SPECIALIST REPORT - Manti-La Sal National Forest

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LOCATION/PROJECT: Crandall Creek, above Genwal Mine

Walked approximately 1.5 miles of Crandall Creek with Randy Gaynor (Genwal Mine) and Dale Harber (MLNF). Objective of field tour was to discuss criteria for defining "perennial streams". Genwal has proposed mining operations which have potential to subside a portion of Crandall Creek. Forest Plan currently directs that perennial streams on NFS lands will not be subsided by mining activities. Hence: our discussion on what is/is not a perennial stream.

EXISTING CONDITION:

Rosgen B and occasional A-type reaches in the portion where we hiked. Primarily rearing and occasional (good) adult holding pools. Creek is largely boulder/bedrock controlled with intermittent large woody deadfall and beaver dams (lower portion near the mine). Willow and alder thick along banks in spots. Two small slides are contributing sediment - the trail alignment cuts across very unstable portions of these and could use some work. DWR electrofishing surveys (per Randy) only found fish as far up as the beaver dam near the mine - but we do not know (yet) whether they surveyed farther up the drainage. Stressed to Randy that a fish survey at a single point in time (particularly one which only noted adults) should not be used to formulate conclusions on fish distribution or habitat use in the drainage. Did not observe any topographic breaks, etc. which would preclude fish use of any portion of the stream that we looked at.

DEFINING "PERENNIAL":

Using a combination of professional judgement, "Stream Hydrology: An Introduction for Ecologists" by Gordon and McMahon, input from Nancy Cox at the Aquatic Ecosystem Lab at BYU, FSM 2526.05, and criteria used by the UT DWR for stream alteration permits; I would recommend that the following criteria be used to determine if a watercourse is perennial:

1) Presence of a defined channel (i.e. bed and banks).
2) Hydric species present on the greenline.
3) Presence of a macroinvertebrate community; including stoneflies and/or mayflies (these latter two families are more indicative of persistent water).
4) No evidence of terrestrial vegetation growing in channel substrates.
5) Surface water persists throughout the year except in years of infrequent drought (FSM 2526.05).

Presence of fish is not a good indicator - there is far too much annual variation in their distributions to reach such a conclusion.

If all of the above are present (1 thru 5), I would call the watercourse perennial. It should be noted that professional judgement is extremely important during/after periods of drought (such as we have been experiencing). Application of such criteria (or any criteria that you might choose to adopt)

needs to be done by a hydrologist on site. I recommend that streams where we have disagreements be treated as perennial - so that we err on the conservative side. We get so little precipitation, and our culinary water supplies are so important, that we should carefully protect the integrities of our channels from subsidence so that they convey these waters in a "natural" manner. Conservative approaches would also ensure compliance with UT anti-degradation laws.

IMPLICATIONS FOR CRANDALL CK.:

If the above criteria are applied to the portion of Crandall Creek that I hiked today, I would say that the North Fork (the reach being discussed with Genwal) is perennial. There was a distinct channel, hydric species along the banks, no terrestrial vegetation in the streambed, persistent surface waters, and a flourishing macroinvertebrate community. Dale helped me sample some riffles and we found Hydropsychids, mayflies, planaria, one species of Dipteran larva, and some nematodes.

CUMULATIVE EFFECTS:

Crandall Creek is definitely receiving large amounts of sediment from sources above the reach that we looked at. I haven't visited the upper meadow portions of the drainage yet, but Mr. Gaynor indicated that he had observed extensive erosion due to livestock grazing. There was evidence of cattle in the lower portions but the vegetation that we observed was lush and the banks heavily armoured with rock and therefore less sensitive to mechanical disturbance. As we continue to discuss potential mining impacts to such drainages, we need to look carefully at other types of uses to ensure that the mitigations we are prescribing consistently protect stream channel morphology and aquatic habitat.

/s/Jill Dufour
Fisheries Biologist