

BURNED AREA REHABILITATION PLAN

VEGAS FIRE
GASS COMPLES
DESERT NATIONAL WILDLIFE REFUGE

AGENCY/UNIT: U.S. Fish and Wildlife Service
Desert National Wildlife Refuge

LOCATION: Las Vegas, Nevada

DATE: July 10, 2006

PREPARED BY: Regional Burned Area Emergency Response
Team

Submitted By: _____
Richard Hadley, Regional Burned Area Emergency Response Coordinator

BURNED AREA REHABILITATION PLAN

**VEGAS FIRE
GASS COMPLEX
DESERT NATIONAL WILDLIFE REFUGE**

REVIEW AND APPROVAL -- U.S. FISH AND WILDLIFE SERVICE

BURNED AREA REHABILITATION PLAN CONCURRENCE

- Concur**
- Concur with Revision**
- Disapproved**

Explanation for Revision or Disapproval:

Linda Miller, Project Leader, Desert National Wildlife Refuge Complex

Date

BURNED AREA REHABILITATION PLAN CONCURRENCE

- Concur**
- Concur with Revision**
- Disapproved**

Explanation for Revision or Disapproval:

Doug Waggoner, Regional Fire Mgt. Coordinator, California Nevada Operations

Date

BURNED AREA REHABILITATION PLAN CONCURRENCE

- Concur**
- Concur with Revision**
- Disapproved**

Explanation for Revision or Disapproval:

Steve Thompson, Manager, California Nevada Operations

Date

BURNED AREA REHABILITATION PLAN

VEGAS FIRE & GASS COMPLEX

Desert National Wildlife Refuge Fires

EXECUTIVE SUMMARY

This plan addresses rehabilitation of fire effects as a result of both the Vegas Fire and Gass Complex in the Las Vegas and Sheep Ranges of Desert National Wildlife Refuge. The plan has been prepared in accordance with the *Department of the Interior, Departmental Manual, Part 620: Wildland Fire Management, Chapter 3: Burned Area Emergency Stabilization and Rehabilitation* and the Interagency Burned Area Emergency Stabilization and Rehabilitation Handbook. This document provides for rehabilitation of lands on Desert National Wildlife Refuge administered by the U.S. Fish and Wildlife Service.

The primary objectives of the Vegas Fire and Gass Complex Burned Area Rehabilitation Plan are to:

- Replace 4 fire damaged wildlife water guzzlers essential to management of desert bighorn sheep populations in Desert National Wildlife Refuge.
- Implement chemical treatment of invasive noxious weeds to ensure establishment of a healthy, stable ecosystem that emulate pre-fire conditions.
- Conduct post-fire monitoring of native plant recovery to detect any invasion of noxious weeds and invasive non-native plant species that can reasonably be treated with integrated pest management treatments.
- Develop monitoring specifications designed to document relative effectiveness of rehabilitation treatments for noxious weed species or determine whether additional rehabilitation treatments are required.

A Regional Burned Area Emergency Response (BAER) Team has conducted an analysis of fire effects using aerial and ground reconnaissance methods throughout the fire area. Archaeologists determined that no cultural resources within the fire were impacted. The vegetation specialist evaluated and assessed fire effects to vegetation resources including noxious weed populations and identified values at risk associated with vegetation losses. The wildlife biologist conducted an assessment of fire effects to Threatened and Endangered (T&E) wildlife and the desert bighorn sheep for which Congress established Desert National Wildlife Refuge.

Resource assessments produced by these specialists can be found in Appendix I and treatments identified in the assessments are located within Part F, Specifications. A summary of treatment costs is located within Part E. Part I is provided as a signature page for agency review and approval.

Fire Location

The Vegas Fire began on June 28, 2006 as a lightning storm rolled across the refuge and was contained at 21,120 acres. The Gass Complex was ignited by lightning on June 30, 2006. The Gass Complex was initially six fires that burned together into an 18,800 acre fire on July 2, 2006 and contained on July 7, 2006.

Vegetation resources were impacted to varying degrees as fire intensities varied across the landscape. Combinations of wind, fuel, slope and plume driven fire behavior contributed to difficult suppression conditions. Thunderstorms moving through the area caused downburst winds with little to no precipitation

over the fire area. The Mojave Desert was lush with vegetation following a record-setting winter in 2005. These carry-over fuels contributed to extreme rates of spread for the fire.

Elevations range from 3,000 feet to 6,500 feet. Primary plant communities include desert scrub, mixed mid-elevation desert scrub, and it burned up into the pinyon-juniper woodland and substantial sparsely vegetated rock outcrops.

Management

Two plans relevant to ES which contain management direction are the Complex's Fire Management Plan and the Desert Tortoise (Mojave Population) Recovery Plan.

ISSUES AND OBJECTIVES

The resource staff of Desert National Wildlife Refuge and Las Vegas Field Office provided valuable information concerning fire history, resources at risk, logistics, BAER plan issues and objectives.

Primary issues identified by the Complex and Refuge personnel included:

- Impacts to Desert Tortoise populations and their habitats
- Impacts to Big Horn sheep habitat
- Impacts to cultural resources
- Non-native species invasion

Based upon field reviews and findings, the team has developed this plan to address the following issues:

- Assessment of Threatened and Endangered Desert Tortoise and their habitat.
- Noxious weed and invasive species establishment and expansion within the fire area.
- Protection of the ecological integrity of fragile desert ecosystems

Resource Assessments

Vegetation

No Threatened & Endangered or Sensitive plant species were affected by the fires. The potential exists for invasion of burned areas by non-native weeds, which could negatively impact suitable desert tortoise and desert bighorn sheep habitat.

Wildlife

Desert tortoise and bighorn sheep habitat were impacted by the fire. Recovery of this habitat should be monitored to determine if further treatment should be implemented to ensure that noxious weed species do not out compete the reestablishment of native species habitat.

Three water guzzlers established by the Refuge for desert bighorn sheep were destroyed by the fire. These structures are being recommended for replacement under the Vegas-Complex Burned Area Rehabilitation Plan (see attached).

Cultural Resources

No prehistoric or historic sites have been documented within the fire perimeters. No emergency stabilization treatments were necessary for cultural resource sites. Fuels treatments were conducted by suppression crews around two wooden historic structures under the direction of the refuge archeologist.

Rehabilitation

Based on aerial and ground surveys the BAER Team identified the following treatments for implementation.

- Noxious Weed Control
- Non-Native Invasive Species and Native Vegetation Rehabilitation Monitoring
- Replacement of Fire Damaged Wildlife Guzzlers

BURNED AREA REHABILITATION PLAN

**VEGAS FIRE
GASS COMPLEX
DESERT NATIONAL WILDLIFE REFUGE**

PART A FIRE LOCATION AND BACKGROUND INFORMATION

| | | | |
|-----------------------------|--|---|---------------------|
| Fire Name | Vegas Fire Gass Complex | Jurisdiction | Acres |
| Fire Number | Vegas - CSK9 Gass - CT0N | <u>Desert National Wildlife Refuge</u> | 21,106 Vegas |
| Agency Unit | US Fish & Wildlife Service | | 18,800 Gass |
| Region | California/Nevada Operations | | |
| State | Nevada | | |
| County(s) | Lincoln, Clark | | |
| Ignition Date/Manner | June 28, 2006 / Lightning June 30, 2006 / Lightning | | |
| Zone | Western Great Basin | | |
| Date Contained | July 4, 2006 Vegas July 6, 2006 Gass Complex | | |
| Date Controlled | July 30, 2006 Vegas July 30, 2006 Gass Complex | | |

PART B NATURE OF PLAN

Type of Plan (check one box below)

| | |
|--|----------|
| Initial Submission | X |
| Update and Revising Initial Submission | |
| Supplying Information For Accomplishment To Date On Work Underway | |
| Different Phase Of Project Plan | |
| Final Report (To Comply With The Closure Of The EFR Account) | |

REHABILITATION OBJECTIVES

Rehabilitation is defined by Department of the Interior Policy 620 DM 3, as efforts undertaken within three years of containment of a wildland fire to repair or improve fire-damaged lands unlikely to recover naturally to management approved conditions, or to repair or replace minor facilities damaged by fire.

