Rehabilitation of the Leach Field at Lost Creek Campground

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Introduction

Lost Creek Campground is located on the Pinnacles Rd, 3.2 miles from the junction with East Rim Rd. Construction to the leach field at Lost Creek Campground was completed in July 2004. Visitor use of this campground is significant with approximately 3000 over-night guests staying in the campground per year during the past 3 years. The newly constructed leach field is in plain sight of the entrance and from the restrooms. Rehabilitation of this area is needed to improve the aesthetics of Lost Creek campground, to protect the genetic integrity of the local species, and to reduce the impact of soil movement within the constructed area.

Site Evaluation

The dominant tree species found at Lost Creek Campground is Lodgepole Pine *(Pinus contorta).* Lodgepole Pine grows admirably in the local soils, consisting of pumice and ash deposits. Species richness for Lost Creek Campground is low indicated by the observance of very few individual species in the understory. The predominant plant found in the herbaceous layer was a sedge species (Carex sp.). Identification was not verifiable due to the lack of seed heads found during the site evaluation. Four grass species were observed to lesser degrees, and a few flowering dicots were observed even more rarely. The entire species list for the area is as follows:

Pinus contorta	Lodgepole Pine
Carex sp.	Carex species
Elymus elymoides	Squirreltail
Elymus glaucus	Wild Blue Rye
Achnatherum occidentale ssp. californicum	California Needlegrass
Bromus carinatus	California Brome
Ericameria bloomeri	Rabbitbrush
Lupinus andersonii	Anderson's Lupine

The area adjacent to the disturbed area, SE to Pinnacles Rd. was surveyed to determine the species composition and seed availability. Plants growing in the riparian zone were not considered.

Several young Lodgepole Pine trees were observed growing in a tight cluster near the restrooms. These small trees could be thinned and transplanted in the leach field. However, I would only recommend transplanting up to ten trees in the area, less if the

root system is well established at the time of planting and if they are well maintained. Trees may not be suitable for rehabilitation at all if they will damage the leach system. Furthermore, we can expect some natural regeneration of Lodgepole Pine without transplanting, so much so, that the area may need to be thinned of small trees in the near future. Expect to monitor this area for tree growth and suitability.

Erosion Control Matting

The two most limiting factors to rehabilitation of the leach field will be the loss of the duff layer during construction and the subsequent exposed, poor soils. The emission of dust particles into the air should be a primary concern in the succession of rehabilitation efforts at Lost Creek Campground. Erosion control matting is recommended for reducing dust emission and for increasing the availability of moisture for germinating vegetation. The type of matting that has been approved for rehabilitation of this project area and a cost analysis for purchasing and installing the mat can be referenced separately in this report.

Seed Planting

The potential for some natural regeneration of the local species has been compromised in the loss of the duff layer where "seed banking" naturally occurs. Therefore, the most applicable approach to reintroducing vegetation to the project area will require seed collection of appropriate, available species from the surrounding location. Species can be collected from the species list indicated above. Spring and fall seed planting is recommended, and is therefore, dependent on the availability of collected seed. Scarification of the soil, by hand, is recommended to create sites for the seeds to become established. Once the erosion control mat is installed, seed planting can be facilitated by rolling back the mat to reveal the soil layer and after the seeds are planted, the mat replaced to protect them. However, the erosion control matting is biodegradable and will likely last only 1 year. Consultation with Nancy Dunkle, Restoration Specialist for NPS, has concluded that a mixed media (70% straw/30% coconut fiber) erosion mat is suitable for this rehabilitation project. The mixed fiber content should improve germination and the subsequent growth of planted seed.

Watering

Watering after establishing seed into the project area is probably a beneficial tool for productive rehabilitation. Routine watering should be implemented early after the snow has melted from the project area. This will increase seed germination and aid in overall plant growth. Watering should be tapered off once the seedlings have become established. During the second and subsequent years following seed planting, watering is less necessary, although some minor watering maintenance may be required. If seeding is done in successive years, perform routine watering maintenance. A water source is available at the site and a hose and watering wand or sprinkler should be purchased and left on site.

Fertilizers
Fertilizers are an option for maximizing plant growth. If the use of fertilizers is determined appropriate for rehabilitation at Lost Creek, the types of amendments and methods for application should be approved by the Natural Resource Division.

Interpretive Signs
Restricting foot traffic to the area will help the establishment of vegetation in the leach field. We have typically used interpretive signing on a post and chain model to indicate revegetation areas. The success of this method varies as some people neglect to observe the signage. However, it should decrease the impact from human disturbance.

Summary of Actions
1. Contour and scarify soil with hand rakes.
2. Install ~ 9 rolls of SC150BN erosion control matting (70% straw/30% coconut fiber) available from ACF West, Portland, OR. Secure with landscaping pins.
3. Dampen soil with water source on site to encourage germination and to reduce soil movement. When seeds are introduced into the project site, watering should be done routinely.
4. Collect seeds from available species in the adjacent area. Do not collect seed in riparian zone.
5. Broadcast seed over project area. This can be done in early spring once the snow has receded or in late fall. The erosion control matting will need to be rolled back for broadcasting the seed and then secured after planting.
6. Monitor project area for seedling establishment and vegetation cover.
7. Reevaluate treatments in response to effectiveness of rehabilitation efforts and document results of these efforts. Include photos during all phases.