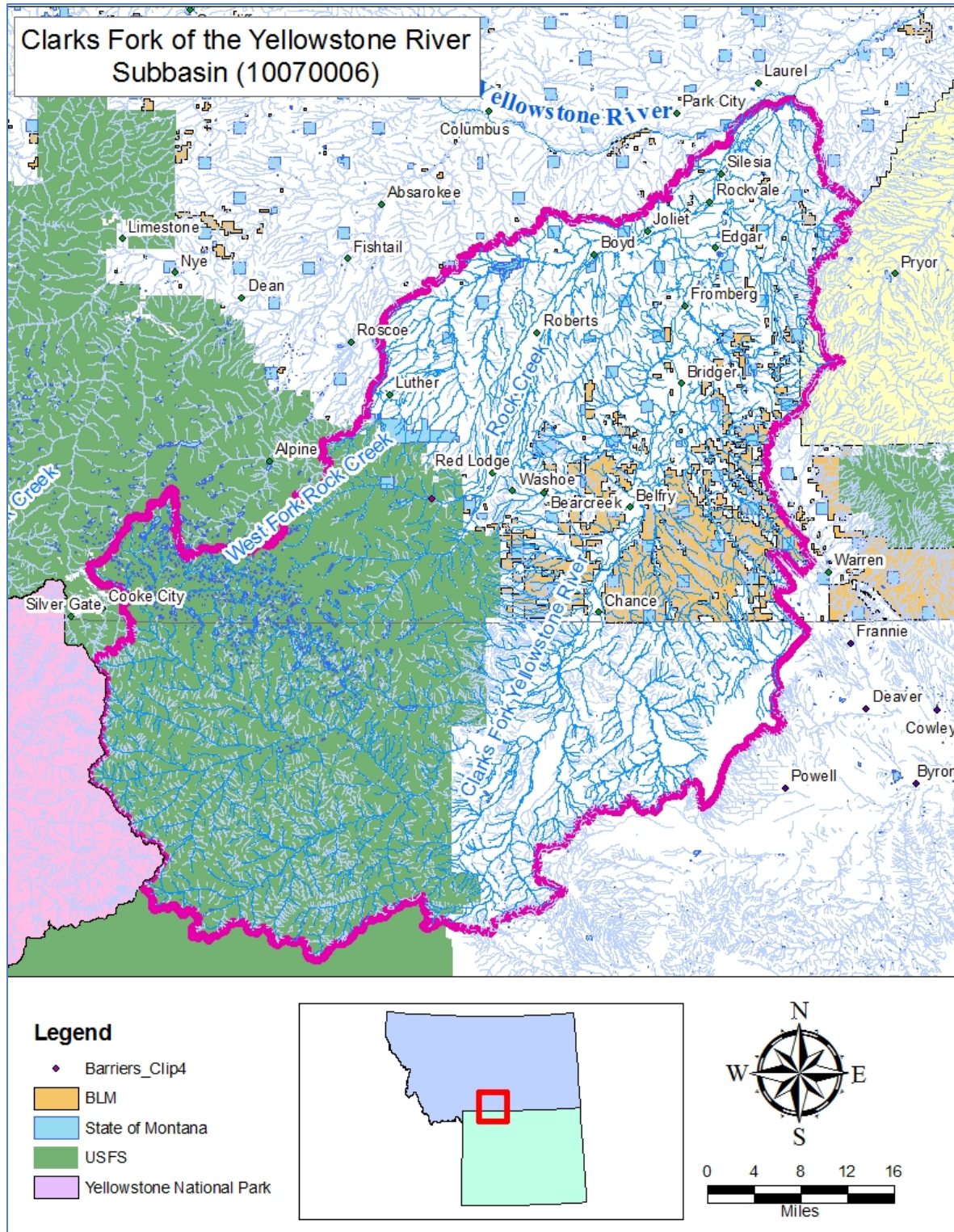


habitat component involved placement of spawning gravels in the lake outlet. In summer 2009, approximately 1,000 2-inch long Yellowstone cutthroat trout and 100 14-inch-long Yellowstone cutthroat trout were stocked into the lake. Stocking will occur for several years with the objective of establishing a self-sustaining Yellowstone cutthroat trout population. Survival, growth and spawning/reproduction of these fish will continue to be monitored in the future.

