

Fire Rehabilitation Plan for Strawberry Island Fire (#13520-9261-130)

I. Background

A wildfire occurred on May 21, 2000 on Upper Strawberry Island near the mouth of the Snake River within McNary National Wildlife Refuge in Franklin County, W A. The fire burned a total of 33 acres. The fire appeared to have been human-caused as the point of origin was an abandoned illegal campfire.

The climate of the region is arid with approximately seven inches of rainfall annually. Summers are hot (highs about 85-100°F) and dry (minimum relative humidity in the teens). This area is subjected to strong winds (averaging 10 mph while the average maximum wind speed is 25 mph) throughout the season. Wind velocity is strengthened by the channeling effect within the river valley.

Soil type is characterized as Riverwash which is composed of sand and gravel. Topography is flat with small depressions. Vegetation prior to the fire primarily consisted of shrub-steppe dominated by big sagebrush and grasses (primarily cheatgrass and basin wildrye). Cottonwood, Russian olive and willow trees and shrubs occurred adjacent to the river's edge.

The fire intensity was moderately high. Fire behavior calculations generated forward rates spread at 55-154 chains/hour and flame lengths of 6-8 feet. These calculations were based upon a fine dead fuel moisture of 4%, a live fuel moisture of 100%, and a mid-flame windspeed of 6 mph.

The shrub-steppe habitat was heavily damaged by the fire. Most sagebrush plants were completely consumed. These shrubs will not re-sprout and therefore, constitute a total loss. Some of the bunchgrasses may have survived. However, the dominant grass in the area was cheatgrass which had already gone to seed. Several cottonwoods, willows, and Russian-olive trees were also damaged. Some damage was done to the substrate by firefighters using hand tools. These sandy soils are extremely fragile, and any disturbance opens an avenue for exotic/noxious weed invasions.

Upper Strawberry Island is an important and well-known Native American cultural resource site. It is also registered on the National Register of Historic Places. Over 120 depressions marking the locations of pit houses, as well as various tools and animal bones, have been discovered during archeological investigations indicating that this was a large pre-historic settlement. We have attached a memorandum describing a post-fire site visit conducted by Alex Bourdeau from the Region I Cultural Resource Team.

2. Evaluation and Analysis

Removal of vegetative cover exposes the surface to wind and water erosion. The cultural resources on the island are now exposed to the elements. The primary threat to the cultural resources is continued exposure through wind and water erosion of the site, which may lead to looting by artifact hunters. Public boating and use around the island is heavy, especially during

the summer. Strawberry Island is closed to the public, however, its accessibility by boat makes it easy for people to gain access. Left untreated, the post-fire environment will lead to the unacceptable degradation of cultural resources. Seeding with native grasses and shrubs would provide a locally adapted group of plants that would provide the best protection of these values.

3. Rehabilitation needs and objectives

A "no action" alternative would allow normal post-fire community development. This would leave a large portion of the area exposed to wind and water erosion, and increase the potential for looting, thus, jeopardizing existing cultural resources. Further, we anticipate that mostly cheatgrass and broadleaf weeds will initially invade the site which would inhibit or prevent native plant recovery.

In order to provide for the protection of cultural resources and promote the reestablishment of native vegetation, reseeding of native shrubs and grasses is essential. Because of the sensitive nature of the area, ground preparation, seeding and weed control would be done by hand.

We would begin in early November by hand treating the area using backpack sprayers with Roundup® to control germinating cheatgrass. Magnar basin wildrye (*Elymus cinereus*) grass seed will be broadcast and hand-raked into the soil 7-10 days later. By planting in the fall we should be able to take advantage of winter and spring precipitation. The following spring and summer, we will hand treat broadleafweeds with the appropriate herbicide. Five hundred sagebrush (*Artemisia tridentata*) seedlings will be hand-planted during the second fall period.

4. Environmental Considerations

We expect the cheatgrass to germinate in October and November. Seeding with native plants needs to be early enough in the winter to allow germinating plants to utilize the moisture and become established before the summer dormant season. The use of herbicide is the most efficient and effective means of preventing the spread of weeds while permanent cover is being established. Weed control and grass seed and shrub planting will be done by hand to minimize impacts to sensitive cultural resources.

A draft Fire management Plan was submitted to the Regional Office in July 1999. This Rehabilitation Plan is commensurate with the draft Fire Management plan.

5. Summary of Anticipated Resource Needs and Costs

Some of the equipment necessary to implement this rehabilitation plan is available on the refuge. Grass seed, sagebrush seedlings, hand grass seed spreaders, herbicide and backpack sprayers will have to be purchased. Refuge staff will apply herbicide and plant grass seed and shrubs. Due to this year's many fires, native grass seed will be in high demand and will likely increase in price over the coming weeks. A summary of expected rehabilitation costs is presented in the following table.

