FINAL ECONOMIC ANALYSIS OF CRITICAL HABITAT DESIGNATION FOR THE TOPEKA SHINER

June 2004

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EXECUTIVE SUMMARY

1. The purpose of this report is to identify and analyze the potential economic impacts associated with designation of critical habitat for the Topeka shiner *(Notropis topeka)*. This report was prepared by Industrial Economics, Incorporated, for the U.S. Fish and Wildlife Service's Division of Economics.

2. The proposed designation includes 2,462 river miles in portions of: the North Raccoon, Boone, and Rock River watersheds in Iowa; the Kansas, Big Blue, Smoky Hill, Cottonwood Rivers, and Wildcat Creek watersheds in Kansas; the Rock and Big Sioux River watersheds in Minnesota; the Bonne Femme, Moniteau, and Sugar Creek watersheds in Missouri, and the Big Sioux, Vermillion, and James River watersheds in South Dakota. In August 2002, the U.S. Fish and Wildlife Service proposed designation of critical habitat for the Topeka shiner (*Notropis topeka*) in the states of Iowa, Kansas, Minnesota, Nebraska, and South Dakota. In February 2004, the Service proposed designating four additional units in Missouri and Kansas, and an additional stream segment in South Dakota. The main body of this report addresses the impacts to the areas proposed for designation in the proposed rule and Appendix B addresses the impacts of the areas proposed for designation in the supplemental rule. This executive summary discusses the results in total.

3. Section 4(b)(2) of the Endangered Species Act (the Act) requires the Service to designate critical habitat on the basis of the best scientific data available, after taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. The Service may exclude areas from critical habitat designation when the benefits of exclusion outweigh the benefits of including the areas within critical habitat, provided the exclusion will not result in extinction of the species.

KEY FINDINGS

- The present value cost is forecast to be **$16.1 million to $37.0 million** over the next ten years (seven percent discount rate).
- Road/bridge construction/maintenance and agriculture and ranching-related activities account for 66 percent of these costs.
- The administrative cost of consultation and technical assistance efforts account for over 80 percent of the projected costs of this designation; project modifications represent the remaining 20 percent.
- Federal, State, and local agencies will bear 70 percent of the costs; private entities will incur the remaining 30 percent.
- Approximately 60 percent of the costs are expected to occur in 30 percent of the proposed designation; the highest cost units include the Raccoon River Watershed in Iowa, and the Big Sioux, Lower Big Sioux, Vermillion, Lower James, and Upper James River watersheds in South Dakota.
- About 15 percent of the total costs are expected to occur in three percent of the proposed designation, 25 percent in seven percent of the designation, and 50 percent in 22 percent of the designation; considering the expected cost per river mile, the Bonne Femme and Moniteau Creek watersheds in Missouri are the three most costly units.
- A significant economic impact on small businesses is not expected.

Framework for the Analysis

4. This analysis is consistent with the designation as described in the proposed rule. As such, this analysis does not reflect potential changes to the proposed units in the final rule. Description of the habitat designation in the final rule may consequently differ from that presented in this analysis.

5. The primary purpose of this analysis is to estimate the economic impact associated with the designation of critical habitat for the shiner. This information is intended to assist the Secretary in making decisions about whether the benefits of excluding particular areas from the designation outweigh the benefits of including those areas in the designation.[1] This economic analysis considers the economic efficiency effects that may result from the designation and addresses how the impacts of the designation are distributed, including an assessment of any local or regional economic impacts of the designation and the potential effects of the designation on small entities. This information can be used by decision-makers to assess whether the effects of the designation might unduly burden a particular group or economic sector.

6. This analysis focuses on the direct and indirect costs of the rule. However, economic impacts to land use activities exist in the absence of critical habitat. These impacts may result from, for example, local zoning laws, State and natural resource laws, and enforceable management plans and best management practices applied by other State and Federal agencies. For example, state water quality regulations provide protection to the shiner and its habitat. Economic impacts that result from these types of protections are not included in this assessment; they are considered to be part of the "baseline."

7. This analysis describes impacts that are expected to occur above and beyond the baseline. In other words, it measures the costs of compliance with the Act that would not occur in the absence of constraints on activities engendered by section 7 of the Act. In addition, where appropriate costs associated with section 9 and 10 of the Act are considered related to the designation of critical habitat.

8. The measurement of direct compliance costs focuses on the implementation of section 7 of the Act. This section requires Federal agencies to consult with the Service to ensure that any action authorized, funded, or carried out will not likely jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat. The administrative costs of these consultations, along with the costs of project modifications resulting from these consultations, represent the direct compliance costs of designating critical habitat. *Importantly, this analysis does not differentiate between consultations that result from the listing of the species (i.e., the jeopardy standard) and consultations that result from the presence of critical habitat (i.e., the adverse modification standard).*

9. The designation may, under certain circumstances, affect actions that do not have a Federal nexus or are otherwise not subject to the provisions of section 7 under the Act. For the purposes of this analysis, these impacts are defined as indirect effects. For

[1] 16 U.S.C. § 1533(b)(2).

example, although technical assistance is not a direct cost of section 7 of the Act, these costs are incorporated into the cost analysis when they are explicitly propagated by consideration of species and habitat conservation. Similarly, a State agency may request technical assistance from the Service as a precaution to ensure that activities without a Federal nexus, such as the issuance of National Pollutant Discharge Elimination System (NPDES) permits, adequately provide for particular species and habitats. In this case, costs of Service review of such activities would be included as a cost of critical habitat designation.

10. The analysis examines activities taking place both within and adjacent to the proposed designation. It estimates impacts based on activities that are "reasonably foreseeable," including, but not limited to, activities that are currently authorized, permitted, or funded, or for which proposed plans are currently available to the public. Accordingly, the analysis bases estimates on activities that are likely to occur within a ten year time frame, beginning on the day that the current proposed rule becomes available to the public. The ten-year time frame was chosen for the analysis because, as the time horizon for an economic analysis is expanded, the assumptions on which the projected numbers of projects are based become increasingly speculative. In instances where impacts are reasonable foreseeable beyond a ten year time frame, the analysis incorporates them.

11. This report relies on a sequential methodology and focuses on distilling the salient and relevant aspects of potential economic impacts. The steps followed in this analysis consist of:

- Describing current and projected economic activity within and around the proposed critical habitat area;
- Identifying whether such activities are likely to involve a Federal nexus;
- For activities with a Federal nexus, evaluating the likelihood that these activities will require consultations under section 7 of the Act and, in turn, result in any modifications to projects.
- Estimating the direct costs of expected section 7 consultations, project modifications and other economic impacts;
- Estimating the likelihood that current or future activities may require additional compliance with other Federal, State, and local laws as a result of new information provided by the proposed designation;
- Estimating the likelihood that projects will be delayed by the consultation process or other regulatory requirements triggered by the designation;
- Estimating the likelihood that economic activity and/or property values affected will be affected by regulatory uncertainty;
- Estimating the indirect costs of the designation, as reflected in the cost of compliance with State and local laws, project delays, regulatory uncertainty, including private property values;

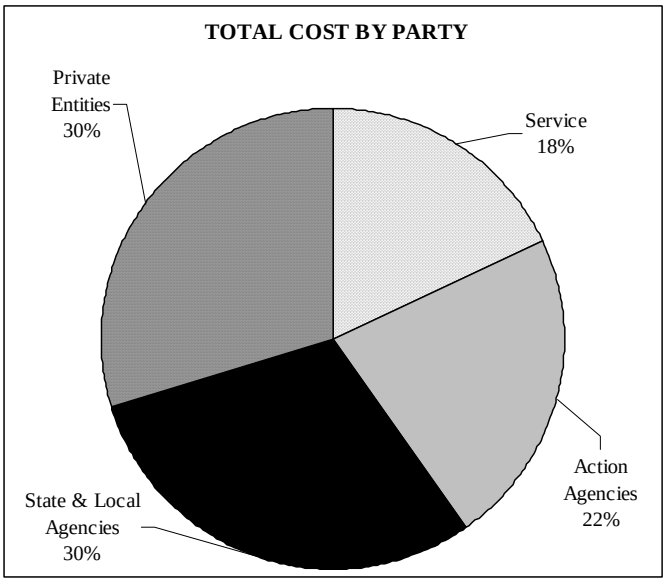
- Assessing the extent to which critical habitat designation and other co-extensive regulations will create costs for small businesses as a result of modifications or delays to projects;
- Assessing the effects of administrative costs and project modifications on the supply, distribution, and use of energy; and
- Determining the benefits that may be associated with the designation of critical habitat.

Results of the Analysis

12. The economic impacts associated with the shiner, discounted to present value using a rate of seven percent, range from $16.1 million to $37.0 million over a ten year period. The shiner critical habitat area is characterized largely by agriculture and ranching lands, suggesting that farmers and ranchers could experience costs as a result of the designation. However, it is anticipated the economic impacts to farmers and ranchers will be minimal. Consultations are expected to arise from agriculture or ranching-related activities in Minnesota, Missouri, Nebraska, and South Dakota. These consultations are not likely to result in costly additional project modifications because agricultural and ranching-related consultations primarily involve Federal assistance for conservation programs (i.e., the Conservation Reserve Program).

13. The economic impacts associated with the designation will be manifested primarily as increased operating costs for Federal, State, and local agencies in Iowa, Minnesota, Missouri, Kansas, Nebraska, and South Dakota. Federal, State, and local agencies are expected to bear 70 percent of the total costs. Whether the administrative requirements imposed by the designation will result in additional funding needs for these agencies, or reallocation of Federal, State, and local agency budgets is difficult to predict. The remaining 30 percent of costs are expected to be borne by private entities. Consultations that may involve private landowners include those related to agriculture and ranching, dam-related activities, streambank-related activities, sand and gravel mining, utility projects, recreation and conservation, and other habitat dependant activities permitted by USACE. Some of these costs, however, are expected to be borne by the Federal, State, or local agencies that fund or facilitate these projects and not the private landowners who apply for the assistance (e.g., NRCS conservation projects). Because most of the costs of this rule are borne by governmental agencies rather than private businesses or landowners, secondary impacts to the region are expected to be minimal. Exhibit ES-1 represents the distribution of costs borne by party.

Exhibit ES-1



14. While a range of activities may be affected, approximately 43 percent of the total costs are expected to stem from consultations with State and Federal agencies on road/bridge construction and maintenance projects. Of the remaining costs, 23 percent stem from agriculture and ranching-related activities and nine percent stem from technical assistance efforts, while each of the other activities account for no more than seven percent of total costs. See Exhibit ES-2 below for a comparison of costs across activities, broken down by administrative and project modification costs.

15. Costs can be expressed in terms of unit or river mile, both of these metrics are useful in determining economic impact of the designation. On a cost per unit basis the largest portion of costs are expected to occur in the Raccoon River Watershed in Iowa (13 percent). This is due primarily to the high cost of road/bridge construction and maintenance projects in the State and the large number of river miles in the watershed (186 river miles) compared to the other units in Iowa. The next five most costly units occur in South Dakota (Big Sioux River (11 percent), Lower Big Sioux River, Vermillion River, Lower James River, and Upper James River Watersheds, each accounting for nine percent of total costs). Each of the remaining units account for less than six percent of total costs. The presence of road/bridge construction and maintenance activities and agriculture and ranching-related activities in conjunction with unit size tend to drive the costs of the unit. Exhibit ES-3 below highlights the relative contributions of each unit to total costs. Exhibit ES-4 then presents, in the same order, the unit cost by river mile. Based on cost per river mile Bonne Femme Creek and Moniteau Creek in Missouri are the most costly units. Together these two units make up 12 percent of the total costs ($6.3 million) in two percent of river miles of the total designation (59 river miles). This is due to the high number of consultations in each of the units (approximately 500 consultations of about 2,800 total consultations).

Exhibit ES-2

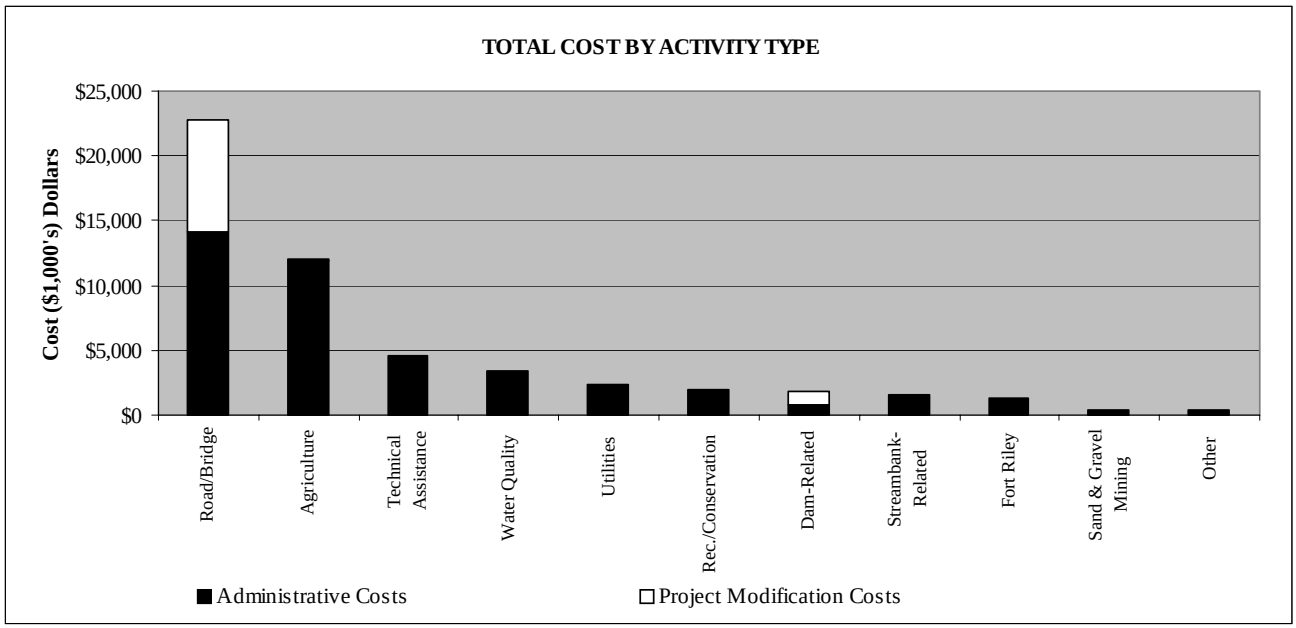


Exhibit ES-3

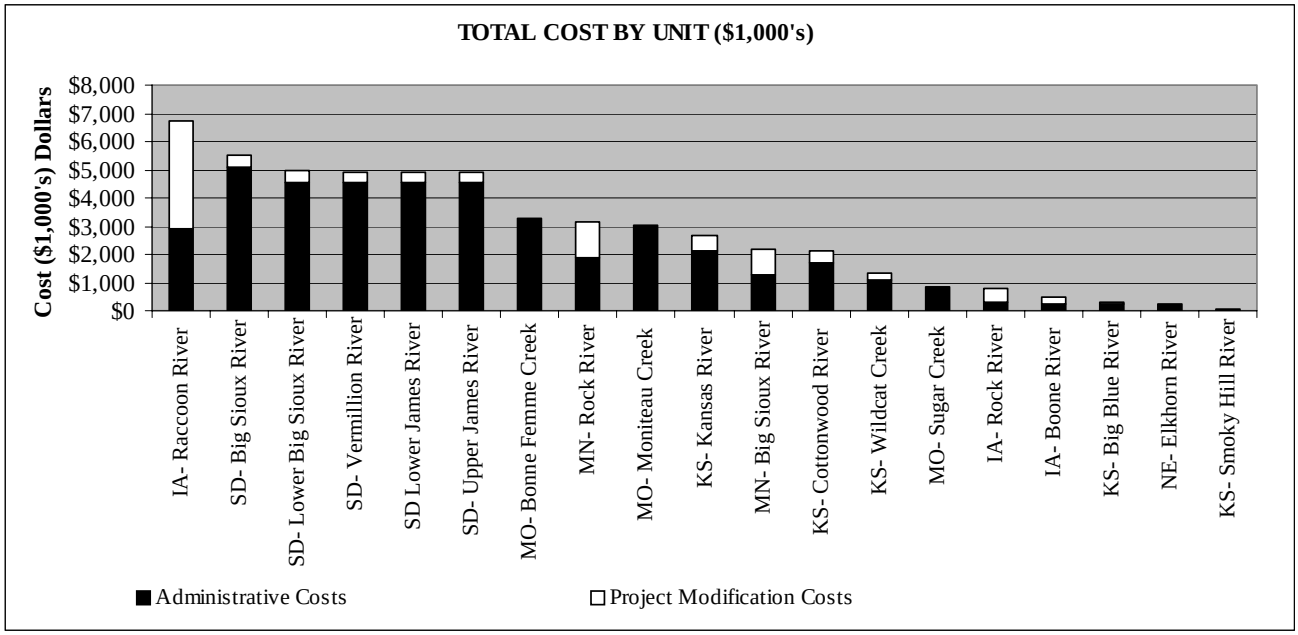
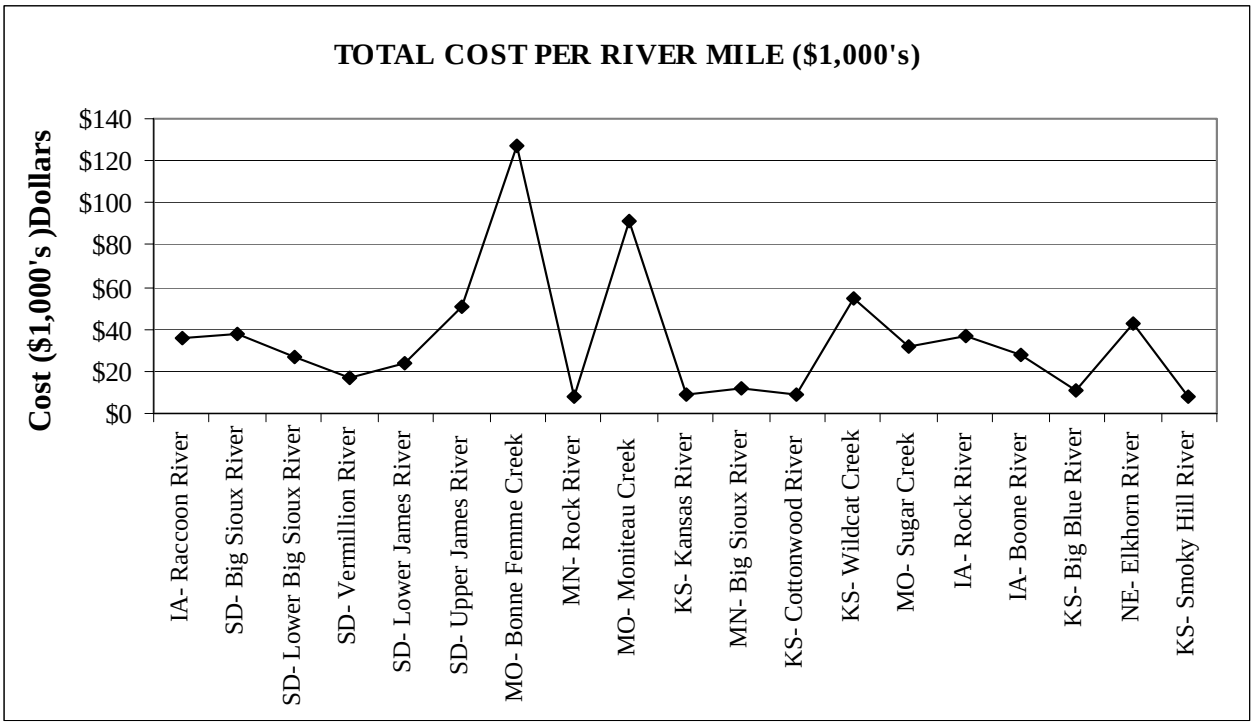


Exhibit ES-4



16. Eight percent of the river miles account for 24 percent of the total costs (in Missouri the Boone Femme Creek and Montieau Creek watersheds, in Kansas the Wildcat Creek watershed, in South Dakota the South James River watershed, and in Nebraska the Elkhorn River watershed), further 23 percent of the river miles account for 51 percent of the total costs (in addition to the watersheds identified above, in South Dakota the Big Sioux River watershed, in Iowa the Rock River and Raccoon River watersheds, and in Missouri the Sugar Creek watershed).

