State of Utah

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DIVISION OF WATER QUALITY
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MEMORANDUM

TO: Water Quality Standards Workgroup

FROM: Chris Bittner, Chair

DATE: October 16, 2017

SUBJECT: Proposed recreational and aquatic life uses to complete the designation of uses for Grove and Battle Creeks, Utah County, Utah

As previously discussed with the workgroup at the October, 2016 meeting, the Division of Water Quality (DWQ) is proposing to add the Class 1C use to Grove and Battle Creeks. At that time, site-specific information to recommend changes to the existing recreational and aquatic life uses was unavailable. These creeks are currently classified by default as Classes 2B and 3D and these reaches are antidegradation Category 1 waters (no new discharges allowed). Based on the expected low flows and shallow nature of the creeks, the Class 2B, infrequent primary and secondary contact recreation was expected to be appropriate. For aquatic life, Class 3A, cold water aquatic life was expected to be appropriate based on similarities with other creeks located on similar aspects, land uses and elevations. The Utah Division of Wildlife Resources manages these waters as a cutthroat trout fishery but has no site-specific information regarding the actual occurrence of trout.

On August 22, 2017, DWQ staff conducted a reconnaissance of these two creeks (Figure 1). The purpose of this reconnaissance was to confirm that Class 2B, infrequent primary and secondary contact recreation and Class 3A, cold water aquatic life are appropriate. In addition to visual observations, water chemistry was measured, portions of the creeks were shocked for fish and qualitative macroinvertebrate samples were collected. The reconnaissance survey was not intended to definitively characterize either the recreational or aquatic life uses.

The reconnaissance began at the base of Mount Timpanogos at the Battle Creek trailhead where the water is diverted for drinking water. The surveyors hiked approximately 2 ½ miles up the Battle Creek trail and then traversed north to the Grove Creek trail before hiking down to the Grove Creek trailhead (Figure 2). The creeks were accessed at favorable locations.

Both creeks are high-gradient and include several waterfalls and cascades (Figures 3-8). These high energy conditions result in unstable or scoured substrates. In much of Grove Creek, the substrate rocks are embedded because of a precipitate. Both creeks have a lack of connectivity

with downstream waters because of dewatering and the waterfalls would likely impede fish migrations.

For the water chemistry measurements, the Hydrolab malfunctioned in the field and only temperature could be measured. The measured temperatures were 9ºC in Battle Creek and ranged from 10º to 15º C in Grove Creek. Laboratory data was previously submitted by Pleasant Grove in support of their request.

The most favorable fish habitats in Battle Creek were shocked and no fish were observed. Battle Creek was previously shocked near the trailhead 2015 and no fish were observed. At several locations any stunned fish would have been difficult to see due to the fast and turbulent flow. No likely fish refuges were observed in Grove Creek, so it was not shocked.

Qualitative macroinvertebrate samples were collected from both creeks using a kick-net. Macroinvertebrates were sparse and dominated by mayflies, caddisflies, and stoneflies. In Grove Creek, small leaches (~10 mm) were also observed. The macroinvertebrates were all generally small (~5 mm).

Recommendations. The existing recreational use of Class 2B is appropriate because the shallow water depth and a lack of pools will not support frequent primary and secondary contact recreation.

The expectation that these creeks should be Class 3A, cold water aquatic life is confirmed by the macroinvertebrates observed and supported by the water temperatures measured. Class 3A also includes fish such as trout and although the current indications are that fish are not residents for the purposes of determining appropriate criteria, more rigorous surveys are needed to conclude that fish are not residents.

Redline of R317-2

TABLE

Dry Creek and tributaries (above Alpine), from U.S. National Forest boundary to headwaters	2B 3A	4
American Fork Creek and tributaries, from diversion at mouth of American Fork Canyon to headwaters	2B 3A	4
Spring Creek and tributaries, from Utah Lake near Lehi to headwaters	2B 3A	4
Lindon Hollow Creek and		

tributaries, from Utah Lake to headwaters		2B	3B	4
Grove Creek from Murdock Diversion to headwaters	1C	2B 3A		
Battle Creek from Murdock Diversion to Headwaters	1C	2B 3A		
Rock Canyon Creek and tributaries (East of Provo) from U.S. National Forest boundary to headwaters	1C	2B 3A		4

