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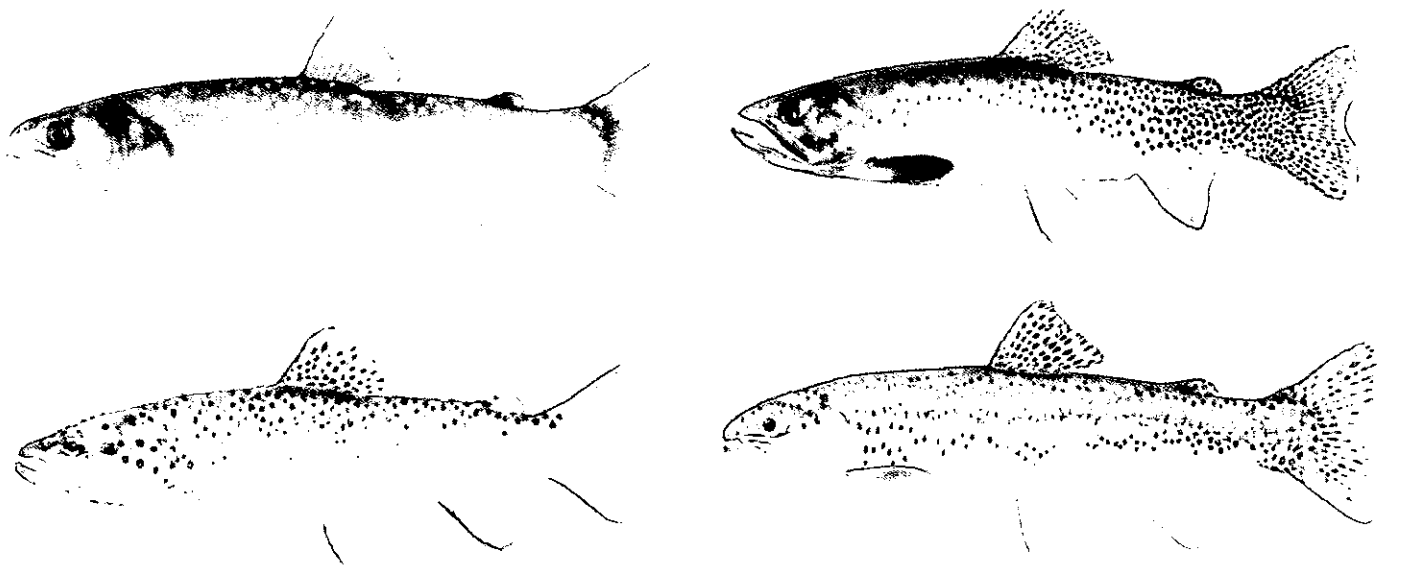
A Hierarchical Strategy for Prioritizing the Restoration of 83 Impaired Tributaries of the Big Blackfoot River



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Submitted to:

The Blackfoot Challenge
and
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EXECUTIVE SUMMARY

Over the past decade, the Blackfoot River Restoration Initiative has expanded from simple riparian restoration projects to a watershed-level conservation program. Despite increased demand, scope and complexity of the program, the initiative continues to operate with limited funds and chronic shortages of field personnel. As a result, the need to consolidate and direct restoration resources (effort and money) to priority streams continues to increase. In order to prioritize restoration resources, the Blackfoot Cooperators developed a fisheries-based restoration priority scorecard, based on biological, social and financial considerations, for 83 fisheries-impaired tributaries of the Blackfoot River. To prioritize streams, we summed all scores and converted total score to ranked values in ascending order. We also stratified impaired tributaries by restoration (project streams) and non-restoration (non-project streams) status. We then prioritized streams by biological, social and financial considerations. Prioritization revealed the current program emphasizes streams of high biological priority, and identified many additional non-project streams with potential to benefit bull trout, fluvial westslope cutthroat trout, sport fishery values and water quality.

Through the 1990s, restoration priorities focused on 37 Blackfoot River tributaries from the North Fork downstream. Westslope cutthroat trout (WSCT hereafter) densities have increased in the lower to middle reaches of the Blackfoot River downstream of the North Fork confluence. Bull trout densities are increasing in the lower Blackfoot River, Monture Creek and North Fork Blackfoot River. These increases are due largely to the present restoration effort. By working jointly with the agricultural community and other land managers and focusing on identified limiting factors, tributary populations and river population size and resilience should continue to expand.

While native fish populations are improving in the lower watershed, correcting major habitat problems (timber deforestation and road drainage, mining waste and agricultural runoff and riparian degradation, etc.) is far from complete. A large area of the Blackfoot watershed is outside of the current restoration priority area. This report evaluates additional areas in the Blackfoot River for priority status including: upper Blackfoot River drainage upstream of Nevada Creek, Nevada Creek drainage, and Garnet Mountains.

Although completion of current restoration "project streams" should remain a priority, we have also completed a fisheries baseline and related special studies necessary to identify additional restoration needs in the Blackfoot Watershed. Between 1989 and 2001, we conducted fisheries assessments on 88 Blackfoot River tributaries. From these and other assessments, we identified factors influencing riparian health and fish populations on 83 streams. In addition to a watershed-level scale of identified restoration opportunities, our restoration methods have expanded from simple riparian improvement projects to conservation on a watershed-level over the last decade. With the increased scope of conservation efforts, our fisheries monitoring and project maintenance needs continue to expand. These increases in the scope and demand for stream and watershed restoration are all confounded by limited funds and chronic shortages of field personnel dedicated to program coordination, implementation and monitoring.

In 2001, the Big Blackfoot Chapter of Trout Unlimited, Blackfoot Challenge, Chutney Foundation, U.S. Fish and Wildlife Service, in cooperation with the Montana Fish, Wildlife and Parks developed a fisheries-based tributary scorecard and ranking criteria designed to prioritize potential restoration opportunities on Blackfoot River tributaries. We based priorities on biological attributes of streams and social and financial considerations.

We ranked all 83 impaired tributaries by total score, and also stratified all streams by restoration (project streams) or non-restoration (non-project streams) status. We then ranked project and non-project streams by: 1) total rank, 2) biological rank, 3) native species rank (bull trout and WSCT fields), 4) sport fishery value, 5) potential to increase instream flow to the Blackfoot River, 6) potential for downstream water quality improvements, and 7) social and financial considerations.

It is important to note that our ranking criteria does not consider many complex restoration-related issues, such as: 1) fisheries potential of sites, 2) potential contribution to connected systems, 3) severity of impacts to other systems, 4) population size, 5) native and non-native species interactions (e.g. WSCT genetics), 6) numerical water quality standards and criteria, or 7) industrial-scale timber harvesting practices, public land or hard-rock mine drainage issues, and 8) possibly other specific agency programs geared toward fisheries and water quality improvements. As such, this prioritization does not replace imperiled native fish recovery (e.g. ESA, Habitat Conservation Plans) programs or water quality planning (319, TMDL and Best Management Practices, Superfund) efforts. Rather, this prioritization attempts to guide the limited resources of the Blackfoot Cooperators by providing a priority list of biologically important but impaired streams located primarily on private lands. Because priorities are stratified by several criteria, many priority categories overlap closely with any number of specific resource (public and private) conservation programs, including those outlined above. Where overlap occurs, we welcome cooperation and assistance in this endeavor.

This document is intended to be a guide for prioritizing restoration activities, however, good restoration opportunities may occasionally occur among the lowest priority streams, prompting restoration actions. Report objectives are to provide a hierarchical and biologically based series of restoration priorities for future habitat restoration work, both within and beyond the current focus area, based upon our best current information. We recognize unique restoration opportunities may be presented, that priorities shift, and that continued input from landowners and managers will help guide the Blackfoot River Restoration Initiative.

The following table summarizes the 83 impaired streams included within this report, and is sorted by priority rank and total score (Table 1). For the remainder of the report, we also prioritized project and non-project streams separately (*see* Results Part I and II).

Table 1. Eighty-three streams ranked by restoration priority and total score.

Rank	Stream Name	Project Stream	Total Score	Rank	Stream Name	Project Stream	Total Score
1	Monture Creek	y	175	40	Wilson Creek	n	110
1	North Fork	y	175	44	Chamberlain E.F.	y	105
3	Poorman Creek	y	175	44	Hogum Creek	n	105
3	Landers Fork	n	170	44	Moose Creek	n	105
5	Cottonwood (r.m. 43)	y	165	47	Black Bear Creek	n	100
5	Dick Creek	y	165	47	Seven up Pete Creek	n	100
7	Beaver Creek	y	160	49	Ashby Creek	y	95
7	Belmont Creek	y	160	49	Chamberlain W.F.	y	95
7	Rock Creek	y	160	49	Bear Creek (r.m. 37.5)	n	95
10	Kleincshmidt Creek	y	155	49	Camas Creek	n	95
11	Dunham Creek	y	150	49	Chicken Creek	n	95
11	Gold Creek	y	150	49	Chimney (Douglas)	n	95
13	Blanchard Creek	y	145	49	Murray Creek	n	95
13	Warren Creek	y	145	49	Sheep Creek	n	95
13	Copper Creek	n	145	49	Warm Springs Creek	n	95
13	Willow Creek (lower)	n	145	58	Finn Creek	n	90
17	Elk Creek	y	140	58	Mitchell Creek	n	90
17	Hoyt Creek	y	140	58	Sturgeon Creek	n	90
17	Spring Creek (N.F.)	y	140	58	Washoe Creek	n	90
20	McCabe Creek	y	135	62	Cottonwood (Douglas)	y	85
21	Chamberlain Creek	y	130	62	Nevada Creek (lower)	y	85
21	McElwain Creek	y	130	62	Arkansas Creek	n	85
21	Salmon Creek	y	130	62	Buffalo Creek	n	85
21	Shanley Creek	y	130	62	California Creek	n	85
21	Wasson Creek	y	130	62	Jefferson Creek	n	85
21	Alice Creek	n	130	62	Washington Creek	n	85
21	Spring (Cottonwood)	n	130	69	Bartlett Creek	n	80
28	Bear Creek (r.m. 12.2)	y	125	69	Frazier Creek	n	80
28	Nevada Spring Creek	y	125	69	Gallagher Creek	n	80
28	Yourname Creek	n	125	69	Game Creek	n	80
31	East Twin Creek	y	120	69	Humbug Creek	n	80
31	Pearson Creek	y	120	69	Shingle Mill Creek	n	80
31	Keep Cool Creek	n	120	75	Bear Creek (N.F.)	n	75
31	Sauerkraut Creek	n	120	75	Strickland Creek	n	75
31	Wales Creek	n	120	75	Ward Creek	n	75
36	Douglas Creek	y	115	78	Indian Creek	n	70
36	Arrastra Creek	n	115	79	Burnt Bridge Creek	n	65
36	Fish Creek	n	115	79	Clear Creek	n	65
36	Lincoln Spring Creek	n	115	79	Frazier Creek (N.F.)	n	65
40	Union Creek	y	110	79	Gleason Creek	n	65
40	Nevada Creek(lower)	n	110	83	Chimney (Nevada)	n	35
40	Willow Creek (upper)	n	110				

INTRODUCTION

The Blackfoot River watershed is the site of a comprehensive watershed restoration initiative, with emphasis on native and wild trout recovery. The program began in 1988 with the initiation of studies that identified watershed-wide degradation of tributaries as a primary reason for fish population declines in the Blackfoot River. From these early findings, a restoration initiative began to take form. The initiative started with simple riparian improvement projects and progressively evolved to a watershed-level resource conservation program, largely dedicated to improving wild trout populations. Through the 1990s, we directed priority for restoration to 37 streams with emphasis on Blackfoot River tributaries from the North Fork down-river (Figure 1). Restoration projects have been completed on many streams, and final restoration phases on many others are now in progress. As a first step to expand restoration beyond the current project streams, we recently completed habitat and fish population assessments on 54 additional streams with most of these streams lying outside of the current restoration focus area. From these and earlier tributary assessments, we generated this restoration prioritization report for all 88 Blackfoot tributaries (outside of the Clearwater River drainage) inventoried since 1989.

Early fish population studies documented low densities of native westslope cutthroat trout (*Onchorynchus clarki lewisi*) at the mid-to-low elevations of the Blackfoot watershed (Peters and Spoon 1989, Peters 1990, Pierce et al. 1997). Bull trout (*Salvelinus confluentus*) densities were low basin-wide, with extirpated local populations in several

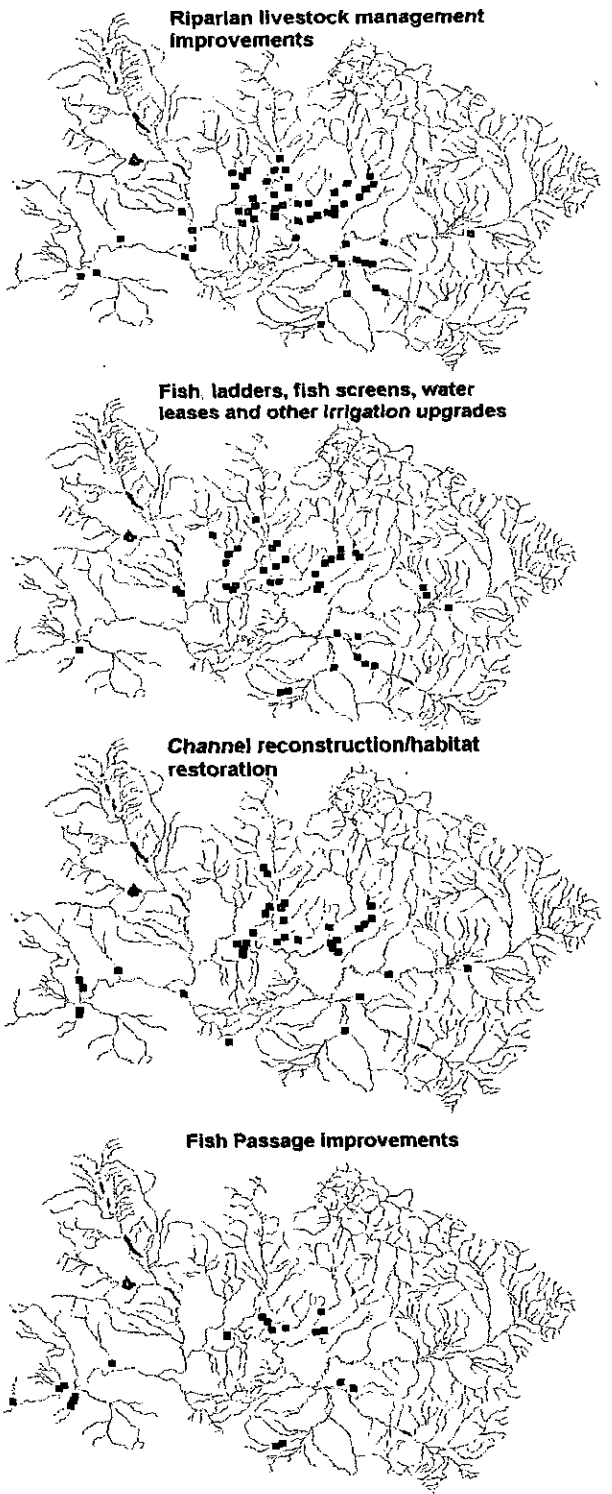


Figure 1. Map of project streams and principle restoration activities.

streams. Fish population investigations found that early life-stages of salmonids in the lower Blackfoot River rely on tributaries. Tributary assessments reported extensive problems, spanning multiple land ownerships that resulted in fish population declines at a watershed scale (Peters and Spoon 1989, Peters 1990, Pierce et al. 1997, Pierce and Schmetterling 1999, Pierce and Podner 2000, Pierce et al. 2001, Pierce et al. 2002).

Low numbers of non-native adult rainbow (*O. mykis*) and brown trout (*Salmo trutta*) at the low-to-mid elevations of the watershed, combined with high winter mortality of young-of–the–year (YOY) trout and poor tributary habitats resulted in weak recruitment to river populations for these species (Peters and Spoon 1989, Peters 1990, Pierce et al. 1997). Reliance of native salmonids on upper tributary reaches at early life stages indicates an adaptation to the severe environment of the Blackfoot River. However, due to 1) poor tributary conditions, 2) long migrations, 3) high fidelity to natal streams, 4) barriers to movement, and 5) more extensive use of the tributaries at early life stages, fluvial native fish are even more subject to human impacts in the tributary system than introduced fish species. By contrast non-native rainbow and brown trout spawn in lower stream reaches, migrate shorter distances, have less fidelity to their natal streams, and as a result are less sensitive to the same human-related impacts of the tributary system.

Throughout the 1990s, we directed special riparian and upland restoration activities, that provide for riparian-dependant species including a diversity of self-sustaining wild trout populations, to 37 tributaries of the Blackfoot River. We emphasized restoration on streams supporting populations of WSCT and bull trout, with further emphasis on tributaries of the lower to middle Blackfoot River (Figure 1). Restoration tools include reconstructing stream channels and restoring native habitat features to impaired streams, developing low impact grazing systems and removing streamside feedlots, planting native riparian vegetation, improving instream flows, restoring historic fish migration corridors, and enrolling landowners in perpetual conservation easement programs. Cooperators included private landowners, private organizations, non-profit groups, and state and federal agencies.

Restoration has contributed to improved native fish populations at the low-to-mid elevations of the watershed. WSCT densities have increased in the lower to middle reaches of the Blackfoot River downstream of the North Fork confluence. Several tributaries support increased WSCT densities. Bull trout densities are increasing in the lower river system including both Monture Creek and the North Fork Blackfoot River, but remain at static low densities upstream of Nevada Creek.

Although fish populations are improving in the lower watershed, habitat degradation is extensive and correcting major habitat problems is far from complete. Most of the Blackfoot watershed (upper Blackfoot River drainage upstream of Nevada Creek, Nevada Creek drainage, Clearwater River drainage and Garnet Mountains) lies beyond the scope of the current restoration focus area. This restoration priority report is an effort to redirect and expand fisheries restoration to biologically important areas not included in the current priority area on private land. We prioritized impaired project and impaired non-project streams separately. Report objectives are to provide a hierarchical and biologically based series of restoration priorities for future restoration work, both within and beyond the current focus area.

STUDY AREA

The Blackfoot River, located in west-central Montana, begins at the junction of Beartrap and Anaconda Creeks, and flows west 132 miles from its headwaters near the Continental Divide to its confluence with the Clark Fork River in Bonner, Montana (Figure 2).

This river system drains a 2,320 square mile watershed through a 3,700-mile stream network of which 1,900 miles are perennial streams capable of supporting fishes. Mean annual discharge is 1,607 cubic-feet-per-second (cfs). The physical geography of the watershed ranges from high-elevation glaciated alpine meadows, timbered forests at the mid-elevations to prairie pothole topography on the valley floor. Glacial landforms, moraine and outwash, glacial lake sediments and erratic boulders cover the floor of the entire Blackfoot River valley and exert a controlling influence on the habitat features of the Blackfoot River and the lower reaches of most tributaries. The Blackfoot River is a free flowing river to its confluence with the Clark Fork River where Milltown dam, a run-of-the-river hydroelectric facility, creates Milltown Reservoir. Milltown dam has blocked upstream fish passage on the Clark Fork River, affecting natural migrations between the Clark Fork River and Blackfoot River since 1907.

Land ownership in the Blackfoot watershed is 44% National Forest, 5% Bureau of Land Management, 7% State of Montana, 20% Plum Creek Timber Company and 24% other private ownership. In general, public lands and large tracts of Plum Creek Timber Company properties comprise large forested tracts in mountainous areas of the watershed while private lands occupy the foothills and lower valley areas (Figure 2). Traditional land-use in the basin includes mining, timber harvest, agriculture and recreation activities, all of which have contributed to habitat degradation or fish population declines. Of 88 inventoried streams, 83 have been altered, degraded or otherwise identified as fisheries-impaired since inventories began in 1989. Restoration has been directed to 37 of these streams. The majority of habitat degradation occurs on valley floor and foothills of the Blackfoot watershed and largely on private agricultural ranchlands. However, problems also extend to commercial timber areas, mining districts, and state and federal public lands.

Of 88 inventoried streams, we identified 83 as fisheries-impaired. Impaired streams are located throughout the Blackfoot watershed, from the headwaters of the drainage to the confluence of the Blackfoot River with the Clark Fork River. One exception is the Clearwater River drainage with one stream (Blanchard Creek) included in this report. Of the 88 streams inventoried, five were considered unimpaired either naturally, from past restoration projects, or have yet to be evaluated for fisheries impairment. Of the 83 impaired streams, 33 are project streams. Restoration projects are concentrated in the lower Blackfoot River drainage from the North Fork downstream, but also include areas in the lower Nevada Creek valley and upper Blackfoot Valley near Lincoln. Non-project streams are generally located in the upper Blackfoot drainage upstream of the North Fork and throughout the Garnet Mountains in the southern region of the Blackfoot watershed.

The Blackfoot River is one of twelve renowned "blue-ribbon" trout rivers in Montana with an appropriated "Murphy" instream flow water right. The Montana Fish, Wildlife and Parks manages the Blackfoot River and tributaries for a diversity of self-

sustaining "wild trout" populations. Distribution patterns of most salmonids generally conform to the physical geography of the landscape, with species diversity increasing longitudinally in the downstream direction (Figure 3). Species assemblages and densities of fish can also vary greatly at the lower elevations of the watershed.

Most salmonids (WSCT, bull trout, rainbow trout and brown trout) in the river system exhibit migratory behavior and rely on tributaries at multiple life stages. WSCT has a basin-wide distribution and is the most abundant species in the upper reaches of the tributary system. Outside of the Clearwater drainage, WSCT exhibit both resident and migratory (fluvial) life-history behavior. Resident populations of WSCT inhabit tributaries where they complete their entire life cycle. By contrast, fluvial WSCT spawn and rear in small tributaries and exhibit migratory behavior, which includes use of the larger streams and rivers. Bull trout distribution extends from the mainstem Blackfoot River to headwaters of larger tributaries north of the Blackfoot River mainstem; however, juvenile bull trout will rear in smaller "non-spawning" tributaries, some of which are located in the Garnet Mountains. Rainbow trout distribution is limited to the Blackfoot River downstream of Nevada Creek and lower reaches of the lower river tributaries, with the exception of Nevada Creek upstream and downstream of Nevada Reservoir. Rainbow trout occupy ~10% of the perennial streams in the Blackfoot watershed, with river populations reproducing primarily in the lower portions of larger south-flowing tributaries. Brown trout inhabit ~15% of the perennial stream system with a distribution that extends from the Landers Fork down the length of the Blackfoot River and into the lower foothills of the tributary system. Brook trout are widely distributed in tributaries but rare in the mainstem Blackfoot River below the Landers Fork.

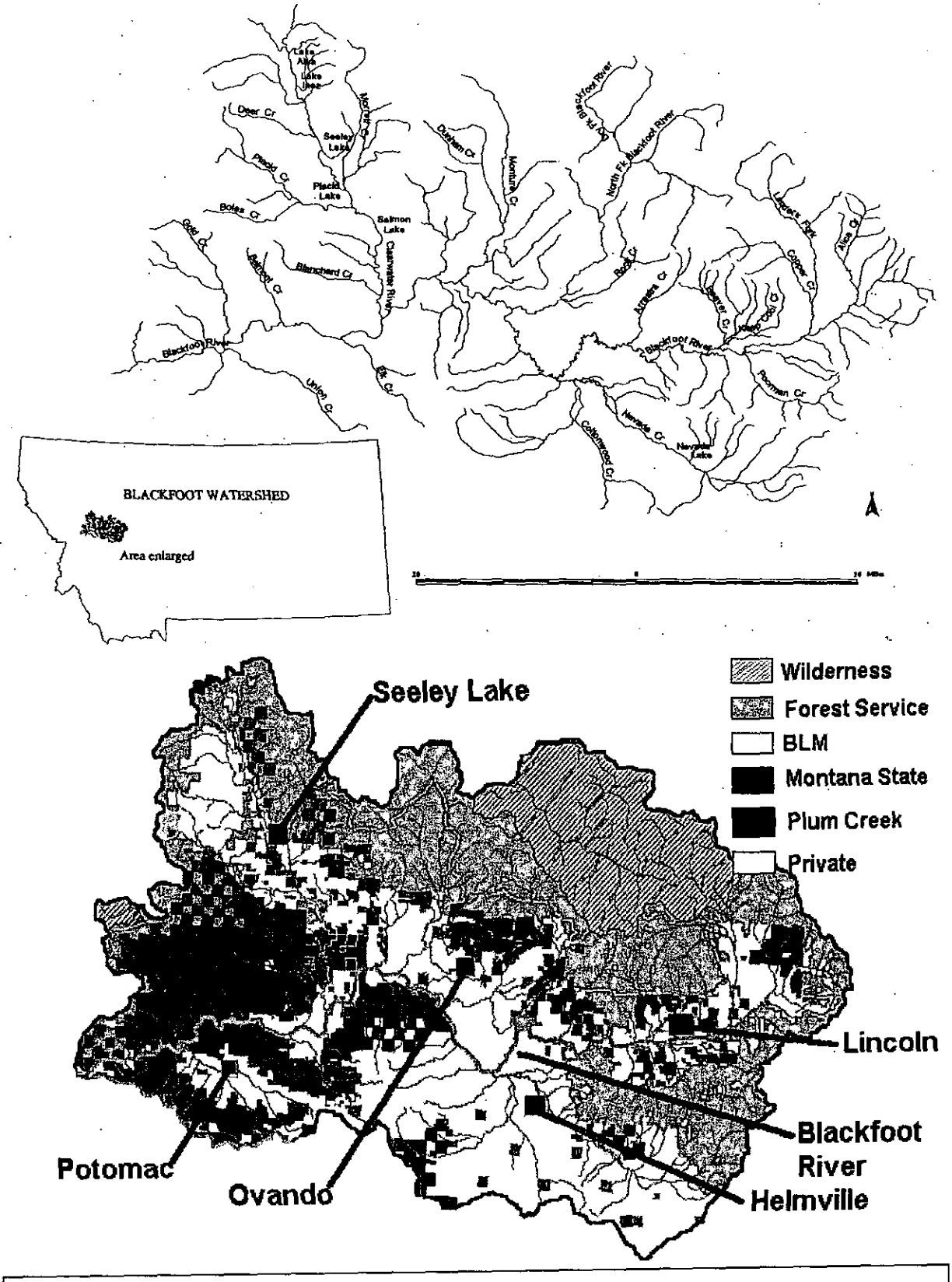
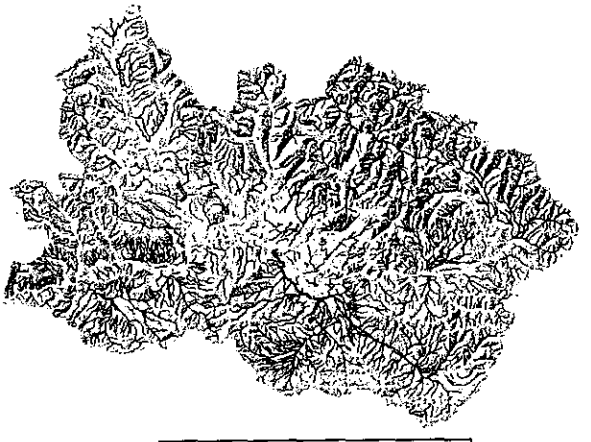
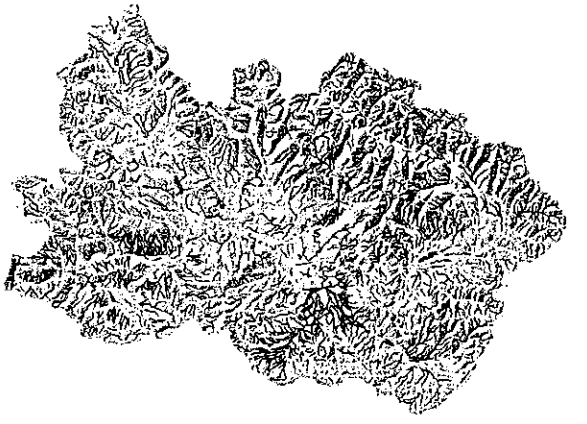


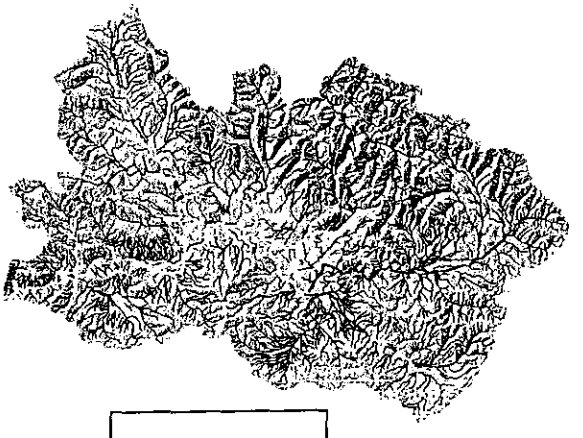
Figure 2. Study area: The Blackfoot River watershed (above) with land ownership (below).



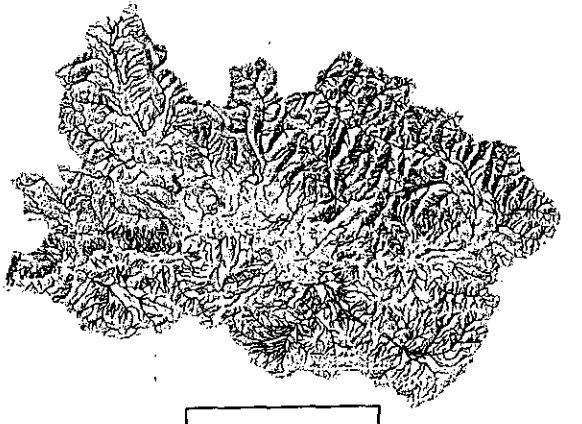
Bull Trout



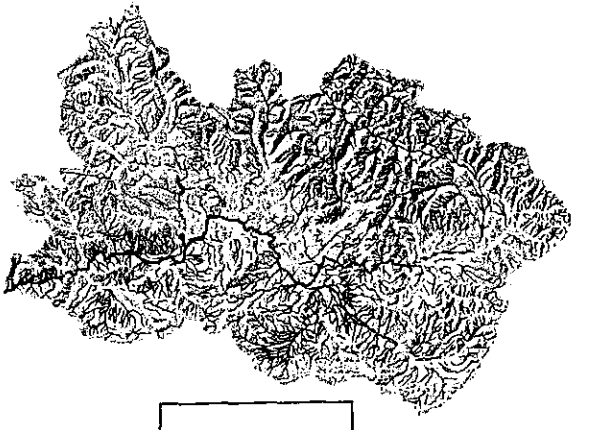
Westslope Cutthroat Trout



Rainbow Trout



Brown Trout



Brook Trout

Figure 3. Distribution of five salmonids.