The primary objectives of this Burned Area Rehabilitation Plan are to:

- Repair or replace 3 fire damaged to wildlife water guzzlers essential to management of desert bighorn sheep populations for which Desert National Wildlife Refuge was established by Congress.
- Implement chemical treatment of invasive noxious weeds to ensure establishment of a healthy, stable ecosystem that emulate pre-fire conditions.
- Conduct post-fire monitoring of native plant recover to detect any invasion of noxious weeds and invasive non-native plant species that can reasonably be treated with integrated pest management treatments.
- Develop monitoring specifications designed to document relative effectiveness of rehabilitation treatments for noxious weed species or determine whether additional rehabilitation treatments are required.

BURNED AREA REHABILITATION PLAN

PART C - TEAM ORGANIZATION

BAER TEAM MEMBERS

| POSITION | TEAM MEMBER / AGENCY |
|------------------------------|--------------------------|
| Team Leader | Richard Hadley, FWS |
| Wildlife | Christiana Manville, FWS |
| Cultural | Kathleen Sprowl, FWS |
| Zone Fire Management Officer | Glenn Gibson, FWS |

Resource Advisors: (Note: Resource Advisors are individuals who assisted the BAER Team with the preparation of this plan. See the consultations Section of this plan for a full list of agencies and individuals who were consulted or otherwise contributed to the development of this plan.

| NAME | AFFILIATION, SPECIALTY |
|-----------------------|--|
| Amy Sprunger-Allworth | FWS, Refuge Manager, Desert National Wildlife Refuge 702-879-6110 |
| Christiana Manville | FWS, Fish and Wildlife Biologist, Las Vegas Field Office 702-515-5240 |
| Kevin Oliver | BLM, Fire Management Officer, Las Vegas Field Office |
| Troy Phelps | BLM, Assistant Fire Management Officer, Las Vegas Field Office 702-596-4004 |
| | |

- PART D - SUMMARY OF APPROVAL AUTHORITIES

U.S. FISH AND WILDLIFE SERVICE

| ACTIVITIES REQUIRING NATIONAL OFFICE APPROVAL Rehabilitation | Cost |
|---|------------------|
| R-1 Implementation Leader | \$56,242 |
| R-2 Treatment Effectiveness Monitoring | \$38,473 |
| R-3 Noxious Invasive Species Control | \$141,946 |
| R-4 Replace Burnt Wildlife Guzzlers | \$117,039 |
| TOTAL | \$353,713 |

PART E SUMMARY OF ACTIVITIES AND COSTS

The summary of activities and cost table below identifies rehabilitation costs charged or proposed for funding from subactivity 9262 funding sources.

| Spec # | Title | Unit | Unit Cost | # of Units | Work Agent | Cost |
|---|---------------------------|-------------|------------------|-------------------|-------------------|------------------|
| R-1 | Implementation Leader | Month | \$9,327 | 18 | FA | \$56,242 |
| R-2 | Treatment Monitoring | Survey | \$513 | 150 | FA,SC | \$38,473 |
| R-3 | Noxious Weed Control | Acres | \$797 | 300 | FA,SC | \$141,946 |
| R-4 | Replace Wildlife Guzzlers | Guzzler | \$39,013 | 4 | CA,SC | \$117,052 |
| | | | | | | \$353,713 |
| Work Agent: CA = Coop Agreement; FA=Force Account; P=Permitee; SC=Service Contract; TSP=Timber Sale Purchaser; V=Volunteer | | | | | | |

PART F - INDIVIDUAL SPECIFICATION

| | | | |
|-------------------------------------|-------------------------------------|---|---------------------------|
| TREATMENT/ACTIVITY NAME | Implementation Leader | PART E SPECIFICATION # | R-1 Implementation Leader |
| NFPORS TREATMENT CATEGORY* | Rehabilitation – Project Management | FISCAL YEAR(S) (list each year): | 2007 - 2008 |
| NFPORS TREATMENT TYPE * | Contract Administration | WUI? Y / N | No |
| IMPACTED COMMUNITIES AT RISK | N/A | IMPACTED T&E SPECIES | N/A |

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

| |
|--|
| <p>Number and Describe Each Task:</p> <p>A. General Description: This project would provide for hiring a project manager for 1 year in ensure that all projects proposed in the Vegas Fire and Gass Complex Rehabilitation Plan will be implemented in a timely manor. The project leader will develop contract documents, track funding and manage all on the ground activities to ensure that treatments are carried out consistent with Department of the Interior Rehabilitation Policy.</p> <p>B. Location/(Suitable) Sites: Vegas Fire and Gass Complex, Desert National Wildlife Refuge.</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 1. Implementation Leader will coordinate all aspects of rehabilitation plan including administering contracts, documentation of treatment installed, providing accomplishment report, submitting supplemental requests for funding, ensuring the completion of all approved treatments, and coordinating treatments with other agencies and private landowners 2. Implementation Leader will coordinate on-the-ground implementation of treatments including site orientation of contractors, developing daily/weekly work plans for contractors/crews, and supervising work. 3. At completion of the funding period the implementation leader will prepare a final accomplishment report. <p>D. Purpose of Treatment Specifications: The implementation leader will develop contract specifications, coordinate contractor access to remote closed refuge property, coordinate all aspects of project management, inspect subcontractors work, and report accomplishments</p> <p>E. Treatment Effectiveness Monitoring Proposed: N/A.</p> |
|--|

LABOR, MATERIALS AND OTHER COST:

| | |
|---|--------------------|
| PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below). | COST / ITEM |
| FWS-GS-11 Biologist @ \$27.39 / hour + benefits @ 33% = \$36.32 X 8 hours/day X 194 days | \$56,242 |
| TOTAL PERSONNEL SERVICE COST | \$56,242 |
| EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting. | COST / ITEM |
| TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST | |
| MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item): | COST / ITEM |
| TOTAL MATERIALS AND SUPPLY COST | |
| TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item): | COST / ITEM |
| TOTAL TRAVEL COST | |
| CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item): | COST / ITEM |
| TOTAL CONTRACT COST | |

SPECIFICATION COST SUMMARY

| FISCAL YEAR | PLANNED INITIATION DATE (M/D/YYYY) | PLANNED COMPLETION DATE (M/D/YYYY) | WORK AGENT | UNITS | UNIT COST | PLANNED ACCOMPLISHMENTS | PLANNED COST |
|--------------|------------------------------------|------------------------------------|------------|-------|-----------|-------------------------|--------------|
| FY2006 | | | | | | | |
| FY 2007 | 10/07 | 10/08 | F | Month | \$ | 9 | 56,242 |
| FY 2008 | | | | | | | |
| FY__ | | | | | | | |
| TOTAL | | | | | | | \$56,242 |

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

| | | |
|----|---|---|
| 1. | Estimate obtained from 2-3 independent contractual sources. | |
| 2. | Documented cost figures from similar project work obtained from local agency sources. | |
| 3. | Estimate supported by cost guides from independent sources or other federal agencies | |
| 4. | Estimates based upon government wage rates and material cost. | P |
| 5. | No cost estimate required - cost charged to Fire Suppression Account | |

