

# **Lower Pinhook Spring Condition Assessment**

**Location:** Castle Valley Allotment, Manti-La Sal National Forest

**Date:** September 23, 2016    **Begin/End Time:** 10:30am to 12:30pm

Whitman College Semester in the West (20 students)

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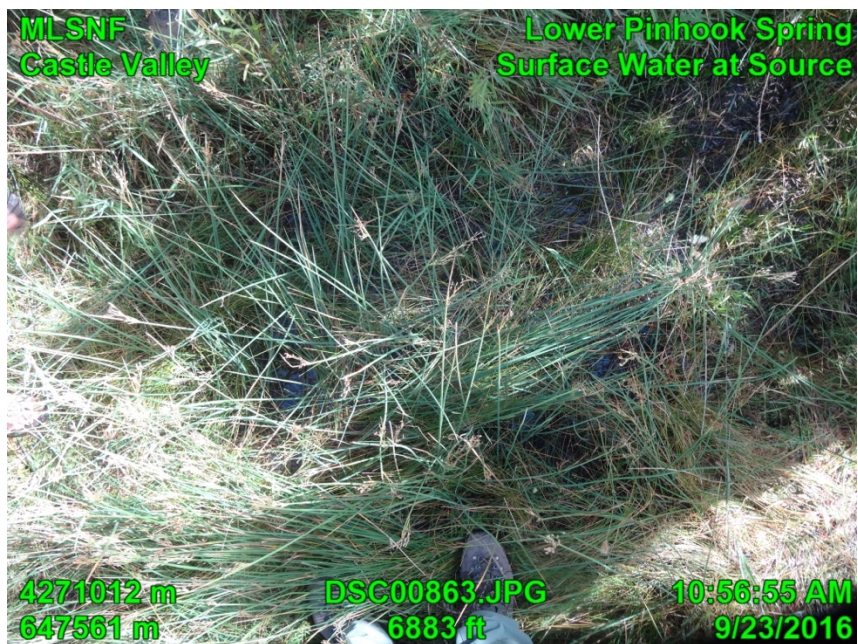
## **I.Introduction:**

The Lower Pinhook Spring exists within the Castle Valley Allotment of the Manti La Sal National Forest at 647560E and 4271016N at an elevation of 6,851'. After the Porcupine Ranch fire in 2008 killed the Gambel pak and juniper populations of the spring, this riparian area has been regrowing. x. The sensitive area around the spring has been protected from browsing with a perimeter fence put in place by the Forest Service, who also seeded Great Basin wildrye. The purpose of this assessment is to determine spring health and monitor the effectiveness of the exclosure. The exclosure is surrounded by the Lower Pinhook Pasture of Castle Valley Allotment, which is characterized by abundance of junipers, pinyon pines, and Gambel oak.

## **II. Spring Evaluation Methods:**

To effectively assess the Lower Pinhook spring, five groups of four volunteers individually examined various aspects of the area. Each member of the team performed a specific task, including photographing and creating GPS waypoints, recording data, identifying and collecting vegetation samples, and sketching a map of the spring. GPS waypoints and photographs were taken at significant features of the spring, including sources, intermittent pools, and streams. At these features, the flow of water was also observed.



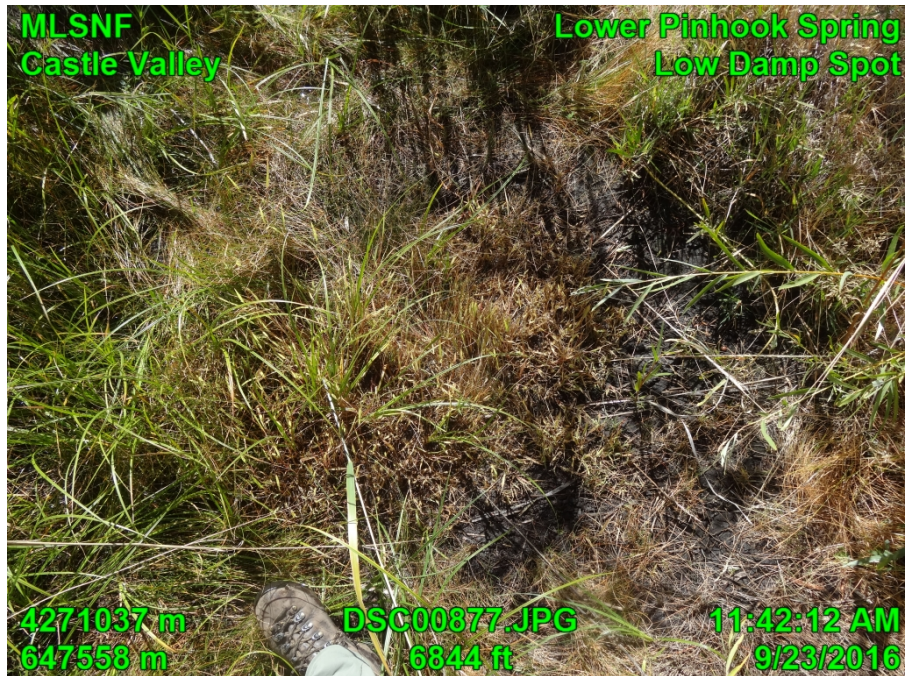


*Fig . 1 Spring source*



*Fig. 2: Lower pool*





*Fig. 3: Intermittent pool*



*Fig. 4: Stream with burned trees in overstory, Great Basin wildrye below and exotic watercress as groundcover near and on water*





