

3.7 FISHERIES

3.7.1 Introduction

This section discusses Fisheries resources in the proposed Project area. The description of Fisheries resources is based on information provided in the 2011 Final Environmental Impact Statement (Final EIS) as well as new circumstances or information relevant to environmental concerns that have become available since the publication of the Final EIS, including the proposed reroute in Nebraska. The information that is provided here builds on the information provided in the Final EIS and in many instances replicates that information with relatively minor changes and updates. Other information is entirely new or substantially altered from that presented in the Final EIS. Specifically, the following information, data, methods, and/or analyses have been substantially updated in this section from the 2011 document:

- The number and type of stream crossings and stream crossing methods have changed due to changes in the proposed Project route as well updated field survey information provided by Keystone. The stream crossing assessment is comprised of a desktop analysis based on National Hydrologic Dataset (NHD) information and supplemented by TransCanada Keystone Pipeline, LP (Keystone) field survey descriptions where available; and
- Information on the fisheries resources for waterbodies within 10 miles downstream of the proposed Project area is presented.

The description of the fisheries resources is based on information and data provided by government agencies and subject matter experts. This information was supplemented by additional field surveys conducted by Keystone along the proposed pipeline route.

The scope of the following discussion of the affected environment focuses on fish and fish habitats that currently exist within and immediately adjacent to the proposed pipeline right-of-way (ROW). Waterbodies in this assessment are those that support fish and fish habitat and that would be crossed by the proposed pipeline. These waterbodies include streams, rivers, ponds, reservoirs, and lakes. In the event of a spill or release of material from the proposed pipeline, habitats far downstream from the ROW could be impacted. This section also includes an overview of the fish resources in these downstream waters; however, impacts to these resources are discussed in the Potential Releases sections (Sections 3.13 and 4.13).

3.7.2 Environmental Setting

The general environmental setting for fish resources is the surface waters of the Missouri River drainage basin. The proposed Project route enters the United States in Montana and crosses the semi-arid plain and prairie regions of the northern Midwest that make up the Great Plains. The Missouri River originates in the high mountains of Montana east of the continental divide (Brown 1971). The Missouri River is the longest river in North America, and the streams and rivers in Montana, South Dakota, and Nebraska that are crossed by the proposed Project corridor all drain into the Missouri River.

Most portions of the Great Plains that were formerly prairie and grasslands are now heavily impacted by agriculture and, to a lesser extent, affected by urbanization, which has caused hydrologic disturbance and physical modification including stream channelization, habitat

fragmentation, and alteration of the riparian corridor (Dodds et al. 2004). Prairie streams are subject to flooding as well as drying, and species inhabiting these streams have evolved to accommodate significant environmental disturbance and intermittency of flow (Dodds et al. 2004). Part of this accommodation is the ability to rapidly recolonize previously dry stream channel reaches (Matthews 1988). The availability of refuge habitat during dry spells and floods can influence stream fish assemblages (Schlosser 1995) and, in some instances, is critical for the completion of fish life cycles (Schiemer and Spindler 1989, Bisson et al. 1982).

The typical stream types found within the Missouri River Basin include those characterized as prairie streams and big rivers. The fish fauna of prairie streams are often less diverse than fish fauna in streams of other regions because prairie streams are subject to widely fluctuating environmental conditions, and only fish tolerant of these conditions can persist (Pflieger 1975).

In big-river systems like the mainstem Missouri River, species have adapted to tolerate high levels of turbidity. Historically, the Missouri and other big rivers transported large quantities of sediment downstream. However, the sediment load transported by big rivers of the Midwest today is reduced because of the construction of large dams and reservoirs that trap suspended sediments.

The Nebraska segment of the proposed pipeline would skirt the eastern edge of the Nebraska Department of Environmental Quality (NDEQ)-identified Sand Hills Region. Lakes and streams of the NDEQ-identified Sand Hills Region are inhabited by 75 fish species, many of which are common big-river generalists capable of withstanding a wide range of environmental conditions. Less common and rare species, such as the northern redbelly dace (*Phoxinus eos*), are more sensitive to fluctuations in environmental conditions and may exist in small pockets separated from other portions of the species range. In many cases, they are restricted to more stable headwater habitats. Pike, bass, and perch have been introduced to NDEQ-identified Sand Hill Region lakes, and trout have been introduced to several coldwater streams to provide recreational fishing opportunities (Schneider et al. 2011).