PROCEDURES

Designating fisheries-impaired streams

From 88 streams assessed by FWP between 1988 and 2001, we developed a list of 83 "fisheries-impaired" streams. We identified impairment using many methods including 1) interpretation of fish population survey data (population size, population structure and species composition) at many sites along a stream profile during stream inventories, 2) measurements of habitat, stream flow, irrigation fish loss, channel instability, riparian health, and water temperature, and 3) direct observations of adverse land management activities during assessments. Inventory results and impairments are summarized in a series of nine FWP reports (Peters and Spoon 1989, Peters 1990, Pierce and Peters 1990, Pierce 1991, Pierce, Peters and Swanberg 1997, Pierce and Schmetterling 1999, Pierce and Podner 2000, Pierce, Podner and McFee 2001, Pierce, Podner and McFee 2002.) In addition to FWP evaluations, many agency reports, graduate studies, and independent assessments helped designate streams as fisheries-impaired. These sources are also cited in the nine FWP reports. For this prioritization report, we also relied on a summary list of fisheries-impaired streams taken from the most recent FWP report (Pierce et al. 2002), located in Appendix C of this report.

Prioritization Scorecard

In consultation with the Big Blackfoot Chapter of Trout Unlimited, Blackfoot Challenge, U.S. Fish and Wildlife Service along with funding from the Chutney Foundation, we developed a restoration prioritization scorecard (Appendix A). This scorecard, along with assigned points and ranking therein, form the foundation of this stream prioritization (Appendix B). We based stream scores on a hierarchical point system with emphasis on biological benefits (150 total possible points) along with social and financial considerations (50 total possible points).

Due to their personal knowledge and expertise regarding fish populations, habitat problems and restoration in the Blackfoot drainage, a committee of three FWP fisheries biologists (Don Peters, Ron Pierce, and Craig Podner) was given the job of assessing tributary data and assigning values to the scorecard. Scoring of some criteria (primarily social and financial considerations) necessarily relied on past landowner interviews, direct knowledge of tributaries, along with professional expertise and committee judgment for inventoried non-project streams.

For the biological benefits section of the scorecard, streams with documented bull trout use received scores of 10, 20, 30 or 40 points, depending on whether the stream supported spawning (20 points), rearing (10 points) or is a designated bull trout "core area" stream (10 points). Compared to other criteria, bull trout streams received potentially more points due to their: 1) "threatened" status under the Endangered Species Act along with state and federal priorities for the recovery of this species; 2) high potential for improvement in the Blackfoot watershed; and 3) downstream benefits to other species resulting from bull trout recovery efforts.

For WSCT streams, an additional zero to 20 points were possible, depending on whether a stream supported no WSCT (zero points), resident WSCT (10 points) or fluvial WSCT use (20 points). Fluvial WSCT streams received a higher score than resident fish streams due to 1) the precarious status of the fluvial life-history, 2) high sport fish value

to the Blackfoot River, and 3) downstream benefits to other species resulting from WSCT recovery efforts. Streams receiving fluvial WSCT status (20 points) were those identified through 1) direct telemetry studies, 2) direct observations of fluvial-sized fish by a committee member, or 3) direct tributaries to the Blackfoot River and biologically connected during high flows periods.

Streams received an additional zero, 10 or 20 points based on sport fishery value to the Blackfoot River. Streams with no sport fishery value (disjunct from the Blackfoot River) received zero points; single species sport fishery value (non-disjunct usually with WSCT) received 10 points (low rank), while non-disjunct streams that provide recruitment of multiple species (bull trout, WSCT, rainbow and brown trout) to the Blackfoot River received 20 points (high rank). We assumed streams supporting rainbow and brown trout and bull trout (if connected) provided sport fishery value to the Blackfoot River. We assumed small non-direct and non-fluvial headwater tributaries to support primarily resident WSCT and as such were not considered as providing sport fishery value to the Blackfoot River. We did not consider brook trout in this ranking due to their limited use of the Blackfoot River and adverse biological impacts to native species.

Stream restoration technical feasibility was also considered with zero points for not feasible and 20 points for streams considered technically feasible to restore. Streams with acid mine drainage or heavy metals (upper Blackfoot River and tributaries-not considered in this report), large instream reservoirs (upper Nevada Creek, Frazier Creek, and Wales Creek), over-appropriated water rights (lower Nevada Creek), major highway problems (Chimney Creek), and fully restored (Grentier Spring Creek) were considered not technically feasible to restore for the purposes of this report.

In addition to direct fisheries and feasibility criteria, streams with potential to increase flows (e.g. irrigation salvage potential) to the Blackfoot River were allotted 20 points. Finally, under the biological ranking section, streams with potential to improve downstream water quality by reducing 1) instream sediment (10 points), 2) water temperature (10 points), and 3) nutrient loading (10 points) could earn up to an additional 30 points.

For social and financial consideration, we used three criteria: 1) landowner and land manager cooperation (5, 10, 15 or 20 points) - a measure of perceived landowner cooperation; 2) restoration feasibility (5, 10 or 20 points) – an estimate of project cost/mile; and 3) demonstration/educational value of potential projects (5 or 10 points) - a measure of project uniqueness, landowner interest and project access.

We transferred scorecard values to an EXCEL spreadsheet (Appendix B). We sorted all 83 streams by total score and then prioritized streams by total rank (Table 1). High scores are high priorities and are represented as low ranking values. For instance Monture Creek received the highest total score (175 points) for all streams and thus ranked 1st in total priority. We used this scoring and ranking method for all categories that rely on several numerical fields.

We also stratified all 83 streams by restoration (project streams) or non-restoration (non-project streams) status. We scored and ranked project and non-project streams by: 1) total rank, 2) biological rank, 3) native species rank (bull trout and WSCT fields), 4) sport fishery value, 5) potential to increase instream flow to the Blackfoot River, 6) potential for downstream water quality improvements, and 7) social and

financial considerations. We then compiled a series of histograms, cumulative percent curves and classified maps to summarize stream priority rankings in Results Part I by project and non-project status. Five surveyed streams designated unimpaired streams (four project and one non-project) were excluded from prioritization.

In Results Part II, we organized streams by project and non-project status and summarized each stream by six separate priority categories. For all six priorities, ranks values relate to histogram and cumulative frequency curves values, or classified maps located in Results Part I. For example, Alice Creek with a biological rank of 7/14 falls in the 7th of 14 total classes. Based on the cumulative frequency curve of biological ranks, Alice Creek then falls in the lower 30th percentile for biological priorities for non-project streams. For summary purposes, we described streams within the lower ~ 50th percentile (of cumulative frequency curve) as *high* restoration priority; streams in the higher 50th percentile were considered *low* priority. Classes within the 50th percentile were ranked *moderate* unless heavily weighed to the high or low end of a priority scale, as in class 6 (non-project streams) under the native species prioritization. We also ranked all 83 streams in Results Part II by total rank and total score to show how individual streams ranked against all streams.

Working with Private Landowners: the Key to Successful Restoration

The emphasis of the Blackfoot River restoration initiative is to restore degraded tributaries by improving upland management, riparian health and fish habitat. Typically, each tributary project involves multiple landowners, multiple professional disciplines, more than one funding source plus the involvement of a watershed group. Restoration has focused on addressing obvious impacts to fish populations such as migration barriers, stream de-watering, fish losses to irrigation canals and degraded riparian areas. All projects are cooperative efforts between private landowners and the restoration team, and occur throughout the drainage but emphasize on tributaries from the North Fork down river. All projects are voluntary, incorporate landowner needs (such as irrigation and grazing objectives), and are administered at the local level by a core group of agency resource specialists in cooperation with local watershed groups, including both the Big Blackfoot Chapter of Trout Unlimited and the Blackfoot Challenge, or local government groups such as the North Powell Conservation District. Tax incentives of the watershed groups with non-profit 501(c)3 statuses are key to generating private dollars for restoration.

Two full-time restoration biologists help coordinate restoration efforts (wildlife biologist from the U. S. Fish and Wildlife Service-Partners for Fish and Wildlife Program, and a fisheries biologist from the Montana Fish, Wildlife and Parks). A lead biologist generally enlists help from interagency personnel including range conservationists, hydrologists, engineers and water rights specialists as necessary. In turn, the watershed groups help prioritize projects, administer budgets, solicit bids and assist with landowner contacts, resolve conflicts and help address other social issues.

Cost sharing of projects is arranged by project personnel and comes from many sources including landowner contributions, private donations, foundation grants, and state and federal agency programs. Project biologists and/or the watershed group undertake grant writing and fund-raising. The lead biologist usually writes environmental assessments and obtains project permits on behalf of the cooperating landowner.

Project bids (consulting and construction) conform to State and Federal procurement policies. These policies included the development of Blackfoot watershed qualified vendors lists (QVL) derived through a competitive process. A minimal project cost triggers use of the QVL. The watershed groups solicit bids from the QVL for both consulting and contractor services. Bid-contracts are signed between the watershed group and the selected vendor upon bid acceptance.

Depending on the specific project, landowners are intimately involved with construction, maintenance and cost of projects. Addressing the source of stream degradation usually requires developing riparian/upland management options sensitive to the requirements of fish and other riparian-dependent species. Written agreements (10-30 year periods) with landowners to maintain projects are arranged with cooperators on each project. These agreements vary by funding source and may include agencies, the North Powell Conservation District and/or the Fish and Habitat Committee of the Big Blackfoot Chapter of Trout Unlimited.

Landowner awareness of the habitat requirements of fish and wildlife and their full participation in projects are considered crucial to the long-term success of the restoration initiative. Landowners are encouraged to participate in all project phases from fish population surveys, to problem identification, restoration and monitoring of completed projects.

RESULTS/DISCUSSION

In addition to total stream score and rank for 83 stream as outlined in the executive summary, we also stratified streams by "project" and "non-project" status in Results Part I and II. For project and non-project streams, we further stratified streams by 1) total rank, 2) biological rank, 3) native species rank (bull trout and WSCT), 4) sport fishery value to the Blackfoot River, 5) potential to increase instream flow to the Blackfoot River, 6) potential for downstream water quality improvements, and 7) social and financial considerations. We used a series of histograms, cumulative frequency curves, and classified maps to summarized results for these six categories. In order to simplify the various priority results, we converted absolute scores (e.g. total score values of 175, 170, 165, etc.) to ranked values (e.g. priorities 1, 2, 3, etc.).

Results Part II contains: 1) impaired project streams (33 streams), 2) impaired non-project stream (50 streams), plus 3) a section describing five non-impaired streams. Project streams are those currently in the restoration project stage or have received restoration project work in the past. Non-project streams have not yet received restoration (Figure 4).

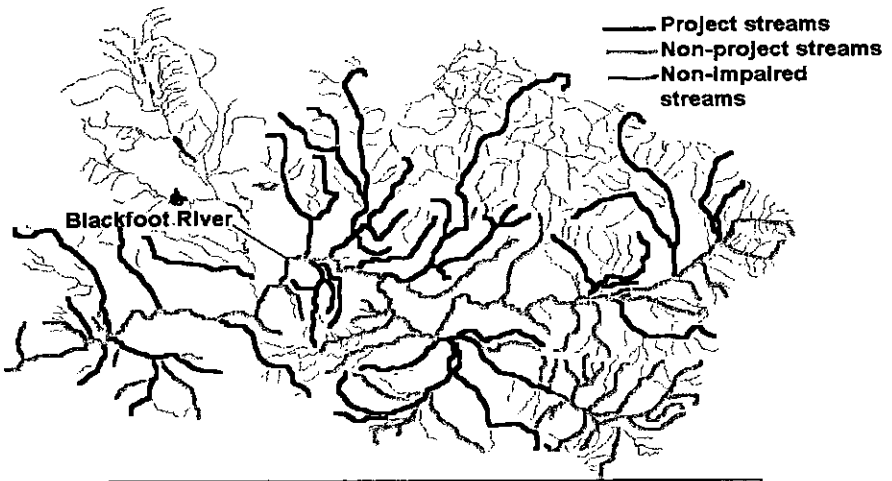


Figure 4. Map of project, non-project and non-impaired streams.

In Results Part II, stream priorities were summarized by six categories. For all six categories, low class values represent high priorities. These class values relate directly to histograms cumulative frequency curves and classified maps located in Results Part I. As an example, Alice Creek with a biological rank of 7/14 falls in the 7th of 14 total classes based on the biological rank histogram in Results Part I. Based on the cumulative frequency curve of biological rank, Alice Creek then falls in the lower 30th percentile for biological priorities for non-project streams. For summary purposes, we described streams within the lower ~ 50th percentile (of cumulative frequency curve) as *high* restoration priority; streams in the upper 50th percentile were considered *low* priority. Classes within the 50th percentile were ranked *moderate* unless heavily weighed to the upper or lower end of a priority scale, as in class 6 (non-project streams) under the native species prioritization.

RESULTS PART I: Project and non-project evaluations.

Total Stream Rank (project and non-project streams)

Total stream rank, stratified by project and non-project streams, was calculated by adding all 13 input fields and ranking the resulting sum. The ranking generated 17 classes (Figure 5). In general, high priority project streams (classes 1-9) include several key native fish streams among several ongoing project tributaries to the Blackfoot River (Table 2). Low priority project streams (classes 10-17) include many small WSCT streams, often in degraded condition (Results Part II). High priority non-project streams (classes 1-10) include a few bull trout streams among several upper river tributaries. Low priority non-project streams (classes 11-17) are generally disjunct tributaries in the Union and upper Nevada Creek watersheds (Results Part II).

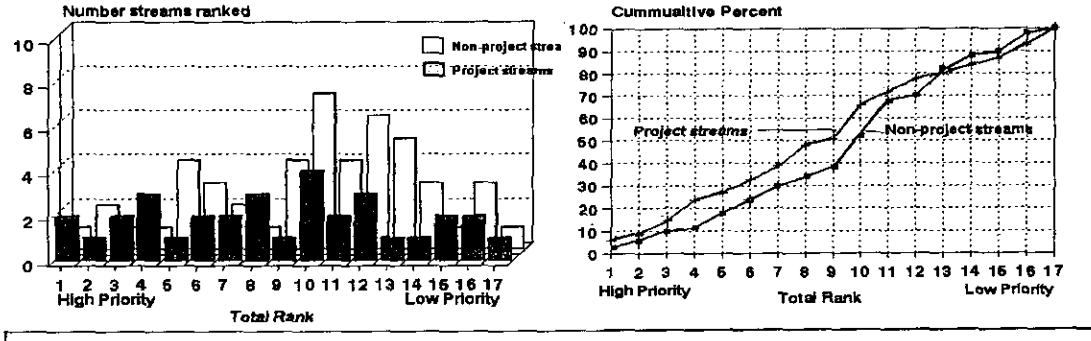


Figure 5. Histogram and cumulative frequency curve for streams ranked by total priority.

Table 2. Project and non-project streams prioritized by total rank and score.

Rank	Score*	Project Streams	Rank	Score*	Non-project Streams
1	175 (1)	Monture, NF Blackfoot	1	170 (3)	Landers Fork
2	170 (3)	Poorman	2	145 (13)	Willow (below Lincoln), Copper
3	165 (5)	Cottonwood (R.M.43), Dick	3	130 (21)	Spring (Cottonwood), Alice
4	160 (7)	Beaver, Belmont, Rock	4	125 (28)	Yourname
5	155 (10)	Kleinschmidt	5	120 (31)	Sauerkraut, Wales, Keep Cool
6	150 (11)	Dunham, Gold	6	115 (36)	Arrastra, Lincoln Spring, Fish
7	145 (13)	Blanchard, Warren	7	110 (40)	Wilson, Upper Nevada
8	140 (17)	Elk, Hoyt, Spring (N. F.)	8	105 (44)	Hogum, Moose, Willow(aboveLincoln)
9	135 (20)	McCabe	9	100 (47)	Seven-up Pete, Black Bear
10	130 (21)	Chamberlain, McElwain, Salmon, Shanley, Wasson	10	95 (49)	Warm Springs, Camas, Chicken, Chimney (Douglas), Murray, Bear (R.M.37.5), Sheep
11	125 (28)	Bear Creek (R.M.12.2), Nevada Spring	11	90 (58)	Finn, Mitchell, Sturgeon, Washoe
12	120 (31)	East Twin, Pearson	12	85 (62)	Buffalo, California, Jefferson, Washington, Arkansas
13	115 (36)	Douglas			
14	100 (40)	Union	13	80 (69)	Frazier, Game, Bartlett, Gallagher, Humbug, Shingle Mill
15	105 (44)	E.F. Chamberlain			
16	95 (49)	Ashby Creek, W.F. Chamberlain	14	75 (75)	Strickland, Ward, Bear (NF BFR)
			15	70 (78)	Indian
17	85 (62)	Cottonwood (trib. to Nevada), Nevada (lower)	16	65 (79)	Burnt Bridge, Clear, Gleason, N.F. Frazier
			17	35 (83)	Chimney (Nevada)

Score* is stratified (project, non-project) score.
Numbers within ( ) are non-stratified total rankings 1-83.

Biological Rank

We obtained the biological rank by adding 10 scores together, including 1) three bull trout fields, 2) WSCT life-history, 2) sport fishery value to the Blackfoot, 4) technical ability to address the entire stream system, 5) ability to increase instream flow to the Blackfoot River, and 6) three water quality scores related to potential downstream water quality improvements (Appendix A). Ranking of Biological scores generated 14 classes for non-project streams, and 10 for project streams (Figure 6). The distribution among ranked classes shows project streams weighted more toward higher biological priorities than non-project streams.

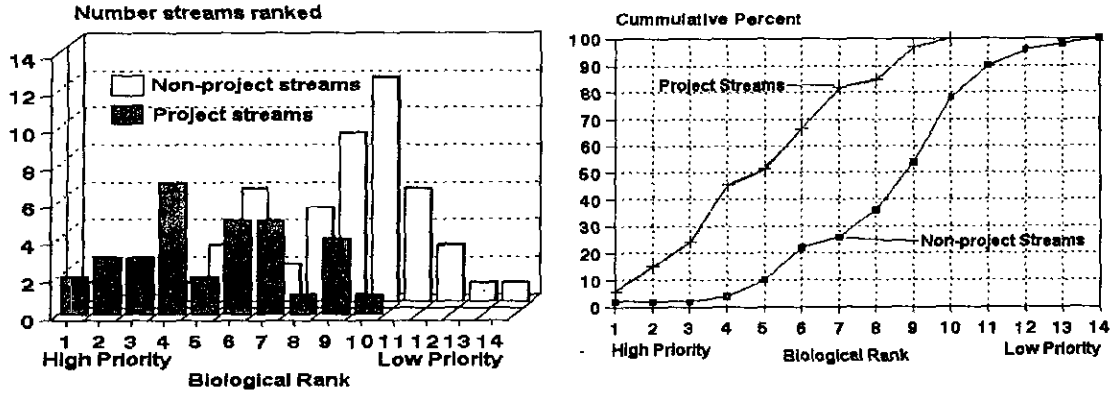


Figure 6. Histogram and cumulative frequency curve for streams ranked by biological priority.

Table 3. Project and non-project streams prioritized by biological rank.

Rank	Score*		Project Streams	Rank	Score*		Non-Project Streams
1	140	(1)	N.F. Blackfoot, Poorman	1	140	(1)	Landers Fork
2	130	(4)	Monture, Cottonwood (R.M.43), Rock	2	110	(10)	Willow (below Lincoln)
3	120	(7)	Dick, Beaver, Belmont	3	100	(18)	Copper, Spring (Cottonwood), Yourname
4	110	(10)	Kleinschmidt, Dunham, Gold, Blanchard, Warren, Elk, Spring (N.F)	4	90	(23)	Alice, Sauerkraut, Wales, Arrastra, Lincoln Spring
5	100	(18)	Hoyt, Salmon	5	80	(33)	Keep Cool, Wilson
6	90	(23)	McCabe, McElwain, Shanley, Wasson, Nevada Spring	6	70	(40)	Fish, Nevada Cr (upper), Willow (above Lincoln), Hogum, Warm Sprgs
7	80	(33)	Chamberlain, Bear (R.M.12.2), East Twin, Douglas, Union	7	60	(46)	Moose, Seven-up Pete, Camas, Chicken, Chimney (Douglas), Murray, Buffalo, California, Jefferson, Washington
8	70	(40)	Pearson	8	50	(60)	Black Bear, Bear (R.M.37.5), Sheep, Finn, Mitchell, Sturgeon, Washoe, Arkansas, Frazier, Game, Strickland, Ward
9	60	(46)	E.F. Chamberlain, Ashby, W.F. Chamberlain, Cottonwood (Nevada)	9	40	(73)	Bartlett, Gallagher, Humbug, Shingle Mill, Bear (NF), Burnt Bridge
10	50	(60)	Nevada Creek (lower)	10	30	(79)	Clear, Gleason, Indian
				11	50	(82)	N.F. Frazier
				12	10	(83)	Chimney (Nevada Cr)

Score* is stratified (project, non-project) score.
Numbers within ( ) are non-stratified total biological rankings 1-83.

Native Species Rank

Native species prioritization incorporated only bull trout and WSCT fields. Scoring criteria weighted heavily towards bull trout and fluvial WSCT presence (Appendix A). Native species scoring and ranking generated 7 classes (Figure 3). High priority project streams (classes 1-4) contain 5 lower Blackfoot River bull trout core areas and several tributaries therein. Forty-four of 50 (88%) non-project streams support native species, with high priority (classes 1-5) streams (primarily upper river tributaries) containing bull trout or fluvial WSCT. Non-project class 6 streams (low priority) contain by far the highest number of impaired streams. These streams generally support disjunct resident WSCT populations, located primarily in headwater areas of the Nevada Creek and Union Creek watersheds. Because they lack native WSCT and bull trout, six non-project tributaries ranked in the lowest (7th) priority class (Figure 7).

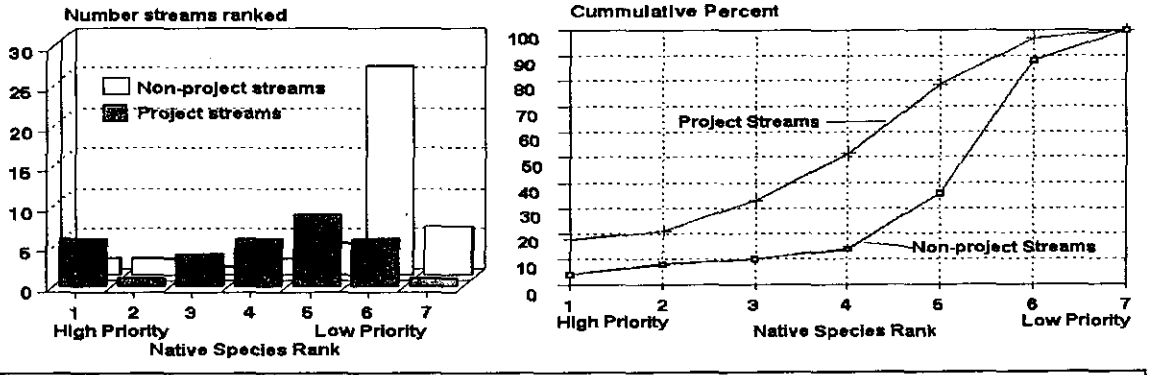


Figure 7. Histogram and cumulative frequency curve for streams ranked by native species

Table 4: Project and non-project streams prioritized by native species rank.

Rank	Score*	Project Streams
1	60 (1)	Belmont, Cottonwood (R.M.43), Dunham, Gold, Monture, N.F. Blackfoot
2	50 (9)	Poorman
3	40 (12)	Kleinschmidt, Rock, Salmon, Spring (N. F.)
4	30 (17)	Bear (R.M.12.2), Beaver, Chamberlain, Dick, East Twin, McCabe
5	20 (25)	Blanchard, E.F. Chamberlain, W.F. Chamberlain, Elk, Nevada Spring, Pearson, Shanley, Warren, Wasson
6	10 (45)	Ashby, Cottonwood (Nevada), Douglas, Hoyt, McElwain, Union
7	0 (77)	Nevada Cr (lower)

Rank	Score*	Non-Project Streams
1	60 (1)	Lander Fork, Copper
2	50 (9)	Alice, Arrastra
3	40 (12)	Nevada Cr (upper)
4	30 (17)	Spring (Cottonwood), Sauerkraut
5	20 (25)	Willow (below Lincoln), Yourname, Wales, Lincoln Spring, Keep Cool, Fish, Moose, Seven-up, Bear Creek (R.M.37.5), Bear (NF), Hogum
6	10 (45)	Wilson, Willow (above Lincoln), Warm Springs, Camas, Chicken, Chimney (Douglas), Murray, Buffalo, California, Jefferson, Washington, Mitchell, Washoe, Arkansas, Frazier, Game, Bartlett, Gallagher, Humbug, Shingle Mill, Burnt Bridge, Indian, Clear, Gleason, N.F. Frazier, Chimney
7	0 (77)	Black Bear, Sheep, Finn, Sturgeon, Strickland, Ward

Score* is stratified (project, non-project) score.
Numbers within ( ) are non-stratified total native species rankings 1-83.

Stream rank by sport fishery value

Sport fishery prioritization is a measure of species recruitment (multiple or single-species fields) to the Blackfoot River. Tributaries providing multi-species recruitment ranked high, whereas streams providing single-species recruitment ranked low. Of 83 total streams, 44 (53%) provide recreational sport fishery value to the Blackfoot River based on scoring criteria (Figure 8). Thirteen of 83 (16%) provide single species (primarily WSCT) sport fishery value, compared to 31 (34%) with multi-species sport fishery value. The majority (79%) of project streams provide sport fishery value, compared to minority of (36%) of non-project streams. Of 33 project streams, 21 (64%) support high (multi-species) recreational sport fishery value, while 5 streams (15%) support low (single-species) sport fishery value. Seven project streams have no sport fishery value. For non-project streams, 10 of 50 (20%) support high (multi-species) sport fishery value, while 8 (16%) provide low (single species) sport fishery value. The majority of non-project streams, 32 of 50 (64%), provide no sport fishery value to the Blackfoot River based on scoring criteria.

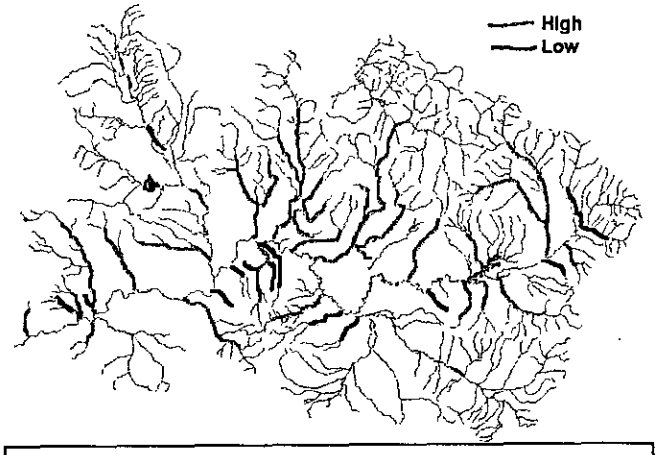


Figure 8. Streams ranked with high (multi-species) and low (single-species) sport fishery value to the Blackfoot River.

Potential to increase instream flows

Scoring streams by potential to increase flows to the Blackfoot River relied on a single input field (Appendix B). Scoring identified potential to increase instream flows from tributaries to the Blackfoot River in 29 of 83 (47%) streams surveyed. For project streams, 19 of 33 (51%) have this potential, compared to 10 of 50 (20%) non-project streams. These results reflect 1) the difference in elevation of streams between headwater non-project streams and lower elevation project streams, 2) more extensive water use through irrigation from tributaries in the Ovando and Helmville areas compared to streams in the Lincoln area (Figure 9), 3) difficulties associated with enhancing instream flows, and 4) need for continued water conservation focus for current project streams.

Figure 9. Generalized map of streams ranked with potential to improve Blackfoot River flows.

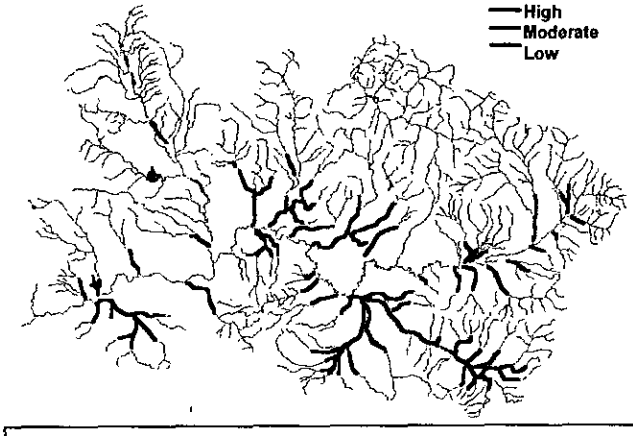


Figure 10. Generalized map of streams ranked with potential to improve downstream water quality.

Water quality rank

Water quality scoring relied on three fields, all based on potential of streams (in restored condition) to reduce instream sediment, water temperature and nutrients to downstream waters. Scoring produced four ranked classes (high, moderate, low and none), with 73 of 83 (88%) impaired tributaries as having some (i.e. one of three criteria) water quality improvement potential (Figure 10). Nineteen of 33 (58%) project streams ranked high in water quality potential, compared to 20 of 50 (40%) non-project streams (Figure 11). Based on scoring criteria, potential to improve water quality through at least one of the three variables occurs in 95% of project and 80% of non-project streams. Ten streams ranked as having no potential for improved water quality (Table 5).

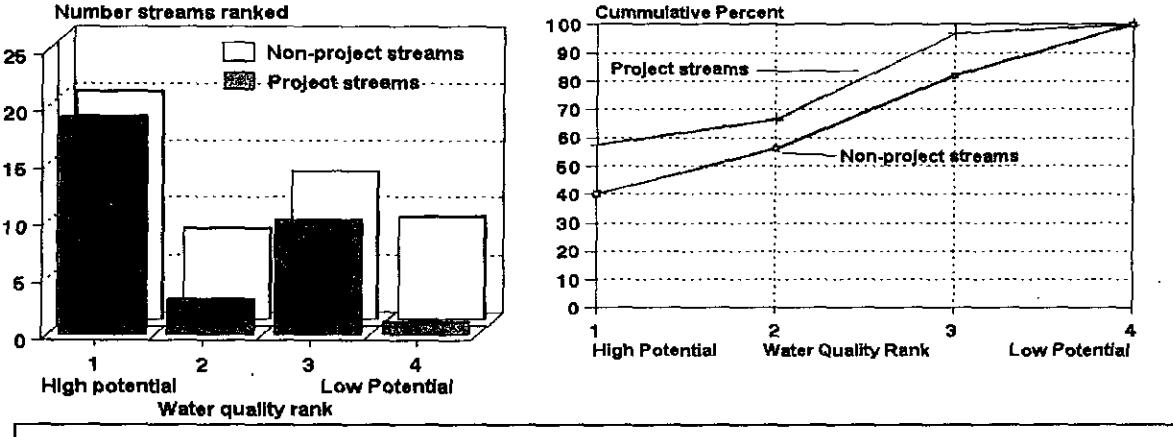


Figure 11. Histogram and cumulative frequency curve for streams prioritized by potential water quality benefits.

