

**Natural Resource Damage Restoration Plan for the Pilot Diesel Spill
Bill Williams River National Wildlife Refuge
Mohave County, Arizona**



USFWS Photo

Prepared by

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Executive Summary

On December 7, 2000 a tanker truck owned and operated by Pilot Petroleum (Pilot) lost control of the vehicle causing the 8,000-gallon tanker to uncouple from the tractor. The tanker trailer ruptured while sliding across the pavement releasing an estimated 6,000 gallons of No.2 diesel fuel on the highway and contaminated adjacent soils overlooking the Bill Williams River just 300 feet from the waters edge. The spill occurred on the Bill Williams River National Wildlife Refuge (Refuge) directly impacting soil, vegetation, and wildlife.

The U.S. Fish and Wildlife Service (USFWS), as a natural resource trustee for wildlife, including threatened and endangered species and migratory birds, and federal wildlife refuge lands, received money in December 2003 for a settlement of natural resource damage claim with Pilot for natural resource damages in December 2000. Under the consent decree Pilot agreed to pay approximately \$145,000 designated to restore, rehabilitate, replace, or acquire the equivalent of any natural resource or its services injured, lost, or destroyed as a result of the spill. The USFWS sought this settlement considering contamination at this site had potentially affected or damaged soil and native flora and fauna.

The USFWS mandate under the Federal Oil Pollution Act of 1990 (OPA) [33 U.S.C. §§ 2706b], and its natural resource damages and restoration regulations at [15 C.F.R. Part 990], is to make the environment and the public whole for injuries to natural resources and natural resource services resulting from the discharge of oil. Pursuant to OPA, the USFWS is proposing restoration measures as a Natural Resource Damage Assessment and Restoration (Restoration) project, which involves re-vegetating approximately 20 acres of abandoned agricultural crop fields (fields) at Kohen Ranch (Kohen). Based on current conditions in the affected area, the USFWS is currently proposing that no restoration measures be implemented at the immediate spill site, rather executed in a more feasible restoration location.

The USFWS is required to evaluate restoration alternatives which may consist of a single action or a set of actions. The restoration project must provide partial compensation for loss of habitat and services incurred including long-term or perpetual benefits to migratory birds and other fish and wildlife resources. A reasonable range of restoration alternatives to address specific injuries while making the environment and public interests whole were considered, including the natural recovery/no action alternative, and restoration of in-kind natural resource at the same location, as well as the proposed alternative “restoration of in-kind restoration in the vicinity of the loss”.

This plan presents information regarding the affected environment, the determination of natural resource injuries, and proposed restoration actions to compensate for natural resource injuries and lost human-use caused by the Pilot oil spill.

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1 INTRODUCTION

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, by way of its Natural Resource Damage Assessment and Restoration (NRDAR) stipulations, permits natural resource trustees to seek compensation for “damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction, or loss induced by releases of hazardous materials into the environment”.

In December 2003, the U.S. Fish and Wildlife Service (USFWS), as a natural resource trustee for wildlife, including threatened and endangered species and migratory birds, and federal wildlife refuge lands, received money for a settlement of natural resource damage claim with Pilot Petroleum (Pilot) (U.S. v. Pilot). The USFWS sought this settlement considering contamination at this site had potentially affected or damaged soil and native flora and fauna. The USFWS is required to utilize settlement money to compensate for those losses. Before settlement monies can be allocated for restoration activities, CERCLA requires a restoration plan to be developed, reviewed by the public and finalized.

The United States v. Pilot Corporation Federal Consent Decree (Consent Decree) required Pilot to allocate \$145,000 into the NRDAR Fund. Upon completion of the final restoration plan, funds will be distributed for re-vegetation activities and monitoring of the Restoration project on the Refuge. The USFWS retains the authority to modify the allocation of funds and to implement other projects deemed reasonable and necessary to restore impacted resources in accordance with the Oil Pollution Act and the regulations governing the use of recoveries for natural resource injuries (U.S. v. Pilot).

1.1 INCIDENT BACKGROUND

On December 7, 2000, a tanker truck owned and operated by Pilot lost control of the vehicle causing the 8,000-gallon tanker to uncouple from the tractor. The tanker trailer ruptured while sliding across the pavement releasing an estimated 6,000 gallons of No.2 diesel fuel on the highway and contaminating adjacent soils overlooking the Bill Williams River just 300 feet from the waters edge. The spill occurred on the Refuge directly impacting soil, vegetation, and wildlife (Castellana 2001.).