Juvenile and adult aquatic insects, worms, shellfish, and other invertebrate life are assumed to inhabit all proposed Project area waterbodies. These organisms provide food for juvenile and adult fish. Species composition of macroinvertebrate communities depends on the physical and chemical characteristics of the water; hence, macroinvertebrates are important indicators of water quality (Keystone 2009).

Lakes, ponds, and reservoirs within 10 miles downstream of the proposed Project area typically support the same species of recreational and commercial fish as the streams that supply them. These waterbodies can provide suitable habitats for spawning, rearing, and foraging, and can also provide seasonal refuge when conditions in adjacent stream segments become unsuitable. While natural lakes typically do not restrict fish movement, many artificial waterbodies are constructed with dams and outlet configurations that prevent upstream fish movement, thus isolating upstream populations and limiting re-colonization following extirpation events.

3.7.2.1 Fisheries Resources

This section addresses fish species with recreational or commercial significance that occur in waterbodies that would be crossed by, or are within 10 miles downstream of, the proposed Project route. Special status fish species including threatened, endangered, and species of

concern are discussed in Sections 3.8 and 4.8, Threatened and Endangered Species and Species of Conservation Concern.

Common fish species with recreational or commercial value that occur across the proposed Project area are listed in Table 3.7-1. Many of these species are native North American fish that have been introduced into watersheds where they did not previously occur to provide for recreational fisheries, while the common carp (*Cyprinus carpio*) is an exotic Eurasian introduction.

Table 3.7-1 Common Recreational and Commercial Fish Associated with Proposed Project Route Stream Crossings

Species or Group	Status ^a	Montana	South Dakota	Nebraska
Bass (smallmouth, largemouth, spotted) (<i>Micropterus</i> spp.)	Recreational	x	x	x
Bluegill (<i>Lepomis macrochirus</i>)	Recreational		x	x
Brook trout (<i>Salvelinus fontinalis</i>)	Recreational	x	x	x
Buffalo (bigmouth, smallmouth) (<i>Ictiobus</i> spp.)	Recreational/ Commercial	x	x	x
Bullheads (black, yellow) (<i>Ameiurus</i> spp.)	Recreational	x	x	x
Burbot (<i>Lota lota</i>)	Recreational	x		
Common carp (<i>Cyprinus carpio</i>)	Recreational/ Commercial	x	x	x
Channel catfish (<i>Ictalurus punctatus</i>)	Recreational/ Commercial	x	x	x
Crappie (black, white) (<i>Pomoxis</i> spp.)	Recreational	x	x	x
Flathead catfish (<i>Pylodictis olivaris</i>)	Recreational/ Commercial		x	x
Freshwater drum (<i>Aplodinotus grunniens</i>)	Recreational/ Commercial	x	x	x
Green sunfish (<i>Lepomis cyanellus</i>)	Recreational	x	x	x
Minnnows (baitfish) Fathead minnow (<i>Pimephales promelas</i>); Golden shiner (<i>Notemigonus crysoleucas</i>); and others	Recreational/ Commercial	x	x	x
Muskellunge (<i>Esox masuiongy</i>)	Recreational		x	x
Northern pike (<i>Esox lucius</i>)	Recreational	x	x	x
Paddlefish (<i>Polyodon spatula</i>)	MT-SC; BLM-S	x		
Pumpkinseed (<i>Lepomis gibbosus</i>)	Recreational	x	x	x
Rainbow trout (<i>Oncorhynchus mykiss</i>)	Recreational	x	x	x
Sauger (<i>Sander canadensis</i>)	MT-SC; BLM-S	x	x	x

