

Steelhead/rainbow trout resources of the Middle Fork Eel River

Middle Fork Eel River

The Middle Fork Eel River is tributary to the Eel River and consists of about 69.8 stream miles. It flows southeasterly, entering the Eel River at about stream mile 119.3, near the town of Dos Rios. It is the largest sub-basin in the Eel River watershed and drains an area of about 753 square miles (DFG 1997a).

Staff from DFG surveyed the Middle Fork Eel River from its mouth to the confluence with the North Fork Middle Fork Eel River in 1938. Multiple age classes of steelhead were observed throughout the Eel River during this survey. Adult steelhead were observed at Asa Bean Falls, located about 50 miles upstream from the Eel River confluence. The falls were reported to be a partial barrier to steelhead (DFG 1938a, DFG 1938b, DFG 1938c). According to a 1946 DFG memo, USFS staff blasted the falls with dynamite in August of that year in order to improve passage for anadromous steelhead (DFG 1946).

In 1957, staff from DFG and USFS surveyed a ten-mile section of the Middle Fork Eel River downstream of the Beaver Creek confluence as well as the section between the Beaver and Balm of Gilead creeks' confluences. In stream survey reports, the Middle Fork is described as, "...an important spawning and nursery area for summer and winter steelhead runs" (DFG 1957a). The section downstream of the Beaver Creek confluence was described as "an excellent nursery ground for young steelhead" (DFG 1957b). The section upstream of Beaver Creek had limited spawning areas but "...appears to support a sizeable population of SH-RT."

A 1959 report summarizes fisheries data collected in the Middle Fork Eel River during investigations of possible dam sites in the watershed. This report stated that summer steelhead were observed in the Middle Fork as early in the year as April 20, and winter-run fish were known to reach Asa Bean Falls during December and January. The river also was said to support a population of resident rainbow trout. During 1959 stream surveys, nursery habitat in the mainstem Middle Fork was found to be limited to the reaches upstream of the Eel River Ranger Station. Spawning areas were observed throughout the section surveyed, from the mouth of the river to "Haynes Delight," located upstream from the Balm of Gilead Creek confluence (Anonymous 1960).

An inventory of anadromous fish resources is included in a 1965 California Fish and Wildlife Plan. In its description of the Middle Fork Eel River, the inventory stated that the watershed contained a total of 178 miles of steelhead habitat and supported an annual run of 23,000 steelhead. (The estimation method was not provided in the plan.) It was also noted that, "The river is not supporting optimum runs of fish. The limiting factor appears to be siltation, arising largely from poor land-use programs" (DFG 1965a, p. 385).

The Middle Fork Eel River was examined in 1973 as part of a study of water temperature conditions in the Eel River system. During this study, juvenile *O. mykiss* were found to be abundant from Osborn Station to Buck Creek, and 24 adult summer steelhead were observed between Osborn Station and Hellhole Canyon (Kubicek 1977). Several juvenile *O. mykiss* were observed between Buck Creek and Black Butte River, and approximately 100 juveniles were observed in a pool just above Black Butte River, concentrated in an area along the gravel bar separating the two streams (Kubicek pers. comm.).

In a 1992 report on the distribution of summer steelhead, Weldon Jones described observations of summer steelhead that took place in the Middle Fork Eel River beginning in the 1930s (DFG 1992). Fishing for summer steelhead became popular on the Middle Fork in the early 1950s. However, anglers noticed a decrease in the number of fish in 1955 and a severe flood that year caused damage to summer steelhead habitat. Following the floods in 1964, during which “summer holding areas were almost entirely obliterated” (DFG 1992, p. 7), DFG closed the Middle Fork Eel River to summer steelhead fishing.

Staff from USFS surveyed the upper 12 miles of the Middle Fork Eel River in 1979 and observed “adverse conditions.” Steelhead passage was said to be limited by a falls barrier near Wrights Valley (upstream of the Balm of Gilead Creek confluence) and much of the stream upstream from the barrier consisted of dry channel with “extensive sediment deposits.” However, resident rainbow trout were said to be “abundant” in these upstream sections when water was present (USFS 1980a).

Each year from 1984 through 1989 staff from DFG conducted electrofishing surveys at two stations in the Middle Fork Eel River in order to monitor juvenile steelhead populations. During this sampling juvenile steelhead, ranging from 1.6 to 8.6 inches in length, were collected each year (except 1985 when sampling was not conducted). The sampling stations were located near the mouth of Fly Creek and near the mouth of the North Fork Middle Fork Eel River (DFG 1989a). Notes from one surveyor state, “. . .below Fly Creek and south. . .higher temperatures and shallower pools [make the Middle Fork] poorly suited for summer holding grounds. The area above Fly Creek is ideal for summer steelhead, low turbidity, low temperature at pool bottoms, and many overhanging bedrock ledges” (USFS 1980b).

Staff from DFG completed the “Eel River Salmon and Steelhead Restoration Action Plan” in 1997. The authors wrote that, “The lower mainstem Middle Fork Eel River has harsh summer conditions for the relatively few juvenile salmonids that live in it” (DFG 1997a, p. 25). Steelhead populations in the Middle Fork Eel River have been impacted by increased sediment levels, cattle grazing, logging, and poaching. The Action Plan stated that steelhead populations in the Middle Fork have declined steadily since 1900, particularly in response to the flood events of 1955 and 1964, and winter steelhead numbers were considered “. . .well below historic levels” when the plan was written in 1997 (DFG 1997a, p. 25).

Annual surveys of summer steelhead in the Middle Fork Eel River were conducted by staff from DFG and USFS from 1966 through 1999. In a report of the survey conducted in 1999, the Middle Fork summer steelhead run was described as “The largest remaining wild run of these magnificent fish” (DFG 1999, p. 2). It was noted to be “. . .probably the only population that has not been touched by a hatchery program, and as such, is most likely the State’s most important summer steelhead population” (DFG 1999, p. 2). Counts from the annual surveys indicated that the Middle Fork summer steelhead population has declined since 1987, with the exception of high population numbers in 1995. The numbers of adult fish fluctuated from a high of 1,601 in 1981 to a low of 198 in 1966, and 471 fish were counted in 1999.

Staff from DFG surveyed two sections of the upper Middle Fork Eel River in 2000. Multiple age classes of steelhead were observed between the North Fork Middle Fork and Balm of Gilead Creek confluences, and in the section from Uhl Creek to the river’s headwaters. In 2000, the upstream limit for steelhead trout was described as a falls located about 0.75 miles downstream from the mouth of Willow Basin Creek (DFG 2000a). One stream survey report stated, “The stream section surveyed (and the Eel River as a whole) is slowly moving to a higher level of complexity since the devastating storms of 1955 and 1964” (DFG 2000b).

Goforth Creek

Goforth Creek is tributary to the Middle Fork Eel River and consists of about two stream miles. It flows south, entering the Middle Fork Eel River about 0.6 miles upstream from the Eel River confluence.

During a 1976 stream survey *O. mykiss* were observed in the lower 200 yards of Goforth Creek. The creek was said to support a small *O. mykiss* population, but had “poor spawning and nursery habitat for steelhead.” Limiting factors included steep terrain and a lack of shelter (DFG 1976a).

Poonkinny Creek

Poonkinny Creek is tributary to Goforth Creek and consists of about 1.9 stream miles. It flows south, entering Goforth Creek about 0.7 miles upstream from the Middle Fork Eel River confluence.

Juvenile and YOY *O. mykiss*, ranging from one to seven inches in length, were observed throughout Poonkinny Creek during a 1976 DFG stream survey. Steelhead spawning and nursery habitat was described as “poor” or “fair.” A lack of spawning gravel was listed as a major limiting factor (DFG 1976b).

Salt Creek

Salt Creek is tributary to the Middle Fork Eel River and consists of about 6.2 stream miles. It flows north, entering the Middle Fork Eel River about 5.3 miles upstream from the Eel River confluence.

Salt Creek was surveyed during a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. The report described steelhead spawning areas as “quite limited” in Salt Creek, but stated, “...steelhead reportedly do ascend to the upper reaches of the stream and spawn each year” (Anonymous 1960).

In a 1976 stream survey report, staff from DFG characterized Salt Creek as “...one of the larger tributaries to the Middle Fork of the Eel River providing good steelhead spawning and rearing habitat.” Young-of-year steelhead were observed in the lower stream and rainbow trout were noted in the upper areas. Spawning areas were “heavily damaged” by siltation in the lower portion of the stream (DFG 1976c).

Staff from DFG conducted a stream inventory of Salt Creek in 1994. Steelhead were captured during electrofishing in the creek, including a total of 116 steelhead found at one site about 0.7 miles upstream from the creek mouth (Goodfield 1994). The inventory report recommends increasing canopy, along with treating sources of fine sediment including those related to the road system.

Elk Creek

Elk Creek is tributary to the Middle Fork Eel River and consists of about 17.3 stream miles. It flows northwesterly, entering the Middle Fork Eel River about 15.1 miles upstream from the Eel River confluence.

Elk Creek was surveyed during a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. During the survey “very good” spawning gravels were observed in Elk Creek from the mouth to the Sanhedrin Creek confluence. The survey report states, “Steelhead reportedly spawn a much greater distance above this point” (Anonymous 1960).

Smith and Elwell (1961), as reported in Kubicek (1977), indicated that Elk Creek (in its extreme headwaters) was only one of a few Middle Fork tributaries downstream of the Black Butte River confluence that contain salmonid nursery areas of any consequence.

Staff from USFS surveyed two miles of Elk Creek downstream from the Crocker Creek confluence in 1977, when rainbow trout were deemed “common” in the lower reach and “abundant” in the upper. The middle reach was dry (USFS 1977a). In the two miles between the confluences of Crocker and Sportsman creeks, density of *O. mykiss* was noted as “abundant,” “few,” and “common” in the lower, middle, and upper portions of the reach, respectively (USFS 1977b). The two mile reach upstream from the Sportsman Creek confluence also was surveyed and contained areas of “abundant” rainbow trout. The fishery in this reach was deemed “excellent” overall (USFS 1977c).

Staff from DFG conducted a stream inventory of Elk Creek in 1994. Three juvenile steelhead were found at one electrofishing site, located about 3.4 miles upstream from the creek mouth (CCC 1994). The inventory report recommends increasing canopy and with treating sources of fine sediment.

Eden Creek

Eden Creek is tributary to Elk Creek and consists of about 10.7 stream miles. It flows northeasterly, entering Elk Creek about 1.7 miles upstream from the Middle Fork Eel River confluence.

A 1983 DFG status report of California Wild and Scenic Rivers lists the number of stream miles accessible to anadromous species in tributaries of the Eel River. In this report Eden Creek is listed as containing 1.2 miles of stream accessible to steelhead (DFG 1983a). The report notes that this number represents the stream miles “open to fish passage” and “is not a measure of habitat availability or habitat quality” (DFG 1983a, p. H-45). The distribution estimates were made by examining DFG fisheries files and USGS maps.

Ellis Creek

Ellis Creek is tributary to Elk Creek and consists of about 3.8 stream miles. It flows north, entering Elk Creek about 4.9 miles upstream from the Middle Fork Eel River confluence.

Staff from DFG conducted a stream inventory of Ellis Creek in 2002. Two age 2+ steelhead were observed about 0.1 miles upstream from the creek mouth. The first probable fish barrier was noted about stream mile 1.4. The inventory report notes that water temperature may limit the fishery and recommends increasing canopy (DFG 2002a).

Sanhedrin Creek

Sanhedrin Creek is tributary to Elk Creek and consists of about 6.8 stream miles. It flows north, entering Elk Creek about 5.7 miles upstream from the Middle Fork Eel River confluence.

Sanhedrin Creek was surveyed by helicopter in 1965 and the surveyors noted “possible steelhead utilization.” One fish was seen but not identified. Silt and debris accumulation was observed near the mouth of the creek (Hinze 1965).

Bear Creek

Bear Creek is tributary to Elk Creek. It is formed by the confluence of headwater forks, and flows southwesterly about 3.7 miles.