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

| |
|--|
| List Relevant Documentation and Cross-Reference Location within the Accomplishment Report. |
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PART F - INDIVIDUAL SPECIFICATION

| | | | |
|-------------------------------------|------------------------------------|---|--|
| TREATMENT NAME | Treatment Effectiveness Monitoring | PART E SPECIFICATION # | R-2 Treatment Effectiveness Monitoring |
| NFPORS TREATMENT CATEGORY* | Monitoring | FISCAL YEAR(S) (list each year): | 2007 |
| NFPORS TREATMENT TYPE * | Treatment Effectiveness Monitoring | WUI? Y / N | No |
| IMPACTED COMMUNITIES AT RISK | No | IMPACTED T&E SPECIES | Desert Tortoise Habitat and Desert Bighorn Sheep |

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

| |
|--|
| <p>A. General Description: Monitor invasive species treatment effectiveness and native plant recovery within the burned area to determine if management objectives are being met and to identify any further noxious weed control and native plant seeding is required for rehabilitation of the area is required.</p> <p>B. Location/(Suitable) Sites: Monitor for noxious weeds will occur in areas with potential weed invasion and in areas that are treated for noxious weeds. Monitoring for plant recovery success will occur in areas with increased risk to noxious weed invasion.</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 1. Establish permanent transects for each treatment area to continue short-term monitoring on known noxious weed occurrences and in areas of potential spread within the burned area to determine spread of noxious and invasive weeds. The monitoring protocol has been developed by USGS-BRD, using a modified version of the National Park Service FMA protocol. The monitoring will evaluate one or more of the following: cover, height, density, frequency, and visual obstructions for individual plant species or group of species. Line intercept can be used to measure shrub canopy cover and quadrat-sampling methods can be used to measure frequency. Collect data to describe the vegetation recovery from the fire. Compare reestablishment within burned area to control areas outside the burn. 2. Prepare annual report and final report analyzing the data for burned and unburned sites to determine cover and frequency of natives. 3. Locate, map, and document (using photography, topographic maps, and GPS technology) new weed occurrences within the burned area. 4. Continue with agency approved control measures pursuant to the Integrated Pest Management plan on new weed occurrences where monitoring demonstrates the establishment or expansion of known weed populations. 5. For native plant areas information from monitoring transects shall determine reestablishment rates of native plant species. These data may be used to determine if additional rehabilitation actions will be continued. <p>D. Purpose of Treatment Specifications: Noxious weed and invasive plant monitoring is required to detect new weed occurrences in the burned area, to monitor known weed densities, and determine the effectiveness of treatments. Monitoring of native grass and forbs recovery is required to ascertain the degree of competition with undesirable plant species and determine if additional treatments area necessary to control non-native invasive species and protect ecosystem biodiversity.</p> <p>E. Treatment Effectiveness Monitoring Proposed: As described in this specification. Coordination and oversight between the refuge staff, contractors, and USGS-BRD regarding data collection and interpretation shall increase effectiveness of this monitoring</p> |
|--|

II. LABOR, MATERIALS AND OTHER COST:

| | |
|--|--------------------|
| < PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below). | COST / ITEM |
| FWS – GS-05 Term Biological Technician @ \$13.21/hr. + benefits @ 33% = \$17.57 X 8 hours/day X 130 days | \$18,273 |
| TOTAL PERSONNEL SERVICE COST | \$18,273 |
| < EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting. | COST / ITEM |
| Vehicle lease 4WD pick-up truck @ \$700/month X 6 months | \$4,200 |
| TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST | \$4,200 |
| < MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item): | COST / ITEM |
| Field and office supplies @ \$1000 | \$1,000 |
| TOTAL MATERIALS AND SUPPLY COST | \$1,000 |

| | | |
|--|--|--------------------|
| < TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item): | | COST / ITEM |
| TOTAL TRAVEL COST | | |
| < CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item): | | COST / ITEM |
| Monitoring Contract for data acquisition, data management and reports – Great Basin Institute @ \$15,000 | | \$15,000 |
| TOTAL CONTRACT COST | | \$15,000 |

SPECIFICATION COST SUMMARY

| FISCAL YEAR | PLANNED INITIATION DATE (M/D/YYYY) | PLANNED COMPLETION DATE (M/D/YYYY) | WORK AGENT | UNITS | UNIT COST | PLANNED ACCOMPLISHMENTS | PLANNED COST |
|--------------|------------------------------------|------------------------------------|------------|--------|-----------|-------------------------|--------------|
| FY2006 | | | | | | | |
| FY2007 | 10/07 | 10/08 | FA,CA | Survey | \$513 | 75 | \$38,473 |
| FY2008 | | | | | | | |
| FY__ | | | | | | | |
| TOTAL | | | | | | | |

Work Agent: CA=Coop Agreement, FA=Force Account, G=Grantee, P=Permitee, SC=Service Contract, TSP=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

| | |
|--|---|
| 1. Estimate obtained from 2-3 independent contractual sources. | |
| 2. Documented cost figures from similar project work obtained from local agency sources. | C |
| 3. Estimate supported by cost guides from independent sources or other federal agencies | |
| 4. Estimates based upon government wage rates and material cost. | P |
| 5. No cost estimate required - cost charged to Fire Suppression Account | |

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

| |
|--|
| List Relevant Documentation and Cross-Reference Location within the Accomplishment Report. |
|--|

PART F - INDIVIDUAL SPECIFICATION

| | | | |
|-------------------------------------|---|---|--------------------------|
| TREATMENT NAME | Sahara Mustard Control | PART E SPECIFICATION # | R-3 Noxious Weed Control |
| NFPORS TREATMENT CATEGORY* | Rehabilitation –Non-Native Invasive Species Control | FISCAL YEAR(S) (list each year): | 2007 -2008 |
| NFPORS TREATMENT TYPE * | Chemical Treatment | WUI? Y / N | No |
| IMPACTED COMMUNITIES AT RISK | No | IMPACTED T&E SPECIES | Yes |

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

| |
|--|
| <p>Number and Describe Each Task: Monitor and control invasion of YST</p> <p>A. General Description: Sahara mustard a highly invasive noxious weed has been located immediately adjoining Desert National Wildlife Refuge at the Frozen Toe Helispot and access road. Sahara mustard provides an immediate threat to the habitat of the Federal Threatened desert tortoise and treatments have proven to be effective at its control. This project will provide for inspection of the Frozen Toe and Mormon Well access roads for Sahara mustard and if necessary immediate treatment any detected Sahara mustard on the refuge during the 2007 winter and spring growing season.</p> <p>B. Location/(Suitable) Sites: Frozen Toe and Mormon Well access Roads on eastern edge of the Vegas Fire and Gass Complex</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 6. The Mormon Well and Frozen Toe Access Roads will be patrolled on a bi-weekly basis during the winter and spring growing season for new populations of Sahara mustard. 7. Detailed treatment are provide in the USFWS Pesticide Use Permit for Sahara mustard. <p>D. Purpose of Treatment Specifications: Control or contain existing noxious weed occurrence to prevent further spread onto uninfested sites within the burned area including federally threatened Desert tortoise habitat. See USFWS Pesticide Use Permit: Sahara mustard for Desert NWR.</p> <p>E. Treatment Effectiveness Monitoring Proposed: Visual Post-reevaluation of treatment area. If new Sahara mustard plants are present the area will be retreated.</p> |
|--|

