Merriam's turkey (*Meleagris gallopavo merriami*). *Conservation Genetics* 5:631-645.
- Moore, K., B. Davis, and T. Duck. 2003. Mt. Trumbull ponderosa pine ecosystem restoration project. *USDA Forest Service Proceedings, RMRS-P-29*. Pp. 117-132.
- Roccaforte, i.P., P.Z. Fulé, and W.W. Covington. 2008. Landscape-scale changes in canopy fuels and potential fire behavior following ponderosa pine restoration treatments. *International Journal of Wildland Fire* 17:293-303.
- Roccaforte, i.P., P.Z. Fulé, and W.W. Covington. 2009. Assessing changes in canopy fuels and potential fire behavior following ponderosa pine restoration. *Fire Management Today* 69:47-50.
- Roccaforte, J.P., P. Fule, and W.W. Covington. 2010. Monitoring landscape-scale ponderosa pine restoration treatment implementation and effectiveness. *Restoration Ecology* 18:820-833.
- Romme, W., C. Allen, J. Bailey, W. Baker, B. Bestelmeyer, P. Brown, K. Eisenhart, L. Floyd-Hanna, D. Huffman, B. Jacobs, R. Miller, E. Muldavin, T. Swetnam, R. Tausch, and P. Weisberg. 2009. Historical and modern disturbance regimes, stand structures, and landscape dynamics in piñon-juniper vegetation of the western U.S. *Rangeland Ecology and Management* 62:203-222.
- Scoles, S.J., T.C. Esque, L.A. DeFalco, S.E. Eckert, D.F. Haines. 2003. Cheatgrass and Red Brome abundance following post-fire revegetation treatments in a Pinyon-Juniper Community at Parashant National Monument, Arizona. *USGS Las Vegas Field Station, NV*.
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- Sorensen, C.D. and C.M. McGlone. 2010. Ponderosa pine understory response to short-term grazing exclusion (Arizona). *Ecological Restoration* 28: 124-126.
- Springer, J.D., A. Waltz, P. Fule, M. Moore, and W.W. Covington. Seeding versus natural

- regeneration: a comparison of vegetation change following thinning and burning in ponderosa pine. USDA Forest Service Proceedings RMRS-P-22. Pp. 67-73.
- Springer, J.D., and D.C. Laughlin. 2004. Seeding with natives increases species richness in a dry ponderosa pine forest (Arizona). *Ecological Restoration* 22:220-221.
- Springer, J.D., M.L. Daniels and M. Nazaire. 2009. Field guide to forest & mountain plants of Northern Arizona. Ecological Restoration Institute, Northern Arizona University, Flagstaff, AZ.
- Stoddard, M.T., D.W. Huffman, T.M. Alcoze, and P.Z. Fulé. 2008. Effects of slash on herbaceous communities in pinyon-juniper woodlands of northern Arizona. *Rangeland Ecology and Management* 61:485-495.
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- Wightman, C.S., and S.S. Germaine. 2006. Forest stand characteristics altered by restoration affect Western Bluebird habitat quality. *Restoration Ecology* 14:653-661.
- Wightman, C.S., S.S. Germaine and P. Beler. 2007. Landbird community composition varies among seasons in a heterogeneous ponderosa pine forest. *Journal of Field Ornithology* 78:184-194.

ASD personnel are currently working with researchers to investigate the short- and long-term implications of fire and vegetation treatments on fires during the 2005 and 2006 seasons. The research started in 2006 and will continue through 2014. The fires include Jacob 05, Cockscorn, Nevershine, Cedar Wash, Brumley, Hungry and Cottonwood. This monitoring and research will allow fire managers to better understand how to identify suitable species for native plant material development on desert revegetation projects.

8.2 Research Needs

Future fire research needs will be addressed on an as needed basis. The Fire Ecologist will facilitate the prioritization process with input from fire, resource management staff and other partners. Fire research needs related to vegetation, wildlife, cultural resources, air quality, hydrology, fuel management, and social and economic values will be identified from these sources.

Vegetation and Fuel

- Determine FRCC, fire regime, reference conditions, and wildland fire effects on all vegetation types.
- Determine the effectiveness of multiple entry fires and temporal spacing of fire for fuel reduction.
- Investigate the effects of fire management activities, the influence of the spatial scale of fire patches, and post-fire succession on exotic plant species invasion.
- Model expected range of variation in fire regimes and fire behavior in climates experienced now and predicted for the future.
- Determine the effectiveness of post-fire rehabilitation techniques and refine rehabilitation methodologies.
- Mine existing data from historical fire and rangeland (mainly old chainings) treatments to construct maps and the possibility of re-treating those older projects.
- Develop a map of *Bromus* spp. (cheatgrass, red brome, and ripgut brome) locations in all areas from existing data, determine threshold levels that would trigger control actions, and prepare an action plan in the FMP that includes control measures and recommended fire management activities.

- Determine effects of burning in different seasons on fuel reduction, vegetation response, and exotic plant species invasion.
- Mine existing data and gather new data on the current status of invasive and rare plant species in burn units to inform prescribed fire plan objectives.
- Develop maps of all wildfires managed for multiple objectives.

Wildlife

- Investigate the effects of burn severity on desert tortoise habitat components.
- Investigate the influence of spatial scale of fire patches and succession on bird communities.
- Determine effects of burning in different seasons on wildlife habitat and populations.

Cultural Resources, Social and Economic Values

- Determine the effectiveness of mitigation measure treatments for cultural resources.
- Understand fire effects on cultural resources using post-fire archeological surveys.
- Understand the response of ethnographically important plants to fire.
- Understand tribal perspectives on managing fire effects to cultural resources.
- Examine the short term (immediate to 5 years) displacement of grazing operations.
- Examine the long term benefits or negative impacts on forage for grazing on multiple objective fires.
- Determine the cost effectiveness of wildland fires managed for multiple objectives and prescribed fires of varying size.
- Survey visitor understanding and opinions on fire management activities, fire management goals and benefits, and change in fire policy implementation.
- Understand effects of fire management activities to visitor experience (closures, viewshed, soundscape,).
- Examine whether wilderness stewardship mitigations are effective at meeting the goals of both wilderness management and fire management.

Air Resources

- Investigate smoke impacts into Class I Airsheds.

Water Resources

- Investigate changes in potential for debris flows and flash floods following fire.
- Determine fire effects to water quality in canyons.
- Understand fire effects to seeps and springs.

9 Roles and Responsibilities

The following describes the roles and responsibilities of the WFMP within the ASD.

9.1 Staff Roles and Responsibilities

The roles and responsibilities of the Fire Management Officer are to supervise and coordinate with the Fire Ecologist, GIS Specialist and the FEMOs to ensure that fire monitoring is completed in a professional and scientific way. The responsibilities of Fire Monitoring are as follows:

Fire Ecologist

The Fire Ecologist serves as the program expert in fire ecology and coordinates with other resource managers to collect scientific information regarding long- and short-term effects of fire and fuel management activities. The Fire Ecologist is responsible for the development and implementation of the fire effects monitoring plan, which includes assessment and modification of the monitoring design and analysis of data. The Fire Ecologist is also responsible for ensuring that data management and quality control procedures are in place and for overseeing the training of the FEMOs. The role of the Fire Ecologist in the adaptive management process is to report monitoring results to fire and resource managers, conduct literature reviews, and interpret results, identify fire- and fuel-related research needs, and coordinate research efforts. The Fire Ecologist assists with the development of quantifiable objectives for prescribed fire and non-fire fuel treatment plans and reviews fire management, prescribed fire, and non-fire fuel treatment plans. In addition, the Fire Ecologist coordinates with regional and national fire ecologists, the Inventory and Monitoring Program, and other resource management monitoring programs, and acts as a liaison with ASD natural and cultural resource programs. The Fire Ecologist has budget and fiscal responsibility for the WFMP and enters the necessary information into the NFPORs program.

GIS Specialist

The GIS Specialist provides a variety of support products to the ASD Wildland Management Program, such as geospatial expertise, analysis, data layers, and maps. Also, in support of the Fire Monitoring Plan, the GIS Specialist manages the fire history database, WFDSS maps, downloading GPS data, and provides other resource maps for multiple objective fires.

Fire Effects Monitor (FEMO)

Fire Effects Monitors contribute to the collection of data needed to determine the effectiveness of the ASD WFMP in meeting objectives. FEMOs are responsible mostly for environmental and fire observation level monitoring. In addition, they also assist in monitoring on long-term changes. FEMOs collaborate with the Fire Ecologist and Fire Operations Specialist (FOS) on gathering data. FEMOs also assist with the implementation and monitoring of fire treatments as needed and as available.

Fuels Specialist

The Fuels Specialist is responsible for the final input of data into NFPORS for monitoring and wildfires that are managed for multiple objectives.

9.2 Work Plans and Prioritization

The Fire Management Officer develops annual work plans and priorities for the Fire Ecologist. The Fire Ecologist is responsible for monitoring related to fire.

10 Consultation, Collaboration and Review

This wildland fire monitoring and research plan was compiled in consultation with many stakeholders. The implementation of this plan and future reviews will continue to involve collaborations with these and other interested parties.

10.1 Plan Input

Several meetings were held to solicit input into this monitoring plan. Emails and conversations were conducted to develop and complete the monitoring plan. The following individuals contributed to these and other sections through meetings and informal conversation:

Table 10.4 Individuals who provided substantial input during monitoring plan development.

Name	Resource	Title	Input
Brian Bock	ASD, Fire	Fire Ecologist/Fire Resource Specialist	Writer, data mining, research
Doug Havalina	National Interagency Fire Center (NIFC)	BLM Lead Fire Ecologist	Consulter
Lee Hughes	ASD, plant		Plant species occurrence, monitoring
Mark Pater	BLM Safford, AZ	Fire Ecologist	Reviewer
Mark Rosenthal	ASD, Fire	Fire Management Officer	Reviewer, data manager, goals and objectives
Scott Florence	ASD, management	ASD Manager	Reviewer, goals and objectives, monitoring design
Michelle Petty	ASD, fire	Budget specialist	Technical communication reviewer
Ted Milesnick	NIFC	Branch Chief Fire Planning	Consulter
Whit Bunting	ASD, Range	Range Management Specialist	Monitoring, Plant species occurrence, research needs
Windy Bunn	Grand Canyon National Park(GCNP), Fire	Fire Ecologist	Consulter, supplied the GCNP monitoring template
Ann McLuckie	Utah Division of Wildlife Resources	Wildlife Biologist	Reviewer of monitoring design, data management/analysis, and statistics

10.2 Agency/Interagency Collaboration

The ASD WFMP will collaborate closely with the ASD resource staff, with other agency, and Nongovernment Organizations to assess the effects of fire management activities on invasive plant species.

The ASD Fire Ecologist will also collaborate with all necessary academic, government and nongovernment entities to further monitoring and to identify areas where monitoring data can be shared.

ASD staff, with support from ASD Wildland Fire Management staff, will work with U.S. Fish and Wildlife Service, Arizona State Historic Preservation Officer, Arizona Game and Fish, universities, and affiliated Indian Tribes to keep these stakeholders informed of fire management activities, monitoring, and research results.

10.3 Peer review

Peer/technical review for this plan was provided by:

Reviewers include:

Name	Title
Brian Bock	Fire Ecologist, ASD
Mark Pater	Fire Ecologist, BLM Safford Field Office
Mark Rosenthal	Fire Management Officer, ASD

Scott Florence	Manager, ASD
Ann McLuckie	Wildlife Biologist, Utah Division of Wildlife Resources

11 References

- Covington, W.W., M.M. Moore, P.Z. Fulé, and H.B. Smith. 2000. Grand Canyon Forest Restoration. Research objective 1: Landscape studies of fire regimes and forest structure. Ecological Restoration Institute, Northern Arizona University, Flagstaff, Arizona.
- Ffolliott, P.F., W.P. Clary, and J.R. Davis. 1968. Some characteristics of the forest floor under ponderosa pine in Arizona. Research Note RM-127. U.S. Department of Agriculture, Forest Service.
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- Smith, Ed. 2006b. Historical Range of Variation and State and Transition Modeling of Historical and Current Landscape Conditions for Ponderosa Pine of the Southwestern U.S. Prepared for the U.S.D.A. Forest Service, Southwestern Region by The Nature Conservancy, Tucson, AZ.
- SWCC (Southwest Coordination Center). 2004. Southwest Area Fuel Moisture Monitoring Program: Standard Methods and Procedures. Southwest Coordination Center, Albuquerque, NM.

U.S. GOVERNMENT

- 2009 Guidance for Implementation of Federal Wildland Fire Management Policy, 13 February 2009
- 2001 Review and update of the 1995 Federal Wildland Fire Management Policy. Bureau of Land Management Office of Fire and Aviation, National Interagency Fire Center, Boise, ID.