Project Rehabilitation Costs	
Grass seed (Magnar Basin Wildrye) 10lbs/ac @ \$11.50/lb x 33 acres	\$ 3795
Sagebrush seedlings	450
Labor (seeding) (96 hours @ \$20/hr)	1920
Boat fuel and equipment	300
Herbicide	1000
Contingencies (increase in seed cost)	100
Total Project Cost	\$ 7564

United States Department of the Interior

FISH AND WILDLIFE SERVICE, REGION 1
Cultural Resource Team
20555 SW Gerda lane
Sherwood, Oregon 97140 503-625-4377
(fax 503-625-4887)

To: Dave Linehan -Mid-Columbia NWR Complex

From: Alex Bourdeau -Archaeologist
Cultural Resources Team

Subject: Site visit to Strawberry Island sites (45FR5 and 45FR29) following wildfire.

On May 31, 2000, I conducted a site visit to Strawberry Island located within the McNary National Wildlife Refuge. The visit was requested by yourself and Gary Hagedorn following a wildfire that occurred during the preceding weekend on the island. At the time of my visit, the exact point of ignition had not been determined by fire investigators, but was near the midpoint of the island, downstream and upwind from Strawberry Island Village (45FR5). This led to speculation that the fire had been started intentionally to reveal archaeological materials. Refuge personnel were concerned that vandalism may occur as a result.

Although the fire did expose the depressions of the pithouses that are the defining characteristic of Strawberry Island Village, it does not appear that any vandalism has occurred since the fire. There was no evidence of recently disturbed soils in or around the pithouse features. Very few artifacts were noted on the surface of the site, with the exception of numerous fish skull fragments (primarily preoperculum) burned by the fire. As these bones were scattered more or less randomly throughout the burned area, it is most likely they were left behind recently by scavengers, such as coyotes and raccoons or by predatory birds. A few concentrations of fire cracked rock were noted, but none had been recently disturbed. The lack of artifacts on the surface confirms the conclusions of Schalk and others (1983), that the village has been covered by 10 to 30 centimeters of silt by post-occupational overbank floods.

From my inspection, I have concluded this fire was probably not started to "clear" the archaeology site. Had that been the intent, it is more likely the fire would have been started in its immediate vicinity rather than 200 meters downstream. It is also apparent that it is unnecessary to bum off this site in order to find it. Many of the pithouses are very obvious features on the landscape.

From a site preservation standpoint, it would be advantageous to reestablish grassy vegetation on the site as quickly as possible. The formation of dunes on the downstream portions of both halves of Strawberry Island suggests that wind erosion and deposition are occurring here. Devegetation of the village may result in increased wind erosion, removing the protective silt

and exposing archaeological materials. I recommend the Service determine which grass species are appropriate and have them planted by hand broadcasting when they are most likely to successfully colonize the site. Care should be taken to not walk through the pithouses during planting as this will disturb the side-walls of the pithouse depressions and possibly cause displacement of archaeological materials. It is also apparent that Russian olive has taken up residency on Strawberry Island. If a non-surface disturbing method to kill or retard the growth of Russian olive can be found, I recommend it be used. Large tree roots growing through sites are known to displace and eventually destroy the spatial integrity of cultural materials.

Aside from inspecting the possible effects of the fire on the archaeological deposits, I was also interested in determining if the US Army Corps of Engineers (COE) efforts to protect 45FR5 from high water and wave and boat wake erosion were working. In the mid-1980's, the CaE constructed an off-bank rock berm around the upstream end of Strawberry Island as recommended by Schalk and others (1983). The berm appears to have effectively stopped erosion of the village site. The area between the cutbanks and the berm are filling with sediment and nice stands of willows and other riparian vegetation (unaffected by the fire) are taking root. However, along portions of the rest of the island, which is identified as site 45FR29, erosion is continuing. Systematic monitoring of this site by an archaeologist should be undertaken to record any significant features or artifacts exposed by this erosion. As operation of McNary Dam is the principal cause of the erosion, the COE and the Bonneville Power Administration (BP A) should include this monitoring in their plan of work for the Payos Kuus Ts'uukwe Cooperating Group. If monitoring reveals that significant features are being damaged, mitigation measures would need to be developed as required by Section 106 of the National Historic Preservation Act

If you have any questions on these findings or recommendations, please contact me.

Alex Bourdeau
Archaeologist
Region 1 Cultural Resources Team