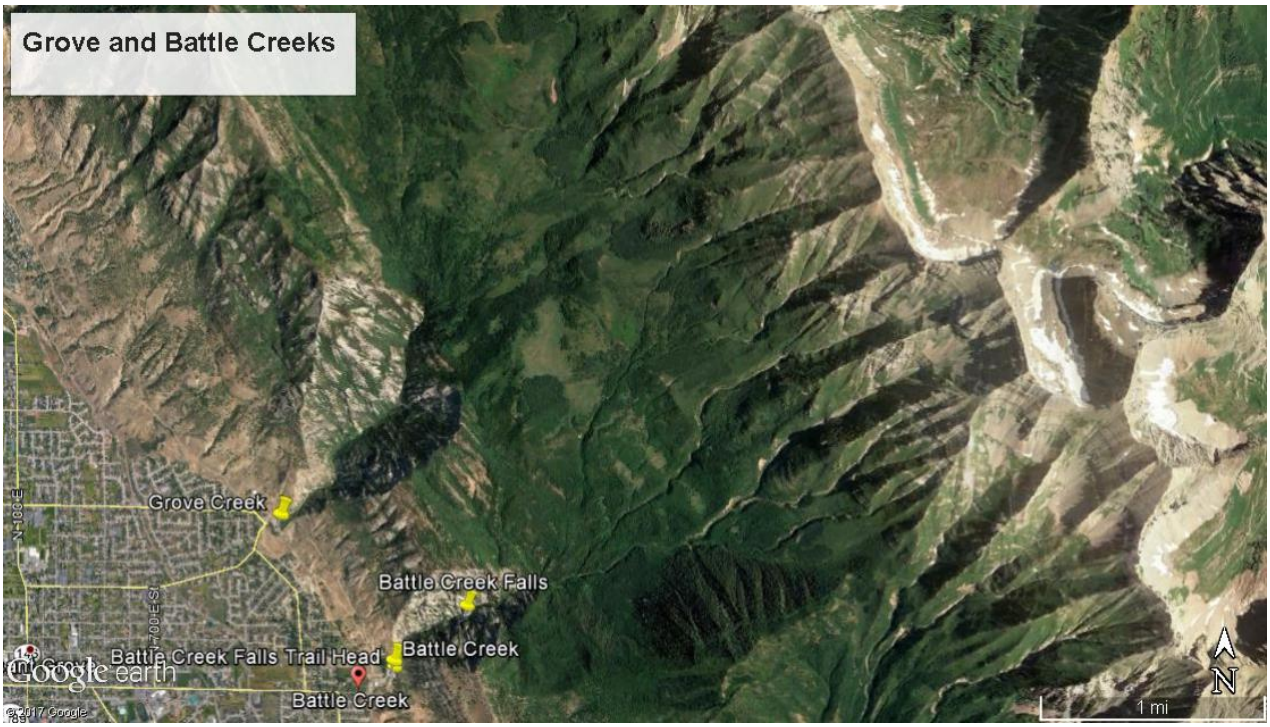

Figure 1. Battle and Grove Creeks, Utah County, Utah

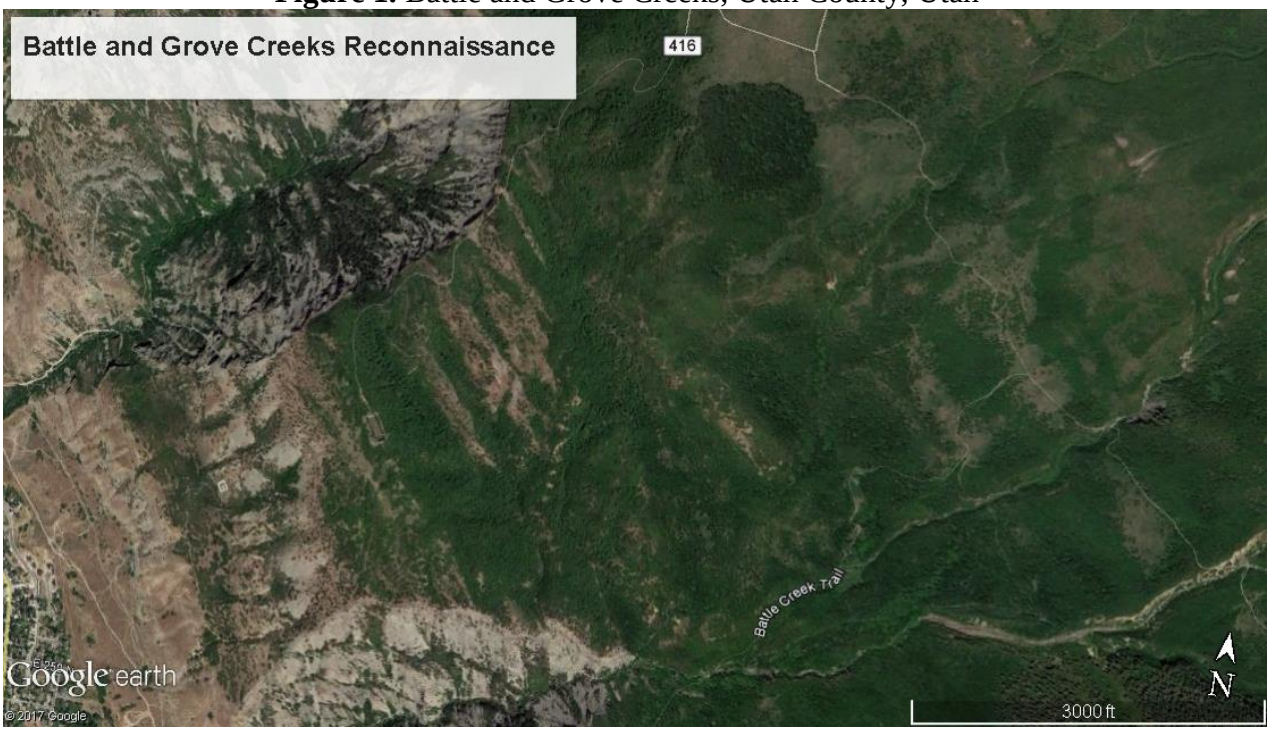