Summary of Costs

17. Exhibit ES-5 provides an overview of the present value of total costs over a ten year period. To discount and annualize costs, guidance provided by the Office of Management and Budget (OMB) specifies the use of a real rate of seven percent. In addition, OMB recommends sensitivity analysis using other discount rates. One commonly applied rate is three percent, which some economists believe better reflects the social rate of time preference.[2] This analysis presents results using both of these rates.

[2] U.S. Office of Management and Budget, Circular A-4, September 17, 2003.

Exhibit ES-5

TOTAL COSTS ASSOCIATED WITH THE DESIGNATION OF CRITICAL HABITAT FOR THE TOPEKA SHINER

	Total Estimated Section 7 Costs
Nominal value of total section 7 costs (ten years)	$22.9 million to $52.7 million
Present Value (7% discount rate)	$16.1 million to $37.0 million
Present Value (3% discount rate)	$19.6 million to $45.0 million
Annualized over ten years*	$2.3 million to $5.3 million

* Annualized payments are equal at 7% and 3% because costs are assumed to be distributed evenly throughout the ten year time frame.
Notes: Costs may not sum due to rounding. These estimates include all Section 7 costs, including both those associated with the listing and designation of critical habitat for the shiner.

18. Exhibit ES-6 provides a more detailed summary of the consultation and technical assistance costs likely to be associated with the designation over a ten year period (table presentation is in 2002 dollars). The costs of consultations with the USACE in South Dakota were attributed to specific watersheds based on data describing general permit activities in each area. Costs in Iowa, Minnesota, and Kansas (excluding Fort Riley Army Installation) were attributed based on the relative length of river miles designated in each watershed. Costs for Missouri, Fort Riley Army Installation, and Nebraska watersheds were attributed to units.

Exhibit ES-6

SUMMARY OF COSTS FOR THE TOPEKA SHINER (OVER TEN YEARS)

State	**Estimated Range of Cost (millions)**
Iowa- Raccoon River Watershed	$4.8 to $6.7
Iowa- Boone River Watershed	$0.3 to $0.5
Iowa- Rock River Watershed	$0.6 to $0.7
IOWA SUBTOTAL	**$5.7 to $8.0**
Minnesota- Big Sioux River Watershed	$ 1.2 to $2.2
Minnesota- Rock River Watershed	$1.8 to $3.2
MINNESOTA SUBTOTAL	**$3.04 to $5.36**
Kansas- Cottonwood River Watershed	$1.0 to $2.1
Kansas- Kansas River Watershed	$1.2 to $2.6
Kansas- Big Blue River Watershed	$0.1 to $0.3
Kansas- Smoky Hill River Watershed	Less than $0.1
Kansas- Wildcat Creek Watershed	$0.5 to $1.3
KANSAS SUBTOTAL	**$2.8 to $6.4**
Nebraska- Elkhorn River Watershed	$0.1 to $0.3
NEBRASKA SUBTOTAL	**$0.1 to $0.3**
Missouri- Bonne Femme Creek Watershed	$1.1 to $3.3
Missouri- Moniteau Creek Watershed	$1.0 to $3.0
Missouri- Sugar Creek Watershed	$0.3 to $0.9
MISSOURI SUBTOTAL	**$2.7 to $7.5**
South Dakota- Big Sioux River Watershed	$1.9 to $5.5
South Dakota- Lower Big Sioux River Watershed	$1.7 to $5.0
South Dakota- Vermillion River Watershed	$1.7 to $4.9
South Dakota- Lower James River Watershed	$1.7 to $4.9
South Dakota- Upper James River Watershed	$1.7 to $4.9
SOUTH DAKOTA SUBTOTAL	**$8.6 to $25.3**
TOTAL SECTION 7 COSTS (ALL STATES)	**$22.9 to $52.7**

Notes: These estimates include all section 7 costs, including those associated with the listing and designation of critical habitat for the shiner. Totals are rounded to three significant digits and may not sum due to rounding. Costs are reported in 2002 dollars.
A more detailed outline of these section 7 costs is provided in Appendix A and Appendix B.

Small Business Effects

19. The projects potentially affected that are expected to involve costly project modifications are expected to be undertaken by State DOTs or otherwise funded by Federal agencies (e.g., NRCS funded conservation projects). The portion of costs expected to be borne by private entities is relatively small. Because small entities are unlikely to be significantly affected by consultations that involve costly project modifications, a significant economic impact on a substantial number of small entities is not expected to result.

20. Exhibit ES-7 presents the key assumptions of this economic analysis, as well as the potential direction and relative scale of bias introduced by the assumption.

Exhibit ES-7

CAVEATS TO THE ECONOMIC ANALYSIS

Key Assumption	Effect on Cost Estimate
Historic administrative consultation costs and costs of specific project modifications are good predictors of future consultation behavior.	+/-
Consultation rates will not decrease over time.	++
The presence of other species (i.e., piping plover, etc.) has no influence on consultation/project modification costs.	+
The analysis utilizes the high-end estimate of number of potential consultations to quantify economic impacts.	+
Where location specific information is not available the total number of consultations and associated costs is estimated to be a function of the total river miles within each watershed in Iowa, Minnesota, and Kansas. In South Dakota costs are evenly distributed across watersheds.	0
All Iowa DOT projects will be subject to all potential project modifications (i.e., timing restrictions, restriction of in-stream work, building of longer bridges, restriction on replacing bridges with culverts, and finding alternatives to construction of temporary road crossings during bridge construction).	+
All South Dakota DOT projects will be subject to surveys to determine presence of the shiner.	+
Action agency Best Management Practices are baseline protections that do not introduce additional costs.	+/-
Activities for which sufficient information was not available to predict future consultations (e.g., DOT streambank stabilization and NRCS impoundment projects in South Dakota) will not result in any costs over the next ten years.	-

- : This assumption may result in an underestimate of real costs.
+ : This assumption may result in an overestimate of real costs.
+/- : This assumption has an unknown effect on estimates.
0: This assumption does not change the total estimated cost within a State, but may distort the distribution of costs across watersheds within that State.

21. The proposed designation includes 2,462 river miles in portions of: the North Raccoon, Boone, and Rock River watersheds in Iowa; the Kansas, Big Blue, Smoky Hill, Cottonwood Rivers, and Wildcat Creek watersheds in Kansas; the Rock and Big Sioux River watersheds in Minnesota; the Bonne Femme, Moniteau, and Sugar Creek watersheds in Missouri, and the Big Sioux, Vermillion, and James River watersheds in South Dakota. In August 2002, the U.S. Fish and Wildlife Service proposed designation of critical habitat for the Topeka shiner (*Notropis topeka*) in the states of Iowa, Kansas, Minnesota, Nebraska, and South Dakota. In February 2004, the Service proposed designating four additional units in Missouri and Kansas, and an additional stream segment in South Dakota. The purpose of this report is to identify and analyze potential economic impacts that could result from the proposed critical habitat designation. This report was prepared by Industrial Economics, Incorporated (IEc), under contract to the Service's Division of Economics.

22. The main body of this report addresses the impacts to the areas proposed for designation in the August 2002 proposed rule and Appendix B addresses the impacts of the areas proposed for designation in the February 2004 supplemental rule.

23. Section 4(b)(2) of the Endangered Species Act (the Act) requires that the Service base the designation of critical habitat upon the best scientific and commercial data available, after taking into consideration the economic impact, and any other relevant impact, of specifying any particular area as critical habitat. The Service may exclude areas from critical habitat designation when the benefits of exclusion outweigh the benefits of including the areas as critical habitat, provided the exclusion will not result in extinction of the species.

1.1 Description of Species and Habitat[3]

24. The Topeka shiner (hereafter "the shiner") is a small, stout minnow, not exceeding 75 millimeters (3 inches) in total length. It is one of 83 species in the genus *Notropis* within the minnow family. The shiner habitat is characterized by small to mid-size prairie streams

[3] Information on the shiner and its habitat is taken from the U.S. Fish and Wildlife Service, *Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Topeka Shiner; Proposed Rule*, 50 CFR Part 17, August 2002.

with relatively high water quality and cool to moderate temperatures. The predominant substrate types within these streams are gravel, cobble, and sand, and occasionally a bedrock and clay hardpan overlain by a layer of silt. Shiners most often occur in pool and run areas of streams, and are seldom found in riffles. They are most often pelagic (living in open water) in nature, occurring in mid-water and surface areas and are primarily considered a schooling fish. Shiners are short-lived species, rarely surviving to their third summer. The species typically matures at 12 to 14 months of age. They are multiple-clutch spawners that spawn from late May to August in Kansas and Missouri. They are benthic and nektonic feeders, relying primarily on midges (chironomids), true flies (dipterans), and mayflies (ephemeropterans), zooplankton (cladocerans and copepods), minnow eggs, immature aquatic insects, larval fish, and algal and vascular plant matter, including seed capsules.

25. Historically, the shiner was widespread and abundant throughout small to mid-size streams of the central prairie regions of the United States. This historic range includes portions of Iowa, Kansas, Minnesota, Missouri, Nebraska, and South Dakota. Available suitable habitat for the shiner however, has been substantially reduced. The shiner now primarily exists in isolated population complexes (adjoining stream segments) and individual isolated stream reaches. The species is impacted by habitat destruction, degradation, modification, introduced predaceous fishes, and fragmentation resulting from siltation, reduced water quality, tributary impoundment, stream channelization, in-stream gravel mining, and changes in stream hydrology.

26. In determining which areas to propose as critical habitat, the Service must consider those physical and biological features that are essential to the conservation of the species. The following are the primary constituent elements that the Service has identified as critical to the conservation of the shiner:

- Streams most often with permanent flow, but that can become intermittent during dry periods.

- Side channel pools and oxbows either seasonally connected to a stream or maintained by groundwater inputs, at a surface elevation equal to or lower than the bank-full discharge stream elevation.

- Streams and side channel pools with water quality necessary for unimpaired behavior, growth, and viability of all life stages. The water quality components can vary seasonally and include – temperature (1 to 30° Centigrade), total suspended solids (0 to 2000 parts per million (ppm)), conductivity (100 to 800 mhos), dissolved oxygen (four ppm or greater), pH (7.0 to 9.0), and other chemical characteristics.

- Living and spawning areas for adult shiners with pools or runs with water velocities less than 0.5 meters/second (approximately 20 inches/second) and depths ranging from 0.1 to 2.0 meters (approximately four to 80 inches).

- Living areas for juvenile shiners with water velocities less than 0.5 meters/second (approximately 20 inches/second) with depths less than 0.25 meters (approximately ten inches) and moderate amounts of in stream aquatic

cover, such as woody debris, overhanging terrestrial vegetation, and aquatic plants.

- Sand, gravel, cobble, and silt substrates with amounts of fine sediment and substrate embeddedness that allows for nest building and maintenance of nests and eggs by native Lepomis sunfishes (green sunfish, orange spotted sunfish, longear sunfish) and shiner as necessary for reproduction, unimpaired behavior, growth, and viability of all life stages.

- An adequate terrestrial, semiaquatic, and aquatic invertebrate food base that allows for unimpaired growth, reproduction, and survival of all life stages.

- A hydrologic regime capable of forming, maintaining, or restoring the flow periodicity, channel morphology, fish community composition, off-channel habitats, and habitat components described in the other primary constituent elements.

- Few or no nonnative predatory or competitive species present.

The Service considers these primary constituent elements to facilitate delineation of potential critical habitat for the shiner. One or more of the primary constituent elements must exist in the proposed areas to ensure that there is potential for the species to exist within each portion of the designation.

1.2 Proposed Critical Habitat

27. The proposed designation includes 2,462 river miles in portions of: the North Raccoon, Boone, and Rock River watersheds in Iowa; the Kansas, Big Blue, Smoky Hill, Cottonwood Rivers, and Wildcat Creek watersheds in Kansas; the Rock and Big Sioux River watersheds in Minnesota; the Bonne Femme, Moniteau, and Sugar Creek watersheds in Missouri, and the Big Sioux, Vermillion, and James River watersheds in South Dakota. In August 2002, the U.S. Fish and Wildlife Service proposed designation of critical habitat for the Topeka shiner (*Notropis topeka*) in the states of Iowa, Kansas, Minnesota, Nebraska, and South Dakota. In February 2004, the Service proposed designating four additional units in Missouri and Kansas, and an additional stream segment in South Dakota. The units proposed in the February 2004 supplemental rule are addressed in Appendix B.

28. In the August 2002 proposed rule the Service proposed critical habitat designation for the shiner on 186 stream segments, representing 2,340 miles of stream in the States of Iowa, Minnesota, Kansas, Nebraska, and South Dakota. The proposed designation includes portions of the following watersheds: the North Raccoon, Boone, and Rock River watersheds in Iowa; the Kansas, Big Blue, Smoky Hill, and Cottonwood River watersheds in Kansas; the Rock and Big Sioux River watersheds in Minnesota; and the Big Sioux, Vermillion, and James River watersheds in South Dakota. Lands proposed as critical habitat are under Federal, State, local government, and private ownership; however, approximately 2,293 miles, or 98 percent of the proposed critical habitat is located on private lands.

29. A more detailed description of each watershed unit is provided in Exhibit 1-1.

Exhibit 1-1
Topeka Shiner Proposed Critical Habitat
Watershed Units

State (counties)	Watershed	Description of Habitat
Iowa (Calhoun; Carroll; Dallas; Greene; Sac; and Webster)	Raccoon River Watershed (19 stream segments)	• Some habitat is altered (channelization and sedimentation) but provides most or all of the primary constituent elements. • Habitat includes off-channel pool habitats adjacent to the main stem of the North Raccoon River. • The main stem North Raccoon River likely provides an important dispersal corridor between tributary streams and off-channel pools adjacent to the main stem, particularly during high flow events.
Iowa (Hamilton; Wright)	Boone River (Eagle Creek, 1 segment; Ditch 3 and Ditch 19 Complex, 2 segments)	• Eagle Creek - The lower reaches retain much of creek's natural stream morphology. The upper basin (not proposed) severely altered by stream channelization and drainage ditch construction. • Ditch 3 - Habitat lies from confluence with Boone River upstream to the Humboldt County line. • Ditch 19 - Habitat lies from confluence with Ditch 3 to the Humboldt County line. • Ditch 3 and Ditch 19 have reestablished much of their natural morphology and in-stream habitat conditions. Upstream habitat (not proposed) is highly modified by channelization.
Iowa (Lyon; Osceola)	Rock River (Rock River Complex, 2 segments; Little Rock River Complex, 1 segment)	• Rock River - Habitat lies from Rock River confluence with Kanaranzi Creek upstream to border with Minnesota and along the Kanaranzi Creek from its confluence with Rock River upstream to the Minnesota border. • Little Rock River - Habitat lies from the near town of Little Rock upstream to the Minnesota border.
Minnesota (Lincoln; Pipestone; Rock)	Big Sioux (Medary Creek Complex, 2 segments; Flandreau Creek Complex, 4 segments; Split Rock/Pipestone/Beaver Creek Complex, 18 segments)	• Medary Creek - Habitat includes Medary Creek and unnamed tributary. • Flandreau Creek - Habitat includes Flandreau Creek and an unnamed tributary, the East Branch Flandreau Creek, and Willow Creek. • Split Rock/Pipestone/Beaver Creek - Some habitat is altered (channelization and sedimentation) but habitat provides most or all of the primary constituent elements.
Minnesota (Murray; Nobles; Pipestone; Rock)	Rock River (Rock River Complex, 28 stream segments; Little Rock River Complex, 2 segments; Mud Creek Complex, 3 segments)	• Rock River - Many streams are impacted by channelization and sedimentation. Habitat is characterized by predominantly natural morphology, in-stream pools, and a number of off-channel and oxbow pools. • Little Rock River - Habitat includes adjacent off-channel pools and oxbows from Minnesota/Iowa border upstream to near Rushmore, Minnesota. • Mud Creek - Habitat includes two unnamed tributaries and adjacent off-channel pool habitat.