U.S. DEPARTMENT OF THE INTERIOR (USDO)

Bureau of Land Management (BLM)

- 2004 Arizona Statewide Land Use Plan Amendment for Fire, Fuels and Air Quality Management and Decision Record. U.S. Department of the Interior, Bureau of Land Management, Arizona State Office, Phoenix, AZ.
- 2008 Arizona Strip Field Office Record of Decision and Resource Management Plan. U.S. Department of the Interior, Bureau of Land Management, Arizona Strip Field Office, 345 East Riverside Drive, St. George, UT.
- 2008 Fire Planning Handbook (Interim Guidance), Bureau of Land Management Handbook H-9211-1, June 2008
- 2008 Grand Canyon Parashant National Monument, Record of Decision and Resource Management Plan/General Management Plan, U.S. Department of the Interior, Bureau of Land Management, Lake Mead National Recreation Area, National Park Service, 345 East Riverside Drive, St. George, UT.
- 2010 Monitoring of Fine Fuels and Fuel Moisture (IM No. AZ-2011-006) (9210 (9340) I, 23 December 2010.
- 2008 Integrated Vegetation Management, BLM Handbook, H1740-2, Rel 1-1714
- 2008 Vermillion Cliffs National Monument, Record of Decision and Resource Management Plan, U.S. Department of the Interior, ASD, Bureau of Land Management, 345 East Riverside Drive, St. George, UT.
- 2011 Instruction Memorandum No. AZ-2011-006, Monitoring of Fine Fuels and Fuel Moisture, appendices 11.1
- Prescribed Fire Management Handbook, Utah State B L M Forest Service Intermountain Region, page 1-19.

Fish and Wildlife Service (USFWS)

- 2004 Biological and Conference Opinion for the BLM Arizona Statewide Land Use Plan Amendment for Fire, Fuels, and Air Quality Management U.S. Fish and Wildlife Service, 2321 West Royal Palm Road, Suite 103, Phoenix, Arizona.
- 2007 Biological Opinion for the Arizona Strip Resource Management Plan. U.S. Fish and Wildlife Service

2321 West Royal Palm Road, Suite 103, Phoenix, Arizona.

National Park Service (NPS)

2003 Fire Monitoring Handbook. WFMP Center, National Interagency Fire Center, Boise, ID. 274 pp.
NPS Fire Monitoring Handbook (NPS 2003), or the forms found in the Interagency Fire Use Module Field Guide (2005) or the Interagency Fire Use Module Field Guide 2008-2009.

Appendix F - BLM-USFWS Wildfire Suppression Documentation

This form is used to document actions taken on a wildfire that may affect threatened or endangered species, their habitat, or designated critical habitat. This form constitutes the report to the U.S. Fish and Wildlife Service (FWS) on this wildfire suppression action. Please note that additional consultation may be required if conservation measures cannot be followed or if incidental take is exceeded (see FWS File # 02-21-03-F-0210). Depending upon scope and effects, separate consultation may be needed for BAER activities.

GENERAL FIRE INFORMATION

Fire Name: _____ BLM Fire # _____

Fire Start Date: _____ Fire Suppression End Date: _____

Date(s) Contacted FWS: _____ FWS Contact Name: _____

Resource advisor name(s) and contact information: _____

Notes: _____

**Provide information discussed with FWS contact. Include any decision items and/or reporting requirements agreed upon during the course of the suppression action. Add additional dates and contact names to this form when appropriate.*

Consultation # 02-21-03-F-0210 _____ New FWS File # Issued: _____

Cause of Fire: _____

Fire Location Description/Legal Description: _____

**Include a Vicinity Map. Please provide GIS shapefiles.*

General Description of Habitat [e.g., Brown and Lowe classification]: _____

Suppression Start Date: _____ Suppression End Date: _____

**Include a Suppression Action Map. Show all suppression actions applied to the fire. Delineate dozer lines, hand lines, burn out areas, locations of retardant/water drops, base camp, staging areas, spike camp, helispot, water dip site, etc. Locating the boundary where the wildfire and fire suppression operations meet may be difficult at times; however, this information is helpful when identifying effects to T/E species from suppression actions. Please provide GIS shapefiles.*

Emergency Stabilization Start Date: _____ Emergency Stabilization End Date: _____

Rehabilitation Start Date: _____ Rehabilitation End Date: _____

Emergency Stabilization/Rehabilitation Description and Location: [If emergency stabilization/rehabilitation actions occur greater than 30 days after containment of the wildfire, a separate Section 7 consultation may be required.]

**Provide a description of the suppression/emergency stabilization operations listed in the 24hr Activity Report(s) (Appendix F-A). Include the type(s) of equipment used, number of personnel on the fire, methods, locations, etc. Where applicable, correlate the suppression/ emergency stabilization/rehabilitation operations with the appropriate maps. Please provide a copy of the 209 forms (initial fire report) and attach them to this form.*

**Include an Emergency Stabilization/Rehabilitation Map. Show all Emergency Stabilization/Rehabilitation actions applied to the fire; combine the location of these actions with the Suppression Action Map if possible. Please provide GIS shapefiles.*

Table 1. Aerial suppression equipment and associated actions

Action and/or Equipment Type	Water Only Drops	No. Drops/ Aircraft Type	No. of Aerial Flights Over Action Area	Height Above Ground within T/E Habitat (Range in feet)	No. of Water Dips from Waterway ¹	Total Acres Impacted
Helicopter						
Fixed Wing						
Aerial Strip Lighting						

**The list of actions and equipment above are for example only. Please fill in the appropriate actions and/or equipment type used on the wildfire.*

Table 2. Ground-based suppression equipment and actions

Action and/or Equipment Type	Description of use	Location	Feet/miles of line or acres impacted
Engine			
Dozer Line			
Hand Line			
Burnout			

¹ If more than one location is used, please provide an additional table with the location name and # of water dips. Water dip locations should be shown on the Suppression Action Map.

Backfire			

**The list of actions and equipment above are for example only. Please fill in the appropriate actions and/or equipment type used on the wildfire. Please include any other actions that required habitat removal for staging areas, spike camps, helispots, etc.*

Table 3. Ground/Aerial Suppression chemicals used

Fire Chemical Product	Aerial Application (Y/N)	Ground Application (Y/N)	Gallons Applied
Fire-Trol GTS-R			
Phos-Chek 259-R			
Ansul Sylv-ex			
Flame Guard Gel			

**The list of fire chemical products above is for example only. Please fill in the appropriate chemicals used on the wildfire. Report all chemical drops applied within 300 feet of a waterway or with the potential to impact a waterway.*

Wildfire Burn Acres: _____

Severity Burn Acres (approximate)

Low: _____

Moderate: _____

High: _____

Suppression Burn Acres: _____

Severity Burn Acres (approximate)

Low: _____

Moderate: _____

High: _____

**If the above information is available or can be obtained, please provide a Burn Severity Map. Include the low, moderate, and high severity burn locations and delineate them according to Fire Burn and Suppression Burn polygons. Please provide GIS shapefiles.*

Table 4. General/species-specific conservation measures applied

General/Species Specific Conservation Measure Applied	Modification Made To Conservation Measure	Date FWS Official Notified of Modification	FWS Contact Name

**Provide a list of conservation measures applied during the course of the action. The date and contact name may be similar to the contact information on page 1 of this form; however, this table is important for identifying conservation measures implemented and modified. If*

applicable, please include in the Comments section below how the conservation measures were modified.

Comments:

T/E SPECIES WITHIN THE ACTION AREA AND ASSOCIATED EFFECTS

Table 5. Affected T/E Species and habitat acres located within the action area. For the Mexican spotted owl, please report restricted and protected habitat.

Common Name	Suitable Unsurveyed Habitat	Occupied Habitat	Critical Habitat

**The Action Area Map (see Status of the Species within the Action Area) will help identify species located within the Action Area.*

Environmental Baseline [species condition/habitat condition and status in the area]:

**Describe the effects of the past and ongoing human and natural factors leading to the current status of the species and habitat within the action area prior to the action for the species listed in Table 3. Reference recent biological assessment/opinions or other documents, if available.*

**Provide an Action Area Map and delineate a boundary to show all areas affected by suppression/rehabilitation actions. This boundary should be larger than the action (or fire boundary) itself. When delineating the boundary, consider all potential effects to T/E species associated with suppression/rehabilitation actions such as sensitivity to noise, flight patterns, wind patterns and smoke, chemical products, sediment transport, etc. Show T/E species locations and critical habitat within the action area boundary. Please provide GIS shapefiles.*

T/E Species Survey Information: [Please indicate when surveys were last completed.]

Table 6. Suppression/emergency stabilization actions affecting T/E species within the action area (see Appendix F-B)

Species and Location		Description and Level of Impacts								
		Direct Impacts from Aerial Operations	Type of Disturbance (Noise, Smoke, Physical, etc.)	Ignition Acres ^{1 2}	Wildfire Acres ^{1 2}	Chemical Effects	Sediment/Erosion	Water Drafting (ground pump/aerial)	Habitat Removal/Destruction	Injury/Direct Mortality
Suppression/Rehabilitation Operations	Aerial Ignition									
	Aerial Suppression									
	Aerial Rehabilitation									
	Ground Ignition									
	Ground Suppression									
	Ground Rehabilitation									
	Mopup									
Wildfire Only										

Table 7. Effects determinations

Species Name and Location	Effect to Species	Effect to Critical Habitat	Determinations
			NE – No Effect
			NLAA – Not Likely to Adversely Affect
			LAA – Likely to Adversely Affect

**Table 7 must be filled out by a knowledgeable biologist. Your effects determination should be based on information provided in the Suppression Action Map, Emergency Stabilization Map, Action Area Map, Burn Severity Map, Appendix F-A, and Tables 1, 2, and 4. The determinations and species listed in the columns above are for example only.*

Comments:

**Please provide feedback on the use/application of this form and its contents. Suggestions will be used to make improvements to this form and process.*

SIGNATURE PAGE

Once signed and accepted, this documentation form serves as the completed report on this wildfire suppression action.

PREPARED BY

Name/Title
Bureau of Land Management

Date

REVIEWED BY

Biologist Name/Title
Fish and Wildlife Service

Date

Appendix F-A. 24 Hour Activity Report – Provide information that is pertinent to species effects.

AERIAL SUPPRESSION ACTIONS				
	Direct Impacts from Aerial Operations (other than chemical)	Ignition	Chemical	Water Drafting (aerial)
Aerial Ignition				
Aerial Suppression				

GROUND SUPPRESSION ACTIONS				
	Ignition	Chemical	Water Drafting (ground pump)	Habitat Removal/ Destruction
Ground Suppression				
Mopup				

EMERGENCY STABILIZATION ACTIONS				
	Direct Impacts from Aerial Operations	Habitat Removal/ Destruction		
Aerial Rehabilitation				
Ground Rehabilitation				

Date: _____ Time: _____

**Identify the suppression/emergency stabilization actions and the potential direct impacts to T/E species that occur each day. Provide a daily Fire Progression Map with the location of actions applied in the table above. Please provide GIS shapefiles. See examples for a list of potential suppression/rehabilitation operations and associated impacts to T/E species.*

Appendix F-B. Matrix of suppression activities and effects (for use in completing Table 6)

Potential suppression/rehabilitation actions and associated effects when implemented during wildfire suppression activities.		Types of Impacts to Threatened and Endangered Species							
		Direct Impacts from Aerial Operations	Type of Disturbance (Noise, Smoke, Physical, etc.)	Ignition	Chemical	Sediment/Erosion	Water Drafting (ground pump/aerial)	Habitat Removal/Destruction	Injury/Direct Mortality
Suppression/Rehabilitation Operations	Aerial Ignition	X	X	X		X		X	X
	Aerial Suppression	X	X		X		X		X
	Aerial Rehabilitation	X	X						X
	Ground Ignition		X	X		X		X	X
	Ground Suppression		X		X	X	X		X
	Ground Rehabilitation		X						X
	Mopup		X			X	X	X	X

Aerial Ignition: Includes ignition of fuels by dropping incendiary devices or materials from aircraft (NWCG 1996).

Aerial Suppression: Includes aircraft operations used to aggressively suppress a wildfire.

Ground Ignition: Includes all ignition tools and methods used by hand crews to control a wildfire (drip torch, backburn, backfire, burn out, etc.).

Ground Suppression: Includes all suppression tools and methods used by hand crews to control a wildfire (dozer, handline, water drafting, water tender, etc.).

Mopup: Includes extinguishing or removing burning material near control lines, felling snags, and trenching logs to prevent rolling after an area has burned, to make a fire safe, or to reduce residual smoke (NWCG 1996).

Aerial/Ground Rehabilitation: Includes activities necessary to repair damage or disturbance caused by wildfire or the wildfire suppression activity (NWCG 1996).

Direct Impacts from Aerial Operations: Includes water, retardant, and seed dropped from aircraft during suppression/rehabilitation operations.

Chemical: Any chemical used for suppression operations.

EXAMPLES

Example of Table 6. Suppression/emergency stabilization actions affecting T/E species within the action area

Southwestern Willow Flycatcher – Location #1		Description and Level of Impacts								
		Direct Impacts from Aerial Operations	Type of Disturbance (Noise, Smoke, Physical, etc.)	Ignition Acres ^{3 4}	Wildfire Acres ^{1 2}	Chemical Effects	Sediment/Erosion	Water Drafting (ground pump/aerial)	Habitat Removal/Destruction	Injury/Direct Mortality
Suppression/Rehabilitation Operations	Aerial Ignition		Noise/Smoke – See Table X and Map X	50 acres suitable habitat						
	Aerial Suppression	Y – See Table X and Progression Map	Noise from Helicopter							Injured SWFL observed after water drop in occupied habitat.
	Aerial Rehabilitation	Y- seed from helicopter in suitable habitat.	Noise from Helicopter							
	Ground Ignition		Noise/possible flush response from hand crew in suitable habitat. Smoke	75 acres suitable habitat. See Map X, Table X					10 acres of moderate-severity burn in suitable habitat.	
	Ground Suppression		Noise/Physical from hand/control lines						¼ mile long 10-foot wide hand line in suitable	
	Ground Rehabilitation		Physical- 20 fire fighters seeding burn area.							
	Mopup		Noise/Physical- in suitable habitat.							
Wildfire Only					250 acres suitable habitat					

³ Differentiate between occupied/suitable habitat.