Staff from USFS surveyed about three miles of Bear Creek in 1977. Only the lower section had rainbow trout, which were deemed “rare” (i.e., density of about one per 100 feet). The survey report states, “Clean up log jams on upper section, control erosion of slopes, do replanting. This area has trail access yet it is unstable at this time and highly disturbed” (USFS 1977d).

Forks Creek

Forks Creek is tributary to Elk Creek and consists of about 1.7 stream miles. It flows east, entering Elk Creek about 10.7 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed about 0.3 miles of Forks Creek in 1977. The survey report states, “Very nice and stable stream except for few jams but flow is just nonexistent.” No fish were observed, and the fishery and the habitat condition were rated “poor” (USFS 1977e).

Staff from DFG conducted a stream inventory of Forks Creek in 2002. During the survey juvenile salmonids were observed from the creek mouth up to about 0.3 miles upstream. (DFG 2002b). The inventory report noted that water temperatures were “nearing the threshold stress range for juvenile salmonids.”

Crocker Creek

Crocker Creek is tributary to Elk Creek and consists of about 5.8 stream miles. It flows northeasterly, entering Elk Creek about 12.2 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed about two miles of Crocker Creek in 1977. Rainbow trout were “abundant” in the lower section and “common” in the middle section. The fishery was deemed “good” while the habitat condition was “fair” (USFS 1977f).

Staff from DFG conducted a stream inventory of Crocker Creek in 2002. Juvenile salmonids, including one six-inch steelhead, and other unidentified salmonids were observed in the lower 0.4 miles of the stream. According to the inventory report, anadromous fish may only have access to the lower reach due to steep gradient, large boulders, and lack of water further upstream (CCC 2002a). The report noted that spawning gravels were limited and water temperatures were “nearing the threshold stress range for juvenile salmonids.” It recommended re-vegetation.

Sulphur Springs Creek

Sulphur Springs Creek is tributary to Elk Creek and consists of about 4.9 stream miles. It flows northeasterly, entering Elk Creek about 12.5 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed about one mile of lower Sulphur Springs Creek in 1977. Rainbow trout were observed but abundance was generally low, although the lower section had an estimated density of 20 fish per 100 feet of stream. The overall fishery rating and the habitat condition were deemed “poor” (USFS 1977g).

Staff from DFG conducted a stream inventory of Sulphur Springs Creek in 2002. Juvenile salmonids were observed just upstream from the mouth of the creek but the species was not identified. The survey ended about 0.1 miles upstream from the mouth due to a “very steep, large boulder-dominated channel,” which was likely the upstream limit for anadromous fish (CCC 2002b).

Mendenhall Creek

Mendenhall Creek is tributary to Elk Creek and consists of about 4.3 stream miles. It flows southwesterly, entering Elk Creek about 14 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed two miles of Mendenhall Creek in 1977 and observed multiple *O. mykiss* year classes in the middle and upper reaches. The middle reach density was estimated to be 50 fish per 100 feet, while the upper reach density was 20 fish per 100 feet (USFS 1977h).

Staff from DFG conducted a stream inventory of Mendenhall Creek in 2002. The lower 0.8 miles of the creek were surveyed and juvenile steelhead were observed. The report recommended planting riparian vegetation to improve habitat in the creek (CCC 2002c).

Sportsman Creek

Sportsman Creek is tributary to Elk Creek. It is formed by the confluence of headwater forks, and flows about 2.1 miles northeast. The confluence with Elk Creek is immediately upstream from the mouth of Mendenhall Creek.

Staff from USFS surveyed about two miles of Sportsman Creek in 1977. Rainbow trout were only observed in the middle reach and were deemed “rare.” The overall fishery rating and the habitat condition were described as “poor” (USFS 1977i).

Lookout Creek

Lookout Creek is tributary to Elk Creek and consists of about three stream miles. It flows southwesterly, entering Elk Creek about 15.8 miles upstream from the Middle Fork Eel River confluence.

Staff from DFG conducted a stream inventory of Lookout Creek in 2002. Juvenile salmonids were observed throughout the section surveyed, which included the lower 0.8 miles of the creek. An unspecified barrier at the upstream end of this reach was

described as the “possible end of anadromy” (Palacios 2002). The inventory report notes that water temperature may limit the fishery and recommends treating sources of fine sediment.

Thatcher Creek

Thatcher Creek is tributary to the Middle Fork Eel River and consists of about 6.4 stream miles. It flows northwesterly, entering the Middle Fork Eel River about 16.5 miles upstream from the Eel River confluence.

Thatcher Creek was surveyed during a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. The report stated, “Steelhead have been observed spawning in the headwaters of this stream during the winter periods” and noted the presence of “good” spawning riffles from the mouth of the creek upstream to the confluence with Jack Hollow Creek (Anonymous 1960).

Smith and Elwell (1961), as reported in Kubicek (1977), indicated that Thatcher Creek (upper section) was one of only a few Middle Fork tributaries downstream of Black Butte River confluence that contain salmonid nursery areas of any consequence.

Staff from USFS surveyed Thatcher Creek in 1973 and observed “salmonids” in the creek. “A considerable quantity of very nice spawning substrate” also was noted. High water temperatures may have limited salmonid rearing habitat and planting riparian vegetation was recommended (USFS 1973a).

Thatcher Creek was surveyed again in 1977 by USFS staff and rainbow trout were observed throughout the creek. Abundance varied from “rare” to “abundant” in various sections of the creek and the fish ranged in size from one to seven inches (USFS 1977j, USFS 1977k).

Staff from DFG conducted a salmonid carcass survey in Thatcher Creek in 1988 and did not observe any fish or redds. Many slides were noted along the banks of the creek (DFG 1988a).

Hayshed Creek

Hayshed Creek is tributary to the Middle Fork Eel River and consists of about 6.3 miles of intermittent stream. It flows southwesterly, entering the Middle Fork Eel River about 17 miles upstream from the Eel River confluence.

Hayshed Creek was surveyed during a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. The creek was described as a “small drainage” and “fairly good” spawning riffles were observed in the lower section. According to the report, falls located just upstream from the mouth of the creek are only a barrier during high flows and steelhead had been seen spawning above them (Anonymous 1960).

Staff from USFS surveyed about three miles of Hayshed Creek in 1973 and observed low salmonid density in the lower reach with somehow higher density (i.e., 10-15 fish per 100 feet) in the middle reach. The survey report states, “I suspect that few anadromous salmonids spawn in this stream. A majority of the fish encountered were large two or three year old fish” (USFS 1973b). The report adds, “scarcity of deep pools and lack of riparian vegetation to provide shading may result in unfavorable stream temperatures during very hot summer days.”

Mill Creek

Mill Creek is tributary to the Middle Fork Eel River and consists of about 13.1 stream miles. It flows southeasterly, entering the Middle Fork Eel River about 20.8 miles upstream from the Eel River confluence.

Mill Creek was surveyed by staff from DFG in 1938 and steelhead presence was noted. “Good” spawning areas were observed and the survey report stated, “Runs of salmon and steelhead reported to have been good during past season” (DFG 1938d).

Juvenile steelhead were rescued from Mill Creek in 1949 and 1953. A total of 45,139 steelhead were rescued in 1949 and 29,129 were rescued in 1953 (DFG 1950, DFG 1954).

Smith and Elwell (1961), as reported in Kubicek (1977), indicated that Mill Creek (in its extreme headwaters) was one of only a few Middle Fork tributaries downstream of Black Butte River confluence that contain salmonid nursery areas of any consequence.

Staff from DFG conducted a salmonid carcass survey in Mill Creek in 1989. A field note documents the collection of two carcasses in the creek, but does not mention the species of fish (DFG 1989b).

Staff from DFG conducted a stream inventory of Mill Creek in 1996. One site was electrofished, about 6.7 miles upstream from the Middle Fork Eel River confluence and YOY and juvenile *O. mykiss* were found. The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment (CCC 1996).

A DFG memo summarizes the results of salmonid sampling conducted from 1998-2002 on Round Valley Indian Reservation lands. Mill Creek was among the creeks sampled and the memo states, “Steelhead were found in all streams in all years” (DFG 2002c).

Turner Creek

Turner Creek is tributary to Mill Creek and consists of about 3.9 miles of intermittent stream. It flows northeasterly, entering Mill Creek about 3.2 miles upstream from the Middle Fork Eel River confluence.

Staff from DFG surveyed Turner Creek in 1938. No fish observations are noted in the survey report, which describes the creek as “entirely dry” (DFG 1938e).

Turner Creek was surveyed during a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. The report states that “Steelhead have been observed spawning” in Turner Creek and the creek is described as containing “good quality” spawning gravels (Anonymous 1960).

Steelhead were observed up to stream mile 4.0 in Turner Creek during spot checks at road crossings conducted between 1985 and 1997 by DFG staff (Jones 1997).

The condition of Turner Creek is described in a 2000 DFG memo concerning a restoration project in the watershed. According to the memo, flows become subsurface in Turner Creek during the summer months, but this condition did not occur historically. It

cites overgrazing by cattle as reducing channel complexity and contributing to loss of the riparian zone and excess sedimentation. Streambank stabilization projects were planned for four sites in the creek (DFG 2000c).

Grist Creek

Grist Creek is tributary to Mill Creek and consists of about 6.5 miles of intermittent stream. It flows east, entering Mill Creek about six miles upstream from the Middle Fork Eel River confluence.

Staff from DFG surveyed Grist Creek in 1938 and did not note any fish observations. The survey report stated, “Very few salmon or steelhead reported to run into this stream, and these are reported to go far up” (DFG 1938f)

Grist Creek was surveyed during a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. The report states that “Steelhead have been observed spawning” in Grist Creek and the creek is described as containing “good quality” spawning gravels (Anonymous 1960).

Town Creek

Town Creek is tributary to Grist Creek and consists of about 5.8 miles of intermittent stream. It flows southeasterly, entering Grist Creek about 2.3 miles upstream from the Mill Creek confluence.

Staff from DFG surveyed Town Creek in 1938 and noted that only “a trickle of water” was flowing between pools in the creek. However, YOY steelhead and one 20-inch adult were observed in the pools and the report stated, “Runs of salmon and steelhead reported to have been good during past season” (DFG 1938g).

Fish rescues were performed in many Eel River streams in 1949. A total of 10,850 juvenile steelhead were rescued from Town Creek that year (DFG 1950).

Town Creek was surveyed during a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. The report states, “Steelhead have been observed spawning [in Town Creek]” and the creek is described as containing “good quality” spawning gravels (Anonymous 1960).

A salmonid carcass survey was conducted on a section of Town Creek from the confluence with Little Valley Creek to the Main Street bridge in 1988. No fish or redds were observed and the surveyed section was said to be “poor for spawning or rearing.” However the field note stated, “Both Little Valley Creek and Town Creek above the conjunction looked as if they might have good rearing habitat with cover and pools...” (Walton 1988).

A DFG memo summarizes the results of salmonid sampling conducted from 1998-2002 on Round Valley Indian Reservation lands. Town Creek was among the creeks sampled and the memo states, “Steelhead were found in all streams in all years.” Sampling was only conducted on the tribal lands in the watershed (DFG 2002c).

Little Valley Creek

Little Valley Creek is tributary to Town Creek and consists of about 2.8 miles of intermittent stream. It flows south, entering Town Creek about 2.6 miles upstream from the Grist Creek confluence.

The lower two miles of Little Valley Creek were inspected in 1965 and stream flows were intermittent throughout the area. A field note stated, "...both SS and SS were observed." It is assumed that one of those abbreviations was intended to be written as "SH," indicating the presence of steelhead. The surveyor also wrote, "Because of lack of flow and the scarcity of spawning gravels, I feel that this stream isn't too important as a salmon and steelhead stream" (DFG 1965b).

Little Valley Creek is mentioned in a 1988 field note regarding a salmonid carcass survey of Town Creek. The field note states, "Both Little Valley Creek and Town Creek above the conjunction looked as if they might have good rearing habitat with cover and pools..." (DFG 1988b).