Species or Group	Status ^a	Montana	South Dakota	Nebraska
Shad (baitfish) Gizzard shad (<i>Dorosoma cepedianum</i>)	Commercial		x	x
Shortnose gar (<i>Lepisosteus platostomus</i>)	MT-SC	x	x	x
Shovelnose sturgeon (<i>Scaphirhynchus platorynchus</i>)	Commercial	x	x	x
Sunfish (longear, orangespot, redbreast, warmouth) (<i>Lepomis</i> spp.)	Recreational	x	x	x
Walleye (<i>Sander vitreus</i>)	Recreational	x	x	x
Yellow perch (<i>Perca flavescens</i>)	Recreational/ Commercial	x	x	x

^a BLM = Bureau of Land Management, MT = Montana, S = Sensitive, SC = Species of Concern.

Several fish that support important recreational or commercial fisheries have declined in abundance and are currently protected within some portions of their range. These fish are classified as threatened, endangered, or sensitive and are discussed in more detail in Sections 3.8 and 4.8, Threatened and Endangered Species and Species of Conservation Concern, and in Appendix H, 2012 Biological Assessment.

Spawning periods and habitats for some recreational and commercial fish species in the proposed Project area are shown in Table 3.7-2. Fish species are particularly sensitive to habitat disruption caused by construction during spawning periods. Spawning periods for fish that range across the length of the proposed Project route would vary depending on latitude. After spawning, the type and length of habitat use for larval and juvenile fish rearing vary depending on the fish species, life history stage, and site-specific conditions. Eggs would be expected to hatch relatively soon after spawning activities (for example, 3 to 16 days for common carp). Therefore, use of these waterbodies for larval rearing would be expected to overlap and extend beyond the identified spawning periods in Table 3.7-2.

Fisheries information was derived primarily from fishery distribution maps available on agency websites, supplemented by information provided by regional biologists. The proposed Project route would involve 56 perennial stream crossings and 974 intermittent stream crossings. Of these streams, the proposed Project route would cross 52 perennial streams (two crossed multiple times) that contain known or potential habitat for fish of recreational or commercial value. Surface water classifications used to assess potential fisheries resource values of streams that would be crossed by the proposed pipeline route are provided in Appendix D, Waterbody Crossing Tables and Required Crossing Criteria for Reclamation Facilities. Section 3.7.2.2, Types of Fisheries Affected, discusses the perennial crossings for each state, the proposed crossing method, and the presence or absence of a fishery of special concern based on state surface water classifications.

There are 580 lakes, ponds, or reservoirs that are within 10 miles downstream of proposed water crossings. A large majority of these waterbodies consists of small ponds or reservoirs, while 36 are greater than 10 acres in surface area. A comprehensive list of these waterbodies is provided in Appendix D, Waterbody Crossings, Tables 7, 8, and 9. These waterbodies typically support the same recreational and commercial fish species that are listed in Table 3.7-1, with spawning periods and habitats that are equivalent to those provided in Table 3.7-2.

Table 3.7-2 Recreational and Commercial Fish Spawning Periods and Habitats

Species or Group ^{b,c}	Month ^a												Habitat	
	J	F	M	A	M	J	J	A	S	O	N	D		
Bass (<i>Micropterus</i> spp.)														Shallow areas over clean gravel and sand bottoms.
Buffalo (bigmouth, smallmouth) (<i>Ictiobus</i> spp.)														Spawn at depths of 4 to 10 feet over gravel or sand substrates.
Bullhead (yellow and black) (<i>Ameiurus</i> spp.)														Usually spawn in weedy or muddy shallow areas by building nests.
Burbot (<i>Lota lota</i>)														Eggs are scattered over sand or gravel substrates.
Common carp (<i>Cyprinus carpio</i>)														Adhesive eggs scattered in shallow water over vegetation, debris, logs, or rocks.
Flathead catfish (<i>Pylodictis olivaris</i>)														Nest builders with habitat similar to channel catfish.
Channel catfish (<i>Ictalurus punctatus</i>)														Prefer areas with structure such as rock ledges, undercut banks, logs, or other structure where they build nests.
Crappie (<i>Pomoxis</i> spp.)														Eggs deposited in depressions on bottom in cove or embayments.
Freshwater drum (<i>Aplodinotus grunniens</i>)														Buoyant eggs drift in river currents during development.
Muskellunge (<i>Esox masuiongy</i>)														Spawn in tributary streams and shallow lake channels.
Northern pike (<i>Esox lucius</i>)														Small streams or margins of lakes over submerged vegetation.
Paddlefish (<i>Polydon spatula</i>)														Move into rivers and spawn over flooded gravel bars.
Sauger (<i>Sander canadensis</i>)														Move into tributary streams or backwaters where they spawn over rock substrates.
Shad (baitfish) (<i>Dorosoma cepedianum</i>)														Spawn in shallow water over sandy/rocky substrates; eggs scattered, adhere to objects.
Shovelnose sturgeon (<i>Scaphirhynchus platorynchus</i>)														Spawning occurs in open water channels of large rivers over rocky or gravelly bottoms.
Sunfish (<i>Lepomis</i> spp.)														Nest builders in diverse substrates and shallow depths.
Walleye (<i>Sander vitreus</i>)														Spawn in lakes and streams in shallow water over rock substrates.