Exhibit 1-1
Topeka Shiner Proposed Critical Habitat
Watershed Units

State (counties)	Watershed	Description of Habitat
Kansas (Chase; Morris; Butler; Greenwood, Marion)	Cottonwood River (Fox Creek Complex, 3 segments; Diamond Creek Complex, 8 segments; Middle Creek Complex, 3 segments; South Fork Cottonwood River Complex, 15 segments; Mud Creek, 1 segment)	• Fox Creek - This is a high-quality aquatic habitat and includes portions of the Tallgrass Prairie Preserve. • Diamond Creek - This is a high-quality aquatic habitat draining large tracts of tallgrass prairie. The upstream portion of the basin has been largely converted to rowcropping, with a subsequent decline in aquatic habitat. • Middle Creek - This is high-quality aquatic habitat draining large tracts of tallgrass prairie. Portions of western sub-basins have been converted to rowcropping. Several tributary streams have intensive dam construction, resulting in major changes to habitat and fish communities. • South Fork Cottonwood River - Habitat is of high-quality draining large tracts of tallgrass prairie. Several tributaries have been dammed. • Mud Creek - Habitat is a mosaic of prairie and cropland.
Kansas (Wabaunsee; Shawnee; Riley; Geary; Dickinson)	Kansas River (Mill Creek Complex, 14 segments; Mission Creek, 1 segment; Deep Creek Complex, 2 segments; Wildcat Creek Complex, 2 segments; Clarks Creek Complex, 5 segments; Lyon Creek Complex, 5 segments; Walnut Creek, 1 segment)	• Mill Creek - This is high-quality aquatic habitat draining large tracts of tallgrass prairie. Much of the main stem flood plain of Mill Creek and several tributaries has been converted to cropland, likely in combination with intensive in-stream gravel dredging. This results in headcutting, bank erosion, loss of riparian vegetation. Moderate tributary dam development exists in habitat along with over-wintering of cattle in riparian and in-stream areas. • Mission Creek - This is good aquatic habitat draining tallgrass prairie uplands and a cultivated flood plain. • Deep Creek - Habitat is high-quality draining tallgrass prairie uplands and a partially cultivated flood plain. Upstream reaches are subject to intensive in-stream gravel mining resulting in severe stream bank erosion and headcutting. • Wildcat Creek - Habitat drains cultivated cropland, tallgrass prairie uplands, and woodlands. The lower portion of the downstream reach drains suburban Manhattan, KS. Habitat has been moderately impacted by sediment and nutrient inputs from upstream sources. • Clarks Creek - This is good aquatic habitat draining tallgrass prairie uplands and a partially cultivated flood plain. Reaches involve in-stream gravel mining. • Lyon Creek - Habitat drains prairie uplands and croplands. Some reaches have been degraded by heavy sediment and nutrient loading. Several sub-drainages are subject to watershed impoundments and ponds. • Walnut Creek - This is good quality aquatic habitat. At times the reach has limited downstream refugia due to a backup of floodwaters from Tuttle Creek Reservoir.
Kansas (Marshall; Pottawatomie)	Big Blue River (Clear Fork Creek, 1 segment; North Elm Creek, 1 segment)	• Clear Fork - This is good aquatic habitat draining primarily tallgrass prairie uplands and a partially cultivated flood plain. A stable population of shiners exists within the mid-to upper reaches. • North Elm - Habitat is moderately degraded due to heavy sediment loading and is primarily cropland.
Kansas (Wallace)	Smoky Hill River (Willow Creek, 1 segment)	• Habitat consists of a series of spring-fed pools of good water quality. The watershed is drained by shortgrass prairie and areas of dryland and irrigated cropping. Beneficial land stewardship programs exist on property surrounding permanent pools.

Exhibit 1-1
Topeka Shiner Proposed Critical Habitat
Watershed Units

State (counties)	Watershed	Description of Habitat
Nebraska (Madison)	Elkhorn River (Taylor Creek, 1 segment)	• The creek is somewhat modified in portions of its watershed but retains several of the primary constituent elements necessary for designation.
South Dakota (Deuel; Hamlin; Brookings)	Big Sioux River (Hidewood Creek, 1 segment; Peg Munky Run, 1 segment; Sixmile Creek Complex, 2 segments; Medary Creek Complex, 3 segments)	• Hidewood Creek - Habitat lies from confluence with Big Sioux River upstream to State Highway 15 and an adjacent off-channel pool. • Peg Munky Run - Habitat lies from State Highway 28, upstream to near Interstate Highway 29, including adjacent off-channel pool habitat. The downstream reach of the stream provides a possible dispersal corridor but is highly channelized and does not have the primary constituent elements necessary for designation. • Sixmile Creek - The habitat lies near confluence with the Big Sioux River, upstream of White, SD, and includes adjacent off-channel pool habitat. • Medary Creek - Habitat lies from the confluence with the Big Sioux River, upstream to the SD/MN border, and includes portions of Deer Creek, an unnamed tributary, and an adjacent off-channel pool habitat.
South Dakota (Brookings; Moody; Minnehaha)	Lower Big Sioux River (Spring Creek, 1 segment; Flandreau Creek Complex, 1 segment; Brookfield Creek, 1 segment; Slip-up Creek, 1 segment; Split Rock/Pipestone/Beaver Creek Complex, 7 segments)	• Spring Creek - Habitat lies from the confluence with the Big Sioux River, upstream to the SD/MN border, and includes adjacent off-channel pool habitat. • Flandreau Creek - The creek is likely a dispersal corridor and could be used as refugia for the species during long periods of drought. The proposed designation lies from the confluence with Big Sioux River upstream to the SD/MN border. • Brookfield Creek - The habitat includes runs upstream from confluence with the Big Sioux River and includes adjacent off-channel pool habitat. • Slip-up Creek - The habitat lies from the confluence with the Big Sioux River upstream, and includes adjacent off-channel pool habitat. • Split Rock/Pipestone/Beaver Creek - Some habitat in tributary streams is altered by channelization and sedimentation, but current habitat conditions provide most or all of the primary constituent elements. Habitat lies on Split Rock Creek and an unnamed tributary; Pipestone Creek and unnamed tributary; West Pipestone Creek; Beaver Creek; Fourmile Creek; and adjacent off-channel pool habitat.
South Dakota (Clay; Lincoln; McCook; Miner; Turner)	Vermillion River (Vermillion River Complex, 9 segments)	• Habitat includes long reaches of Vermillion River main stem and West Fork Vermillion River. Some habitat is altered by channelization and sedimentation, but current habitat conditions provide most or all of the primary constituent elements. The shiner likely uses main stem reaches as dispersal corridors and refugia during periods of drought. Habitat designation is proposed for the Vermillion River; West Fork Vermillion River; East Fork Vermillion River; Silver Lake Creek; Camp Creek; Turkey Ridge Creek; Long Creek; Saddle Creek; and Blind Creek.

Exhibit 1-1
Topeka Shiner Proposed Critical Habitat
Watershed Units

State (counties)	Watershed	Description of Habitat
South Dakota (Hutchinson; Davison; Hanson; Miner; Aurora)	Lower James River (Lonetree Creek Complex, 2 segments; Dry Creek Complex, 2 segments; Wolf Creek, 1 segment; Twelve-mile Creek, 1 segment; Enemy Creek, 1 segment; Rock Creek, 1 segment; Firesteel Creek Complex, 12 segments)	• Lonetree Creek - Habitat lies upstream of the confluence with the James River, and the South Branch Lonetree Creek. • Dry Creek - Habitat is proposed upstream of its confluence with the James River and North Branch Dry Creek. • Wolf Creek - This is moderate quality aquatic habitat draining mostly grassy flood plain and primarily cultivated uplands. Habitat includes runs upstream from confluence with the James river. • Twelve-mile Creek - This is moderate quality aquatic habitat draining a mostly grassy flood plain and primarily cultivated uplands. Habitat includes upstream runs from the confluence with the James River. • Enemy Creek - This is moderate quality aquatic habitat draining mostly grassy flood plain and primarily cultivated uplands. Habitat includes runs upstream from confluence with the James River. • Rock Creek - This is moderate quality aquatic habitat draining mostly grassy flood plain and primarily cultivated uplands. Habitat includes runs upstream from confluence with the James River. • Firesteel Creek - Habitat lies from near the headwaters of Lake Mitchell upstream to the confluence with West Branch Firesteel Creek, and West Branch Firesteel upstream to near Wilmarth Lake.
South Dakota (Beadle)	Upper James River Watershed (Pearl Creek Complex, 2 segments; Shue Creek, 1 segment)	• Pearl Creek - This is good quality aquatic habitat draining a grassy flood plain and primarily cultivated uplands. A healthy and stable shiner population exists in the area. Habitat includes Pearl Creek from the confluence with the James River upstream past its confluence with Middle Pearl Creek, and a reach of Middle Pearl Creek upstream from its confluence with Pearl Creek. • Shue Creek - This is good quality aquatic habitat draining a grassy flood plain and primarily cultivated uplands. Habitat includes the reach from Shue Creek's confluence with the James River upstream to Staum Dam.

Source: U.S. Fish and Wildlife Service, *Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Topeka Shiner; Proposed Rule*, 50 CFR Part 17, August 2002

1.3 Framework and Methodology

30. The primary purpose of this analysis is to estimate the economic impact associated with the designation of critical habitat for the shiner. This information is intended to assist the Secretary in making decisions about whether the benefits of excluding particular areas from the designation outweigh the benefits of including those areas in the designation.[4] In addition, this information allows the Service to address the requirements of Executive Orders 12866 and 13211 and the Regulatory Flexibility Act (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA).[5]

31. This chapter provides the framework for this analysis. First, it defines the economic effects considered in the analysis. Second, it establishes the baseline against which these effects are measured. Third, it describes the measurement of direct compliance costs, which include costs associated with, and generated as a result of, section 7 consultations. Fourth, it identifies potential indirect economic effects of the rule resulting from (1) compliance with other parts of the Act potentially triggered by critical habitat, (2) compliance with other laws, and (3) time delays and regulatory uncertainty. Fifth, it discusses the need for an economic assessment of the benefits of critical habitat designation. Finally, the section concludes by discussing the time frame for the analysis and the general steps followed in the analysis.

1.3.1 Types of Economic Effects Considered

32. This economic analysis considers both economic efficiency and distributional effects. In the case of critical habitat designation, economic efficiency effects generally reflect the "opportunity costs" associated with the commitment of resources required to comply with the Act. For example, if the activities that can take place on a parcel of private land are limited as a result of a designation, and thus the market value of the land reduced, this reduction in value represents one measure of opportunity cost or change in economic efficiency. Similarly, the costs incurred by a Federal action agency to consult with the Service under section 7 represent opportunity costs of the designation.

33. This analysis also addresses how the impacts are distributed, including an assessment of any local or regional economic impacts and the potential effects on small entities and the energy industry. This information can be used by decision-makers to assess whether the effects of the designation might unduly burden a particular group or economic sector.

34. For example, while the designation may have a relatively small impact when measured in terms of changes in economic efficiency, individuals employed in a particular sector of the economy in the geographic area of the designation may experience relatively greater effects. The difference between economic efficiency effects and distributional effects, as well as their application in this analysis, are discussed in greater detail below.

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[4] 16 U.S.C. § 1533(b)(2).

[5] Executive Order 12866, "Regulatory Planning and Review," September 30, 1993; Executive Order 13211, "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use," May 18, 2001; 5 U.S.C. §§ 601 *et seq*; and Pub Law No. 104-121; and 2 U.S.C. §§658-658g and 1501-1571.

Efficiency Effects

35. At the guidance of the Office of Management and Budget (OMB) and in compliance with Executive Order 12866 "Regulatory Planning and Review," Federal agencies measure changes in economic efficiency in order to understand how society, as a whole, will be affected by a regulatory action.[6] In the context of this regulatory action, these efficiency effects represent the opportunity cost of resources used or benefits foregone by society as a result of critical habitat designation and other co-extensive regulations.[7] Economists generally characterize opportunity costs in terms of changes in producer and consumer surpluses in affected markets.[8]

36. In some instances, compliance costs may provide a reasonable approximation for the efficiency effects associated with a regulatory action. For example, a landowner or manager may need to enter into a consultation with the Service to ensure that a particular activity will not adversely modify critical habitat. The effort required for the consultation represents an economic opportunity cost, because the landowner or manager's time and effort would have been spent in an alternative activity had the parcel not been included in the designation. When compliance activity is not expected to significantly affect markets -- that is, not result in a shift in the quantity of a good or service provided at a given price, or in the quantity of a good or service demanded given a change in price -- the measurement of compliance costs can provide a reasonable estimate of the change in economic efficiency.

37. Where a designation is expected to significantly impact a market, it may be necessary to estimate changes in producer and consumer surpluses. For example, a designation that precludes the development of large areas of land may shift the price and quantity of housing supplied in a region. In this case, changes in economic efficiency can be measured by considering changes in producer and consumer surplus in the real estate market.

38. This analysis begins by measuring reasonably foreseeable compliance costs. As noted above, in some cases, compliance costs can provide a reasonable estimate of changes in economic efficiency. However, if the designation is expected to significantly impact markets, the analysis will consider potential changes in consumer and/or producer surplus in affected markets.

Distributional and Regional Economic Effects

39. Measurements of changes in economic efficiency focus on the net impact of the regulation, without consideration for how certain economic sectors or groups of people are

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[6] Executive Order 12866, "Circular A-4," September 17, 2003.

[7] The term "co-extensive" is discussed in greater detail in Section 1.3.3.

[8] For additional information on the definition of "surplus" and an explanation of consumer and producer surplus in the context of regulatory analysis, see Gramlich, Edward M., *A Guide to Benefit-Cost Analysis (2nd Ed.)*, Prospect Heights, Illinois: Waveland Press, Inc., 1990; and U.S. Environmental Protection Agency, *Guidelines for Preparing Economic Analyses*, EPA 240-R-00-003, September 2000, available at http://yosemite.epa.gov/ee/epa/eed.nsf/webpages/Guidelines.html.

affected. Thus, a discussion of efficiency effects alone may miss important distributional considerations concerning groups that may be disproportionately affected. OMB encourages Federal agencies to consider distributional effects separately from efficiency effects.[9] This analysis considers several types of distributional effects, including impacts on small entities and regional economic impacts. It is important to note that these are fundamentally different measures of economic impact than efficiency effects, and thus cannot be added to or compared with estimates of changes in economic efficiency.

Impacts on Small Entities

40. This analysis considers how small entities, including small businesses, organizations, and governments, as defined by the RFA, might be affected by critical habitat designation and other co-extensive regulations.[10]

Regional Economic Effects

41. Regional economic impact analysis provides an assessment of the potential localized effects. Specifically, regional economic impact analysis produces a quantitative estimate of the potential magnitude of the initial change in the regional economy resulting from a regulatory action. Regional economic impacts are commonly measured using regional input/output models. These models rely on multipliers that mathematically represent the relationship between a change in one sector of the economy (e.g., hydroelectric power generation) and the effect of that change on economic output, income, or employment in other local industries (e.g., manufacturers relying on the electricity generated). These economic data provide a quantitative estimate of the magnitude of shifts of jobs and revenues in the local economy.

42. The use of regional input/output models can overstate the long-term impacts of a regulatory change. Most importantly, these models provide a static view of the economy of a region. That is, they measure the initial impact of a regulatory change on an economy but do not consider long-term adjustments that the economy will make in response to this change. For example, these models provide estimates of the number of jobs lost as a result of a regulatory change, but do not consider re-employment of these individuals over time. In addition, the flow of goods and services across the regional boundaries defined in the model may change as a result of the designation, compensating for a potential decrease in economic activity within the region.

43. Despite these and other limitations, in certain circumstances regional economic impact analysis may provide useful information about the scale and scope of localized impacts. It is important to remember that measures of regional economic effects generally reflect shifts in resource use rather than efficiency losses. These types of distributional effects, therefore, should be reported separately from efficiency effects (i.e., not summed). In addition, measures of regional economic impact cannot be compared with estimates of efficiency effects.

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[9] U.S. Office of Management and Budget, Circular A-4, September 17, 2003.

[10] 5 U.S.C. § 601 *et seq.*

1.3.2 Defining the Baseline

44. The purpose of this analysis is to measure the economic impact of compliance with the protections derived from the designation of critical habitat, including habitat protections that may be co-extensive with the listing of the species. Economic impacts to land use activities may exist in the absence of co-extensive protections. These impacts may result from, for example:

- Local zoning laws;
- State natural resource laws; and
- Enforceable management plans and best management practices applied by other State and Federal agencies.

Economic impacts that result from these types of protections are not included in this assessment; they are considered to be part of the "baseline." Existing laws, regulations, and policies are described in greater detail Section 2 of this analysis.

1.3.3 Direct Compliance Costs Associated With Section 7 of the Act

45. The measurement of direct compliance costs focuses on the implementation of section 7 of the Act. This section requires Federal agencies to consult with the Service to ensure that any action authorized, funded, or carried out will not likely jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat. The administrative costs of these consultations, along with the costs of project modifications resulting from these consultations, represent the direct compliance costs.