Short Creek

Short Creek is tributary to Mill Creek and consists of about 11.5 miles of intermittent stream. It flows south, entering Mill Creek about 6.3 miles upstream from the Middle Fork Eel River confluence.

Records indicate that juvenile steelhead were rescued from Short Creek often during the period from 1938 to 1966. A 1968 stream survey includes a summary of the numbers of fish rescued during many of these years. They range from 1,100 to 90,548 steelhead rescued per year (DFG 1968).

Staff from DFG surveyed Short Creek in July of 1938 and noted that YOY steelhead were "abundant." Spawning areas were "excellent" and natural propagation was "very extensive." During a visit to the same area later in the summer, much of the streambed was found to be dry and only about 150 fish remained where about 10,000 had been seen previously (DFG 1938h).

Smith and Elwell (1961), as reported in Kubicek (1977), indicated that Short Creek (in its extreme headwaters) was one of only a few Middle Fork tributaries downstream of Black Butte River confluence that contain salmonid nursery areas of any consequence.

During a 1968 stream survey of Short Creek "young" *O. mykiss* were observed throughout ten miles of the watershed, including two miles of tributary streams. In the survey report the creek is described as "...one of the longer secondary tributaries to the Middle Fork Eel River." It was said to have "extremely good spawning gravels for steelhead" but low summer flows which limited nursery habitat (DFG 1968).

Staff from DFG conducted a stream inventory of Short Creek in 1996. One site, located about 3.2 miles upstream from the creek mouth, was electrofished and two YOY *O. mykiss* were found. Young-of-year salmonids were observed at two other locations in the stream, but the species was not identified (DFG 1996a). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with excluding cattle from the creek to avoid trampling and effects from defecation.

A DFG memo summarizes the results of salmonid sampling conducted from 1998-2002 on Round Valley Indian Reservation lands. Short Creek was among the creeks sampled and the memo states, "Steelhead were found in all streams in all years" (DFG 2002c).

Tank Creek

Tank Creek is tributary to Short Creek and consists of about three miles of intermittent stream. It flows south, entering Short Creek about 5.9 miles upstream from the Mill Creek confluence.

Observations of *O. mykiss* in Tank Creek are included in a 1968 survey report from a stream survey of Short Creek. According to this report, *O. mykiss* were observed in Tank Creek at an abundance of five fish per 100 feet of stream (DFG 1968).

Staff from DFG observed juvenile steelhead in Tank Creek in 1995 (Jones 1995).

Little Salt Creek

Little Salt Creek is tributary to Short Creek and consists of about 1.5 miles of intermittent stream. It flows north, entering Short Creek about 7.5 miles upstream from the Mill Creek confluence.

Observations of *O. mykiss* in Little Salt Creek are included in a 1968 survey report from a stream survey of Short Creek. According to this report, *O. mykiss* were observed in Little Salt Creek at an abundance of less than five fish per 100 feet of stream (DFG 1968).

Alder Creek

Alder Creek is tributary to Mill Creek and consists of about 1.3 stream miles. It flows south, entering Mill Creek about 13.1 miles upstream from the Middle Fork Eel River confluence.

During a stream survey conducted in Alder Creek in 1995, DFG staff observed juvenile steelhead up to a 20 foot barrier falls located at stream mile 0.8 (Jones 1995).

Cold Creek

Cold Creek is tributary to Mill Creek and consists of about 5.3 stream miles. It flows south, entering Mill Creek about 13.1 miles upstream from the Middle Fork Eel River confluence.

Several thousand juvenile steelhead were collected from drying portions of Cold Creek on three occasions in 1953 and moved to other portions of the creek. More than 4,000 juveniles also were moved to Williams Creek during a rescue event that year (DFG 1954).

In 1995 DFG staff observed juvenile steelhead in Cold Creek up to a 30 foot falls located at stream mile 2.2. A resident rainbow trout population was present above the falls (Jones 1995).

Mud Creek

Mud Creek is tributary to Cold Creek and consists of about 3.8 stream miles. It flows south, entering Cold Creek about 1.1 miles upstream from the Mill Creek confluence.

In 1995 DFG staff observed juvenile steelhead in Mud Creek up to a 15 foot falls located at stream mile 0.5 (Jones 1995)

A DFG memo summarizes the results of salmonid sampling conducted from 1998-2002 on Round Valley Indian Reservation lands. Mud Creek was among the creeks sampled and the memo states, "Steelhead were found in all streams in all years." Sampling was only conducted on the tribal lands in the watershed (DFG 2002c).

Williams Creek

Williams Creek is tributary to the Middle Fork Eel River and consists of about ten stream miles. It flows south, entering the Middle Fork Eel River about 29 miles upstream from the Eel River confluence.

Staff from DFG surveyed Williams Creek in 1938 and noted the presence of YOY steelhead. "Good" spawning areas, "considerable" natural propagation, and "good" pools and shelter also were observed (DFG 1938i). Stocking records indicate that Williams Creek was stocked with steelhead in 1938 and 1939 (DFG 1939a).

Juvenile steelhead were rescued from Williams Creek in 1939 (DFG 1940). Steelhead rescued from other creeks were planted in Williams Creek in 1954 and 1962 (DFG 1954, DFG 1962a). The planted fish came from Short, Mill, and Cold creeks in 1954 and from Short Creek in 1962.

Smith and Elwell (1961), as reported in Kubicek (1977), indicated that Williams Creek (upper section) was one of only a few Middle Fork tributaries downstream of Black Butte River confluence that contain salmonid nursery areas of any consequence.

Williams Creek was surveyed in 1976 and "steelhead" and "rainbow trout" were observed. The survey report stated that steelhead had access to the lower six miles of the stream, up to a complete barrier, and that rainbow trout were present upstream of the barrier. Williams Creek was described as "...providing valuable steelhead spawning and nursery habitat" but heavy siltation was noted in some areas (DFG 1976d).

Staff from DFG conducted a stream inventory of Williams Creek in 1996. Electrofishing was conducted at three sites and YOY *O. mykiss* were found at all three locations, a few age 1+ and age 2+ also were observed (DFG 1996b). The inventory report notes that water temperature may limit the fishery and recommends increasing canopy, along with treating sources of fine sediment. Limited spawning gravels were also noted.

A DFG memo summarizes the results of salmonid sampling conducted from 1998-2002 on Round Valley Indian Reservation lands. Williams Creek was among the creeks sampled and the memo states, "Steelhead were found in all streams in all years." Sampling was conducted in the lower 0.25 miles of Williams Creek (DFG 2002c).

Murphy Creek

Murphy Creek is tributary to Williams Creek and consists of about 5.3 stream miles. It flows south, entering Williams Creek about 3.2 miles upstream from the Middle Fork Eel River confluence.

Murphy Creek is mentioned in a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. The report states, "Steelhead have been observed spawning [in Murphy Creek]" (Anonymous 1960).

A DFG memo summarizes the results of salmonid sampling conducted from 1998-2002 on Round Valley Indian Reservation lands. Murphy Creek was among the creeks sampled and the memo states, "Steelhead were found in all streams in all years." Sampling was conducted in the lower one mile of Murphy Creek (DFG 2002c).

Black Butte River

The Black Butte River is tributary to the Middle Fork Eel River and consists of about 23.7 stream miles. It flows northwesterly, entering the Middle Fork Eel River about 31.8 miles upstream from the Eel River confluence.

The historical occurrence of summer steelhead in the Black Butte River is described in a 1992 report on the distribution of summer steelhead in the Eel River system. It cites reports that hunters caught summer steelhead in the upper drainage in the late 1930s and mentions an unconfirmed report of summer steelhead migrating into the watershed in 1987 (DFG 1992).

In 1938 staff from DFG surveyed the Black Butte River. Steelhead ranging from 2.0 to 3.5 inches were "common" at a station located about 0.25 miles upstream from the mouth.

The fish were said to exhibit "extensive" natural propagation and spawning areas were described as "excellent" (DFG 1938j).

Staff from DFG surveyed the Black Butte River in 1970 and found that it "...provides some of the better spawning and rearing habitat for steelhead and king salmon in the Middle Fork Eel River drainage." Juvenile steelhead were observed throughout the entire river and no barriers were noted on the mainstem. Limiting factors cited in the survey report included low water flows, high stream temperatures, and lack of canopy cover in the lower stream (DFG 1970).

Fish population estimates for the Black Butte River and two tributaries were prepared by DFG staff in 1973. Data collected from a site in upper Black Butte River were said to indicate, "...from The Basin to the Mendocino Line could be expected to support...400 adult steelhead" (DFG 1973a). The survey report states, "Because of the presence of slip prone soils along the Black Butte River and Estell Creek and the extreme sensitivity of the stream to excessive water temperature increases following shade removal, it is recommended that roads be kept as far away from the banks of the Black Butte River and Estell, Sheep and Spanish Creeks as possible."

Black Butte River was examined in 1973 as part of a study of water temperature conditions in the Eel River system (Kubicek 1977). Several "juvenile steelhead and/or resident rainbow trout" up to seven inches in length were observed 0.5 miles above the confluence with the Middle Fork in early summer (Kubicek pers. comm.).

Staff from USFS surveyed eight miles of the Black Butte River in 1976. The resulting stream survey analysis states, “This stream is of primary importance to the spawning and rearing of steelhead. They were abundant, averaging 45 fish per 100 feet, ranging in size from 1 to 14 inches.” It adds, “There were some mass slides which deposited logs and silt in the stream channel. Other than this, and the lack of shade, the stream was very productive and in good condition” (USFS 1976a).

Staff from USFS accessed Black Butte River during 2006 and noted YOY steelhead as “common to locally abundant” between the Skidmore and Spanish creek confluences. According to field notes, “1+ and 2+ steelhead were seen in low numbers, as well as a few large apparently resident rainbow trout (10 to 14 inches).” The notes add, “Fire crews reported seeing a number of 18 to 24 inch trout in large deep pools that made it sound as if summer steelhead adults were present” (USFS 2006).

Nebo Creek

Nebo Creek is tributary to the Black Butte River and consists of about 2.2 stream miles. It flows south, entering the Black Butte River about 3.4 miles upstream from the Middle Fork Eel River confluence.

Staff from DFG surveyed Nebo Creek in 1975 and found the creek to be dry throughout the lower 0.75 miles. A rock barrier was present at the mouth of the creek and the survey report stated, “Nebo Creek supports little or no suitable habitat for fish due mainly to its steepness and lack of summer flow” (DFG 1975a).

Jumpoff Creek

Jumpoff Creek is tributary to the Black Butte River and consists of about 5.9 stream miles. It flows southwesterly, entering the Black Butte River about four miles upstream from the Middle Fork Eel River confluence.

Steelhead rescued from other creeks were planted in Jumpoff Creek in 1939, 1953, and 1956 (DFG 1939b, DFG 1954, DFG 1957c). The planted fish came from Short Creek.

Jumpoff Creek was examined in 1973 as part of a study of water temperature conditions in the Eel River system. Salmonids up to ten inches in length were observed to be abundant (Kubicek 1977).

Staff from DFG surveyed Jumpoff Creek in 1975 and observed both steelhead and rainbow trout. Surveyors reported that steelhead were limited to the lower 0.1 miles of the creek and a rainbow trout population was present upstream of a barrier. The creek was said to “... provide good habitat for resident rainbow trout” (DFG 1975b).

Staff from USFS surveyed the lower two miles of Jumpoff Creek in 1979 and observed “suitable trout habitat” and rainbow trout throughout the area. The survey report stated, “A self-sustaining population of rainbow trout exists relatively undisturbed due to the inaccessibility of the stream” (USFS 1980c).

A 1993 USFS Watershed Overview form indicates the presence of a rainbow trout population in Jumpoff Creek. The form states, “It is recommended that this stream remain undisturbed” (USFS 1993).

Twin Rocks Creek

Twin Rocks Creek consists of about 2.4 stream miles and is tributary to Jumpoff Creek. It flows west, entering Jumpoff Creek at about stream mile 2.2.

A 1980 USFS memo indicates that the lower 0.25 miles of Twin Rocks Creek was surveyed, only 100 yards of which “contained water.” The memo states, “A self-sustaining population of rainbow trout exists, although habitat conditions are adverse” (USFS 1980d).

