

Crandall Canyon Spring Complex (#186) Condition Assessment

Location: Crandall Canyon Allotment, Scad Valley Pasture, Manti-La Sal National Forest

Date: September 28, 2016 Begin/End Time: 12:00pm to 1:30pm

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I. Introduction

The purpose of this assessment was to assess conditions at this spring complex and its immediate surroundings. The complex consists of four individual springs laid out on a roughly North-South axis (each separated by 20-32m of relatively bare ground), just above the Horse Canyon trailhead off Miller Flat Road. The complex is located within a sheep pasture and is easily accessible to both humans and livestock.

We focused our assessment on the southernmost of the four sources (hereafter referred to as Source 186.1, located at UTM 479486E/4371095N and 8767' elevation) but noted major ways in which the other three deviated from it in terms of vegetation and physical layout. The four springs provide habitat for a variety of riparian plant and animal species; no water infrastructure currently exists at this site.

II. Spring Evaluation Methods

Tools and materials used in this assessment included compass, Bushnell rangefinder, ruler, camera, and Garmin GPS unit. We designated the four springs and the areas most visibly affected by the springs as Microhabitat A and the barer ground separating them Microhabitat B (Appendix A: Map). We divided into four roles: botanist, photographer, recorder, and illustrator, who respectively collected and preserved samples of dominant vegetation in the southernmost Microhabitat A, photographed and geotagged each source as well as other salient features of the complex, noted all observed plant species and wildlife sign, drafted recommendations for spring restoration, and sketched a detailed map of the complex (including surroundings, distances, and dominant vegetation—Appendix A) and of Source 186.1 (Appendix B).

We assessed the flow of water at the source of each spring on a qualitative scale from 0 to 4, with 0 being dry or dewatered (no water present and likely no water for the last year), 1 dry with no water present but likely has been intermittently, 2 wet or damp soil with water likely present erratically/intermittently, 3 wet with surface water or flow present and water likely present regularly but intermittently, and 4 wet with surface water or flow present and low, moderate, or large flow likely always present.

We assessed disturbance at the site on a scale from 0-3, with 0 being no or negligible disturbance, 1 light impact but no degradation of spring site, 2 moderately impacted and somewhat degraded, and 3 highly impacted with the spring substantially degraded. Disturbances we looked for included impacts by elk, cattle, sheep, and humans.

III. Photographs



Fig 1. Source Spring 186. First source found.



Fig 2. Close up of the water pathway

from source 1 of spring 186.



Fig 3. Sheep scat found near source 1.



Fig 4. Gopher holes between source 1 and source 2.



Fig 5. Booth's willow browsed at source 1 also common in areas within the spring complex where willows are present. The ends of stems appear dead, dried out, and quite dark in color.



Fig. 6: Grazed sedges within the spring complex.



Fig 7. Source 2 clear pool becomes a stream supporting lots of life.



Fig 8. Algae growing on moss stems found within the pool at source 2, growing around the edges and on the roots of the sedges and rushes.



Fig 9. Source 3 willow thicket comprised of two species, no visible surface water.



Fig 10. Source 4 pool hidden by willows

IV. Assessment:

Disturbance

There is substantial evidence of rush and willow browsing at all four Microhabitats A to the point where some willows, especially at Sources 186.3 and 186.4, are dying (Fig. 5). We assessed browsing as impact level 3 (substantially degraded). Additionally, all four Microhabitats B are significantly trampled by sheep and horses, with a large ring of bare ground outside Source 186.1 and a medium-sized patch next to 186.4; we assessed trampling as impact level 2 (somewhat degraded).

Vegetation

Most common vegetation at Source 186.1 (Microhabitat A) includes beaked sedge (*Carex rostrata*), and a second, unidentified sedge; and Booth's willow (*Salix boothii*). An unidentified thick green moss (Fig. 7) was also common along the banks of the trickle, with scattered forbs such as strawberry, thistle, and yarrow. The surrounding area (Microhabitat B) is dominated by sagebrush, with grasses common, sedges and rushes scattered, forbs (including native sneezeweed, *Helenium hoopesii*) more common than in Microhabitat A and small patches of bare ground, horsetail, and gopher burrows.

Source 186.2 has only a few scattered willows and much more moss than 186.1, as well as irise. 186.3 is the only source without open water and contains two types of willow; it is more dominated by sedges than 186.1. Lastly, 186.4 has Booth's willow growing in the source pool itself. The outflow from the pool is almost identical to that of 186.1, the most substantial difference being that the willows in 186.4 grow in scattered clumps instead of being concentrated in a single bunch as at 186.1 and 186.3.