46. This analysis does not differentiate between consultations that result from the listing of the species (i.e., the jeopardy standard) and consultations that result from the presence of critical habitat (i.e., the adverse modification standard). Consultations resulting from the listing of the species, or project modifications meant specifically to protect to the species as opposed to its habitat, may occur even in the absence of critical habitat. However, in 2001, the U.S. 10th Circuit Court of Appeals instructed the Service to conduct a full analysis of all of the economic impacts of critical habitat designation, regardless of whether those impacts are attributable co-extensively to other causes.[11] Given the similarity in regulatory definitions between the terms "jeopardy" and "adverse modification," in practice it can be difficult to pre-determine the standard that drives a section 7 consultation. Consequently, in an effort to ensure that this economic analysis complies with the instructions of the 10th Circuit as well as to ensure that no costs of the proposed designation are omitted, the potential effects associated with <u>all</u> section 7 impacts in or near proposed critical habitat are fully considered. In doing so, the analysis ensures that any critical habitat impacts that are co-extensive with the listing of the species are not overlooked.

[11] *New Mexico Cattle Growers Ass'n v. U.S.F.W.S.*, 248 F.3d 1277 (10th Cir. 2001).

1.3.4 Indirect Costs

47. A designation may, under certain circumstances, affect actions that do not have a Federal nexus or otherwise are not subject to the provisions of section 7 under the Act. The potential exists for several types of such indirect effects: two examples are discussed in this section. First, some landowners may voluntarily elect to complete a habitat conservation plan (HCP) in response to having their land designated as critical habitat. Second, the consultation process may result in time delays for upcoming or ongoing projects, and the designation may foster regulatory uncertainty for prospective projects. The two most common categories of indirect effects are discussed further below.

Creation of Habitat Conservation Plans (HCPs)

48. One management plan which is expected to be a precursor to an HCP for the State of South Dakota is anticipated within the boundaries of this proposed designation. Therefore, HCP-related costs are an issue in this analysis.

49. Under section 10(a)(1)(B) of the Act, a non-Federal entity (i.e., a landowner or local government) may develop an HCP for an endangered animal species in order to meet the conditions for issuance of an incidental take permit in connection with the development and management of a property.[12] The HCP intends to counterbalance potential harmful effects that a proposed activity may have on a species, while allowing the otherwise lawful activity to proceed. As such, the purpose of the habitat conservation planning process is to ensure that the effects of incidental take are adequately minimized and mitigated. Thus, HCPs are developed to ensure compliance with section 9 of the Act and to meet the requirements of section 10 of the Act.

50. However, a connection may exist between the creation of HCPs and the costs these plans impose and the designation of critical habitat. The Service, being a Federal entity, must formally consider whether an HCP will jeopardize a listed species or adversely modify its designated critical habitat before approving the plan. This review process may be a direct impact under section 7 of the Act. However, in certain circumstances, the effort involved in creating the HCP and associated conservation actions may also generate indirect effects associated with the designation of critical habitat. For example, in one past instance, landowners preemptively developed HCPs in an effort to avoid having their property designated as critical habitat.[13] In this case, the effort involved in creating the HCP and undertaking associated conservation actions were considered to be an effect of designation.

51. The following scenarios regarding HCP creation provide general guidance regarding the degree to which associated costs should be considered within the context of a critical habitat economic analysis:

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[12] U.S. Fish and Wildlife Service, "Endangered Species and Habitat Conservation Planning." From: http://endangered.fws.gov/hcp/, as viewed on August 6, 2002. Sections 9 and 10 of the Act do not apply to plants.

[13] See Industrial Economics, Incorporated, *Economic Analysis of Critical Habitat Designation for the Nine Bexar County Texas Invertebrate Species*, prepared for the U.S. Fish and Wildlife Service, March 3, 2003.

- In cases in which an HCP existed prior to a proposed designation, the costs of developing the HCP and the added costs of management imposed by the HCP should not be considered in the analysis of the effects of the designation. These costs are appropriately considered to be part of the regulatory baseline, because their creation was driven by the listing of the species and the need to avoid take, which is prohibited under section 9 of the Act. However, in cases where designated critical habitat overlaps with completed HCPs, the economic analysis will need to consider the cost to the Service to re-consult on the plan's impact to critical habitat and whether or not this process may result in additional conservation actions.

- In cases in which an HCP is proposed, or reasonably foreseeable absent the designation of critical habitat, the administrative costs associated with the required internal section 7 consultation should be included in the economic analysis of total section 7 costs, because the Service will need to consider the effects of the plan on designated critical habitat. In addition, if as a result of the designation additional project modifications will be recommended by the Service and incorporated into the HCP in order to avoid adversely modifying critical habitat, the costs of these project modifications should also be included in the economic analysis of critical habitat.[14]

- In cases in which development of one or more HCPs can be documented as being precipitated by critical habitat designation (i.e., to avoid designation or to reduce the costs of the designation), the costs of development of the HCP and the added costs of management imposed by the HCP should be included in the critical habitat economic analysis. In such cases the analysis should be presented with appropriate caveats as to the uncertainty regarding the extent to which the HCP would have existed absent critical habitat designation.

As previously stated, one management plan which is expected to be a precursor to an HPC is anticipated no HCPs are anticipated within the boundaries of this proposed designation.

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[14] Project modification costs associated with the jeopardy standard are not considered for the following reason. Section 10(a)(2)(B) of the Act requires that for the issuance of an incidental take permit, the HCP must assure that "the taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild." According to the Service's *Habitat Conservation Planning and Incidental Take Permit Processing Handbook*, "the wording of this criterion is identical to the "jeopardy" definition under the section 7 regulations (50 CFR Part 402.02)...Congress was explicit about this link, stating in the Conference Report on the 1982 ESA amendments that the Services will determine whether or not to grant a permit, "in part, by using the same standard as found in section 7(a)(2) of the ESA, as defined by the [Services'] regulations.'" (U.S. Department of the Interior and U.S. Department of Commerce, *Habitat Conservation Planning and Incidental Take Permit Processing Handbook*, November 4, 1996). As a result, during the HCP process, actions undertaken to meet the jeopardy provision of section 7 are also required under section 10 of the Act. Therefore, in circumstances where an HCP is reasonably foreseeable absent the designation of critical habitat, these actions are considered to be part of the baseline of this economic analysis.

Time Delays and Regulatory Uncertainty

52. In addition to the indirect effects of compliance with other laws triggered by the designation, project proponents, land managers and landowners may face additional indirect impacts. These can include costs due to project delays associated with the consultation process or compliance with other regulations, or, in the case of land location within or adjacent to the designation, loss in property values due to regulatory uncertainty, and loss (or gain) in property values resulting from public perceptions regarding the effects of critical habitat. These categories of potential effects are described in greater detail below.

Time Delays

53. Both public and private entities may experience incremental time delays for projects and other activities due to requirements associated with the section 7 consultation process and/or compliance with other laws triggered by the designation. The need to conduct a section 7 consultation will not necessarily delay a project, as often the consultation may be coordinated with the existing baseline regulatory approval process. However, depending on the schedule of the consultation, a project may experience additional delays, resulting in an unanticipated extension in the time needed to fully realize returns from the planned activity. To the extent that delays result from the designation, they are considered in the analysis. Specifically, the analysis considers costs associated with any incremental time delays associated with section 7 consultation or other requirements triggered by the designation above and beyond project delays resulting from baseline regulatory processes. Time delays resulting from consultations on the shiner are possible, where appropriate these costs are included.

Regulatory Uncertainty

54. The Service conducts each section 7 consultation on a case-by-case basis and issues a Biological Opinion on formal consultations based on species-specific and site-specific information. As a result, government agencies and affiliated private parties who need to consult with the Service under section 7 may face uncertainty concerning whether project modifications will be recommended by the Service and what the nature of these modifications will be. This uncertainty may diminish as consultations are completed and additional information becomes available on the effects of critical habitat on specific activities. However, a degree of regulatory uncertainty may persist. In some cases, this uncertainty may be incorporated by the project proponent into the costs of completing a proposed activity. For example, mining companies uncertain about potential restrictions to their activities in designated areas of critical habitat may lease mining rights at a reduced rate. They may retain outside experts or legal counsel to better understand their responsibilities with regard to critical habitat. Where appropriate, the analysis considers the potential costs associated with regulatory uncertainty.

Stigma

55. In some cases, the public may perceive that critical habitat designation may result in incremental changes to private property values, above and beyond those associated with anticipated project modifications and regulatory uncertainty described above. That is, the public may perceive that, all else being equal, a property that is designated as critical habitat

will have lower market value than an identical property that is not within the boundaries of critical habitat. Public attitudes about the limits and costs that critical habitat may impose can cause real economic effects to the owners of property, regardless of whether such limits are actually imposed.

56. Conversely, the direction of property value effects resulting from critical habitat may be positive rather than negative. For example, property owners may believe that critical habitat designation will increase property values, if they believe that such designation will slow sprawling development in a given community (i.e., protect the rural character of an area) or increase water quality of neighborhood streams and rivers. This perception alone may result in real increases in land values, even in cases where the economic analysis predicts no additional requirements on activities taking place in the area. In either case, as the public becomes aware of the true regulatory burden imposed by critical habitat, the impact of the designation on property markets should decrease. This analysis considers the implications of public perceptions related to critical habitat on private property values within the proposed designation.

1.3.5 Benefits

57. The published economics literature has documented that real social welfare benefits can result from the conservation and recovery of endangered and threatened species. Such benefits have also been ascribed to preservation of open space and biodiversity, both of which are associated with species conservation. Likewise, regional economies and communities can benefit from the preservation of healthy populations of endangered and threatened species, and the habitat on which these species depend.

58. In Executive Order 12866, OMB directs Federal agencies to provide an assessment of costs and benefits of a proposed regulatory actions.[15] Where possible, the benefits of critical habitat designation should be described on a unit-by-unit basis in order to provide the Service with best available information to finalize critical habitat designations. For example, useful information for policy makers might include whether the benefits of excluding one (or more) critical habitat units outweigh the costs of including one (or more) units. However, in its guidance for implementing Executive Order 12866, OMB acknowledges that often, it may not be feasible to monetize, or even quantify, the benefits of environmental regulations. Where benefits cannot be quantified, OMB directs agencies to describe the benefits of a proposed regulation qualitatively.[16] *In the case of the shiner, the Service believes that the benefits of critical habitat designation are best expressed in biological terms that can be weighed against the expected cost impacts of the rulemaking.* Thus, this report does not provide a monetary measure of the benefits of the proposed designation. The general habitat descriptions contained in Exhibit 1-1 provide an example of the type of information that might be used by the Service to determine the relative biological benefit of the individual units toward species conservation.

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[15] Executive Order 12866, "Regulatory Planning and Review," September 30, 1993.

[16] U.S. Office of Management and Budget, Circular A-4, September 17, 2003.

1.3.6 Analytic Time Frame

59. The analysis examines activities taking place both within and adjacent to the proposed designation. It estimates impacts based on activities that are "reasonably foreseeable," including, but not limited to, activities that are currently authorized, permitted, or funded, or for which proposed plans are currently available to the public. Accordingly, the analysis bases estimates on activities that are likely to occur within a ten year time frame, beginning on the day that the current proposed rule becomes available to the public. The ten-year time frame was chosen for the analysis because, as the time horizon for an economic analysis is expanded, the assumptions on which the projected numbers of projects are based become increasingly speculative. As a result, it is difficult to predict not only the numbers of projects, but also the cost estimates for the associated consultations, beyond a ten-year window. Consequently, attempts to extend the economic analysis beyond the ten-year time window can be speculative. Where future activities burdened by compliance with the Act are reasonable foreseeable beyond the ten-year time frame, this analysis incorporates them.

1.3.7 General Analytic Steps

60. This report relies on a sequential methodology and focuses on distilling the salient and relevant aspects of potential economic impacts of the proposed designation. The steps followed in this analysis consist of:

- Describing current and projected economic activity within and around the proposed critical habitat area;
- Identifying whether such activities are likely to involve a Federal nexus;
- For activities with a Federal nexus, evaluating the likelihood that these activities will require consultations under section 7 of the Act and, in turn, result in any modifications to projects.
- Estimating the direct costs of expected section 7 consultations, project modifications and other economic impacts associated with the designation;
- Estimating the likelihood that current or future activities may require additional compliance with other Federal, State, and local laws as a result of new information provided by the proposed designation;
- Estimating the likelihood that projects will be delayed by the consultation process or other regulatory requirements triggered by the designation;
- Estimating the likelihood that economic activity will be affected by regulatory uncertainty, and/or property values affected;
- Estimating the indirect costs of the designation, as reflected in project delays, regulatory uncertainty, and effects on property values; and
- Assessing the extent to which critical habitat designation will create costs for small businesses as a result of modifications or delays to projects.

61. As noted above, this analysis considers both the efficiency effects and distributional effects that could result from this designation. It begins by considering direct compliance costs associated with the designation, as well as potential indirect effects, such as those effects associated with compliance with other Federal, State, and local laws, project delays, and impacts to property values. As necessary, regional economic impacts are described, as are impacts on significantly affected markets.

1.4 Information Sources

62. The primary sources of information for this report were communications with personnel from the Service, affected Federal agencies, State agencies and counties. Specifically, communication with personnel from the State Departments of Transportation (DOT); staff from Fort Riley, Kansas; the Natural Resource Conservation Service (NRCS); The United States Army Corps of Engineers (USACE); the Farm Services Agency (FSA); the Bureau of Reclamation (BOR); the United States Environmental Protection Agency (EPA), the Missouri Department of Conservation, and the South Dakota Department of Environment and Natural Resources. Publicly available data were also used to augment the analysis.

SOCIOECONOMIC PROFILE AND BASELINE ELEMENTS SECTION 2

63. This section provides information on the socioeconomic characteristics of areas proposed as critical habitat for the shiner, as well as relevant regulations that provide protection to the shiner and habitat.

2.1 Socioeconomic Profile of the Critical Habitat Areas

64. This section summarizes key economic and demographic information for the counties containing proposed critical habitat for the shiner. County level data are presented to provide context for the discussion of potential economic impacts, and to illuminate trends that may influence these impacts. Although county level data may not precisely reflect the socioeconomic characteristics of the areas immediately surrounding the proposed critical habitat for the shiner as the units are located in rivers and other water bodies that cross county barriers, it provides a useful context for the broader analysis.

2.1.1 Population

65. Approximately 98 percent of the proposed critical habitat area is under private ownership. Agriculture and grazing are the primary activities on these private lands, although proposed habitat also includes small portions of urban, suburban and industrial areas. The remaining two percent of the proposed lands consist of small scattered tracts under State and Federal ownership.

66. Exhibit 2-1 lists the population size, per capita income, and population density for each State and county containing proposed critical habitat. Although these measures vary across the designation, these data suggest that the majority of the areas proposed as critical habitat are less densely populated and support a lower than average income per capita than respective statewide averages.

Exhibit 2-1

SOCIOECONOMIC PROFILE OF COUNTIES CONTAINING CRITICAL HABITAT FOR THE TOPEKA SHINER (2000)

State	County	Population	Percent of State	Per Capita Income (2000$)	Persons per square mile
Iowa	**State Total**	**2,927,509**	**100%**	**$26,431**	**52.4**
	Calhoun	11,079	0.38%	$22,935	19.5
	Carroll	21,350	0.73%	$26,226	37.6
	Dallas	41,034	1.40%	$27,968	69.5
	Greene	10,343	0.35%	$22,522	18.2
	Hamilton	16,433	0.56%	$26,764	28.5
	Lyon	11,743	0.40%	$22,424	20
	Osceola	6,982	0.24%	$24,359	17.6
	Sac	11,473	0.39%	$22,570	20
	Webster	40,186	1.37%	$24,808	56.3
	Wright	14,315	0.49%	$26,280	24.7
Minnesota	**State Total**	**4,931,093**	**100%**	**$31,935**	**61.8**
	Lincoln	6,406	0.13%	$21,846	12
	Murray	9,138	0.19%	$23,844	13
	Nobles	20,821	0.42%	$23,550	29.1
	Pipestone	9,841	0.20%	$24,866	21.2
	Rock	9,699	0.20%	$25,108	20.1
Kansas	**State Total**	**2,691,750**	**100%**	**$27,374**	**32.9**
	Butler	59,677	2.21%	$26,488	41.7
	Chase	3,039	0.11%	$24,368	3.9
	Dickinson	19,360	0.72%	$21,467	22.8
	Geary	27,757	1.03%	$20,578	72.6
	Greenwood	7,661	0.28%	$20,269	6.7
	Marion	13,378	0.50%	$18,511	14.2
	Marshall	10,936	0.41%	$26,810	12.1
	Morris	6,110	0.23%	$20,252	8.8
	Pottawatomie	18,276	0.68%	$23,214	21.6
	Riley	62,845	2.33%	$23,566	103.1
	Shawnee	170,024	6.32%	$27,784	309
	Wabaunsee	6,878	0.26%	$22,368	8.6
	Wallace	1,734	0.06%	$21,146	1.9

Exhibit 2-1

SOCIOECONOMIC PROFILE OF COUNTIES CONTAINING CRITICAL HABITAT FOR THE TOPEKA SHINER (2000)

State	County	Population	Percent of State	Per Capita Income (2000$)	Persons per square mile
Nebraska	**State Total**	**1,712,577**	**100%**	**$27,630**	**22.3**
	Madison	35,168	2.05%	$24,419	61.5
South Dakota	**State Total**	**755,509**	**100%**	**$25,958**	**9.9**
	Aurora	3,059	0.40%	$22,055	4.3
	Beadle	16,977	2.25%	$27,518	13.5
	Brookings	28,248	3.74%	$24,723	35.5
	Clay	13,483	1.78%	$24,145	32.9
	Davison	18,706	2.48%	$27,234	43
	Deuel	4,497	0.60%	$24,753	7.2
	Hamlin	5,547	0.73%	$21,234	10.9
	Hanson	3,151	0.42%	$20,712	7.2
	Hutchinson	8,063	1.07%	$25,262	9.9
	Lincoln	24,508	3.24%	$23,284	41.7
	McCook	5,852	0.77%	$24,787	10.2
	Miner	2,887	0.38%	$24,155	5.1
	Minnehaha	148,972	19.72%	$31,891	183.1
	Moody	6,583	0.87%	$25,329	12.7
	Turner	8,851	1.17%	$24,196	14.3

Source: Bureau of Economic Analysis, Regional Accounts Data, accessed at http://www.bea.doc.gov/regional/reis on October 21, 2002.