#### **6.6 Clarks Fork of the Yellowstone Subbasin (HUC 10070006)**

The Clarks Fork of the Yellowstone River Subbasin (Figure 6-38) begins in the high mountain lakes of the Absaroka-Beartooth Wilderness Area near Cooke City, Montana. The Clarks Fork drainage has more mountain lakes (424) than any other drainage in the Beartooth Mountains, and these lakes support a wide variety of trout species, including brook trout, rainbow trout, Yellowstone cutthroat trout, golden trout, lake trout and various hybrid trout. Although this large variety offers significant angling opportunity, it makes Yellowstone cutthroat trout restoration a difficult, if not impossible task in much of the drainage. No significant headwater areas in the Clarks Fork drainage present great Yellowstone cutthroat trout restoration opportunity due to large numbers of nonnative trout that would have to be removed in headwater lakes and streams. Fisher Creek, near Cooke City, has adequate water and no headwater lakes, but does not support fish due to heavy metal contamination. Restoration work here may improve water quality, but it is more likely that background metal levels would be too high to support fish even with remediation of mining-related sources.



**Figure 6-38: Clarks Fork of the Yellowstone River Subbasin**

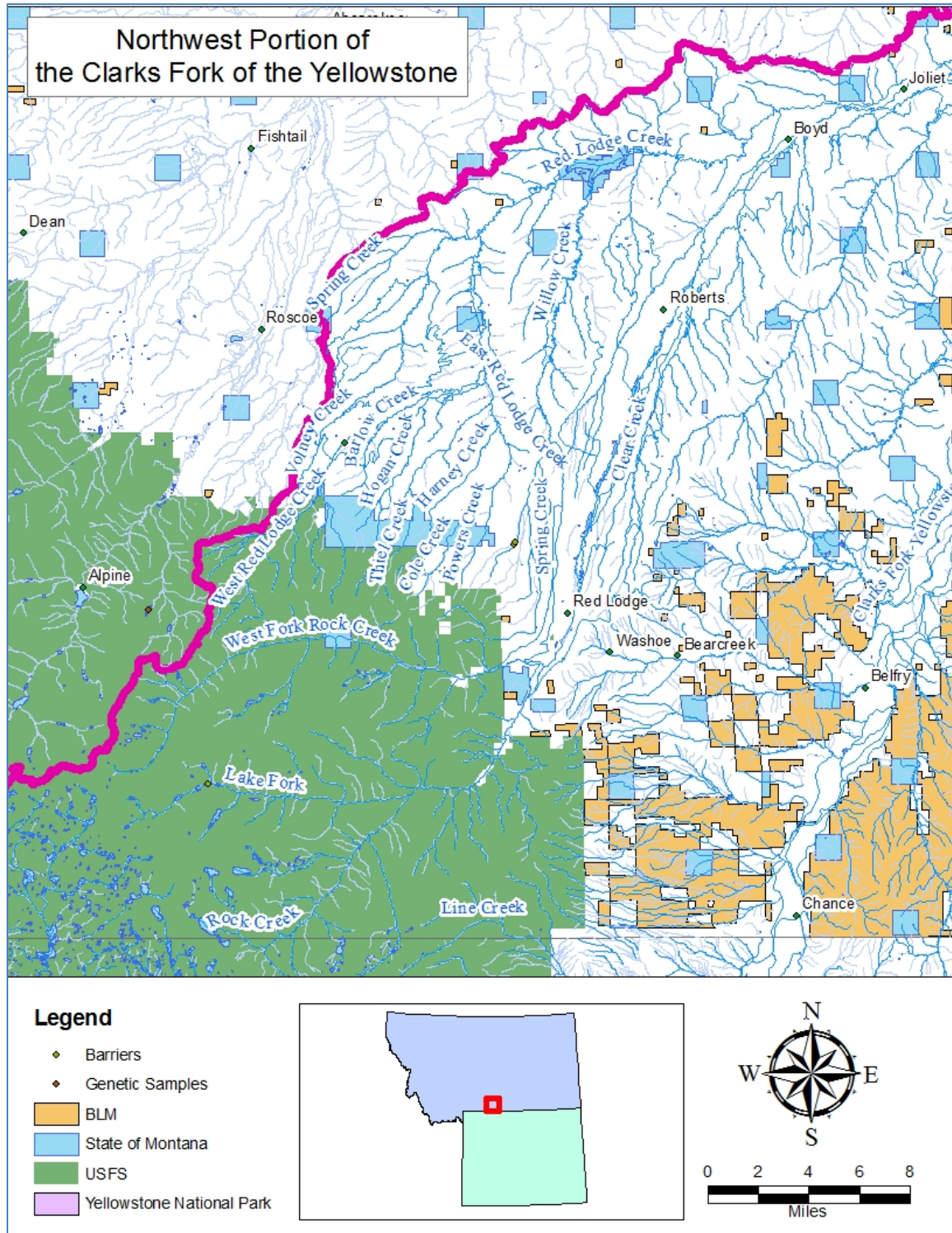
Downstream from the headwaters, the Clarks Fork exits Montana at an elevation of 7,600 feet and flows through the state of Wyoming. After many miles of steep water and deep canyons, the