Table 5. Project and non-project streams prioritized by water quality rank.

Rank	Score*		Project streams
1	30	(1)	Ashby, Beaver, Blanchard, Cottonwood (Nevada), Dick, Douglas, Elk, Hoyt, Kleinschmidt, McElwain, Monture, Nevada (lower), Nevada Spring, Poorman, Rock, Shanley, Union, Warren, Wasson.
2	20	(40)	Belmont, N.F. Blackfoot, Pearson.
3	10	(51)	Bear (RM12.2), Chamberlain, EF Chamberlain, WF Chamberlain, Cottonwood (RM 43), Dunham, East Twin, Gold, McCabe, Spring (NF), Salmon.
4	0	(75)	Salmon Creek

Rank	Score*		Non-project streams
1	30	(1)	Nevada (upper), Willow (lower), Yourname, Wales, Wilson, Willow (upper), Camas, Chicken, Chimney (trib to Douglas), Murray, Buffalo Gulch, California Gulch, Jefferson, Washington, Black Bear, Finn, Sturgeon, Strickland, Ward, Sheep.
2	20	(40)	Landers Fork, Sauerkraut, Keep Cool, Mitchell, Washoe, Arkansas, Frazier, Game,
3	10	(51)	Alice, Spring (trib to Cottonwood), Lincoln Spring Cr., Hogum, Moose, Seven-up Pete, Warm Springs, Bartlett, Gallagher, Humbug, Shingle Mill, Burnt Bridge, NF Frazier.
4	0	(75)	Copper, Arrastra, Fish, Bear (RM37.5), Bear (trib to NF), Indian, Clear, Gleason, Chimney (trib to Nevada).

Score* is stratified (project, non-project) score.
Numbers within ( ) are non-stratified total water quality rankings 1-83.

Social and financial rank

Prioritizing by social and financial considerations sections incorporated three fields: 1) landowner/manager cooperation, 2) restoration feasibility (cost/mile), and 3) demonstration/educational value, with scoring weighed more heavily towards the first two fields. Scoring generated six classes (Appendix B), which for summary purposes we classified into high, moderate and low priorities (Figure 12). Only 8 of 33 (24%) project and 7 of 50 (14%) non–project streams ranked in the high priority class. The highest number, 40 of 83 (48%) of project and non-project streams scored in the moderate class, with 18 (55%) project and 23 (46%) non-project streams classified as such. Receiving low ranks were 7 (21%) project and 20 (40%) non-project streams.

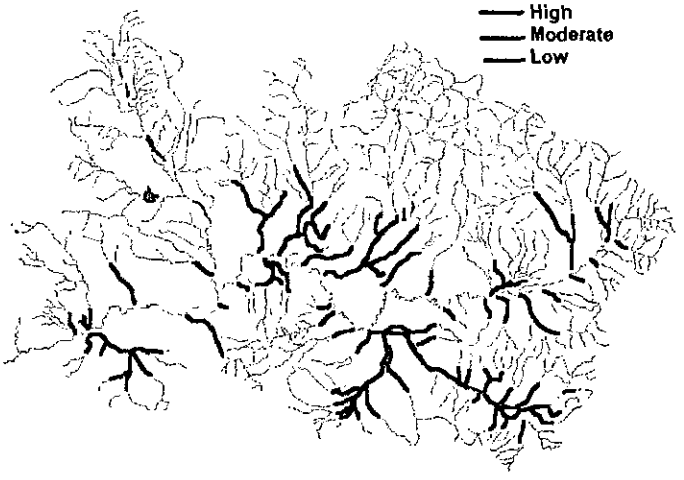


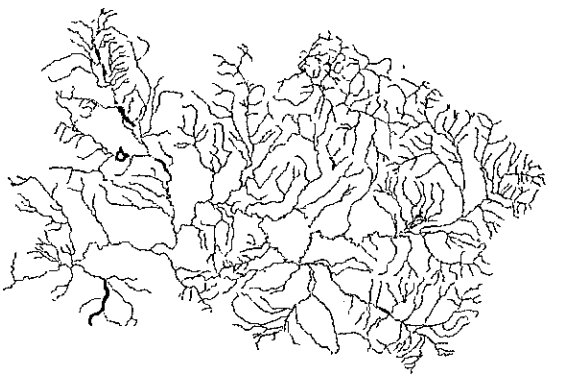
Figure 12. Generalized map of streams prioritized by social and financial considerations.

RESULTS PART II: Prioritization of 33 project streams

Streams in Results Part II are organized alphabetically and include location information, land ownership patterns along with general fisheries information, past restoration projects, and current fisheries impairments. These summaries also contain the stream's overall watershed score and rank (1/83) adjacent to stream name (e.g. Ashby Creek: 95(49/83), and the year(s) of the FWP tributary report. The Literature Cited portion of the report contains the full citation for FWP reports.

Despite a large number of completed restoration projects, project streams still support extensive fisheries-related impairments including: 1) 9 streams with road crossing problems, 2) 13 streams with irrigation impacts, 3) 13 streams with channel alterations, 4) 20 streams that lack habitat complexity, 5) 23 stream with degraded riparian vegetation, 6) 14 streams with instream flow potential, 7) 11 streams with poor road drainage, 8) 18 streams with grazing degradation, 9) 4 streams with recreation impacts, and 10) 7 streams with whirling disease.

Ashby Creek: 95(49/83)



Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	Low (16/17)
Biological Rank:	Low (9/10)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2001, 2002

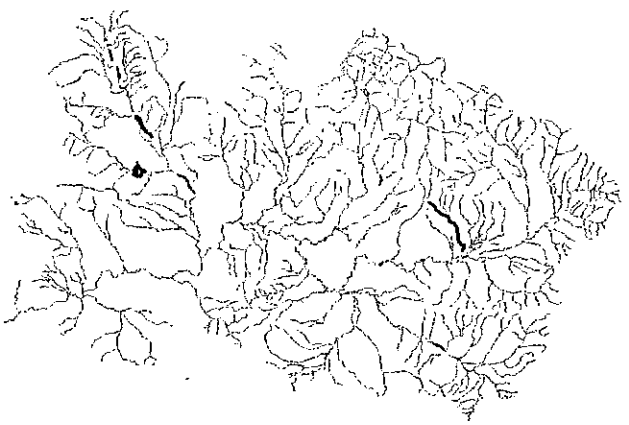
Ashby Creek, a 2nd order tributary to Camas Creek in the Union Creek watershed, flows ~8 miles through public land in upper reaches and private agricultural land in the lower ~5.5 miles. Ashby Creek ranks low on the restoration priority list for project streams. Low native species value and lack of sport fishery value contributes this ranking, despite high potential for downstream water quality benefits. Ashby Creek supports a genetically pure population of resident WSCT along with brook trout. Densities are generally low for both species although WSCT numbers increase in the upstream direction. Fisheries-related impairments, located in the middle and lower reaches, include 1) irrigation (fish passage and dewatering), 2) channel alterations, 3) lack of complex fish habitat (instream wood), 4) excessive livestock access to riparian areas, and 5) elevated sediment from road drainage.

Bear Creek (R.M. 12.2): 125(28/83)

Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	Low (11/17)
Biological Rank:	Low (7/10)
Native Species:	Moderate (4/7)
Sport Fishery:	High (20)
Water Quality:	Low (3/4)
Social Rank:	High (1/3)
FWP Reports:	1997, 1999, 2000, 2001, 2002

Bear Creek, a small, 2nd order tributary to the lower Blackfoot River, flows ~6 miles through private land including industrial forest in upper reaches. Bear Creek has received extensive restoration over the last several years and is approaching final restoration phases. Bear Creek ranks low on the restoration priority list for project streams for total and biological rank, but high in social rank. Bear Creek ranks moderate for native species value and high for multi-species sport fishery value and low potential water quality due to the completion of many restoration projects in the basin. Bear Creek supports limited bull trout rearing, fluvial WSCT, rainbow trout, brown trout and resident brook trout. Fisheries–related impairments, located in the lower reaches, include elevated stream sediment levels from poor road drainage. The stream is currently recovering from livestock-induced riparian vegetation suppression.

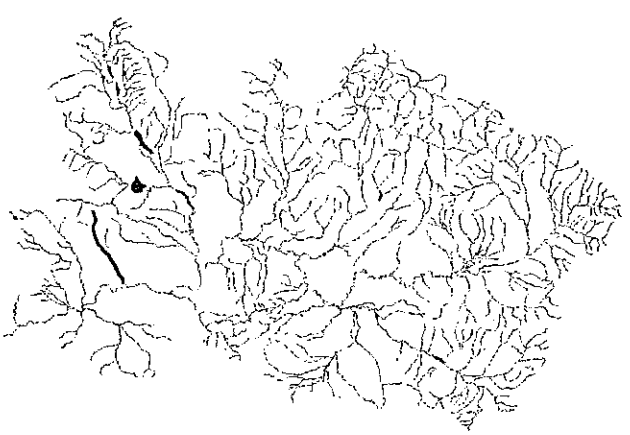
Beaver Creek: 160(7/83)



Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	High (4/17)
Biological Rank:	High (3/10)
Native Species:	Moderate (4/7)
Sport Fishery:	High (20)
Water Quality:	High (1/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1990, 2000

Beaver Creek, a 3rd order tributary to Keep Cool Creek located near Lincoln, flows ~ 9 miles through both public and private land. The private land is located in the lower three miles of stream. Beaver Creek ranks high for total and biological rank. Supporting very limited bull trout rearing and fluvial WSCT, Beaver Creek ranks moderate for native species value. It provides a high multi-species sport fishery value, Beaver Creek also ranks high in both 1) potential water quality benefits, and 2) potential to increase flows to the Blackfoot River. Beaver Creek supports high densities of WSCT in headwaters along with brown trout and resident brook trout in lower reaches. Brown trout are dominant at increased densities in lower reaches. Fisheries impairments, located in the middle reaches, include 1) reduced instream flow from irrigation, 2) fish entrapment to irrigation canals, and 3) livestock induced stream bank degradation and riparian vegetation suppression from livestock grazing and an instream corral.

Belmont Creek: 160(7/83)

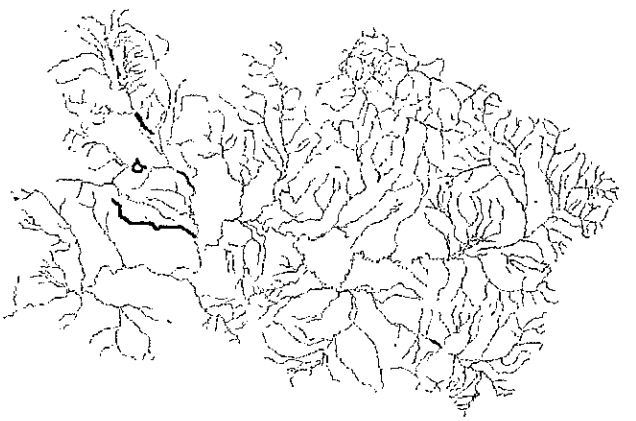


Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	High (4/17)
Biological Rank:	High (3/10)
Native Species:	High (1/7)
Sport Fishery:	High (20)
Water Quality:	Low (2/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1990, 1997, 1999, 2002

Belmont Creek, a 2nd order tributary to the lower Blackfoot River, flows ~11 miles through public and private land-primarily industrial (Plum Creek) forest. The lower ~10 miles of stream are Plum Creek properties, except for a BLM section near the mouth. Past fisheries-related projects include a Plum Creek-

sponsored basin-wide erosion control (road drainage) measures, along with fish passage improvements near the mouth. As a bull trout core area and fluvial WSCT stream, Belmont Creek ranks high on the restoration priority list for total rank, biological rank, and native species rank. In addition to native species, Belmont Creek supports rainbow and brown in lower reaches and very low brook trout densities. This species assemblage provides for high (multi-species) sport fishery value to the Blackfoot River. With only one (sediment) of three water quality impairments, Belmont Creek ranked as a low priority for potential water quality improvements. Fisheries-related impairments include elevated levels of instream sediment (road drainage, riparian livestock access), along with areas of low habitat complexity in lower Belmont Creek.

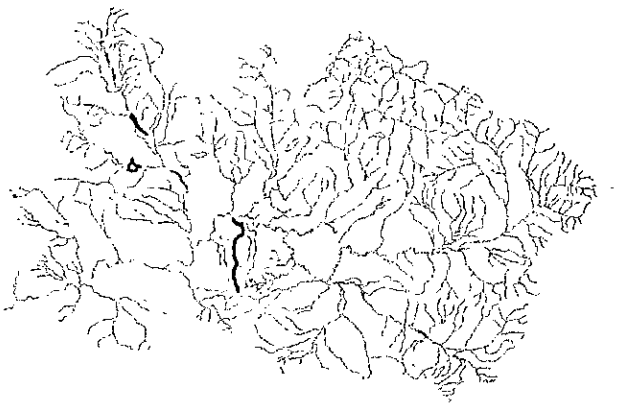
Blanchard Creek: 145(13/83)



Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	High (7/17)
Biological Rank:	High (4/10)
Native Species:	Low (5/7)
Sport Fishery:	High (20)
Water Quality:	High (1/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1997, 1999, 2000, 2001

Blanchard Creek, a 2nd order tributary to the lower Clearwater River, flows ~13 miles through industrial (Plum Creek) forest, along with State land and private agricultural properties in lower reaches. Blanchard Creek ranks high for both total and biological rank, based largely on its potential for instream flow and water quality benefits. Because Blanchard Creek supports fluvial WSCT but no bull trout, it ranks low in native species value for project streams. However, because Blanchard Creek supports high rainbow trout densities and brown trout, it ranks high (multi-species) sport fishery value to both the Clearwater and Blackfoot Rivers. Again, Blanchard Creek ranked high for both potential water quality benefits, and potential to increase flows to the Blackfoot River. Fisheries-related impairments - located primarily in lower Blanchard Creek include 1) dewatering, 2) channel alterations, 3) road drainage problems, 4) livestock induced stream bank degradation and 5) riparian vegetation suppression.

Chamberlain Creek: 130(21/83)

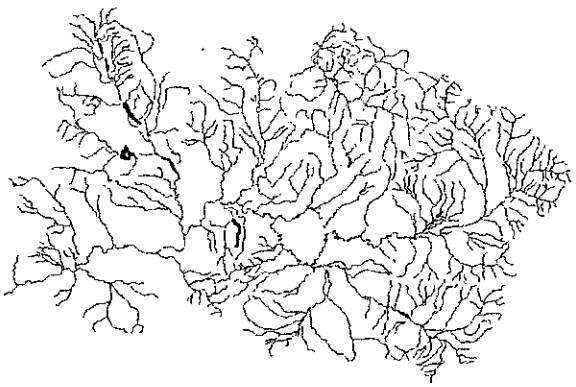


Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	Low (10/17)
Biological Rank:	Low (7/10)
Native Species:	Moderate (4/7)
Sport Fishery:	High (20)
Water Quality:	Low (3/4)
Social Rank:	High (1/3)
FWP Reports:	1990, 1997, 1999, 2001

Chamberlain Creek, a 2nd order tributary to the middle Blackfoot River, flows ~10 miles through both public (BLM) and private (Plum Creek and agricultural) lands. Private land is located in the lower seven miles of stream. Chamberlain Creek ranked low for total and biological ranking but high in social/financial criteria. These low total and biological rankings are

the result of improved flow and improved water conditions related to past restoration projects. Because Chamberlain Creek supports bull trout rearing and fluvial WSCT, it ranked high in native species value. Chamberlain Creek also support (high) multi-species sport fishery value to the Blackfoot River. High densities of WSCT dominate the lower four miles of stream mixed with low numbers of rainbow, brown, brook and bull trout. Fisheries impairments, located in the lower and middle reaches, include 1) elevated stream sediment (road drainage), 2) livestock induced riparian vegetation suppression, 3) lack of complex fish habitat (instream wood), and 4) whirling disease.

Chamberlain Creek, East Fork: 105(44/83)



Fisheries Impaired: Y
Project Stream: Y
Total Rank: Low (15/17)
Biological Rank: Low (9/10)
Native Species: Low (5/7)
Sport Fishery: Low (10)
Water Quality: Low (3/4)
Social Rank: High (1/3)
FWP Reports: 1999

The East Fork of Chamberlain Creek, a small, 1st order tributary to Chamberlain Creek, flows ~3.5 miles entirely through private (Plum Creek) lands. The East Fork is a past project stream. Past projects include correcting road drainage and replacing a culvert near the mouth. The East Fork ranks low on the restoration priority for all categories of ranking criteria. This low ranking result from single species sport fishery status, and low potential for both water quality improvements and downstream flow benefits to the Blackfoot River. The lower reaches of the East Fork supports high densities of fluvial WSCT. Fisheries impairments, located in the lower reaches, are believed to still include elevated instream sediment levels from poor road drainage. The new culvert may also restrict upstream movement of juvenile fish. The East Fork of Chamberlain tested negative for whirling disease despite positive results for whirling disease in the mainstem of Chamberlain Creek.

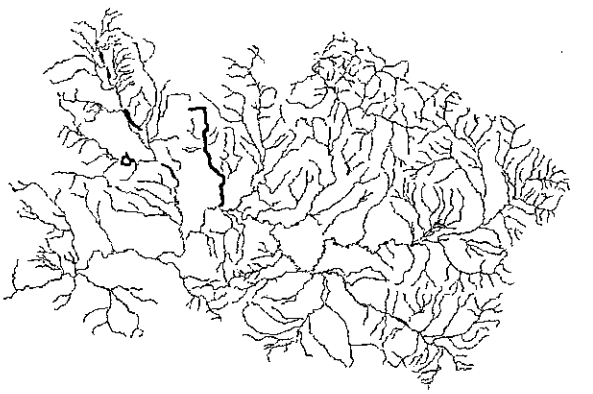
Chamberlain Creek, West Fork: 95(49/83)

Fisheries Impaired: Y
Project Stream: Y
Total Rank: Low (16/17)
Biological Rank: Low (9/10)
Native Species: Low (5/7)
Sport Fishery: Low (10)
Water Quality: Low (3/4)
Social Rank: Moderate (2/3)
FWP Reports:

The West Fork of Chamberlain Creek, a small, 1st order tributary to lower Chamberlain Creek, flows ~2.5 miles entirely through private (Plum Creek) lands. The West Fork ranks low on the restoration priority list for total rank and all biological categories. Low rankings result from single species status, low potential for both 1) water quality improvements and 2) downstream flow benefits to the Blackfoot River. The lower reaches of the West Fork supports fluvial WSCT. Fisheries impairments, located in the lower reaches, are elevated instream

sediment levels from poor road drainage. No fish sampling data has been collected on the West Fork; however, the mainstem near the mouth of the West Fork supports high densities of fluvial WSCT along with low numbers of brook trout.

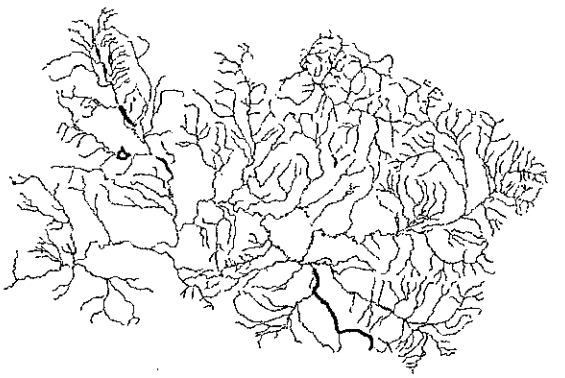
Cottonwood Creek (R.M. 43): 85(5/83)



Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	High (3/17)
Biological Rank:	High (2/10)
Native Species:	High (1/7)
Sport Fishery:	High (20)
Water Quality:	Low (3/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1990, 1997, 1999, 2000, 2001

Cottonwood Creek, a major, a 3rd order tributary to the middle Blackfoot River, flows ~16 miles through National Forest in upper reaches and mixed State and private lands in the lower ~12 miles. Cottonwood Creek ranks high on the restoration priority list for total and biological rank, including high native species and sport fishery values. These high rankings result primarily for the status as a bull trout core area and fluvial WSCT stream, and multi-species assemblage (rainbow and brown trout) in lower stream reaches. It has low potential water quality benefits with some potential for sediment reduction. Cottonwood Creek also has potential to increase downstream flows to the Blackfoot River. Low densities of rainbow and brown trout inhabit the lower reaches while moderate numbers of brown and brook trout dominate the middle reaches. Moderate densities of WSCT and with low numbers of bull trout dominate the upper reaches. Principle fisheries impairments, located in the middle and lower reaches, include 1) lack of complex fish habitat (instream wood); 2) livestock induced stream bank degradation, 3) riparian vegetation suppression, and 4) whirling disease.

Cottonwood Creek (trib. to Douglas Creek): 165(62/83)

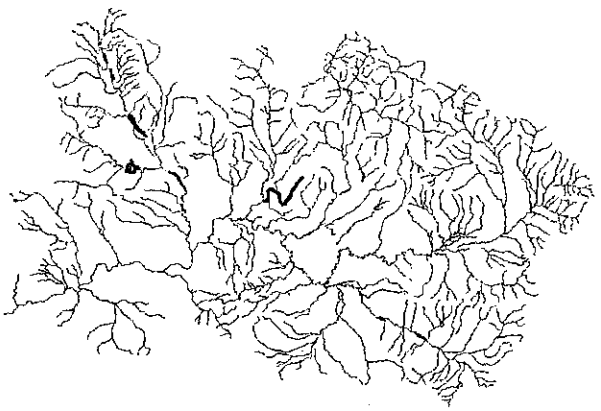


Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	Low (17/17)
Biological Rank:	Low (9/10)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Low (3/3)
FWP Reports:	2001

Cottonwood Creek, a 2nd order tributary to lower Douglas Creek, flows ~ 18 miles first through public (BLM) and then private agricultural land in the lower ~8 miles of the stream. Overall, it ranks very low on the restoration priority list for project-impaired streams. A low native species value, low social ranking, and lack of sport fishery value generate its low total and biological ranking. Due to dewatering, potential for a reduction in sediment, temperature and nutrients, Cottonwood Creek ranks high in potential water quality benefits. The upper reaches support high densities of resident WSCT and brook trout. Lower Cottonwood Creek supports only long nose suckers. Fisheries impairments, located in the lower reaches, include 1) livestock

induced stream bank degradation and riparian vegetation suppression, 2) lack of complex fish habitat (instream wood), 3) undersize road crossing culverts causing erosion, and 4) dewatering

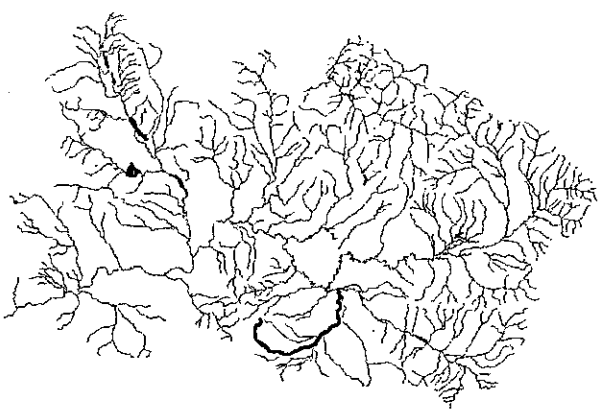
Dick Creek: 165(5/83)



Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	High (3/17)
Biological Rank:	High (3/10)
Native Species:	Moderate (4/7)
Sport Fishery:	High (20)
Water Quality:	High (1/4)
Social Rank:	High (1/3)
FWP Reports:	1997, 2002

Dick Creek, a 2nd order tributary to lower Monture Creek, flows ~14 miles through both public (National Forest and State) and private (agricultural and timber) land in the lower ~6 miles of stream. Dick Creek ranks high on the restoration priority list of project streams. Although located in a bull trout core area, Dick Creek does not support spawning and rearing for bull trout, and generated moderate rank in native species value as a result. Dick Creek supports populations of fluvial WSCT, rainbow trout, brown trout, and resident brook trout and provides high (multi-species) sport fishery value to the Blackfoot River. Because of potential for a reduction in water temperatures, sediment and nutrients, Dick Creek ranked high in potential water quality benefits. Dick Creek also received a high rank for its potential to increase downstream stream flows to the Blackfoot River. Moderate densities of rainbow trout dominate its lower reaches along with brown trout and low densities of brook trout. Dick Creek's headwaters support WSCT and brook trout in moderate densities. Fisheries impairments, located throughout the middle and lower reaches, include 1) livestock induced stream bank degradation and riparian vegetation suppression, 2) lack of complex fish habitat (instream wood), 3) dewatering and fish losses to irrigation canals, and 4) road culverts limiting fish passage.

Douglas Creek: 115(36/83)

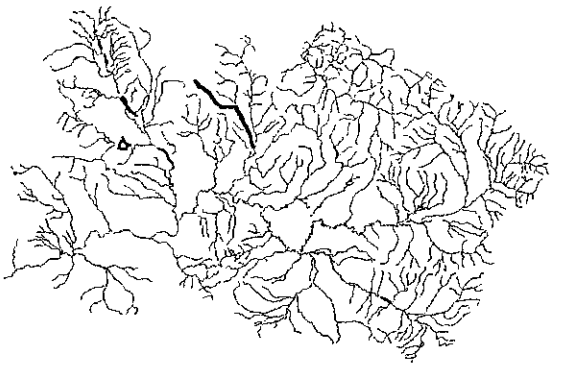


Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	Low (13/17)
Biological Rank:	Low (7/10)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1997, 2001

Douglas Creek, a major 3rd order tributary to lower Nevada Creek, flows ~22 miles through public (BLM) and private ranch land. Most of the drainage, the lower ~18 miles, is private agricultural land. The low native species value and lack of sport fishery value contribute to a low ranking on the restoration priority list for project-impaired streams. Douglas Creek ranked high for potential water quality benefits and increases stream flows to the Blackfoot River. The upper reaches support pure resident WSCT in moderate densities. Lower and middle Douglas Creek supports low numbers of native non-game fish species. Fisheries impairments, located throughout the drainage, include 1) lack of complex fish habitat (instream wood), 2) livestock

induced stream bank degradation and riparian vegetation suppression, 3) elevated sediment and elevated nutrient levels and elevated water temperatures, 4) channel degradation related to instability and to road construction, and 5) reduced instream flows from irrigation.

Dunham Creek: 150(11/83)



Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	High (6/17)
Biological Rank:	High (4/10)
Native Species:	High (1/7)
Sport Fishery:	High (20)
Water Quality:	Low (3/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1997, 1999, 2002

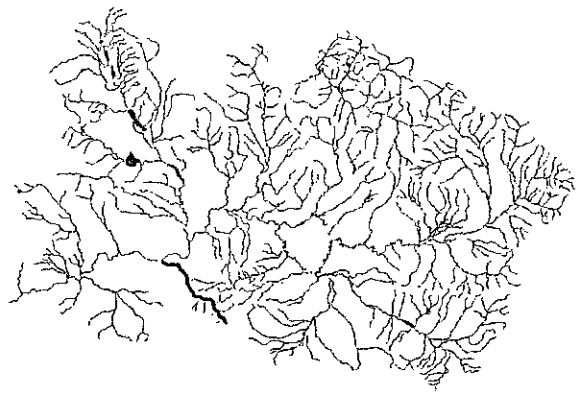
Dunham Creek, a large 2nd order tributary to Monture Creek, flows ~13 miles through public land (National Forest) and a small portion of private land near the mouth. Dunham Creek ranks high on the restoration priority list for project streams. Supporting fluvial bull trout spawning and rearing and fluvial WSCT, Dunham Creek ranks high in native species and multi-species sport fishery values. Because of high water quality, Dunham Creek has low potential water quality benefits. Dunham Creek supports populations of fluvial bull trout, fluvial WSCT, and resident brook trout. Fish densities for both WSCT and bull trout decline in the middles reaches. Fisheries impairments, located in the middle and lower reaches, include the loss of riparian vegetation related to past logging practices. Dunham Creek is also site of an extensive channel reconstruction, habitat restoration and revegetation project. Dunham Creek is in the early stages of recovery from that project.

East Twin Creek: 120(31/83)

Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	Low (12/17)
Biological Rank:	Low (7/10)
Native Species:	High (4/7)
Sport Fishery:	High (20)
Water Quality:	Low (3/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1997, 1999

East Twin Creek, a small 2nd order tributary to the lower Blackfoot River, flows ~5 miles through private land, except for a small parcel of public land in the headwaters. East Twin Creek ranks low on the restoration priority list for project streams, due to low potential for water quality and instream flow improvement. Supporting bull trout rearing and fluvial WSCT, ranks it high in native species value. East Twin Creek provides a high (multi-species) sport fishery value to the Blackfoot River by supporting a diverse fish assemblage of fluvial WSCT, bull trout, rainbow trout, brown trout, and resident brook trout. In general, densities are low for all species in the lower to middle reaches. The only known problem for East Twin Creek is an undersized culvert, which contributes to localized channel instability.

Elk Creek: 140(17/83)



Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	High (8/17)
Biological Rank:	High (4/10)
Native Species:	Low (5/7)
Sport Fishery:	High (20)
Water Quality:	High (1/4)
Social Rank:	Low (3/3)
FWP Reports:	1997, 1999, 2001, 2002

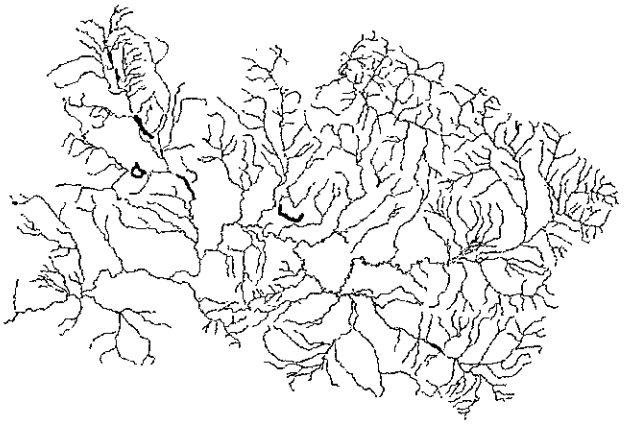
Elk Creek, a degraded 3rd order tributary to the lower Blackfoot River, flows ~14 miles through both public (BLM and State) in headwaters and private (agricultural) land in lower ~7 miles. It ranks high on the restoration priority list for project-impaired streams. Elk Creek has high potential for water quality benefits and increases downstream flows to the Blackfoot River. Elk Creek provides a high (multi-species) sport fishery value to the Blackfoot River, but is low in native species value and received a low social and financial ranking. Elk Creek supports populations of fluvial WSCT, rainbow trout, brown trout, and resident brook trout. Densities of all species decrease in the downstream direction. Fisheries impairments in upper Elk Creek include channel alterations (placer mining) and road drainage problems. Fisheries impairments for lower Elk Creek include 1) lack of complex fish habitat (instream wood), 2) livestock induced stream bank degradation and riparian vegetation suppression, 3) elevated water temperature and channel instability, and 4) irrigation (instream flows, fish losses to ditches and fish passage), and 5) adverse effects of upstream mining and road drainage problems.