⁴ If fire is within Mexican Spotted Owl habitat differentiate between Protected and Restricted habitat.

Loach Minnow		Description and Level of Impacts								
		Direct Impacts from Aerial Operations	Type of Disturbance (Noise, Smoke, Physical, etc.)	Ignition Acres ^{1 2}	Wildfire Acres ^{1 2}	Chemical Effects	Sediment/ Erosion	Water Drafting (ground pump/aerial)	Habitat Removal/ Destruction	Injury/Direct Mortality
Suppression/Rehabilitation Operations	Aerial Ignition									
	Aerial Suppression		Physical-Water Drafting from Helicopter in Occupied habitat			Application near occupied habitat. See Map X and Table X		Aerial drafting in location X. See Map X and Table X		
	Aerial Rehabilitation									
	Ground Ignition			100 acres moderate severity burn near occupied habitat			Possible erosion from 100-acre moderate severity burn. See Map X and Table X			
	Ground Suppression						Possible erosion from dozer line. Map X and Table X		¼ mile long 20-foot wide dozer line near occupied habitat.	
	Ground Rehabilitation									
	Mopup									
Wildfire Only										

BLM-USFWS Wildfire Suppression Documentation

Huachuca Water Umbel		Description and Level of Impacts							
		Direct Impacts from Aerial Operations	Type of Disturbance (Noise, Smoke, Physical, etc.)	Ignition Acres ^{1 2}	Wildfire Acres ^{1 2}	Chemical Effects	Sediment/Erosion	Water Drafting (ground pump/aerial)	Habitat Removal/Destruction
Suppression/Rehabilitation Operations	Aerial Ignition								
	Aerial Suppression								
	Aerial Rehabilitation								
	Ground Ignition			75 acres near occupied habitat. See Map X, Table X					
	Ground Suppression		Physical disturbance from hand/control lines in occupied					¼ mile long 10-foot wide hand line in occupied habitat.	2 individual plants damaged from hand/control line.
	Ground Rehabilitation								
	Mopup								
Wildfire Only					250 acres near occupied habitat. See Map X				

Example of Appendix F-A

24hr Activity Report

AERIAL SUPPRESSION ACTIONS				
	Direct Impacts from Aerial Operations (other than chemical)	Ignition	Chemical	Water Drafting (aerial)
Aerial Ignition	Helicopter	Aerial strip lighting		
Aerial Suppression	Fixed Wing, SEAT, Helicopter		~10 drops – Fixed Wing ~5 drops - SEAT	~2 Helicopter trips to Stock Tank X.

GROUND SUPPRESSION ACTIONS				
	Ignition	Chemical	Water Drafting (ground pump)	Habitat Removal/ Destruction
Ground Suppression	Burnout from hand/dozer line.	Applied wetting agent along FR 200	Draft from River X.	1-mile dozer line 1/4-mile hand line
Mopup				Extinguish Fire in X locations 10 snags removed

EMERGENCY STABILIZATION ACTIONS				
	Direct Impacts from Aerial Operations	Habitat Removal/ Destruction		
Aerial Rehabilitation	Water/Hay/Seed			
Ground Rehabilitation		Sediment Water Bars Fire line Rehab		

Date: _____

Time: _____

Appendix G - Biological Opinion for Arizona Statewide Land Use Plan Amendment

CONDUCTING FUTURE CONSULTATIONS FOR SITE-SPECIFIC ACTIONS AND IMPLEMENTATION LEVEL PLANS UNDER THE BIOLOGICAL OPINION FOR THE ARIZONA STATEWIDE LAND USE PLAN AMENDMENT FOR FIRE, FUELS, AND AIR QUALITY MANAGEMENT

This biological opinion analyzes the potential effects of implementing BLM's fire and fuels management program in Arizona. We have anticipated that take of some species from fire suppression activities and/or fire and fuels management treatments could occur. For these species, the maximum extent of incidental take that could occur was developed given the description of the proposed actions, including full implementation of the relevant general and species-specific conservation measures included in Appendix B of this document.

Fire Suppression

If your fire suppression actions are conducted in accordance with the description of the proposed actions, all relevant conservation measures, and the reasonable and prudent measures and terms and conditions identified for each species in this consultation, incidental take is exempted in this biological opinion and emergency consultation following the wildfire event will not be required. Emergency rehabilitation actions following wildfires have not been specifically analyzed in this biological and conference opinion and will be subject to separate, site-specific consultation, if these actions may affect a listed species or critical habitat.

Documentation of any incidental take during wildfire events is an important part of the reporting requirements of this biological opinion. If fire suppression actions resulting in incidental take account for all of the incidental take anticipated by this program-level consultation, you should reinitiate consultation because any future events may result in exceeding the authorized amount or extent of take.

If conservation measures addressing fire suppression actions are not followed during a wildfire event and you determine that a listed species and/or critical habitat may have been affected, you must request emergency consultation. A separate biological evaluation and biological opinion (as appropriate) will be developed during the consultation. Please note that the items listed in this biological opinion under "Reporting Requirements, Fire Suppression", should be included in the biological evaluation that you submit to us.

In addition, if new information reveals effects of fire suppression activities that were not considered in this opinion, reinitiating of consultation is required. New information may also include the discovery of new locations of species and/or habitat.

Fire and Fuels Management Treatments

We have anticipated that take of some species from fire and fuels management treatments could occur as a result of these proposed actions. For these species, we have anticipated the maximum amount or extent of incidental take that could occur, but because we have no specific project details, we do not know with certainty the specific effects that will result or the exact amount or extent of take that could occur. Therefore, we cannot exempt take for these actions in this consultation. The incidental take exemption will be provided in project-level biological opinions when you provide the specifics of your proposed actions. However, the extent of take that is

anticipated in this consultation will be included at this time in the species' baselines for future consultations.

You will need to enter into additional consultation once site-specific projects are planned. These include programmatic wildland fire use plans and programmatic, batched, or individual prescribed fire and fuels treatment projects that include site-specific information, prescriptions, and treatment methods. The maximum extent of incidental take identified in this consultation functions as an indicator to let you know when the additive effects resulting from individual actions approaches the limits of our effects analysis. As this level of take is approached, you may need to reinitiate consultation on this statewide program to ensure that projects are not disrupted because of unanticipated levels of impacts.

The applicable program-level reasonable and prudent measures and terms and conditions included in this biological and conference opinion will also be included in project-level incidental take statements and should be considered during project planning. These program-level conditions are not mandatory until the incidental take is actually exempted in site-specific project consultations. During these future consultations, we may identify circumstances under which these conditions are unnecessary. We may also identify additional conditions that are required to minimize take resulting from these projects. Final reasonable and prudent measures and terms and conditions will be included in biological opinions for the future site-specific projects.

Appendix H - Conservation Measures for Special Status Species

CONSERVATION MEASURES FOR SPECIAL STATUS SPECIES ON THE ARIZONA STRIP DISTRICT (FROM CURRENT RMP)

The following Conservation Measures will be implemented as part of the proposed action for all management activities authorized. These Conservation Measures are intended to provide District-wide consistency in reducing or eliminating the effects of management actions on federally endangered, threatened, proposed, and candidate species, as well as species included on the Wildlife Species of Concern in Arizona and BLM Arizona Sensitive Species lists.

1.0 CONSERVATION MEASURES FOR FIRE MANAGEMENT ACTIVITIES

1.1 WILDLAND FIRE SUPPRESSION (FS)

The following Conservation Measures will be implemented during fire suppression operations, unless firefighter or public safety, or the protection of property, improvements, or natural resources, render them infeasible during a particular operation. Each Conservation Measure has been given an alphanumeric designation for organizational purposes (*e.g.*, FS-1). Necessary modifications of the Conservation Measures or impacts to federally protected species and habitat during fire suppression operations will be documented by the Resource Advisor, and coordinated with the U.S. Fish and Wildlife Service (USFWS).

- FS-1** Protect known locations of habitat occupied by federally listed species. Minimum Impact Suppression Tactics (MIST) will be followed in all areas with known federally protected species or habitat.
- FS-2** Resource Advisors will be designated to coordinate natural resource concerns, including federally protected species. They will also serve as a field contact representative (FCR) responsible for coordination with the USFWS. Duties will include identifying protective measures endorsed by the Field Office Manager, and delivering these measures to the Incident Commander; surveying prospective campsites, aircraft landing and fueling sites; and performing other duties necessary to ensure adverse effects to federally protected species and their habitats are minimized. On-the-ground monitors will be designated and used when fire suppression activities occur within identified occupied or suitable habitat for federally protected species.
- FS-3** All personnel on the fire (firefighters and support personnel) will be briefed and educated by Resource Advisors or designated supervisors about listed species and the importance of minimizing impacts to individuals and their habitats. All personnel will be informed of the conservation measures designed to minimize or eliminate take of the species present. This information is best identified in the incident objectives.
- FS-4** Permanent road construction will not be permitted during fire suppression activities in habitat occupied by federally protected species. Construction of temporary roads is

approved only if necessary for safety or the protection of property or resources, including federally protected species habitat. Temporary road construction should be coordinated with the USFWS, through the Resource Advisor.

- FS-5** Crew camps, equipment staging areas, and aircraft landing and fueling areas should be located outside of listed species habitats, and preferably in locations that are disturbed. If camps must be located in listed species habitat, the Resource Advisor will be consulted to ensure habitat damage and other effects to listed species are minimized and documented. The Resource Advisor should also consider the potential for indirect effects to listed species or their habitat from the siting of camps and staging areas (*e.g.*, if an area is within the water flow pattern, there may be indirect effects to aquatic habitat or species located off-site).
- FS-6** All fire management protocols to protect federally protected species will be coordinated with local fire suppression agencies that conduct fire suppression on BLM-administered lands to ensure that the agency knows how to minimize impacts to federally protected species in the area.
- FS-7** The effectiveness of fire suppression activities and Conservation Measures for federally protected species should be evaluated after a fire, when practical, and the results shared with the USFWS and AGFD. Revise future fire suppression plans and tactical applications as needed and as practical.

1.2 FUELS TREATMENTS, PRESCRIBED BURNING AND OTHER FUELS MANAGEMENT ACTIONS (FT)

The following Conservation Measures are mandatory when implementing wildland fire use, prescribed fires, and proposed vegetation treatments using mechanical, chemical, and/or biological treatment methods:

- FT-1** Biologists will be involved in the development of prescribed burn plans and vegetation treatment plans to minimize effects to federally protected species and their habitats within, adjacent to, and downstream from proposed project sites. Biologists will consider the protection of seasonal and spatial needs of federally protected species (*e.g.*, avoiding or protecting important use areas or structures and maintaining adequate patches of key habitat components) during project planning and implementation.
- FT-2** MIST will be followed in all areas with known federally protected species or habitats.
- FT-3** Pre-project surveys and clearances (biological evaluations/assessments) for federally protected species will be required for each project site before implementation. All applicable Conservation Measures will be applied to areas with unsurveyed suitable habitat for federally protected species, until a survey has been conducted by qualified personnel to clear the area for the treatment activity.
- FT-4** Use of motorized vehicles during prescribed burns or other fuels treatment activities in suitable or occupied habitat will be restricted, to the extent feasible, to existing roads, trails, washes, and temporary fuel breaks or site-access routes. If off-road travel is deemed necessary, any cross-country travel paths will be surveyed prior to use and will be closed and rehabilitated after the prescribed burn or fuels treatment project is completed.

FT-5 As part of the mandatory fire briefing held prior to prescribed burning, all personnel (firefighters and support personnel) will be briefed and educated by Resource Advisors or designated supervisors about listed species and the importance of minimizing impacts to individuals and their habitats. All personnel will be informed of the Conservation Measures designed to minimize or eliminate take of the species present.

1.3 REHABILITATION AND RESTORATION (RR)

RR-1 When rehabilitating important areas for federally listed species that have been damaged by fire or other fuels treatments, the biologist will give careful consideration to minimizing short-term and long-term impacts. Someone who is familiar with fire impacts and the needs of the affected species will contribute to rehabilitation plan development. Appropriate timing of rehabilitation and spatial needs of federally listed species will be addressed in rehabilitation plans.

RR-2 Seed from regionally native or sterile alien (non-native) species of grasses and herbaceous vegetation will be used in areas where reseeding is necessary following ground disturbance to stabilize soils and prevent erosion by both wind and water.

RR-3 Sediment traps or other erosion control methods will be used to reduce or eliminate influx of ash and sediment into aquatic systems.