Figure 2. Battle and Grove Creeks Site Reconnaissance

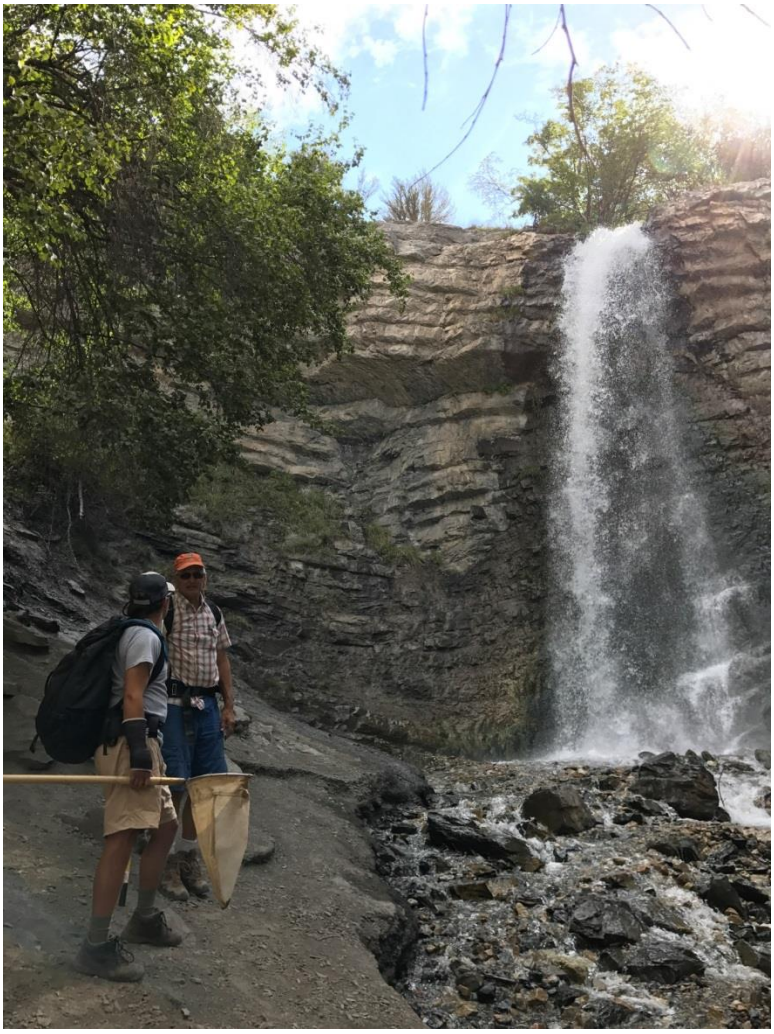

Figure 3. Battle Creek

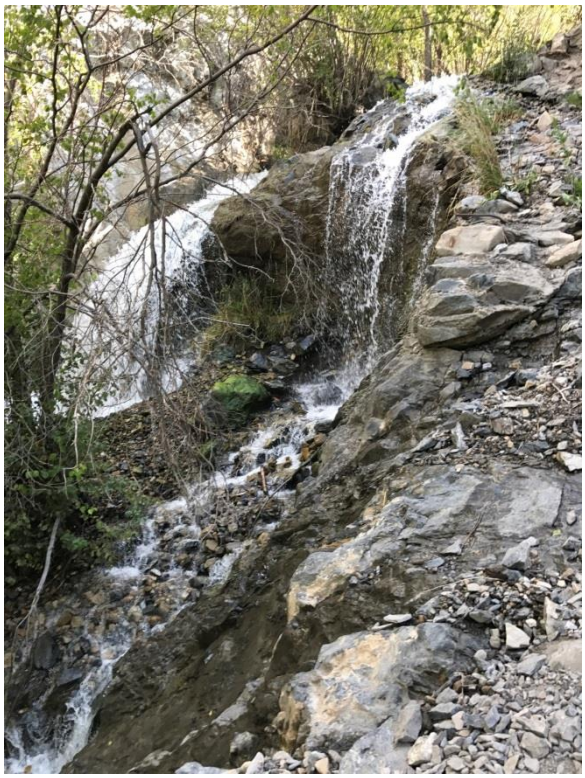