Species or Group ^{b,c}	Month ^a												Habitat
	J	F	M	A	M	J	J	A	S	O	N	D	
White bass (<i>Morone chrysops</i>)													Egg masses deposited over sand bars, submerged.
Yellow perch (<i>Perca flavescens</i>)													Shallow open water over weedy areas.

Sources: NatureServe 2009; Eddy and Underhill 1974; Harlan et al. 1987; Pflieger 1975; Pflieger 1997; Hoese and Moore 1977; Robison and Buchanan 1988; Thomas et al. 2007; Miller and Robison 2004; Ross 2001; and Pattillo et al. 1997.

^a Spawning periods are approximate and could occur in only a portion of a particular month.

^b Rainbow trout and brook trout are not included because these species are not documented to spawn in streams crossed by the proposed Project route; their presence and persistence is a result of continued hatchery fish stocking programs.

^c Some species are grouped into families in this table (i.e., sunfish), but are presented as individual species in Table 3.7-1.

3.7.2.2 *Types of Fisheries Affected*

This section addresses fisheries potentially found in perennial streams (including rivers) that would be crossed by the proposed Project route, as well as all ponds, lakes, and reservoirs within 10 miles downstream of these crossings. Although intermittent streams may be of some value in terms of fisheries resources, they are not addressed in this section because they are unable to support a year-round fishery and impacts are expected to be minimal. The proposed Project area includes coldwater (trout), coolwater (perch and pike), and warmwater (catfish, bullheads, sunfish, carp, and bass) fisheries.

Surface water classifications based on a waterbody's water quality and resource values are important elements of fisheries management in each state. The classification systems for each of the states crossed by the proposed pipeline route are administered by the following agencies:

- Montana Department of Environmental Quality (MDEQ 2012);
- South Dakota Department of Environmental and Natural Resources (SDDENR 2012); and
- NDEQ (2012b).

Table 3.7-3 provides the locations of proposed pipeline crossings at perennial streams identified as contributing habitat for recreational and commercial fisheries. No surface water resources containing fisheries were identified near the facilities to be located in North Dakota (pipe storage yard and rail siding) or in Kansas (pump stations).