RR-4 Use of motorized vehicles during rehabilitation or restoration activities in suitable or occupied habitat will be restricted, to the extent feasible, to existing roads, trails, or washes, and to temporary access roads or fuel breaks created to enable the fire suppression, prescribed burn, or fuels treatment activities to occur. If off-road travel is deemed necessary, any cross-country travel paths will be surveyed prior to use and will be closed and rehabilitated after rehabilitation or restoration activities are completed.

RR-5 All temporary roads, vehicle tracks, skid trails, and off-road vehicle (ORV) trails resulting from fire suppression and the proposed fire management activities be rehabilitated (water bars, etc.), and be closed or made impassible for future use.

RR-6 Burned area emergency rehabilitation (BAER) activities and long-term restoration activities should be monitored, and the results provided to the USFWS and AGFD. Section 7 consultation for BAER activities will be conducted independently, if necessary.

RR-7 (Recommended) Develop public education plans that discourage or restrict fires and fire-prone recreation uses during high fire-risk periods. Develop brochures, signs, and other interpretive materials to educate recreationists about the ecological role of fires, and the potential dangers of accidental fires.

1.4 CONSERVATION MEASURES FOR FIRE MANAGEMENT ACTIVITIES IN RIPARIAN AND AQUATIC HABITATS (RA)

The following Conservation Measures be implemented during fire suppression and fuels treatment operations in riparian, wetland, or aquatic habitats, unless firefighter or public safety, or the protection of property, improvements, or natural resources, render them infeasible during a particular operation. Fuels treatment activities include prescribed fire and mechanical, chemical, and/or biological vegetation treatments in riparian, wetland, and aquatic habitats. Necessary modifications of the Conservation Measures or impacts to federally protected species and habitat during fire suppression operations will be documented by the Resource Advisor, and coordinated with the USFWS.

- RA-1** During wildfire suppression, apply MIST within riparian areas. Fire suppression actions in riparian areas should be prioritized to minimize damage to stands of native vegetation from wildfire or suppression operations. To the extent possible, retain large, downed woody materials and snags that are not a hazard to firefighters.
- RA-2** Fire suppression and rehabilitation in riparian corridors will be coordinated with the Resource Advisor or qualified biologist approved by BLM.
- RA-3** Site-specific implementation plans that include project areas with federally protected aquatic or riparian-obligate species will specify fire management objectives and wildland fire suppression guidance, taking into account the special concerns related to these species.
- RA-4** In riparian areas, use natural barriers or openings in riparian vegetation where possible as the easiest, safest method to manage a riparian wildfire. Where possible and practical, use wet firebreaks in sandy overflow channels rather than constructing firelines by hand or with heavy equipment.
- RA-5** Construction or development of a crossing for motorized vehicles across a perennial stream will not be permitted, unless an established road already exists or where dry, intermittent sections occur.
- RA-6** Avoid the use of fire retardants or chemical foams in riparian habitats or within 300 feet of aquatic habitats, particularly sites occupied by federally protected species. Apply operational guidelines as stated in the *Interagency Standards for Fire and Fire Aviation Operations 2003 (or updates)*, “Environmental Guidelines for Delivery of Retardant or Foam Near Waterways.”
- RA-7** Priority for placement of fire camps, fire staging areas, and aircraft landing or refueling sites will be outside riparian areas or river/stream corridors.
- RA-8** When using water from sources supporting federally protected species, care must be taken to ensure adverse impacts to these species are minimized or prevented. Unused water from fire abatement activities will not be dumped in sites occupied by Federally protected aquatic species to avoid introducing non-native species, diseases, or parasites.
- RA-9** If water is drafted from a stock tank or other body of water for fire suppression, it will not be refilled with water from another tank, lakes, or other water sources that may support non-native fishes, bullfrogs, crayfish, or salamanders.
- RA-10** Use of containment systems for portable pumps to avoid fuel spills in riparian or aquatic systems will be required.

RA-11 (Recommended) Develop and implement restoration plans for affected riparian or aquatic areas, including long-term monitoring, to document changes in conditions in the riparian zone and watershed that maintain flood regimes and reduce fire susceptibility. Monitor stream water quality and riparian ecosystem health to determine effects of wildfire and fire management activities. Coordinate efforts and results with the USFWS and AGFD.

RA-12 Fire management treatments within or adjacent to riparian and aquatic habitats be designed to provide long-term benefits to aquatic and riparian resources by reducing threats associated with dewatering and surface disturbance, or by improving the condition of the watershed and enhancing watershed function.

RA-13 For priority fire/fuels management areas (e.g., wildlife-urban interface (WUI) areas) with federally protected species or designated critical habitat downstream, BLM biologists and other resource specialists, as appropriate, in coordination with USFWS and AGFD, determine:

- A) The number of acres and the number of projects or phases of projects to occur within one watershed per year.
- B) An appropriately-sized buffer adjacent to perennial streams in order to minimize soil and ash from entering the stream.
- C) Where livestock grazing occurs in areas that have been burned, specialists will determine when grazing can be resumed. Such deferments from grazing will only occur when necessary to protect streams from increased ash or sediment flow into streams.⁵

If agreement cannot be reached or treatment will not meet fuel reduction objectives, BLM re-initiate consultation. Our authority to make these types of changes is in the regulations at 43 CFR 4110.3-3(b).

2.0 SPECIES SPECIFIC CONSERVATION MEASURES

In addition to the general Conservation Measures listed in **Section 1.0**, the following species-specific Conservation Measures will be applied to management actions in special status species habitats to the extent possible, and will be required during fuels and vegetation treatment activities. Necessary modifications of the Conservation Measures or impacts to federally protected species and habitat during implementation of management actions will be documented by the BLM or NPS biologist, and coordinated with the USFWS.

2.1 Reptiles

2.1.1 Desert tortoise, Mojave population (FT)

DT-1. Minimize or eliminate effects to desert tortoise from authorized projects¹.

¹"Project" means any surface-disturbing activities proposed that may cause disturbance of desert tortoise habitat and/or death or injury of a desert tortoise, with the exception of grazing by livestock and activities associated with fire suppression.

- DT-1.A.** For each authorized project¹, BLM and/or NPS will designate a field contact representative (FCR) who will be responsible for overseeing compliance with these conservation measures and for coordination on compliance with the USFWS. The FCR will be a qualified biologist approved by BLM and/or NPS, and will have the authority and the responsibility to halt all project activities that are in compliance with these conservation measures. These individuals will have a copy of these conservation measures while on the work site.
- DT-1.B.** To the extent possible, project features will be located in previously-disturbed areas or outside of desert tortoise habitat.
- DT-1.C.** To the extent possible, project activities will be scheduled when tortoises are inactive (October 15 through March 15). The following project activities will only be authorized between October 15 through March 15: surface disturbance associated with mineral leasing; organized, non-speed vehicular events; construction and non-emergency maintenance activities in rights-of-ways; and non-emergency maintenance of existing roads.
- DT-1.D.** Pre-construction surveys will be conducted to locate desert tortoises that may be injured or killed as a result of proposed activities. Projects will be altered or tortoises in harm's way will be relocated to avoid lethal take of tortoises in project areas. Prior to any surface-disturbing activities associated with "projects," work sites will be surveyed for desert tortoises by a qualified biologist approved by BLM and/or NPS. Areas of new disturbance will be surveyed with 100-percent coverage.
- DT-1.D.1.** Between October 15 and March 15 any new disturbance will be preceded by 100-percent surveys conducted within one week of the proposed activities. During surveys, occupied desert tortoise burrows in or within 40 feet of areas to be disturbed will be excavated using hand tools under the supervision of an authorized biologist. Tortoises discovered in burrows will be relocated. Burrows will then be collapsed or blocked to prevent entry by tortoises. Desert tortoises and any desert tortoise eggs found in areas to be disturbed will be relocated in accordance with conservation measure DT-1.D.4. All handling of desert tortoises and their eggs will be in accordance with conservation measure DT-1.D.4.
- DT-1.D.2.** For project activities occurring during the desert tortoise active season (March 15 through October 15), surveys will be conducted within 24 hours of initiation of surface-disturbing activities. For surface-disturbing activities conducted from March 15 to October 15 in desert tortoise habitat, construction and operation activities will be monitored by a qualified desert tortoise biologist approved by BLM and/or NPS. The biologist will be present during all activities in which encounters with tortoises may occur. The biologist will watch for tortoises wandering into construction areas, check under vehicles, check at least three times per day any excavations that might trap tortoises, and conduct other activities necessary to ensure that death or injury of tortoises is minimized.
- DT-1.D.3.** Only biologists authorized and permitted by the USFWS and Arizona Game and Fish Department (AGFD) will handle desert tortoises. Additional biologists could be authorized if BLM and/or NPS submits the name(s) of the proposed authorized biologist(s) to the USFWS for review and approval at least 15 days prior to the onset of activities that could result in a take. Minimum requirements for authorized biologists include attending the Desert Tortoise Council's training course for handling desert tortoises and/or training by an authorized biologist. Authorized biologists must have all valid state and federal permits.

DT-1.D.4. The authorized biologist will maintain a record of all desert tortoises encountered during project activities. This information will include for each desert tortoise:

1. The locations and dates of observation
2. General condition and health, including injuries and state of healing and whether animals voided their bladders
3. Location moved from and location moved to
4. Diagnostic markings (i.e. identification numbers of marked lateral scutes)

Desert tortoises that are handled will be marked for future identification. An identification number (using the acrylic paint/epoxy technique) will be placed on the 4th costal scute (USFWS 1992). No notching of scutes or replacement of fluids with a syringe is authorized.

DT-1.E. If a tortoise or clutch of tortoise eggs is found in a project area, to the extent practicable activities will be modified to avoid injuring or harming it. If activities cannot be modified, the tortoise/clutch will be moved from harm's way by an the authorized biologist the minimum distance possible within appropriate habitat to ensure its safety from death, injury, or collection associated with the project or other activities. The authorized biologist will have some discretion to ensure that survival of each relocated desert tortoise/clutch is likely. Desert tortoises/clutches will not be translocated to lands outside the administration of the Federal government without the written permission of the landowner. Handling procedures for desert tortoises and their eggs will adhere to protocols outlined in Desert Tortoise Council (1994 with 1996 revisions).

DT-1.F. Areas of new construction or disturbance will be flagged or marked on the ground prior to construction. All construction workers will strictly limit their activities and vehicles to areas that have been marked. Construction personnel will be trained to recognize markers and understand the equipment movement restrictions involved.

DT-1.G. A desert tortoise education program will be presented to all project personnel that may encounter tortoises; such as employees, inspectors, supervisors, contractors, and subcontractors; prior to initiation of activities that may result in disturbance of desert tortoise habitat or death or injury of desert tortoises. The education program will include discussions of the following:

1. legal protection of the desert tortoise and sensitivity of the species to human activities;
2. a brief discussion of desert tortoise distribution and ecology;
3. the terms and conditions of applicable biological opinions;
4. project features designed to reduce adverse effects to desert tortoises and their habitat, and to promote the species' long-term survival;
5. protocols during encounters with desert tortoises and associated reporting requirements; and
6. the definition of take and penalties for violations of Federal and State laws.

- DT-1.H.** During the tortoise active season (March 15 through October 15), project features that might trap or entangle desert tortoises such as open trenches, pits, open pipes, etc will be covered or modified to prevent entrapment.
- DT-1.I.** Long-term or permanent project sites in which continued encounters with desert tortoises are expected, such as construction of schools under an R&PP lease, roads, power plants, office buildings, and other permanent or long-term projects will be enclosed with desert tortoise barrier fencing to prevent tortoises from wandering onto the project site where they may be subject to collection, death, or injury. Barrier fencing should consist of wire mesh with a maximum mesh size of 1-inch (horizontal) by 2-inch (vertical) fastened securely to posts. The wire mesh will extend at least 18 inches above the ground and preferably 12 inches below the surface of the ground. Where burial is not possible, the lower 12 inches will be folded outward, away from the enclosed site, and fastened to the ground so as to prevent tortoise entry. Any gates or gaps in the fence will be constructed and operated to prevent desert tortoise entry (such as installing "tortoise guards" similar to cattle guards, and/or keeping gates closed). Specific measures for tortoise-proofing gates and gaps will be addressed project by project. Once fence construction is complete, all tortoises within the fence will be relocated outside the fence in accordance with conservation measure DT-1.D.4. If more than 20 tortoises be relocated from any one area enclosed by a fence, the Bureau or NPS will contact the USFWS in regard to disposition of the animals. After the area within the fence has been cleared of tortoises, construction and operation activities may occur within the fence without the presence and monitoring of a biologist (see conservation measure DT-1.D.).
- DT-1.J.** Temporary fencing, such as snow fencing, chain link, and other suitable materials will be used in designated areas as determined by the Bureau to reduce encounters with tortoises from March 15 to October 15 on short-term projects, such as construction of power lines, burial of fiber optic cables, etc, where encounters with tortoises are likely.
- DT-1.K.** Blading of work areas will be minimized to the extent possible. Disturbance to shrubs will be avoided if possible. If shrubs cannot be avoided during equipment operation or vehicle use, wherever possible they will be crushed rather than excavated or bladed.
- DT-1.L.** Project vehicle use will be limited to designated routes (existing routes prior to designation) to the extent possible.
- DT-1.M.** At no time will vehicle or equipment fluids be dumped on public lands. All accidental spills must be reported to BLM and NPS and cleaned up immediately, using the best available practices according to the requirements of the law. All spills of federally or State-listed hazardous materials that exceed reportable quantities will be promptly reported to the appropriate State agency and the BLM and NPS.
- DT-1.N.** Vehicles associated with Bureau-authorized projects traveling on unpaved roads in desert tortoise habitat will not exceed speed limits established by the Bureau as necessary to protect desert tortoises. These speed limits will generally not exceed 40 mph even on the best-unpaved roads but may be much less than this on some roads.
- DT-1.O.** New paved roads and highways in desert tortoise habitat or major reconstruction or modifications of existing paved roads through desert tortoise habitat will be fenced with desert tortoise barrier fencing (see DT-1.I. and J.). Culverts, to allow safe passage of tortoises, will be constructed approximately every mile of new or reconstructed paved road (culverts can also serve the more typical purpose of conducting water under roads). The culvert diameter needed to encourage tortoise use is correlated with culvert length, but generally short culverts of large diameter are most likely to be used. The floor of the culvert will

be covered with dirt and maintenance should be performed as necessary to maintain an open corridor for tortoise movement. Culvert design will be coordinated with and approved by the USFWS.

