

Environmental Consequences

Fisheries

Proposed Action

The Gibson Jack Creek watershed will be treated in years 1,2,4 and 5 of the Proposed Action. Year one will treat 168 acres: 65 acres of prescribed fire and 131 acres of mechanical and hand thinning. Year two will treat 443 acres with prescribed fire. Year four will treat 252 acres: 91 acres of clearing and 161 acres of prescribed fire. Year 5 will treat 43 acres by clearing. The clearing, hand thinning and machine thinning will produce little or no measurable increase in sediment loading to Gibson Jack Creek (see water quality section). The small number of acres treated by prescribed fire in year one (65 acres), year two (443 acres) and year four (161 acres) coupled with the small percentage of the treatment within the acreages (30-40%) will produce only a slight increase in sediment loading (0.5 to 4 tons per acre following treatment compared to 0.5 tons per acre pre-treatment) to Gibson Jack Creek.

The Mink Creek watershed will be treated in years 1,3,4 and 5. Year one will treat 213 acres: 26 acres of prescribed fire and 187 acres of machine and hand thinning. Year three will treat 658 acres: 615 acres of hand thinning and 43 acres of prescribed fire. Year four will treat only 28 acres with hand thinning. And year five will treat 419 acres with machine and hand thinning. In the prescribed fire treatment areas, there will be an increase in sediment loading from around 0.5 tons per acre pre-treatment to approximately 0.5 to 6 tons per acre post-treatment (see water quality section). However, the small number of acres treated in any given year by fire (26-43 acres) coupled with the moderate percentage of the treatment within the acreage (30-50%) will produce only a negligible impact on the sediment loading in Mink Creek watershed. Sediment analysis (see water quality section) indicates that the machine and hand thinning prescribed for the Mink Creek watershed will create little or no increase in sediment loading.

To reduce soil disturbance, machine thinning will only occur on snow pack, frozen ground or dry ground and only on slopes less than 40 percent. Prescribed fires will be cool, spring burns which will not kill the roots of perennial grasses and forbs. Only 30-50% of the prescribed fire treatment areas will be burned. Both Gibson Jack and Mink Creeks will have a 200 foot buffer on both banks where only minimal hand thinning will be allowed for fuels reduction and for ecological reasons (i.e. removal of junipers and young Douglas Fir and the rejuvenation of decadent aspen and maple stands). Ground disturbance will be minimal under the proposed fuel reduction prescriptions for both the Gibson Jack and Mink Creek watersheds. There will be a small, short term spike in sediment loading to both watersheds under the Proposed Action depending on the size and duration of precipitation events following the treatments. The discharge on both streams during spring run off will be able to handle the increased sediment load without causing excessive deposition in the stream channel. Thus, there will be only minimal, short term impacts to water quality and to the quantity and quality of available salmonid habitat. Cumulative impacts on water quality and salmonid habitat following five years of treatment will also be very minimal as ground cover will recover within 1-2 months

following treatment. There may be a slight increase in peak flows and a slight reduction in the duration of spring run off in both watersheds after five years of treatment as the result of increased open areas of 1179 acres and 1318 acres in the Gibson Jack and Mink Creek watersheds respectively. The open areas will speed up snow melt and increase peak flows slightly in both streams. This will have minimal impacts on water quality and the quality and quantity of salmonid habitat. The minimal hand thinning allowed in the riparian zones will not significantly reduce the canopy cover or the water quality buffering ability of Gibson Jack or Mink Creek. Therefore, there will be little or no impact on the water temperature regime or water quality of either stream. Overall, the fuels reduction prescriptions of the Proposed Action will have only minimal impacts on the Yellowstone cutthroat trout fishery in Gibson Jack or Mink Creeks.