Sallady Creek

Sallady Creek is tributary to the Black Butte River and consists of about 2.4 stream miles. It flows north, entering the Black Butte River about 5.9 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed about 0.25 miles of Sallady Creek in 1976 and observed steelhead YOY at a density of about 24 fish per 100 feet. According to a memo, “Some of the creek was dry with a few intermittent pools.” Staff also stated, “There were a few good spawning areas” and “This creek appeared to be one of the most stable tributaries of the Black Butte River system” (USFS 1976b).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* was observed in Sallady Creek (Brown 1991).

Mississippi Creek

Mississippi Creek is tributary to the Black Butte River and consists of about 2.3 stream miles. It flows north, entering the Black Butte River about 8.2 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed Mississippi Creek in 1973 and found it to be an “...intermittent stream...of limited value to anadromous fish for spawning and rearing purposes.” A total passage barrier consisting of boulder-falls was observed about 350 yards upstream from the mouth and YOY steelhead were observed downstream of this barrier. Habitat upstream of the barrier was deemed unsuitable (USFS 1973c).

Blue Slide Creek

Blue Slide Creek is tributary to the Black Butte River and consists of about three stream miles. It flows southwesterly, entering the Black Butte River about 9.6 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed Blue Slide Creek in 1973 and did not observe fish. However, the resulting report stated, “This small stream apparently supplies some spawning habitat for adult steelhead. Local people indicated that steelhead are observed in the stream during the early months of the spawning runs of adult steelhead.” All spawning was thought to occur in the upper reaches due to large amounts of sand deposits and unstable slides in the lower stream (USFS 1973d).

Atchison Creek

Atchison Creek is tributary to the Black Butte River and consists of about 3.2 stream miles. It flows southwesterly, entering the Black Butte River about 11.8 miles upstream from the Middle Fork Eel River confluence.

A 1973 USFS stream analysis states, "...the lower one-half of [Atchison Creek] is accessible to spawning adult salmonids... Salmonids were found in this stretch of stream in densities of 15 fish per 100 lineal feet...and increased to 30 fish...in the lower 200 yards of the stream." The analysis called the drainage "unstable" (USFS 1991a). The associated survey report notes that the *O. mykiss* population is believed to have resident and anadromous components, and that all fish were observed downstream from a barrier at about stream mile 0.5.

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* was observed in Atchison Creek (Brown 1991).

A 1991 watershed overview form by the USFS states, "The lower mile is an important steelhead spawning and rearing area during years with adequate streamflows. A 15' barrier prevents further u/s movement" (USFS 1991a).

Butte Creek

Butte Creek is tributary to the Black Butte River and consists of about 4.3 stream miles. It flows southwesterly, entering the Black Butte River about 12.7 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed Butte Creek in 1973 and estimated that only the lower 0.25 miles of stream were available to anadromous fish due to a waterfall barrier. *Oncorhynchus mykiss* was observed both upstream and downstream of the barrier and the upstream fish were assumed to be resident rainbow trout. The survey report stated, "This perennial stream is especially important because of the 2 cfs summer flow contribution to Black Butte River" (USFS 1973e).

Cold Creek

Cold Creek is tributary to the Black Butte River and consists of about 11.3 stream miles. It flows north then west, entering the Black Butte River about 15.1 miles upstream from the Middle Fork Eel River confluence.

An undated DFG stream survey report, likely dating from the 1930s, states that Cold Creek was stocked "intermittently" with rainbow trout with unknown success. The creek was described as "a fair trout stream" (DFG 1941).

In 1973, USFS staff surveyed the lower mile of Cold Creek as well as the reach between the confluences of Plaskett and Snow Basin creeks. The lower reach had an estimated 250-300 trout per 100 lineal feet of stream, consisting mostly of YOY. Density in the upper reach was estimated to be 10-15 fish per 100 feet. A stream analysis notes, "This stream has considerable importance by providing both rearing and reproductive habitat to steelhead and by providing cool, clear water to the river during summer low flow periods" (USFS 1973f). The survey report and a subsequent memo recommend protecting against the effects of logging in the basin (USFS 1973g).

Staff from USFS surveyed Cold Creek in 1976 and observed “abundant” rainbow trout throughout the creek. Surveyors described the lower section of the creek as “good trout habitat.” The middle and upper reaches were said to be “accessible and well used for fishing” (USFS 1976c).

Several sections of Cold Creek were surveyed in 1997 by staff from DFG. Juvenile and YOY rainbow trout were observed throughout the creek, but abundance was low in the lower section and fish were much more common in the middle and upper reaches. Three natural barriers were present within one mile of the mouth of the creek, the upper mile of the creek was unusable due to high temperatures, and erosion caused by logging practices was observed. However, Cold Creek was described as a “Healthy trout bearing stream” (DFG 1997b, DFG ca 1997a).

Staff from USFS surveyed Cold Creek in 2004. The survey report states, “Steelhead YOY, 1+, and 2+ were seen in Cold Creek, but not in large numbers” (USFS 2004a).

Plaskett Creek

Plaskett Creek is tributary to Cold Creek and consists of about 1.8 stream miles. It flows south then west, entering Cold Creek about six miles upstream from the Black Butte River confluence. The basin area is about three square miles.

During a 1997 survey of Plaskett Creek YOY and juvenile rainbow trout were observed in the lower one mile of the stream. The creek was described as having “many positive aspects” although it was noted that the *O. mykiss* population may be impacted by non-native fish species that have been planted in Plaskett Meadows, a recreational area in the headwaters of Plaskett Creek. Steelhead do not have access to this creek due to barriers on Cold Creek (DFG 1997c).

Staff from DFG surveyed the lower 0.75 miles of Plaskett Creek and a 0.25-mile reach in the headwaters in 2002. The survey report described “adequate spawning gravel for resident trout” and recorded juvenile trout density at about five fish per 100 feet, with overall size range between 1.5 and about 8 inches in length. The creek was considered “a potential source of recruitment for the Eel River steelhead population” (DFG 2002d).

Baldy Creek

Baldy Creek is tributary to the Black Butte River and consists of about 5.4 stream miles. It flows northeasterly, entering the Black Butte River about 17.3 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed Baldy Creek in 1973 and observed YOY and juvenile steelhead downstream of a barrier located about 0.25 miles upstream from the mouth. Upstream of the barrier a section of the creek about 0.5 miles long had “excellent stream characteristics but no fish” (USFS 1973h). About 2.5 miles of Baldy Creek was surveyed in 1976, when juvenile steelhead were observed only in the lowest 1,000 feet and density was estimated to be 48 fish per 100 feet (USFS 1976d).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* was observed in Baldy Creek (Brown 1991).

Buckhorn Creek

Buckhorn Creek is tributary to the Black Butte River and consists of about 4.9 stream miles. It flows northeasterly, entering the Black Butte River about 17.7 miles upstream from the Middle Fork Eel River confluence.

During a 1973 survey of the lower two miles of Buckhorn Creek USFS staff observed *O. mykiss* throughout the area. Juvenile steelhead were present downstream of a boulder falls barrier, located about 0.75 miles upstream from the mouth, and “rainbow trout” were observed upstream of the barrier. Unstable streambanks, mass slides, and “considerable” sediment deposits also were noted (USFS 1973i).

Staff from USFS surveyed three miles of Buckhorn Creek in 1976 and observed YOY and yearling *O. mykiss*. A stream analysis states, “Buckhorn Creek’s lower mile has a favorable spawning habitat (an estimated 30 fish per 100 ft.)” Density was estimated at 25 fish per 100 feet in a reach one mile upstream from the mouth (USFS 1976e).

Skidmore Creek

Skidmore Creek is tributary to the Black Butte River and consists of about 3.9 stream miles. It flows northeasterly, entering the Black Butte River about 19.8 miles upstream from the Middle Fork Eel River confluence.

Young-of-year and juvenile steelhead were present in the lower 0.25 miles of Skidmore Creek during a 1973 USFS survey. Only this section of the creek was accessible to fish due to steep gradients further upstream. The stream was said to dry up during the summer and fish from Skidmore Creek were expected to move to the Black Butte River for rearing (USFS 1973j).

Staff from USFS surveyed 1.25 miles of Skidmore Creek in 1976 and noted, “the lower ½ mile of this creek is used for spawning and rearing of steelhead.” The lower area was estimated to have “approximately 30 steelhead per 100 feet” while the upper section had a “lack of fish” (USFS 1976f).

A 1991 channel analysis noted “a few fish approximately 3 inches long” in Skidmore Creek. Staff from USFS observed dry reaches and areas with “trickle flow” (USFS 1991b).

Umbrella Creek

Umbrella Creek is tributary to the Black Butte River and consists of about 3.8 stream miles. It flows northeasterly, entering the Black Butte River about 21 miles upstream from the Middle Fork Eel River confluence.

Forest Service staff surveyed Umbrella Creek in 1973 and observed “steelhead” and “rainbow trout” in the lower 0.25 to 0.75 miles of the stream. Anadromous fish did not have access further upstream due to an extensive boulder area. Sediment deposition was noted in pools in the creek and attributed to road construction in the watershed (USFS 1973k).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* was observed in Umbrella Creek (Brown 1991).

Spanish Creek

Spanish Creek is tributary to the Black Butte River and consists of about 7.4 stream miles. It flows southwesterly, entering the Black Butte River about 23 miles upstream from the Middle Fork Eel River confluence.

Stocking records indicate that Spanish Creek was stocked with 5,000 rainbow trout in 1930 (DFG 1930).

A 1972 DFG survey of Spanish Creek involved estimating the standing crop of age 1+ steelhead. Staff noted sampling in three areas totaling 300 feet that produced 60 yearling steelhead. The resulting memo states, "A standing crop of 1,000 yearlings per mile should be able to produce a return of about 50 adult steelhead per mile." Staff from DFG determined that the amount of available habitat in Spanish Creek "...probably supports a run of about 200-300 adult steelhead per year." Staff also noted "cool, high quality flows," and lack of slides and erosion in the basin that suggested "special treatment" for the creek including road building restrictions and a 200-foot riparian buffer strip (DFG 1972a).

Staff from USFS surveyed Spanish Creek in 1973 and found *O. mykiss* present in the lower six miles of the creek, downstream of a 12 foot waterfall. Another barrier was noted immediately downstream from the waterfall and led surveyors to consider some of the creek's fish "steelhead" and others "rainbow trout." The survey report states, "At least the lowermost three stream miles of Spanish Creek are of great importance to steelhead for spawning and rearing purposes" and "...excellent spawning gravels were encountered throughout the area" (USFS 1973l).

Staff from DFG conducted a stream inventory of Spanish Creek in 2002. The lower 3.5 miles of the creek was surveyed and salmonids ranging from two to eight inches were observed throughout the section. The species of salmonid was not identified (Humphrey 2002). The inventory report noted spawning gravels were limited to few reaches of the creek and recommended treating sources of fine sediment and increasing canopy.

Black Butte River tributary (Big Spring Creek)

This creek flows east from Big Spring about 1.4 miles to its confluence with the Black Butte River in "The Basin." It may be considered the uppermost tributary of the river, which is formed by the confluence of Estell and Middle creeks.

Staff from USFS surveyed Big Spring Creek in March 2004 and observed "some 1+ steelhead." The survey report states, "Big Spring Creek flows were already down to a trickle, but the stream probably offers high-water refugia for rearing juveniles. Big Spring Creek fish habitat in the stream is limited..." (USFS 2004b).

Estell Creek

Estell Creek is tributary to the Black Butte River and consists of about 3.8 stream miles. It flows west to its confluence with Middle Creek, which comprises the headwaters of the Black Butte River, about 23.7 miles upstream from the Middle Fork Eel River confluence.

In a 1972 survey report, USFS staff wrote, "[Estell Creek] is good steelhead producing stream. Juvenile SH add to RT trout fish population." The report recommends protecting the stream from logging effects (USFS 1972).