The immediate emergency response included representatives from the local fire department, Arizona Department of Public Safety (ADPS), USFWS, Arizona Department of Transportation (ADOT), and Pilot. On December 13, 2000, the U.S. Environmental Protection Agency (EPA) Federal On-Scene Coordinator (FOSC) tasked the Superfund Technical Assessment and Response Team (START) to aid in an emergency response to the diesel fuel spill (Castellana 2001).

Pilot contracted Environmental Response, Incorporated (ERI) who immediately commenced excavation of the contaminated site. Pilot also contracted Geotechnical and Environmental consultants (GEC) to execute assessment and confirmation screening,

sampling, and analysis at the site. All spoil material was stocked piled on U.S. Bureau of Land Management (BLM) land approximately 3 miles north of spill site for removal at a later date (Castellana 2001).

Over 9,000 tons of contaminated material was removed from the site and sent to Vicksburg, Arizona for incineration. The affected area was then backfilled with approximately 7,000 tons of clean material (Castellana 2001).

Monitoring of the spill site and adjacent areas were performed both by Pilot and Department of Interior (DOI) personnel for continued diesel contamination. Monitoring efforts showed that no contaminants were detected under the analytical methods and procedures used. Monitoring the contaminated spill site and adjacent areas has been finalized with the USFWS satisfied with no contaminant threats to the Refuge (Castellana 2001).

1.1.1 PUBLIC NOTIFICATION AND DRAFT PLAN AVAILABILITY

The FWS will be providing the public with a notice of availability (30 day review period) of the draft Natural Resource Restoration Plan for public review and comments. Comments on this draft plan can be submitted to Dick Gilbert (Refuge Manager) at Bill Williams River National Wildlife Refuge; 60911 Highway 95 Parker, AZ 85344; telephone (928) 667-4144; fax (928) 667-3402; or at dick_gilbert@fws.gov through 30 days from issuance. The USFWS will place a notice in the Lake Havasu Daily News-Herald; a newspaper circulated in the general area of the site, and will make a draft copy available at the Mohave County Library in Lake Havasu City, Arizona (1770 N. McCulloch Blvd., Lake Havasu City, AZ 86403-6594; telephone (928) 453-0718). In addition, a draft copy can also be obtained upon request from the Refuge headquarters at Bill Williams River National Wildlife Refuge; 60911 Highway 95 Parker, AZ 85344. After the comment period is over, the USFWS will consider any comments and will then issue a final restoration plan.

2 IMPACTS TO TRUST NATURAL RESOURCES

Trust natural resources potentially impacted and affected by the release of contaminants at the Pilot spill site include native vegetation (migratory/resident bird nesting and foraging habitat), a variety of species of small invertebrates, reptiles, and federally-listed threatened and endangered species. The spill and cleanup action at the spill site caused injuries to natural resources managed by the USFWS through the Refuge, including but not limited to the removal of several Littleleaf Palo Verde (*Cercidium microphyllum*) trees, the removal of the Refuge entrance sign, and the closure of the visitor resource for 38 days resulting in lost use and services.

Soil composition of the new clean fill material is much finer than the material removed resulting in soil that drains fairly quickly and lacks soil microbes. Soil moisture along with soil microbes is very critical in the establishment and recruitment of new native vegetation.

3 NATURAL RESOURCE DAMAGE SETTLEMENT

Language within the Consent Decree requires remedial actions at the Pilot Diesel Spill Site. According to the Consent Decree with Pilot, USFWS will use \$145,000 to restore, rehabilitate, replace, or acquire the equivalent of any natural resource or its services injured, lost, or destroyed as a result of the spill.

4 RESTORATION ALTERNATIVES CONSIDERED

The USFWS is required to evaluate restoration alternatives which may consist of a single action or a set of actions. The regulations specify a number of elements that should be found in every restoration plan: analysis of alternative actions, cost-effective and technically feasible solutions, and allowances for corrective actions, project monitoring requirements, and measurable goals to ensure project completion. The restoration project must provide partial compensation for loss of habitat and services incurred including long-term or perpetual benefits to migratory birds and other fish and wildlife resources. The following specific potential alternatives have been identified (43 CFR 11).

4.1 No Action Alternative

Under the no action alternative, no action to restore, rehabilitate, or replace resources injured or lost would occur as a result of the Pilot fuel spill. Natural resources would be rehabilitated through natural recovery in the affected area. The effect of this alternative may take many years to reach pre-spill conditions. As a natural resource trustee under CERCLA and the OPA, we are required to make the environment and the public whole for injuries to natural resources and natural resource services resulting from the discharge of fuel. The no action alternative is not considered a viable alternative.