No Action Alternative

Under the No Action Alternative, a wild fire would burn across both Gibson Jack and Mink Creeks. It would be a hot, high intensity fire: 60% of the burn would be high intensity; 30% would be moderate intensity and 10% would be low intensity. Under this scenario, sediment loading to both streams would drastically increase from the current level of around 0.5 tons/acre to a range of 1-37 tons/acre averaging around 18 tons/acre (see water quality section). The riparian zone would most likely be impacted by a wild fire of this intensity reducing its ability to buffer the impacts from sediment loads of this magnitude. Neither Gibson Jack Creek or Mink Creek are capable of transporting this type of catastrophic increase in sediment load. Excessive deposition will occur. Pools and runs would fill with sediment greatly reducing the quantity and quality of available habitat for salmonids. Channel braiding would increase, further reducing habitat availability for salmonids. Riffle cobbles would become embedded with silt reducing the available habitat for macroinvertebrates (fish food), sculpins (trout prey base) and algae (primary productivity). Spawning gravels would become heavily laden with fine sediment smothering eggs or greatly reducing hatching success, greatly reducing the reproductive success of resident salmonids. Turbidity would also increase, impacting the respiratory function of both salmonids and macroinvertebrates. Reduced canopy cover would increase water temperature, stressing cold water salmonids. Reduced riparian habitat condition will reduce streambank stability, increasing bank failure and sediment loading.

Overall riparian and aquatic health as well as aquatic organism productivity would be greatly impacted under the No Action Alternative. The quantity and quality of Yellowstone cutthroat trout habitat would be greatly reduced with a corresponding substantial reduction in overall Yellowstone cutthroat trout productivity.

Cumulative Impacts

Fisheries

Lower Gibson Jack Creek suffers from reduced flows in the late summer as the result of a City of Pocatello diversion and does not appear to have a viable fishery. Most of the Upper Gibson Jack watershed, excluding the South Fork, falls within a 2200 acre Research Natural Area. No grazing is permitted in the watershed. In 2001, 100 acres within the Gibson Jack watershed was burned as part of a fuels reduction project. This area has experienced good regrowth of grasses and forbs and is currently not a significant source of sediment loading to the watershed. Recreational use in the watershed is moderate and mostly involves day use hiking activities. There is a loop trail on both forks which parallels the streams and periodically crosses the streams but impacts appear to be minimal. No motorized use is allowed. The watershed is relatively pristine. The small, short term increase in sediment loading from the treatment areas annually and cumulatively over the five year treatment period will add only a very small increment to the cumulative impacts on the water quality and Yellowstone cutthroat trout habitat in Gibson Jack Creek.

Excessive bank erosion and bank failure from land use activities are fairly common in the Mink Creek watershed. Livestock grazing and recreational activities (motorized and non-motorized) have significantly impacted the watershed in many places, especially in the lower reaches of the main stem. Sediment deposition is a major problem. In 2001 and 2002, two 100 acre prescribed fires were accomplished in the Mink Creek watershed. Grasses, forbs and mountain brush are now regenerating well within these treatments and they are currently not a significant source of sediment loading to the watershed. Mink Creek has several recreational trails, campsites and interpretive centers associated with it but their impacts on the stream system appear to be low overall but moderate in a few isolated reaches. Roads and/or trails parallel most of Mink Creek and its major tributaries. Residential development is most certainly having a small unquantified impact on the water quality and salmonid habitat in lower Mink Creek. The two mile road up Kenny Creek in the Mink Creek watershed is currently being cleared to create a fuels break in dense vegetation. This consists of limbing and thinning juniper and mountain brush that occur along the road and running it through a chipper. This project will total approximately 100 acres. Ground disturbance is minimal and the chips will add to the ground over reducing any potential for erosion and sediment loading to the watershed. There is a small Research Natural Area (640 acres) in the headwaters of the West Fork. Approximately 200 meters above its confluence with Mink Creek, the West Fork enters a diversion structure operated by the City of Pocatello. The West Fork exhibits good riparian and channel conditions and supplies good water quality to the Project Area downstream. Both the South and East Forks exhibit only fair riparian health and channel conditions primarily as the result of livestock grazing and recreational activities. Sediment deposition is a serious problem with both tributaries and it is having a negative impact on the water quality and the quantity and quality of salmonid habitat downstream on main stem Mink Creek in the Project Area. However, the small acreage treated in any given year, especially by prescribed fire, will add only a very minimal sediment loading increment to the cumulative impacts on water quality in Mink Creek. There will be a negligible incremental increase to the cumulative impacts to the Yellowstone cutthroat trout fishery in Mink Creek as a result of implementation of the Proposed Action.

References

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