2.1.2 Economic Activity

67. Exhibit 2-2 provides economic statistics for the 44 counties containing proposed critical habitat for the shiner. The "Number of Establishments" columns present the total number of physical locations within the relevant counties at which business activities were conducted with one or more paid employee in the year 2000. These figures provide a measure of the average density of commercial and industrial establishments in those areas proposed as critical habitat. Exhibit 2-2 also highlights the annual payroll of each economic sector. In Iowa, Minnesota and Nebraska, manufacturing maintains the largest payroll, where as in Kansas and South Dakota, services maintain the greatest share.

Exhibit 2-2

ECONOMIC ACTIVITY WITHIN COUNTIES CONTAINING TOPEKA SHINER CRITICAL HABITAT, BY INDUSTRY

Economic Activity	Iowa		Minnesota		Kansas		Nebraska		South Dakota	
	No. of establish-ments	Annual payroll ($1000)	No. of establish-ments	Annual payroll ($1000)	No. of establish-ments	Annual payroll ($1000)	No. of establish-ments	Annual payroll ($1000)	No. of establish-ments	Annual payroll ($1000)
Agriculture, Forestry, Hunting, and Fishing	31	$1,518	6	$0	24	$1,064	1	$0	28	$316
Mining	17	$1,037	3	$0	59	$4,586	2	$0	5	$0
Utilities	27	$1,835	9	$0	38	$9,780	2	$0	30	$16,255
Construction	632	$92,449	197	$16,579	1,137	$293,528	132	$23,111	1,157	$255,595
Manufacturing	271	$360,050	60	$98,190	343	$485,864	51	$147,082	376	$607,461
Wholesale Trade	319	$154,696	104	$39,365	432	$187,432	81	$50,678	612	$267,184
Retail Trade	983	$156,048	315	$46,323	1,806	$367,268	243	$53,073	1,544	$384,930
Transportation and Warehousing	303	$98,772	103	$11,076	295	$45,994	77	$21,960	437	$104,678
Information	109	$34,858	32	$4,141	184	$151,919	18	$7,677	176	$119,507
Finance and Insurance	344	$75,410	126	$30,842	714	$292,471	100	$14,655	774	$443,443
Real Estate	126	$6,946	34	$625	400	$37,022	56	$2,864	329	$33,375
Services	2,056	$374,762	641	$91,162	4,729	$1,604,940	538	$124,131	3,881	$1,244,380
Auxiliaries	10	$4,047	0	$0	19	$23,511	0	$0	15	$30,483
Unclassified	58	$863	18	$15	130	$198	19	$554	113	$1,617
TOTAL	**5,286**	**$1,363,291**	**1,648**	**$338,318**	**10,310**	**$3,505,577**	**1,320**	**$445,785**	**9,477**	**$3,509,224**

Source: U.S. Census Bureau, *2000 County Business Patterns*, accessed at http://censtats.census.gov/cgi-bin/cbpnaic/cbpsect.pl on October 22, 2002.
Notes: Payroll estimates are in 2000 dollars.

68. The above industrial portrait of the area may be somewhat misleading. Although it presents an accurate picture of the economic contributions of the various industries within the counties containing designated streams, it is the stream segments up to the bankfull discharge stream elevation level that comprise the designated critical habitat. Therefore, although the economic activities presented in Exhibit 2-2 occur within the counties, they are often remote from the designated area and are unlikely to suffer significant economic impact from the designation of critical habitat.

69. Although it accounts for a relatively small portion of economic activity in each State, agriculture is the major land use activity in the immediate vicinity of the proposed critical habitat. Despite this relatively small economic contribution of agriculture to the region, historically and culturally small-scale and family-owned farming operations are prominent and meaningful institutions. These farms often garner support from the Federal government through participation in any of a number of technical assistance and subsidy programs as described in Section 3 of this analysis. Impacts of the designation on farming are discussed in greater detail in Sections 3 and 4 of this analysis.

2.2 Relevant Baseline Elements

70. "Baseline elements" consist of regulations, guidelines, and/or policies that may afford protection for the shiner and its habitat. This discussion focuses on several important regulatory elements that have bearing on this analysis.

71. The following regulations highlight the extensive level of environmental protection, most specifically aimed at maintaining or improving water quality, that exists in the critical habitat area. Because the shiner is an aquatic species, it reaps the substantial benefits of these protections. Although section 7 consultations will take place on activities involving a Federal nexus, the measures required to protect the shiner and its habitat are often redundant with those that serve to protect water quality. Such measures (i.e., erosion control and revegetation of impact areas) are therefore typically already present in the Action agencies' general project directives and as such, the presence of shiner critical habitat is not expected to result in large-scale project modification.

2.2.1 Federal Protections

72. This section highlights pertinent information on Federal regulations and policies that may offer protection to the shiner and its habitat.

Topeka Shiner Draft Recovery Plan[17]

73. The Topeka Shiner Draft Recovery Plan was prepared by a team of representatives from the Service, the Minnesota Department of Natural Resources, the South Dakota Department of Game, Fish and Parks, the Iowa Department of Natural Resources, the Kansas Department of Wildlife and Parks, Eco-Centric, Inc., the Missouri Department of Conservation, and the University of Minnesota. The objectives of the plan are to:

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[17] U.S. Fish and Wildlife Service, *Topeka Shiner Recovery Plan (Draft)*, Manhattan, KS, 2001.

- Prevent the extinction of the shiner;
- Stabilize, protect, and enhance existing shiner populations and habitats;
- Identify, enhance, and restore areas of historic habitat; and
- Downlist and delist the species.

74. The Draft Recovery Plan identifies six Primary Recovery Units (PRUs) and six Secondary Recovery Units (SRUs) within the species habitat and outlines a strategy to meet the criteria for the delisting of the shiner. The plan then establishes a series of tasks, including research and guidance measures, that will contribute to the conservation of the species, including:

- Conducting studies on the species' biology and life history;
- Monitoring populations and habitat;
- Reestablishing the shiner in suitable stream or off-channel habitats within its historic range;
- Designing and implementing a public awareness and education program; and
- Implementing and maintaining an adaptive management program to ensure appropriate research and management activities are carried out.

Clean Water Act

75. The purpose of the Clean Water Act (CWA) is to restore the physical, biological, and chemical integrity of the waters of the United States. Under section 401 of the CWA, all applicants for a Federal license or permit to conduct activity that may result in discharge to navigable waters are required to submit a State certification to the licensing or permitting agency. The State certification must state that the discharge complies with the requirements of sections 301, 302, 303, 306, and 307 of the CWA.[18]

76. Section 404 of the CWA prescribes a permit program for the discharge of dredged or fill material into navigable waters. Activities that are regulated under this program include water resource projects (i.e., dams) and infrastructure development (i.e., roads and bridges). Specifically, pursuant to section 404, permit applicants are required to show that they have "taken steps to avoid wetland impacts, where practicable, minimized potential impacts to wetlands, and provided compensation for any remaining, unavoidable impacts through activities to restore or recreate wetlands."[19] The Army Corps of Engineers is charged with issuance of such permits.

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[18] Clean Water Act, Section 401, 33 U.S.C. 1341 Certification.

[19] Clean Water Act, Section 404, 33 U.S.C. 1344 Permits for Dredged or Fill Material.

Fish and Wildlife Coordination Act

77. The purpose of this act is to ensure that fish and wildlife resources are equally considered with other resources during the planning of water resources development projects by: 1) authorizing the Secretaries of Agriculture and Commerce to provide assistance with Federal and State agencies in protecting game species and studying the effects of pollution on wildlife; and 2) requiring consultation with the Service for water impoundment or diversion projects with a Federal nexus.[20]

Soil and Water Resources Conservation Act of 1977

78. This Soil and Water Resources Conservation Act provides for a continuing appraisal of the Nation's soil, water, and related resources, including fish and wildlife habitats. It establishes a soil and water conservation program to assist landowners and land users in furthering soil and water conservation. Specifically, this Act authorizes the Secretary of Agriculture to establish a cooperative conservation program with Federal, State, and local stakeholders for the management of private grazing land to conserve and enhance private grazing land resources.[21]

Watershed Protection and Flood Prevention Act

79. This Act authorizes Federal assistance to local organizations for conservation projects in watershed areas. Specifically, the Secretary of Agriculture is authorized to enter into agreements with local organizations and landowners to provide financial and other assistance in the development of plans to conserve and develop the land's soil, water, woodland, wildlife, energy and recreation resources, and enhance water quality.[22]

Endangered Species Act Landowner Incentives Program

80. This voluntary program, managed by the Service, provides technical and financial assistance to private landowners to address the needs of threatened and endangered species, while also incorporating the need for economic development. Private landowners are offered financial incentives to engage voluntarily in mitigation and habitat conservation planning. These incentives may be in the form of tax incentives and/or cost share payments funded through the Wildlife Conservation Fund or the Land and Water Conservation Fund. To qualify for this program, landowners or other non-Federal partners must contribute at least ten percent of the cost of the conservation project.[23]

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[20] Fish and Wildlife Coordination Act, 16 U.S.C. 661-666.

[21] Soil and Resources Conservation Act, 16 U.S.C. 2001-2009.

[22] Watershed Protection and Flood Prevention Act, 16 U.S.C. §§ 1001-1009.

[23] U.S. Fish and Wildlife Service, *Fiscal Year 2003 Budget Justifications*, Appropriation: Land Owner Incentive Program, pp. 401.

Partners for Fish and Wildlife Programs (PFW)

81. The PFW program promotes voluntary partnerships between the Service and landowners to pursue conservation-related projects such as wetlands restoration, habitat creation and enhancement, or environmental improvements of agricultural practices. Through PFW, the Service offers support for such projects ranging from technical assistance to private landowners through voluntary cooperative agreements, to funding restoration projects. Existing PFW projects within shiner critical habitat may provide some protection to the species or its habitat. Proposed PFW projects however, may be subject to a Service internal section 7 consultation to assure adequate protective measures are present for the shiner and habitat.

2.2.2 State-level Protections: Iowa

82. The following section presents information on relevant State regulations that may offer protection to the shiner and its habitat within the proposed critical habitat areas in Iowa.

Iowa Threatened and Endangered Species Protection Program

83. Enacted in 1975, Iowa's endangered and threatened species law provides for cooperation with the Federal government in the conservation, protection, and artificial propagation of endangered and threatened species as designated under Iowa Administrative Code [571] Chapter 77. The Topeka shiner is listed as endangered by the State of Iowa. State protections for endangered and threatened species include:

- Establishment of species management programs including the purchase of habitat; and
- Penalties for violation of the provisions of Chapter 481B and for the unlawful selling, taking, catching, killing, injuring, destroying, or possessing of any listed endangered or threatened animal.[24]

Iowa Flood Plain Management Program

84. This program limits the amount of channel straightening that can be done on most streams and rivers and essentially prohibits channel changes on Protected Streams. For streams that are not Protected Streams, proposals for channel changes are reviewed to ensure the proposal will not have an adverse impact on habitat. The review process often results in requirements for mitigation or, in some cases, disapproval of the channel change.

85. In addition, the Iowa Department of Natural Resources uses its flood plain regulatory powers to insure that the construction or modification of large dams or low-head dams will not have adverse impacts. Typical requirements are provisions for passing low flows through

[24] *Endangered Plants and Wildlife*, Iowa Code, Chapter 481B.

the dam, provisions for passage of fish, or provisions for maintaining adequate levels of dissolved oxygen downstream of a dam.[25]

Iowa Resource Enhancement and Protection (REAP) Program

86. This State program invests in the enhancement and protection of the State's natural and cultural resources. Funding is provided for various projects including:

- Open Space Acquisition and Development - Funds are allocated to Department of Natural Resources (DNR) for the acquisition and development of lands and waters; and

- Water Quality Protection Practices program - Funding is provided to DNR to work with soil and water conservation districts to protect water quality in Iowa by targeting and preventing off-site sediment, nutrient and livestock waste pollution problems.[26]

Iowa Protected Water Area (PWA) Program

87. Initiated in 1987, this program addresses the need for additional open space protection in Iowa. The basic purpose is to maintain, preserve and protect existing natural and scenic qualities of selected lakes, rivers and marshes and their adjacent land areas. This program may offer some additional protection to the shiner through its objectives including:

- Protecting and enhancing water and riparian environments to ensure continued fish and wildlife propagation;

- Maintaining or improving water quality; and

- Maintaining the natural, free-flowing character of the river.[27]

2.2.3 State-level Protections: Minnesota

88. The following section presents information on relevant State regulations that may offer protection to the shiner and its habitat within the proposed critical habitat areas in Minnesota.

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[25] Iowa Department of Natural Resources, Environmental Protection Division, *Floodplain Management,* accessed at http://www.state.ia.us/dnr/organiza/epd/prgrmdsc/nonpt/fplain.htm on October 31, 2002.

[26] Iowa Department of Natural Resources, Iowa Resource Enhancement and Protection Program, accessed at http://www.state.ia.us/ dnr/organiza/reap.htm on October 31, 2002.

[27] Iowa Department of Natural Resources, Parks, Recreation and Preserves Division, *Protected Water Areas,* accessed at http://www.state.ia.us/dnr/organiza/ppd/prowater.htm on October 31, 2002.

Minnesota Endangered Species Statute

89. The shiner is listed as a species of "special concern" in Minnesota. As such, this species is considered uncommon in Minnesota and is therefore subject to careful monitoring of its status.[28]

Minnesota Wetlands Program

90. The Ecological Services Division of the Minnesota Department of Natural Resources is responsible for oversight of the Wetlands Program, including the restoration or creation of wetlands to replace drained or filled wetlands, and the implementation of the Wetlands Management Plan that addresses four basic challenges to State wetlands management system, including:

- Recognition and application of regional differences in wetlands policies and decision-making;
- Simplification of the permitting system to make it more accessible;
- Development and delivery of better information to people making decisions about wetlands;
- Provision of a common set of statewide strategies for conservation of wetlands.[29]

Minnesota Stream Habitat Program

91. This program meets its major objectives by providing information about habitat types for fish species to interested parties. These objectives include ensuring that an adequate quantity of water to protect fish and wildlife is flowing in rivers and streams throughout the year and restoring degraded stream channels.[30]

Minnesota Pesticide Management Plan

92. Under the authority of the Comprehensive Groundwater Protection Act of 1989 (Minn. Stat. § 103H) and the Pesticide Control Law (Minn. Stat. § 18B), the Minnesota Pesticide Management Plan, administered by the Minnesota Department of Agriculture (MDA), focuses on nonpoint source pesticide contamination of the State's rural and urban water resources. Specifically, the MDA programs:

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[28] Minnesota Statutes, Section 84.0895, *Endangered Species Statute*.

[29] Minnesota Department of Natural Resources, Ecological Services Division, *Minnesota Wetlands Conservation Plan, Version 1.0*, 1997.

[30] Minnesota Department of Natural Resources, Ecological Services Division, *Stream Habitat Protection and Restoration Program*, accessed at http://www.dnr.state.mn.us/ecological_services/streamhab/index.html on October 31, 2002.

- Work to properly manage pesticides and adequately protect groundwater from agricultural pesticides, including the development of certain Integrated Pest Management programs;

- Are charged with the development of management practices and regulatory rules in the event that groundwater quality monitoring indicates significant degradation trends;

- Are guided by a Pesticide Management Plan (PMP) to address impacts to the State's water resources and guide development of Pesticide Best Management Practices for the prevention, evaluation and mitigation of nonpoint source occurrences of pesticides;

- Convenes an advisory committee for the Commissioner that reviews water resource monitoring data and makes recommendations regarding PMP implementation.[31]

2.2.4 State-level Protections: Kansas

93. The following section presents information on relevant State regulations that may offer protection for the shiner and its habitat in Kansas.

Kansas Threatened and Endangered Species

94. The shiner is listed as a threatened species in the State of Kansas. Provisions for threatened species in the State include immediate release if caught while fishing and issuance of an action permit for proposed land use activities to ensure there are sufficient mitigating or compensating measures for protection of either critical habitat, listed species, or both.[32]

Kansas Water Plan

95. Under the State Water Resources Planning Act, the Kansas Water Plan is used to coordinate management, conservation, and development of the water resources of the State. Specifically, the plan sets out goals including:

- The reduction of damaging floods and of losses resulting from floods;

- The protection and the improvement of the quality of the water supplies of the State;

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[31] Pesticide Management Plan Advisory Committee and the Minnesota Department of Agriculture, *Minnesota Pesticide Management Plan*, October 1998.

[32] Kansas Department of Wildlife and Parks, K.A.R. 115-15-1, *Threatened and Endangered Species; General Provisions*.