Gold Creek: 150(11/83)

Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	High (6/17)
Biological Rank:	High (4/10)
Native Species:	High (1/7)
Sport Fishery:	High (20)
Water Quality:	Low (3/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1990, 1997, 1999, 2000, 2001, 2002

Gold Creek, a large 3rd order tributary to the lower Blackfoot River, flows ~19 miles through public (FS and BLM) and private (Plum Creek) land. Gold Creek ranks high on the restoration priority list for project streams. As a core area bull trout stream, Gold Creek provides spawning and rearing of fluvial bull trout. Gold Creek also supports fluvial WSCT and rainbow trout and brown trout in lower reaches along with resident brook trout. Gold Creek ranks high in native species value and provides high (multi-species) sport fishery value. Because of generally high water quality, Gold Creek ranked low for potential water quality benefits. Gold Creek provides no irrigation and thus no potential in improve downstream flows to the Blackfoot River. Fisheries impairments include 1) road drainage problems, 2) recreational impacts (access sites in bull trout spawning areas) and 3) low whirling disease infection.

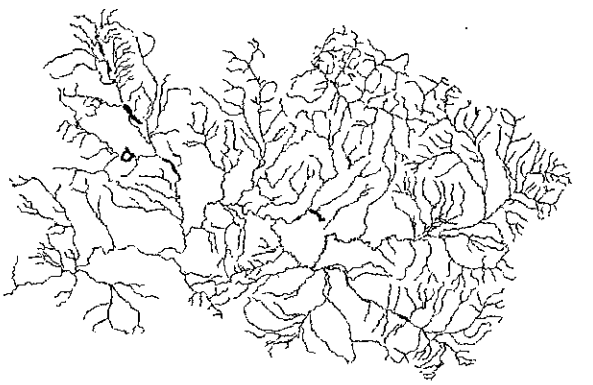
Hoyt Creek: 140(17/83)



Fisheries Impaired: Y
Project Stream: Y
Total Rank: High (8/17)
Biological Rank: Moderate (5/10)
Native Species: Low (6/7)
Sport Fishery: High (20)
Water Quality: High (1/4)
Social Rank: Moderate (2/3)
FWP Reports: 1997

Hoyt Creek, a small 1st order spring creek tributary to lower Dick Creek, originates from alluvial aquifers located immediately north of Ovando. This spring creek flows ~4 miles exclusively through private ranch land. Despite a low native species rank, Hoyt Creek ranks high in the total ranking of project streams. This rank is due to high (multi species) sport fishery value and potential to improve flow and water quality in the watershed. Hoyt Creek supports resident WSCT, rainbow trout, brown trout and brook trout in generally low densities. Fisheries impairments, located throughout the stream, include lack of habitat complexity and suppressed riparian vegetation.

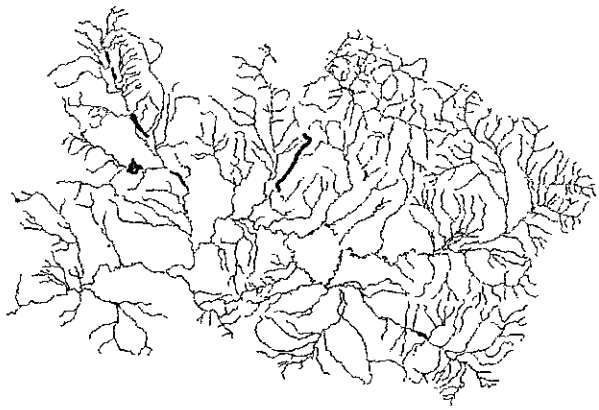
Kleinschmidt Creek: 155(10/83)



Fisheries Impaired: Y
Project Stream: Y
Total Rank: High (5/17)
Biological Rank: High (4/10)
Native Species: High (3/7)
Sport Fishery: High (20)
Water Quality: High (1/4)
Social Rank: High (1/3)
FWP Reports: 1990(as Ginoff Creek), 1997, 1999, 2000, 2001, 2002

Kleinschmidt Creek, a 1st order spring creek tributary to Rock Creek (North Fork watershed), drains the southern portion of Kleinschmidt Flat. This stream flows ~2.6 miles exclusively through private land. Kleinschmidt Creek has been the focus of an extensive channel reconstruction and restoration project and is now in early recovery stage. Kleinschmidt Creek ranks high for project streams for all criteria. These high ranks are the result of bull trout core area status, bull trout rearing, and use by fluvial WSCT and multi species sport fishery values. Despite extensive restoration, Kleinschmidt Creek has potential for further water quality improvement with modified riparian grazing practices in upper reaches. Kleinschmidt Creek received a high social rank. Kleinschmidt Creek supports very low densities of juvenile bull trout and fluvial WSCT along with higher densities of brook trout and brown trout. Fisheries impairments limited to upper Kleinschmidt Creek include 1) lack of riparian vegetation, 2) excessive livestock access to the riparian area and 3) feedlot runoff. Kleinschmidt Creek support a high level of whirling disease.

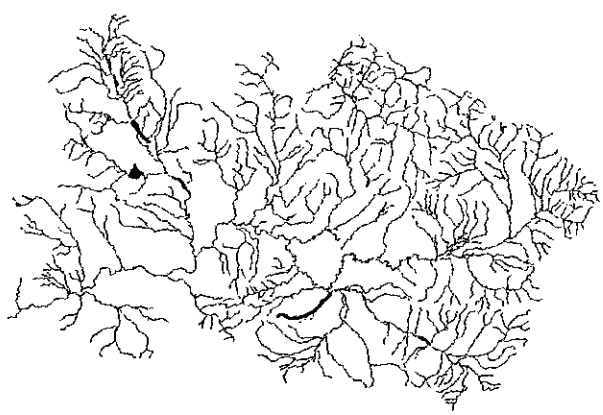
McCabe Creek: 135(20/83)



Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	Moderate (9/17)
Biological Rank:	Low (6/10)
Native Species:	Moderate (4/7)
Sport Fishery:	Low (10)
Water Quality:	Low (3/4)
Social Rank:	High (1/3)
FWP Reports:	1997, 1999, 2000, 2001, 2002

McCabe Creek, a small, 2nd order tributary to Dick Creek, flows ~9.5 miles through public (National Forest) and private (agricultural) land in middle to lower reaches. McCabe Creek ranks moderate to low for most ranking criteria except for social/financial consideration where it ranked high. The total rank of moderate is due to 1) moderate native species rank, 2) single species (WSCT) sport fishery value and 3) low potential to improve water quality due to its restored condition. McCabe Creek, located in the bull trout core area, contains fluvial WSCT and brook trout. WSCT trout show an upstream increase in densities, while brook trout show an upstream decrease. Except for suppressed riparian woody vegetation, the majority of fisheries impairments have been addressed through an extensive restoration program. The stream is currently in a recovery phase.

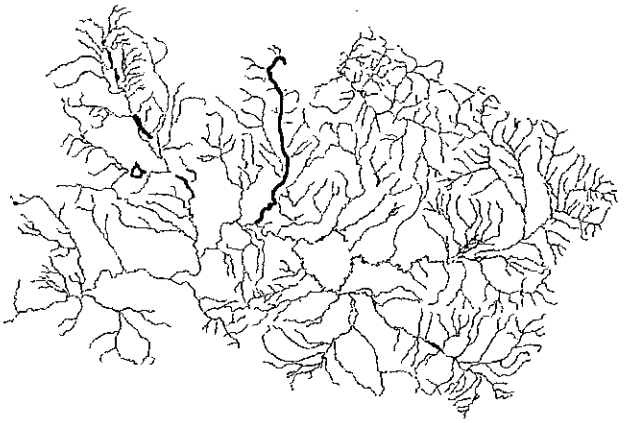
McElwain Creek: 130(21/83)



Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	Low (10/17)
Biological Rank:	Low (7/10)
Native Species:	Low (6/7)
Sport Fisheries:	Low (10)
Water Quality:	High (1/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1999

McElwain Creek, a 2nd order tributary to lower Nevada Creek, flows ~9 miles through public (BLM) and private ranch land. Private land is located in the lower ~6 miles of the stream. McElwain Creek ranks low for all priority criteria, except for a high rank in water quality criteria. Low ranks are due to 1) low native species value (absence of bull trout), and 2) single species (WSCT) sport fishery value. McElwain Creek has potential to increase flow in the Blackfoot river and high potential to improve water quality due to its degraded condition. McElwain Creek supports pure resident WSCT with densities decreasing in the downstream direction. Fisheries impairments, located mostly on private land, include 1) poor road crossings and drainage, 2) irrigation impacts (fish passage and dewatering), 3) degraded riparian vegetation, 4) excessive livestock access to stream banks.

Monture Creek: 175(1/83)



Fisheries Impaired: Y
Project Stream: Y
Total Rank: High (1/17)
Biological Rank: High (2/10)
Native Species: High (1/7)
Sport Fisheries: High (1/4)
Water Quality: High (1/4)
Social Rank: High (1/3)
FWP Reports: 1990, 1997, 1999, 2000, 2001, 2002

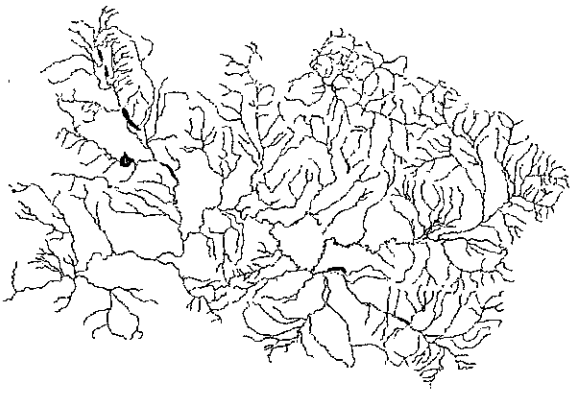
Monture Creek, a large 4th order tributary to the middle Blackfoot River, originates in a roadless watershed along southern flanks of the Bob Marshall Wilderness. Monture Creek is ~24 miles long, with the lower ~12 miles flowing through private ranch land. Monture Creek, located in the bull trout core area, ranked as a very high priority for all criteria. This ranking is due to 1) bull trout spawning, rearing and core area status, 2) presence of fluvial WSCT, 3) a high (multi-species) sport fishery value, 4) high potential to improve water quality in the Blackfoot River, and cooperative lands resulting in a high ranking for the social category. Monture Creek, a primary spawning and rearing stream to the middle Blackfoot River, supports populations of fluvial bull, fluvial WSCT, rainbow trout and brown trout and resident brook trout. Most fisheries impairments for Monture Creek were corrected over the last decade. However localized impairments in the lower Monture Creek include 1) channel alterations, 2) lack of instream complexity, 3) degraded riparian vegetation, 4) livestock access to the stream banks and 5) a low-level infection of whirling disease.

Nevada Creek (lower, below reservoir): 85(62/83)

Fisheries Impaired: Y
Project Stream: Y
Total Rank: Low (17/17)
Biological Rank: Low (10/10)
Native Species: Low (7/7)
Sport Fishery: None
Water Quality: High (1/4)
Social Rank: Moderate (2/3)
FWP Reports: 1990, 1997, 2001, 2002

Nevada Creek below the reservoir is a large 3rd order tributary to the middle Blackfoot River that flows ~33 miles exclusively through private ranch land. Lower Nevada Creek ranks very low in all criteria except for potential water quality benefits where it ranks high. These low ranks are due to the lack of native species and lack of a sport fishery values to the Blackfoot River. Although Nevada Creek ranks low overall, it ranked high for potential to increase flow to the Blackfoot, and ranked high in potential to improve downstream water quality. Salmonids (rainbow trout and brown trout) inhabit lower Nevada Creek in very low densities immediately below Nevada Creek reservoir, but absent from lower Nevada Creek. Fisheries-related impairments, located throughout the drainage, include 1) irrigation impacts (entrainment, dewatering), 2) channel alterations, 3) lack of instream complexity, 4) degraded riparian vegetation resulting from excessive livestock access to riparian areas, and 5) low water quality.

Nevada Spring Creek: 125(28/83)



Fisheries Impaired: Y
Project Stream: Y
Total Rank: Low (11/17)
Biological Rank: Low (6/10)
Native Species: Low (5/7)
Sport Fishery: None
Water Quality: High (1/4)
Social Rank: Moderate (2/3)
FWP Reports: 1997, 2001, 2002

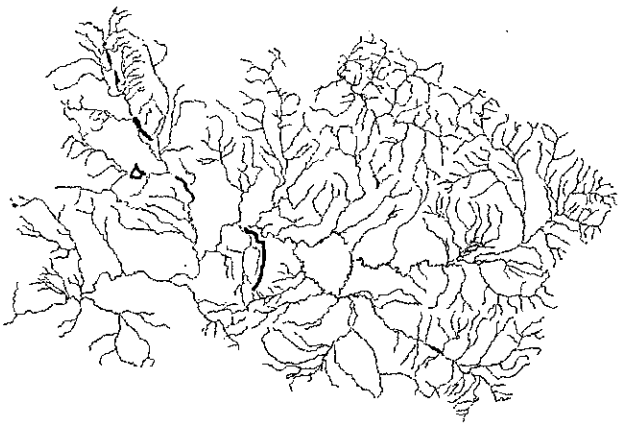
Nevada Spring Creek, a 1st order spring creek tributary to lower Nevada Creek, flows ~3.2 miles in length exclusively though private ranch land. Nevada Spring Creek ranks low in all biological categories, except for a high rank in water quality based on potential benefits in restored condition. This low biological rank is due to low native species value and lack of a sport fishery value. However, Nevada Spring Creek has potential to increase flow in the Blackfoot and the high potential to improve downstream water quality to lower Nevada Creek and possibly the Blackfoot River. Nevada Spring Creek supports very low densities of fluvial WSCT and brown trout in the upper reaches. Fisheries impairments, located over the length of the stream include 1) irrigation impacts (dewatering and fish passage), 2) channel alterations, 3) lacks instream complexity, 4) degraded riparian vegetation resulting from excessive livestock access to stream banks.

North Fork Blackfoot River: 175(1/83)

Fisheries Impaired: Y
Project Stream: Y
Total Rank: High (1/17)
Biological Rank: High (1/10)
Native Species: High (1/7)
Sport Fishery: High (20)
Water Quality: Low (2/4)
Social Rank: Moderate (2/3)
FWP Reports: 1990, 1997, 1999, 2000, 2001, 2002

The North Fork Blackfoot River, the largest tributary (4th order) to the Blackfoot River, drains the Scapegoat Wilderness before entering private land at river mile ~17. The North Fork is a number one ranked stream for project streams, in the total ranking. This rank is due to 1) bull trout core area status (spawning and rearing), 2) presence of fluvial WSCT, 3) a high (multi-species) sport fishery value and high potential to increase flow in the Blackfoot. The North Fork also has some potential to improve water quality by reducing sediment and temperature. The North Fork supports one of the Blackfoot watersheds largest bull trout spawning populations. In addition to native salmonids, the North Fork supports rainbow trout, brown trout and low densities of resident brook trout. These species inhabit the river at a varying distribution at low to moderate densities. Fisheries impairments confined to localized areas of middle reaches include 1) channel alterations, 2) lack of instream complexity, 3) degraded riparian vegetation, 4) and reduced instream flow. Whirling disease is also present in the lower drainage.

Pearson Creek: 120(31/83)



Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	Low (12/17)
Biological Rank:	Low (8/10)
Native Species:	Low (5/7)
Sport Fishery:	Low (10)
Water Quality:	Low (2/4)
Social Rank:	High (1/3)
FWP Reports:	1997, 2000, 2001, 2002

Pearson Creek, a small 2nd order Garnet Mountain tributary to Chamberlain Creek, flows ~9 miles through mostly private (Plum Creek) land and a small section of public (BLM) land in the upper reaches. Pearson Creek ranks low for all biological criteria. This rank is due to a low native species rank and low (single-species) sport fishery value. However, Pearson Creek has high potential for improving downstream water quality. Pearson Creek supports fluvial WSCT in the lower drainage. Pearson Creek has been the site of and extensive restoration program, which corrected the majority of identified problems. Current fisheries impairments located in lower Pearson Creek include 1) lack of instream complexity, 2) degraded riparian vegetation, and 3) road drainage problems.

Poorman Creek: 170(3/83)

Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	High (2/17)
Biological Rank:	High (1/10)
Native Species:	High (2/7)
Sport Fishery:	High (20)
Water Quality:	High (1/4)
Social Rank:	Low (3/3)
FWP Reports:	2000, 2002

Poorman Creek, a 3rd tributary to the upper Blackfoot River, flows ~14 miles through public land (National Forest) in upper reaches and private ranch land in mid- to lower reaches. Poorman Creek ranks high for all biological categories but low for social and financial considerations. High biological ranks are the result of 1) bull trout spawning and rearing, 2) fluvial WSCT presence, 3) high (multi-species) sport fishery value, 4) the potential to increase flow in the Blackfoot, and 5) high potential to improve water quality in the Blackfoot River. Poorman Creek supports populations of bull trout, fluvial WSCT, brown trout and brook trout. Bull trout use the upper reaches of this stream for spawning and rearing in low numbers. WSCT and brook trout are found in low densities in the middle to upper reaches of Poorman Creek, while brown trout are found in low numbers near the mouth and middle reaches. Fisheries impairments located primarily in lower Poorman Creek include 1) channel alterations related to placer mining, 2) road crossings, 3) irrigation impacts (dewatering, entrainment and fish passage), 4) degraded riparian vegetation resulting from excessive livestock access to the stream banks.

Rock Creek: 160(7/83)

Fisheries Impaired: Y
Project Stream: Y
Total Rank: High (4/17)
Biological Rank: High (2/10)
Native Species: High (3/7)
Sport Fishery: High (20)
Water Quality: High (1/4)
Social Rank: Low (3/3)
FWP Reports: 1990, 1997, 1999, 2000, 2001, 2002

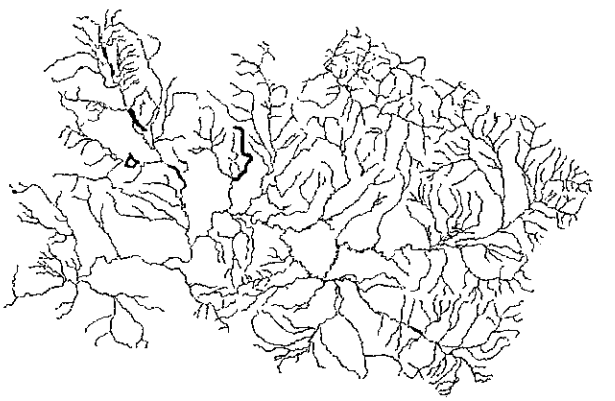
Rock Creek, the largest tributary to the lower North Fork Blackfoot River, is a 2nd order stream that flows ~9 miles through public (State) and private ranch land. State land is only found in the upper reaches of the stream. Rock Creek ranks high for all biological categories. These ranks are due to 1) bull trout core area status, and bull trout rearing, 2) fluvial WSCT presence, 3) high (multi-species) sport fishery value, 4) potential to increase flow in the Blackfoot River, and 5) high potential to improve downstream water quality. Rock Creek ranked low for social and financial considerations. Rock Creek contains some rearing of bull trout, fluvial WSCT, brown trout, rainbow trout and resident brook trout. Many of the fisheries impairments were addressed over the last decade. Current fisheries impairments, concentrated in middle reach of Rock Creek drainage, include 1) irrigation impacts (dewatering, entrainment, fish passage), 2) lack of instream complexity, 3) heavily degraded riparian vegetation resulting from excessive livestock access to stream banks, and 4) whirling disease.

Salmon Creek: 130(21/83)

Fisheries Impaired: Y
Project Stream: Y
Total Rank: Low (10/17)
Biological Rank: Moderate (5/10)
Native Species: High (3/7)
Sport Fishery: High (20)
Water Quality: Low (4/4)
Social Rank: Low (3/3)
FWP Reports: 1997, 1999

Salmon Creek, a small, 1st order outlet stream from Coppers Lake, flows ~2.5 miles in length through entirely public (National Forest) private agricultural land before joining Dry Creek to form Rock Creek. This small stream received mixed ranking for biological criteria including low total rank, moderate biological rank and high ranks for native species and sport fishery values. The overall low total rank is due generally to high native species and high sport fishery value offset by low potential to improve on water quality and low rank for social/financial considerations. Salmon Creek, located in the North Fork bull trout core area, supports very low densities of both juvenile bull trout and fluvial WSCT along with high densities of brook trout. Most of the habitat-related problems were corrected on Salmon Creek through extensive restoration. Current Fisheries impairments, located on lower Salmon Creek instream flow problems related to flood irrigation.

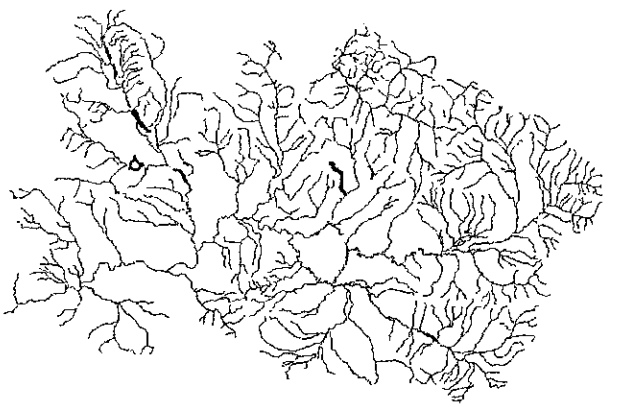
Shanley Creek: 130(21/83)



Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	Low (10/17)
Biological Rank:	Low (6/10)
Native Species:	Low (5/7)
Sport Fishery:	High (20)
Water Quality:	High (1/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1997, 1999, 2002

Shanley Creek, a 2nd order tributary to Cottonwood Creek, flows ~9 miles through public and private land, including the Bandy Experimental Ranch. Shanley Creek received a low total rank, low biological rank and low native species value, but ranked high in (multi-species) sport fishery value and potential water quality benefits. Shanley Creek, located in the Cottonwood Creek bull trout core area, historically contained bull trout based on landowner interviews. However, this species was absent from recent FWP surveys. Shanley Creek now contains resident WSCT, brown trout and brook trout. WSCT dominate upper Shanley Creek. Brown trout dominate lower Shanley Creek. Several restoration projects were completed on Shanley Creek including livestock management changes, screening an irrigation ditch. Current fisheries impairments include degraded riparian vegetation due to excessive livestock access to stream banks.

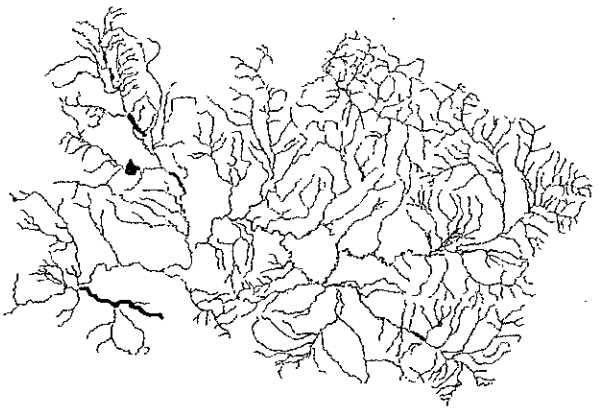
Spring Creek (trib. to N.F.): 140(17/83)



Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	High (8/17)
Biological Rank:	High (4/10)
Native Species:	High (3/7)
Sport Fishery:	High (20)
Water Quality:	Low (3/4)
Social Rank:	Low (3/3)
FWP Reports:	1999, 2001, 2002

Spring Creek, a small 1st tributary to the North Fork Blackfoot River, originates on the north side of Ovando Mountain. It flows ~6 miles through private land. Spring Creek ranks moderate in the total rank for project streams. This moderate rank is due to a low social rank, low water quality benefits, a moderate native species rank, high (multi species) sport fishery value, and a potential to increase flow in the Blackfoot. Located in the bull trout core area, Spring Creek supports juvenile bull trout rearing, and low densities of fluvial WSCT and brook trout. Fisheries impairments include dewatering and fish losses to an irrigation ditch.

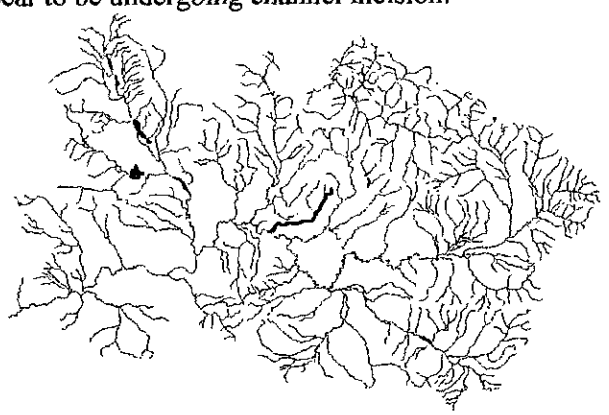
Union Creek: 110(40/83)



Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	Low (14/17)
Biological Rank:	Low (7/10)
Native Species:	Low (6/7)
Sports Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Low (3/3)
FWP Reports:	1990, 2001

Union Creek, a primary 3rd order tributary to the lower Blackfoot River, flows ~18 miles through both public (BLM) and mainly private ranch land. The lower ~15 miles of this stream flows through private land. Union Creek ranks low in the total rank for project streams. The low ranking results from a low native species rank, absence of sport fishery to the Blackfoot River, and low rank for social and financial considerations. Because of its degraded condition, Union Creek has high potential to improve water quality and increase flows to the Blackfoot River. Union Creek contains both brook trout and WSCT. Brook trout are present in very low densities in the middle reaches. Resident WSCT were sampled in low numbers in the middle and upper reaches. Fisheries impairments, located in the middle and lower reaches include 1) poor road crossings (undersize culvert), 2) irrigation impacts (low instream flows), 3) lack of instream complexity, 4) degraded riparian vegetation resulting from excessive livestock access to stream banks. Lower portions of Union Creek also appear to be undergoing channel incision.

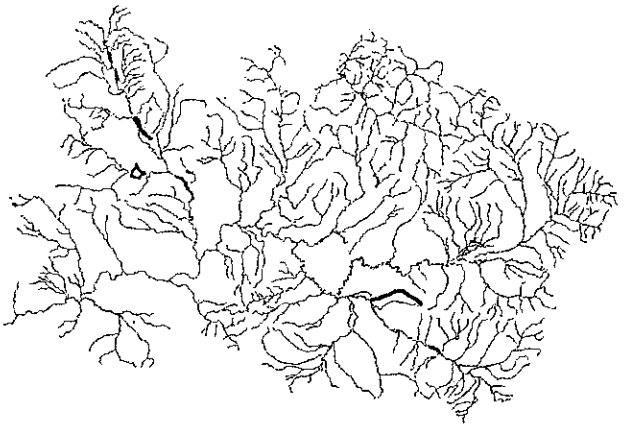
Warren Creek: 145(13/83)



Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	High (7/17)
Biological Rank:	High (4/10)
Native Species:	Low (5/7)
Sport Fishery:	High (20)
Water Quality:	High (1/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1997, 1999, 2001, 2002

Warren Creek, a small 2nd tributary to the middle Blackfoot River, flows ~14 miles primarily through forested foothills and private ranch land. Warren Creek ranks high in the total rank for project streams. This high rank is due to high (multi-species) sport fishery value to the Blackfoot River and high potential to improve downstream flow and water quality. Warren Creek ranks low native species value. Warren Creek contains a mixed species composition of brook trout, brown trout and low numbers of fluvial and resident WSCT. Brook trout inhabit the entire drainage, brown trout are found in the lower reaches and WSCT are present in the lower and upper reaches of Warren Creek. Fisheries impairments, located throughout the drainage, include 1) poor road crossings, 2) irrigation impacts (dewatering and passage), 3) channelization, 4) lack of instream complexity, and 5) degraded riparian vegetation resulting from excessive livestock access to stream banks.

Wasson Creek: 130(21/83)



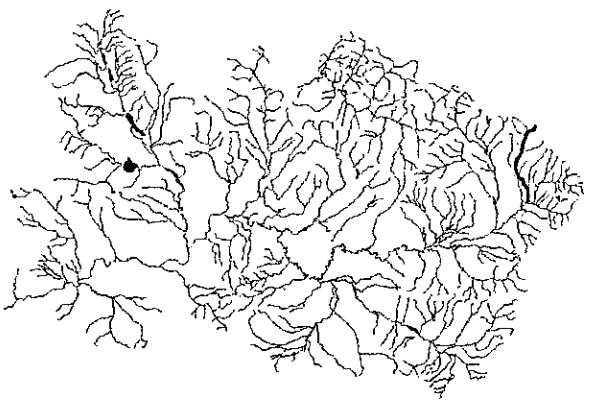
Fisheries Impaired:	Y
Project Stream:	Y
Total Rank:	Low (10/17)
Biological Rank:	Low (6/10)
Native Species:	Low (5/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1991, 1997, 2001

Wasson Creek is a small 1st order tributary to upper Nevada Spring Creek with a length of ~8.4 miles. The Wasson drainage contains both public (National Forest) land in the upper drainage and private land downstream of mile ~4. Wasson Creek ranks low in the total ranking for project streams. Wasson Creek ranks low rankings in most categories except for a high rank in potential water quality benefits and moderate rank in social and financial considerations. Wasson Creek also has potential to increase flow in the Blackfoot River. Wasson Creek supports high densities of WSCT in upper reaches with densities decreasing significantly in lower reaches. Impairments to fisheries, located in the middle and lower reaches, include 1) excessive livestock access to the stream, 2) channel alterations, 3) dewatering, and 4) possible fish barriers at diversion points.

RESULTS PART II: Prioritization of 50 non-project streams

Non-project streams support a wide range of impairments not yet addressed from a restoration standpoint. Identified fisheries impairments include: 1) 19 streams with poor road crossings, 2) 18 streams with irrigation impacts, 3) 18 streams with channel alterations, 4) 14 streams that lack complexity, 5) 14 stream with degraded riparian vegetation, 6) 16 streams with poor instream flow, 7) 25 streams with poor road drainage, 8) 31 streams with grazing degradation, 9) 5 streams with recreation impacts, 10) 6 streams with mining impacts, and 11) one stream with residential impacts.