Figure 4. Battle Creek

Figure 5. Battle Creek

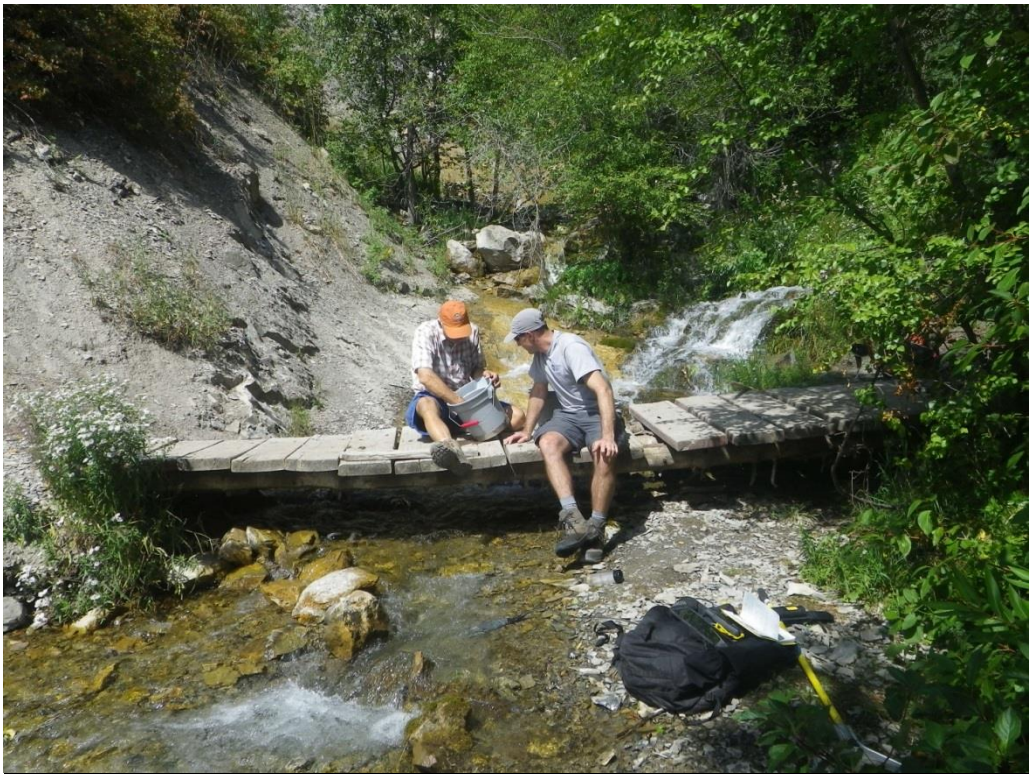

Figure 6. Grove Creek

Figure 7. Grove Creek

Figure 8. Grove Creek