Fish population estimates for the Black Butte River and two tributaries were prepared by DFG staff in 1973. Data collected from a site in lower Estell Creek were said to indicate, “A yearling population of this size could be expected to produce an adult return of about 50 steelhead per mile” and the run assumed to be supported by Estell and Sheep creeks combined was 150 individuals (DFG 1973a).

Staff from USFS surveyed Estell Creek in 1973 and wrote, “This perennial tributary to Black Butte River is of great importance to steelhead for spawning and rearing purposes.” Steelhead ranging from one to eight inches were found throughout the 3.5 mile survey section and no total passage barriers were present (USFS 1973m). In 1976, USFS staff estimated juvenile abundance at 80 fish per 100 feet of stream in the lower one mile of Estell Creek (USFS 1976g).

Staff from DFG surveyed Estell Creek in 1996 and observed YOY and juvenile *O. mykiss*, as well as one adult steelhead. Fish densities were greatest in the section downstream of the Sheep Creek confluence. Several barriers were noted in the report including a barrier located about one mile upstream from the mouth, which is labeled on a map as the “End of anadromous fish access” and was recommended for modification (DFG 1996c).

Staff from USFS surveyed Estell Creek in 2004 and observed “common” steelhead YOY, as well as age 1+ and 2+ individuals “wherever cover was sufficient to provide habitat for these larger fish.” The survey report cites low flows as limiting “habitat to grow steelhead to out migrant age/size” (USFS 2004b).

Sheep Creek

Sheep Creek is tributary to Estell Creek and consists of about 2.2 stream miles. It flows west, entering Estell Creek about 1.3 miles upstream from its confluence with Middle Creek.

A portion of Sheep Creek was surveyed during a 1973 USFS survey of Estell Creek. Steelhead were observed in the creek at a density of about 50 fish per 100 feet of stream. A partial boulder barrier was observed about 200 feet upstream from the mouth, above which a steep gradient was noted and few fish were observed (USFS 1973m).

Staff from USFS surveyed about 0.75 miles of Sheep Creek in 1976. A memo states, “This stream is of minimal importance to the spawning or rearing of steelhead.” The author cited low juvenile densities, intermittent flow, “excessive log debris, and the lack of spawning gravel” (USFS 1976h).

Staff from USFS surveyed Sheep Creek in 2004 and observed multiple steelhead age classes at densities of about 5 per 100 feet of stream in small pools. The survey report cites flows as “marginal” but low temperature relative to Estell flows (USFS 2004b).

Middle Creek

Middle Creek is tributary to the Black Butte River and consists of about 3.6 stream miles. It flows northwesterly to its confluence with Estell Creek, which forms the headwaters of the Black Butte River, about 23.7 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed Middle Creek in 1973 and found that it had a waterfall about 150 yards upstream from the mouth which created a total passage barrier to adult steelhead. Juvenile and YOY “steelhead” were found downstream of the barrier and “rainbow trout” were observed further upstream. Stream characteristics were described as “excellent” upstream of the barrier and the report noted that barrier modification would “...no doubt enhance the runs of winter steelhead in Black Butte River” (USFS 1973n).

Staff from USFS surveyed Middle Creek in 1976 and estimated trout density at about 13 per 100 lineal feet downstream from a waterfall at stream mile 0.12 and at about 5 trout per 100 feet upstream. Fish were noted in the lower two miles of the creek, which had “many suitable spawning areas” as well as dry reaches (USFS 1976i).

Staff from USFS surveyed Middle Creek in 2004 and observed “some 1+ steelhead” and “a steelhead redd.” During a second visit in 2004, YOY were observed (USFS 2004b). According to DFG staff, Middle Creek has ‘erosion issues’ (Harris pers. comm.).

Staff from DFG surveyed Middle Creek in 2008 and observed steelhead YOY and one steelhead redd 150 feet above the county road crossing and “numerous” juvenile fish downstream of the Basin Creek confluence (Harris pers. comm.).

Rose Creek

Rose Creek is tributary to the Middle Fork Eel River and consists of about two stream miles. It flows west, entering the Middle Fork Eel River about 33.4 miles upstream from the Eel River confluence.

Staff from DFG surveyed Rose Creek in 1997 and did not observe fish. The resulting report states, “Summer habitat is non-existent” and “Rose Creek most likely provides shelter to young salmonids during times of high flow in the Middle Fork Eel River” (DFG 1997d).

Bar Creek

Bar Creek is tributary to the Middle Fork Eel River and consists of about 4.4 stream miles. It flows west, entering the Middle Fork Eel River about 34.6 miles upstream from the Eel River confluence.

Staff from USFS surveyed the lower mile of Bar Creek in 1979. Surveyors found “suitable trout habitat” only in the upper half mile of the surveyed section due to a lack of water in the lower half mile. A “self-sustaining population of rainbow trout” was present but, “The lack of water limits any fishery improvement potential” (USFS 1980e).

Staff from DFG surveyed a 0.3 mile section of Bar Creek upstream of the M1 road crossing. The survey report is undated, but the survey likely took place in 1997. *Oncorhynchus mykiss* was observed during the survey and the report stated, “Bar Creek is a relatively small drainage but does have a good summer streamflow, canopy, ample supply of fish food organisms and supports a resident rainbow trout population” (DFG ca 1997b).

Fish sampling was performed throughout the Eel River watershed in 1989 and 1990 as part of a four-year study conducted by researchers at UC Davis. During this sampling, *O. mykiss* was observed in Bar Creek (Brown 1991).

Buck Creek

Buck Creek is tributary to the Middle Fork Eel River and consists of about 3.9 stream miles. It flows west, entering the Middle Fork Eel River about 35.7 miles upstream from the Eel River confluence.

No fish were observed during a 1997 DFG survey of Buck Creek. The creek was dry at its mouth and intermittent throughout the lower mile. The creek was characterized as a “non-trout stream” and anadromous fish access was prevented by cascade barriers in the lower 0.25 miles (DFG 1997e).

Travelers Home Creek

Travelers Home Creek is tributary to the Middle Fork Eel River and consists of about 4.1 stream miles. It flows southeasterly, entering the Middle Fork Eel River about 37 miles upstream from the Eel River confluence.

Staff from DFG surveyed Travelers Home Creek in 1997 and observed YOY steelhead in the lower 400-800 feet of the stream. Upstream, the gradient was thought to be a barrier to anadromous fish and no fish were observed (DFG 1997f).

Hellhole Canyon Creek

Hellhole Canyon Creek is tributary to the Middle Fork Eel River and consists of about 1.6 stream miles. It flows west, entering the Middle Fork Eel River about 38 miles upstream from the Eel River confluence.

The Middle Fork Eel River in the vicinity of Hellhole Canyon was inspected during a 1957 survey of the area. A memo regarding this survey states that Hellhole Canyon Creek had a barrier within 100 feet of its mouth “...which would prohibit spawning fish from entering” (Heckman 1957).

Fly Creek

Fly Creek is tributary to the Middle Fork Eel River and consists of about 4.7 stream miles. It flows northwesterly, entering the Middle Fork Eel River about 39.9 miles upstream from the Eel River confluence.

No fish were observed during a 1938 DFG survey of Fly Creek. “Good” spawning areas and “good” pools and shelter were noted in the lower section (DFG 1938k).

In 1957 staff from DFG observed two to four inch *O. mykiss* in “fair quantities” in Fly Creek. The survey report noted that rescued steelhead may have been planted in this creek in 1957 and the creek “appears to offer spawning area for SH.” However, it was unclear whether the fish observed had been planted (DFG 1957d).

Staff from DFG surveyed Fly Creek in 1965 and observed juvenile *O. mykiss*. A 30-foot falls was noted about 0.25 miles upstream from the mouth of the creek, which was said to be “...an excellent small tributary with apparent sustaining flows” (DFG 1965c).

In 1979, staff from USFS surveyed Fly Creek and concluded that the stream contains a “self-sustaining population of rainbow trout.” Anadromous fish access was said to be prevented by a steep gradient and numerous falls in the lower mile of the creek. About 2.5 miles of suitable trout habitat were present upstream of this area (USFS 1980f).

In 1995, staff from DFG found that Fly Creek continued to have “...good flows and quality pools and a healthy and viable population of resident rainbow trout.” A large number of barriers were present, but barrier removal was deemed impractical (DFG 1995a).

Howard Creek

Howard Creek is tributary to the Middle Fork Eel River and consists of about 5.1 stream miles. It flows northwesterly, entering the Middle Fork Eel River about 40.8 miles upstream from the Eel River confluence.

Howard Creek was surveyed by staff from DFG in 1938. Rainbow trout were observed during the survey (DFG 1938l).

During a 1957 survey of Howard Creek “resident rainbow trout” were observed. Surveyors noted that rescued steelhead had been planted in this creek in 1957. According to the survey report, this creek “May contribute fish of resident habit” to the Middle Fork Eel River, but “...would seem of little importance to SH except as water provider” (DFG 1957e).

A 1965 survey of Howard Creek documented the presence of a 20-foot falls immediately upstream from the creek’s mouth. A lack of fish presence was attributed to effects of the 1964 flood and the creek had “...near excellent summer conditions for resident trout” (DFG 1965d).

In 1979, staff from USFS found that “A self-sustaining population of rainbow trout exists relatively undisturbed” in Howard Creek. The previously mentioned barrier near the mouth of the creek was described as “small” and the survey report noted that “...steelhead possibly use Howard Creek as a spawning stream” (USFS 1980g).

In a 1994 Watershed Analysis Report for the Middle Fork Eel River Watershed, Howard Creek is listed as a stream in “immediate need for restoration.” Habitat problems mentioned in this creek include channel scouring, lack of riparian vegetation, and sedimentation (USFS 1994a).

Staff from DFG observed erosion in the lower section of Howard Creek in 1995. “Rainbow trout” were observed throughout most of the creek from the mouth upstream to the M1 road crossing. The stream was noted to be “...most likely under-utilized because of the high gradient and barriers” (DFG 1995b).

Bear Creek

Bear Creek is tributary to the Middle Fork Eel River and consists of about 3.2 stream miles. It flows northwesterly, entering the Middle Fork Eel River about 41.1 miles upstream from the Eel River confluence.

Staff from DFG included field notes regarding Bear Creek in a 1957 stream survey report for the Middle Fork Eel River. Surveyors observed low water levels in Bear Creek and wrote, “No fish and not suited for them” (DFG 1957b).

The Middle Fork Eel River in the vicinity of Bear Creek was inspected during a 1957 survey. A memo regarding this survey states that Bear Creek "...appeared to be inaccessible to adult salmonids because of steep high water falls" (Heckman 1957).

The mouth of Bear Creek was observed to be dry every summer during surveys conducted by DFG staff between 1966 and 1999 (Jones 1999). No fish were observed in Bear Creek during a survey conducted in 1995 by DFG staff (Sullivan and Crand 1995).

Fishtown Creek

Fishtown Creek is tributary to the Middle Fork Eel River and consists of about 1.8 stream miles. It flows west, entering the Middle Fork Eel River about 41.8 miles upstream from the Eel River confluence.

Staff from DFG included field notes regarding Fishtown Creek in a 1957 stream survey report for the Middle Fork Eel River. Surveyors observed boulder jams in Fishtown Creek and wrote, "No fish seen or likely to be present" (DFG 1957b).

No fish were observed during a 1997 DFG survey of Fishtown Creek. Numerous barriers were noted and the stream went underground near the confluence with the Middle Fork Eel River. However, Fishtown Creek was characterized as "...an important source of cold water to the Middle Fork Eel River during the summer months" (DFG 1995c).

Beaver Creek

Beaver Creek is tributary to the Middle Fork Eel River and consists of about 7.2 stream miles. It flows north then west, entering the Middle Fork Eel River about 42.9 miles upstream from the Eel River confluence.

Stocking records indicate that Beaver Creek was stocked with steelhead in 1938 and 1939 (DFG 1939c). During a 1938 survey of Beaver Creek "rainbow trout" were present and said to have "fair" success and "fair" natural propagation. "Good" spawning areas were also observed (DFG 1938m).