DT-1.P. Unleashed dogs will be prohibited in project areas.

DT-1.Q. Temporary access routes created during project construction will be modified as necessary to prevent further use. Closure of access routes could be achieved by ripping, barricading, posting the route as closed, and/or seeding and planting with native plants.

DT-1.R. To reduce attraction of potential desert tortoise predators, project sites in desert tortoise habitat will be maintained in a sanitary condition at all times; waste materials at those sites will be placed in covered receptacles and disposed of promptly at an appropriate waste disposal site. "Waste" refers to all discarded matter, including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment. All reasonable effort will also be taken to reduce or eliminate water sources associated with project activities that might attract ravens and other predators.

DT-1.S. After completion of the project, trenches, pits, and other features in which tortoises could be entrapped or entangled, will be filled in, covered, or otherwise modified so they are no longer a hazard to desert tortoises.

DT-1.T. After project completion, measures will be taken to facilitate restoration. Restoration techniques will be tailored to the characteristics of the site and the nature of project impacts. Techniques may include removal of equipment and debris, recontouring; and seeding, planting, transplanting of cacti and yuccas, etc. Only native plant species, preferably from a source on or near the project area, will be used in restoration.

DT-2 Take appropriate action to suppress all wildfires in desert tortoise habitat.

DT-2.A. As soon as practical, all personnel involved in wildfire suppression (firefighters and support personnel) will be briefed and educated about desert tortoises and the importance of protecting habitat and minimizing take, particularly due to vehicle use. Fire crews will be briefed on the desert tortoise in accordance with Appendix II of Duck et al. (1995).

DT-2.B. If wildfire or suppression activities cannot avoid disturbing a tortoise, the Resource Advisor or monitor will relocate the tortoise, if safety permits. The tortoise will be moved into the closest suitable habitat within two miles of the collection site that will ensure the animal is reasonably safe from death, injury, or collection associated with the wildfire or suppression activities. The qualified biologist will be allowed some discretion to ensure that survival of each relocated tortoise is likely. If the extent or direction of movement of a fire makes sites within two miles of the collection site unsuitable or hazardous to the tortoise or biologists attempting to access the area, the tortoise may be held until a suitable site can be found or habitat is safe to access and not in immediate danger of burning. The Resource Advisor will contact the USFWS Arizona Ecological Services Field Office (AESFO) as soon as possible concerning disposition of any animals held for future release. Desert tortoises will not be placed on lands outside the administration of the Federal government without the written permission of the landowner. Handling procedures for tortoises, including temporary holding facilities and procedures, will adhere to protocols outlined in Desert Tortoise Council (1994).

DT-2.C. Upon locating a dead, injured, or sick desert tortoise, initial notification must be made to the appropriate USFWS Law Enforcement Office within three working days of its finding. Written notification must be made within five calendar days and include the date, time, and location of the animal, a photograph, and any other pertinent information. The notification will be sent to the Law Enforcement Office with a copy to the AESFO.

- DT-2.D.** Care must be taken in handling sick or injured animals to ensure effective treatment and care, and in handling dead specimens to preserve biological material in the best possible state. If possible, the remains of intact desert tortoises will be placed with educational or research institutions holding appropriate State and Federal permits. If such institutions are not available, the information noted above will be obtained and the carcass left in place. Arrangements regarding proper disposition of potential museum specimens will be made with the institution prior to implementing the action. Injured animals should be transported to a qualified veterinarian by an authorized biologist. Should any treated desert tortoise survive, the USFWS should be contacted regarding final disposition of the animal.
- DT-2.E.** The Resource Advisor or monitor(s) will maintain a record of all desert tortoises encountered during fire suppression activities. This information will include for each desert tortoise: 1) locations and dates of observation; 2) general condition and health, including injuries and state of healing, and whether animals voided their bladders; 3) location moved from and to; and 4) diagnostic markings (i.e., identification numbers of marked lateral scutes). No notching of scutes or replacement of fluids with a syringe is authorized.
- DT-2.F.** Prior to moving a vehicle, personnel will inspect under the vehicle for tortoises. If a tortoise is found under the vehicle, the tortoise will be allowed to move away from the vehicle on its own accord, if possible. Otherwise, an individual will move the tortoise to a safe locality in accordance with FS-2 and DT-1.E.
- DT-2.G.** Off-road vehicle activity will be restricted to the minimum necessary to suppress wildfires. Off-road vehicle activity will not be permitted on NPS lands. Vehicles will be parked as close to roads as possible, and vehicles will use wide spots in roads or disturbed areas to turn around. Whenever possible, a biologist or crewperson trained to recognize tortoises and their shelter sites will precede any vehicle traveling off-road to direct the driver around tortoises and tortoise burrows. Whenever possible, local fire-fighting units should provide direction and leadership during off-road travel because of their expertise and knowledge of area sensitivities.
- DT-2.H.** Fire-related vehicles will drive slow enough to ensure that tortoises on roads can be identified and avoided.
- DT-2.I.** Fire crews or rehabilitation crews will, to the extent possible, obliterate off-road vehicle tracks made during fire suppression in tortoise habitat, especially those of tracked vehicles, to reduce future use.
- DT-2.J.** To the maximum extent practical, campsites, aircraft landing/fueling sites, and equipment staging areas will be located outside of desert tortoise habitat or in previously disturbed areas. If such facilities are located in desert tortoise habitat, 100 percent of the site will be surveyed for desert tortoises by a qualified biologist approved by BLM or NPS, whenever feasible. Any tortoises found will be moved to a safe location in accordance with FS-2 and DT-1.E. All personnel located at these facilities will avoid disturbing active tortoise shelter sites.
- DT-2.K.** Elevated predation by common ravens or other predators attributable to fire suppression activities will be reduced to the maximum extent possible. Work areas, including campsites, landing/fueling sites, staging areas, etc. will be maintained in a sanitary condition at all times. Waste materials at those sites will be contained in a manner that will avoid attracting predators of desert tortoises. Waste materials will be disposed of at an appropriate waste disposal site. "Waste" means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.
- DT-2.L.** Backfiring operations are permitted where necessary in desert tortoise habitat. Burning out patches of identified habitat within or adjacent to burned

areas is not permitted as a standard fire suppression measure unless necessary for firefighter or public safety or to protect property, improvements, or natural resources.

DT-2.M. Use of foam or retardant is authorized within desert tortoise habitat.

DT-2.N. Rehabilitation of vegetation in tortoise habitat will be considered, including seeding, planting of perennial species, etc.

DT-2.O. Recovery of vegetation will be monitored, including establishing and monitoring paired plots, inside and outside burned areas in tortoise habitat. Recovery plans will be coordinated with the USFWS and AGFD.

DT-2.P. The effectiveness of wildfire suppression activities and desert tortoise Conservation Measures will be evaluated after a wildfire. Procedures will be revised as needed.

2.2 AMPHIBIANS (AM) (INCLUDES RELICT LEOPARD FROG (FC))

AM-1 Implement the Conservation Measures for Fire Management Activities in Riparian and Aquatic Habitats.

AM-2 All personnel performing fire management activities at any creek crossing will be informed of the potential presence of aquatic amphibians and the need to perform their duties to avoid impacts to the habitat.

2.3 BIRDS

2.3.1 California Condor (FE and 10J)

Conservation Measures for California Condor

CC-1. Management Guidance for Projects Constructed or Implemented by Authorized or Permitted Members of the Public within the 10(j) Area

CC-1.A. Immediately prior to the start of an authorized or permitted project, BLM/NPS will contact personnel monitoring California Condor locations and movements on the Arizona Strip to determine the locations and status of condors in or near the project area.

CC-1.B. BLM/NPS will request that permit holders notify the BLM/NPS wildlife team lead or condor biologist if California Condors visit the worksite while permitted activities are underway. BLM/NPS may encourage permit holders to modify, relocate, or delay project activities where adverse affects to condors may result.

CC-1.C. Where condor nesting activity is known within 0.5 miles of permitted or authorized activities that include operation of heavy machinery, BLM/NPS may encourage the operator to avoid use of the equipment during the active nesting season (February 1- November 30), or as long as the nest is viable.

CC-1.D. Where condors occur within 1.0 mile of permitted or authorized activities that include blasting, BLM/NPS will encourages that blasting be postponed until the condors leave the area or are hazed away by personnel permitted to haze condors. Where condor nesting activity is known within 1.0 mile of the project area, BLM/NPS encourages that blasting activity be delayed until after the active nesting season (February 1- November 30), or as long as the nest is

viable. These dates may be modified based on the most current information regarding condor nesting.

- CC-2.** Management Guidance for Projects Constructed or Implemented by BLM/NPS Employees or Contractors Within the 10(j) Area AND For All BLM/NPS-Authorized Actions, Regardless of Proponent, Outside the 10(j) Area on the Arizona Strip.
 - CC-2.A.** Immediately prior to the start of a permitted project, BLM/NPS will contact personnel monitoring California Condor locations and movement on the Arizona Strip to determine the locations and status of condors in or near the project area.
 - CC-2.B.** Where California Condors visit a worksite while activities are underway, the on-site supervisor will notify the BLM/NPS wildlife team lead or condor biologist. Project workers and supervisors will be instructed to avoid interaction with condors. Project activities will be modified, relocated, or delayed if those activities could have adverse effects on condors. Operations will cease until the bird leaves on its own or until techniques are employed by permitted personnel that results in the individual condor leaving the area.
 - CC-2.C.** Where condor nesting activity is known within 0.5 miles of activities that include operation of heavy machinery, BLM/NPS will direct the operator to cease equipment use during the active nesting season (February 1- November 30), or as long as the nest is viable. Where feasible and consistent with NEPA, BLM/NPS may relocate operations to a site greater than 0.5 miles from the condor nest site.
 - CC-2.D.** Where condors occur within 1.0 miles of activities that include blasting, BLM/NPS will require that blasting be postponed until the condors leave the area or are hazed away by personnel permitted to haze condors. Where condor nesting activity is known within 1.0 miles of the project area, BLM/NPS will cease blasting during the active nesting season (February 1- November 30), or as long as the nest is viable. These dates may be modified based on the most current information regarding condor nesting.
- CC-3.** Management Guidance for All BLM/NPS-Authorized Actions, Regardless of Proponent or location Within the Planning Area.
 - CC-3.A.** The project site will be cleaned up at the end of each day the work is being conducted (e.g., trash removed, scrap materials picked up) to minimize the likelihood of condors visiting the site. BLM/NPS staff may conduct site visits to the area to ensure adequate clean-up measures are taken.
 - CC-3.B.** For projects where potential exists for leakage or spill of hazardous materials, a spill plan will be developed and implemented to prevent water contamination and potential poisoning of condors. The plan will include provisions for immediate cleanup of any hazardous substance, and will define how each hazardous substance will be treated in case of leakage or spill. The plan will be reviewed by the BLM condor lead biologist to ensure condors are adequately addressed.
 - CC-3.C** BLM/NPS will implement the protective measures for California Condors that are contained in the March 2004 “Recommended Protection Measures for Pesticide Applications in The Southwest Region of the USFWS.”