II. LABOR, MATERIALS AND OTHER COST:

| | |
|--|--------------------|
| < PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below). | COST / ITEM |
| FWS – GS-05 Term Biological Technician @ \$13.21/hr. + benefits @ 33% = \$17.57 X 8 hours/day X 130 days X 2 yrs. | \$36,546 |
| TOTAL PERSONNEL SERVICE COST | \$36,546 |
| < EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting. | COST / ITEM |
| Vehicle lease 4WD pick-up truck @ \$700/month X 6 months X 2 yrs. | \$8,400 |
| TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST | \$8,400 |
| < MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item): | COST / ITEM |
| Field and office supplies @ \$1000 | \$1,000 |
| TOTAL MATERIALS AND SUPPLY COST | \$1,000 |
| < TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item): | COST / ITEM |
| TOTAL TRAVEL COST | |
| < CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item): | COST / ITEM |
| Two applications of Transline (including all equipment, materials, etc. - \$320 /acre X 150 Acres X 2 treatments) | \$96,000 |

| | |
|---------------------|----------|
| TOTAL CONTRACT COST | \$96,000 |
|---------------------|----------|

SPECIFICATION COST SUMMARY

| FISCAL YEAR | PLANNED INITIATION DATE (M/D/YYYY) | PLANNED COMPLETION DATE (M/D/YYYY) | WORK AGENT | UNITS | UNIT COST | PLANNED ACCOMPLISHMENTS | PLANNED COST |
|--------------|------------------------------------|------------------------------------|------------|-------|-----------|-------------------------|------------------|
| FY2006 | | | | | | | |
| FY 2007 | Spring 2007 | 10/08 | FA,SC | Acres | \$797 | 150 Acres | \$70,973 |
| FY 2008 | Spring 2008 | 10/09 | FA,SC | Acres | \$797 | 150 Acres | \$70,973 |
| FY__ | | | | | | | |
| TOTAL | | | | | | | \$141,946 |

Work Agent: CA=Coop Agreement, FA=Force Account, G=Grantee, P=Permitee, SC=Service Contract, TSP=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

| | |
|--|---|
| 1. Estimate obtained from 2-3 independent contractual sources. | |
| 2. Documented cost figures from similar project work obtained from local agency sources. | C |
| 3. Estimate supported by cost guides from independent sources or other federal agencies | |
| 4. Estimates based upon government wage rates and material cost. | P |
| 5. No cost estimate required - cost charged to Fire Suppression Account | |

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

| |
|--|
| List Relevant Documentation and Cross-Reference Location within the Accomplishment Report. |
|--|

PART F - INDIVIDUAL SPECIFICATION

| | | | |
|-------------------------------------|---|---|----------------------------|
| TREATMENT/ACTIVITY NAME | Replace Burnt Wildlife Guzzlers | PART E SPECIFICATION # | R-4 Replace Burnt Guzzlers |
| NFPORS TREATMENT CATEGORY* | Rehabilitation – Wildlife Habitat Stabilization | FISCAL YEAR(S) (list each year): | 2007 |
| NFPORS TREATMENT TYPE * | Stabilize/Secure/Protect Critical Habitat | WUI? Y / N | No |
| IMPACTED COMMUNITIES AT RISK | N/A | IMPACTED T&E SPECIES | Desert Bighorn Sheep |

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

| |
|--|
| <p>Number and Describe Each Task:</p> <p>A. General Description: Three water guzzlers developed to provide water to desert bighorn sheep have been burned and the water source for this species and others has become unavailable. This reduces the available water sources in the Las Vegas Range of Desert National Wildlife Refuge from 5 to 2 and may have a significant immediate impact on the species during the remainder of this dry season (until November or December). This will place additional stress on the herd in the Las Vegas range forcing them to move to other ranges and making them susceptible to predation.</p> <p>B. Location/(Suitable) Sites: Juniper Peak, Mormon Well, Frozen Toe and Apex Guzzlers were destroyed by the Vegas Fire and Gass Complex.</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 1. Replace burned water guzzler structures including plumbing and water storage tanks destroyed by fire. 2. Contracted work will utilize existing engineering designs available from the Nevada Division of Wildlife. 3. Burnable materials will be replaced with non-burnable materials to ensure that future fires do not destroy these important water sources. <p>D. Purpose of Treatment Specifications: The purpose of this treatment is to immediately reestablish critical water sources to the desert bighorn sheep that inhabits the Las Vegas Range of Desert National Wildlife Refuge to minimize potential summer and fall stress on the herd. By immediately replacing these water delivery systems the sheep will more likely stay within the range and mitigate the potential for increased mortality due to displacement.</p> <p>E. Treatment Effectiveness Monitoring Proposed: Contract work to replace burned water tanks and pipelines will be inspected by the Refuge Manager and a wildlife biologist to insure that work is completed to contract specifications.</p> |
|--|

LABOR, MATERIALS AND OTHER COST:

| | |
|---|--------------------|
| PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below). | COST / ITEM |
| TOTAL PERSONNEL SERVICE COST | |
| EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting. | COST / ITEM |
| TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST | |
| MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item): | COST / ITEM |
| \$18,299 (various pipes, tanks, valves, clamps, fittings) / Guzzler X 3 Guzzlers = | \$54,897 |
| TOTAL MATERIALS AND SUPPLY COST | \$54,897 |
| TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item): | COST / ITEM |
| TOTAL TRAVEL COST | |
| CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item): | COST / ITEM |
| 7.5 day operations of Eurocopter A-Star with crew @ \$5,056 / day = | \$37,995 |
| Contract Installation of Guzzler at \$8,074 / guzzler x 3 guzzlers = | \$24,147 |
| TOTAL CONTRACT COST | \$62,142 |

SPECIFICATION COST SUMMARY

| FISCAL YEAR | PLANNED INITIATION DATE (M/D/YYYY) | PLANNED COMPLETION DATE (M/D/YYYY) | WORK AGENT | UNITS | UNIT COST | PLANNED ACCOMPLISHMENTS | PLANNED COST |
|--------------|------------------------------------|------------------------------------|------------|----------|-----------|-------------------------|------------------|
| FY2006 | | | | | | | |
| FY 2007 | 10/07 | 10/08 | CA,SC | Guzzlers | \$39,013 | 4 Guzzlers | \$117,039 |
| FY__ | | | | | | | |
| FY__ | | | | | | | |
| TOTAL | | | | | | | \$117,039 |

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, SC=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE OF COST ESTIMATE

| | | |
|----|---|---|
| 1. | Estimate obtained from 2-3 independent contractual sources. | |
| 2. | Documented cost figures from similar project work obtained from local agency sources. | C |
| 3. | Estimate supported by cost guides from independent sources or other federal agencies | |
| 4. | Estimates based upon government wage rates and material cost. | |
| 5. | No cost estimate required - cost charged to Fire Suppression Account | |

P = Personnel Services, **E** = Equipment **M** = Materials/Supplies, **T** = Travel, **C** = Contract, **F** = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

| |
|--|
| List Relevant Documentation and Cross-Reference Location within the Accomplishment Report. |
|--|

BURNED AREA REHABILITATION PLAN

VEGAS FIRE & GASS COMPLEX

VEGETATION RESOURCE ASSESSMENT

I. OBJECTIVES

- Assess and evaluate fire impacts to vegetative resources, and determine treatment and monitoring needs, supported by specifications, to aid in vegetative recovery.
- Evaluate the potential for invasive plant species to encroach into native plant communities within the fire area, and determine treatment and monitoring needs to mitigate encroachment.
- Determine effects of fire on federally listed threatened and endangered (T&E) and sensitive species. Determine rehabilitation and monitoring needs to mitigate unacceptable impacts to these species.