In a 1957 survey of the lower 0.75 miles of Beaver Creek, several barriers were observed about 200 yards upstream from the mouth. However, "numerous yearling steelhead" were observed upstream of these barriers, indicating that some fish were able to migrate past them. Rainbow trout were also observed in another, further upstream, section of Beaver Creek in 1957 (DFG 1957f).

Staff from USFS surveyed Beaver Creek in 1978. Rainbow trout was the only fish species noted in two sections, both upstream of the confluence with Buck Rock Creek (USFS 1978a).

In a 1994 Watershed Analysis Report for the Middle Fork Eel River Watershed, Beaver Creek is listed as a stream in "immediate need for restoration." Habitat problems mentioned in this creek include channel scouring, lack of riparian vegetation, and sedimentation (USFS 1994a).

A section of Beaver Creek downstream of the M1 road crossing was surveyed by staff from DFG in 1995. Resident rainbow trout were observed throughout this section and one adult female summer steelhead was also seen in a pool just downstream of the Buck Rock Creek confluence. Further anadromous migration was said to be prevented by a 40 foot waterfall just upstream of

Buck Rock Creek. Due to the presence of summer steelhead, this section of creek was said to be “of particular importance” (DFG 1995d).

Buck Rock Creek

Buck Rock Creek is tributary to Beaver Creek and consists of about 3.4 stream miles. It flows northwesterly, entering Beaver Creek about 0.2 miles upstream from the Middle Fork Eel River confluence.

Staff from DFG included field notes regarding Buck Rock Creek in a 1957 stream survey report for the Middle Fork Eel River. These notes report that about two dozen fish, “probably SH fingerlings,” were planted in this creek in 1957 (DFG 1957b).

Staff from USFS surveyed Buck Rock Creek in 1978 and observed “few” rainbow trout in the lower section of the creek. Habitat condition in the creek was characterized as “good,” but the overall fishery rating was said to be “poor” and stocking was recommended upstream of the road crossing (USFS 1978b).

No fish were observed during a 1997 survey of Buck Rock Creek and a survey report characterized the creek as “...unusable to fish due to its steep gradient and many barriers.” It was said to contribute summer and winter water flows to Beaver Creek (DFG 1995e).

Smokehouse Creek

Smokehouse Creek is tributary to Beaver Creek and consists of about 3.5 stream miles. It flows south, entering Beaver Creek about 3.1 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed the lower 0.75 miles of Smokehouse Creek in 1978 and observed “abundant” rainbow trout. The creek was at a low level and flowing intermittently (USFS 1978c).

Rainbow trout were observed during a 1995 DFG survey of Smokehouse Creek and ranged from two to eight inches in length. Steelhead did not have access to this creek due to barriers downstream on Beaver Creek. Many barriers were present in Smokehouse Creek as well, but it was deemed “...in good condition, with many areas of excellent cover and deep pools” (DFG 1995f).

Hammerhorn Creek

Hammerhorn Creek is tributary to the Middle Fork Eel River and consists of about 4.3 stream miles. It flows southwesterly, entering the Middle Fork Eel River about 43.5 miles upstream from the Eel River confluence.

In 1938 staff from DFG surveyed Hammerhorn Creek and observed rainbow trout. The fish exhibited “good” success and “good” natural propagation (DFG 1938n).

During a 1957 stream survey *O. mykiss* ranging from 2.5 to 7.0 inches in length were observed in Hammerhorn Creek. No complete barriers were identified during the survey, and it was unknown whether these fish were migratory or resident. In the

survey report Hammerhorn Creek is characterized as, “A very rocky, rather steep small trout stream of considerable seasonal variation in flow” (DFG 1957g).

A 1962 DFG memo describes plans to construct a recreational lake, known as Hammerhorn Lake, near Hammerhorn Creek. The lake is described as “an off stream storage” that would be filled by water diversion from Hammerhorn Creek. The memo notes an “abundant population of rainbow trout” in the creek and expresses concern regarding the impacts of reduced flows due to the diversion (DFG 1962b).

The middle and lower sections of Hammerhorn Creek were surveyed in 1995 and 1996, respectively. The survey of the lower creek identified a steep gradient which created “an insurmountable barrier to upstream migration” beginning about 0.1 miles upstream from the mouth. Resident rainbow trout were observed upstream of this barrier during both surveys (DFG 1995g, DFG 1996d).

Pothole Creek

Pothole Creek is tributary to the Middle Fork Eel River and consists of about four stream miles. It flows northeasterly, entering the Middle Fork Eel River about 44.9 miles upstream from the Eel River confluence.

The lower 0.5 miles of Pothole Creek were surveyed in 1957 and *O. mykiss* was found to be “abundant and in good condition.” The creek was characterized as a “fair spawning stream” (DFG 1957h).

In a 1973 summary of a USFS survey of Pothole Creek, a 15-foot waterfall located about 0.5 miles upstream from the mouth of the creek is described as a total passage barrier. A mix of resident and anadromous fish was observed downstream of this barrier, but very little spawning gravel was seen as available (USFS 1973o).

A 1994 USFS survey noted trout between one and four inches in length throughout the lower mile of Pothole Creek. The survey report indicates that “very unstable slopes” and active landslides led to the formation of “massive log jams” and to siltation of pools (USFS 1994b). Trout between one and seven inches in length were observed in the 1.25-mile reach immediately upstream, along with “major log and boulder jams throughout.” The survey report states, “From the road could see where clear cutting had taken place within drainage of Pothole. May be contributing to siltation levels” (USFS 1994b).

Staff from DFG surveyed the creek in 1997 and wrote, “Pothole Creek is abundant with resident steelhead trout and other wildlife and should be managed accordingly.” Good spawning gravel was observed throughout the creek (DFG 1997g).

Fossil Creek

Fossil Creek is tributary to the Middle Fork Eel River and consists of about 3.6 stream miles. It flows northeasterly, entering the Middle Fork Eel River about 45.3 miles upstream from the Eel River confluence.

Staff from USFS surveyed Fossil Creek in 1977 and found the stream mostly dry and noted that it “doesn’t contribute flow into the Eel River.” No fish were observed (USFS 1977l).

In a 1983 biological report regarding a summer steelhead survey of the Middle Fork Eel River, Fossil Creek is described as one of the two "...best tributaries for spawning below the North Fork of the Middle Fork." A table in this report characterized spawning habitat in the creek as "fair" and rearing habitat as "good" (DFG 1983b).

Staff from DFG inspected "large amounts of sand, gravel, and cobble deposits" at the mouth of Fossil Creek in 1987. The creek dried up about 50 yards upstream from the mouth, but fish were observed in a pool another 50 yards upstream. A barrier located 300 yards upstream from the mouth prevented steelhead migration (DFG 1987).

Staff from USFS surveyed Fossil Creek in 1994. A subsequent watershed overview notes, "Extensive logging on south side of creek. Abundant slash left. Heavy siltation" (USFS 1994c). During a 1997 survey staff from DFG again noted the presence of a cascade barrier within a few hundred yards of the mouth of Fossil Creek. "Substantial populations" of juvenile salmonids were observed downstream of the barrier, but no fish were observed in the rest of the creek and the area upstream of the barrier did not appear to have suitable habitat. Surveyors recommended that the lower section be managed as a steelhead spawning and rearing area (DFG 1997h).

Alder Creek

Alder Creek is tributary to the Middle Fork Eel River and consists of about 3.4 stream miles. It flows southwesterly, entering the Middle Fork Eel River about 45.7 miles upstream from the Eel River confluence.

Staff from USFS surveyed Alder Creek in 1977 and did not observe fish. The stream was intermittent and "...characterized by boulders, landslides and logjams." A 30-foot waterfall also was noted about 0.25 miles upstream from the mouth (USFS 1977m).

In a 1994 Watershed Analysis Report for the Middle Fork Eel River Watershed, Alder Creek is listed as a stream in "immediate need for restoration." Habitat problems mentioned in this creek include channel scouring, lack of riparian vegetation, and sedimentation (USFS 1994a).

No fish were present during a 1997 DFG survey of Alder Creek. "Excellent salmonid habitat" was observed upstream of the large cascade barrier near the mouth (DFG 1997i).

Maple Creek

Maple Creek is tributary to the Middle Fork Eel River and consists of about 2.5 stream miles. It flows southwesterly, entering the Middle Fork Eel River about 46 miles upstream from the Eel River confluence.

No fish were observed during a 1977 USFS survey of Maple Creek. Several 15-20 foot falls were noted in the lower stream section (USFS 1977n).

Staff from DFG surveyed Maple Creek in 1997 and did not observe fish. Surveyors noted that "...the gradient at the confluence with the Middle Fork Eel is of sufficient gradient (50 ft in 100 feet) to prevent anadromous migration into Maple Creek" (DFG 1997j).

Deer Lick Creek

Deer Lick Creek is tributary to the Middle Fork Eel River and consists of about 2.2 stream miles. It flows southwesterly, entering the Middle Fork Eel River about 46.9 miles upstream from the Eel River confluence.

No fish were observed during a 1966 DFG survey of Deer Lick Creek and the creek was said to have “no fishery value.” There was no flow and the survey report indicates that a steep gradient “prevents any usage by anadromous fish” (DFG 1966a).

Similar conditions were observed in a 1977 USFS survey and a 1997 DFG survey of Deer Lick Creek when fish were not encountered. In 1977 the creek was “impassable due to a 70’ falls at the base of the creek and is dry” (USFS 1977o). In 1997, DFG staff recommended managing Deer Lick Creek “as a source of cold water for the Middle Fork Eel River” (DFG 1997k).

Middle Fork Eel River tributary 1

An unnamed tributary to the Middle Fork Eel River consists of about 1.1 stream miles. It flows northeasterly and enters the Middle Fork Eel River about 47.4 miles upstream from the Eel River confluence.

Staff from DFG surveyed this stream in 1957 and observed *O. mykiss* but described the fish as “scarce above mouth.” A survey report states, “Appears to contribute nothing but waterflow to Eel River SH fishery. No spawning or nursery grounds observed” (DFG 1957i).

Rattlesnake Creek

Rattlesnake Creek is tributary to the Middle Fork Eel River and consists of about 8.1 stream miles. It flows southwesterly, entering the Middle Fork Eel River about 47.6 miles upstream from the Eel River confluence.

In 1938 staff from DFG surveyed Rattlesnake Creek and did not record any observations of fish. A 20-foot waterfall barrier was observed just above the mouth of the creek during the survey (DFG 1938o).

During a 1957 survey of the lower 0.75 miles of Rattlesnake Creek staff from DFG observed a “...fairly good quantity of resident fish with fair reproductive success as judged by the number of fish of the year present.” Steelhead were noted to have access to the lower 300 yards downstream of the waterfall barrier and fish were observed in this section, but thought to be resident trout (DFG 1957j).

Staff from DFG surveyed Rattlesnake Creek in 1966 and described it as a “marginal resident trout stream.” The fish observed were numerous in the lower two miles of the creek and no fish were observed above a waterfall located three miles upstream from the mouth (DFG 1966b).

Rainbow trout were “common” or “abundant” in the lower sections of Rattlesnake Creek during a USFS survey in 1977. Erosion control and log jam removal were recommended as habitat management measures (USFS 1977p).

Rattlesnake Creek was sampled during the 1982 Middle Fork Eel River Patrol, conducted by staff from DFG and USFS. The study report indicates that YOY *O. mykiss* were observed in Rattlesnake Creek at a density of up to 100 fish per 100 feet of stream (DFG 1983c). A summary report of the 1983 Middle Fork Eel River Patrol states that summer steelhead in the Middle Fork Eel benefit from cool flows that emanate from Rattlesnake Creek (USFWS 1983).

In 1995 staff from DFG surveyed two sections of Rattlesnake Creek and observed a population of resident rainbow trout. The creek was described as “an important tributary to the Middle Fork Eel River.” Some bank erosion was observed and surveyors recommended taking action to prevent continued siltation of the stream (DFG 1995h).

Stick Lake Canyon Creek

Stick Lake Canyon Creek is tributary to the Middle Fork Eel River and consists of about 3.5 stream miles. It flows north, entering the Middle Fork Eel River about 49.4 miles upstream from the Eel River confluence.