Wildlife

Observed wildlife at Source 186.1 included bees, wasps, and grasshoppers in Microhabitats A and B, and golden eagle and red-tailed hawk in Microhabitat B. Additionally, we saw gopher burrows in Microhabitat B. Microhabitat A of 186.2 included waterflies, diving beetles, caddisfly larvae, leafhoppers, and epiphytic green algae (possibly volvox) growing on the moss.

Flow Consistency

All springs except 186.3 consist of a small pool leading to a running flow of clear, open water (in the case of 186.2, this soon joins with a larger creek coming from farther uphill) that goes underground roughly 15-20 meters downhill. As a large grove containing two species of willow (Booth's and Mountain) is situated directly above 186.3 and appeared healthy apart from browsing impact, we assessed all four sources as flow consistency 4 (perennial).

Species Identification

We sampled four species from Source 186.1: A suspected monocot in the lily family, one unidentified species of rush, and two unidentified sedges.

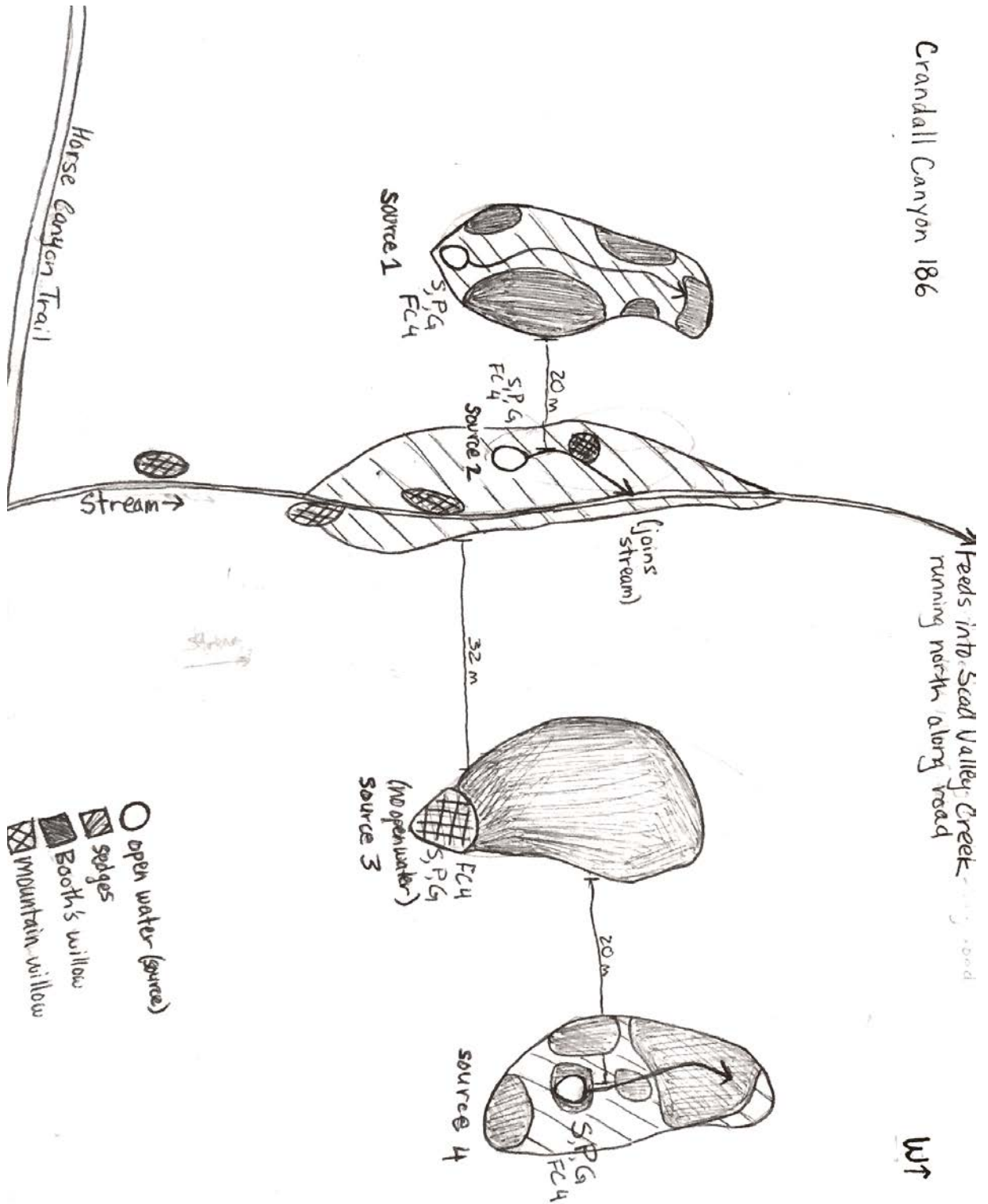
V. Analysis

The water from all four sources appears clean and unimpeded in its flow, with no visible erosion. However, the considerable degradation of species dependent upon the spring water (particularly Booth's willow) from browsing and trampling are cause for concern.

VI. Recommendations