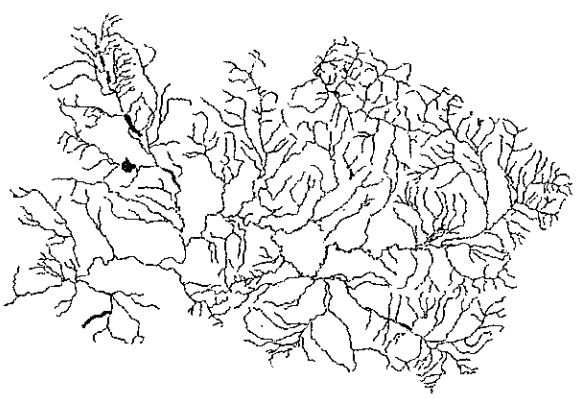
Alice Creek: 130(21/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (3/17)
Biological Rank:	High (6/14)
Native Species:	High (2/7)
Sport Fishery:	Low (10)
Water Quality:	Low (3/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2000

Alice Creek, an upper Blackfoot River 2nd order tributary, flows ~16 miles through a checkerboard of public (National Forest) and private ranch land. The lower ~3 miles of stream is exclusively private. Alice Creek ranks high on the restoration priority list for non-project streams. Supporting bull trout spawning and rearing, and a population of fluvial WSCT, ranks Alice Creek high in native species value. It also provides a low (single species) sport fishery value to the Blackfoot River and ranks low in potential water quality benefits. Recent fish population sampling found no fish in lower Alice Creek and low densities of fluvial WSCT in middle reaches. The upper reaches support low densities of WSCT and brook trout. Fisheries impairments near mile 2 include 1) the lack of complex fish habitat (instream wood), 2) localized stream banks degradation and 3) an instream road crossing from recreational users.

Arkansas Creek: 85(62/83)

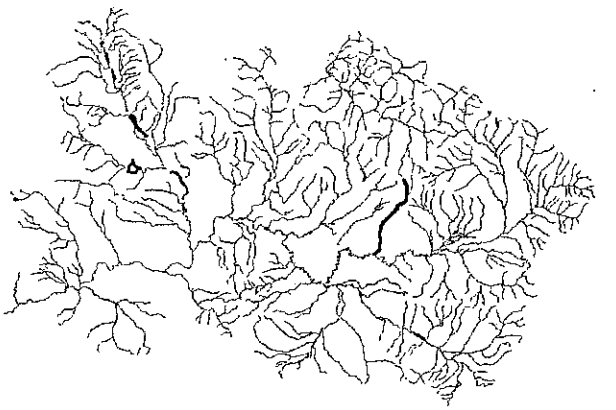


Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (12/17)
Biological Rank:	Low (10/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	Moderate (2/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2001

Arkansas Creek, a small 1st order tributary to Ashby Creek in the Union Creek watershed, flows ~5 miles through private (Plum Creek and agricultural) land. It ranks moderate in potential water quality benefits, low in native species value, and provides no sport fishery value to the Blackfoot River, giving Arkansas Creek a low total ranking on the restoration priority list for non-project streams. Arkansas Creek supports pure resident WSCT and brook trout in its lower and middle reaches. WSCT densities are low but increase slightly in the upstream direction,

while brook trout densities are low. Fisheries impairments include 1) elevated stream sediment levels from poor road drainage, 2) channel alterations and 3) livestock induced bank degradation.

Arrastra Creek: 115(36/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (6/17)
Biological Rank:	High (6/14)
Native Species:	High (2/7)
Sport Fishery:	High (20)
Water Quality:	None (4/4)
Social Rank:	Low (3/3)
FWP Reports:	1990, 1997, 2000

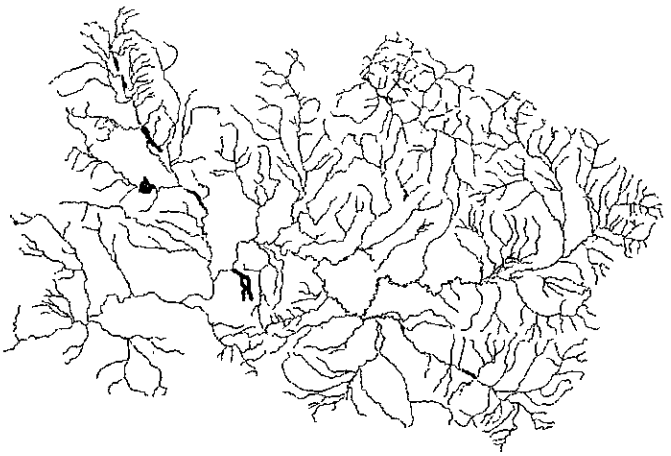
Arrastra Creek, a large 2nd order middle Blackfoot River tributary, flows ~13 miles through public (National Forest) and private land. The lower half of the stream is private. Arrastra Creek ranks high in total ranking on the restoration priority list for non-project streams. Supporting bull trout spawning and rearing and genetically pure fluvial WSCT, it ranks high in native species value, provides high (multi-species) sport fishery value to the Blackfoot River. We have identified no substantive water quality problems for Arrastra Creek. Arrastra Creek also supports populations of brown trout and resident brook trout. Fish densities are low for all species in lower reaches, but increase to moderate levels in middle reaches. The upper Arrastra Creek supports only native fish assemblage including WSCT and bull trout. Fisheries impairments include a total fish passage barrier in upper Arrastra Creek. Likely restoration opportunities in the middle and lower reaches include 1) localized poor road drainage, 2) a perched culvert limiting upstream fish passage, and 3) localized recreational impacts to stream banks.

Bartlett Creek: 80(69/83)

Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (13/17)
Biological Rank:	Low (11/14)
Native Species:	Low (6/7)
Sport fishery:	None
Water Quality:	Low (3/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2000

Bartlett Creek, a 1st order tributary to Alice Creek in the upper Blackfoot River watershed, flows ~7 miles through private land and a small portion of public land (National Forest) in the upper reaches. Bartlett Creek ranks low on the restoration priority list for non-project streams. This low ranking is the result of low native species value, lack of sport fishery value and low potential downstream water quality benefits to the Blackfoot River. Bartlett Creek supports populations of resident WSCT and brook trout. Fish densities are very low for both species in the lower reaches. High densities of brook trout were the only species found in the middle reaches. Fisheries impairments in lower Bartlett Creek include lack of complex fish habitat (instream wood) and localized recreational degradation (campsites) to stream banks.

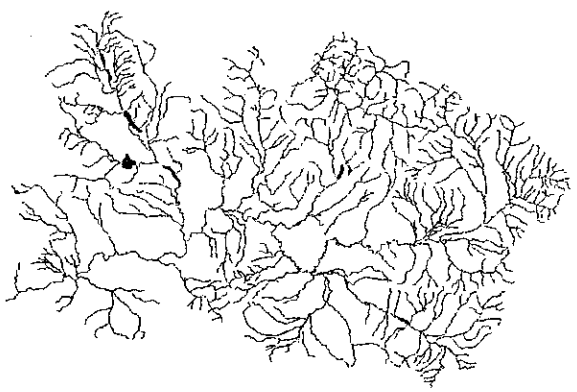
Bear Creek (R.M. 37.5): *95(49/83)*



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Moderate (10/17)
Biological Rank:	Low (10/14)
Native Species:	High (5/7)
Sport Fishery:	Low (10)
Water Quality:	None (4/4)
Social Rank:	*High* (1/3)
FWP Reports:	1999

Bear Creek, a small, 2nd order tributary to the middle Blackfoot River, flows ~4 miles through public (BLM) and private land in middle reaches. A lack of potential water quality benefits, high native species value, high social ranking characterizes Bear Creek's *moderate* total ranking on the restoration priority list for non-project streams. Bear Creek supports fluvial WSCT, providing low (single species) sport fishery value to the Blackfoot River. The lower reaches support low densities WSCT that increase to moderate levels in the middle and upper reaches. Fisheries impairments include undersize culverts limiting fish passage.

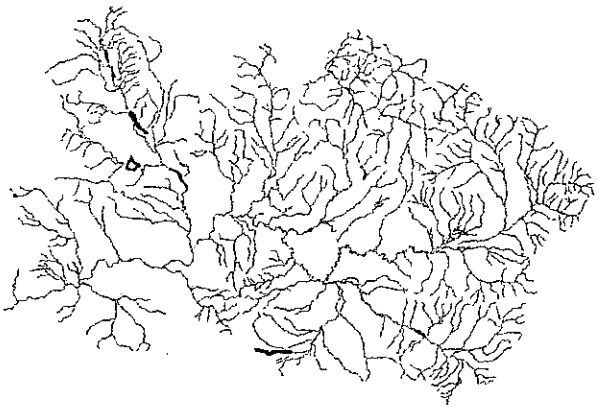
Bear Creek (trib. to North Fork): 75(75/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (14/17)
Biological Rank:	Low (11/14)
Native Species:	High (5/7)
Sport Fishery:	None
Water Quality:	None (4/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1999

Bear Creek, a small spring fed 2nd order disjunct tributary of the North Fork Blackfoot River, flows ~2 miles through private land. Bear Creek ranks low on the restoration priority list for non-project streams, despite bull trout core area status. Bear Creek has high native species value due to core area status, lacks potential water quality benefits and provides no sport fishery value. Bear Creek supports low densities of genetically pure resident WSCT and no other fish species. Fisheries impairments in lower Bear Creek include irrigation reducing instream flows and entrainment of fish to irrigation canals.

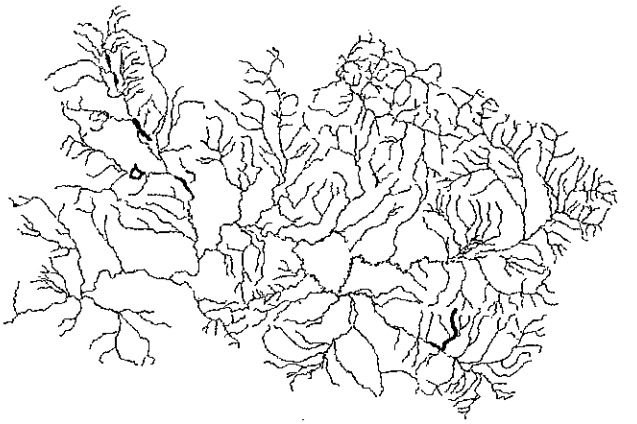
Black Bear Creek: 100(47/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (9/17)
Biological Rank:	Low (10/14)
Native Species:	None (7/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	High (1/3)
FWP Reports:	2001

Black Bear Creek, a small 1st order tributary to Bear Creek in the upper Douglas Creek watershed, flows ~7.5 through both public (BLM) and private agricultural land. The upper reaches are public land. Black Bear Creek ranks high on the restoration priority list for non-project streams, due to high potential for downstream water quality benefits and high social and financial rank. Unfortunately, Black Bear Creek currently does not support fish, resulting in a low biological rank despite a high rank in potential water quality benefits. Riparian impairments in the lower reaches include 1) livestock induced stream bank degradation and riparian vegetation suppression, 2) a crushed and undersize culvert, and 3) reduced instream flow from irrigation.

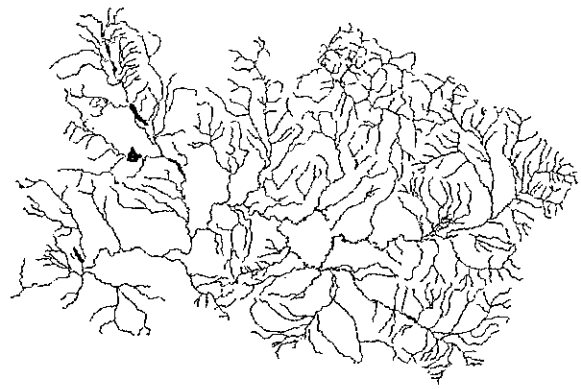
Buffalo Gulch: 85(62/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (12/17)
Biological Rank:	Moderate (9/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Low (3/3)
FWP Reports:	2002

Buffalo Gulch, a small 2nd order tributary to the Nevada Creek Reservoir, flows ~7 miles through both public (National Forest) in headwaters and private land in the lower ~4 miles of stream. Buffalo Gulch ranks high in potential water quality benefits, low in native species value, and provides no sport fishery value to the Blackfoot River, resulting in a low total rank for non-project streams. Lower Buffalo Gulch supports moderate densities of resident WSCT and low densities of rainbow trout. Fisheries impairments in the lower ~3 miles of stream include 1) livestock-induced stream bank damage, 2) riparian vegetation suppression and 3) lack of complex fish habitat (instream wood).

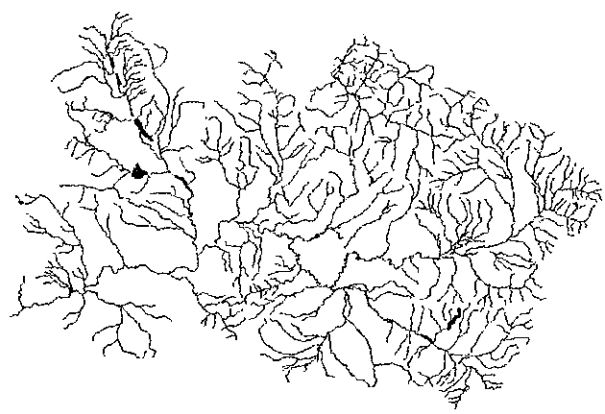
Burnt Bridge Creek: 65(79/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (16/17)
Biological Rank:	Low (11/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	Low (3/4)
Social Rank:	Low (3/3)
FWP Reports:	1999

Burnt Bridge Creek, a small 1st order tributary to Gold Creek in the lower Blackfoot River watershed, flows ~2 miles through both private land and a small portion of public land near the mouth. Burnt Bridge Creek ranks low on the restoration priority list for non-project streams. Although located in a bull trout core area, Burnt Bridge Creek ranks low in native species value, low in potential water quality benefits and currently provides no sport fishery value to the Blackfoot River. Burnt Bridge Creek supports only resident brook trout in low densities. Fisheries impairments include 1) an entrenched and altered stream channel, 2) elevated stream sediment levels from poor road drainage, 3) undersize culverts, 4) localized areas of riparian vegetation suppression, and 5) reduced instream flows from irrigation.

California Gulch: 85(62/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (12/17)
Biological Rank:	Moderate (9/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Low (3/3)
FWP Reports:	2002

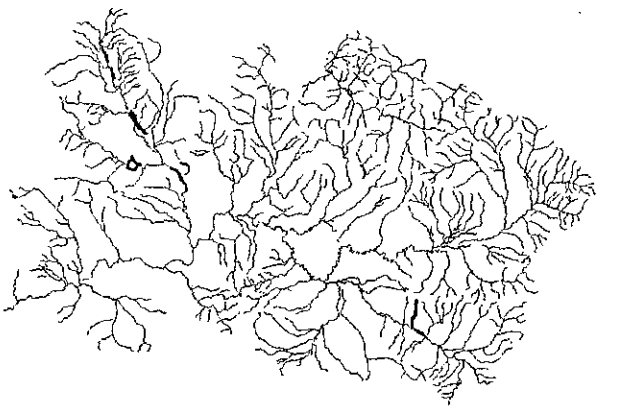
California Gulch, a small 2nd order tributary to Buffalo Gulch in the upper Nevada Creek watershed, flows ~3.5 miles through both public (National Forest) and private land in the lower ~2 miles. High potential water quality benefits, low native species value, low social rank, and no sport fishery value to the Blackfoot River, ranks California Gulch low on the restoration priority list for non-project streams. California Gulch supports only resident WSCT. Fisheries impairments in the lower ~2 miles include 1) lack of complex fish habitat (instream wood), 2) livestock-induced stream bank degradation and riparian vegetation suppression, and 3) reduced instream flows from irrigation.

Camas Creek: 95(49/83)

Fisheries Impaired: Y
Project Stream: N
Total Rank: Moderate (10/17)
Biological Rank: Moderate (9/14)
Native Species: Low (6/7)
Sport Fishery: None
Water Quality: High (1/4)
Social Rank: Moderate (2/3)
FWP Reports: 2001

Camas Creek, a 3rd order tributary to Union Creek in the lower Blackfoot River water shed, flows ~10 miles through private agricultural land. Overall, Camas Creek ranks moderate on the restoration priority list for non-project streams. This moderate rank results from high potential downstream water quality benefits, low native species value, and no sport fishery value to the Blackfoot River. Camas Creek supports resident WSCT and brook trout. Fish sampling found no salmonids in the lower Camas Creek. The middle reaches support brook trout in low number, while moderate numbers of WSCT dominates the headwaters, including Smith Creek an upper tributary of Camas Creek. Fisheries impairment in the middle and lower reaches include 1) livestock-induced stream bank degradation, 2) riparian vegetation suppression, and 3) lack of complex fish habitat (instream wood).

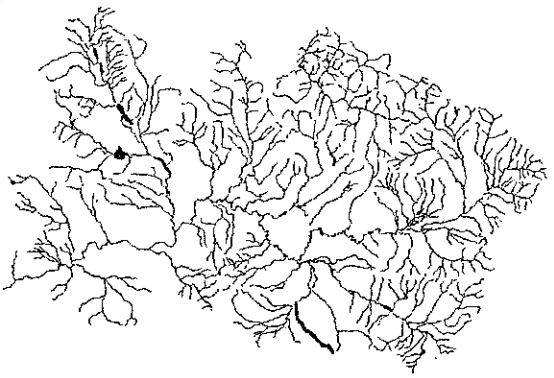
Chicken Creek: 95(49/83)



Fisheries Impaired: Y
Project Stream: N
Total Rank: Moderate (10/17)
Biological Rank: Moderate (9/14)
Native Species: Low (6/7)
Sport Fishery: None
Water Quality: High (1/4)
Social Rank: Moderate (2/3)
FWP Reports: 2001

Chicken Creek, a small 1st order tributary to Nevada Creek, flows ~4 miles through mainly private land with a small portion of public land (National Forest) near the headwaters. The total rank for Chicken Creek is moderate for non-project streams. This moderate rank comes from low native species value, no sport fishery value to the Blackfoot River and high potential water quality benefits. Lower Chicken Creek supports low densities of resident rainbow trout, while the middle reaches support low numbers of resident WSCT. Fisheries impairments in the lower 1.5 miles include 1) livestock-induced stream channel degradation, 2) riparian vegetation suppression, and 3) lack complex fish habitat (instream wood).

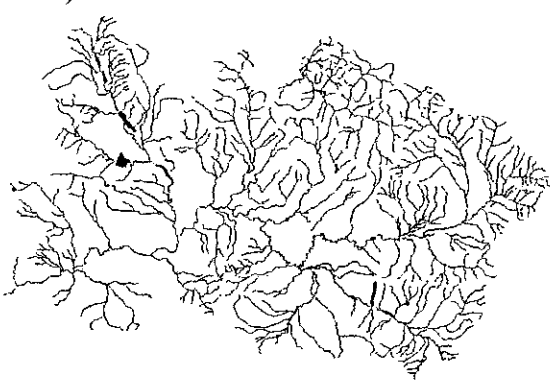
Chimney Creek (trib. to Douglas Creek): 95(49/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Moderate (10/17)
Biological Rank:	Moderate (9/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2001

Chimney Creek, a 1st order tributary to middle Douglas Creek, flows ~7.4 miles entirely through private ranch land. Chimney Creek ranks moderate on the restoration priority list for non-project streams. This moderate ranking comes from high potential downstream water quality benefits, moderate social rank, low native species value, and no sport fishery value to the Blackfoot River. Lower Chimney Creek supports only non-game fish species. The middle reaches support low densities of resident WSCT. Fisheries impairments include 1) livestock induced stream channel degradation and riparian vegetation suppression, 2) the lack of complex fish habitat (instream wood), and 3) channel alterations (instream reservoirs for irrigation).

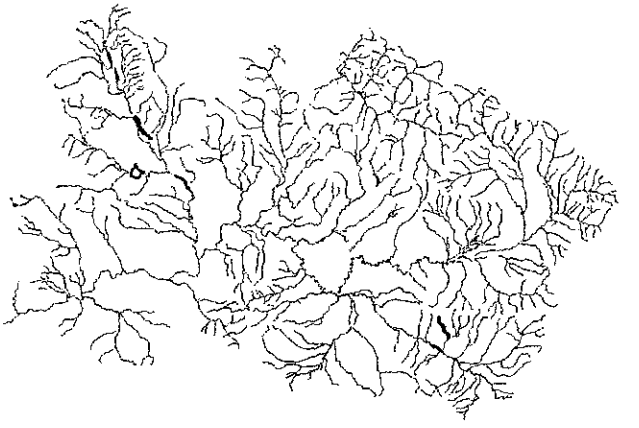
Chimney Creek (trib. to Lincoln Slough): 35(83/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (17/17)
Biological Rank:	Low (14/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Low (3/3)
FWP Reports:	2001

Chimney Creek, a small 1st order tributary to Lincoln Slough in the lower Nevada Creek watershed, flows ~5 miles through both public (National Forest) land in the upper drainage and private ranch land in the lower ~2.5 miles of stream. Chimney Creek ranks low in total rank for non-project streams due to low native species value, low social rankings and no sport fishery value, and a technical inability to address the entire stream system. Chimney Creek supports a small, low density, disjunct population of resident WSCT in middle reaches. Fisheries impairments in the lower 2 miles include 1) localized livestock induced stream bank degradation, 2) dewatering from irrigation, 3) channel alterations, 4) undersized culverts, and 5) irrigation canals creating barriers to fish passage.

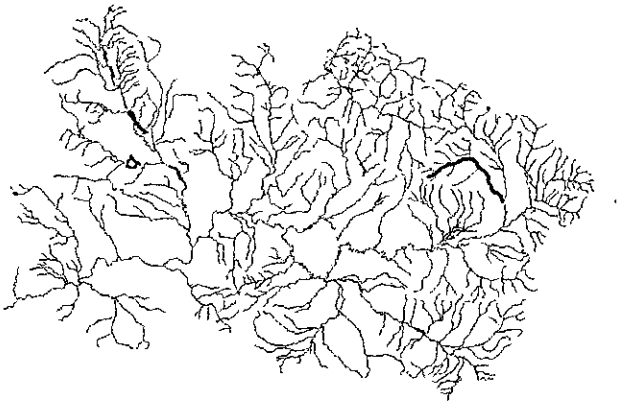
Clear Creek : *65*(79/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (16/17)
Biological Rank:	Low (12/14)
Native Species:	low (6/7)
Sport Fishery:	None
Water Quality:	None (4/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2002

Clear Creek, a small 2nd order tributary to Buffalo Gulch in the upper Nevada Creek watershed, flows ~4 miles through both public (National Forest) in the upper drainage and private land downstream of mile ~1.5. Clear Creek ranked low in total rank for non-project impaired streams. Clear Creek low priority is generated from low native species value, no sport fishery value to the Blackfoot River and lack of potential downstream water quality benefits. Clear Creek supports a resident WSCT population. Densities are low throughout the drainage, although, numbers increase in middle reaches. Fisheries impairments include minor livestock damage to riparian vegetation in the middle reaches.

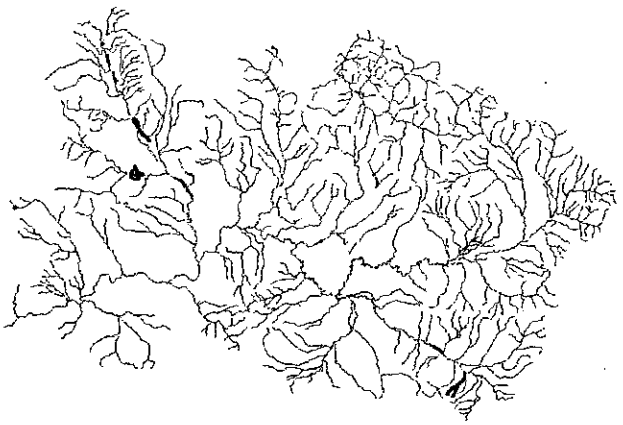
Copper Creek : 145(13/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (2/17)
Biological Rank:	High (5/14)
Native Species:	High (1/7)
Sport Fishery:	High (20)
Water Quality:	None (4/4)
Social Rank:	High (1/3)
FWP Reports:	1990, 1999, 2000

Copper Creek, a large 3rd order tributary to the Landers Fork in the upper Blackfoot River watershed, flows ~14 miles entirely through public (National Forest) land, except a small portion of private land in the lower reaches. Copper Creek ranks very high on the restoration priority list for non-project streams. With bull trout core area status, fluvial bull trout and genetically pure fluvial WSCT spawning and rearing, it ranks very high in native species value and very high (multi-species) in sport fishery value to the Blackfoot River. Because of existing high water quality and adequate flows, Copper Creek ranks low in potential water quality benefits to the Blackfoot River. It also ranks high in social and financial considerations. Densities of WSCT and bull trout for both species are generally low throughout the drainage, but increase in middle reaches. Fisheries impairments include localized areas of stream bank degradation from recreational users in the middle reaches.

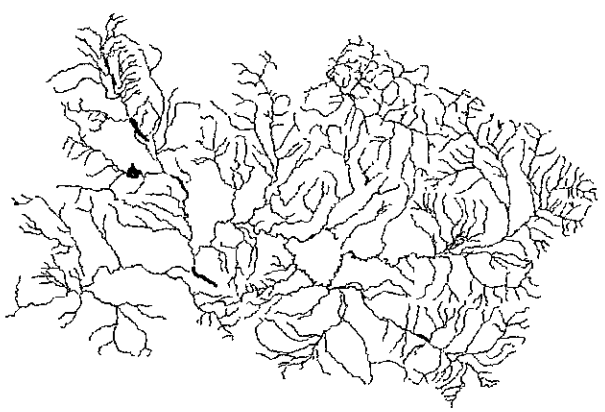
Finn Creek: 90(58/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (11/17)
Biological Rank:	Low (10/14)
Native Species:	None (7/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2002

Finn Creek, a small 2nd order tributary to upper Nevada Creek, flows ~3.3 miles entirely through private ranch land. Finn Creek ranks low in total ranking for non-project streams. Finn Creek currently has no native species value, no sport fishery value to the Blackfoot River, and ranks high in potential water quality benefits. No fish were sampled on Finn Creek. Fisheries impairments in the lower ~2 miles include 1) low flows due to an aggraded channel, 2) livestock-induced stream bank degradation and riparian vegetation suppression, and 3) lack of complex fish habitat (instream wood).

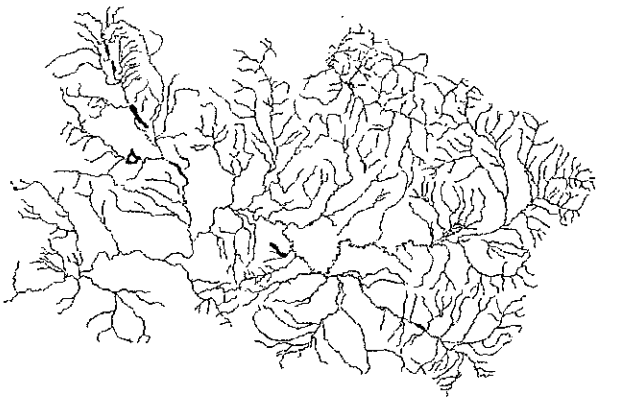
Fish Creek: 115(36/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (6/17)
Biological Rank:	High (8/14)
Native Species:	High (5/7)
Sport Fishery:	Low (10)
Water Quality:	None (4/4)
Social Rank:	High (1/4)
FWP Reports:	2002

Fish Creek, a 1st order tributary to the lower Blackfoot River, flows ~5 miles through mostly private timber land with a small portion of public (State) land in middle reaches. Fish Creek ranks high on the restoration priority list for non-project streams. This high ranking is generated by a high native species value, single species sport fishery value to the Blackfoot River, and potential to increase stream flows to the Blackfoot River. We identified no potential water quality benefits on Fish Creek. Fish Creek supports fluvial WSCT with densities that increase in the upstream direction. Fisheries impairment in the lower ~3 miles include 1) dewatering, 2) channel alteration (instream pond), and 3) an undersize culvert creating possible fish barriers.

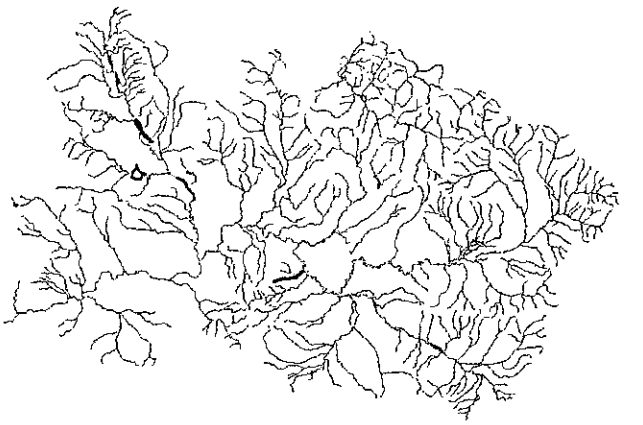
Frazier Creek, North Fork: 65(79/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (16/17)
Biological Rank:	Low (13/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	Low (3/4)
Social Rank:	High (1/3)
FWP Reports:	1997, 2000

North Fork of Frazier Creek, a small 1st order tributary to Frazier Creek in the middle Blackfoot River watershed, flows ~2 miles through private timber and ranch land. The North Fork ranks low on the restoration priority list for non-project streams because of low native species value, low water quality benefits, no sport fishery value to the Blackfoot River and a technical inability to address the entire stream system. The North Fork supports a genetically pure population of resident WSCT. This population is disjunct from both upper Frazier Creek and the Blackfoot River due to instream irrigation reservoirs above and below the North Fork confluence. Fisheries impairments include 1) fragmentation of stream reaches, 2) irrigation (entrainment and low flows), and 3) localized livestock-induced stream bank damage.