4.11 Restoration of In-Kind Natural Resource at the Same Location

On-site Restoration was evaluated and would not be feasible due to soil texture and the lack of soil moisture. This option is not technically feasible nor is it cost effective. The overall design of an irrigation system along with soil preparations would be too costly. The probability of producing actual benefits to the spill site would be fairly low. Due to reasons listed above, on-site restoration is also not considered a viable alternative.

4.111 Restoration or Replacement of In-Kind Natural Resource in the Vicinity of the Loss

In-kind restoration in the vicinity of the loss restores lost resources of like habitats in different locations. The Kohen fields Restoration project would create and restore approximately 20 acres of native vegetation dominated by mesquite bosque and adjacent riparian habitat. Implementation of this Restoration project will fulfill our obligation to the public and compensate for damages to natural resources that resulted from the Pilot spill.

5 PROPOSED RESTORATION

The Restoration proposed encompasses approximately 20 acres of abandoned fields within the larger approximate 250 acre Kohen parcel on the north side of the Bill Williams River channel. Farming operations from previous land owners have left areas of Kohen vulnerable to invasive plant species. Excessive flooding terminated farming operations on Kohen in 1983, allowing invasive species to take advantage of the disturbed soils.

The geography of the Kohen fields gradually undergoes a transition from wash alluvium, to terrace, to primary floodplain. Restoration efforts will focus on the northern terrace area within the fields of Kohen. Kohen consists of native desert wash and riparian species including but not limited to, Littleleaf Palo Verde (*Cercidium microphyllum*), Blue Palo Verde (*Cercidium floridum*), Ironwood (*Olneya tesota*), Honey mesquite (*Prosopis glandulosa*), Screwbean mesquite (*Prosopis pubescens*), Fremont cottonwood (*Populus fremontii*), Goodding willow (*Salix gooddingii*), seep-willow (*Baccharis salicifolia*), desert broom (*Baccharis sarothroides*), creosote bush (*Larrea tridentata*), and (*Atriplex spp.*).

The Restoration will consist of three project goals. The projects will address 1) Instillation of a 3' X 15' gate, 2) establishment of adequate surface irrigation for the revegetated area, 3) revegetation with native desert wash and riparian tree species including container and seeded understory habitat.

Goal: Eliminate non authorized travel through the Kohen area and aid in security of irrigation system; more specifically safeguard proposed solar power system to provide electricity for irrigation needs.

Objective: Install a high quality constructed 3' X 15' 2 1/2" schedule 40 pipe gate

Management Prescription: Contract and jointly install the 3' X 15' gate which will be necessary to keep non authorized travel and theft of equipment minimized. Although it is almost impossible to stop a determined thief from stealing a piece of equipment, especially where equipment must be left in an unprotected remote location, the creation of a quality gate will aid in deterring use to the Restoration area which may be cost effective in the future.

Goal: Provide adequate soil moisture to sustain newly planted vegetation.

Objective: Construct a solar drip irrigation system throughout the 20 acre Restoration area.

Management Prescription: With the use of an existing pumping well, Refuge staff and volunteers will establish a solar drip irrigation system which will aid in the efficiency in

maintaining soil moisture along with reducing broadband weed growth and promoting deep root growth for newly established vegetation.

A solar pad station will be constructed to generate electricity to the pump. A solar pump will be deployed in the existing irrigation well. Main water lines will consist of 1 ½” PVC pipe. Lateral lines will consist of three-quarter inch diameter polyethylene tubing and will run perpendicular to the main line. Pressure compensating 1gallon per hour (GPH) emitters will be plugged into the ¾” polyethylene tubing located near planted vegetation. All irrigation tubing is polyethylene UV-protected and will lay on soil surface.

Maintenance and integrity of the irrigation system will be inspected monthly for the duration of irrigation needs. Frequent maintenance checks will be necessary and essential to check water lines and emitters for proper function to reduce human error in plant survivorship. Human, rodents, and other wildlife have been known to damage such resources.

Goal: Restore native habitat on Kohen fields to compensate for natural resources which were lost in the Pilot spill.

Objective: Revegetate and maintain approximately 20 acres with (*P. glandulosa*), (*Cercidium* spp.), (*O. tesota*), (*P. pubescens*), (*B. salicifolia*), (*L. tridentate*), (*B. sarothroides*), and (*Atriplex* spp.), also including but not limited to native purple three-awn (*Aristida purpurea*), Mexican spangletop (*Leptochloa uninervia*), Big Galleta (*Hilaria rigida*), and Desert fluffgrass (*Tridens pulchellus*) as herbaceous understory species in the form of container plants or seed.