We recommend that the browsing of willows in this spring complex be reduced by directing the herders to prevent sheep from remaining at the spring site. Two species of willow and a diversity of grasses, rushes, sedges, and mosses rely on the small moist areas of the spring within the greater sagebrush habitat. It is likely that the spring complex is also an important source of water for wildlife. The sources here currently have clear running water and are successfully supporting riparian vegetation.

Appendix A (Spring Complex 186)

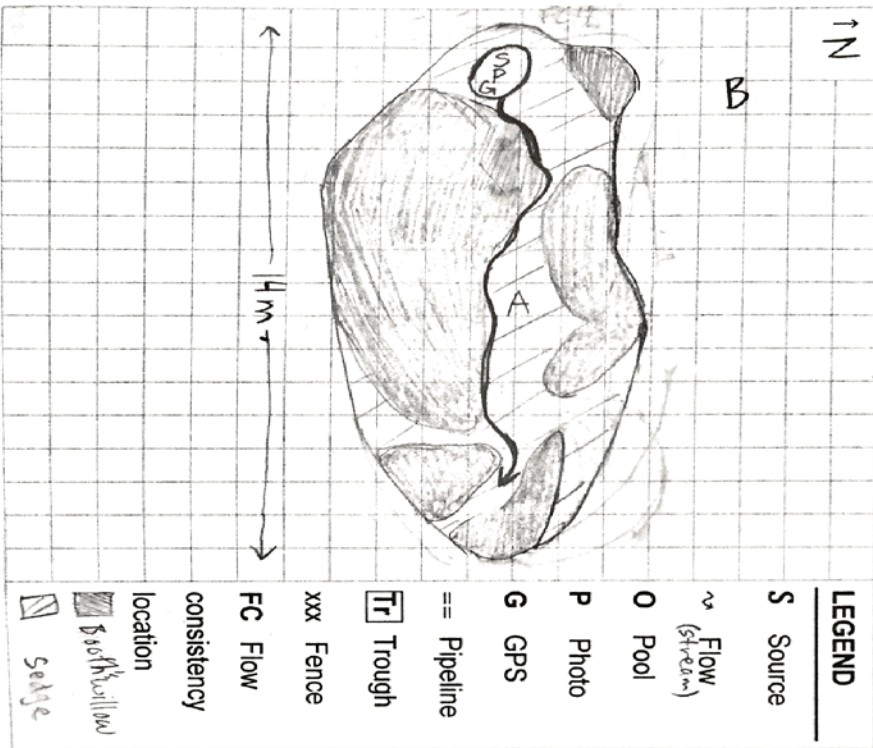


Appendix B (Source 186.1 Close-Up)

SKETCH MAP

Sketch a basic map of the site. Use the legend symbols to identify spring components (source, flow, pool) or infrastructure, where measurements, samples, photos, or GPS points were taken; or other notable characteristics. Use polygons to indicate microhabitats A-D (listed at right).

Source 1 close-up



1.75 steps/square

MICROHABITATS

List significant microhabitats and identify each with a labeled polygon in the sketch map. A spring can just have one microhabitat, or it can have several. A microhabitat can be a cave, channel, marsh, moist meadow, or other (specify)

List the microhabitats and identify each with a labeled polygon (A, B, C, or D) in the sketch map. A spring can just have one microhabitat (A) or it can have several (A-D).

MICROHABITAT DESCRIPTION	
A.	Willow/Sedge Ovals around sources
B.	Surrounding Sagebrush Steppes
C.	
D.	