

**ESR MONITORING REPORT  
SNAKE ONE (B19E)**

Fiscal Year of Fire	FY2005
Fire Containment Date	8/5/2005
Fire Size	25,225
BLM Acres Burned	13,002
ES Plan Total Planned Costs	\$395,000
ES Acres Treated	13,002
BAR Plan Total Planned Costs	\$601,000
BAR Acres Treated	13,002
State/Field Office	Idaho/Four Rivers
Contact Person	Irene Saphra
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**2) END OF THIRD-YEAR CLOSEOUT SUMMARY**

The Snake One Fire burned in steep terrain above Brownlee Reservoir and within the Rocking M Conservation Easement. This area provides critical big game winter range to elk and deer as well as numerous other fauna species. The threat to watersheds and erosion in the drainages above the Snake River were of concern to fisheries and redband trout.

Due to elevations ranging from 2,000 to 5,500 feet, there existed a broad range of plant cover types prior to the burn. Broad cover types within the burn included; woodlands, canyon riparian, annual and native grasslands, sagebrush, mountain brush and bitterbrush steppe habitat communities.

The area is part of The Lower Weiser River Cooperative Weed Management Area. Many noxious weed species were known to occur in the area including Scotch thistle, Canada thistle, perennial pepperweed, whitetop, poison hemlock, spotted knapweed, rush skeletonweed, leafy spurge, dalmation toadflax and yellow starthistle.

BLM aerially seeded 14,300 acres including the dozer lines (paid from suppression funds). Steep drainage areas of with erosion potential above the Snake River were seeded with grass/forbs with straw and WoodStraw® covering to stabilize the soils and provide cover for seedling germination. Over two years 80,000 bitterbrush seedlings were planted on 3 units covering approximately 350 acres.

<b>2822 &amp; 2881 – Aerial Seeding/Soil Stabilization Completed in 2006</b>								
<b>ES Treatment</b>		<b>Units</b>	<b>Size</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>Total Cost to Date</b>	<b>Degree of Success</b>
S3	Aerial Seeding Grass/Forb	Acres	1,300	\$83,104			\$83,104	Fully Successful
S6	Soil Stabilization Straw/WoodStraw® Covering	Each	200	\$124,385			\$124,385	Fully Successful

Objectives Grass/Forb seeding & WoodStraw® :

Grass/Forb: The density and ground cover afforded by those species was equal to or greater than 90 percent of the density and ground cover afforded by those same species at a representative unburned site located immediately adjacent to the burned area and 2) 60 percent of the surviving pre-fire native/non-native perennial plants produced seed.

Straw and WoodStraw® : Increasing the seed to soil contact and provide covering to hold seed on site, prevent wildlife depredation, and provide a cover to act as a proper seed bed.

Treatment Implementation:

1,300 acres of steep drainages above Brownlee Reservoir were broadcast seeded with perennial grass/forbs where loss of vegetation was a potential soil stabilization problem. Seeding was completed in November 2005 by Columbia Basin Helicopters using an isolair bucket. 200 acres within high intensity burn areas with a high degree of existing native perennial grass mortality were covered by the straw/WoodStraw® to anchor soil during fall and winter, to increase the seed to soil contact, provide covering to hold seed on site, prevent wildlife depredation, and provide a covering to act as a proper seed bed. Prior to application a new company, Forest Concepts, contacted NIFC representatives and requested their new patented product, WoodStraw®, be utilized on a stabilization project. NIFC contacted Boise District and asked if they could supply WoodStraw® for the Snake One stabilization project. NIFC funded the purchase of 21 tons of WoodStraw® and BLM purchased 20 tons of straw for the treatment. Straw and WoodStraw® were applied alongside each other within the treatment unit areas. The straw/WoodStraw® application was completed in November 2005 using Columbia Helicopters under an ARA contract with Boise Helitac providing ground crew operations. Straw and WoodStraw® were applied side by side to evaluate their individual effectiveness.

Monitoring Methods:

4 data plots, 5 photo plots were established within the treatment areas to collect vegetation density and cover. Point cover data was also collected from the straw/WoodStraw® sites during treatment application to record percent cover achieved, and percent of straw/WoodStraw®, soil, vegetation cover over time.

