Report on the stabilization of Lyons Creek road after the flood of 2008

Prepared for

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December 2009

(PPL-Montana MOTAC Project 779-09)

In 2008 central Montana received a number of unusually high rain events along the Rocky Mountain and Big Belt mountains which created flood conditions in the Dearborn River and Little Prickly Pear Creek. Flows in Little Prickly Pear (LPP) Creek reached 1310 cfs on May 26, which was the fourth highest flow on record for this site (Figure 1). There were several incidents of isolated flooding in the LPP subdrainage with reports of washed out roads and culverts in both Lyons Creek and Little Wolf Creek. The major damage sustained in Lyons Creek was located 1.35 miles upstream from the mouth. The eroded site was the base of a spur road in section 19 (DNRC) that provided access to a private residence in section 20 (Figure 2). The site measured 97.5 feet long by 2.5 feet (avg width) by 2.5 feet (avg depth) indicating approximately 22.5 yds^3 of road material had eroded into Lyons Creek (Figure 3, Figure 4).

After the flood of 2008, the Department of Natural Resources and Conservation (DNRC) required the landowner to abandon this section of road and create a new access entirely on private property. Montana Fish, Wildlife & Parks (MFWP) met on site with DNRC in May 2009 to discuss remediation. MFWP expressed the importance of Lyons Creek as a vital spawning stream for rainbow and brown trout from the Missouri River. Both parties agreed that the site was unstable in its present condition and that it should be stabilized to prevent any further erosion.

In June 2009, DNRC, MFWP and a private contractor met on site to develop a remediation plan and to estimate costs of the remediation. The parties agreed that the toe of the eroded slope should be armored to prevent further erosion, the eroded slope should be contoured to reduce the angle of repose, the slope should be covered with topsoil and reseeded, and the point bar formed opposite of the eroded site should be gently contoured toward the opposite bank to reduce channel constriction at this site. The estimated cost for equipment, materials and labor was $3,600.

In June 2009 MFWP applied to PPL-Montana MOTAC for $3000 of ‘interim’ funding for this project. MFWP also petitioned the Missouri River Flyfishers for financial assistance. DNRC pledged $2000 in-kind for a Class III level intensity inventory of cultural and paleontologic resources, and MFWP pledged to administer the construction, provide grass seed and maintain the site to ensure re-vegetation was successful.

DNRC completed the cultural resources inventory on June 18 and it was forwarded to PPL-Montana. In July, PPL-Montana MOTAC awarded MFWP $3000 (MOTAC 779-09) for the project and the Missouri River Flyfishers provided $800. On July 2, MFWP issued a 124 permit to DNRC to begin the construction process (DNRC-11-09) as well as a 318 permit to temporarily suspend regulatory language of the Montana Clean Water Act as it relates to surface water quality standards during construction projects.

In September construction began and followed the plan according to the site visit and the conditions of the 124 and 318 permit. Construction started on August 18 and was completed by August 19 (Figure 5). On August 27, MFWP finished raking the topsoil, seeded the site with native grasses and applied straw for erosion control (Figure 6). MFWP used a trash pump on four occasions to apply water to the newly seeded area. By September, 17, rooted grass was firmly established at the project site (Figure 7, Figure 8). The silt fence was removed and the project was considered complete on September 24. Monitoring will continue in 2010.

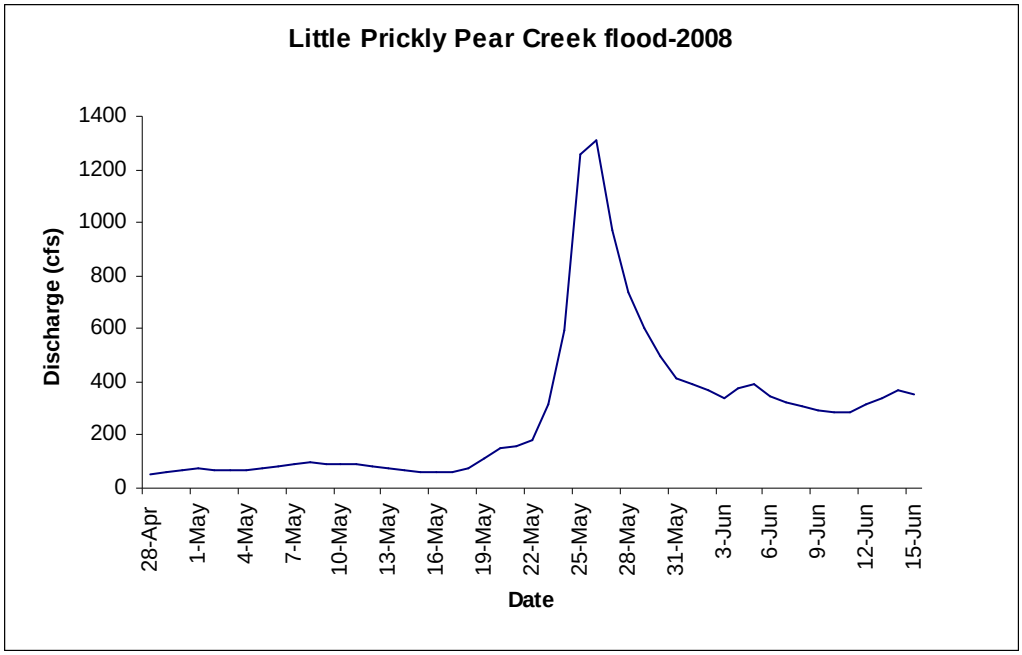

Figure 1. Discharge of Little Prickly Pear Creek April-June 2008.