- CC-3.D.** Use of non-lead ammunition is strongly encouraged for activities involving the discharge of firearms.
- CC-4.** Management Guidance for All Actions Involving Use of Aircraft, Regardless of Proponent or location Within the Planning Area.
- CC-4.A.** Aircraft use along the Vermilion Cliffs, Paria Plateau, or any sites where condors are actively breeding or roosting will be minimized to the extent possible. Known active nest sites will be avoided.
- CC-4.B.** The BLM condor biologist or Wildlife Program Lead will contact the Peregrine Fund, as appropriate, immediately before operations involving aviation begin to check on possible locations of condors in the subject area.
- CC-4.C.** All BLM/NPS-authorized aviation personnel will be provided literature and/or instructed regarding condor concerns prior to conducting aerial operations.
- CC-4.D.** Aircraft will maintain and maximize safe flying separation distances from condors in the air or on the ground unless safety concerns override this restriction. If airborne condors approach aircraft, aircraft will give up airspace to the extent possible, as long as this action does not jeopardize safety. Aircraft will keep a minimum of 0.25 miles away from condors located on the ground.
- CC-5.** Management Guidance for Fire Suppression, Fire Use, Prescribed Fire, and Related Actions Within the Planning Area.
- CC-5.A.** The Resource Advisor will contact the Peregrine Fund daily (at 520-606-5155 or 520-380-4667) to check on locations of condors during fire suppression or fuels treatment activities involving aviation. This information will be communicated to the Incident Commander and aviation personnel.
- CC-5.B.** Any presence of condors in the general area of an active fire will be reported immediately to the Resource Advisor, who will in turn advise the BLM condor biologist, as appropriate. The BLM condor biologist or the AZ Strip FO wildlife team lead will be the primary contacts with the USFWS and the Peregrine Fund when such contacts are needed regarding condor concerns.
- CC-5.C.** Fire dispatch will immediately notify the Peregrine Fund at either (208) 362-3811 or (928) 355-2270 whenever a fire or other event on the Paria Plateau is reported which may conceivably threaten the condor holding pens and facilities atop the Vermilion Cliffs.
- CC-5.D.** If condors arrive at any area of human activity associated with fire suppression or fuels treatment projects (wildland fire use, prescribed fire, vegetation treatments), the birds will be avoided. The assigned Resource Advisor or a qualified wildlife biologist approved by BLM will be notified, and only permitted personnel will haze the birds from the area.
- CC-5.E.** All District BLM/NPS fire personnel, including helicopter pilots, will be provided literature or instructed regarding condor concerns. Normally this will be done by the BLM condor biologist when the fire crews first come on and are trained on various subjects, including desert tortoise concerns. If additional pilots come on during the summer, fire dispatch will notify the BLM condor biologist (435 688-3224) so that they can also be briefed.

- CC-5.F.** All helicopter dip tanks containing water will be covered when not in use or personnel will be stationed nearby until a cover is in place.
- CC-5.G.** If any fire retardant chemicals must be used in areas where condors are in the vicinity, the application area will be surveyed and any contaminated carcasses will be removed as soon as practical to prevent them from becoming condor food sources.
- CC-5.H.** Smoke from prescribed fire projects will be prevented from negatively affecting condor holding pens and breeding, nesting, and chick rearing sites. A proposed prescribed fire will not be initiated, or an existing fire use event will be modified or terminated, in order to prevent or stop significant amounts of smoke, or smoke that will remain in place for an extended period of time, or chronic smoke events, from occurring in area(s) where condors are held or attempting to breed, nest, or rear chicks.
- CC-5.I.** BLM will adhere to the air quality standards set by the Arizona Department of Environmental Quality.
- CC-5.J.** All camp areas will be kept free from trash.

2.3.2 Southwestern willow flycatcher (FE)

Conservation Measures for Southwestern Willow Flycatcher

WF-1. Management Guidance for Fire Suppression and Related Actions

- WF-1.A.** Implement the Conservation Measures for Fire Management Activities in Riparian and Aquatic Habitats.
- WF-1.B.** Except where fires are active in occupied habitat, minimize unnecessary low-level helicopter flights during the breeding season (April 1 – September 30). Approach bucket dip sites at a 90-degree direction to rivers to minimize flight time over the river corridor and occupied riparian habitats. Locate landing sites for helicopters at least ¼ mile from occupied sites to avoid impacts to willow flycatchers and their habitat.
- WF-1.C.** Minimize use of chainsaws or bulldozers to construct firelines through occupied or suitable habitat except where necessary to reduce the overall acreage of occupied habitat or other important habitat areas that otherwise be burned.
- WF-1.D.** Implement activities to reduce hazardous fuels or improve riparian habitats (prescribed burning or vegetation treatments) within occupied or unsurveyed suitable habitat for southwestern willow flycatchers only during the non-breeding season (October 1 to March 31).
- WF-1.E.** Avoid developing access roads that result in fragmentation or a reduction in habitat quality. Close and rehabilitate all roads that were necessary for project implementation.
- WF-1.F.** Prescribed burning will only be allowed within ½ mile of occupied or unsurveyed suitable habitat when weather conditions allow smoke to disperse away from the habitat when birds may be present (breeding season of April 1 – September 30).

- WF-1.G.** Vegetation treatment projects adjacent to occupied or unsurveyed suitable habitat will only be conducted when willow flycatchers are not present (October 1 – March 31).
- WF-1.H.** Continue to implement the riparian fire management plan to minimize fire damage in riparian areas, especially those with suitable or potential flycatcher habitat.

2.3.3. Yuma clapper rail (FE)

Conservation Measures for Yuma Clapper Rail

- CR-1.** Management Guidance for Fire Suppression and Related Actions
 - CR-1.A.** Implement the Conservation Measures for Fire Management Activities in Riparian and Aquatic Habitats.
 - CR-1.B.** Any prescribed fire or vegetation treatment project in occupied or suitable marsh habitat only occur between September 1 and March 15 to avoid the Yuma clapper rail breeding and molting seasons.
 - CR-1.C.** Mechanical removal of overstory habitat (e.g. tamarisk) could occur as early as August 15, after the breeding season for Yuma clapper rails.
 - CR-1.D.** Herbicide application will not occur in Yuma clapper rail habitat and drift-inhibiting agents will be used to assure that the herbicide does not enter adjacent marsh areas.
 - CR-1.E.** Evaluate past surveys for Yuma clapper rails as part of the planning for prescribed fire projects. Post-project surveys should also be conducted to document the re-growth of cattail habitats and occupancy by clapper rails.
 - CR-1.F.** After fire suppression is completed in Yuma clapper rail habitat, review any available survey records of the burn site and record in the fire report the number of rails recorded from the vicinity during these surveys.

2.3.4. Bald eagle (FT)

Conservation Measures for Bald Eagle

- BE-1.** Management Guidance for Fire Suppression and Related Actions
 - BE-1.A.** No human activity associated with fire management will be authorized within ½ mile of known bald eagle nest sites between December 1 and June 30.
 - BE-1.B.** No tree cutting will be authorized within ¼ mile of known bald eagle nest trees.
 - BE-1.C.** No human activity associated with fire management will be authorized within ¼ mile of known bald eagle winter roost areas between October 15 and April 15.
 - BE-1.D.** No tree cutting will be authorized within the area immediately around winter roost sites as determined by BLM biologists.
 - BE-1.E.** No helicopter or aircraft activity or aerial retardant application associated with fire management activities will be authorized within ½ mile of bald eagle

nest sites between December 1 and June 30 or winter roost sites between October 15 and April 15.

BE-1.F. Prescribed burn activities outside of nesting season will be conducted in a manner to ensure nest and winter roost sites are more than ½ mile from downwind smoke effects.

BE-1.G. Provide reasonable protective measures so fire prescription or fuels treatment will not consume dominant, large trees as identified by the Resource Advisor or qualified biologist approved by BLM within ½ mile of known nests and roosts of bald eagles. Pre-treatment efforts should provide reasonable protection of identified nesting and roosting trees.

BE-1.H. Prepare and implement BAER plans for burned areas that have the potential to cause future erosion problems in the watershed, riparian, or aquatic areas. Objectives of these plans, within watersheds containing bald eagle breeding areas and/or potential habitat, will be to reduce erosion and sedimentation into these habitats.

2.3.5 Mexican spotted owl (FT)

Conservation Measures for Mexican Spotted Owl

SO-3. Management Guidance for Grazing Management

SO-3.A. Determine the effectiveness of current grazing standards and guidelines as they relate to the owl's needs, and devise grazing strategies that can benefit the owl and its prey.

SO-3.B. Monitor grazing use by livestock to determine any changes in the relative composition of herbaceous and woody plants to maintain habitat for owls and their prey.

SO-3.C. Minimize or eliminate disturbance, injury, mortality, or other forms of take of Mexican spotted owls resulting from grazing by livestock.

SO-1. Management Guidance for Fire Suppression and Related Actions

SO-1.A. BLM wildlife biologists will be involved early in the decision-making process for fuels management treatments (wildland fire use, prescribed fires, vegetation treatments) that are planned within suitable habitat for Mexican spotted owls.

SO-1.B. Suitable habitat for Mexican spotted owls will be surveyed prior to implementing prescribed fire or vegetation treatment activities on BLM-administered lands to determine if owls are present and their breeding status. These fire management activities will only be implemented within suitable habitat if birds are not present.

SO-1.C. If a spotted owl is discovered during fire suppression or fuels treatment activities (wildland fire use, prescribed fire, vegetation treatments), the Resource Advisor or a qualified wildlife biologist will document the find and assess potential harm to the owl and advise the Incident Commander or project crew boss of methods to prevent harm. The information will include for each owl the location, date, and time of observation and the general

condition of the owl. The Resource Advisor or biologist will contact the appropriate USFWS office.

SO-1.D. The following measures will be followed in suitable habitat (occupied or unoccupied) whenever consistent with objectives to reduce hazardous fuels:

1. Incorporate natural variation, such as irregular tree spacing and various stand/patch sizes, into management prescriptions and attempt to mimic natural disturbance patterns.
2. Maintain all species of native vegetation in the landscape, including early seral species. To allow for variation in existing stand structures and provide species diversity, both uneven-aged and even-aged systems may be used as appropriate.
3. Allow natural canopy gap processes to occur, thus producing horizontal variation in stand structure.
4. Retain hardwoods, large down logs, large trees, and snags. Emphasize a mix of size and age classes of trees. The mix should include large mature trees, vertical diversity, and other structural and floristic characteristics that typify natural forest conditions.

SO-1.E. The effects of fire suppression and fuels treatment activities on Mexican spotted owls and their habitat, and the effectiveness of these conservation measures, will be assessed after each fire event or fuels treatment project by the Resource Advisor or local biologist to allow evaluation of these guidelines. Prescriptions for wildland fire use, prescribed fires, and vegetation treatments will be adjusted, if necessary.

2.3.6. Yellow-billed cuckoo (FC)

Conservation Measures for Yellow-billed Cuckoo

YC-1. Management Guidance for Fire Suppression and Related Actions

YC-1.A. Implement the Conservation Measures for Fire Management Activities in Riparian and Aquatic Habitats.

YC-1.B. Any prescribed fire or vegetation treatment project in occupied or suitable marsh habitat only occur between September 1 and March 15 to avoid adverse affects to breeding birds.

YC-1.C. Mechanical removal of overstory habitat (e.g. tamarisk) could occur as early as September 1, after the breeding season for yellow-billed cuckoos.

YC-1.D. Evaluate past surveys for yellow-billed cuckoos as part of the planning for prescribed fire projects. Post-project surveys should also be conducted to document the re-growth of mature cottonwood-willow gallery forests and occupancy by cuckoos.

- YC-1.E.** After fire suppression is completed in yellow-billed cuckoo habitat, review any available survey records of the burn site and record in the fire report the number of cuckoos recorded from the vicinity during these surveys.
- YC-1.F.** Continue to implement the riparian fire management plan to minimize fire damage in riparian areas, especially those with suitable or potential flycatcher habitat.

2.3.7. Peregrine Falcon (BLM Sensitive)

Conservation Measures for Peregrine Falcon

Continue post-delisting recovery monitoring of selected peregrine falcon nest sites in cooperation with the AGFD and the USFWS. The monitoring plan calls for five sampling periods at three-year intervals throughout the life of this Approved Plan. Monitoring protocol requires a minimum of two, four-hour visits to a site unless a nest is located sooner.

PF-1. Management Guidance for Fire Suppression and Related Actions

- PF-1.A.** BLM wildlife biologists will be involved early in the decision-making process for fuels management treatments (wildland fire use, prescribed fires, vegetation treatments) that are planned within ½ mile of active nest sites of peregrine falcon.
- PF-1.B.** Prior to implementing prescribed fire or vegetation treatment activities on BLM-administered lands, areas within ½ mile of cliff faces that could contain suitable habitat for peregrine falcon will be surveyed. Fire management activities will only be implemented when peregrine falcons are not present.
- PF-1.C.** If a peregrine falcon is discovered during fire suppression or fuels treatment activities (wildland fire use, prescribed fire, vegetation treatments), the Resource Advisor or a qualified wildlife biologist will document the find, assess potential harm to the falcon, and advise the Incident Commander or project crew boss of methods to prevent harm.

2.4. VIRGIN RIVER FISHES (not in Grand Canyon-Parashant National Monument)

2.5. Flowering Plants

Conservation Measures for Special Status Plants

PL-1. Management Guidance for Fire Suppression and Related Actions

- PL-1.A.** Known locations and potential habitat for plant populations will be mapped to facilitate planning for wildland fire use, prescribed fires, and vegetation treatments, and to ensure protection of these populations during fire suppression.
- PL-1.B.** Delineate buffer areas around plant populations prior to prescribed fire and vegetation treatment activities. Coordinate with USFWS during any

emergency response and wildland fire use activities to ensure protection of plant populations from fire and fire suppression activities.

PL-1.C. No staging of equipment or personnel will be permitted within 100 meters of identified individuals or populations of special status plant species during fire suppression, wildland fire use, or prescribed fire. Off-road vehicles will not be allowed within the 100-meter buffer area, unless necessary for firefighter or public safety or the protection of property, improvements, or other resources.