Management Prescription: Bore approximately 1500 holes greater than three feet in depth for adequate tillage with the use of a two man auger on the 20-acre northern portion of Kohen. Refuge staff and volunteers will plant 1500 container-rooted nursery stock native trees and shrubs within the most northern 20-acre field. Some locations will have small sprinkler type heads which will aid in germinating hand dispersed understory species listed above.

6 COSTS FOR HABITAT RESTORATION

Costs include assessment and restoration planning, and document preparation as well as labor involved in site preparation, loading and unloading container plants from delivery truck and transporting plants and supplies to the Restoration area and actual planting. Supplies and equipment include trees purchased from nurseries and rental cost for drilling rigs and other equipment (Appendix A.).

Bureaus that participated in the claim were granted \$25,300 in repayment of past cost (Table 1.). In January of 2005, the Refuge requested \$12,000 of the negotiated settlement funds for planning activities. The current amount available is approximately \$107,700.

Table 1. Repayment of Past cost to DOI bureaus that participated in the claim.				
Negotiated Settlement				
Bureau/Office	Total Settlement Dollars Received	Assessment Cost Recovery (Past)	Restoration (Future)	Planning Activities
Bureau of Reclamation				
Fish and Wildlife Service	\$142,700	\$23,000	\$119,700	(-) \$12,000
Off Env. Policy & Compliance	\$300	\$300		
Office of Solicitor	\$1,500	\$1,500		
Other: DOI Indirect	\$500	\$500		
Totals:	\$145,000	\$25,300	\$107,700	

7 MONITORING

This monitoring plan outlines the general protocol needed to evaluate whether the restoration objectives have been met. A monitoring period of two years will commence after the initial restoration measures are implemented. Current analytical methods (line transect(s)) will be used to estimate density and survivorship. Data will be collected within subplots of transect which will in time identify if the Restoration was a success or failure.

The Kohen Restoration project must have at least 50% survivorship of planted vegetation for a successful project. Volunteer trees and shrubs of approved species shall be deemed equivalent to planted specimens two years of age or older and can be counted towards success.

Establishment of photo points will aid in assessment and documenting change over time. Promoting the establishment of a diverse assemblage of native plants will encourage wildlife use.

8 REFERENCES

Castellana B. 2001. Parker Diesel Spill Emergency Response Bill Williams Wildlife Refuge Mohave County, Arizona. Superfund Technical Assessment and Response Team Long Beach, California U.S. EPA TDD# 09-0012-0042 Job# 001275.0042.01.RZ

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. Code of Federal Regulations 42 § 9607

33 U.S.C. 2706b- Natural resources

43 CFR 11§ Sec. 11.81- Damage determination phase—restoration and compensation determination plan

43 CFR 11§ Sec. 11.82- Damage Determination phase--alternatives for restoration, rehabilitation, replacement, and/or acquisition of equivalent resources.

43 CFR 11§ Sec. 11.93- Post-assessment phase--Restoration Plan.

United States of America v. Pilot Corporation. Action No. (not listed) consent decree entered December 4, 2003.

Appendix A. Cost For Native Riparian Habitat Creation On Proposed Restoration Area									
GS-5	gross salary plus (35%) benefits = \$147.00/day								
GS-7	gross salary plus (35%) benefits = \$182.00/day								
GS-9	gross salary plus (35%) benefits = \$222.00/day								
GS-11	gross salary plus (35%) benefits = \$269.00/day								
Cost Source		FTE Days	\$/FTE Day	Fixed Cost	Acres	Years	Cost		
Assessment and Restoration Planning, and Document Preparation									
Identifying Restoration Goals and Purposes		6	735						4,410
Identifying and Selecting Proposed Alternatives		4	735						2,940
Intra-Service Section 7 Biological Evaluation		5	222						1,110
Restoration Plan/NEPA Preparation		20	270						5,400
Restoration Implementation, Monitoring, and Contingencies									
Gate/Instillation				8,100					8,100
Irrigation System				15,100	20				15,100
Construction of Irrigation System		10	675						6,750
Irrigation System Maintenance/Repairs				3,000					3,000
Native Trees (1500 Containers)/Delivered				7,500	20				7,500
Native Herbaceous Plants (Container/Seed)/Delivered				1,000	20				1,000
Equipment Rental				1,000					1,000
Planting Labor		12	935		20				11,220
Monitoring/Reporting		36	270			2			9,720
Polaris 6X6 ATV				13,000					13,000
Temporary Position		180		17,450					17,450
TOTALS		273		66,150	20	2			107,700