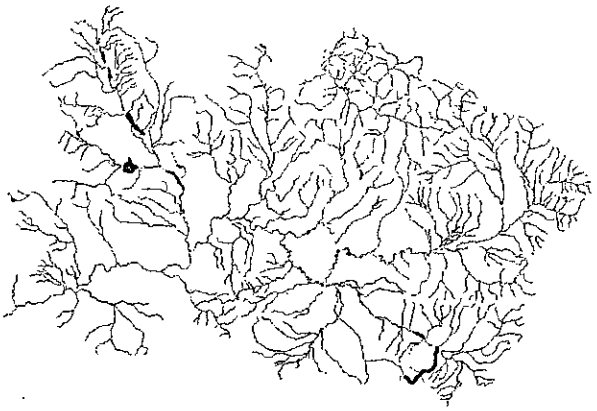
Frazier Creek: 80(69/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (13/17)
Biological Rank:	Low (10/14)
Native Species:	Low (6/7)
Sport fishery:	None
Water Quality:	Moderate (2/4)
Social Rank:	Low (3/3)
FWP Reports:	1997, 2000

Frazier Creek, a small 2nd tributary to the middle Blackfoot River, flows ~3.6 miles through both public (BLM) and private land. The private land is located in the lower two-thirds of the stream. Frazier ranks low on the restoration priority list for non-project streams. Frazier Creek low total rank is the result of low native species value, low social and financial rank, lack of sport fishery value to the Blackfoot River and a technical inability to address the entire stream system. However, Frazier has moderate potential for water quality benefits and potential to increase stream flows to Blackfoot River. Frazier Creek supports a disjunct resident population of genetically pure WSCT and no other fish species. Fisheries impairments include 1) reduced instream flows, 2) channel alterations (two instream reservoirs), 3) stream channel fragmentation preventing fish passage, and 4) livestock grazing impacts to riparian areas.

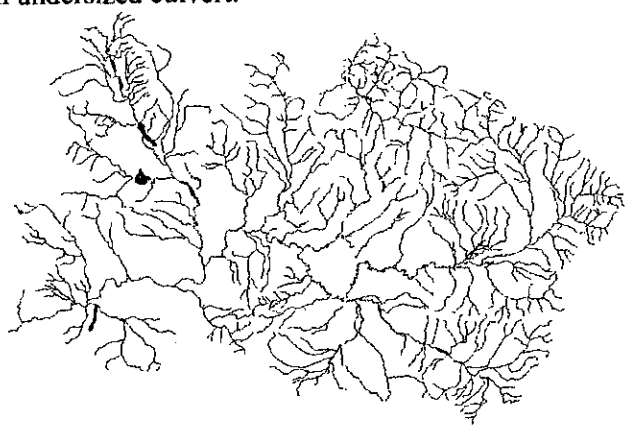
Gallagher Creek: 80(69/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (13/17)
Biological Rank:	Low (11/14)
Native Species:	Low (6/70
Sport Fishery:	None
Water Quality:	Low (3/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2002

Gallagher Creek, a 2nd order tributary to upper Nevada Creek, flows ~7 miles through both public (National Forest) land in headwaters and private land downstream of mile ~3. Low native species value, low water quality benefits, no sport fishery value to the Blackfoot River, ranks Gallagher Creek low on the restoration priority list for non-project streams. Gallagher Creek supports only resident WSCT. The lower reaches support low densities of WSCT that increase to moderate numbers in middle reaches. Fisheries impairments in lower reaches include localized livestock-induced stream bank damage and an undersized culvert.

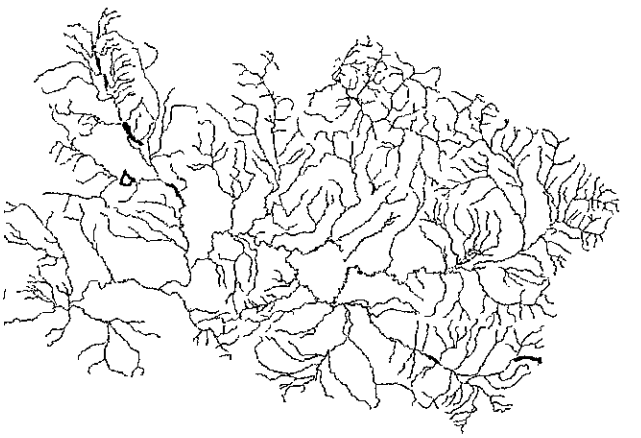
Game Creek: 80(69/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (13/17)
Biological Rank:	Low (10/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	Moderate (2/4)
Social Rank:	Low (3/3)
FWP Reports:	2001

Game Creek, a 1st order tributary to Union Creek, flows ~5.6 miles through industrial forest (Plum Creek) and State land in the headwaters and private ranch land downstream of mile ~2. Low native species value, low social ranking, lack of sport fishery value to the Blackfoot River and moderate potential in water quality benefits, ranks Game Creek low on the restoration list for non-project streams. Lower Game Creek supports resident WSCT. Fisheries impairments in middle reaches include localized livestock induced stream bank damage and a perched culvert limiting fish passage.

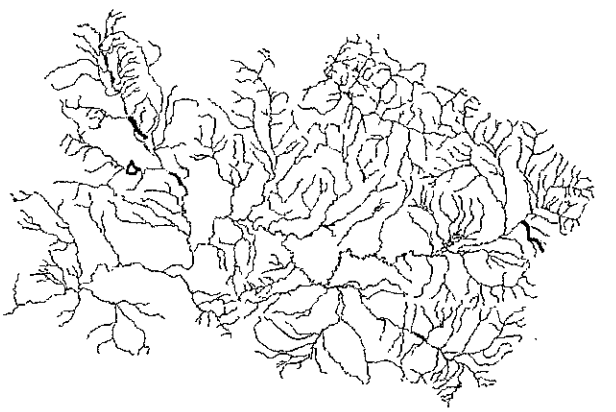
Gleason Creek: 65(79/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (16/17)
Biological Rank:	Low (12/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	None (4/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2002

Gleason Creek, a 1st order tributary to upper Nevada Creek, flows ~4.4 miles entirely through public (National Forest) land. With low native species value, no potential water quality benefits, and no sport fishery value to the Blackfoot River, Gleason Creek ranks low on the restoration priority list for non-project streams. Gleason Creek supports low densities of resident WSCT with no other fish species. Fisheries impairments near the mouth of Gleason Creek include a perched culvert limiting fish passage and mining impacts.

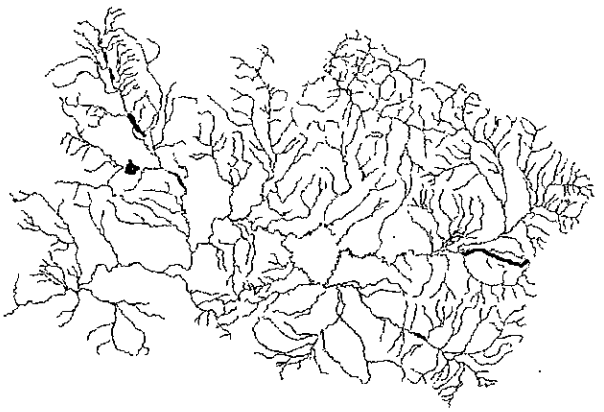
Hogum Creek: 105(44/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (8/17)
Biological Rank:	High (8/14)
Native Species:	High (5/7)
Sport Fishery:	High (20)
Water Quality:	Low (3/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1997, 2000

Hogum Creek, a 2nd order tributary to the upper Blackfoot river, flows ~6 miles through both public (National Forest) in headwaters and private land downstream of mile ~ 2. Hogum Creek ranks high in total rank for non-project streams. This high rank is due to high native species value and (high) multi-species sport fishery value to the Blackfoot River. Hogum Creek ranks low in potential water quality benefits and moderately in social rank. Hogum Creek supports very limited bull trout bull trout, WSCT, brown trout and brook trout. All species, except the bull trout, show upstream increases at low densities. Fisheries impairments in the lower reaches include road crossings (undersize culvert) and localized stream bank degradation from livestock.

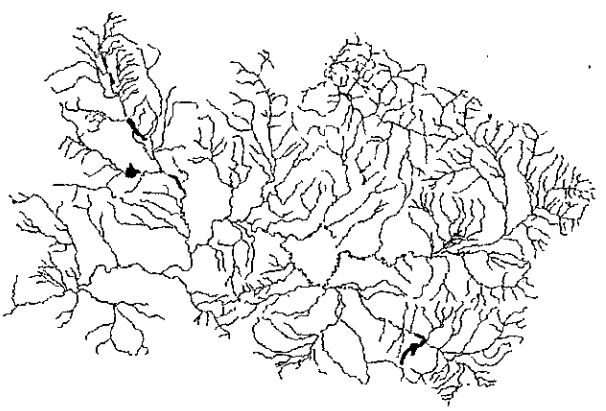
Humbug Creek: 80(69/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (13/17)
Biological Rank:	Low (11/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	Low (3/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1997

Humbug Creek, a small 2nd order disjunct tributary to Poorman Creek, is located on the south side of the Lincoln Valley. Humbug Creek flows ~3 miles exclusively through private land. Humbug Creek ranks low in the total rank for non-project streams. This rank is due to a low native species value, no sport fishery value to the Blackfoot River, low potential to improve downstream water quality and a moderate social and financial rank. Humbug Creek supports moderate densities of resident WSCT. Fisheries impairments in the lower reaches include 1) dewatering, 2) channel alterations, 3) degraded riparian vegetation, and 4) excessive livestock access to stream banks.

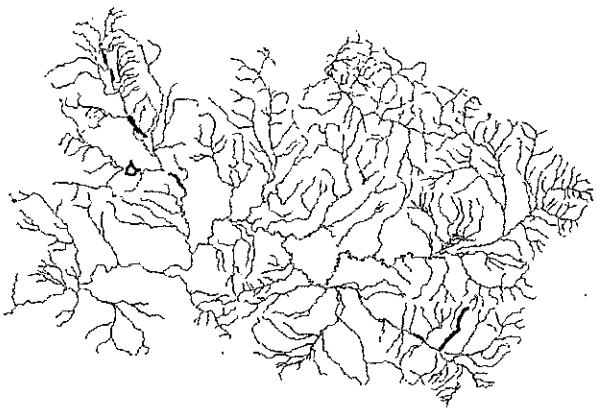
Indian Creek: 70(78/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (15/17)
Biological Rank:	Low (12/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	None (4/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2002

Indian Creek, a 2nd order tributary to the Nevada Creek Reservoir, flows ~4.5 miles through mostly public (BLM) land and a small portion of private land near the mouth. Indian Creek ranks low in the total ranking for non-project streams. This low rank is due to low native species value, no sport fishery value to the Blackfoot River, the lack of potential to improve water quality and a moderate social ranking. Indian creek supports resident WSCT in low densities within the lower to middle reaches. Fisheries impairments include lack of instream complexity in the lower reaches.

Jefferson Creek: 85(62/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (12/17)
Biological Rank:	Moderate (9/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Low (3/3)
FWP Reports:	2002

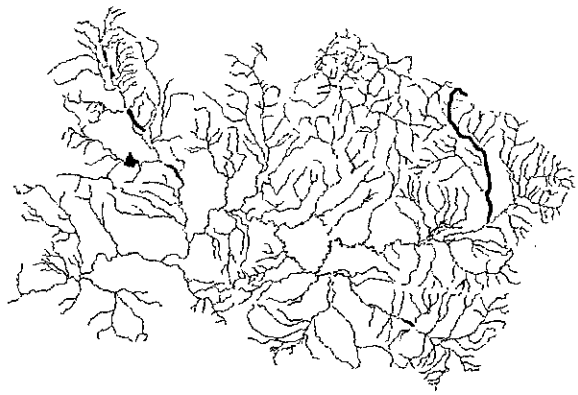
Jefferson Creek, a 2nd order tributary to Nevada Creek, drains the eastern slopes of Dalton Mountain and flows ~7.5 miles entirely through private land except for a section of public (BLM) land between mile 4 and 5. Jefferson Creek ranks low in the total ranking for non-project streams. This rank is due a low (single) native species value, lack of sport fishery value to the Blackfoot River and low social and financial rank. Jefferson Creek ranked high in potential to improve downstream water quality due to its impaired condition. Jefferson Creek supports populations of resident WSCT and rainbow trout. Rainbow trout are found in low numbers in lower reaches. WSCT are found throughout the drainage in generally low densities. Fisheries impairments in the upper and middle reaches include 1) poor road crossings (crushed undersized culvert), 2) channel alterations (mining disturbance), 3) lack of instream complexity, and 4) low instream flow.

Keep Cool Creek: 120(31/83)

Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (5/17)
Biological Rank:	High (7/14)
Native Species:	High (5/7)
Sport Fishery:	High (20)
Water Quality:	Moderate (2/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1990

Keep Cool Creek, a 3rd order tributary to the upper Blackfoot River, drains Stonewall Mountain and the Keep Cool Lakes. Keep Cool Creek flows ~12 miles through public (National Forest) land before entering private land near mile ~6. Keep Cool Creek ranks high in the total ranking for non-project streams. This rank is due to high native species rank, high (multi-species) sport fishery value to the Blackfoot River and high potential to improve water quality in the Blackfoot River by reducing sediment and temperature. Keep Cool Creek supports populations of fluvial WSCT and brown trout. Brown trout are found in low numbers in the lower reaches of the stream. Fisheries impairments include excessive access by livestock to the stream banks in the middle reaches.

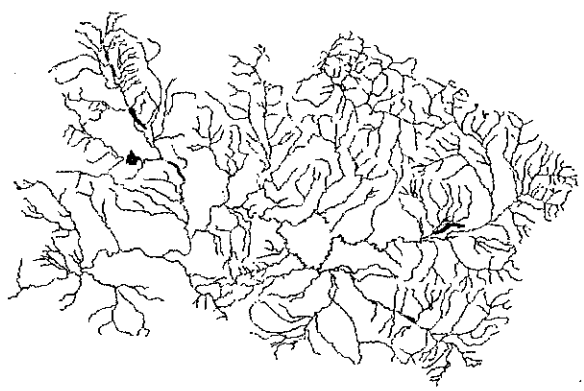
Landers Fork: 170(3/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (1/17)
Biological Rank:	High (1/14)
Native Species:	High (1/7)
Sport Fishery:	High (20)
Water Quality:	Moderate (2/4)
Social Rank:	Low (3/3)
FWP Reports:	1990, 1997, 1999, 2000, 2001

The Landers Fork, a 4th order stream and major tributary to the upper Blackfoot River, originates in the Scapegoat Wilderness and flows ~ 28 miles. The upper ~16 miles are entirely public (National Forest) land with mixed ownership in lower stream reaches. Landers Fork received the highest total rank for non-project streams. This high rank is due to bull trout core area status, high native species value, high (multi-species) sport fishery value to the Blackfoot River, potential to increase flow in the Blackfoot and potential to improve water quality in the Blackfoot River, despite a low rank in the social/financial category. The Landers Fork supports genetically pure WSCT, fluvial bull trout and non-native salmonids in very low densities. WSCT are found in low densities downstream of Silver King Falls. Bull trout also inhabit the lower Landers Fork below Silver King Falls in low densities. Brown trout and brook trout inhabit the lower Lander Fork in very low densities. Fisheries impairments in the lower 7 miles include 1) channel alterations, 2) lack of instream complexity, 3) riparian vegetation suppression, 4) instream flow problems, which appear to partially result from channel alterations and instability, and 5) localized recreational impacts.

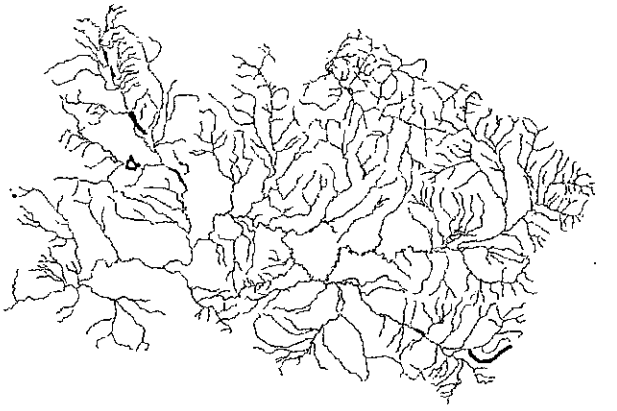
Lincoln Spring Creek: 115(36/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (6/17)
Biological Rank:	High (6/14)
Native Species:	High (5/7)
Sport Fishery:	High (20)
Water Quality:	Low (3/4)
Social Rank:	Low (3/3)
FWP Reports:	1997

Lincoln Spring Creek, a large 1st order spring creek flowing through the town of Lincoln, flows ~5 miles exclusively through private (residential) ownership. Lincoln Spring Creek high in total ranking for non-project streams. This rank is due to high native species value, high (multi-species) sport fishery value to the Blackfoot River, potential to increase flow in the Blackfoot River, despite low potential to improve water quality and low rank for social and financial considerations. The feasibility to address the entire stream is also questionable. Lincoln Spring Creek currently supports brown trout and brook trout in low densities. Lincoln Spring Creek receives limited use by fluvial WSCT but no reproduction. Fisheries impairments include 1) poor road crossings, 2) lack of instream complexity, 3) degraded riparian vegetation, and 4) residential development.

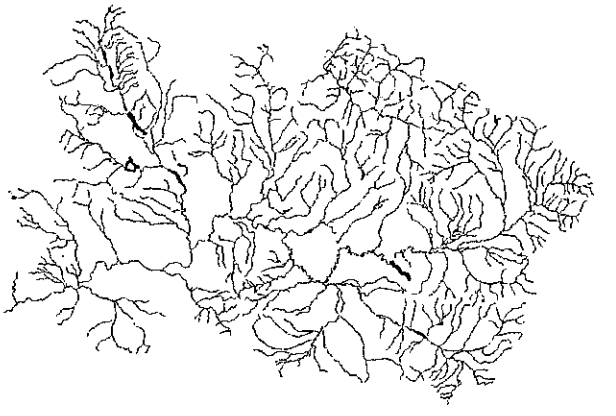
Mitchell Creek: 90(58/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (11/17)
Biological Rank:	Low (10/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	Moderate (2/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2002

Mitchell Creek, a 1st order tributary to Nevada Creek, flows ~7 miles through a combination of public (National Forest) land in the headwaters and private agricultural land downstream of mile ~4. Mitchell Creek ranks low in total rank for non-project streams. This ranking is due to low native species value, lack of sport fishery value to the Blackfoot River, and moderate potential to improve downstream water quality. The only salmonid present is resident WSCT in low to moderate densities. Fisheries impairments in middle reaches include 1) road crossings (undersized culvert), 2) lacks complex fish habitat, and 3) livestock access to stream banks.

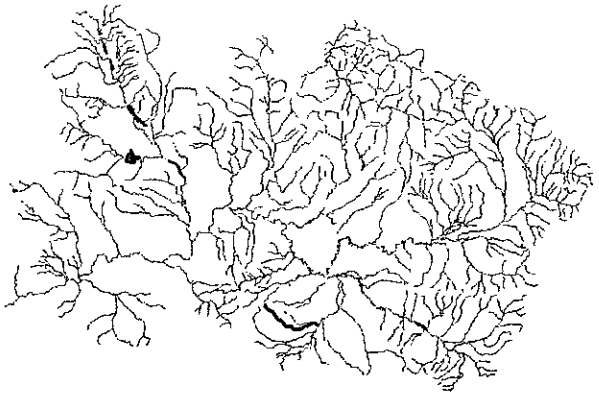
Moose Creek: 105(44/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (8/17)
Biological Rank:	Moderate (9/14)
Native Species:	High (5/7)
Sport Fishery:	Low (10)
Water Quality:	Low (3/4)
Social Rank:	High (1/3)
FWP Reports:	2000

Moose Creek, a small 1st order tributary to the upper Blackfoot River, flows ~4 miles through National Forest land, except for a small section of private land near the mouth. Moose Creek ranks high in total rank, due to high native species, single species sport fishery value to the Blackfoot River and a high rank for social and financial considerations. Due to adequate flows and healthy riparian area, Moose Creek ranks low in potential to improve water quality and provides no potential for increasing flows to the Blackfoot River. Moose Creek supports a population of fluvial WSCT. Fishery impairments near the mouth include an undersized culvert, which likely limits upstream fish passage.

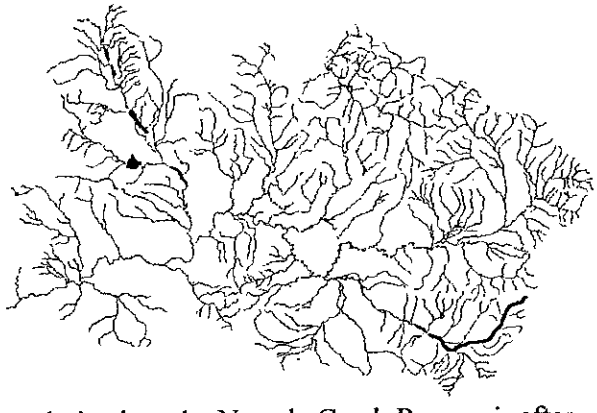
Murray Creek: 95(49/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Moderate (10/17)
Biological Rank:	Moderate (9/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2001

Murray Creek, a 2nd order tributary to Douglas Creek, flows ~8 miles through public (BLM) and private agricultural land downstream of mile ~4. Murray Creek received a moderate rank on the priority list for non-project streams. This rank relates to low native species rank, lack of a sport fishery value to the Blackfoot River and high potential to improve downstream water quality. Murray Creek supports low densities of genetically pure resident WSCT in the middle and upper reaches with densities increasing in the upstream direction. Fisheries impairments, located in the lower and middle reaches, include 1) poor road crossings (perched and undersized culverts) and road drainage, 2) irrigation (dewatering and fish entrainment), 3) lack of instream complexity, and 4) degraded stream banks resulting from excessive livestock access to riparian areas.

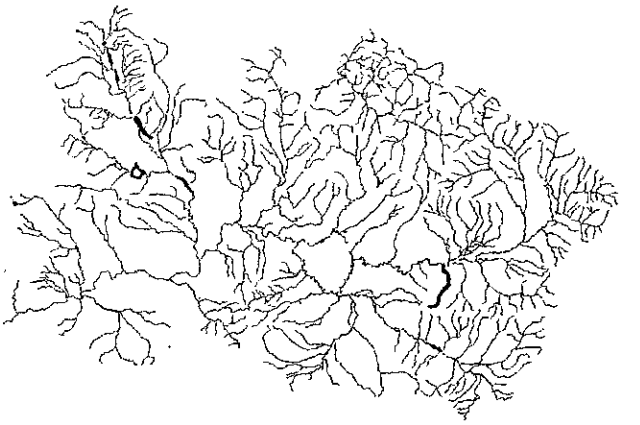
Nevada Creek (Above Reservoir): 110(40/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (7/17)
Biological Rank:	Moderate (8/14)
Native Species:	High (3/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1990, 1997, 2001, 2002

Upper Nevada Creek, a large 2nd order stream, drains into the Nevada Creek Reservoir after draining Nevada Mountain and flowing ~24 miles through a combination of public (National Forest) and private agricultural land. National Forest is located in the upper ~9 miles of stream. Upper Nevada Creek received a high total rank for non-project streams. This rank is due to high native species value, moderate rank in the social and financial category and a high potential to improve downstream water quality. Upper Nevada Creek provides no sport fishery value to the Blackfoot River. Upper Nevada Creek supports populations of WSCT, rainbow trout, and brook trout. Bull trout reportedly inhabit upper reaches of Nevada Creek in very low numbers. Resident WSCT inhabits upper Nevada Creek in very low densities that increase substantially on the National Forest. Rainbow and brook trout are found on private land upstream of Nevada Reservoir in low densities. Fisheries impairments, located primarily on private land include 1) irrigation impacts (low flow), 2) channel alterations and instability, 3) lack of instream complexity, and 4) degraded stream banks resulting from excessive livestock access to riparian areas.

Sauerkraut Creek: 120(31/83)



Fisheries Impaired:	Y
Project Streams:	N
Total Rank:	High (5/17)
Biological Rank:	High (6/14)
Native Species:	High (4/7)
Sport Fishery:	High (20)
Water Quality:	Moderate (2/4)
Social Rank:	Low (3/3)
FWP Reports:	2000

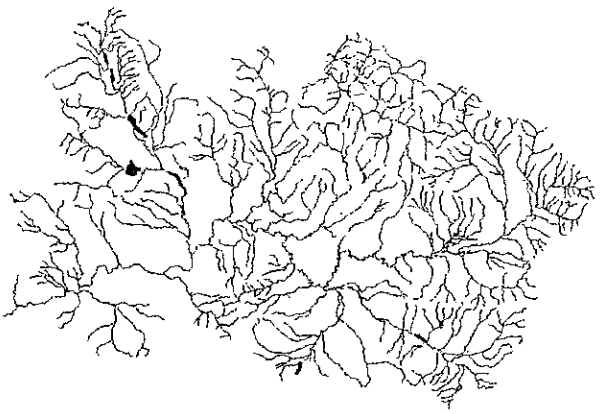
Sauerkraut Creek, a 1st order tributary to the upper Blackfoot River, flows ~7 miles through public (National Forest) land in the headwaters and private land downstream of mile ~3. Sauerkraut Creek received a high total rank for non-project streams. This rank is due high native species value, high (multi-species) sport fishery value to the Blackfoot River, and moderate potential to improve water quality in the Blackfoot River. Sauerkraut Creek received a low rank for social and financial considerations. Sauerkraut Creek supports limited bull trout rearing, fluvial genetically pure WSCT, brown trout and brook trout. We found bull trout and brown trout in lower Sauerkraut Creek, whereas WSCT and brook trout are found throughout the drainage. Brook trout densities decrease in the upstream direction. Fisheries impairments, located in the middle reaches, include 1) poor road crossings (undersized culvert), 2) channelization, 3) lack of instream complexity, 4) stream bank damage in localized area excessive livestock access to riparian areas, and 5) mining disturbances.

Seven Up Pete Creek: 100(47/83)

Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (9/17)
Biological Rank:	Moderate (9/14)
Native Species:	High (5/7)
Sport Fisheries:	Low (10)
Water Quality:	Low (3/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2000

Seven Up Pete Creek, a 1st order tributary to the upper Blackfoot River drains the slopes of Crater Mountain and flows ~5 miles through both National Forest and private land. Private land is located only between mile 3 and 4. Seven Up Pete Creek ranks high for non-project streams in total rank. This high rank is due to high native species value and single species sport fishery value to the Blackfoot River. Seven Up Pete Creek ranks low for potential to improve water quality in the Blackfoot River. Seven Up Pete Creek supports low densities of genetically pure fluvial WSCT and brook trout. Fisheries impairments include mining practices in headwater areas and instream road crossings in the lower reaches.

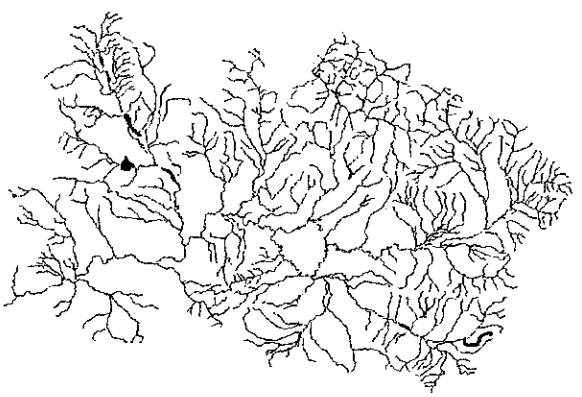
Sheep Creek: 95(49/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Moderate (10/17)
Biological Rank:	Low (10/14)
Native Species:	None (7/7)
Sport Fisheries:	None
Water Quality:	High (1/4)
Social Rank:	High (1/3)
FWP Reports:	2001

Sheep Creek, a small 1st order tributary to Sturgeon Creek, located in the Douglas Creek watershed, flows ~4 miles exclusively through private ranch land. Sheep Creek ranks moderate for total rank, due to low native species value, lack of a sport fishery value, high potential to improve downstream water quality and a high social rank. No salmonid or other fish species were detected in Sheep Creek. Riparian impairments include low instream flow due to an aggraded channel and excessive livestock access to stream banks over most of the channel.

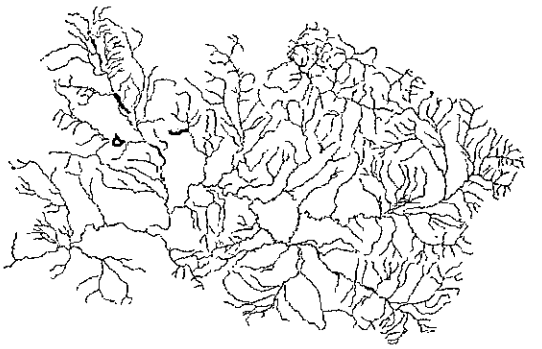
Shingle Mill Creek: 80(69/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (13/17)
Biological Rank:	Low (11/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	Low (3/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2002

Shingle Mill Creek, a 1st order tributary to upper Nevada Creek, originates on the western slope of Nevada Mountain. Shingle Mill Creek flows ~5.5 miles mostly through public (National Forest) with private ranch land in lower reaches. Shingle Mill Creek ranks low for total rank due to low native species value, low potential for improving water quality and lack of sport fishery value to the Blackfoot River. Shingle Mill Creek supports resident WSCT, with population densities that decrease in the downstream direction. Fisheries impairments in the lower reaches include irrigation impacts (dewatering and passage) and livestock access to stream banks.

Spring Creek (trib. to Cottonwood Cr.): 130(21/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (3/17)
Biological Rank:	High (5/14)
Native Species:	High (4/7)
Sport Fishery:	High (20)
Water Quality:	Low (3/4)
Social Rank:	Low (3/3)
FWP Reports:	1997, 2000

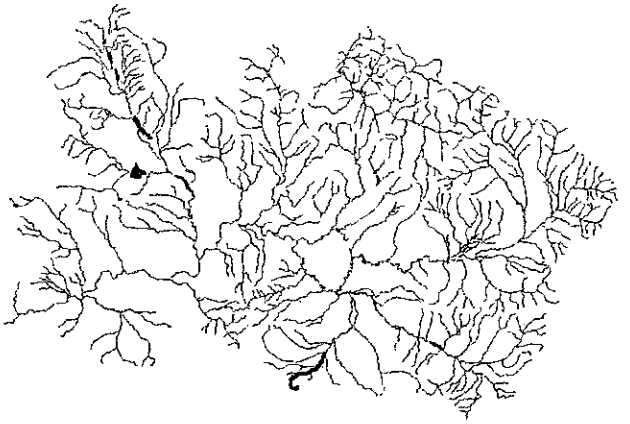
Spring Creek, a 1st order tributary to upper Cottonwood Creek, flows ~2.5 miles exclusively through private timber and agricultural lands. Spring Creek scored high in total rank for non-project streams. The high ranking is due to high native species value, high (multi-species) sport fishery value, and potential to increase flows to the Blackfoot River. Spring Creek has low potential to improve downstream water quality and ranks low in social and financial considerations. Located in the bull trout core area, Spring Creek supports WSCT and brook trout and bull trout rearing as recently as 1989. Since 1989, Spring Creek has been diverted on a year-around basis and is now disjunct from Cottonwood Creek. Bull trout have not been detected in more recent sampling. Fisheries impairments in the lower reaches include 1) irrigation impacts (fish passage, entrainment, and dewatering), 2) channel alterations, and 3) suppressed riparian vegetation.