PL-1.D. No prescribed burning will be implemented within 100 meters of identified locations or unsurveyed suitable habitat of special status plant species unless specifically designed.

Appendix I - Emergency Preparedness Step-Up Plan

Arizona Strip District Emergency Preparedness Step-Up Plan

Step-up plans provide management direction given in identified levels of burning conditions, fire activity, and resource commitment, and are required at national, state/regional, and local levels. Preparedness levels (1-5) are determined by incremental measures of burning conditions, fire activity, and resource commitment. Step-up plans are designed to direct incremental preparedness actions in response to increasing fire danger. Those actions are delineated by “staffing levels”. Each Step-up plan should address the five preparedness levels (1, 2, 3, 4 and 5) and the corresponding planned actions that are intended to mitigate those fire danger conditions. The Step-up Plan describes escalating responses that are pre-approved in the fire management plan. Mitigating actions are designed to enhance the unit’s fire management capability during short periods (one burning period, Fourth of July or other pre-identified events) where normal staffing cannot meet initial attack, prevention, or detection needs. The difference between preparedness level/step-up and severity is that preparedness level/step-up actions are established in the unit fire management plan, and implemented by the unit when those pre-identified conditions are experienced. Severity is a longer duration condition that cannot be adequately dealt with under normal staffing, such as a wide spread killing frost converting live fuel to dead fuel and/or long term drought conditions. See Interagency Standards for Fire and Fire Aviation Operations, Chapter 10 for more information regarding appropriate mitigating actions for step-up planning and long term severity.

The emergency preparedness step-up plan for the Arizona Strip District is included below.

There are certain conditions where emergency preparedness can be implemented. Conditions that apply to Planning Levels 2 thru 5 are as listed below:

- A. Unit Duty Officer (DO) may activate extended staffing for mitigating actions designed to enhance the Unit’s fire management capabilities during busy holiday weekends or other pre-identified events within the identified fire season where normal staffing cannot meet initial attack, prevention, or detection needs. Extended staffing for affected Unit DO, necessary logistic staff, 2 IA resources, No aviation resources authorized for this condition.
- B. Predicted or observed LAL of 2 to 6 in Planning Levels 3 and 4 will allow DO to increase Planning Level to next highest level for that current burn period.
- C. Drought – The standard measure for drought will be the U.S. Drought Monitor (www.drought.unl.edu/dm/monitor.html)
 - If drought monitor shows Unit to be primarily rated as DO – Abnormally Dry or D1 – Moderate Drought then no change in Planning Level upwards will occur.
 - If drought monitor shows Unit to be primarily rated as D2 – Severe, then Unit DO may bump up one Planning level. If D2 continues for 30 days then consider national severity request.
 - If drought monitor shows Unit to be primarily rated as D3/D4 – Extreme/Exceptional Drought, then Unit DO may bump up two Planning Levels. Request national severity funding if within designated fire season.
- D. Use of State Directors short term account to extend staffing and/or mobilize locally assigned resources if conditions meet those outlined in Instructional Memorandums.
- E. Conditions listed above are not additive – in other words if you are in Planning Level (PL) 3 when LAL 6 is predicted on July 4th Holiday, you can only bump up 1 planning level not 2. You would be in Planning Level 4 not Planning Level 5.

The Mojave SIG NFDRS BI value will be used to identify the appropriate actions identified in the Step-Up Plan. Fuel Model G is used for analysis as it is analyzed daily by the CCIFC. The inclusion of the 1000 Hour fuel dead fuel moisture is for reference. Typically the BI values will drive the Planning Level for this Step-up Plan.

Planning Level	Adjective Rating	BI Range	1000 Hour	Fire Activity	Emergency Preparedness Actions Authorized	Emergency Preparedness Fund Source
1	Low	0 – 34	7%+	Little or no fire activity. Little or no potential.	<ul style="list-style-type: none"> No emergency preparedness actions should be needed. Normal staffing during identified fire season. No AD's authorized. 	None authorized
2	Moderate	35 – 68	6– 7%	Some potential for the occurrence of multiple fires in class A/B size classes or some fires actually occurring, but weather and fuels conditions and/or season will minimize fire potential.	<ul style="list-style-type: none"> Apply all applicable conditions listed above (A through E) No emergency preparedness actions and funding are authorized. Normal staffing during identified fire season. Necessary extended staffing will be funded from ongoing fire accounts/fires. No AD's authorized. 	None authorized
3	High	69 – 102	4– 6%	Potential exists for multiple fires in A/B/C size classes to occur or multiple fires in these size classes are occurring. Some potential for extended attack fires exists. Weather and fuels conditions and/or season will minimize fire potential in short term.	<ul style="list-style-type: none"> Apply all applicable conditions listed above (A through E) as appropriate. Extended staffing approved for Unit DO; 2 IA resources (Engine/IA Squad) at each station within affected Unit, Blackrock Lookout and the Logistic Coordinator. Resources from within the unit may be extended to “move up and cover” stations where pre-positioning is occurring away from primary stations. Also consider extended staffing for Helitack. Prevention technicians may be extended to patrol campgrounds. Consider extended staffing for SEATs. Aircraft should only be extended when DO assumes a strong likelihood that fire activity will occur. If forecasted or observed LAL is 3 -6 consider aerial recon and 2 logistic staff. Vehicle mileage approved for extended staffing pre-positioning only. No AD's authorized. 	State Directors Account Or National Severity

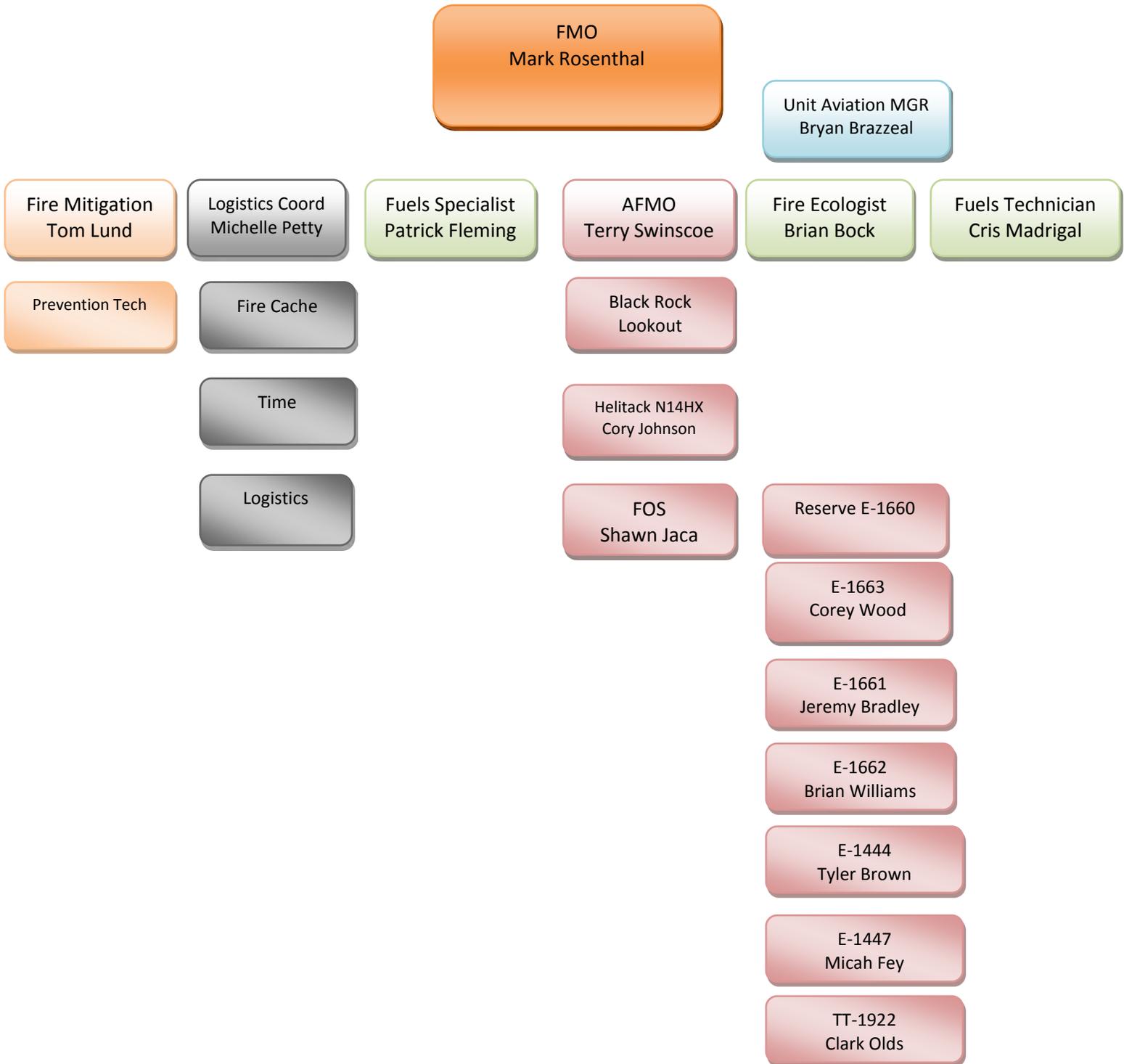
4	Very High	103 –128	3- 4%	<p>Potential exists for multiple A/B/C and larger fires to occur. Extended attack potential is high. Weather, fuels, and/or season will create conditions where fire spread potential and resistance to control is high.</p>	<ul style="list-style-type: none"> • Apply all applicable conditions listed above (A through E) as appropriate • Extended staffing approved for Unit FMO; Unit AFMO; DO; Logistics Coordinator; Logistics Coordinator and 2 Logistics Dispatchers; Blackrock Lookout; all IA resources at each station. Resources from within the affected zone or other unaffected zones may be extended to “move up and cover” stations where pre-positioning is occurring away from primary stations. Also consider extended staffing for Helitack/up to 15 total smokejumpers. Prevention technicians may be extended to patrol campgrounds. • Extended staffing for Unit Aviation Manager. Unit DO may extend aircraft deemed necessary. • If forecasted or observed LAL is 2 or greater, consider aerial recon. • Vehicle mileage approved for extended staffing pre-positioning only. • AD’s are authorized for short term use. 	<p>State Directors Account Or National Severity</p>
5	Extreme	>128	<3%	<p>Potential exists for multiple A/B/C and larger fires to occur. Potential for multiple IMT managed incidents is high. Weather, fuels, and/or season will create conditions where fire spread potential and resistance to control may be beyond capabilities of IA resources available.</p>	<ul style="list-style-type: none"> • Apply all applicable conditions (A thru E) listed above as appropriate • Extended staffing approved for Unit FMO; Unit AFMO; Unit DO; Logistics Coordinator; up to 5 Logistics Dispatchers; Blackrock Look Out; all IA resources at each station. Resources from within the affected zone or other unaffected zones may be extended to “move up and cover” stations where pre-positioning is occurring away from primary stations. Also consider extended staffing for Helitack/up to 20 total smokejumpers. Prevention technicians may be extended to patrol campgrounds. • Extended staffing for Unit Aviation Manager; Air Tanker Base Manager or Acting; Assistant ATBM; ATGS; Fixed Wing Parking attendant may be authorized by Unit DO. • If forecasted or observed LAL is 2 or greater consider aerial recon. • Unit DO may extend aircraft deemed necessary. • Vehicle mileage approved for extended staffing pre-positioning only. • AD’s are authorized for short term use. 	<p>State Directors Account Or National Severity</p>

Appendix J - 2012 Standard Operating Guidelines



2012 Standard Operating Guidelines

Arizona Strip 2012 Organization



Introduction

The following guidelines are specific to the Arizona Strip District, BLM Fire Management Program. The purpose of these guidelines is to provide a frame work to allow wildland fire personnel to operate in a safe and efficient manner.

Mission Statement

Be a safe fire program through training, communication, positive attitude and respect.

Expectations

1. Arizona Strip Fire Management personnel will conduct themselves in a safe, professional manner.
2. Maintain fire preparedness at all times.
3. Build a strong cohesive program.
4. Will seek opportunities to build interagency relationships.
5. Take pride in what you do and hold yourself accountable.

Suppression Responsibilities

1. Have fire gear packed, complete and in an accessible location. Be prepared for immediate dispatch for prolonged periods, up to 30 days. Always have enough money, or have the ability to get funds, i.e. ATM Card or credit card, to maintain yourself on these details. Usually you will be compensated while gone but do not depend on it.
2. Follow all instructions and job performance requirements addressed in the Interagency Standard for Fire & Aviation Operations, Position Descriptions, and the Employee Performance and Appraisal Plan (EPAP).
3. Retrieve or replace all equipment and supplies before leaving an incident. If this is not possible complete a Property Loss and Damage report for non-expendable items, or a Fire Replacement requisition.
4. Before going out of service ensure all equipment is fire ready for the next shift.
5. When off duty, employees are expected to stay in communication with their supervisor to help expedite fire calls. If you wish to be unavailable during your days off make sure you inform your supervisor. This may mean you miss a fire assignment. If you have been consuming alcohol, you will be considered unfit to work. Be honest with your Module Leader, otherwise you may compromise the safety of yourself and others.