II. ISSUES

- Short and long-term effects of the fire on plant communities and vegetative resources including T & E plant species.
- Potential for invasion of impacted lands by non-native invasive plant species.

III. OBSERVATIONS

This report addresses known and potential impacts to vegetative resources by wildland fires on U. S. Fish and Wildlife Service (USFWS) Desert National Wildlife Refuge (NWR) lands within the burned area of the Vegas Fire and Gass Complex.

Findings and recommendations contained in this assessment are based upon information obtained from personal interviews and meetings with staff from the Desert NWR Complex, USFWS Las Vegas Ecological Services (ES) Office, Bureau of Land Management Las Vegas Field Office, from literature reviews, and from field reconnaissance of the fire area.

A. Background

The Vegas Fire and Gass Complex started on June 27 and June 30, 2006 from multiple lightning strikes. The fires spread rapidly through an unusually dense and continuous herbaceous fuel component, resulting from over 400 percent of normal rainfall from January through April 2005.

Management Direction

Resource management direction for the Desert NWR is contained in the following documents: Wildland Fire Management Plan; Refuge Management Plan; Desert Tortoise Recovery Plan, Mojave Population; and Bighorn Sheep Management Plan. The Refuge Management Plan and Bighorn Sheep Management Plan reportedly date from the 1960s and 1970s, respectively. Neither plan was available for review. The Desert Tortoise Recovery Plan includes the following management recommendation for disturbed areas, considered pertinent to these fires, which occurred within the Desert Wildlife Management Area:

“Surface disturbance in the Desert Wildlife Management Area should be restored to pre-disturbance conditions (defined as the topography, soils, and native vegetation that exist in adjacent undisturbed or relatively undisturbed areas). This includes such actions as closing access to non-designated roads and restoring non-designated roadbeds to their pre-disturbance state.”

A Comprehensive Conservation Plan (CCP) for the Refuge is in the process of being prepared.

Vegetation Communities

The fires burned through eleven distinct vegetation classes mapped for the Desert NWR by the Department of Defense (Levis, personal communication). For analysis purposes these classes were grouped into four general vegetation types roughly corresponding to those described by Bradley and Deacon (1967), and referenced in the Refuge Wildland Fire Management Plan (FMP).

Desert Scrub

On the valley floors and lower bajadas below 4,200 feet, the creosote bush (*Larrea divaricata*) community predominates with white bursage (*Franseria dumosa*). Other plants occurring in this community include indigo bush (*Dalea fremontii*), Ephedra (*Ephedra* sp.), purple sage (*Salvia dorrii*), and turpentine broom (*Thamnosma montana*). Yuccas, especially the Mohave yucca (*Yucca schidigera*), are also present. Cholla (*Opuntia* sp.) and other cactus are common. Common forbs and grasses include big galleta (*Hilaria rigida*), desert needlegrass (*Stipa speciosa*), and filaree (*Erodium cicutarium*). Exotic brome grasses (cheat grass, *Bromus tectorum*, and red brome, *Bromus madritensis*) are common. This type consists of the following vegetation classes: S020 North American Warm Desert Wash, S021 North American Warm Desert Pavement, S022 North American Warm Desert Playa, S069 Sonora-Mojave Creosote Bush-White Bursage Desert Scrub.

Mid Elevation Mixed Desert Scrub

The blackbrush (*Coleogyne ramosissima*) community predominates on the upper bajadas and lower slopes between 4,200 and 6,000 feet. A variety of other shrubs also occur including many of those present in the lower creosote bush community. Yuccas, especially the Joshua tree (*Yucca brevifolia*) are numerous in many localities. Cacti are common, most notably cottontop barrel cactus (*Echinocactus polycephalus*), prickly pear (*Opuntia echinocarpa*), and various cholla species (*Opuntia* sp.). A variety of shrubs are more common along the washes than in the surrounding desert. These include cheese bush (*Hymenoclea salsola*), snakeweeds (*Gutierrezia* sp.) and bladder sage (*Salazaria mexicana*). Exotic bromes are abundant throughout the type, particularly in washes. The mid elevation mixed desert scrub type consists of the following vegetation classes: S054 Inter-Mountain Basins Big Sagebrush Shrubland, S060 Mojave Mid-Elevation Mixed Desert Scrub, S070 Sonora-Mojave Mixed Salt Desert Scrub, S071 Inter-Mountain Basins Montane Sagebrush Steppe, S079 Inter-Mountain Basins Semi-Desert Shrub Steppe.

Pinyon-Juniper Woodland

The pinyon-juniper (*Pinus monophylla* and *Juniperus osteosperma*) community is most prevalent on slopes between 6,000 and 7,500 feet. Pinyon-juniper woodland is often displaced by mountain mahogany (*Cercocarpus* sp.) on the driest, southern exposures. Sagebrush (*Artemisia* sp.) is dominant in some transitional zones between the mid elevation mixed desert scrub and woodland vegetative types. A number of large shrubs are quite common along the upper washes and cliff bases. These include cliff rose (*Cowania mexicana*), apache plume (*Fallugia paradoxa*), rubber rabbitbrush (*Chrysothamnus nauseosus*), and desert peach (*Prunus fasciculata*). Cheat grass is common. The pinyon-juniper woodland type corresponds to vegetation class S040 Great Basin Pinyon-Juniper Woodland.

Sparse-Rock Outcrop

Consists of bare rock with sparse cover of shrubs and/or trees. Vegetation distribution is irregular, occurring primarily in gaps between rock outcrops. Consists principally of pinyon-juniper woodland, but may also include mid elevation mixed desert scrub vegetation at lower elevations and on southern aspects. This vegetation type corresponds to vegetation class S016 North American Warm Desert Bedrock Cliff and Outcrop.

Non-Native Invasive Species

Although many non-native invasive plants are widespread throughout this sub-region of the state, only a few have reported occurrence in or around the subject fire areas. Cheat grass and red brome are widespread naturalized exotics that have significantly altered native plant communities throughout the region. They are abundant throughout the burned areas. Red brome is more common at the lower elevations, while cheat grass predominates on the upper slopes. No other non-native invasive species have been observed in the burned areas.

Sahara mustard (*Brassica tournefortii*) is a robust, fast growing, drought tolerant winter annual. It is not currently listed as noxious, but is expected to be in the near future (Lund, personal communication). The recent spread of this species throughout low elevation shrublands has caused concern over introduction of a significant new fuel type in the desert bioregion (Brooks and Minnich). It is present along the Highway 93 right of way, near the intersection with Interstate 15, and is progressively spreading through the region, primarily along road corridors (Lund, personal communication). Traffic using open roads accessing the burned areas may serve as vectors for invasion of burned areas by this and other exotic species.

Threatened, Endangered and Sensitive Plants

The process for review and determination of critical habitats is documented in the Wildlife Resources Assessment of this plan. No federally listed threatened or endangered plant species were identified for the subject fire areas. The Nevada Natural Heritage Program maintains a spatial database of sensitive plant species recognized by the State of Nevada. This database was overlaid with the mapped fire perimeter. By this method it was determined a single documented occurrence of remote rabbitbrush (*Chrysothamnus eremobius*), a State category 1 endemic, exists near the western boundary of the Lamb Fire, however this species is not listed as protected by the State. The Refuge has no policy providing for the protection of this or similar status species. There are no known occurrences of State listed protected plants within the fire areas.

Livestock and Range Resources

According to Desert NWR Complex staff, no livestock, range improvements, feral horses or burros occur on the Refuge.