Strickland Creek: 75(75/83)

Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (14/17)
Biological Rank:	Low (10/14)
Native Species:	None (7/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Low (3/3)
FWP Reports:	2002

Strickland Creek, a 2nd order tributary to Halfway Creek, originates on the northern slopes of Gravely Mountain in the Garnet Mountain range. Strickland Creek flows ~6.5 miles exclusively through private ranch land. Strickland Creek ranks low in total rank for non-project streams. This low rank is due to lack of native species, no sport fishery value to the Blackfoot River, and low social and financial rank. Strickland Creek has high potential to improve downstream water quality. We found no salmonids in sampling lower Strickland Creek. Fisheries impairments on lower Strickland Creek include lack of instream complexity and degraded stream banks from excessive livestock access to riparian areas.

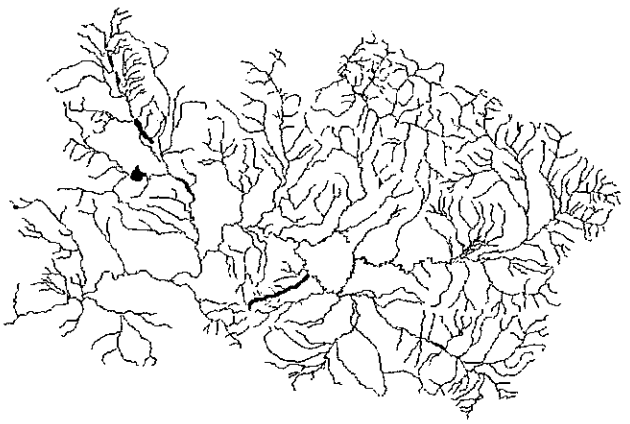
Sturgeon Creek: 90(58/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (11/17)
Biological Rank:	Low (10/14)
Native Species:	None (7/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2001

Sturgeon Creek, a small 3rd order tributary to Douglas Creek, flows ~4 miles exclusively through private ranch land. Sturgeon Creek ranks low for total rank. This low rank is due to lack of native species and absence of sport fishery value to the Blackfoot River. Sturgeon Creek ranks high for potential to improve downstream water quality. No salmonids were sampled in Sturgeon creek, but a small spring creek tributary supports a small disjunct population of resident WSCT. Fisheries impairments located throughout the drainage include 2) channel alterations (instream reservoir), 2) degraded riparian vegetation, 3) inadequate instream flow, and 4) excessive livestock access to stream banks.

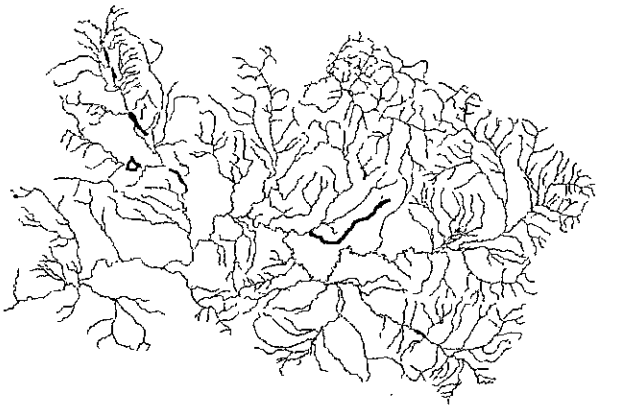
Wales Creek: 120(31/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (5/17)
Biological Rank:	High (6/14)
Native Species:	High (5/7)
Sport Fishery:	High (20)
Water Quality:	High (1/4)
Social Rank:	Low (3/3)
FWP Reports:	1990, 2001

Wales Creek, a 2nd order tributary to the middle Blackfoot River, flows ~9 miles through both public (BLM) in headwater areas and private ranch land downstream of mile ~4. Wales Creek ranks high in total rank, due to 1) high native species value, 2) high (multi-species) sport fishery value to the Blackfoot River, 3) potential to increase flow in the Blackfoot, and 4) potential to improve water quality in the Blackfoot River. Wales Creek ranks low for social and financial considerations. We determined restoration cannot technically address the entire Wales Creek system due to a large instream reservoir. Species composition is comprised of fluvial WSCT (below reservoir) and resident WSCT (above reservoir). The lower reaches also contain low brown trout densities. Above the reservoir, (mile 2.0), Wales Creek supports genetically pure WSCT. In addition to habitat fragmentation, fisheries impairments above and below the reservoir include stream bank damage resulting from excessive livestock access to riparian areas. Dewatering occurs below the reservoir.

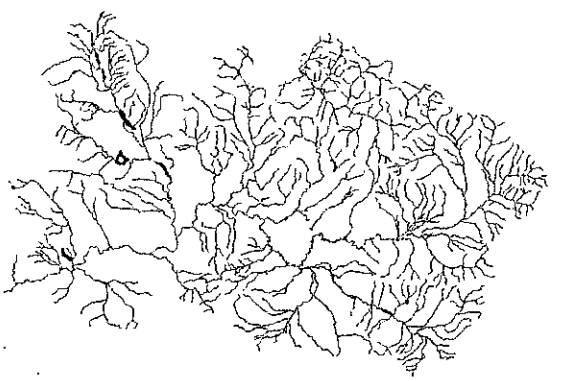
Ward Creek: 75(75/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (14/17)
Biological Rank:	Low (10/14)
Native Species:	None (7/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Low (3/3)
FWP Reports:	2002

Ward Creek, 2nd order tributary to the North Fork of the Blackfoot River, originates on Arrastra Mountain and flows ~17 miles through mixed ownership, with the lower ~6 miles exclusively on private land. Ward Creek is a tributary to two large lakes (Browns and Kleinschmidt Lakes) in the Blackfoot Valley. Ward Creek ranks low in total rank for non-project streams. This low rank is due to lack of native species, no sport fishery value to the Blackfoot River and low social and financial rank. Ward Creek ranks high in potential to improve downstream water quality. Ward Creek does not support native salmonids but rather low densities of resident brook trout in lower reaches and moderate densities in upper reaches. Fisheries impairments are extensive and include lack of instream complexity and degraded stream banks and riparian areas resulting from excessive riparian livestock access.

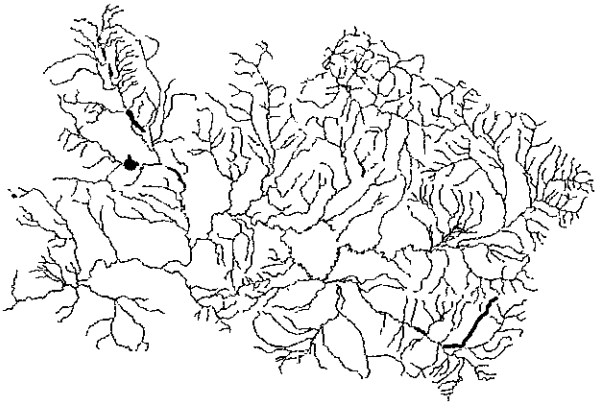
Warm Spring Creek: 95(49/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Moderate (10/17)
Biological Rank:	Low (8/14)
Native Species:	Low (6/7)
Sport Fishery:	Low (10)
Water Quality:	Low (3/4)
Social Rank:	Low (3/3)
FWP Reports:	1999

Warm Spring Creek, a small 1st order tributary to lower Gold Creek, flows ~2.5 miles primarily through private land with a small portion of public land. Warm Springs Creek ranks moderate in total rank for non-project streams. This moderate rank is due to low native species value and low (single-species) sport fishery value to the Blackfoot River. Warm Springs Creek has potential to increase flow in the Blackfoot. Warms Springs Creek ranks low in potential water quality benefits and low for social and financial considerations. Despite bull trout core area status, Warm Springs Creek supports low densities of resident rainbow trout and no other species. Fisheries impairments include 1) fish passage problems at a road crossing, 2) excess road drainage, and 3) irrigation impacts.

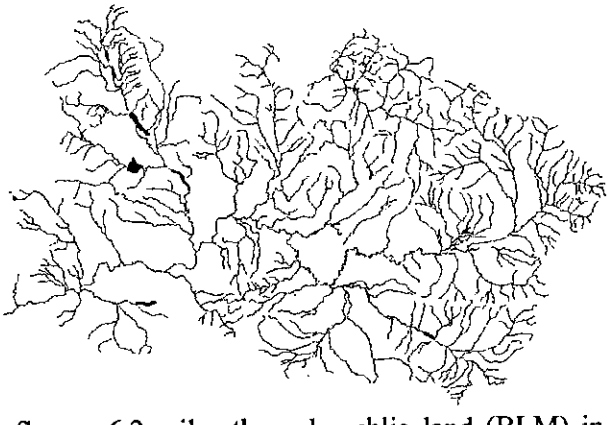
Washington Creek: 85(62/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (12/17)
Biological Rank:	Moderate (9/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Low (3/3)
FWP Reports:	2002

Washington Creek, a 2nd order tributary to upper Nevada Creek, flows ~11 miles through mixed public (National Forest, BLM) and private ownership. Washington Creek ranks low for non-project streams in total rank. This low rank is due to 1) low native species value, 2) lack of sport fishery value to the Blackfoot River, and 3) low social and financial rank. Washington Creek ranks high for potential to improve downstream water quality due to its impaired condition. Washington Creek contains resident WSCT and resident brook trout throughout the drainage. Densities of WSCT decrease in the downstream direction. Brook trout are present in low densities from a fish barrier (mile 7.2) downstream to the mouth. Fisheries impairments are extensive and include 1) channel alterations related to past placer mining irrigation, 2) lack of instream complexity, and 3) stream bank damages resulting from excessive livestock access to riparian areas.

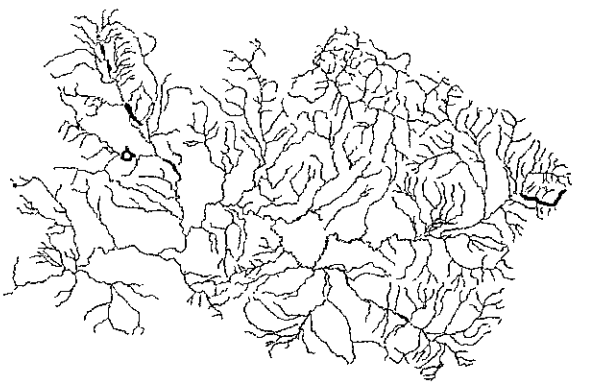
Washoe Creek: 90(58/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	Low (11/17)
Biological Rank:	Low (10/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	Moderate (2/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2001

Washoe Creek, a small 1st order stream, flows ~6.2 miles through public land (BLM) in headwaters and private ranch land downstream of mile ~3.5. Washoe Creek ranks low for total ranking of non-project streams. This low rank is due to low native species value, lack of sport fishery value to the Blackfoot River and potential to improve downstream water quality. Washoe Creek ranks moderate for social and financial consideration. Washoe Creek supports resident WSCT. Fisheries impairments in the lower Washoe Creek include excessive livestock access to stream banks and lack of instream complexity.

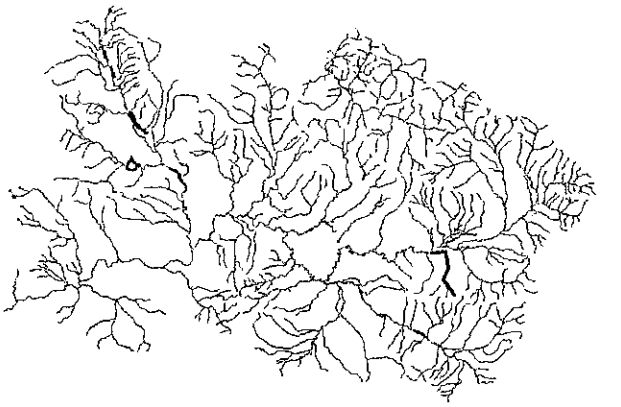
Willow Creek (above Lincoln): 145(40/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (9/17)
Biological Rank:	Moderate (9/14)
Native Species:	Low (6/7)
Sport Fishery:	Low (10)
Water Quality:	High (1/4)
Social Rank:	Moderate (2/3)
FWP Reports:	2000

Willow Creek above Lincoln, a 2nd order tributary to the upper Blackfoot River, flows ~8 miles through public (National Forest) in headwaters and private land downstream of mile ~6. Willow Creek ranked high for total rank due to high potential to improve water quality for the Blackfoot River and single-species sport fishery value to the Blackfoot River. Willow Creek ranks low in native species value. Willow Creek supports low densities of resident WSCT and brook trout. Fisheries impairments, located in the lower reaches include localized stream bank degradation resulting from excessive livestock access to riparian areas.

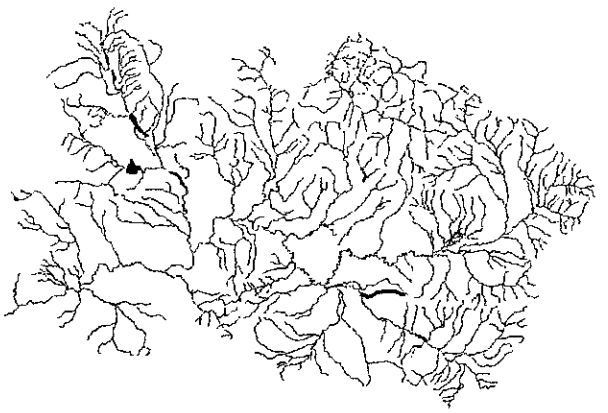
Willow Creek (below Lincoln): 145(13/83)



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (2/17)
Biological Rank:	High (4/14)
Native Species:	High (5/7)
Sport Fishery:	High (20)
Water Quality:	High (1/4)
Social Rank:	Moderate (2/3)
FWP Reports:	1997, 2000

Willow Creek below Lincoln, a 2nd order tributary to the upper Blackfoot River, flows ~9 miles through public (National Forest) land in the upper drainage and private ranch land downstream of mile ~6. Willow Creek ranks high for total rank, due to 1) high potential to improve water quality to the Blackfoot River, 2) high native species value, 3) high (multi-species) sport fishery value to the Blackfoot River, and 4) potential to increase flow in the Blackfoot River. Willow Creek supports fluvial WSCT, brown trout and resident brook trout. WSCT and brook trout dominate upper reaches. Low densities of brown trout occupy lower Willow Creek. Fisheries impairments in the middle and lower reaches include irrigation impacts (dewatering) and degraded riparian vegetation from excessive livestock use.

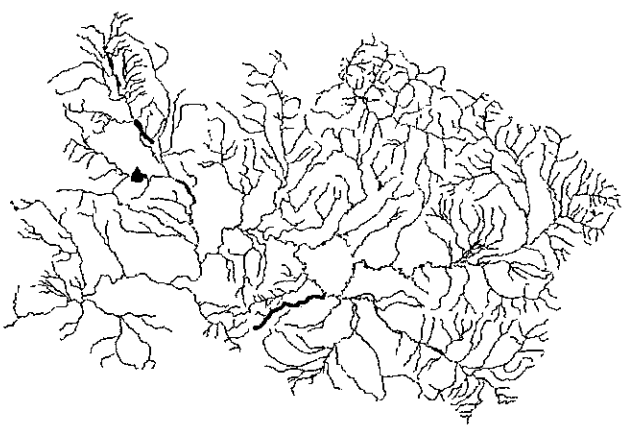
Wilson Creek: *110(40/83)*



Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (7/17)
Biological Rank:	High (7/14)
Native Species:	Low (6/7)
Sport Fishery:	None
Water Quality:	High (1/4)
Social Rank:	Low (3/3)
FWP Reports:	2001

Wilson Creek, a 1st order tributary to Lincoln slough (Nevada Creek), flows ~6 miles first through public (National Forest) and private ranch downstream of mile ~3. Wilson Creek ranks high for total rank of non-project streams. This high rank is due high potential to improve downstream water quality and potential to increase flows to the Blackfoot. Wilson Creek ranks low for native species value, lacks sport fishery value to the Blackfoot River and ranks low for social and financial considerations. Wilson Creek supports a disjunct population of resident WSCT at very low densities. Fisheries impairments in the middle to lower reaches include 1) poor road crossings, 2) irrigation impacts (fish entrainment, low flows), and 3) lack of connectivity to Nevada Creek.

Yourname Creek: 125(28/83)



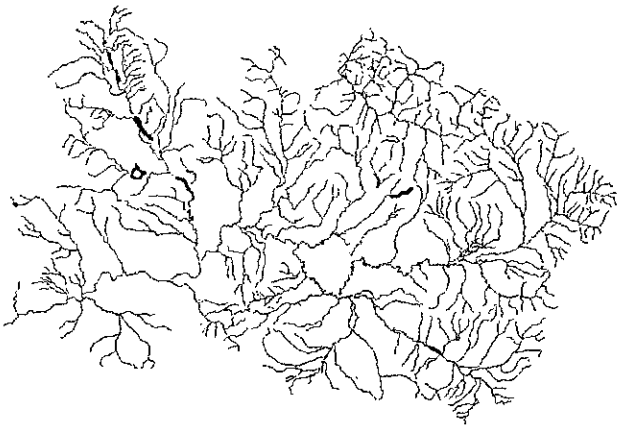
Fisheries Impaired:	Y
Project Stream:	N
Total Rank:	High (4/17)
Biological Rank:	High (5/14)
Native Species:	High (5/7)
Sport Fishery:	Low (10)
Water Quality:	High (1/4)
Social Rank:	Low (3/3)
FWP Reports:	1997, 2001

Yourname Creek, a 2nd order tributary to the middle Blackfoot River, originates near Elevation Mountain and flows ~9 miles through both public (BLM) and private land. Public land is found only in the upper 1.4 miles of stream. Yourname Creek ranks high for total rank of non-project streams. This high rank is due to 1) high native species value, 2) single-species sport fishery value to the Blackfoot River, 3) potential to improve downstream water quality to the Blackfoot River, and 3) potential to increase flow to the Blackfoot River. Yourname Creeks ranks low for social and financial considerations. Yourname Creek supports a genetically pure population of fluvial WSCT with densities increasing substantially in the upstream direction. Fisheries impairments include 1) irrigation impacts (dewatering and entrainment), 2) lack of instream complexity, and 3) degraded stream banks resulting form excessive livestock access to riparian areas.

RESULTS PART II: Summary of unimpaired streams

This section contains five streams, which at this time, are not considered fisheries impaired and as such were not considered for restoration priority. All but Lodgepole Creek are past project streams with problems corrected thereby eliminating them from further consideration as impaired.

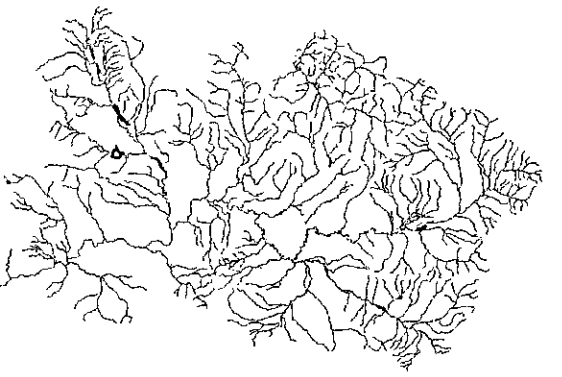
Dry Creek



Fisheries Impaired: N
Project Stream: Completed
Total Rank:
Biological Rank:
  Native Species:
  Sport Fishery:
  Water Quality:
Social Rank:
FWP Reports: 2001

Dry Creek is a tributary to Rock Creek in the North Fork of the Blackfoot River watershed. It flows through public (National Forest) land except for the lower-most portion of stream. We considered Dry Creek a non-impaired stream due to recent grazing management changes on private land, which will address the only known fisheries-impairment to this stream. Dry Creek supports bull trout rearing, fluvial WSCT and resident brook trout.

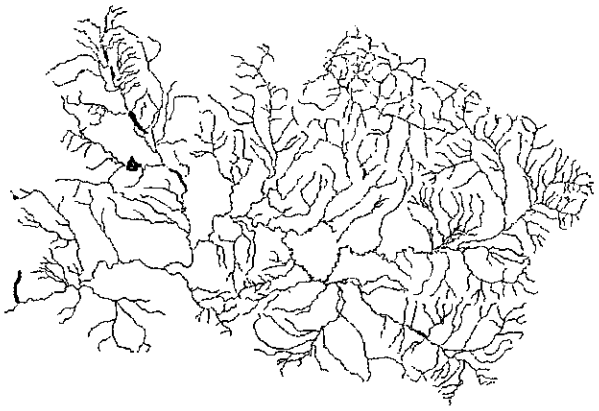
Grentier Spring Creek



Fisheries Impaired: N
Project Stream: Completed
Total Rank:
Biological Rank:
  Native Species:
  Sport Fishery:
  Water Quality:
Social Rank:
FWP Reports: 1997

Grentier Spring Creek is a spring-fed tributary to the upper Blackfoot River, located on private land. Grentier Spring Creek was the focus of extensive restoration over the past several years including channel reconstruction, habitat restoration and riparian land management changes. Grentier Spring Creek supports low densities of bull trout and fluvial WSCT as well as brown trout and brook trout, giving rise to a multi-species sport fishery value to the Blackfoot River. Because of restoration efforts, it now has low potential water quality benefits to the Blackfoot River. No fisheries impairments are present at this time.

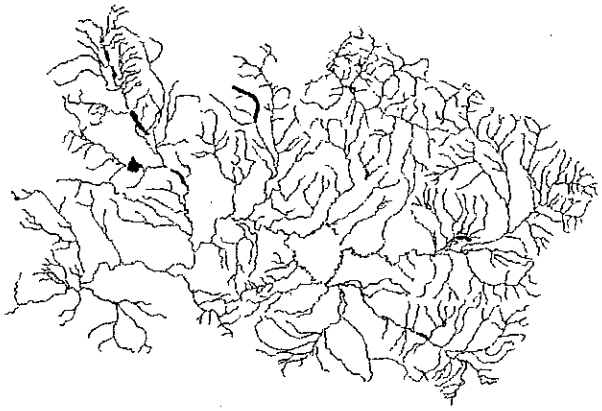
Johnson Creek



Fisheries Impaired: N
Project Stream: Completed
Total Rank:
Biological Rank:
  Native Species:
  Sport Fishery:
  Water Quality:
Social Rank:
FWP Reports: 1999

Johnson Creek is a 2nd order tributary to the lower Blackfoot River that drains public (National Forest) and private land. Johnson Creek is not ranked in the total rank for project streams, because restoration work (fish passage near the mouth) is completed. We have identified no additional impairments on this stream. Johnson Creek is a small, cold stream that supports several fish species including bull trout, WSCT, rainbow trout and brown trout in low numbers.

Lodgepole Creek

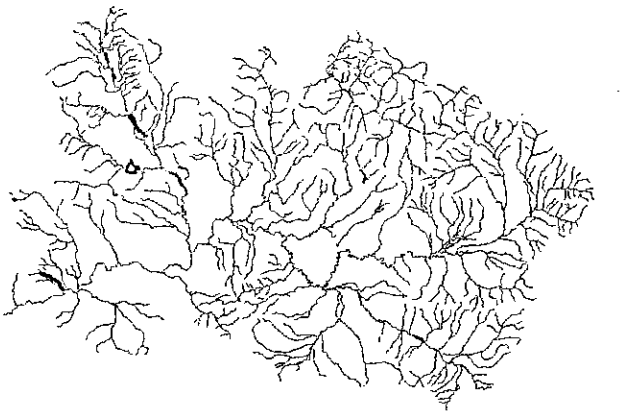


Fisheries Impaired: N
Project Stream: N
Total Rank:
Biological Rank:
  Native Species:
  Sport Fishery:
  Water Quality:
Social Rank:
FWP Reports: 1997

Lodgepole Creek is the primary tributary to Dunham Creek. It drains Monture Mountain before flowing exclusively through public (National Forest) land. Lodgepole Creek is not ranked in the stream prioritization report, because it is thought to be unimpaired. Lodgepole Creek supports both WSCT and bull trout in low numbers.

West Twin Creek

Fisheries Impaired: N
Project Stream: Completed
Total Rank:
Biological Rank:
  Native Species:
  Sport Fishery:
  Water Quality:
Social Rank:
FWP Reports: 1997



West Twin Creek is a small 3rd order tributary to the lower Blackfoot River, which originates from the slopes of Wisherd Ridge and Sheep Mountain. It flows south through public (National Forest) and private land. West Twin Creek is a past project stream in which the only known impairment was addressed with the completion of a fish passage project at Highway 200. West Twin Creek is not ranked in the restoration prioritization because it has been restored and lack of further identified impairments. West Twin Creek supports a high value sport fishery with a mixed species composition of WSCT, rainbow trout, brown trout, and brook trout in low numbers.

ACKNOWLEDGEMENTS

We would like to thank the Big Blackfoot Chapter of Trout Unlimited (BBCTU), Blackfoot Challenge, Chutney Foundation and U.S Fish and Wildlife Service Partners for Fish and Wildlife for helping with scorecard development and project funding. Also we thank Greg Neudecker with the USFWS, Don Peters and Hank Goetz with BBCTU for improving the quality of this report.

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Appendix

Exhibit A: Prioritization scorecard for Blackfoot River tributaries.

Exhibit B: Spreadsheets of scorecard values ranked by project and non-project streams

Exhibit C: Table of Potential restoration projects.

Exhibit D: Examples of practical fisheries restoration methods

Exhibit A: Prioritization scorecard for Blackfoot River tributaries.

Blackfoot Watershed Stream Restoration Priority Scorecard
Stream Name _____
FWP Report _____

		Score	
I: Biological/Resource Benefits – 150 possible points			
Bull trout spawning present		20	_____
Bull trout rearing present		10	_____
Bull trout core area		10	_____
Fluvial westslope cutthroat trout present		20	_____
Resident westslope cutthroat trout present		10	
Sport fishery value to Blackfoot River	Multiple species	20	_____
(provides recruitment to Blackfoot River, includes WSCT, bull, rainbow and brown trout)	Single species	10	
Technically able to address entire stream system		20	_____
Provide increased instream flows to Blackfoot River		20	_____
Improves downstream water quality by reducing:			
Sediment		10	_____
Temperature		10	_____
Nutrients		10	_____
Biological Score			_____
Biological Rank			_____
II: Social and Financial Considerations – 50 possible points			
Land owner/Land manager Cooperation in watershed			
100%		20	_____
75% - 100%		15	
50% - 75%		10	
< 50%		5	
Restoration Feasibility – Cost/mile			
< $10,000/mile		20	_____
$10,000 - $50,000/mile		10	
> $50,000/mile		5	
Demonstration/Educational value			
(Unique project, Landowner interest, Easy access)			
Three of three categories		10	_____
Two of three categories		5	
Social Score			_____
Social Rank			_____
Total Score			_____
Total Rank			_____

Appendix B: Spreadsheets of scorecard values ranked by project and non-project status.