river reenters Montana in desert country at just under 4,000 feet elevation. From where it reenters Montana to its confluence with the Yellowstone River, the Clarks Fork flows mainly through agricultural land and transitions from a cold-water rainbow and brown trout fishery (from the Wyoming border downstream to the town of Bridger) to a warm-water river (downstream from Bridger). This portion of river experiences substantial dewatering during the summer irrigation season. Yellowstone cutthroat trout restoration potential is largely nonexistent in the main stem of the Clarks Fork, and because it flows mainly through high desert country throughout much of its length, few tributaries with adequate water to support trout enter the river. Nonetheless, several tributaries offer some potential or possibility for Yellowstone cutthroat trout work. These include Line Creek, Bluewater Creek, and several tributaries to Rock Creek.

### **6.6.1 Line Creek**

Line Creek (Figure 6-39) enters the Clarks Fork in Wyoming, but about 5 miles of the creek and its tributaries are in Montana. The North Fork of the creek begins at Line Lake, located just within Montana near the Wyoming border. An intermittent stream flows out of the lake to form the headwaters. The South Fork (or main fork) of Line Creek begins approximately 2 miles south of Line Lake, in Wyoming. The confluence of the two tributaries is in Montana, 4 miles east of Line Lake, and just north of the Montana-Wyoming border. Brook trout are present in the lower reaches of the creek in Wyoming, and Yellowstone cutthroat trout were stocked in Wyoming in 2009. Portions of Line Creek in Montana were surveyed in 2002, and no fish were found. Stream habitat surveys identified high quality fish habitat that would likely support a healthy Yellowstone cutthroat trout population in the creek. An apparent barrier to the upstream movement of fish between the Wyoming and Montana reaches of Line Creek exists, keeping fish from colonizing the headwaters.





**Figure 6-39: Northwest portion of the Clarks Fork of the Yellowstone Subbasin with potential for Yellowstone cutthroat trout conservation.**

The Lake Fork of Rock Creek (Figure 6-39) flows over 12 miles and joins Rock Creek southwest of Red Lodge. The drainage contains brook trout, rainbow trout, and nonhybridized Yellowstone

cutthroat trout. Numerous lakes in the drainage provide the source for the fish present in the creek. As Lake Fork of Rock Creek supports a nonhybridized population of Yellowstone cutthroat trout, securing these fish is a conservation priority.

### **6.6.2 Red Lodge Creek**

Red Lodge Creek (Figure 6-39) begins where numerous tributaries draining the north face of the Beartooth Mountains join in the open meadow country between Red Lodge and Absarokee. The relatively slow, meandering creek flows into Cooney Reservoir, an irrigation reservoir that also serves as a popular rainbow trout and walleye fishery. Cooney Reservoir delivers water to irrigators in Red Lodge Creek and these augmented flows benefit the fishery. Brown trout and rainbow trout dominate the fish population in lower Red Lodge Creek, and restoration of Yellowstone cutthroat trout is likely infeasible. Tributaries to the 30-mile-long Red Lodge Creek, which joins Rock Creek north of Boyd, likely have the greatest potential for Yellowstone cutthroat trout restoration in the Clarks Fork drainage.

### **6.6.3 West Fork Rock Creek**

The West Fork of Rock Creek (Figure 6-39) flows over 20 miles and joins Rock Creek just west of Red Lodge. Numerous lakes in the West Fork drainage contain Yellowstone cutthroat trout, but many contain brook trout as well, reducing the possibility for Yellowstone cutthroat trout restoration in the drainage. The upper reaches of the West Fork would likely provide quality Yellowstone cutthroat trout habitat if brook trout were removed from all of the headwater lakes and the creek.

