

Memo to: Gary Lenhart, Capitol Reef
From: C. R. Kyte
Subject: Fossil Butte springs, seeps, and watersheds
Date: Aug. 28, 2003

Copies of a CD containing ArcView hydrology information, the Huntoon report, the Sect 11 spring development EA, and the Cundick Spring NEPA compliance document are being transmitted with this memo.

The enclosed disc contains ArcView projects containing hydrology information for Fossil Butte N. M. You should treat the remainder of this memo like a readme file for the ArcView projects. The beaver ponds were located in the field using GPS methods. I walked around all the ponds as close to the high water line as possible while a Trimble GeoExplorer III collected positioning data. I corrected the data, and imported the information into ArcView. The beaver pond data was recorded during the summer and fall of 2002. Beaver activity at FOBU is currently low for two reasons: 1) the springs and seeps have not produced enough water during the last 4-5 years of drought to maintain the ponds, and 2) the beaver were forced to abandon several areas during the past 5-15 years, apparently because they had harvested most of the aspen in the vicinity of the ponds .

The spring and seep shape files were drafted in ArcView with the line and point drawing tools. Huntoon (1978) generated maps showing the locations of springs and seeps. I reproduced his map as closely as I could using the drafting tools provided by ArcView. I added some seeps, and springs that Huntoon undoubtedly overlooked during the limited time he spent in the field at FOBU. The locations I added were also drafted. I used the aerial photo imagery generated by the DOQs to plot the seep and spring locations. Although the locations may not be exact, anyone with a little field savvy with experience interpreting aerial photographs, or topographic maps could find the features I plotted in this manner.

Huntoon (1978) also identified the recharge zones for the springs and seeps. The recharge zones correspond to the ridge tops occupied by the more pervious strata of the Green River Formation. I generated the recharge area shape file by tracing the topmost portion of the Green River Formation outcrop, including the Bull Pen Member in sections 11 and 14. Two springs arise along the base of the Bull Pen in sections 11 and 14. Cundick spring was developed in section 14 to deliver water to points along the ridge that extends to the east beyond the monument boundary for use by livestock. The BLM wanted the NPS to develop a second spring on the north side of the Bull Pen in section 11 (the Bull Pen is the name on topo maps for the roughly circular topographic feature that rises to ~8200 ft in sects 11 & 14) for use by livestock, but the "no development" alternative was chosen and that spring was not developed.

There is a NEPA compliance document and some correspondence pertaining to the development of Cundick Spring in our files, but we have not located an EA document for that project.

I prepared the drainage basin images. I used topographic maps and aerial photographic imagery to determine the watershed divides. My only formal training in hydrology is limited to a 3 day-long seminar where I learned to estimate watershed yield, compute hydrographs, and calculate sediment yield from small watersheds, but I am confident the watershed boundaries I plotted are accurate.