*Fig. 5: Cistern with pipe*



*Fig. 6 Trough outside exclosure; critter ramp on left*





*Fig. 7 Elk scat*



*Fig. 8 Mule deer scat*



Fig. 9: Black Bear scat

#### IV. Assessment

##### Water Presence

Within the enclosure, surface water was present at four locations: a, source pool (Fig. 1), lower pool (Fig. 2), intermittent pool (Fig. 3), and creek (Fig. 4). The source pool and lower pool contained non-flowing surface water and were approximately the same surface area. There was no surface water present in the intermittent pool, but it showed signs of intermittent water presence. The creek flowed through dense vegetation from near the cistern (see map) downslope to the edge of the enclosure.

##### Water Infrastructure

Within the enclosure, adjacent to the stream, there was a single cistern connected to a plastic pipe (Fig. 5). Outside the enclosure there was a livestock trough fed by a steady flow of water from a pipe (Fig. 6).

##### Vegetation Composition

Coyote Willow (*Salix exigua*) was the most common vegetation, forming thickets around spring sources. Secondary in abundance were Baltic rush (*Juncus balticus*), common spikerush (*Eleocharis palustris*), western goldenrod (*Euthamia occidentalis*) and non-native redtop (*Agrostis stolonifera*) densely covered the ground nearest the spring sources. One mountain willow (*Salix monticola*) plant was observed. Moving outward from springs, the enclosure was populated with dense patches of Great Basin wildrye (*Leymus cinereus*, Fig. 4) and Gambel oak (*Quercus gambelii*). Among these more dominant species exist a selection of other forbs (including



northern bedstraw, *Galium boreale*), shrubs (including Woods' rose, *Rosa woodsii*), Mountain willow (*Salix monticola*), and horsetail (*Equisetum* sp.). The enclosure was also home to small populations of non-native species including watercress (*Nasturtium officinale*, Fig. 4), Burdock (*Arctium minus*) and an exotic thistle.

### **Wildlife Presence**

Within the enclosure, there was evidence of several species of wildlife. The more prevalent species, identified by their scat, were American Elk (*Cervus canadensis*, Fig. 7) and Mule Deer (*Odocoileus hemionus*, Fig. 8) and Black Bear (*Ursus americanus*, Fig. 9). Various birds were identified by their calls, including the Black-billed Magpie (*Pica hudsonia*) and Common Raven (*Corvus corax*). An injured Vole (*Microtus* sp.) was also found.

### **Disturbance evidence**

The fire that passed through this area 8 years ago is the largest and most obvious disturbance and defining feature of this landscape, but we observed other minor disturbances in the area of the spring.

The livestock trough outside the enclosure experienced the largest disturbance of the overall spring area, with trampling, browsing of vegetation and compression of soils around the structure. Non-native prickly lettuce (*Lactuca serriola*) is common outside the enclosure.

Within the enclosure, there was evidence of ungulate browsing found on a small exotic *Astragalus* species and *Equisetum* near the spring source. Deer and elk scat were found in proximity to the browsed vegetation.

### **Fence Infrastructure**

The perimeter of the enclosure was completely fenced with a three row barbed wire fence. Fence damage was observed in two separate locations around the enclosure. Additionally, there existed several sections in which the lowest fence wire was high enough to allow for deer entry.

## **V. Analysis**

Based on the assessment performed, the stream appears to be in relatively good health, within the enclosure, with the exception of the presence of non-native species (e.g., watercress). There was some evidence of human travel both inside and outside the fenced enclosure. The area surrounding the livestock trough displayed a markedly higher rate of degradation than that of the area within the enclosure. The damage observed included trampling, soil compaction, grazing/browsing, and non-native plants-- a stark contrast with the dense Coyote willows and Gambel oaks of the riparian area. Within the enclosure, there is no channeling or surface erosion, and these factors, combined with the presence of Great Basin wildrye and Coyote willow, indicate a healthy stream ecosystem. The small amount of ungulate browsing within the fence did not seem to impact the spring. The ratio of nonnative to native species, too, is not large enough to warrant concern about the overall health of the spring ecosystem.



## **VI. Recommendation**

In order to maintain a healthy spring, continue maintenance of the fence. When the surrounding pasture is not being grazed, move the water from the trough back into the spring system.