In 2003, FWP prepared an environmental assessment to evaluate the potential consequences of stocking Yellowstone cutthroat trout in the fishless waters of Line Creek with the intent to establish a self-sustaining population. The drainage is in a Research Natural Area administered by the CNF, and the CNF opposed the project because it conflicted with the goals and objectives of the Research Natural Area. The project did not proceed. Some potential exists to revisit the discussion of Yellowstone cutthroat trout introduction with the CNF. In addition, Yellowstone cutthroat trout have possibly moved downstream into the creek from Line Lake, which has supported a stocked population of Yellowstone cutthroat trout since 1958. The outlet of the lake and creek should be surveyed more intensively to determine whether Yellowstone cutthroat trout are present here.

### **6.6.4 East Red Lodge Creek**

East Red Lodge Creek (Figure 6-39) begins at the junction of Cole and Powers creeks, and flows exclusively through private land. Species presumed present include brook, brown, and rainbow trout. Because of its position in the drainage, Yellowstone cutthroat trout restoration and nonnative fish removal would have to be completed in all of its tributaries in order to successfully reestablish Yellowstone cutthroat trout into East Red Lodge Creek.

### **6.6.5 Clear Creek**

Clear Creek (Figure 6-39) is a 15-mile long tributary that enters Rock Creek just north of Roberts. The headwaters of the creek appear to be a series of springs that emerge from the bench above Red Lodge. Brook, brown and rainbow trout are present in this spring-fed creek. Some opportunity to restore Yellowstone cutthroat trout may exist here, but the interbasin transfer of irrigation water that brings water from Rock Creek to Clear Creek diminishes this potential. In addition, this transfer of water likely brings fish with it. Opportunities for Yellowstone cutthroat trout restoration in the headwaters of Clear Creek upstream from any source of Rock Creek water should be investigated.

### **6.6.6 Spring Creek**

Spring Creek (Figure 6-39) is a small tributary to Willow Creek that flows through agricultural land just west of Red Lodge. No survey data are available for Spring Creek, but brook trout and brown trout are likely present (MFISH database). The creek begins in a series of ditches and interacts extensively with an irrigation system along its length. Connectivity with this complex system of irrigation ditches provides considerable opportunity for transfer of fish from other streams, and limits the potential for establishing a secure population of Yellowstone cutthroat trout.

### **6.6.7 Cole and Powers Creeks**

Cole Creek and Powers Creek (Figure 6-39) originate on the Beartooth Mountain face and join together just below their crossings of Montana Highway 78. Both are small tributaries that contain populations of brook trout. Landowner cooperation and further sampling are necessary to determine the potential for Yellowstone cutthroat trout restoration. A potentially feasible restoration strategy may be to build a fish passage barrier downstream of where these two creeks join, on East Red Lodge Creek, chemically treat the brook trout populations, and reestablish Yellowstone cutthroat trout.

### **6.6.8 Harney Creek**

Harney Creek (Figure 6-39) is a small tributary that enters East Red Lodge Creek just upstream of Thiel Creek. Harney supports brook trout, and this small stream may have the potential to support Yellowstone cutthroat trout. A future large-scale project involving the reclamation of the East Red Lodge Creek drainage, including Thiel, Cole, Powers and Harney creeks would be much more likely of successfully establishing a healthy Yellowstone cutthroat trout population than establishing a population in Harney Creek alone.

### **6.6.9 Thiel Creek**

Thiel Creek (Figure 6-39) enters East Red Lodge Creek a couple of miles upstream of its confluence with West Red Lodge Creek. Thiel Creek has adequate flow to support fish throughout much of its length, and currently supports brook trout.

Thiel Creek was the subject of an attempt to replicate a population of Yellowstone cutthroat trout from Lower Deer Creek (see 6.2.43 Lower Deer Creek). Wildfire and recent hybridization posed immediate threats to the Yellowstone cutthroat trout population in Lower Deer Creek. These efforts sought to establish a brood stock of Lower Deer Creek fish in the event that catastrophic flows or continued hybridization eliminated this nonhybridized population. In 2006, Yellowstone cutthroat trout from Lower Deer Creek were transplanted into Thiel Creek. To prepare the stream for this transfer, FWP installed a fish passage barrier to prevent upstream movement of brook trout, and mechanically removed brook trout from above the barrier. These efforts were unsuccessful. The complexity of the habitat made mechanical removal of brook trout inefficient, and they quickly rebounded. In addition, most of the Yellowstone cutthroat trout, especially the adults, appeared to have left the creek. Although some of the fish stocked as juveniles tended to stay, their long-term survival in Thiel Creek is unlikely in the presence of brook trout.