A series of boulder falls near the mouth of Stick Lake Creek were observed during a 1957 survey and were “considered impassable to SH.” Surveyors concluded that “This tributary contributes nothing in the way of SH or resident RT spawning or nursery areas” (DFG 1957k).

One juvenile rainbow trout was observed during a 1973 survey of Stick Lake Canyon Creek conducted by staff from USFS. However, a summary of the stream survey states that “No resident population of fish was established” and “...this stream is not utilized by adult steelhead for spawning.” The creek was described as “...an important stream contributing considerable cool water to the Middle Eel during critical summer low flows” (USFS 1973p).

Trout were observed near the mouth of Stick Lake Canyon Creek during a 1994 USFS survey. The size range was two to six inches in length (USFS 1994d). Staff from DFG surveyed about 0.2 miles upstream of the mouth of Stick Lake Canyon Creek in 1997. The section surveyed was downstream of a 50-foot cascade and surveyors wrote, “The entire small section...presented a barrier to fish passage due to its high gradient. It is unlikely that any fish are present higher up in this drainage” (DFG 1997l).

Line Gulch Creek

Line Gulch Creek is tributary to the Middle Fork Eel River and consists of about 3.2 stream miles. It flows northeasterly, entering the Middle Fork Eel River about 49.8 miles upstream from the Eel River confluence.

Line Gulch was surveyed in 1966 and staff from DFG observed a set of rapids beginning 50 yards upstream from the mouth that blocked upstream migration. No fish were observed and the report noted, “Winter conditions appear to be too severe for a significant resident population to become established” (DFG 1966c).

Staff from USFS surveyed Line Gulch Creek in 1977 and noted that the creek was flowing intermittently. Three juvenile rainbow trout were observed in pools located about 0.3 miles upstream from the mouth (USFS 1977q).

During a 1997 DFG survey of Line Gulch Creek a four-inch long rainbow trout was observed about 0.6 miles upstream from the mouth of the creek. Several barriers to upstream migration were present and “High gradient riffles and cascades were abundant.”

Surveyors noted that, “The presence of these steep reaches rendered much of the stream unsuitable habitat for salmonids” (DFG 1997m).

Red Chert Creek

Red Chert Creek is tributary to the Middle Fork Eel River and consists of about 4.6 stream miles. It flows northeasterly, entering the Middle Fork Eel River about 51.7 miles upstream from the Eel River confluence.

Staff from USFS surveyed Red Chert Creek in 1977 and observed steelhead and rainbow trout in an area downstream of an unnamed tributary that enters the creek about 1.6 miles upstream from the mouth. The creek was also dry in part of this section and several boulder and rock wall barriers were noted (USFS 1977r).

Red Chert Creek was sampled during the 1982 Middle Fork Eel River Patrol, conducted by staff from DFG and USFS. The study report indicates that YOY *O. mykiss* were observed in Red Chert Creek at a density of about 100 fish per 100 feet of stream (DFG 1983c).

In a 1983 biological report regarding a summer steelhead survey of the Middle Fork Eel River, Red Chert Creek is described as one of the two “...best tributaries for spawning below the North Fork of the Middle Fork.” A table in this report characterized spawning habitat in the creek as “fair” and rearing habitat as “good” (DFG 1983b).

Staff from DFG surveyed Red Chert Creek in 1997 and noted a barrier to anadromous migration in “survey reach 4,” which began about 0.5 miles upstream from the mouth. *Oncorhynchus mykiss* was observed upstream of this barrier and was presumed to be resident rainbow trout. The lower 0.5 miles of the creek was believed to be used by steelhead and the survey report concluded that, “This stream provides steelhead and rainbow trout habitat and probably some of these fish migrate downstream to the Middle Fork Eel River and beyond” (DFG 1997n).

Middle Fork Eel River tributary 2

An unnamed tributary to the Middle Fork Eel River consists of about 1.9 stream miles. It flows east and enters the Middle Fork Eel River about 52.3 miles upstream from the Eel River confluence.

Staff from DFG surveyed this tributary in 1957 and observed *O. mykiss* ranging from four to seven inches in length. The creek was said to provide “...a fair amount of steelhead spawning and nursery area to the main river SH run” (DFG 1957l).

Middle Fork Eel River tributary 3 (Lucky Lake Creek)

An unnamed tributary to the Middle Fork Eel River flows west from Lucky Lake and is known as Lucky Lake Creek. It consists of about 1.4 stream miles and enters the Middle Fork Eel River about 52.9 miles upstream from the Eel River confluence.

Staff from DFG surveyed Lucky Lake Creek in 1997 and found that the high gradient and steep cascades near the mouth created a barrier to anadromous fish access. The creek was said to provide cold water flows to the Middle Fork Eel River (DFG 1997o).

North Fork Middle Fork Eel River

The North Fork Middle Fork Eel River is tributary to the Middle Fork Eel River and consists of about 12.3 stream miles. It flows south, entering the Middle Fork Eel River about 54.5 miles upstream from the Eel River confluence.

The North Fork Middle Fork Eel River was surveyed during a 1959 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. According to the report, “This branch contains some of the best spawning gravels available to steelhead in the entire Middle Fork Drainage” (Anonymous 1960).

The North Fork Middle Fork Eel River was examined during a 1966 survey of the Middle Fork Eel River watershed. The stream was one of four Middle Fork tributaries thought to be accessible to steelhead and “many” juvenile *O. mykiss* were observed in the creek (DFG 1966d).

Staff from DFG surveyed the North Fork Middle Fork Eel River in 1972 and described it as, “The major steelhead spawning and rearing area of the Middle Fork Eel River above Black [Butte] River.” Juvenile steelhead were observed and surveyors noted a possible migration barrier consisting of two bedrock falls located just upstream from the Willow Creek confluence (DFG 1972b). In a 1973 survey, USFS staff described the upstream limit of anadromy as a 20-foot cascade located about 1.5 miles upstream from the Water Spout Trail crossing. A resident rainbow trout population was present upstream of the barrier. Intermittent stream flows during the summer were cited as the most important limiting factor in the North Fork Middle Fork (Mower 1973).

Steelhead were sampled in the North Fork Middle Fork Eel River during a 1976 study of the distribution of fishes in the Eel River system. Regarding the North Fork Middle Fork and its tributaries the report states, “These streams are in pristine condition and are probably one of the spawning and rearing areas for spring-run steelhead that ascend the Middle Fork Eel River” (DFG 1980).

Staff from USFS surveyed about five miles of the lower North Fork Middle Fork Eel River in 1977. “Steelhead-summer, winter, resident” were found to be “common” in the lower section and “abundant” in the middle and upper sections. Size ranged from one to eight inches (USFS 1977s). In 1978, a USFS survey report noted, “There is no stream improvement need at this time with the possible exception of herding cattle away from the North Fork and tributaries” (USFS 1978d).

The North Fork Middle Fork Eel River was sampled during the 1982 Middle Fork Eel River Patrol, conducted by staff from DFG and USFS. The study report indicates that YOY *O. mykiss* were observed at a density of up to 60 fish per 100 feet of stream. This study also noted that riparian vegetation had been heavily damaged by cattle in the North Fork Middle Fork watershed between the Rock and Morrison creeks confluences. Adult summer steelhead were said to use the North Fork Middle Fork reach ending at a pool located about one mile upstream from the Morrison Creek confluence. “Good” spawning areas were noted upstream as far as the Willow Creek confluence (DFG 1983c).

Staff from DFG conducted a summer steelhead survey in the Middle Fork Eel River watershed in 1990. During this survey, three adult summer steelhead were collected in the North Fork Middle Fork Eel River, just downstream of the Morrison Creek confluence (Anonymous 1990).

A 1994 Watershed Analysis Report for the Middle Fork Eel River Watershed states that the North Fork Middle Fork has been impacted by unauthorized cattle grazing in a five-mile section upstream of the Morrison Creek confluence. Riparian vegetation

and water quality were impaired and “habitat quality for all age classes of resident fish and juvenile anadromous fish” was affected (USFS 1994a).

Staff from DFG surveyed the lower four miles of the North Fork Middle Fork Eel River in 2000 and found steelhead of multiple age classes in “medium abundance.” A barrier at the mouth of Willow Creek is labeled on a map as the “upper end of anadromy” (DFG 2000d).

North Fork Middle Fork Eel River tributary (Morrison Creek)

An unnamed tributary to the North Fork Middle Fork Eel River is known as Morrison Creek and consists of about 2.8 stream miles. It flows east, past Morrison Camp, entering the North Fork Middle Fork Eel River about 1.9 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed the lower two miles of Morrison Creek in 1973 and described it as “...a valuable spawning stream for adult steelhead.” Juvenile steelhead were common and many spawning areas were observed, particularly in the lower 0.75 miles of the creek (USFS 1973q). A 1973 USFS stream analysis states, “It appears on the basis of young of the year observed in the stream that Morrison and Rock Creeks are the two most utilized streams for steelhead reproduction on the North Fork Middle Fork Eel River” (USFS 1973r).

The juvenile steelhead population of Morrison Creek was sampled during a 1976 study of standing stocks in the North Fork of the Middle Fork Eel River. During the September 1976 sampling, 64 juvenile steelhead were collected in Morrison Creek and ranged from 1.5 to 6.7 inches in length (DFG 1976e).

Staff from USFS surveyed Morrison Creek in 1977 and noted the presence of many log jams and landslides and impacts of cattle use in the watershed. Rainbow trout were “abundant” during the survey (USFS 1977t). Regarding the upper portion of the creek, a 1978 USFS survey report notes, “Many 6-9 inch rainbow trout were seen and some of the best fish may be found in this area of the creek. The even progression of the fish sizes suggests that a strong resident population exists there, rather than migratory fish” (USFS 1978e).

In a 1983 biological report regarding a summer steelhead survey of the Middle Fork Eel River, Morrison Creek is described as having some of the best spawning habitat in the Middle Fork watershed. A table in this report characterized spawning habitat in the creek as “fair/good” and rearing habitat as “good” (DFG 1983b).

Morrison Creek was sampled during the 1982 Middle Fork Eel River Patrol, conducted by staff from DFG and USFS. The study report indicates that YOY *O. mykiss* were observed in Morrison Creek at a density of up to 50 fish per 100 feet of stream. This study also recorded the presence of a log jam barrier located about 1.2 miles upstream from the mouth of the creek and found “excellent” habitat downstream of the barrier (DFG 1983c).

In 1997 staff from DFG surveyed Morrison Creek and observed steelhead ranging from one to six inches in length. The stream was noted to contribute cool water to the North Fork of the Middle Fork Eel River throughout the year and contained spawning gravels that were “excellent for both resident and anadromous fish” in its lower section (DFG 1997p).

Rock Creek

Rock Creek is tributary to the North Fork Middle Fork Eel River and consists of about 2.6 stream miles. It flows southwesterly, entering the North Fork Middle Fork Eel River about 3.2 miles upstream from the Middle Fork Eel River confluence.

Staff from DFG surveyed Rock Creek in 1972 and described it as, “An important tributary for steelhead spawning and rearing for the North Fork of the Middle Fork Eel.” Fingerling steelhead were observed at a density of about 100 fish per 100 feet of stream and yearlings were observed at about 10 fish per 100 feet (DFG 1972c).

The juvenile steelhead population of Rock Creek was sampled during a 1976 study of standing stocks in the North Fork of the Middle Fork Eel River. During the September 1976 sampling, 84 juvenile steelhead were captured in Rock Creek, ranging from 1.9 to 6.3 inches in length (DFG 1976e).

In a 1983 biological report regarding a summer steelhead survey of the Middle Fork Eel River, Rock Creek is described as having some of the best spawning habitat in the Middle Fork watershed. A table in this report characterized spawning habitat in the creek as “good” and rearing habitat as “good” (DFG 1983b).

Staff from DFG surveyed the lower mile of Rock Creek in 1997 and found it in “good condition” with “good” habitat and cover, but water levels were low and two areas were intermittent. Rainbow trout ranging from one to nine inches were observed and surveyors recommended, “This stream should continue to be managed as a steelhead trout spawning and rearing area” (DFG 1997q).