Helitack Daily Shift Schedule

Standard shift 0800-1200, 1300-1900 Shifts may vary

0800-0900	PT
0900-0930	Fire Ready
0930-1000	Briefing
1000-1300	Vehicle checks / travel to airport
1300-1400	Lunch
1630-1700	Operations Call
1800-1900	AAR, daily log, clean-up projects / work area, travel to SG call out of service.

Engine Crew Daily Shift Schedule

Standard shift 0900-1300, 1400-1800 Shifts may vary

0900-0930	Call in service / Vehicle checks
0930-1000	Briefing
1000-1100	PT
1130	Fire Ready
1300-1400	Lunch
1630-1700	Operations Call
1730-1800	AAR, daily log, lock-down engines and facilities, clean-up projects / work area.

Module Leaders and Fire Management will account for all personnel they are responsible for and update the in/out board daily. **Tardiness will not be tolerated.** Failure to comply could result in disciplinary actions. Due to the nature of this job this schedule may be flexible.

Calling in and out of service with Color Country Interagency Fire Center (CCIFC) is the Module Leaders responsibility. Starting May 15 at 0900 each module will call in and out of service via radio and status each crewmember.

Physical Fitness Standards

Daily physical fitness training (PT) is **required**. Employees serving in wildland fire positions that require a fitness rating of arduous as a condition of employment are authorized one hour of duty time each work day for physical fitness conditioning. Employees serving in positions that require a fitness rating of moderate or light may be authorized up to three hours per week. Fitness conditioning periods will be structured to include aerobic and muscular exercises. Team sports are not authorized for fitness conditioning. All crewmembers will fully participate to the best of their ability. If it is apparent individuals are not participating in the PT program, a structured group PT program will be initiated for that module. Our PT program is based on standards that are outlined on Chapters 5,6,7,8 and 9 and appendices F, G and H of Fitness and Work Capacity 2009 ed. (PMS 304-2, NFES 1596) and the FireFit Program (<http://www.nifc.gov/FireFit/index.htm>) All personnel are encouraged to meet or exceed these standards.

The Fitness Membership Fee Reimbursement Program is created to promote and maintain employee physical and mental health. Permanent employees who participate in the program will be reimbursed up to 50% of their membership fee for a commercial, non-Federal sponsored fitness center. The reimbursable amount is not to exceed \$275.00 annually. (1400-900 (9530))

Work Capacity Testing

The minimum standards outlined on page 13-10 of the Interagency Standards for Fire and Fire Aviation Operations 2012 will be met. Work capacity tests will be administered by an approved administrator.

Briefing

Unless you are on a fire assignment or at a field station, fire personnel are required to attend morning briefing. Briefing will be approximately 30 minutes and consist of: Local/National Situation, Weather, Staffing Levels, and 6 Minutes for Safety. Cell phone use will not be tolerated and will be turned off during briefing. All personnel are expected to participate and pay attention while the briefing is being conducted.

Duty Officer Log will be filled out, faxed or e-mailed to CCIFC and other Duty Officers in the Color Country area.

Field Uniform Standards

Individuals are expected to wear approved t-shirts by the fire management staff. Shirts that are approved are as follow 1. Navy Blue with Arizona Strip Fire logo. 2. Navy Blue with Helitack logo. 3. Plain Navy Blue shirt with no logos. T-shirts can be purchased through the employees association or through a local vendor. Nomex pants and shirts will be clean and serviceable. Serviceable means that there will be no rips, tears, frayed cuffs or holes in the material. Unserviceable nomex will be documented on a property loss and damage form and signed by the DO and turned into the cache for replacement.

Boot Standards

The intent of the AZ Strip District Fire Management Program boot policy is to have good safe, serviceable firefighting boots. The minimum standards outlined on page 07-9 of the Interagency Standards for Fire and Fire Aviation Operations 2012 will be met. Boot tread will be at a minimum of 1/16 of an inch at the lowest part of the tread depth. Boots will be kept in good repair. If you start the season with less than 1/8 of an inch of tread, boots may become unserviceable during the fire season. If boot tread fall below the standard of 1/16 of an inch, please have a contingency plan in place. For example. Second pair of boots, new boots or any boot that meets the standard. If any part of your boot has no tread, your boots are unserviceable. When your boots become unserviceable you will not be available for fire assignments. This includes boots that have delaminated soles, boots that have become unstitched or have holes in the leather.

Accountable Property

All property will be accounted for by each of the Module Leaders and will be reviewed annually. Prior to using another individual's property you must ask for their permission. If the individual is not available you will get permission from the individual's supervisor. After using property you must return it in the same condition you received it in. DI 105's will be kept by each individual and the original will be kept in the Logistics office.

UTV/ATV/Trailers

We will follow BLM policy outlined in Chapter 27 of the Safety and Occupational Health Program Manual Handbook 1112-1. Ordering and use will be tracked through South Zone Logistics. All equipment will have a pre and post inspection. Prior to returning to service, a post inspection form will be completed by a service tech and a post fire maintenance will be done and all information will be collected and attached for documentation.

Vehicles

Vehicle maintenance and inspections are standard procedures for fire preparedness. All vehicles will be inspected daily including during fire operations. Inspections will be recorded and kept in the Fire Engine Maintenance and Procedure Record (FEMPR) or appropriate vehicle maintenance log. Report any problems and initiate action to repair or correct problems as soon as possible. All maintenance and/or problems will be recorded in the FEMPR.

Monthly mileage reports and vehicle inspections will be the responsibility of the Module Leader. Reports will be submitted by the 1st of each month.

Vehicles will be locked and keys will be placed in the key box when off duty. Credit cards will be located on the keys or in the vehicle fuel book. Fuel books will always be located in the vehicle.

Lunch Rules

Module Leader will establish the boundaries for lunch. Those who work on initial attack resources will take a radio to lunch to monitor dispatching traffic.

Response and Get Away Standards for ground crews

Local Response	Working Hours	3 min
Local Response	Working Hours-project work	15 min
Off District Assignment		as per resource order

The Helitack Module has a 15 minute response time upon receiving a mission request from CCIFC.

All module members will monitor the radio and remain in contact with their direct supervisor to ensure prompt response to fire dispatches during work hours.

First out Responsibility

First out resource will be determined by the Duty Officer (DO) and assigned during briefing. The resource is identified on the DO log and is first out until the next day’s briefing. Daily schedule may change if fire readiness is needed early.

Chain of Command

All information needs to follow the established chain of command. It is very important that we follow the chain of command, both up and down the chain.

Engine Modules:

Firefighter ⇔ Engine Operator ⇔ Captain

Helitack Module:

Firefighter ⇔ Lead Crew ⇔ Captain ⇔ Superintendent

Project work

Every effort will be made to facilitate project work during times of low fire activity.

- Take pride in all work done. Be accountable for the work you do.
- Safety is the priority during all project work. Review and Document Risk Assessment conduct and document tailgate safety sessions prior to performing all work.
- It is the responsibility of everyone to ensure the project area is clean.
- All modules that are available will assist during project work.
- All modules will look for opportunities to do project work while in town and at out-stations.

Detailer and EFF

We may staff EFF (emergency firefighters) and host detailers. It is the DO’s responsibility to ensure detailers are welcome and briefed on all operations and program procedures. EFFs may be assigned to different crews; it is the Module Leader’s responsibility to ensure that these firefighters have the appropriate gear and to train them on equipment and Personal Protective Equipment. Per Diem will be established prior to detailer’s assignment.

Training

On-the-job training will be provided by your supervisor as determined in your Individual Development Plan (IDP). The benefit you receive from such training is dependent upon your acceptance of it and the effort you put into it. Your performance in your present job is an important factor when selections are made for these training opportunities. You can also improve your chances of advancing your career by developing yourself. Through the study of manuals, memoranda,

circulars, pamphlets, and books you can learn more about the work and objectives of your unit and the technical aspects of your position or chosen occupation.

All crewmembers will take advantage of training opportunities including; fire operations, task book completions, resume building, computer skills, urban interface, radio, and other miscellaneous education. Module Leaders will provide training opportunities in all aspects of the fire management.

- Training will be a key priority for all crewmembers throughout the summer.
- Only qualified personnel will operate in any given fire position.
- Trainees will have a qualified trainer present during a training assignment or assignments.
- Crewmembers will seek opportunities to gain skills in fire as well as non-fire related skills (computers, writing skills, mathematics, etc).
- Copies of Certificates, fire experience, and position task books will be kept in Logistics.
- Fire experience will be turned in to logistics prior to leaving for the summer.
- It is the module leaders responsibilities to ensure that crewmembers fire experience is completed and turned in.

Days Off Schedule (beginning 6/17/2012)

	Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1661						X	X
1662	X	X					
1663	X						X
1444					X	X	
1447		X	X				
1922	X						X
Moki	7 day						

Off District Rotation

When the fire load is such that it doesn't require all of the resources to be on district the FMO, with input from the AFMO and FOS, will make the decision to make resources available for off district assignments. Which resources made available for any assignments will be a collaborative effort between the FOS and all module leaders. Off district assignments will be utilized to provide training opportunities for individuals. The ultimate decision as to who goes and who doesn't is made by the FMO. Module Leaders will keep the Duty Officer who will then keep their supervisor informed during off district assignments.

Out Stations

Out station use will be tracked by documenting on your crew time report (CTR). If any problems, comments, or questions arise with the use of an out station, contact Tyler Brown-Black Rock, Brian Williams- Pakoon, Corey Wood- Mt. Trumbull. Follow the cleaning and maintenance checklist at each of the stations.

Employee Performance Appraisal Plan

All employees will have an EPAP. EPAPs will be initiated within 2 weeks of employment start date. Copies of the EPAP (initial and final) will be turned in to Gloria Jones. Mid-season review will be completed by July 10th and final evaluation will be completed prior to last day of employment.

Individual Development Plan

IDPs will be initiated for each employee by their supervisor. It is the employee's responsibility to execute their IDP.

Time

Personnel time will be documented on a CTR. CTRs will be turned in daily and no later than the last day of the pay period. Signatures are required by the IC or DO for all hours charged to incidents or projects. All overtime/credit and comp time that is non-fire will be preapproved.

Fire Prevention and Mitigation

The Arizona Strip has a very active fire prevention and mitigation program on the District. Due to the demographics of the area, we conduct and participate in many fire prevention and mitigation activities and programs in Washington, Mohave and Coconino counties. As an employee of the Arizona Strip District Fire Management Program, you may be asked to participate in many of these activities. A positive public perception is very important to the Bureau of Land Management and all other federal and state agencies we might represent. We are all professionals and the need to present ourselves in such a manner is mandatory. Below is a list of programs and activities that are pursued and conducted throughout the Color Country Interagency Fire Management area.

- Pursue formation of fire safe councils in all communities at risk.
- Work collaboratively with communities and other partners to develop a CWPP and update or amend the FMP as necessary to incorporate mitigation and prevention recommendations and priorities developed by the community or outlined in the CWPP.
- Provide fire restriction and emergency closure information to the public.
- Present fire mitigation and prevention information to local schools.
- Present fire ecology information to local youth groups to help enhance the understanding and support the BLM management activities.
- Coordinate information relating to funding and training opportunities to rural fire departments to enhance their firefighting capacity.
- Provide informational brochures and materials to communities and homeowners on reducing fire risks. Provide Defensible Space fire education materials at events.
- Use local media outlets to encourage defensible space and to mitigate current fire causes.
- Produce mini campaigns each year to address the priority fire cause which may include some of the following: billboards, flyers, Fire Safe Council ads, and radio PSAs.
- Participate in residential assessments and provide education to homeowners.

- Conduct presentations to local homeowner groups explaining “Defensible Space” and fire prevention risks and mitigation.
- Provide educational signing, outreach to public land groups, prevention patrols, and contacts.

Leave

During high fire occurrence it is essential that all suppression personnel be available for assignments. Family emergencies, doctor’s appointments, illness and personal business are valid reasons for utilization of your acquired leave. Your immediate supervisor must approve annual leave at least 2 weeks in advance. Unless plans have been made with your immediate supervisor, annual leave will not be granted during the fire season. Sick leave can be used at any time when needed, but abuse of sick leave will not be tolerated. Over 3 consecutive days of sick leave requires a doctor’s note. Hangovers do not constitute sick leave. During days off, crewmembers need to inform supervisor when traveling outside of the local area.

Injuries

All injuries, no matter how minor, will be reported. Reports of an injury will be made to the crewmembers’ supervisor immediately. Supervisors will fill out and submit a CA-1 form, using the web based Safety Management Information System (SMIS). Supervisors will ensure that crewmembers will receive appropriate medical attention.

Credit Cards and Travel

All WAEs with credit cards are responsible for all statements. Statements will be completed within 30 days. Proper coding and timely repayment of funds is the individual’s responsibility. Credit card statements will have the appropriate supporting documentation. Travel vouchers are the responsibility of the Module Leader. Contact your supervisor for fire business assistance.

Equal Employment Opportunity (EEO)

Employees will follow all aspects of the BLM EEO policy. Try to resolve conflicts at the lowest level. If a conflict cannot be resolved, follow the chain of command to notify the next level supervisor.

Per Diem

Seasonal per diem and receipts will be turned in to Michelle Petty upon returning from assignments. They will be imputed within 7 days of getting this information.

Employee Signature: _____

Date: _____

Module Leader Signature: _____

Date: _____