The fish passage barrier still exists in Thiel Creek, supporting the opportunity to remove brook trout and establish a Yellowstone cutthroat trout population. Because of the complex habitat and many spring-like areas, removal of brook trout would require the use of piscicide. Future work should establish the upstream extent of fish distribution in Thiel Creek and quantify all spring seeps, irrigation water transfers and other features that would affect the feasibility of restoring Yellowstone cutthroat trout to Thiel Creek. As this stream flows through private lands, landowner involvement and collaboration would be essential in any future efforts. Landowners along Thiel Creek were supportive of the past efforts to restore Yellowstone cutthroat trout to this stream.

#### **6.6.10 Hogan Creek**

Hogan Creek (Figure 6-39) is another small tributary that enters West Red Lodge Creek just downstream of Barlow Creek. Hogan Creek contains a population of brook trout. This stream has an unknown potential to support Yellowstone cutthroat trout conservation efforts. As it flows entirely through privately owned lands, baseline investigations and eventual implementation of conservation project would require collaboration with landowners.

#### **6.6.11 Barlow Creek**

Barlow Creek (Figure 6-39) enters West Red Lodge Creek in the foothills below the town of Luther. Although believed to be fishless, this stream appears to have adequate water to support fish. Access to survey and evaluate the potential for Yellowstone cutthroat trout restoration in Barlow Creek would require cooperation of private landowners.

#### **6.6.12 West Red Lodge Creek**

West Red Lodge Creek (Figure 6-39) begins on the face of the Beartooth Mountains and flows over 18 miles to where it joins Red Lodge Creek in the foothills. The West Red Lodge Creek drainage contains one of the few remaining populations of indigenous Yellowstone cutthroat trout in the Clarks Fork Yellowstone River system.

In the main stem of West Red Lodge Creek, brown trout and brook trout are present in the upper reaches and brown trout dominate the lower reaches. As of the most recent sampling, no Yellowstone cutthroat trout have been found here. Upstream from the wilderness boundary, this stream may not support fish.

West Red Lodge Creek contains two major tributaries, the East Fork of West Red Lodge Creek and the Burnt Fork, a tributary to the East Fork. The 4.5 mile long East Fork, which joins the West Fork just below the CNF boundary, contains a population of Yellowstone cutthroat trout and brook trout. These Yellowstone cutthroat trout are likely to be indigenous and nonhybridized. The Burnt Fork contains a population of brook trout. Further evaluation of the West Red Lodge Creek drainage is necessary to determine Yellowstone cutthroat trout restoration opportunities and the steps necessary to recover the Yellowstone cutthroat trout population here.

#### **6.6.13 Volney Creek**

Volney Creek (Figure 6-39) originates in the foothills of the Beartooth Mountains just downstream of the CNF boundary. This relatively small creek flows 16.5 miles before entering Red Lodge Creek. The one major tributary to Volney Creek is West Fork Volney Creek, a small 5 mile long stream. Its relatively low elevation headwater area and corresponding warm water results in dominance of native prairie fishes, although the occasional brown trout and brook trout are also present. Although Volney Creek likely has limited potential to support Yellowstone cutthroat trout, future survey efforts should evaluate this assumption.

#### **6.6.14 Willow Creek**

Willow Creek (Figure 6-39) is a 32-mile-long tributary to Cooney Reservoir in the Red Lodge Creek drainage. Brown trout and native prairie fishes occur in its lower reaches, and brook trout are present in the headwaters. The fish-bearing tributaries to Willow Creek are concentrated near the headwaters and include Spring Creek, Brushy Fork, and several unnamed tributaries.

Some potential for Yellowstone cutthroat trout restoration exists in the headwaters of Willow Creek but the opportunities are limited. Where it descends the Beartooth Mountain face on CNF land, the creek is small and steep. A population of brook trout exists here, but is present in low densities. Proceeding downstream, extensive subdivision and complex habitat would make nonnative fish removal and Yellowstone cutthroat trout restoration here a challenge. As the current fish and habitat information available from Willow Creek is limited, further research should seek to identify Yellowstone cutthroat trout restoration potential.