			Biological/Resource Benefits-150 possible points																		Social and Financial Considerations-50 possible points						
Stream Name	Project stream	Impaired	Bull trout spawning present	Bull trout rearing present	Bull trout core area	Fluvial WSCT present	Resident WSCT present	Native Species Totals	Native Species Ranking	Sport Fishery value to BFR (Multi species)	Sport Fishery value to BFR (Single species)	Technically able to address entire stream system	Provide increased stream flows to BFR	Improves downstream water Quality by reducing: Sediment	Improves downstream water Quality by reducing: Temp	Improves downstream water Quality by reducing: Nutrients	Water Quality Score	Water Quality Ranking	Bio score	Bio ranking	Land owner/ Land manager cooperation in watershed	Restoration feasibility-cost/mile	Demo/ Edu value	Social score	Social ranking	Total Score	Total Rank
Ashby Creek	Y	Y					10	10	6			20		10	10	10	30	1	60	9	20	5	10	35	2	95	16
Bear Creek (R.M.12.2)	Y	Y		10		20		30	4	20		20		10			10	3	80	7	20	20	5	45	1	125	11
Beaver Creek	Y	Y		10		20		30	4	20		20	20	10	10	10	30	1	120	3	15	20	5	40	2	160	4
Belmont Creek	Y	Y	20	10	10	20		60	1	20		20		10	10		20	2	120	3	20	10	10	40	2	160	4
Blanchard Creek	Y	Y				20		20	5	20		20	20	10	10	10	30	1	110	4	15	10	10	35	2	145	7
Chamberlain Creek	Y	Y		10		20		30	4	20		20		10			10	3	80	7	20	20	10	50	1	130	10
Chamberlain EF	Y	Y				20		20	5		10	20		10			10	3	80	9	20	20	5	45	1	105	15
Chamberlain WF	Y	Y				20		20	5		10	20		10			10	3	80	9	20	10	5	35	2	95	16
Cottonwood Cr. (Nav.)	Y	Y					10	10	6			20		10	10	10	30	1	80	9	10	10	5	25	3	85	17
Cottonwood Cr. (R.M.43)	Y	Y	20	10	10	20		60	1	20		20	20	10			10	3	130	2	15	10	10	35	2	165	3
Dick Creek	Y	Y			10	20		30	4	20		20	20	10	10	10	30	1	120	3	15	20	10	45	1	165	3
Douglas Creek	Y	Y					10	10	6			20	20	10	10	10	30	1	80	7	10	20	5	35	2	115	13
Dunham Creek	Y	Y	20	10	10	20		60	1	20		20		10			10	3	110	4	20	10	10	40	2	150	6
East Twin Creek	Y	Y		10		20		30	4	20		20		10			10	3	80	7	15	20	5	40	2	120	12
Elk Creek	Y	Y				20		20	5	20		20	20	10	10	10	30	1	110	4	15	10	5	30	3	140	8
Gold Creek	Y	Y	20	10	10	20		60	1	20		20		10			10	3	110	4	15	20	5	40	2	150	6
Hoyt Creek	Y	Y					10	10	6	20		20	20	10	10	10	30	1	100	5	15	20	5	40	2	140	8
Kleinschmidt Cr.	Y	Y		10	10	20		40	3	20		20		10	10	10	30	1	110	4	15	20	10	45	1	155	5
McCabe Creek	Y	Y			10	20		30	4		10	20	20	10			10	3	90	6	20	20	5	45	1	135	9
McElwain Creek	Y	Y					10	10	6		10	20	20	10	10	10	30	1	90	6	10	20	10	40	2	130	10
Monture Creek	Y	Y	20	10	10	20		60	1	20		20		10	10	10	30	1	130	2	15	20	10	45	1	175	1
N.F. Blackfoot R.	Y	Y	20	10	10	20		60	1	20		20	20	10	10		20	2	140	1	15	10	10	35	2	175	1
Nevada Cr. (lower)	Y	Y						0	7			20	20	10	10	10	30	1	50	10	15	10	10	35	2	85	17
Nevada Spring Cr.	Y	Y				20		20	5			20	20	10	10	10	30	1	90	6	20	5	10	35	2	125	11
Pearson Creek	Y	Y				20		20	5		10	20		10	10		20	2	70	8	20	20	10	50	1	120	12
Poorman Creek	Y	Y	20	10		20		50	2	20		20	20	10	10	10	30	1	140	1	10	10	10	30	3	170	2
Rock Creek	Y	Y		10	10	20		40	3	20		20	20	10	10	10	30	1	130	2	15	5	10	30	3	160	4
Salmon Creek	Y	Y		10	10	20		40	3	20		20	20				0	4	100	5	15	10	5	30	3	130	10
Shanley Creek	Y	Y			10		10	20	5	20		20		10	10	10	30	1	90	6	15	20	5	40	2	130	10
Spring Creek (N.F.)	Y	Y		10	10	20		40	3	20		20	20	10			10	3	110	4	15	10	5	30	3	140	8
Union Creek	Y	Y					10	10	6			20	20	10	10	10	30	1	80	7	10	10	10	30	3	110	14
Warren Creek	Y	Y				20		20	5	20		20	20	10	10	10	30	1	110	4	15	10	10	35	2	145	7
Wasson Creek	Y	Y				20		20	5			20	20	10	10	10	30	1	90	6	15	20	5	40	2	130	10

File Name:Project Impaired Streams

Appendix B: Spreadsheets of scorecard values ranked by project and non-project streams

			Biological/Resource Benefits-150 possible points																		Social and Financial Considerations-50 possible points						
Stream Name	Project stream	Impaired	Bull trout spawning present	Bull trout rearing present	Bull trout core area	Fluvial WSCT present	Resident WSCT present	Native Species Totals	Native Species Ranking	Sport Fishery value to BFR (Multi species)	Sport Fishery value to BFR (Single species)	Technically able to address entire stream system	Provide increased stream flows to BFR	Improves downstream water Quality by reducing: Sediment	Improves downstream water Quality by reducing: Temp	Improves downstream water Quality by reducing: Nutrients	Water Quality Score	Water Quality Ranking	Bio score	Bio ranking	Land owner/ Land manager cooperation in watershed	Restoration feasibCty-cost/mile	Demo/ Edu value	Social score	Social ranking	Total Score	Total Rank
Alice Creek	N	Y	20	10		20		50	2		10	20		10			10	3	90	6	15	20	5	40	2	130	3
Arkansas Creek	N	Y					10	10	6			20		10	10		20	2	50	10	15	10	10	35	2	85	12
Arrastra Creek	N	Y	20	10		20		50	2	20		20					0	4	90	6	10	5	10	25	3	115	6
Bartlett Creek	N	Y					10	10	6			20			10		10	3	40	11	15	20	5	40	2	80	13
Bear Creek trib. to N.F.	N	Y			10		10	20	5			20					0	4	40	11	15	10	10	35	2	75	14
Bear Creek (R.M.37.5)	N	Y				20		20	5		10	20					0	4	50	10	20	20	5	45	1	95	10
Black Bear Creek	N	Y						0	7			20		10	10	10	30	1	50	10	20	20	10	50	1	100	9
Buffalo Gulch	N	Y					10	10	6			20		10	10	10	30	1	60	9	10	10	5	25	3	85	12
Burnt Bridge Creek	N	Y			10			10	6			20		10			10	3	40	11	10	10	5	25	3	65	16
California Gulch	N	Y					10	10	6			20		10	10	10	30	1	60	9	10	10	5	25	3	85	12
Camas Creek	N	Y					10	10	6			20		10	10	10	30	1	60	9	10	20	5	35	2	95	10
Chicken Creek	N	Y					10	10	6			20		10	10	10	30	1	60	9	10	20	5	35	2	95	10
Chimney Cr. (Douglas)	N	Y					10	10	6			20		10	10	10	30	1	60	9	10	20	5	35	2	95	10
Chimney Cr. (Nevada)	N	Y					10	10	6								0	4	10	14	15	5	5	25	3	35	17
Clear Creek	N	Y					10	10	6			20					0	4	30	12	10	20	5	35	2	65	16
Copper Creek	N	Y	20	10	10	20		60	1	20		20					0	4	100	5	20	20	5	45	1	145	2
Finn Creek	N	Y						0	7			20		10	10	10	30	1	50	10	15	20	5	40	2	90	11
Fish Creek	N	Y				20		20	5		10	20	20				0	4	70	8	15	20	10	45	1	115	6
Frezier Creek	N	Y					10	10	6				20	10	10		20	2	50	10	15	5	10	30	3	80	13
Frezier Creek, NF	N	Y					10	10	6					10			10	3	20	13	20	20	5	45	1	65	16
Gallagher Creek	N	Y					10	10	6			20		10			10	3	40	11	15	20	5	40	2	80	13
Game Creek	N	Y					10	10	6			20		10	10		20	2	50	10	5	20	5	30	3	80	13
Gleason Creek	N	Y					10	10	6			20					0	4	30	12	20	10	5	35	2	65	16
Hogum Creek	N	Y		10			10	20	5	20		20		10			10	3	70	8	10	20	5	35	2	105	8
Humbug Creek	N	Y					10	10	6			20		10			10	3	40	11	15	20	5	40	2	80	13
Indian Creek	N	Y					10	10	6			20					0	4	30	12	15	20	5	40	2	70	15
Jefferson Creek	N	Y					10	10	6			20		10	10	10	30	1	60	9	10	5	10	25	3	85	12
Keep Cool Creek	N	Y				20		20	5	20		20		10	10		20	2	80	7	15	20	5	40	2	120	5
Landers Fork	N	Y	20	10	10	20		60	1	20		20	20	10	10		20	2	140	1	15	5	10	30	3	170	1
Lincoln Spring Cr.	N	Y				20		20	5	20		20	20			10	10	3	90	6	10	5	10	25	3	115	6
Mitchell Creek	N	Y					10	10	6			20		10		10	20	2	50	10	15	20	5	40	2	90	11
Moose Creek	N	Y				20		20	5		10	20		10			10	3	60	9	20	20	5	45	1	105	8
Murray Creek	N	Y					10	10	6			20		10	10	10	30	1	60	9	10	20	5	35	2	95	10
Nevada Cr.(upper)	N	Y	20	10			10	40	3					10	10	10	30	1	70	8	10	20	10	40	2	110	7
Sauerkraut Creek	N	Y		10		20		30	4	20		20		10	10		20	2	90	6	15	5	10	30	3	120	5
Seven up Pete Cr.	N	Y				20		20	5		10	20		10			10	3	60	9	15	20	5	40	2	100	9

Appendix B: Spreadsheets of scorecard values ranked by project and non-project streams

			Biological/Resource Benefits-150 possible points																	Social and Financial Considerations-50 possible points						
Stream Name	Project stream	Impaired	Bull trout spawning present	Bull trout rearing present	Bull trout core area	Fluvial WSCT present	Resident WSCT present	Native Species Totals	Native Species Ranking	Sport Fishery value to BFR (Multi species)	Sport Fishery value to BFR (Single species)	Technically able to address entire stream system	Provide increased stream flows to BFR	Improves downstream water Quality by reducing: Sediment	Improves downstream water Quality by reducing: Temp	Improves downstream water Quality by reducing: Nutrients	Water Quality Score	Water Quality Ranking	Bio score	Bio ranking	Land owner/ Land manager cooperation in watershed	Restoration feasibility-cost/mile	Demo/ Edu value	Social score	Social ranking	Total Score	Total Rank
Sheep Creek	N	Y						0	7			20		10	10	10	30	1	50	10	20	20	5	45	1	95	10
Shingle Mill Creek	N	Y					10	10	6			20		10			10	3	40	11	15	20	5	40	2	80	13
Spring Cr.(Cottonwood)	N	Y		10	10		10	30	4	20		20	20	10			10	3	100	5	10	10	10	30	3	130	3
Strickland Creek	N	Y						0	7			20		10	10	10	30	1	50	10	10	10	5	25	3	75	14
Sturgeon Creek	N	Y						0	7			20		10	10	10	30	1	50	10	15	20	5	40	2	90	11
Wales Creek	N	Y				20		20	5	20			20	10	10	10	30	1	90	6	10	10	10	30	3	120	5
Ward Creek	N	Y						0	7			20		10	10	10	30	1	50	10	10	10	5	25	3	75	14
Warm Springs Cr.	N	Y			10			10	6		10	20	20	10			10	3	70	8	10	10	5	25	3	95	10
Washington Creek	N	Y					10	10	6			20		10	10	10	30	1	60	9	10	5	10	25	3	85	12
Washoe Creek	N	Y					10	10	6			20		10	10		20	2	50	10	15	20	5	40	2	90	11
Willow Cr. (lower)	N	Y				20		20	5	20		20	20	10	10	10	30	1	110	4	10	20	5	35	2	145	2
Willow Cr. (upper)	N	Y					10	10	6		10	20		10	10	10	30	1	70	8	15	20	5	40	2	110	7
Wilson Creek	N	Y					10	10	6			20	20	10	10	10	30	1	80	7	15	10	5	30	3	110	7
Yourname Creek	N	Y				20		20	5		10	20	20	10	10	10	30	1	100	5	10	10	5	25	3	125	4

[File]Non-Project Impaired Streams

Appendix C. Table of Potential Restoration Projects

Stream Name	Road Crossings	Irrigation Impacts	Channel alterations	Lacks Complexity	Riparian vegetation	Instream flow	Road drainage	Feedlots, Grazing	Recreation Impacts	Whirling Disease	Mining	Residential
Alice Creek				X	X				X			
Arkansas Creek							X	X				
Arrastra Creek	X						X		X			
Ashby Creek		X	X				X	X				
Bartlett Creek					X				X			
Bear Creek (lower River)					X		X					
Bear Creek (middle River)	X											
Bear Creek (North Fork)		X				X						
Beaver Creek		X			X	X		X				
Belmont Creek				X			X	X	X			
Black Bear Creek	X					X		X				
Blackfoot River(mouth to Clearwater)			X	X			X	X	X	X		
Blackfoot River(Clearwater to N.F)			X		X			X	X	X		
Blackfoot River(NF to Lincoln)		X	X	X	X	X		X	X	X		
Blackfoot River(Lincoln to Headwaters)		X	X	X		X			X		X	
Blanchard Creek		X	X	X	X	X	X	X				
Buffalo Gulch	X			X	X			X			X	
Burnt Bridge Creek	X	X	X		X	X	X					
California Gulch	X			X	X			X				
Camas Creek			X	X				X				
Chamberlain Creek				X	X		X			X		
Chamberlain Creek, east fork							X					
Chamberlain Creek, west fork							X					
Chicken Creek			X	X	X			X				
Chimney Creek (trib to Douglas)		X	X	X	X			X				
Chimney Creek (Nevada drain.)	X	X	X			X		X				
Clear Creek								X				
Copper Creek									X			
Cottonwood Creek (lower trib.)				X	X	X		X		X		
Cottonwood Creek (Nevada drain.)	X	X	X	X	X	X		X				
Dick Creek	X	X		X	X	X		X				
Douglas Creek		X	X	X	X	X	X	X				
Dry Creek												
Dunham Creek					X							

Appendix C. Table of Potential Restoration Projects

Stream Name	Road Crossings	Irrigation Impacts	Channel alterations	Lacks Complexity	Riparian vegetation	Instream flow	Road drainage	Feedlots, Grazing	Recreation Impacts	Whirling Disease	Mining	Residential
East Twin Creek												
Elk Creek	X	X	X	X	X	X	X	X			X	
Finn Creek		X		X		X		X				
Fish Creek		X	X									
Frazier Creek		X	X			X		X				
Frazier Creek, north fork			X			X		X				
Gallagher Creek	X							X				
Game Creek	X							X				
Gleason Creek	X										X	
Gold creek							X		X	X		
Grantier Spring Creek												
Hogum Creek	X				X			X				
Hoyt Creek				X	X							
Humbug Creek		X	X		X	X		X				
Indian Creek				X								
Jefferson Creek	X		X	X		X					X	
Johnson Creek												
Keep Cool Creek								X				
Kleinschmidt Creek	X		X	X	X			X		X		
Landers Fork			X	X	X	X			X			
Lincoln Spring Creek	X			X	X							X
Lodgepole Creek												
McElwain Creek	X	X			X	X	X	X				
McCabe Creek					X							
Mitchell Creek	X			X				X				
Monture Creek			X	X	X			X	X	X		
Moose Creek	X											
Murray Creek	X	X		X	X	X	X	X				
Nevada Creek		X	X	X	X	X		X				
Nevada Spring Creek		X	X	X	X			X				
North Fork Blackfoot River			X	X	X	X			X	X		
Pearson Creek				X	X		X					
Poorman Creek	X	X	X	X	X	X	X	X			X	
Rock Creek	X	X	X	X	X	X		X		X		

Appendix C. Table of Potential Restoration Projects

Stream Name	Road Crossings	Irrigation Impacts	Channel alterations	Lacks Complexity	Riparian vegetation	Instream flow	Road drainage	Feedlots, Grazing	Recreation Impacts	Whirling Disease	Mining	Residential
Salmon Creek		X		X		X						
Seven up Pete Creek											X	
Sauerkraut Creek	X		X	X	X			X			X	
Shanley Creek		X			X			X				
Sheep Creek						X		X				
Shingle Mill Creek		X						X				
Spring Creek (upper Cottonwood)		X	X		X	X						
Spring Creek (North Fork)						X						
Strickland Creek				X	X			X				
Sturgeon Creek			X		X	X		X				
Union Creek	X	X		X	X	X		X				
Wales Creek		X	X			X		X				
Ward Creek				X	X			X				
Warm Springs Creek	X	X				X	X					
Warren Creek	X	X	X	X	X	X		X		X		
Washington Creek		X	X	X				X			X	
Washoe Creek				X				X				
Wasson Creek			X	X	X	X		X				
Wilson Creek	X	X				X						
West Twin Creek												
Willow Creek (above Lincoln)					X			X				
Willow Creek (below Lincoln)		X			X	X		X				
Yourname Creek		X	X	X	X	X		X				

Riparian Livestock Management

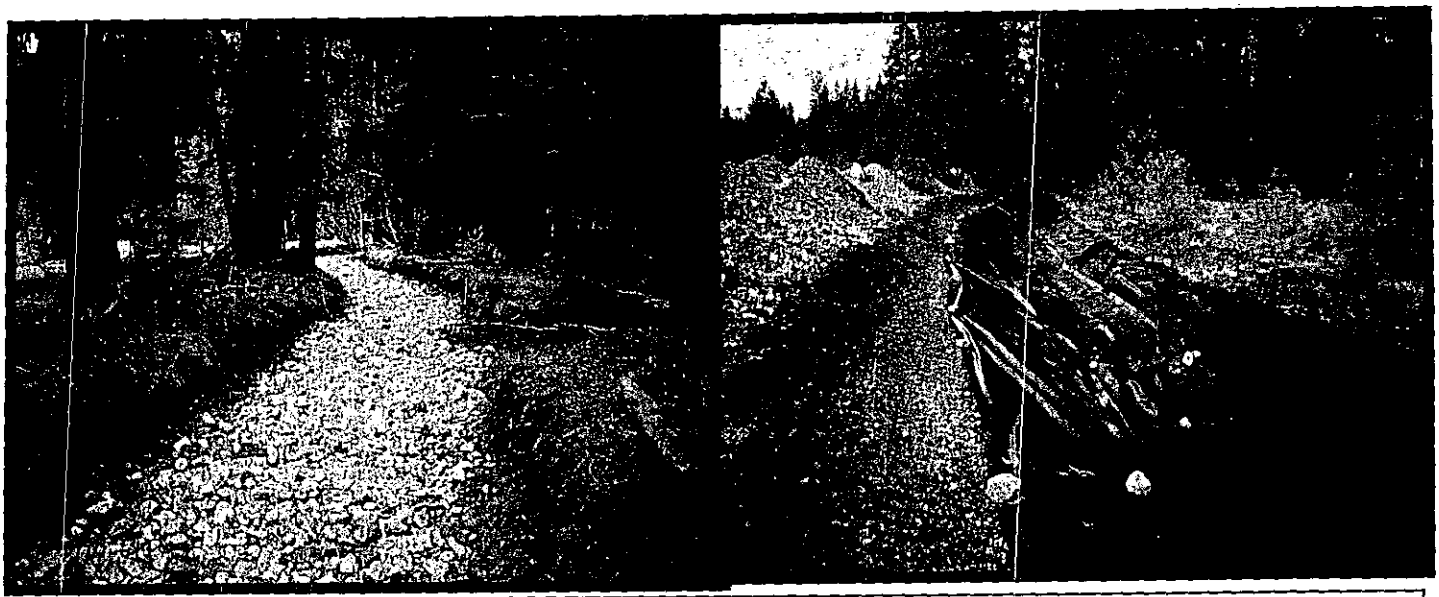
Removing streamside corrals and feedlots is critical to improving water quality. This usually requires the development of an upland water source.

Excessive livestock access to riparian areas leads to adverse changes to fish habitat (left). Developing compatible riparian grazing strategies usually includes developing off-stream water, which draws animals away from the stream.

Riparian Livestock Management

A compatible riparian livestock-grazing plan is a critical component to a healthy stream. These photos show influence of unregulated grazing (before) and temporary exclusion (after) following restoration, development of an upland water source and rotational grazing.

Fish-friendly Irrigation

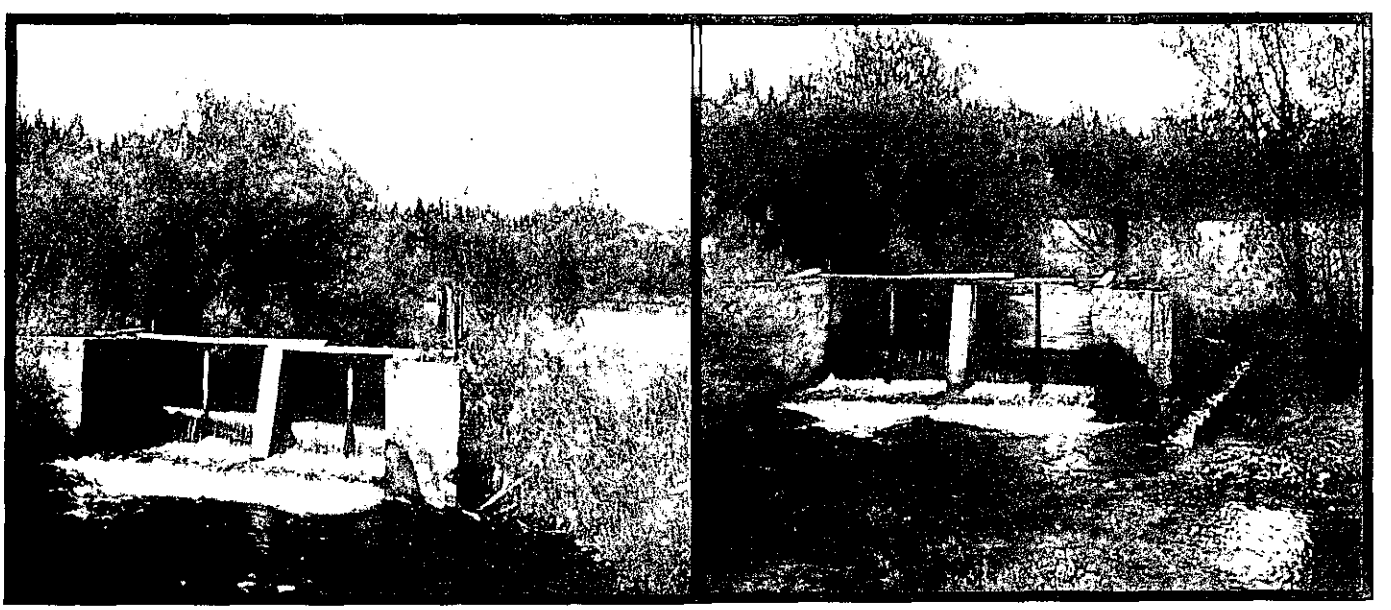


Lining leaky ditches with a rubber-like fabric increased flow efficiencies from ~10% (left) to almost 100% (right) upon completion. When finished the liner is covered with~15 inches of gravel and rock and then seeded.

Water leasing: Once irrigation upgrades are complete and if salvage water is available, a water lease is an excellent option for improving stream flows and for protecting one's water right.

Fish-friendly Irrigation

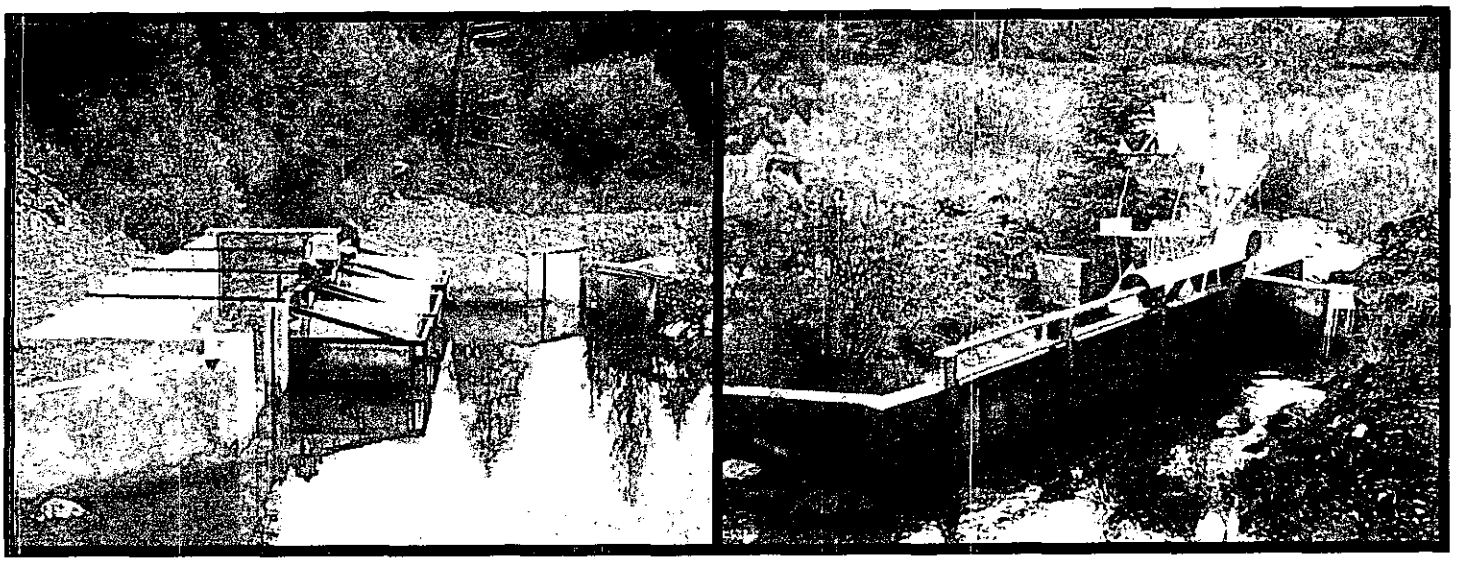
Fish ladders on diversions: The after photo (right) shows the new diversion and fish ladder in operation during high (spring) flow, which is the spawning migration period for rainbow trout and westslope cutthroat trout.



Denil Fish Ladders: Before (right) and after (left) of a diversion retrofitted with a Denil fish ladder: Denil fish ladders can retrofitted to old structures or designed into new diversions. This ladder allows the upstream movement of fish over six inches in length.

Fish-friendly Irrigation

In some cases irrigation diversions can replaced with step-pool fish ladder/diversion structures (right). These structures 1) provide fish passage, 2) maintain channel stability, 3) set elevation control for the diversion, and 4) are very low maintenance. Where appropriate, this type of structure is an excellent option.



Fish Screens: Losses of migratory fish like westslope cutthroat trout and bull trout to irrigation ditches is extensive. These photos show two of several options used to screen fish out of ditches. Both are self-cleaning. The screen on the left operates with electricity, while the screen on the left is self-powered and operates under a wide range of flows.

Channel Reconstruction and Habitat Restoration

Channel reconstruction: These photos show a bulldozed channel (left) before reconstruction and the newly reconstructed channel (right). The new channel included sod transplants and instream wood for bank stability and habitat.

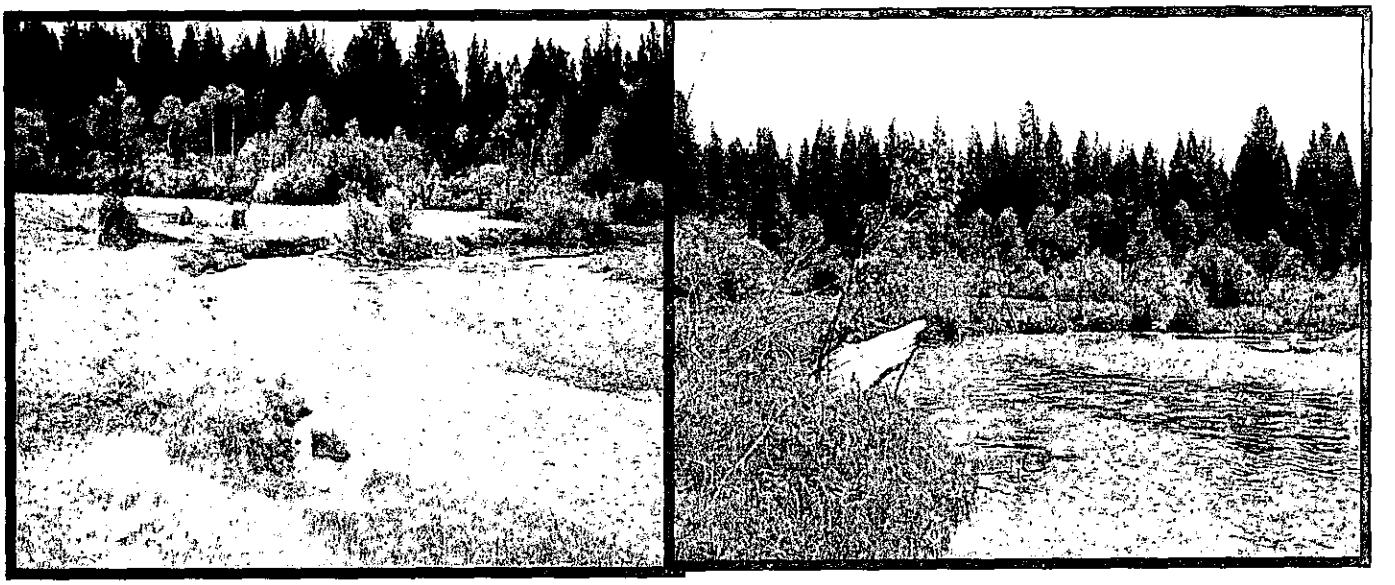
Instream habitat restoration: These photos show a stream of moderate gradient before (left) and after instream habitat restoration (right), using all native materials (wood and on-site rock). Before instream habitat restoration, this stream had all large wood removed from the channel, leading to the loss of pools and loss of habitat complexity.

Channel Reconstruction and Habitat Restoration

During and after channel reconstruction: These photos show a reconstruction project that relies on existing shrubs and wood to improve habitat quality.

Before and after channel reconstruction: The before picture (left) shows the adverse influence of rock dams (over widened) on a stream. The after photo (right) is a newly constructed stream with better pools and higher quality habitat.

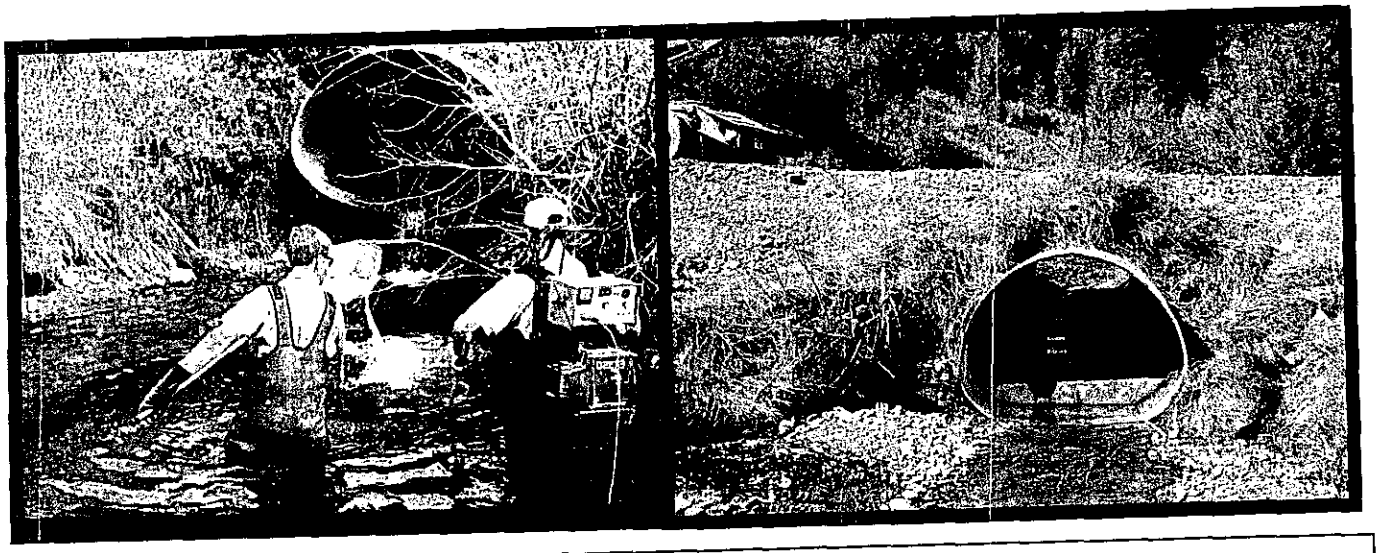
Channel Reconstruction and Habitat Restoration



Habitat restoration and stream bank stabilization: Both can be accomplished using natural materials such as shrub plantings and wood from the riparian area. Modifying grazing practices is often necessary when grazing results in weakened stream banks and accelerated bank erosion, as in the left photo.

Bank stabilization can be accomplished, in some cases, using simple log or rock vanes, which can improve habitat at various flows (low flow-left) and deflect stream energy off stream banks at high flows (right). These types of treatments may supplement riparian grazing changes where stream banks are weakened.

Road Crossings



Before and after photos of a culvert replacement project: The before picture (left) shows an undersized and perched culvert, which caused channel instability and migration problems for small fish. The after photo (right) is a larger baffled culvert set at stream grade to allow upstream passage of all fish, including juveniles.

These photos show a culvert replacement project. The culverts were high velocity barriers to small fish. Bridges allow unimpeded upstream fish passage, plus allows upstream movement of other species like amphibians, which rely on natural stream bottoms.

Road Crossings

Like bridges, open-bottom arch culverts can meet fish migration objectives by restoring a natural bottom channel (right). This option is usually less expensive and requires less long-term maintenance than a bridge.