Results:

Untreated natural recovery areas: By the end of the second growing season mean cover values were 75.78% as compared to control areas with 80% cover. Cover objective one was met with very little bare soil in any of the plots. The majority of the established perennial herbaceous plants had developed seed heads. The well developed perennial grasses provide for soil stability. The area is well established with perennial bunch grasses that should have the capacity to compete with the invasive annuals, as well as provide for soil stability. Many robust Bluebunch wheatgrass and Idaho fescue perennial grass plants observed on site. They provide soil stability and provide canopy cover. Area appears recovered and in terms of watershed values is in good condition but shrub structure as compared to pre-fire condition is lacking. Good to excellent diversity and abundance of native forbs and grasses. Site condition looked good for weather conditions.



Figure 1: DP1 Line 3, Natural Recovery: first growing season



Figure 2: DP 1 Line 3, Natural Recovery: 2nd growing season



Figure 3: DPI Line 3, Natural Recovery: 3rd growing season

Grass Seeding: All seeded species in areas covered by straw/WoodStraw® showed good establishment as compared to seeded not covered areas. Exceptional performers were the Vavilov Siberian Wheatgrass and the Sherman Big Bluegrass. All sites achieved cover objectives by the second growing season and nearly 90% of seeded species were producing seed. Forb species present were Blue Flax and Yarrow. See discussion in straw/WoodStraw® section. Seeding outside of the cover treatment showed marginal success with seeded species establishment in more favorable areas such as drainages, open areas under burned shrubs, and steeper slopes. Mortality of existing species was not as severe as initial site evaluation predicted and native recovery was favorable, although there was an increase in invasive annual grasses in some areas.

	Straw			WoodStraw®			Control
	2006	2007	2008	2006	2007	2008	2006
% Cover	88%	80%	80%	84%	87%	100%	94%
% Bare Ground	12%	2%	2%	16%	2%	0%	6%
Plant Density /m <sup>2</sup>							
Native Grass	8.7	18.4	2.4	15.6	59.6	2.7	4.0
Seeded Grass	3.1			2.9			0
Perennial Forbs	8.5	5.6	2.3	4.5	9.6	1.4	4.5
Seeded Forbs	1.3			2.8			0
Annual Grass	0.1	29.6	4.1	0	0	0.9	3.0
Shrubs	0.6	0		1.2	0	0.4	0.9

Straw/WoodStraw®: The WoodStraw® was better at achieving the initial cover objective (70%) after application. Upon visual inspection during application the WoodStraw® was more evenly distributed as compared to the straw because the wood strips would more easily separate and provide an even covering. The straw would remain in clumps and in some areas provide a 100% cover and in other area no cover. The wood strips had the ability to anchor into the soil providing a more effective soil stabilizing property. With a more even distribution the WoodStraw® did not “smother” the existing vegetation and seeding and had better water filtration and sunlight penetration. This greatly increased the response and germination of all species. There was an increased seeded species establishment under the wood covering and by the second growing season vegetation cover was 53.75%. There was a concern, that the wood would not break down and would persist on site, but we found the opposite, the WoodStraw® “settled” to the soil surface and was covered by emerging vegetation. The straw clumps persisted, smothering vegetation, and were quite visible on site. There was considerable rain prior to the application and even though both the WoodStraw® and straw were both tarped, the increased humidity may have attributed to the more uneven distribution of the straw as compared to the WoodStraw®. The treatment was considered a high success and Forest Concepts has been sharing this project as a success story with other users.

	% wood and straw cover				% vegetative cover			
	2005	2006	2007	2008	2005	2006	2007	2008
Straw	98	49.37	33.58	23.07	0	16.73	21.53	53.46
WoodStraw®	70	59.61	42.85	14.51	0	20.46	53.75	71.07



**Figure 4: WoodStraw® cover**



**Figure 5: Straw cover**



**Figure 6: WoodStraw® immediately after application, cover approximate 70%**



**Figure 7: Seeded species establishing within WoodStraw® end of first growing season**



Figure 7: WoodStraw® end of second growing season



Figure 8: WoodStraw® end of third growing season



Figure 10: Straw coverage immediately after application, note the limited amount of open space.



Figure 11: Straw covering after second growing season, few seeded species seedlings.



Figure 12: Straw covering after third growing season

### **Lessons Learned:**

The new WoodStraw® product utilized at the request of NIFC personnel was found to be a superior product to the straw covering. The product dispersed more evenly in the area which resulted in a more uniform ground covering, it is weed free (cereal rye was found growing in the straw areas), and is a more porous product that allows moisture and sunlight to penetrate to the ground surface. We found that the aerially seeded perennial grasses and especially the big sagebrush did very well in these covered areas and that the cover and stability provided by the WoodStraw® may have improved the germination potential of the grass and sagebrush as germination rates overall in these areas were higher.