Willow Creek

Willow Creek is tributary to the North Fork Middle Fork Eel River and consists of about 2.7 stream miles. It flows southeasterly, entering the North Fork Middle Fork Eel River about 4.1 miles upstream from the Middle Fork Eel River confluence.

Staff from DFG surveyed Willow Creek in 1972 and observed six-foot falls about 75 yards upstream from the mouth and 20-foot falls 180 yards from the mouth. Fingerling *O. mykiss* were present downstream of the lower falls and adult rainbow trout were seen between the falls. Surveyors concluded, “[the creek] contributes some flow and a minor amount of rearing area for juvenile steelhead. It is doubtful if any steelhead spawning occurs” (DFG 1972d). A 1973 USFS memo states, “This stream is of little or no value to anadromous fish but does supply some incremental flow to the North Fork” (USFS 1973s).

The juvenile steelhead population of Willow Creek was sampled during a 1976 study of standing stocks in the North Fork of the Middle Fork Eel River. During the September 1976 sampling, five juvenile steelhead were collected at the mouth of Willow Creek and ranged from 2.4 to 4.4 inches in length (DFG 1976e).

Willow Creek was sampled during the 1982 Middle Fork Eel River Patrol, conducted by staff from DFG and USFS. The study report indicates that YOY *O. mykiss* were observed in Willow Creek at a density of up to 10 fish per 100 feet of stream (DFG 1983c).

In a 1994 Watershed Analysis Report for the Middle Fork Eel River Watershed, Willow Creek is identified as an area in need of restoration. The creek was impacted by over 100 years of cattle grazing and displayed increased peak flows, decreased late season flows, and sediment problems. The report stated that, “Problems in upstream non-fishery reaches affect downstream fishery reaches” (USFS 1994a).

Staff from DFG surveyed Willow Creek in 1998 and three *O. mykiss* were observed downstream of the 20-foot waterfall near the creek mouth. These fish were about six inches in length and “comparable to those in the mainstem NFMF Eel” (DFG 1998a).

Yellowjacket Creek

Yellowjacket Creek is tributary to the North Fork Middle Fork Eel River and consists of about 3.1 stream miles. It flows southwesterly, entering the North Fork Middle Fork Eel River about 6.3 miles upstream from the Middle Fork Eel River confluence.

Staff from USFS surveyed Yellowjacket Creek in 1973 and noted, “Considerable excellent spawning habitat exists within the survey area and is no doubt of significant importance to spawning adult steelhead.” No barriers were observed and a resident rainbow trout population also was present. The survey report indicates that summer rearing habitat may be limited by low flows (USFS 1973t).

A 1973 summary of a Morrison Creek survey mentions the presence of a partial barrier on the North Fork Middle Fork downstream of Yellowjacket Creek that may be responsible for “the apparent decreased spawning activity in Yellowjacket Creek” (USFS 1973q). The creek also is mentioned in a 1973 survey report for the North Fork Middle Fork Eel River, which states that it is “...definitely utilized by steelhead for spawning and rearing” (DFG 1965e).

In August, 1979 staff from USFS surveyed Yellowjacket Creek and observed “poor habitat conditions” due to lack of water. A “self-sustaining population of rainbow trout” was present, but limited to stagnant pools (USFS 1980h).

In 1998 staff from DFG surveyed Yellowjacket Creek and observed rainbow trout ranging in age from YOY to adults. The survey report recommended that the creek be managed as a “...source of cold, clean water and as potential source of recruitment to the summer steelhead population” (DFG 1998b).

Balm of Gilead Creek

Balm of Gilead Creek is tributary to the Middle Fork Eel River and consists of about 9.1 stream miles. It flows southwesterly, entering the Middle Fork Eel River about 55.2 miles upstream from the Eel River confluence.

Balm of Gilead Creek was surveyed during a 1960 study of salmon and steelhead fisheries in the Middle Fork Eel River watershed. Steelhead were collected during fish population sampling as part of this study in 1959 and ranged from one to eight inches in fork length (Anonymous 1960).

Staff from DFG surveyed the lower 0.25 miles of Balm of Gilead Creek in 1966 and observed juvenile *O. mykiss*. Surveyors described the creek as “a small anadromous stream” and wrote, “Its main importance is for a spawning and nursery area for steelhead, in at least its lower portions and as a resident trout stream in its upper reaches” (DFG 1966e).

During a 1971 survey of Balm of Gilead Creek, DFG staff noted “massive slides” in the reach upstream from the Glade Camp Trail crossing (DFG 1971a). Staff from DFG surveyed Balm of Gilead Creek in 1973 and observed adult summer steelhead, as well as YOY and juvenile steelhead, downstream of a set of bedrock falls located at about stream mile 1.25. The creek was described as, “An important tributary of the Middle Eel.” A resident trout population was noted upstream of the falls (DFG 1972e).

Summer steelhead surveys were conducted regularly in the Middle Fork Eel River watershed from 1966 to 1996. Many of these surveys included a section of Balm of Gilead Creek, downstream of the waterfall at stream mile 1.25. Survey results show consistent use of Balm of Gilead Creek by summer steelhead from 1971 through 1996. (DFG 1971b, DFG 1996e, DFG 1996f).

Staff from DFG surveyed Balm of Gilead Creek in 2000 and observed very low densities of YOY and juvenile steelhead throughout the middle and lower sections of the creek. In the survey report the density of fish in the creek is described as “alarmingly depauperate.” The report noted that Balm of Gilead Creek is on the EPA list of 303(d) impaired watersheds due to pollution caused by sedimentation (DFG 2000e).

Minnie Creek

Minnie Creek is tributary to Balm of Gilead Creek and consists of about 3.4 stream miles. It flows northwesterly, entering Balm of Gilead Creek about 5.8 miles upstream from the Middle Fork Eel River confluence.

Staff from DFG surveyed Minnie Creek in 1973 and described it as “...the most important tributary of Balm of Gilead Creek, contributing about one-half the flow where they meet.” According to the survey report, steelhead did not have access to this creek due to barriers on Balm of Gilead Creek, but a population of rainbow trout was present and included three size classes of fish in “good to excellent condition.” The density of fish was low and the stream appeared capable of supporting a larger population (DFG 1973b).

A 1979 USFS survey of Minnie Creek concluded that a barrier at about stream mile 0.25 precluded access to about 1.5 miles of “ideal trout habitat” upstream. A self-sustaining population of rainbow trout was noted downstream from the barrier, with individuals to seven inches in length observed (USFS 1979a).

Balm of Gilead Creek tributary (Hopkins Hollow Creek)

An unnamed tributary to Balm of Gilead Creek is known as Hopkins Hollow Creek and consists of about 2.8 stream miles. It flows northwesterly, entering Balm of Gilead Creek about 7.3 miles upstream from the Middle Fork Eel River confluence.

A field note documents observations made in the lower 200 yards of Hopkins Hollow Creek in 1973. No fish observations were recorded and the field note states, “Stream appears to have little potential for fish due to very low flows” (La Faunce 1973).

Schoolmarm Creek

Schoolmarm Creek is tributary to the Middle Fork Eel River and consists of about 2.2 stream miles draining a basin of about 1.4 square miles. It flows southeasterly, entering the Middle Fork Eel River about 60.9 miles upstream from the Eel River confluence.

A 1972 DFG survey noted a waterfall impassable to fish at about stream mile 0.25. “Trout thought to be juvenile and yearling steelhead” between one and eight inches in length were observed downstream from the falls, and the reach was deemed “a minor nursery and spawning area for steelhead” (DFG 1972f).

Staff from USFS surveyed the lower 0.25 miles of Schoolmarm Creek in 1979 and observed two rainbow trout individuals. The stream was noted to have low flow and fish reproduction was categorized as “poor” (USFS 1979b).

Staff from DFG observed rainbow trout in Schoolmarm Creek downstream of the barrier falls in 2000 (Harris 2000).

Uhl Creek

Uhl Creek is tributary to the Middle Fork Eel River and consists of about 2.1 stream miles. It flows west, entering the Middle Fork Eel River about 61.3 miles upstream from the Eel River confluence. The Uhl Creek drainage is about 2.2 square miles.

A 1972 DFG survey noted a falls about 120 yards upstream from the mouth of Uhl Creek, with three *O. mykiss* size groups observed downstream. The survey report states, “A minor tributary of the Middle Eel. The falls limits use by anadromous fish. Contributes a small flow of cool water (DFG 1972g).

In 1979, staff from USFS surveyed the lower 0.5 miles of Uhl Creek and found suitable trout habitat throughout most of the section. Rainbow trout were present downstream of a waterfall barrier located about 100 yards upstream from the mouth and planting was recommended upstream of the falls in order to “reestablish a self-sustaining population of rainbow trout in Uhl Creek” (USFS 1980i).

Staff from DFG observed rainbow trout at stream mile 0.25 in Uhl Creek during a survey conducted in 2000 (Clemento 2000).

Alder Basin Creek

Alder Basin Creek is tributary to the Middle Fork Eel River and consists of about 2.1 stream miles. It flows west, entering the Middle Fork Eel River about 62.6 miles upstream from the Eel River confluence.

Staff from DFG surveyed the lower 1.5 miles of Alder Basin Creek in 1972 and observed rainbow trout throughout the area. A log jam and a slide created complete barriers in the creek, but both had occurred recently and the trout population upstream of these barriers was thought to be the offspring of adult steelhead. The creek was characterized as, “A small steelhead nursery and spawning stream that has been reduced in size by barriers in recent years” (DFG 1972h).

In August of 1979 staff from USFS surveyed Alder Basin Creek and observed only 0.25 miles of suitable trout habitat due to a lack of water. “Abundant” rainbow trout were present but limited to stagnant pools. Surveyors concluded that the creek “... contains excellent trout habitat, but dry sections hinder utilization of entire stream” (USFS 1980j).

Cutfinger Creek

Cutfinger Creek is tributary to the Middle Fork Eel River and consists of about 2.7 stream miles. It flows southeasterly, entering the Middle Fork Eel River about 65 miles upstream from the Eel River confluence.

A DFG field note states that Cutfinger Creek was completely dry during an August 1972 survey (USFS 1980k). Staff from USFS surveyed the creek in 1979 and observed four stagnant pools in the lower 0.5 miles of the creek. Surveyors noted that, “A population of rainbow trout was present in the pools, although habitat conditions appeared unsuitable” (USFS 1980k).

Staff from DFG surveyed Cutfinger Creek in April of 2002 and observed multiple age classes of resident *O. mykiss*. “Adequate” spawning gravel was present and flows of 2 to 2.5 cfs were recorded. Although it was considered inaccessible to anadromous fish in the Middle Fork Eel River, the creek was described as a “potential source of recruitment for the summer steelhead population” (DFG 2002e).

Robinson Creek

Robinson Creek is tributary to the Middle Fork Eel River and consists of about 2.9 stream miles draining an area of about 2.7 square miles. It flows south, entering the Middle Fork Eel River about 67.7 miles upstream from the Eel River confluence.

Robinson Creek was surveyed by DFG staff in 1972. Rainbow trout were said to be “mainly in two size groups—one to three inches and six to seven inches” although a “few nine to ten inch RT were seen.” The survey report calls the creek “A minor spawning and nursery stream for steelhead and/or resident rainbow trout” (DFG 1972i).

Staff from USFS surveyed the lower 0.75 miles of Robinson Creek in 1979. Water and “poor to suitable” trout habitat was only observed in the lower 0.3 miles of the creek, and this lower section contained a self-sustaining population of rainbow trout (USFS 1980l).

Willow Basin Creek

Willow Basin Creek is tributary to the Middle Fork Eel River and consists of about 1.6 stream miles. It flows northeasterly, entering the Middle Fork Eel River about 69 miles upstream from the Eel River confluence.

Staff from USFS surveyed Willow Basin Creek in 1979 and did not observe fish. The creek lacked water except in stagnant pools and “suitable trout habitat was nonexistent” (USFS 1980m).

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