B. Reconnaissance Methodology and Results

An initial briefing was conducted with the Desert NWR Complex Project Leader and selected natural resource and fire management staff to identify issues and provide focus for site evaluations. Las Vegas Ecological Services (ES) staff also attended the briefing. Individual consultations were conducted with various natural resource specialists from the Desert NWR Complex, Las Vegas ES, and Bureau of Land Management (BLM) Las Vegas Field Office. Additionally, information derived from consultations on the recent nearby Hackberry BAER Incident were applied, as appropriate, to this assessment.

Various databases and maps were researched to guide and focus field reconnaissance. A satellite image of the fires was used to correct fire perimeter maps initially developed by the Incident Management Team(s). A burned area reflectance classification (BARC) map was produced to quantify burn severity. Vegetation classification maps were provided by the Las Vegas ES Geographic Information System (GIS) Specialist. Threatened, endangered and sensitive species data was derived from the State of Nevada Natural Heritage Program database. Local exotic plant locations were determined from the BLM Las Vegas Field Office weed database.

On July 7 and 8 field reconnaissance was conducted of accessible areas including the northern edge of the Vegas Fire and Gass Complex.

C. Findings

Vegetation Effects

Within the desert scrub, and on drier sites of the mid elevation mixed desert scrub, the fires spread primarily in the fine, flashy fuels. Most shrubs in these areas experienced various degrees of scorch, and torching was limited to small groups of shrubs. Complete top kill of shrubs occurred almost exclusively in mid elevation washes and at the heads of canyons where shrub densities were sufficient to support running crown fire. Fire energy dissipated at upper elevations in the pinyon-juniper woodland and sparse-rock outcrop types, presumably due to the occurrence of natural fuel breaks, and higher live fuel moistures, estimated at around 150 percent (Fire Narrative).

Based on field observations and comparisons with the BARC image, it was determined burn severity can be considered a close approximation of vegetation mortality for these vegetation types.

For the most part, vegetation effects of these fires can be described as sporadic top kill, which is expected to stimulate resprouting of shrubs and increasing grass cover over the short term until shrubs eventually reoccupy the sites. Complete vegetation mortality was almost exclusively limited to the upper elevations in the Joshua Tree black brush shrub community. Table 1 provides a general description of fire response for dominant species (adapted from Brooks and Minnich).

Table 3. Fire Responses of Dominant Species

| Life Form | Species | Survival | Response |
|--------------------|--|--|--|
| Perennial Grass | Galleta grass, Indian ricegrass, desert needlegrass, fountain grass | Top Killed | Fire Stimulates Sprouting |
| Annual Grass | red brome, Mediterranean grass, cheat grass, six-week fescue | Killed | Low Severity Burn Stimulates Germination From Buried Seed and Adjacent Areas |
| Cacti | Barrel cactus, prickly pear, cholla | Larger Specimens Generally Survive, With Exception of Cholla | Limited Sprouting |
| Yucca | Mojave yucca, banana yucca, Joshua tree | Top Killed | Fire Stimulates Sprouting |
| Fire Adapted Shrub | Catclaw acacia, smoke tree, desert willow, creosote bush, fourwing saltbush, ephedra, cheesebush, rubber rabbitbrush, spiny hopsage, | Top Killed | Fire Stimulates Sprouting, and Buried Seed Germination for Some Species |

| | | | |
|----------------|--|--------|--------------|
| | antelope bitterbrush | | |
| Other Shrub | Shadscale, blackbrush, brittlebrush, white bursage, snakeweed, cliffrose | Killed | No Sprouting |
| Woodland Trees | Pinyon pine, Utah juniper | Killed | No Sprouting |

The following is a general description of fire response by vegetation type. Information is derived primarily from the Fire Effects Information System (FEIS) database.

Desert scrub

Many shrubs and cacti in this type are adapted to survive low intensity fire. Although creosote bush is often top killed by fire, plants can reoccupy sites rapidly through basal sprouting and seedling germination. Likewise, Ephedra is often top killed but can resprout vigorously. Yucca is well adapted to survive fire, and damaged or top killed specimens can sprout from roots or the base of the stem. White bur sage and cholla are readily killed. Based on observations of past burns in this type, total shrub cover will be reduced initially, but will become reestablished over a period of a decade or so. Grass cover, particularly exotic annuals, can be expected to increase substantially over the short term.

Mid Elevation Mixed Desert Scrub

Joshua tree, because of its height and thick stem protection, is resistant to fire damage. If damaged or killed, it can sprout aggressively from stem or roots. Most other shrubs in this type can reestablish burned sites aggressively. Blackbrush stands, however, are substantially decreased or eliminated by fire. It rarely sprouts following fire and does not aggressively return to burned sites. This type experienced the greatest effect on native vegetation. Shrub cover will be decreased substantially over the short term, particularly in those areas within washes or head canyons that experienced sustained crown fire. Exotic bromes will increase substantially, and shrubs will become reestablished in low burn severity areas over a period of a decade or so.

Pinyon-Juniper Woodland and Sparse-Rock Outcrop

These types burned in a mosaic pattern. Woodland trees were killed in the relatively small areas that experienced crown fire. These areas will quickly be reoccupied by grasses and the few sprouting shrubs. Reestablishment of woodland trees will occur very slowly as a result of seed dispersal from adjacent surviving stands.

Invasive Species

Traffic entering Refuge lands via four-wheel-drive roads from Highway 93 could certainly serve as vectors for the spread of invasive exotic weeds, most notably Sahara mustard. The spread of this species may be arrested by early detection and aggressive control measures within and adjacent to burned areas.

IV. RECOMMENDATIONS

A. Rehabilitation

Non-Native Invasive Species Control

The Frozen Toe, Wamp Springs Canyon, and Mormon Well Roads are approximately 25 miles four-wheel-drive roads that access the lower portions of the Fires and should be monitored for Sahara Mustard and other suspected non-native invasive species. Once detected, control measures, including hand pulling and spot herbicide application, should be undertaken immediately. The replacement of fire-damaged Refuge boundary signs, and placement of gates (on the Wamp Springs Service Road and the lower Wamp Springs Road at the Mouth of Wamp

Springs Canyon) will mitigate concerns in these areas. The locations of non-native invasive species monitoring and control is depicted on the Treatments Map.

Similarly Sahara mustard and invasive annual grass encroachment should be monitored in conjunction with native grass and shrub recovery to determine if further herbicide and/or seeding treatments are warranted.

B. Management Recommendations (non-specified)

Encourage the BLM Las Vegas District to conduct similar non-native invasive species control detection and control treatments on access roads through adjacent BLM lands.

Continue to work with the research community in exploring viable alternative means of controlling exotic grasses which have altered fire regimes and other ecosystem function.

V. CONSULTATIONS

The following individuals were consulted for information necessary for preparation of this assessment.

| Name, title, and agency | Telephone |
|---|-----------------------|
| Amy Sprunger-Allworth, Refuge Manager, Desert NWR | (702) 879-6110 |
| Christiana Manville, Fish and Wildlife Biologist, Las Vegas ES | (702) 515-5240 |

VI. REFERENCES

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Richard Hadley, Regional Emergency Stabilization and Rehabilitation Coordinator

BURNED AREA REHABILITATION PLAN
VEGAS FIRE & GASS COMPLEX
WILDLIFE RESOURCE ASSESSMENT

I. OBJECTIVES

- Assess effects of the fire and suppression actions to Federally listed Threatened and Endangered species and their habitats
- Prescribe emergency stabilization measures and/or monitoring
- Assess effects of the fire to desert bighorn sheep, their habitat, and water developments

II. ISSUES

- Threatened desert tortoise and desert bighorn sheep habitat were burned by both the Vegas Fire and Gass Complex

III. OBSERVATIONS

A. Background

The Vegas Fire (21,120 acres) and Gass Complex (18,800) burned approximately 39,920 acres between June 22, 2005 and July 6, 2005. Fires were ignited by a dry lightning storm that moved across the refuge. Desert NWR experienced heavy rainfall during the winter of 2004-2005 resulting in abundant growth of annual wildflowers and grasses. The lush vegetation allowed the fire to spread more effectively by carrying it through normally sparse patches on the landscape.