- The sound management, both public and private, of the atmospheric, surface and groundwater supplies of the State; and

- The prevention of the pollution of the water supplies of the State.[33]

Kansas Surface Water Quality Standards

96. These standards set forth provisions for protecting the current levels of surface water quality necessary to protect existing and designated uses. Specifically, no degradation of surface water quality by artificial sources of pollution shall be allowed if the degradation will result in harmful effects on populations of any threatened or endangered species of aquatic or semiaquatic life or terrestrial wildlife or its critical habitat as defined in the Act, 16 U.S.C. 1531 et. seq., as amended on October 7, 1988, or in K.S.A 32-960, and amendments thereto, and K.A.R 115-15-3.[34]

Kansas Watershed Conservation Agreements

97. The Mill Creek Watershed Joint District No. 85, Kansas Department of Wildlife and Parks, and the Service drafted the Mill Creek Watershed Conservation Agreement according to section 2(c)(2) of the Act and the Kansas Nongame and Endangered Species Conservation Act of 1975, as amended.[35] The purpose of the agreement is to protect populations of the shiner while facilitating development of flood protection measures with the Mill Creek basin in Wabaunsee County, Kansas. Conservation measures agreed upon by the signatory parties include:

- Providing shiner surveys when appropriate after completion of projects;

- Forgoing construction of impoundments or other physical alterations of "critical use" streams;

- Ensuring that construction and stream alteration does not exceed 20 percent control of the total runoff surface acreage in "safe haven" streams;

- Pursuing alternatives to dams for flood control, including dry dams with fish passage tubes; and

- Pursuing voluntary PFW partnerships with area landowners to implement habitat improvement/protection measures.[36]

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[33] Kansas Water Office, *The Kansas Water Plan: Fiscal Year 2002*, July 2002.

[34] Kansas Bureau of Water, K.A.R. 28-16, *Surface Water Quality Standards*.

[35] Section 2(c)(2) of the Endangered Species Act states that "the policy of Congress is that Federal agencies shall cooperate with State and local agencies to resolve water resources issues in concert with the conservation of endangered species."

[36] Mill Creek Watershed Joint District No. 85, Kansas Department of Wildlife and Parks, and U.S. Fish and Wildlife Service, *Mill Creek Watershed Conservation Agreement*: *Topeka Shiner*

This agreement is to be reviewed and, if necessary, modified through a reinitiation of formal consultation every five years.

98. The Diamond Creek Watershed Conservation Agreement was created by The Diamond Creek Watershed Joint District No. 61, Kansas Department of Wildlife and Parks, and the Service according to section 2(c)(2) of the Act in order to strengthen conservation measures for the shiner in the Diamond Creek portion of the species' overall range. Conservation measures for the shiner include:

- Conducting shiner surveys at specific sites to determine habitat extent and effect of project construction on species;
- Forgoing construction of dams in areas where species has been determined to be present;
- Pursuing alternatives to dams for flood control, including designing dry dams with fish passage tubes; and
- Encouraging participation of area landowners in voluntary incentive programs to protect or improve habitat.[37]

This agreement is to be reviewed, and modified if appropriate, after ten years through reinitiation of formal consultation.

99. The Middle Creek Watershed Joint District No. 62, Kansas Department of Wildlife and Parks, and the Service created the Middle Creek Watershed Conservation Agreement according to Section 2(c)(2) of the Act in order to strengthen conservation measures for the shiner in the Middle Creek portion of the species' overall range. Conservation measures agreed to by signatory parties match those listed above for the Diamond Creek Conservation Agreement. This agreement is to be reviewed, and modified if appropriate, after ten years through reinitiation of formal consultation.[38]

2.2.5 State-level Protections: Nebraska

100. The following section presents information on relevant State regulations that may offer protection to the shiner and its habitat within Nebraska.

(Notropis topeka), August 1997.

[37] The Diamond Creek Watershed Joint District No. 61, Kansas Department of Wildlife and Parks, and the U.S. Fish and Wildlife Service, *Diamond Creek Watershed Joint District No. 61, Chase and Morris Counties, Kansas Conservation Agreement: Topeka Shiner (Notropis topeka)*, February 2001.

[38] The Middle Creek Watershed Joint District No. 62, Kansas Department of Wildlife and Parks, and the U.S. Fish and Wildlife Service, *Middle Creek Watershed Joint District No. 62, Marion and Morris Counties, Kansas Conservation Agreement: Topeka Shiner (Notropis topeka)*, February 2001.

Nebraska Flood Plain Management Statutes

101. The State has established requirements for the effective management of its flood plains. Local governments are required to meet or exceed minimum standards for zoning ordinances, subdivision regulations, building codes, and other regulations that secure safety from floods and provide reasonable and prudent uses of flood plains. Relevant minimum standards include restrictions on the alteration or relocation of watercourses or drainways.[39]

Nebraska Surface Water Quality Standards

102. These standards designate the beneficial uses to be made of surface waters and the water quality criteria to protect the assigned uses. Specifically, criteria for aquatic life use includes standards for pH levels, temperature, toxic substances, petroleum oil, total dissolved gases, and hydrogen sulfide. In addition, the shiner is considered a "key species" and therefore any human activity causing water pollution that would displace the shiner is not allowed.[40]

2.2.6 State-level Protections: South Dakota

103. The following section presents information on relevant State regulations that may offer baseline protection to the shiner and its habitat within South Dakota.

South Dakota Surface Water Quality Standards

104. The water quality standards regulations establish the use or uses to be made of a water body, set criteria necessary to protect the uses, and establish policies to maintain and protect water quality. South Dakota has developed surface water quality standards for all waters of the State, which are designed to protect public health and welfare, and enhance the quality of South Dakota's water.[41]

South Dakota Coordinated Soil & Water Conservation Grant Fund

105. Grants from the Coordinated Soil & Water Conservation Grant Fund are available for projects that show a natural resource conservation benefit to the State. Past projects have included:

- Water development to provide for livestock water needs away from the riparian area to promote healthy regeneration of those areas for erosion control benefits; and

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[39] Nebraska Natural Resources Commission Rules Title 258, *Minimum Standards for Floodplain Management Programs.*

[40] Nebraska Department of Environmental Quality, Surface Water Quality Standards, accessed at http://www.deq.state.ne.us/SurfaceW.nsf/Pages/SWQS on October 31, 2002.

[41] The Administrative Rules of South Dakota, Chapter 74:51, *Surface Water Quality*.

- Water quality improvement projects including overall assessment of the condition of the watershed and identification of sources of water quality impairments.[42]

2.3 Overlap with Other Listed Species

106. Other federally listed endangered species may be found within the proposed critical habitat area. It is unlikely, however, that future section 7 consultations for the shiner would occur in coordination with the majority of these other species because of the distinctive nature of the shiner habitat and because, excluding the Blackside darter and possibly the scaleshell mussel, the species listed in Exhibit 2-3 do not occupy the immediate habitat of the shiner. Project modifications as quantified in this analysis are recommended explicitly to benefit the shiner. Potential project modifications intended to benefit other listed species when consultation does occur in coordination with the shiner may offer some benefit to the shiner. Where as such project modifications are recommended exclusively for the benefit of the other species, however, they are not quantified in this analysis. Exhibit 2-3 lists the endangered species that may inhabit portions of the proposed critical habitat area.

Exhibit 2-3

THREATENED OR ENDANGERED SPECIES THAT MAY BE PRESENT IN TOPEKA SHINER CRITICAL HABITAT AREA

Area of Potential Overlap	Category	Common Name	Scientific Name	Status
Mill Creek Watershed, Kansas	Fish	Blackside darter	*Percina maculata*	State threatened species
Kansas watersheds, Iowa watersheds, South Dakota watersheds	Bird	Bald eagle	*Haliaeetus leucocephalus*	State and Federal threatened species
Kansas watersheds	Bird	Piping plover	*Charadrius melodus*	State and Federal threatened species
Taylor Creek Watershed, Nebraska; Iowa watersheds	Plant	Western prairie fringed orchid	*Platanthera praeclara*	State and Federal threatened species
Rock River Watershed, Iowa	Plant	Prairie bush clover	*Lespedeza leptostachya*	State and Federal threatened species
South Dakota watersheds	Bird	Whooping crane	*Grus americana*	State and Federal endangered species

Note: This table lists threatened and endangered species that may be found in or near the critical habitat area of the shiner. However, in instances where a proposed project area spans a wide range of habitats, additional species that may not be found in the immediate vicinity of the shiner habitat may be included in consultations. As such, this list does not account for every species that may be included in consultations alongside the shiner. For example, statewide programmatic consultations may include each threatened or endangered species in the State.

[42] South Dakota Department of Agriculture, Coordinated Soil and Water Conservation Grant Fund, accessed at http://www.state.sd.us/doa/forestry/soil_and_water_grant.htm on October 31, 2002.

107. The regulatory elements potentially relevant to this analysis as described highlight the fact that a considerable number of Federal, State, and other regulatory initiatives provide the shiner and its habitat with some measure of protection.

108. The previous two sections introduced the geographic areas the Service is proposing to designate as critical habitat for the shiner, the socioeconomic profile of these areas, and relevant pre-existing policies that affect land uses in the region. This section describes categories of impacts and identifies types of land use activities within and/or affecting the proposed critical habitat designation for the shiner.

3.1 Categories of Economic Impacts Associated with the Designation of Critical Habitat

109. The following discussion provides an overview of the categories of economic impacts that are likely to arise in the area proposed as critical habitat.

3.1.1 Technical Assistance

110. The Service may respond to requests for technical assistance from Federal or State agencies, local municipalities, and private landowners and developers with questions regarding whether specific activities may affect a listed species or its critical habitat. Technical assistance costs represent the estimated economic costs of informational conversations between stakeholders and the Service regarding such potential effects. These technical assistance activities are characteristically low effort voluntary actions between two parties, the Service and the stakeholder. The stakeholder may or may not be a Federal agency, as opposed to section 7 consultation which by definition involves a Federal nexus with or without private third party involvement.

3.1.2 Section 7 Consultations

111. Under the listing of a species, section 7(a)(2) of the Act requires Federal agencies to consult with the Service in order to ensure that activities they fund, authorize, permit, or carry out are not likely to jeopardize the continued existence of the species. The Service defines jeopardy as any action that would appreciably reduce the likelihood of both the survival and recovery of the species. For designated critical habitat, section 7(a)(2) also requires Federal agencies to consult with the Service to ensure that activities they fund, authorize, permit, or carry out do not result in destruction or adverse modification of critical habitat. Adverse modification of critical habitat is currently construed as any direct or indirect alteration that appreciably diminishes the value of critical habitat for conservation of a listed species.

112. In some cases, consultations will involve the Service and another Federal agency only, such as the USACE or the EPA. More often, they will also include a third party, such

as State agencies or private landowners involved in projects on non-Federal lands with a Federal nexus.

113. During a consultation, the Service, the Action agency, and the landowner applying for Federal funding or permitting (if applicable) communicate in an effort to minimize potential adverse effects to the species and/or to the proposed critical habitat. Communication between these parties may occur via written letters, phone calls, in-person meetings, or any combination of these. The duration and complexity of these interactions depends on a number of variables, including the type of consultation, the species, the activity of concern, the region where critical habitat has been proposed, and the landowner.

114. Section 7 consultations with the Service may be either informal or formal. *Informal consultation*, which consists of discussions between the Service, the Action agency, and the applicant concerning an action that may affect a listed species or its designated critical habitat, is designed to identify and resolve potential concerns at an early stage in the planning process. By contrast, a *formal consultation* is required if the Service finds that the proposed action is likely to jeopardize or adversely affect the listed species or designated critical habitat in ways that cannot be resolved through informal consultation. Regardless of the type of consultation or proposed project, section 7 consultations can require substantial administrative effort on the part of all participants.

3.2 Estimated Administrative Costs of Consultations and Technical Assistance

115. This section presents low and high end cost estimates of administrative activities associated with technical assistance efforts, informal, and formal consultations. Estimates of the costs of individual consultations were developed from a review and analysis of historical section 7 files from a number of Service field offices around the country. These files addressed consultations conducted for both listings and critical habitat designations. The resulting estimates are based on an average level of effort for consultations of low, medium, or high complexity, multiplied by the appropriate labor rates for staff from the Service and other Federal agencies.

116. Estimates take into consideration the level of effort of the Service, the Action agency, and the applicant during both formal and informal consultations, as well as the varying complexity of consultations. Informal consultations are assumed to involve a low to medium level of complexity. Formal consultations are assumed to involve a medium to high level of complexity. Costs associated with these consultations include the administrative costs associated with conducting the consultation, such as the cost of time spent in meetings, preparing letters, and the development of a biological opinion.

117. Per-effort costs associated with formal consultations, informal consultations, and technical assistance efforts are presented in Exhibit 3-1. The low and the high scenarios represent a reasonable range of costs for each type of interaction. For example, when the Service engages in informal consultation regarding a particular activity, the cost of the Service's effort is expected to be approximately $1,000 to $3,100. The cost of the Action agency's effort is expected to be $1,300 to $3,900, and the cost of a third party's effort (if applicable) is expected to be approximately $1,200 to $6,900. The Action agency or the third party may bear the costs of biological assessment, depending on the specifics of the consultation.

Exhibit 3-1

ESTIMATED ADMINISTRATIVE COSTS OF CONSULTATION AND TECHNICAL ASSISTANCE EFFORTS FOR THE TOPEKA SHINER (PER EFFORT)

Critical Habitat Impact	Scenario	Service	Action Agency	Third Party
Technical Assistance Effort	*Low*	$260	N/A	$600[1]
	High	$680	N/A	$1,500[1]
Informal Consultation	*Low*	$1,000	$1,300	$1,200
	High	$3,100	$3,900	$6,900
Formal Consultation	*Low*	$3,100	$3,900	$6,900
	High	$6,100	$6,500	$9,700

Sources: IEc analysis estimates based on data from the Federal Government General Schedule Rates, 1999, Office of Personnel Management, 2000.

Notes: [1]Third parties may be State agencies.
Low and high estimates primarily reflect variations in staff wages and time involvement by staff reported in 2002 dollars. The high-end estimate for informal consultations, and all formal consultation estimates, include the cost of a biological assessment.

3.3 Project Modifications

118. The section 7 consultation process may involve some modifications to a proposed project. These modifications may be agreed upon by the Action agency and the applicant and included in the project description as avoidance and minimization measures, or they may be recommended by the Service as terms and conditions to implement reasonable and prudent measures. In some cases, the Service may determine that the project will jeopardize the species or adversely modify its critical habitat. In these cases the Service may recommend and the Action agency may require the applicant to comply with reasonable and prudent alternatives to the proposed project, develop their own reasonable and prudent alternatives, or seek an exemption for the project. These project modifications often represent an incremental cost to the applicant.

119. Because of the difficulty generating estimates of potential modifications to specific projects on a case-by-case basis, this analysis models modifications after average or "typical" projects likely to affect the proposed critical habitat of the shiner. Actual modification costs are likely to vary according to the specific characteristics of individual projects and consultation outcomes. Estimated costs of project modifications are detailed following the descriptions of the related activities in Section 4 of this analysis.

3.4 Activities Affecting Topeka Shiner Critical Habitat Area

120. Numerous Action agencies permit and conduct activities and projects in or adjacent to proposed critical habitat areas. These activities may lead to section 7 consultations with

the Service, and in some cases specific projects may require modification in order to protect the shiner and/or its habitat. The primary activities that may be affected by critical habitat designation for the shiner are:

- Road/bridge construction and maintenance and associated activities;
- Agriculture and ranching-related activities;
- Utilities construction/maintenance;
- Streambank stabilization, stream alignment, and channelization;
- Dam construction/rehabilitation and related water operations;
- Recreation and conservation activities;
- Water quality activities.

The following discussion explores each of these land activities, including the potential impact on critical habitat and the Federal nexus (i.e., Action agency) involved.

121. The USACE is the primary Action agency conducting activity in the shiner critical habitat area. This agency is responsible for carrying out and permitting a majority of the activities with the potential to affect riverine, estuarine, and marine areas. USACE civil works divisions undertake projects to maintain navigation channels and water infrastructure, conduct environmental restoration, and maintain flood control. USACE regulatory divisions grant permits for private activities in navigable waterways under section 404 of the Clean Water Act and section 10 of the Rivers and Harbors Act. Two categories of 404 permits are nationwide permits and individual permits. The nationwide permits typically outline generalized conditions for multiple projects of similar activities to facilitate the permitting process. For larger projects that may require more specific or extensive measures to avoid negative environmental impacts, the individual permits are more appropriate.

122. The USACE consults with the Service on both civil works activities and private activities that they permit. The civil works and permitted activities relevant to this analysis include: flood control and bank stabilization, dam operations, and private activities that occur in wetlands or waterways, such as road and bridge construction, and construction in water bodies (i.e., docks, piers). Details of these proposed USACE activities, including the number of anticipated consultations associated with each activity per State are described in the respective land-use activity sections.

3.4.1 Road/Bridge Construction and Maintenance

123. Road and bridge construction activities may pose a risk to the shiner and its habitat as a result of:

- Increased sedimentation from erosion;
- Alteration of channel morphology;

- Elimination of streambank vegetation to filter runoff; and
- Resulting loss of suitable habitat.

124. Thus, major road and bridge construction, maintenance, and improvement projects in areas proposed as critical habitat for the shiner are likely to require section 7 consultations. The lead Action agency for road and bridge construction projects may be the USACE, as it has jurisdiction over construction in navigable waterways, or the State DOT. The Federal nexus for such DOT activities is typically the Federal Highway Administration (FHWA) due to their funding of State DOT projects, though it is the DOT that communicates with the Service throughout the consultation process as the designated representative of the FHWA.

125. This analysis forecasts that a total of approximately 831 informal and 28 formal section 7 consultations will be initiated regarding road/bridge construction and maintenance activities over the next ten years, as detailed in Section 4 of this analysis.

3.4.2 Agriculture and Ranching-Related Activities

126. Agricultural activity surrounding critical habitat for the shiner poses risks to the species in terms of water quality and diversion. The major threats to the species from agriculture and ranching are potential increased siltation from crop cultivation and eutrophication of streams resulting from organic loadings from feedlot operations.[43] Additionally, impoundments created for agricultural use or flood control may impact the species through resulting changes in the stream hydrology.