#### **6.6.15 Brush Fork Willow Creek**

The Brush Fork of Willow Creek (unmapped) contains one of the few remaining indigenous Yellowstone cutthroat trout populations in the Clarks Fork of the Yellowstone River drainage. This population is sympatric with brook trout, which puts it at high risk for extirpation. An effort began in 2005 to remove brook trout from the creek using electrofishing in order to provide some



relief to the Yellowstone cutthroat trout population. Yellowstone cutthroat trout have rebounded, and in several years, the majority of the fish in the reach being electrofished were Yellowstone cutthroat trout. Unless complete removal of brook trout takes place, however, Yellowstone cutthroat trout will continue to be threatened and will decline as brook trout numbers increase in the absence of these removal efforts. Chemical treatment may not be successful in the Brushy Fork drainage because of the extensive beaver activity and spring-like areas. The goal is to continue the brook trout removal effort until a suitable site in the Willow Creek or Red Lodge Creek drainage can be prepared to transfer these fish into and establish a population that does not face the threat to extinction posed by brook trout.

#### **6.6.16 Rock Creek**

Rock Creek (Figure 6-39) flows over 60 miles, beginning high in the Beartooth Mountains, and entering the Clarks Fork of the Yellowstone between the towns of Edgar and Silesia. In contrast to the Clarks Fork valley, which is one of the drier areas in the state, the Rock Creek drainage receives substantially more precipitation and has many small trout-bearing tributaries. The main stem of Rock Creek contains a fish population dominated by brown trout and mountain whitefish in its lower reaches, and rainbow and brook trout in its headwaters. During the summer irrigation season, dewatering can be severe in the stream below the CNF boundary. Cooney Reservoir mitigates some of this dewatering by delivering irrigation water to lower Rock Creek through Red Lodge Creek.

The Rock Creek drainage contains 91 mountain lakes (26 are in Wyoming), 47 of which contain fish. Fish species in the Rock Creek mountain lakes include brook trout (29 lakes), Yellowstone cutthroat trout (25 lakes) and rainbow trout (2 lakes). The presence of brook trout in so many of these lakes greatly diminishes the potential for Yellowstone cutthroat trout restoration projects, which would have to include removal of brook trout from any source water that could repopulate the reclaimed area.

The strong presence of nonnative trout species in the main Rock Creek drainage reduces the potential for Yellowstone cutthroat trout restoration. Nonetheless, some potential for reestablishment exists in some of the tributaries to Rock Creek. The major fish-bearing tributaries to Rock Creek are Lake Fork Rock Creek, West Fork Rock Creek, Clear Creek, and Red Lodge Creek

Red Lodge Creek (Figure 6-39) begins where numerous tributaries draining the north face of the Beartooth Mountains join in the open meadow country between Red Lodge and Absarokee. The relatively slow, meandering creek flows into Cooney Reservoir, an irrigation reservoir that also serves as a popular rainbow trout and walleye fishery. Cooney Reservoir delivers water to irrigators in Red Lodge Creek and these augmented flows benefit the fishery. Brown trout and rainbow trout dominate the fish population in lower Red Lodge Creek, and restoration of Yellowstone cutthroat trout is likely not feasible. Tributaries to the 30-mile-long Red Lodge

Creek, which joins Rock Creek north of Boyd, likely have the greatest potential for Yellowstone cutthroat trout restoration in the Clarks Fork drainage.

#### **6.6.17 Bluewater Creek**

Bluewater Creek (Figure 6-39) enters the Clarks Fork of the Yellowstone near the town of Fromberg. The creek originates as a series of large springs, and provides cool, clear, oxygenated water in the middle of a desert area. FWP operates the Bluewater Springs Trout Hatchery, which is located on the creek about 10 stream miles upstream from the mouth of the creek. Bluewater Creek contains a healthy population of brown trout, and some rainbow trout. The hatchery primarily raises rainbow trout. Upstream from the hatchery, there may be some potential for Yellowstone cutthroat trout restoration. Future work should investigate the potential to establish a Yellowstone cutthroat trout population here.

#### **6.7 Upper Yellowstone-Pompey's Pillar Subbasin (HUC 10070007)**

The Upper Yellowstone-Pompey's Pillar Subbasin (Figure 6-40) encompasses the portion of the Yellowstone River drainage downstream of Billings to downstream of Custer. Landownership is mostly private, with state lands and BLM lands interspersed throughout the drainage. Land uses are agricultural, and include livestock production and irrigated crops.