No dozer lines were constructed to suppress the fires on Desert NWR. Fire engines remained on roads, except at the end of the Frozen Toe Road and Vegas Fire Spike Camp where equipment was allowed to progress a short distance of the gravel road surface. Fire was dropped during initial attack on the Gass Fire and on western flank of the Vegas Fire to prevent the fires from moving into heavier fuels of Saw Mill Canyon.

Desert National Wildlife Refuge occupies approximately 1.5 million acres and consists of typical basin and range topography; a series of narrow north/south-trending mountain ranges separated by wide valleys. Elevations in the fire area range from 3,500 feet to 5,600. The regional climate is arid with an average rainfall of 4.4 inches on valley floors. Most precipitation falls from February through March and July through September. The average maximum summer temperature exceeds 100 degrees Fahrenheit during July and August. Average minimum temperatures fall below freezing only during the months of December and January.

Vegetation communities within the fire areas consisted of desert scrub, Joshua tree / black brush communities, pinyon-juniper woodlands, and sparsely covered vegetated outcrops. There are numerous acres of suitable habitat for desert tortoises within the Desert NWR. These acres also support many other species of wildlife typical of arid deserts. Three federally listed species occur within Desert NWR, with only one (desert tortoise) occurring in fire areas. The entire burned area of both the Vegas and Gass Complex is suitable desert bighorn sheep habitat. Habitat improvements have been made to provide water sources for wildlife.

B. Reconnaissance Methodology and Results

Information for this assessment is based on a review of relevant literature, observations of wildlife on Desert NWR, habitat inventory information, consultation with U. S. Fish and Wildlife Service, and personal communication with Desert NWR and FWS Las Vegas Field Office management personnel. Information on the effects of the fire came from interviews with fire suppression personnel and field reconnaissance of the burned areas during and after the fire. To better understand the species and habitat information briefly discussed in this wildlife assessment, it is important to review the Desert NWR BAER Vegetation Assessment. This report contains more detailed descriptions of pre-fire vegetation and post fire vegetative recovery estimates.

The purpose of this assessment is to discuss the potential effects of fire, suppression actions and proposed emergency stabilization activities to federally listed species. The federally threatened desert tortoise (Mojave population) is the only listed species known to occur in the burned areas. The list of species to be addressed was developed from documents referenced in this report and input from Desert NWR Complex and FWS Las Vegas Field Office biologists and resource managers.

This assessment is not intended to definitively answer the many species effects questions that are inevitably raised during an incident such as the fires within the Desert NWR. The focus of this assessment is to determine the potential for immediate, emergency actions that may be necessary to prevent further impacts to federally listed species and their habitats occurring on Desert NWR lands. Because desert bighorn sheep (*Ovis canadensis*) protection is mandated by the enabling legislation for Desert NWR, this species is also addressed.

C. Findings

1. Biological Assessment for Federally Listed Species

Direct effects as described in this report refer to individual mortality or disturbance that results in flushing, displacement or harassment of the animal. Indirect effects refer to modification of habitat and/or prey species and possible subsequent effects to the species.

DESERT TORTOISE: The range of the desert tortoise includes the Mojave and Sonoran deserts in California, Nevada, Arizona, Utah, and Sinaloa, Mexico. The Mojave population of the desert tortoise was listed as threatened on April 2, 1990. Critical habitat for the Mojave population was designated on February 8, 1994. Within the Desert NWR, tortoises utilize flats and bajadas characterized by scattered shrubs with inter-spaced herbaceous growth generally below 4,200 feet in elevation. There is no designated Critical Habitat on Desert NWR, however suitable habitat is managed in the same manner.

DIRECT FIRE EFFECTS: Direct effects of fire on desert tortoise can vary depending on fire intensity, vegetation, and location of tortoises at the time of the fire. There were approximately 9,095 acres of potential habitat (less than 4,200 ft in elevation) within the fire perimeters, although there were many unburned fingers of vegetation (Table 1). Most of this habitat was high elevation desert tortoise habitat, above 3,500 feet, comprised of creosote, blackbrush, and Joshua trees. Due to their lack of mobility, exposed desert tortoises within the fire area may have been overcome by flames or asphyxiated. Desert tortoises inside deep burrows would have been more protected, however asphyxiation could still cause mortality. Fire crews located 5 desert tortoises during wildfire suppression activities, 4 of which were alive (Table 2). The live tortoises were found near the edge of the fire. The one dead tortoise was burned all over and was located in the middle of a burned area.

INDIRECT FIRE EFFECTS: Indirect effects of fire may include a temporary loss of food plants, a shift in forage species, and a loss of perennial plants that provide thermal cover and protection from predators. The fires burned in a mosaic pattern, leaving unburned islands and stringers. Depending on their location, tortoises could make use of unburned areas to meet their forage and

cover needs. Any indirect effects resulting from the loss of vegetation will continue, though decreasing in intensity over time, as the plant community recovers.

DIRECT FIRE SUPPRESSION EFFECTS: Crushing of tortoises and/or burrows is one possible direct effect which could result from suppression activities, however no such incidents were reported. Fire engines remained on roads and crews checked under their vehicles before moving them. Burnout operations were not conducted in desert tortoise habitat. A spike camp was located in desert tortoise habitat on the Vegas Fire along the Mormon Well Road. No tortoises were seen around the camp. A parking area was cleared in the burn area of last year's Dry lake Fire, to provide a safe place to park during the first day of suppression activities on the Gass Fire. Before parking vehicles in this area, a resource advisor cleared it for tortoises. It should be noted that suppression efforts followed recommendations outlined in the Desert NWR Fire Management Plan to minimize impacts to desert tortoise and their habitats.

INDIRECT FIRE SUPPRESSION EFFECTS: Fire retardant was used in many locations. It is unknown what the effect of adding retardant, which is similar to fertilizer, will have on the surviving vegetation and seed bank. In locations where vehicles were parked off road, tracks were raked out. The area where the Spike Camp for the Vegas Fire was located was kept clean of trash and had a minimal footprint. The footprint will be rehabilitated by putting rocks and debris back into the disturbed area. The parking area in the Dry Lake Fire will be similarly rehabilitated.