Table 3.7-3 Proposed Perennial Stream Crossings along the Proposed Project Route

County	Approximate Milepost	Waterbody Name	Relevant Surface Water or Fishery Class/Rating ^{a,b}	Number of Crossings
Phillips	25.3	Frenchman River	Non-Salmonid	1
Valley	39.0	Rock Creek	Non-Salmonid	1
Valley	40.4	Willow Creek	Non-Salmonid	1
Valley	83.4	Milk River	Non-Salmonid	1
Valley/ McCone	89.7	Missouri River	Marginal Salmonid/Red Ribbon, Class II Recreational Fishery	1
Dawson	198.1	Yellowstone River	Non-Salmonid/Blue Ribbon, Class I Recreational Fishery	1
Fallon	247.1	Sandstone Creek	Non-Salmonid	1
Fallon	265.3	Little Beaver Creek	Non-Salmonid	1
Fallon	284.5	Boxelder Creek	Non-Salmonid	1
Harding	292.6	Shaw Creek	Fish Propagation	1
Harding	295.0	Little Missouri River	WW Semi-permanent	1
Harding	300.4	Kimble Creek	Fish Propagation	1
Harding	303.5	Unnamed Tributary to Dry House Creek	Fish Propagation	1
Harding	321.6	South Fork Grand River	WW Semi-permanent	1
Harding	326.4	Clarks Fork Creek	WW Marginal	1
Butte	361.0	North Fork Moreau River	WW Marginal	1
Perkins	368.9	South Fork Moreau River	WW Marginal	1
Meade	387.8	Pine Creek	WW Marginal	1

County	Approximate Milepost	Waterbody Name	Relevant Surface Water or Fishery Class/Rating ^{a,b}	Number of Crossings
Meade	428.1	Narcelle Creek	Fish Propagation	1
Meade	430.1	Cheyenne River	WW Permanent	1
Haakon	486.0	Bad River	WW Marginal	1
Jones	498.3	Dry Creek	Fish Propagation	1
Tripp	541.3	White River	WW Semi-permanent	1
Tripp	547.3	Cottonwood Creek	Fish Propagation	1
Tripp	600.0	Buffalo Creek	Fish Propagation	1
		Unnamed Tributary to		
Keya Paha	602.06	Buffalo Creek	Class B Warmwater	3
Keya Paha	610.55	Wolf Creek	Class B Coldwater	1
		Unnamed Tributary to		
Keya Paha	612.47	Keya Paha River	Class B Warmwater	1
Keya Paha	613.73	Spotted Tail Creek	Class B Coldwater	1
		Unnamed Tributary to		
Keya Paha	614.10	Spotted Tail Creek	Class B Warmwater	1
Keya Paha	616.97	Alkali Creek	Class B Warmwater	1
Boyd	618.11	Keya Paha River	Class A Warmwater	1
Holt	626.09	Niobrara River	Class A Warmwater	1
Holt	626.86	Beaver Creek	Class B Coldwater	1
Holt	632.69	Big Sandy Creek	Class A Warmwater	1
		Unnamed Tributary to		
Holt	639.96	Brush Creek	Class B Coldwater	1
		Unnamed Tributary to		
Holt	640.28	Brush Creek	Class B Coldwater	1
Holt	646.82	North Branch Eagle Creek	Class B Coldwater	1
Holt	649.30	Middle Branch Eagle Creek	Class B Coldwater	1
Holt	653.07	East Branch Eagle Creek	Class B Coldwater	1
Holt	663.01	Redbird Creek	Class B Warmwater	3
Holt	679.99	South Branch Verdigre Creek	Class B Coldwater	1
Antelope	683.07	Big Springs Creek	Class B Coldwater	1
Antelope	713.34	Elkhorn River	Class A Warmwater	1
Boone	743.77	Beaver Creek	Class A Warmwater	1
Nance	759.62	Plum Creek	Class B Warmwater	1
Nance	761.67	Loup River	Class A Warmwater	1
Nance	766.65	Prairie Creek	Class B Warmwater	1
Polk	775.14	Platte River	Class A Warmwater	1
York	803.35	Beaver Creek	Class B Warmwater	1
York	812.83	West Fork Big Blue River	Class A Warmwater	1
Fillmore	831.79	Turkey Creek	Class B Warmwater	1

Source: Geographic information system data source for waterbody name—U.S. Geological Survey (USGS) National Hydrology Data Set (USGS 2012); data source for Montana—MDEQ 2012; data source for South Dakota—SDDENR 2012 and South Dakota Legislature 2012; data source for Nebraska—NDEQ 2012a.

^a WW = Warmwater.

^b Surface water or fishery class / rating descriptions are provided in the text of the sections following the table.