127. The vast majority of the lands bordering the immediate critical habitat area are privately owned and devoted to agriculture, principally rowcropping, with some livestock grazing activity. Such activities on private land generally do not involve a Federal nexus. In some instances however, agricultural activities on private lands may be supported by voluntary landowner participation in any of a number of programs sponsored by Federal agencies including the NRCS, and the FSA. Additionally, certain agricultural activities are regulated and/or permitted by Federal agencies, such as EPA's regulation of confined animal feeding operations and the USACE permitting of water diversion activities. These agencies provide funding or technical assistance for agriculture-related initiatives.

128. The FSA provides technical and financial assistance to farmers under the Farm Bill. Initiatives typically involve agricultural operation improvements to assist in conserving land and water resources, providing credit to new or disadvantaged farmers and ranchers, helping farmers and ranchers recover from disasters, or stabilizing farm income.

129. The NRCS provides cost-share and other Federal assistance to private ranchers and farmers for the establishment of environmentally sustainable land use practices. Typical conservation activities in the proposed critical habitat area include wetland restoration and enhancement, animal feeding operations and waste management, and construction/

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[43] U.S. Fish and Wildlife Service, *Topeka Shiner Recovery Plan (Draft)*, Manhattan, KS, 2001.

maintenance of impoundments. The NRCS may provide funding through voluntary partnership with private landowners under conservation programs such as:

- Conservation Reserve Program (CRP) - Cost sharing is provided to encourage landowners to convert highly-erodible cropland to vegetative cover, such as native grasses, wildlife plantings, trees, filterstrips, or riparian buffers.

- Environmental Quality Incentives Program (EQIP) - Provides technical and financial assistance for the installation or implementation of structural and management conservation practices on agricultural land to farmers and ranchers who face particular land and water quality threats.

- Wildlife Habitat Incentives Program (WHIP) - Provides technical and financial assistance to landowners to develop upland, wetland, riparian, and aquatic habitat areas on their property.[44]

- Conservation Reserve Enhancement Program (CREP) - Safeguards environmentally sensitive land through the use of Federal and State resources and the CRP. The goal is to improve water quality, soil, and wildlife habitat by removing private lands from agricultural production and planting native grasses, trees, and other vegetation. Qualifying conservation practices include: erosion control structures; filter strips; riparian buffers; and wetland restorations. In exchange for these activities, private landowners are eligible to receive annual rental payments, a one-time signing incentive payment, a practice incentive payment, and cost share assistance for implementing conservation practices on retired land.

130. Because these voluntary programs are intended to provide opportunities to improve or minimize impact on natural resources, negative impacts to endangered species are deliberately avoided. Accordingly, adverse impacts to the shiner or habitat are not anticipated and the Action agency may not find it necessary to initiate consultation with the Service. For example, in Nebraska and Kansas, the NRCS does not consult with the Service with respect to these beneficial programs.[45] The NRCS does, however, consult on projects on private lands that may result in negative impacts, such a construction of livestock feedlots and impoundments.

131. This analysis estimates there will be approximately 660 informal and 30 formal consultations for agriculture and ranching related activities over the next ten years, as detailed in Section 4 of this analysis.

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[44] U.S. Fish and Wildlife Service, *Topeka Shiner Recovery Plan (Draft)*, Manhattan, KS, 2001.

[45] Personal communication with Steve Chick, Natural Resources Conservation Service, Nebraska Office, October 28, 2002; Personal communication with John Ourada, Natural Resources Conservation Service, Kansas Office, November 4, 2002.

3.4.3 Utilities Construction/Maintenance

132. Construction or maintenance of in-stream pipelines may result in consultations with the USACE and the FERC, due to the possibility of increased siltation effecting shiner habitat. Impacts from this category of activity are anticipated to be small as the rural nature of the lands surrounding the critical habitat area do not support many utility corridors. Approximately 34 informal consultations are anticipated related to utility construction/ maintenance over the next ten years.

3.4.4 Streambank Stabilization, Stream Alignment, and Channelization

133. Stream and channel alteration may unfavorably impact the shiner and its habitat by destroying and degrading habitat, or by altering the natural hydrology and water quality by eliminating in-stream debris and riparian vegetation.[46]

134. Streambank stabilization, stream alignment and channelization projects are anticipated to result in 19 informal and 14 formal consultations over the next ten years.

3.4.5 Dam Construction/Rehabilitation and Related Water Operations

135. Shiner populations typically swim downstream in times of drought in order to find suitable habitat. Following drought conditions, the fish migrate back upstream. Impoundments and dams can block such migration, inhibiting recolonization of upstream reaches. Further, these impoundments are used by the shiners as refuges in times of drought, forcing the fish into the same water bodies as larger predatory fish. Dam construction may also introduce increased siltation and alteration of stream substrate, causing further negative impact to shiner habitat.[47]

136. The BOR is responsible for overseeing many aspects of water operations (for dams), including: bioengineering, habitat enhancement, river training, sediment removal, levee maintenance, and vegetation removal. The BOR typically designs projects to minimize harm to the shiner and its habitat and to avoid the need for the Service to recommend project modifications. The Service may, however, restrict construction during the shiner spawning season for these projects.[48]

137. Dam construction/rehabilitation projects are anticipated to result in 33 informal and 12 formal consultations in proposed shiner habitat over the next ten years.

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[46] U.S. Fish and Wildlife Service, *Topeka Shiner Recovery Plan (Draft)*, Manhattan, KS, 2001.

[47] U.S. Fish and Wildlife Service, *Topeka Shiner Recovery Plan (Draft)*, Manhattan, KS, 2001.

[48] Personal communication with Faye Streier, Bureau of Reclamation, Dakotas Area Office, October 29, 2002 and October 30, 2002.

3.4.6 Recreation and Conservation Activities

138. There are a number of targeted conservation projects or programs that may take place on critical habitat lands. One such type of conservation program in shiner habitat are Watershed Conservation Plans. Such plans may require funding or assistance from a number of agencies (i.e., NRCS or USACE) and may therefore generate consultations with the Service.

139. PFW is a voluntary partnership program between the Service and landowners interested in restoring wetlands and other important fish and wildlife habitats on their own lands. The program provides various types of support ranging from technical assistance to private landowners through voluntary cooperative agreements, to funding restoration projects on private lands. Voluntary habitat restoration on private lands usually involves dollar-for-dollar cost share through working with private landowners and Federal, State, and local entities. Landowners sign agreements to keep the restoration projects for the life of the agreement and otherwise retain full control of their land.[49]

140. Since the projects are funded and/or carried out by the Service, internal consultation may take place for each project. Because these projects are intended to be beneficial to the shiner and its habitat, no major issues and/or project modifications are expected. As such, the internal consultations are likely to be informal.

141. 130 informal consultations related to PWF partnerships are expected over the next ten years. Further, a total of 2 formal consultations are expected in relation to other conservation projects on these lands over the next ten years.

3.4.7 Water Quality Activities

142. EPA may engage in section 7 consultations with the Service regarding water quality standards to ensure that they are appropriately protective of endangered and threatened species. EPA typically considers listed species when consulting with the Service on the following categories of water quality program activities:

- Total maximum daily load (TMDL) levels falls under section 303 (d) of the Clean Water Act. Consultations on TMDLs arise when the combination of point and non-point source pollutants causes a noncompliance in a body of water, which is then listed in the State's section 303d list of impaired waters. If noncompliance has the potential to affect an endangered species, then EPA is likely to informally consult with the Service when determining how much load will be allowed in bringing the water body back into compliance.

- EPA's National Pollutant Discharge Elimination System (NPDES) permit program regulates point source pollution. Pursuant to a national Memorandum of Agreement (MOA) between EPA and the Service, the Service reviews each permit application to confirm that listed species are not adversely affected by water quality impacts. If the proposed permit does not

[49] U.S. Fish and Wildlife Service, *Partners for Fish and Wildlife Program*, accessed at http://www.fws.gov on July 2002.

appear to meet State water quality standards, the Service may object to issuance of the permit, and the State may ask the applicant to alter the permit to meet the standards.

- The section 319 Nonpoint Source Pollution Management Plan was established in 1987 under the Clean Water Act to support State and tribal-level nonpoint source control efforts. Through this program, the EPA offers various forms of support to applicants including: technical assistance, financial assistance, education programs, funding and monitoring.

- Through the Clean Water Act section 401 Water Quality Certification Program, the EPA permits State activities which may result in discharge to navigable waters including construction or operation of facilities.

143. According to a 2001 Memorandum of Agreement between the EPA, National Marine Fisheries Service (NMFS), and the Service, the EPA has provided States and tribes authority over their Clean Water Act permitting when appropriate.[50] Accordingly, NPDES permitting actions may generate a technical assistance effort between the Service and the designated representative of the EPA (i.e., the South Dakota Department of Environmental and Natural Resources) as opposed to requiring section 7 consultation. In cases where the Service or agency presents an issue that may not be settled through technical assistance efforts, the EPA may become involved and a consultation may be initiated.

144. Water quality activities in South Dakota are anticipated to result in up to 240 informal consultations the next ten years.

[50] U.S. Environmental Protection Agency, Department of the Interior, and the Department of Commerce, *Memorandum of Agreement Between the Environmental Protection Agency, Fish and Wildlife Service and National Marine Fisheries Service Regarding Enhanced Coordination Under the Clean Water Act and Endangered Species Act; Notice*, Federal Register Vol. 66, No. 36, February 22, 2001.

145. Section 3 of this analysis describes the variety of activities likely to take place within the boundaries of this proposed designation that will require technical assistance from or consultation with the Service. An overall estimate of the frequency with which these activities are expected to generate technical assistance or consultation is presented alongside the descriptions of the activities. This section of the analysis further details the specific impact species listing and designation of critical habitat for the shiner is anticipated to have on these activities, including project modifications that may result from consultation.

146. First, this section quantifies the frequency of technical assistance and consultations within each State as activities, Action agencies, and project modifications may vary significantly with geographic region. Technical assistance and consultations are then parsed on a per watershed basis within each State in Exhibits 4-1 through 4-5, and project modifications are summarized in Exhibit 4-7. In instances where watershed specific information is not known, this analysis assumes that the number of consultations per watershed in each State is directly proportional to the percentage of total stream miles designated that are present in the watershed. Accordingly, if a particular watershed contains 25 percent of the total stream miles designated in that State, 25 percent of the consultations are assumed to occur in that watershed.

147. Lastly, this section quantifies the costs associated with these efforts. Estimates presented in this section include administrative costs associated with technical assistance and consultation activity, as well as costs associated with implementing project modifications that result from consultations with the Service. Importantly, these estimates include all consultations and technical assistance efforts associated with the proposed critical habitat area. As such, this analysis does not distinguish impacts that may be attributable co-extensively to the listing of the shiner from those impacts attributable solely to the designation. Exhibit 4-8 summarizes the resulting total costs associated with activity in the geographic area proposed as critical habitat designation for the shiner. Detailed costs of each activity according to watershed in each State are provided in Appendix A.

4.1 Iowa

Anticipated Technical Assistance Efforts

148. The Ecological Services Field Office that oversees activity in Iowa predicts **500 to 1,000 technical assistance efforts** over the next ten years for a variety of activities, including stream alternations, county road and bridge construction, and ditch clean out

activities.[51] As described above, these technical assistance efforts consist of exchanges of information concerning a particular land use project between a landowner or Action agency and the Service.

Road/Bridge Construction and Maintenance

149. The Iowa DOT (IADOT) has adopted an intermodal transportation plan that addresses aviation, bicycle and pedestrian, pipeline, rail, transit, waterway, and highway transportation collectively.[52] This plan is intended to guide transportation developments through year 2020. Under this plan, the IADOT anticipates initiating **informal consultation on 12** bridge/culvert construction projects and **six informal consultations** associated with road construction and maintenance over the next ten years. The IADOT also anticipates initiating up to **two formal consultations** associated with bridge/culvert construction over the next ten years.

150. The IADOT anticipates that the Service will request the following project modifications for road/bridge construction and maintenance projects.[53]

- **Timing Restrictions**. The IADOT does not anticipate additional project costs associated with timing restrictions. Most bridge construction and maintenance projects are currently undertaken during the winter, which is outside of the shiner spawning season. Additionally, the IADOT plans projects five years ahead of schedule, which allows it to take timing restrictions into consideration during initial project design.

- **Restriction on In-Stream Work**. The IADOT anticipates being restricted from constructing temporary work pads in streams where the shiner is present. Avoidance of in-stream work requires the IADOT to utilize alternative equipment at an increased cost of 25 percent. A typical bridge construction project costs $100,000; use of alternative equipment would add an additional $25,000 to this cost.

- **Requirement to Build Longer or Higher Span Bridges**. The IADOT anticipates building longer or higher span bridges over shiner streams to avoid/minimize impacts on the shiner and its habitat. This protection measure would add $100,000 to the cost of an average bridge construction project.

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[51] Personal communication with U.S. Fish and Wildlife Service, Rock Island, Illinois Ecological Services Field Office November 1, 2002.

[52] Iowa Department of Transportation, *Iowa in Motion: Iowa State Transportation Plan*, July 1997.

[53] Cost information for road/bridge construction and maintenance projects was obtained through personal communication with Kevin Griggs, Iowa Department of Transportation, November 8, 2002.

- **Restriction on Replacing Bridges with Culverts**. The IADOT attempts to replace bridges with culverts whenever possible, because construction of culverts costs 50 percent less than bridge construction, at only $50,000 for a typical project. The IADOT anticipates being restricted from constructing culverts in shiner critical habitat, because these projects are likely to negatively impact the shiner and its habitat. Therefore, the IADOT anticipates utilizing bridges instead of culverts in shiner habitat at a cost of $50,000 per project.

- **Alternatives to Construction of Temporary Crossings for Road Construction**. The IADOT anticipates being required to utilize alternatives to temporary crossings for road construction and maintenance activities in shiner habitat. A typical road grading project costs $1,000,000. Utilizing alternatives to temporary crossings would increase project costs by five percent, or $50,000.

151. Accordingly, this analysis ascribes an incremental cost of $225,000 to each IADOT project to account for these potential project modifications. As some smaller projects may not require each modification, assuming these project modifications are additive and occur for each IADOT project likely overstates the true cost of DOT projects in the critical habitat area.

152. To date, the USACE has not initiated consultation with the Service regarding section 404 permits, civil works projects, or environmental management projects in proposed shiner habitat in Iowa. However, the USACE does expect to initiate consultations in the future regarding section 404 permits and environmental management projects. Specifically, the USACE anticipates initiating **ten informal consultations** associated with section 404 individual permits and **one informal consultation** associated with an environmental management project over the next ten years.[54] The Service will likely restrict construction during the shiner spawning season for these projects.[55]

Recreation and Conservation Activities

153. The Service engages in intra-agency consultations with regard to PFW projects. Such projects typically involve improvement or restoration of cut-off channels; for example, removal of excess sediment. These consultations are anticipated to be informal as these projects are designed to improve the nature of, and minimize the impact from land use activities. The Service expects to engage in up to **60 informal consultations** over ten years with respect to PFW projects.

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[54] U.S. Army Corps of Engineers Headquarters, Regulatory Program Overview, http://www.usace.army.mil/inet/functions/cw/cecwo/reg/oceover.htm, accessed on November 12, 2002.

[55] Personal communication with Steve Johnson, U.S. Army Corps of Engineers, Rock Island office, October 29, 2002; November 7, 2002.

Exhibit 4-1

ESTIMATED CONSULTATIONS AND TECHNICAL ASSISTANCE EFFORTS IN IOWA (OVER TEN YEARS)

Iowa Watershed	Nature of Activity	Nexus	Estimated Extent of Activity
Raccoon River Watershed	Technical Assistance	N/A	• 830 technical assistance efforts
	Road/Bridge Construction and Maintenance	USACE	• 9 informal consultations
		DOT	• 15 informal and 2 formal consultations
	Recreation and Conservation	FWS	• 50 informal consultations
Boone River Watershed	Technical Assistance	N/A	• 76 technical assistance efforts
	Road/Bridge Construction and Maintenance	USACE	• 1 informal consultation
		DOT	• 1 informal consultation
	Recreation and Conservation	FWS	• 4 informal consultations
Rock River Watershed	Technical Assistance	N/A	• 94 technical assistance efforts
	Road/Bridge Construction and Maintenance	USACE	• 1 informal consultation
		DOT	• 2 informal consultation
	Recreation and Conservation	FWS	• 6 informal consultations

Note: This analysis assumes that the number of consultations per watershed is directly proportional to the percentage of the total stream miles designated within that watershed. These consultations include those brought about through the species listing and designation of critical habitat for the shiner.

4.2 Minnesota

Anticipated Technical Assistance Efforts

154. The Minnesota Field Office predicts **150 technical assistance efforts** with respect to shiner habitat over the next ten years.[56] The majority of these efforts are expected to be with regard to water quality issues associated with activities on private lands. Private landowners may contact the Minnesota Department of Natural Resources (MNDNR) to request a permit to fill or alter a wetland or riparian area. The MNDNR may then in return suggest that the landowner contact the Service to inquire whether the proposed activity may affect the shiner or its habitat. This type of communication accounts for the majority of technical assistance efforts in Minnesota.

[56] Personal communication with U.S. Fish and Wildlife Service, Minnesota Field Office, November 8, 2002.