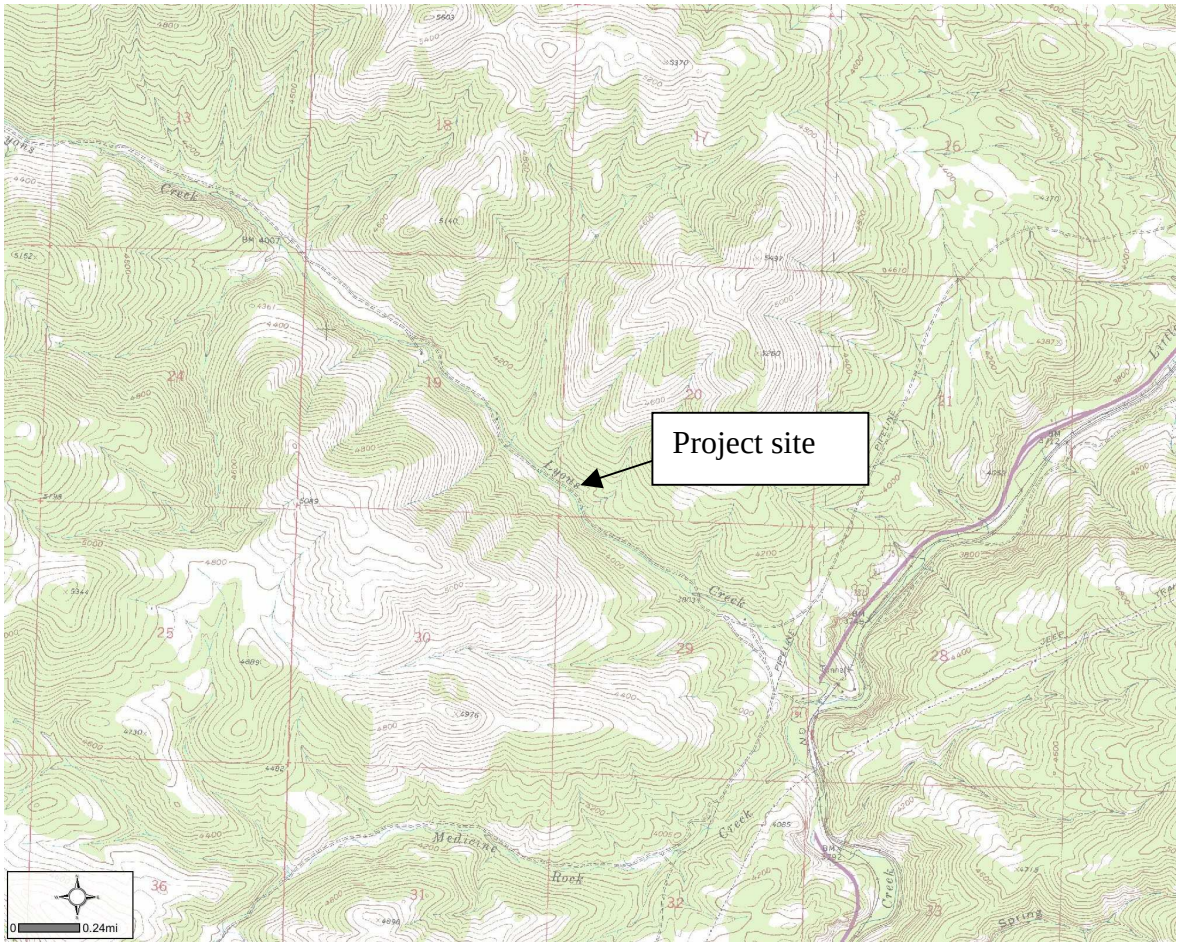

Figure 2. Area of road wash-out on Lyons Creek.

Figure 3. Lyons Creek erosion site looking downstream. June 1, 2009.

Figure 4. Lyons Creek erosion site looking upstream. June 1, 2009.

Figure 5. Construction phase of Lyons Creek bank stabilization project. Aug 19, 2009.

Figure 6. Lyons Creek site with topsoil, seed, straw and trash pump for watering.

Figure 7. Lyons Creek site after four watering cycles. Grass is 6 inches high, Sept 17, 2009.

Figure 8. Lyons Creek project site with rooted grass established. September 17, 2009.