Montana

Montana distinguishes surface water classifications based on their ability to support coldwater (salmonid) or warmwater (non-salmonid) fisheries (MDEQ 2012). The perennial streams the proposed Project route would cross in Montana are classified as supporting non-salmonid

fisheries, except for the Missouri River crossing below Fort Peck dam, which is classified as marginal for supporting salmonid fisheries (Table 3.7-3). The Missouri River east of Fort Peck Reservoir to the border of Richland County is classified as a Red Ribbon—Class II Recreational Fishery, or a recreational fishery of high value. Salmonid fish supported by this fishery include brown trout (*Salmo trutta*), mountain whitefish (*Prosopium williamsoni*), and rainbow trout (*Oncorhynchus mykiss*). The reach of the Yellowstone River where the proposed Project route would cross in Dawson County is classified as a Blue Ribbon—Class I Recreational Fishery, or a recreational fishery of outstanding value. Non-salmonid fish supported by this fishery include burbot (*Lota lota*), channel catfish (*Ictalurus punctatus*), paddlefish (*Polyodon spatula*), sauger (*Sander canadensis*), smallmouth bass (*Micropterus dolomieu*), and walleye (*Sander vitreus*).

The proposed Project route would cross nine perennial streams in Montana that support recreational or commercial fisheries. Four of these perennial stream crossings, the Frenchman River (Milepost [MP] 25.3), the Milk River (MP 83.4), the Missouri River (MP 89.7), and the Yellowstone River (perennial side channel at MP 197.8 and main channel at MP 198.1), would use the horizontal directional drilling (HDD) method (see Section 2.1.9, Waterbody Crossings, for a description of the HDD method). All other perennial stream crossings in Montana would use one of the open-cut crossing methods, also described in Section 2.1.9.

There are 178 lakes, ponds, or reservoirs located within 10 miles downstream of a proposed water crossing in Montana, as listed in Appendix D, Waterbody Crossings, Table 7. Named waterbodies with a surface area in excess of 10 acres and within the 10-mile downstream range include Lindsay Reservoir and Salsbery Reservoir. Additionally, there are four waterbodies that are unnamed on the U.S. Geological Survey 2012 NHD) (USGS 2012a) with surface areas of 10 acres or larger within the 10-mile downstream range.

South Dakota

South Dakota classifies surface waters based on a waterbody's ability to support coldwater and warmwater fish presence and propagation (SDDENR 2012). Warmwater classes are subdivided into permanent fish life propagation, semi-permanent fish life propagation, and marginal fish life propagation. Nine of the 16 perennial fish streams the proposed Project route would cross in South Dakota are classified as supporting warmwater fisheries, while the remaining seven are classified more generally as supporting fish propagation, with no warmwater or coldwater designation (Table 3.7-3). Those classified as supporting warmwater fisheries include one permanent warmwater fishery (Cheyenne River), three semi-permanent warmwater fisheries (Little Missouri, South Fork Grand, and White rivers), and five marginal warmwater fisheries. Common recreational fish found in these streams include catfish, walleye, sauger, bullhead, and bass.

The proposed Project route would cross 16 perennial streams in South Dakota that support recreational or commercial fisheries. Four of these perennial waterbodies, the Little Missouri River (MP 295.0), the Cheyenne River (MP 430.1), the Bad River (MP 486), and the White River (MP 541.3), would be crossed using the HDD method. In addition, the HDD method would be used to cross one intermittent waterbody, Bridger Creek (MP 433.6) All other perennial streams in South Dakota would be crossed by one of the open-cut methods.

Waterbodies and reservoirs located within 10 miles downstream of a proposed water crossing are summarized in Appendix D, Waterbody Crossings, Table 9. The larger of these waterbodies

(those greater than 10 acres) include Lake Gardner and 18 other reservoirs that are unnamed on the USGS 2012 NHD (USGS 2012c). The analysis identified approximately 304 additional waterbodies located within 10 miles downstream of a proposed crossing that were less than 10 acres.