Table 1. Acres of Desert Tortoise Habitat Burned in the Fires on Desert National Wildlife Refuge Between June 27 and July 7, 2006

| Name of Fire | Acres Burned | Acres Desert Tortoise Habitat Burned |
|--------------|---------------|--------------------------------------|
| Gass | 18,790 | 3,553 |
| Range | 155 | 15 |
| Sawmill | 169 | 0 |
| Vegas | 21,107 | 5,440* |
| Wamp | 28 | 0 |
| Warm | 86 | 86 |
| Total | 40,335 | 9,094 |

*estimate, needs further GIS analysis

Table 2. Desert Tortoise Sightings by Fire Crews

| Alive or Dead | Date | Name of Fire | Location | Description |
|---------------|---------|--------------|-------------------------------------|---|
| Alive | 6/29/06 | Vegas | N 36° 43' 18.4" W115 ° 00' 24.9" | Large, near burrow, in burned area near edge of fire |
| Alive | 6/29/06 | Vegas | N 36° 41' 58.7" W115 ° 00' 30.2" | Palm sized, 4,117 feet in elevation, on the edge of the fire, steep rocky terrain |
| Dead | 6/30/06 | Vegas | N 36° 42' 57.8" W115 ° 00' 30.2" | Burned all over, surrounded by black, on a slope |
| Alive | 7/4/06 | Vegas | | On Mormon Well Road, 1/8 mile east of the Vegas Fire |
| Alive | 7/4/06 | Gass | N 36° 28' 8.2" W115 ° 00' 36.2' | End of a burned finger |

2. Other Species of Importance

Desert NWR was established in 1936 with the goal of protecting and perpetuating desert bighorn sheep populations and their habitat. The Refuge actively manages habitat improvements to provide water sources to desert bighorn sheep. The following information is a summary of fire effects to desert bighorn sheep and their habitats based on aerial and ground reconnaissance, review of Refuge management plans and scientific articles, and interviews with Refuge and FWS Las Vegas Field Office staff. There were approximately 27,500 acres of suitable desert bighorn sheep habitat (as described in the Desert NWR Draft CCP) within the fire area, all of which was on Desert NWR land. A total of 3 water guzzlers installed to collect and provide water for desert bighorn sheep were burned and need to be replaced. A total of 21 desert bighorn sheep were observed by fire crews either within or immediately adjacent the burned area.

Indirectly, fires temporarily reduced available forage. In the long term, desert bighorn sheep will benefit from the fire as the vegetation regenerates. Young vegetation regenerating after the fire is very digestible and high in nitrogen. In addition, the reduction of shrub cover removes ambush sites that predators (e.g. mountain lions) use around water sources and along game trails.

No natural springs were located within the fire perimeters. Three refuge constructed guzzlers were burned by the fires. The 1 guzzler was destroyed by the Vegas Fire and the Apex and Frozen Toe guzzlers were destroyed in the Gass Complex. Each of these watering structures plastic tanks, rubber aprons to collect water and plastic piping that was destroyed by the fire. These structures should be replaced as soon as possible with available rehabilitation dollars see Attached Rehabilitation Plan.

VEGAS FIRE AND GASS COMPLEX, DESERT NWR SPECIES LIST

A species list was obtained from the U. S. Fish and Wildlife Service, Las Vegas Field Office, on July 6, 2006. The species list was reviewed by Christian Manville, of the Ecological Service Division and Amy Sprunger-Allworth, Acting Project Leader for Desert NWR Complex, on July 8, 2006 for accuracy, and to determine which species or Critical Habitats may occur within the fire area. The following federally listed species occur, or have habitat within the fire area, or were potentially affected by fire suppression actions:

| SPECIES | SCIENTIFIC NAME | LISTING STATUS |
|-------------------------------------|---------------------------|----------------|
| Desert tortoise (Mojave population) | <i>Gopherus agassizii</i> | FT |

The following species were identified by the FWS as potentially occurring within or near Desert National Wildlife Refuge. Through post fire reconnaissance and consultation with local experts, it was determined that these species and/or their Critical Habitat were not affected by the fire (no habitat within or adjacent to the fire area and/or inventories prior to the fire determined absence), or expected to be affected by potential post-fire flooding.

| SPECIES | SCIENTIFIC NAME | LISTING STATUS | REASON FOR NOT ADDRESSING SPECIES IN THIS REPORT |
|------------------|---------------------------------|----------------|--|
| Pahrump poolfish | <i>Empetrichthys latos</i> | FE | No habitat within fire area |
| Bald eagle | <i>Haliaeetus leucocephalus</i> | FT | Rare migrant; No habitat within fire area |

FE = Federally Endangered
 FT = Federally Threatened

IV. RECOMMENDATIONS

- A. Fire Suppression Rehabilitation:** The incident command team completed rehabilitation of helispots and the Vegas Fire spike camp in accordance with specification provided by the Service. No additional fire suppression rehabilitation is required.
- B. Emergency Stabilization**
1. **Management:** none
 2. **Monitoring:** none
- C. Rehabilitation**
1. **Management:** The 3 water guzzlers destroyed by the fire should be replaced as soon as possible and burnt structures should be removed from the sites.
 2. **Monitoring:** Vegetation recovery should be monitored along with invasive weed monitoring to determine if desert tortoise and desert bighorn sheep habitat is being adversely impacted by invasive species. If invasive noxious weeds are located they should be treated immediately and native grass and shrub seeding should be considered to ensure native plant habitat recovery (see Vegetation Assessment).
- D. Management Recommendations (non-specification related)**
1. It was determined that exposed (i.e. outside of burrows) desert tortoises within burned areas were likely to be effected by the fire. Furthermore, the fires may have temporarily removed vegetation used for cover and forage. Emergency stabilization efforts described in this BAER report are not expected to adversely affect the desert tortoise. Recommendations proposed in the BAER Vegetation Assessment (e.g monitoring of invasive weed), will help to mitigate negative fire effects to desert tortoises. The determinations documented in this report should be reassessed, and consultation conducted as needed. If non-emergency vegetation management activities are proposed for long-term rehabilitation and restoration of the fire area, a Biological Assessment should be prepared.
 2. Consultation should be completed by Desert NWR Complex staff with the U. S. Fish and Wildlife Service, Las Vegas Field Office regarding monitoring and invasive species treatments prior to their implementation.
 3. Post fire monitoring should be initiated to determine desert bighorn sheep population abundance and distribution in and around burned areas. This monitoring should be conducted to document any short-term adverse effects and long-term habitat benefits of the fire. As annual grasses and forbs begin to regenerate, bighorn sheep use of these areas should be described.

DETERMINATIONS OF EFFECT TO THREATENED SPECIES

DESERT TORTOISE

FIRE EFFECTS: Exposed desert tortoises within burned areas were likely to be directly affected by the fire. Desert tortoise forage and cover plants may have been temporarily removed within the fire perimeters, however vegetation mortality was low.

SUPPRESSION ACTION EFFECTS: There was minimal suppression activity in desert tortoise habitat, therefore it was determined to have no effect.

PROPOSED EMERGENCY STABILIZATION ACTION EFFECTS: There were no suppression rehabilitation actions taken in desert tortoise habitat, therefore, there was no effect to desert tortoise or their habitat. All emergency stabilization treatments will be implemented outside of desert tortoise habitat; therefore there will be no effect to desert tortoise or their habitat.

EMERGENCY STABILIZATION MEASURES (detailed information documented in Specifications, Part F)

| |
|---|
| SUPPRESSION REHABILITATION ACTIONS |
| Suppression impacts |

| |
|---|
| BURN AREA EMERGENCY STABILIZATION TREATMENTS |
| Replace boundary signs |
| Noxious weed monitoring/control |

V. CONSULTATIONS

| NAME, AGENCY, TITLE | TELEPHONE |
|---|------------------|
| Amy Sprunger-Allworth, FWS, Acting Project Leader, Desert NWR Complex | 702-515-5450 |
| Christiana Manville, FWS, Fish and Wildlife Biologist, Las Vegas Field Office | 702-515-5240 |

VI. REFERENCES

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VII. ATTACHMENTS

- U. S. FWS Species list dated July 6, 2005 for the Southern Nevada Complex, Coyote Sub-Complex, Desert NWR, in Clark and Lincoln Counties Nevada.
- Fire perimeters, desert tortoise habitat, desert bighorn sheep habitat, and habitat improvements map

Christina Manville, USFWS, Las Vegas Field Office

Richard Hadley, USFWS, California Nevada Operations Office