Nebraska

Nebraska classifies surface waters as supporting coldwater or warmwater fish and as providing habitat for year-round maintenance of one or more identified key species (Class A) or as providing habitat where the variety of warmwater biota is limited by water volume or flow, water quality, substrate composition, or other habitat conditions (Class B) (NDEQ 2012b). Key species are those identified as endangered, threatened, sensitive, or recreationally important aquatic species. The proposed Project would cross 27 perennial streams in Nebraska that have fishery classifications (Table 3.7-3). Of these, 10 are coldwater streams that are rated as Class B waters. Coldwater fish that may be maintained year-round by stocking could include brook trout (*salvelinus fontinalis*), brown trout, or rainbow trout. Of the 17 crossings of warmwater streams, eight are rated Class A and nine are rated Class B. Common recreationally important warmwater fish include catfish, bass, crappie, sauger, shovelnose sturgeon (*Scaphirhynchus platyrhynchus*), sunfish, walleye, and yellow perch (*Perca flavescens*). In addition, forage fish (bait fish) important for the federally endangered interior least tern (*Sternula antillarum*) are found in the Platte, Niobrara, and Loup Rivers.

Of the 27 proposed perennial stream crossings in Nebraska that support recreationally important fisheries, five of those would be crossed using the HDD method, including the Keya Paha River (MP 618.1), the Niobrara River (MP 626.1), the Elkhorn River (MP 713.3), the Loup River (MP 761.7), and the Platte River (MP 775.1). Other perennial stream crossings in Nebraska would use one of the open-cut methods. Two perennial fisheries streams (unnamed tributaries to Buffalo Creek and Redbird Creek) would each be crossed three times by the proposed route.

Waterbodies and reservoirs located within 10 miles downstream of a proposed water crossing are summarized in Appendix D, Waterbody Crossings, Table 8. The larger of these waterbodies (those greater than 10 acres) include Cub Creek Reservoir 14C, Cub Creek Reservoir 13C, Recharge Lake, Big Indian Creek Reservoir 8-E, Big Indian Creek Reservoir 10-A, and six unnamed reservoirs (unnamed according to the USGS 2012 NHD [USGS 2012b]). The analysis identified an additional 68 waterbodies or reservoirs located within 10 miles downstream of a proposed crossing that were less than 10 acres in size.

3.7.2.3 Connected Actions

There are three connected actions in the vicinity of the proposed Pipeline route:

- Bakken Marketlink Project;
- Big Bend to Witten 230-kV Transmission Line; and
- Electrical Distribution Lines and Substations.

The fisheries resources found along and in the proposed connected action project areas are similar to the fisheries resources of the proposed pipeline corridor itself.

3.7.3 References

- Bisson, P.A., J.L. Nielsen, R.A. Palmason, and L.E. Grove. 1982. A system for naming habitat types in small streams, with examples of habitat utilization by salmonids during low streamflow. Pages 62-73, in N.B. Armantrout, editor, Acquisition and utilization of aquatic habitat inventory information. Proceedings of a symposium held 28-30 October, 1981, Portland, Ore. Western Division, American Fisheries Society.
- Brown, C.J.D. 1971. Fishes of Montana. Big Sky Books, Montana State University, Bozeman, Montana. 207 pp.
- Dodds W.K., K. Gido, M.R. Whiles, K.M. Fritz, and W.J. Matthews. 2004. Life on the edge: the ecology of Great Plains prairie streams. *Bioscience* 54(3): 205-216.
- Eddy, S., and J.C. Underhill. 1974. Northern fishes, with special reference to the Upper Mississippi Valley, 3rd edition. University of Minnesota Press, Minneapolis, MN.
- Harlan, J.R., E.B. Speaker, and J. Mayhew. 1987. Iowa fish and fishing. Iowa Conservation Commission, Des Moines, Iowa. 323pp.
- Hoese, H.D., and R.H. Moore. 1977. Fishes of the Gulf of Mexico, Texas, Louisiana and Adjacent Waters, 3rd Printing. Texas A & M University Press. 327 pp.
- Keystone. See TransCanada Keystone Pipeline, LP.
- Matthews, W.J. 1988. North American prairie streams as systems for ecological study. *Journal of the North American Benthological Society* 7: 387-409.
- Miller, R.J., and H.W. Robison. 2004. Fishes of Oklahoma. University of Oklahoma Press. Norman, OK. 450 pp.
- MDEQ. See Montana Department of Environmental Quality.
- Montana Department of Environmental Quality (MDEQ). 2012. Montana 2012 Final Water Quality Integrated Report.
- NatureServe. 2009. NatureServe Explorer: An online encyclopedia of life [web application]. Version 7.1. NatureServe. Arlington, VA. Website: <http://www.natureserve.org/explorer>. Accessed July 27, 2009.
- NDEQ. See Nebraska Department of Environmental Quality.
- Nebraska Department of Environmental Quality (NDEQ). 2012a. Title 117—Nebraska Surface Water Quality Standards, Nebraska Administrative Code.
- _____. Water Quality Division. 2012b. 2012 Water Quality Integrated Report.
- Pattillo, M.E., T.E. Czapla, D.M. Nelson, and M.E. Monaco. 1997. Distribution and Abundance of Fishes and Invertebrates in Gulf of Mexico Estuaries, Vol. II: Species Life History Summaries. ELMR Report No. 11. NOAA/NOS Strategic Environmental Assessments Division, Silver Spring, Maryland. 377pp.
- Pflieger, W.L. 1975. The Fishes of Missouri. Missouri Department of Conservation. 343 pp.
- _____. 1997. The Fishes of Missouri, Revised Ed. Missouri Department of Conservation. Jefferson City, MO. 372 pp.

- Robison, H.W., and M. Buchanan. 1988. *Fishes of Arkansas*. The University of Arkansas Press. Fayetteville, Arkansas. 536 pp.
- Ross, S.T. 2001. *The Inland Fishes of Mississippi*. University Press of Mississippi. Jackson, MS. 624 pp.
- Schiemer, F., and T. Spindler. 1989. Endangered fish of the Danube River in Austria. *Regulated Rivers: Research and Management* 4: 397-407.
- Schlosser, I.J. 1995. Critical landscape attributes that influence fish population dynamics in headwater streams. *Hydrobiologia* 303: 71-81.
- Schneider, R., K. Stoner, G. Steinauer, M. Panella, and M. Humpert (Eds.). 2011. *The Nebraska Natural Legacy Project: State Wildlife Action Plan*. 2nd ed. The Nebraska Game and Parks Commission, Lincoln, NE.
- SDDENR. See South Dakota Department of Environment and Natural Resources.
- South Dakota Department of Environment and Natural Resources (SDDENR). 2012. *The 2012 South Dakota Integrated Report for Surface Water Quality Assessment*.
- South Dakota Legislature. 2012. Administrative Rules Chapter 74:51:03. Website: <http://legis.state.sd.us/rules/DisplayRule.aspx?Rule=74:51:03>. Accessed September 25, 2012.
- Thomas, C.T., T.H. Bonner, and B.G. Whiteside. 2007. *Freshwater Fishes of Texas*. Texas A&M University Press. College Station, TX. 202 pp.
- TransCanada Keystone Pipeline, LP (Keystone). 2009. Application to the South Dakota Public Utilities Commission for a Permit for the Keystone XL Pipeline Under the Energy Conversion and Transmission Facility Act. Submitted to the South Dakota Public Utilities Commission.
- U.S. Geological Survey. 2012. National Hydrography Dataset (NHD). Website: <ftp://nhdftp.usgs.gov/DataSets/Staged/States/FileGDB/HighResolution/>. Accessed September 25, 2012.
- _____. 2012a. National Hydrography Dataset (NHD). Montana File. Website: <ftp://nhdftp.usgs.gov/DataSets/Staged/States/FileGDB/HighResolution/>. Accessed September 25, 2012.
- _____. 2012b. National Hydrography Dataset (NHD). Nebraska File. Website: <ftp://nhdftp.usgs.gov/DataSets/Staged/States/FileGDB/HighResolution/>. Accessed September 25, 2012.
- _____. 2012c. National Hydrography Dataset (NHD). South Dakota File. Website: <ftp://nhdftp.usgs.gov/DataSets/Staged/States/FileGDB/HighResolution/>. Accessed September 25, 2012.