Road/Bridge Construction and Maintenance

155. The MNDOT has adopted a long-term, multi-modal state-wide transportation improvement plan (STIP). The current STIP identifies transportation plans for the years 2001 to 2003. MNDOT has also developed a Project Work Plan/Project Studies Plan that identifies projects anticipated during the years 2004 to 2010. Based on projects identified in these two documents, it is estimated that the MNDOT will initiate **44 informal consultations** associated with road/bridge construction and maintenance activities over the next ten years. These consultations are likely to remain informal due to the MNDOT's implementation of best management practices (BMPs), timing restrictions, and other protective measures. MNDOT implements BMPs as a standard practice on all projects. These measures are therefore not considered to be a project modification.[57]

156. The MNDOT implements BMPs on all road/bridge construction and maintenance projects regardless of whether a consultation is required.[58] Beyond these BMPs, the MNDOT and USACE anticipate implementing the following project modifications for road/bridge construction and maintenance projects:[59]

- **Timing Restrictions.** Like most road/bridge construction and maintenance projects in proposed shiner habitat, the MNDOT anticipates restrictions on work during the shiner spawning season.

- **Restriction on In-Stream Work.** The MNDOT also anticipates restrictions on road/bridge work in-stream, including restrictions on the in-stream use of equipment.

157. The MNDOT anticipates that the implementation of these two project modifications could increase the cost of each project by up to $50,000.

158. The USACE in Minnesota recorded 18 section 404 permit actions in the five counties containing proposed shiner critical habitat in Minnesota. Of these permits, 17 were regional general permits for minor bridge replacement or riprap/bank stabilization activities and the remaining permit was a section 404 letter-of-permission associated with removal of part of

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[57] In cases where BMPs are only implemented where requested by the Service through a section 7 consultation, the costs of implementation of these practices would be quantified as section 7 costs. Where implementation is standard, however, the costs are considered to be baseline as they would occur regardless of section 7 activity.

[58] Personal communication with Greg Busacker, Minnesota Department of Transportation, October 28, 2002.

[59] Personal communication with Greg Busacker, Minnesota Department of Transportation, October 28, 2002; Ralph Augustin, U.S. Army Corps of Engineers, St. Paul District office, November 8, 2002.

an old railroad bed.[60] The USACE estimates that five to six of these permit actions involved activities in wetlands in or adjacent to shiner waters.[61]

159. Based on these estimates, the USACE anticipates **ten to 30 informal consultations** associated with bridge replacements, other public road upgrades, or riprap/bank stabilization activities over the next ten years.

160. The St. Paul, Minnesota office of the USACE indicates that it expects to undertake the same protective measures as DOT projects for its 404 permit projects. The USACE also requires actions to avoid creation of in-stream barriers and implementation of effective erosion and spill prevention measures.[62] All USACE permits currently contain requirements under their BMPs for adequate erosion control and avoiding and minimizing impacts to water/wetland areas. The USACE accordingly anticipates that projects within critical habitat will include adequate protections for the species and habitat, and does not anticipate that additional project measures will be required beyond these baseline protections.

Agriculture and Ranching-Related Activities

161. The NRCS and FSA in Minnesota may consult with the Service with respect to its voluntary partnering programs through which private landowners are encouraged to improve agriculture and ranching activities on their lands. Such programs include CRP, EQIP, and WHIP. In Minnesota, the FSA oversees the CRP program and the NRCS oversees the EQIP and WHIP programs.[63] Approximately **120 informal consultations** regarding the implementation of these voluntary programs are expected over the next ten years.[64]

162. A goal of these projects is to improve agricultural management to minimize environmental impact, including potential effects on endangered and threatened species.

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[60] A general permit covers activities that are substantially similar in nature and cause only minimal individual and cumulative environmental impacts. Letters of permission are utilized when the proposed project would not significantly impact, either individually or cumulatively, environmental values. U.S. Army Corps of Engineers Headquarters, Regulatory Program Overview, http://www.usace.army.mil/inet/functions/cw/cecwo/reg/oceover.htm, accessed on November 12, 2002.

[61] Personal communication with Ralph Augustin, U.S. Army Corps of Engineers, St. Paul District office, November 8, 2002; U.S. Army Corps of Engineers, Department of the Army Permit GP-01-MN, St. Paul District, May 17, 2001; U.S. Army Corps of Engineers, St. Paul District, GPLOP98 Authorizations in the State of MN For the Period August 1, 2001 - August 1, 2002, August 9, 2002.

[62] Personal communication with Ralph Augustin, U.S. Army Corps of Engineers, St. Paul District office, November 8, 2002.

[63] Personal communication with Donald Keyes, Farm Services Agency, Minnesota, December 17, 2002.

[64] Personal communication with the Mark Oja, NRCS, Minnesota, November 2002; Personal communication with Donald Keyes, Farm Services Agency, Minnesota, December 17, 2002.

Appropriate conservation measures have been mutually agreed upon between the FSA or NRCS and the Service. Project modifications to these projects are therefore unlikely.

Recreation and Conservation Activities

163. The main focus of the Minnesota PFW program is on wetland restoration and upland/prairie restoration or establishment.[65] Since its inception, the program has helped restore more than 12,000 wetland sites and over 500 upland sites to native prairie habitat. In the past year, there has been one consultation regarding a streambank stabilization in a shiner stream. The PFW program anticipates that consultations regarding the shiner on PFW projects will continue over the next ten years, resulting in **ten informal consultations**. Potential activities include habitat creation projects that may involve streambank stabilizations or construction of in-stream structures. These consultations are expected to remain informal and will not likely involve project modifications, because they are designed to enhance or improve habitat, or to minimize impact from land use activities.[66]

Exhibit 4-2

ESTIMATED CONSULTATIONS AND TECHNICAL ASSISTANCE EFFORTS IN MINNESOTA (OVER TEN YEARS)

Minnesota Watershed	Nature of Activity	Nexus	Estimated Extent of Activity
Big Sioux Watershed	Technical Assistance	N/A	• 62 technical assistance efforts
	Road/Bridge Construction and Maintenance	USACE	• 12 informal consultations
		DOT	• 18 informal consultations
	Agriculture and Ranching	NRCS and FSA	• 49 informal consultations
	Recreation and Conservation	FWS	• 4 informal consultations
Rock River Watershed	Technical Assistance	N/A	• 88 technical assistance efforts
	Road/Bridge Construction and Maintenance	USACE	• 18 informal consultations
		DOT	• 26 informal consultations
	Agriculture and Ranching	NRCS and FSA	• 71 informal consultations
	Recreation and Conservation	FWS	• 6 informal consultations

Note: This analysis assumes that the number of consultations per watershed is directly proportional to the percentage of the total stream miles designated within that watershed. These consultations include those brought about through the species listing and designation of critical habitat for the shiner.

[65] U.S. Fish and Wildlife Service, *Minnesota Partners for Fish and Wildlife*, August 2001.

[66] Personal communication with the U.S. Fish and Wildlife Service, Partners for Fish and Wildlife, Minnesota, December 17, 2002.

4.3 Kansas

Anticipated Technical Assistance Efforts

164. The Service anticipates up to **44 technical assistance efforts** with respect to shiner habitat in Kansas over the next ten years. These efforts are all expected to be "low effort" phone conversations or responses to letter inquiries by private landowners to clarify simple questions with regard to the species and its habitat. The Service expects that these efforts will occur more frequently directly following designation, but less frequently over the longer term. Accordingly, five to ten technical assistance efforts are anticipated in each of the first two years following the designation, and two to three each year for the remaining eight years.[67]

Road/Bridge Construction and Maintenance

165. The Kansas DOT anticipates participating in approximately **20 consultations** regarding bridge and stream crossing maintenance over the next ten years. These consultations typically involve simple road maintenance projects. Therefore, **16 of these consultations are expected to be informal.**[68]

166. Further, the USACE anticipates participating in up to **210 informal consultations** related to bridge construction and maintenance activities in the Kansas portion of the shiner proposed critical habitat. Ten of these consultations are expected to occur due to the issuance of nationwide section 404 permits pursuant to the Clean Water Act. The presence of critical habitat in these areas, however, increases the stringency of the permitting process. As a result, many projects require more project-specific individual permits as opposed to falling under the blanket nationwide permits.[69] Accordingly, 200 of the 210 consultations are anticipated to result from issuance of individual 404 permits.[70]

167. The Kansas Fish and Wildlife Service has enforced a standard list of project modifications for all road and bridge construction and maintenance projects to minimize take of individual shiners and has confirmed that these same measures would be recommended to mitigate critical habitat effects in a consultation. These modifications include:

- Prohibiting in-stream construction activity between May 15 and July 31;

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[67] Personal communication with U.S. Fish and Wildlife Service, Kansas Field Office, October, 25, 2002.

[68] Personal communication with Jim Peterson, Kansas Department of Transportation, October 21, 2002.

[69] Nationwide general permits are issued by the Chief of Engineers through the Federal Register rulemaking process and are designed to regulate activities with minimal impacts without excess delay or paperwork. 33 CFR Part 330, Nationwide Permit Program.

[70] Personal communication with the Dave Hobbie, U.S. Army Corps of Engineers, Kansas District, Kansas State Regulatory office October 30, 2002.

- Avoiding or minimizing deterioration of water quality through pollution or sedimentation by:
  - Placing only clean, uncontaminated rock and materials in the stream;
  - Minimizing excavation and channel reshaping;
  - Using silk screens to control sedimentation;
  - Using storage facilities for chemical discharge; and
  - Eliminating storm water runoff that may introduce pollutants into the stream.

- Applying BMPs for erosion control; and

- Revegetation of native grasses following construction activity.[71]

168. According to the Kansas DOT and the Kansas District office of the USACE, these project modifications are undertaken regardless of the presence of the shiner or its critical habitat under project General Conditions.[72]

169. It appears debatable whether or not the spawning date construction restrictions introduce an additional cost to the consultation process. The Kansas DOT does not anticipate an additional cost associated with this project measure.[73] Additionally, the USACE includes avoidance of spawning areas during spawning season as a General Condition for these construction activities.[74] Although there may be an incremental cost associated with requiring work to be undertaken more intensely to ensure that project schedules are met, the avoidance of spawning season can usually be incorporated into the

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[71] U.S. Fish and Wildlife Service, Conference Opinion to Federal Highway Administration re: I-70 renovation project in Riley, Kansas, September 21, 1998.

[72] U.S. Army Corps of Engineers, *Nationwide Permits and Conditions*, Federal Register Vol. 60, No. 10, January 15, 2002; Personal communication with Kenneth Herin, Kansas Department of Transportation on October 24, 2002: "The erosion control measures are now a part of the regular project specifications, and are redundant with other clean water regulations." Personal communication with Dave Hobbie, U.S. Army Corps of Engineers, Kansas District, Kansas State Regulatory office on October 30, 2002.

[73] Personal communication with the Kenneth Herin, Kansas Department of Transportation on October 24, 2002: "If the species' needs are addressed prior to bids and estimates, the restrictions would be part of the bidding process. Usually if the contractor knows that there are date restrictions, he can plan to get the piers or other structures in the streambed finished before the season."

[74] "Activities, including structures and work in navigable waters of the United States or discharges of dredged or fill material, in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., excavate, fill, or smother downstream by substantial turbidity) of an important spawning area are not authorized." from U.S. Army Corps of Engineers, *Nationwide Permits and Conditions*, Federal Register Vol. 60, No. 10, January 15, 2002.

early planning stages of a project, thereby avoiding additional costs.[75] Accordingly, this analysis assumes no additional costs will be incurred due to project modifications on road and bridge construction consultations in Kansas.

Utilities Construction/Maintenance

170. FERC regulates the rates and transport of natural gas, oil, and electricity under the Department of Energy Organization Act. Based on the consultation history in the critical habitat region, the Service anticipates participating in approximately **four informal consultations** with the Federal Energy Regulatory Commission related to in-stream pipe maintenance in Kansas. These activities may involve pipe covering, or removal and replacement.[76]

171. The Service's Kansas field office requires the same project modifications for pipeline projects as for bridge and road construction activities as itemized above. Because these measures are redundant with clean water regulations, no additional costs are anticipated for project modifications.

Streambank Stabilization, Stream Alignment, and Channelization

172. The USACE anticipates up to **ten formal consultations** will occur related to channel alignments in the Kansas portion of the proposed critical habitat for the shiner over the next ten years. These channelization activities typically require a 404 permit pursuant to the Clean Water Act.

173. The Service expects to require the same project modifications for the ten formal consultations with the USACE related to channel alignments as for bridge and road construction activities as itemized above. Because these measures are redundant with clean water regulations and Action agency BMPs, no additional costs for project modifications are anticipated.

Dam Construction/Rehabilitation and Related Water Operations

174. The NRCS anticipates participating in **14 consultations** over the next ten years with respect to construction and maintenance of impoundments under Public Law 566 of the Watershed and Flood Protection Act.[77] Construction of such impoundments is intended for the benefit of the private landowner, to control erosion, flooding, and improve habitat. **Two of the 14 consultations are anticipated to be formal.**

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[75] Personal communication with the David Hobbie, U.S. Army Corps of Engineers, Kansas District, Kansas State Regulatory office, October 30, 2002.

[76] Personal communication with U.S. Fish and Wildlife Service, Kansas Field Office, October 21, 2002.

[77] Personal communication with Ken Kuiper, Natural Resources Conservation Service, Kansas Office, October 31, 2002.

175. The Kansas office of the NRCS anticipates that the Service will require a number of project modifications associated with construction of impoundments that are not standard practices for the NRCS. Erosion control measures would be undertaken regardless of the recommendations stemming from a consultation. Revegetation, spawning date restrictions, and in some cases the building of a dry dam are the requisite measures likely to be recommended by the Service. The following is a list of estimated costs per project for each of these potential modifications:

- Dry dam construction and revegetation together may cost up to $35,000. A dry dam would facilitate upstream migration of the fish, and the revegetation is of native species.

- Spawning date restrictions may cost up to $40,000 per project. This includes the extra time and effort associated with shutting down and re-mobilizing the impoundment project to avoid interference with shiner spawning season.

In sum, project modifications for each NRCS impoundment project would cost approximately $75,000 per consultation.

176. Additionally, the USACE anticipates participating in up to **ten formal consultations** with respect to construction or maintenance of impoundments in the proposed critical habitat for the shiner in Kansas over the next ten years.

177. The Service's Kansas field office is expected to require the same project modifications for the ten formal consultations with the USACE related to construction of impoundments as for bridge and road construction activities. As these measures are redundant with clean water regulations and Action agency best management practices, no additional costs are anticipated in association with these project modifications.

Recreation and Conservation Activities

178. Three watershed conservation agreements are already in place within the shiner critical habitat area in Kansas. Additionally, the South Fork of the Cottonwood River watershed district intends to pursue a similar conservation agreement for the shiner.[78] This would offer additional species and habitat protection in 15 stream segments that are currently proposed for designation. The Service anticipates that development of such an agreement will generate **one formal consultation** in the next ten years.

179. Creation of the Cottonwood River Watershed conservation plan is meant to provide protection to the shiner and its habitat. Thus, appropriate conservation measures will be addressed in the plan, and therefore, no project modifications are anticipated to result from this consultation.

[78] Personal communication with U.S. Fish and Wildlife Service, Kansas Field Office, October 21, 2002.

Exhibit 4-3

ESTIMATED CONSULTATIONS AND TECHNICAL ASSISTANCE EFFORTS IN KANSAS (OVER TEN YEARS)

Kansas Watershed	Nature of Activity	Nexus	Estimated Extent of Activity
Cottonwood River Watershed	Technical Assistance	N/A	• 18 technical assistance efforts
	Road/Bridge Construction and Maintenance	USACE DOT	• 87 informal consultations • 7 informal and 2 formal consultations
	Utilities Construction/ Maintenance	FERC	• 2 informal consultations
	Streambank Stabilization, Stream Alignment, and Channelization	USACE	• 4 formal consultations
	Dam Construction and Related Water Operations	USACE NRCS	• 4 formal consultations • 5 informal and 1 formal consultation
Kansas River Watershed	Technical Assistance	N/A	• 23 technical assistance efforts
	Road/Bridge Construction and Maintenance	USACE DOT	• 110 informal consultations • 8 informal and 2 formal consultations
	Utilities Construction/ Maintenance	FERC	• 2 informal consultations
	Streambank Stabilization, Stream Alignment, and Channelization	USACE	• 5 formal consultations
	Dam Construction and Related Water Operations	USACE NRCS	• 5 formal consultations • 6 informal and 1 formal consultations
	Recreation and Conservation	FWS; NRCS	• 1 formal consultation
Big Blue River Watershed	Technical Assistance	N/A	• 2 technical assistance efforts
	Road/Bridge Construction and Maintenance	USACE DOT	• 10 informal consultations • 1 informal consultation
	Streambank Stabilization, Stream Alignment, and Channelization	USACE	• 1 formal consultation
	Dam Construction and Related Water Operations	USACE NRCS	• 1 formal consultation • 1 informal consultation
Smoky Hill River Watershed	Technical Assistance	N/A	• 1 technical assistance effort
	Road/Bridge Construction and Maintenance	USACE	• 3 informal consultations

Note: This analysis assumes that the number of consultations per watershed is directly proportional to the percentage of the total stream miles designated within that watershed. These consultations include those brought about through the species listing and designation of critical habitat for the shiner.

4.4 Nebraska

Anticipated Technical Assistance Efforts

180. There is no history of technical assistance efforts with respect to the shiner in Nebraska. There is only one stream segment designated in the State, and the area does not have a history of land use projects that generate such efforts. Therefore**, no technical assistance efforts** are anticipated related to the shiner at Taylor Creek over the next ten years.[79]

Road/Bridge Construction and Maintenance

181. While no past consultations involving the shiner have taken place in this portion of the proposed designation, **approximately four consultations** related to bridge maintenance are anticipated along Taylor Creek over the next ten years.[80] Such activity typically requires an USACE section 404 permit in order to assure that there is no altering of riparian vegetation or channel morphology through increased sedimentation, vegetation manipulation, or in-stream construction activities. **Two of the four consultations are expected to be informal**. These consultations may be due to increased awareness of the species or its habitat boundaries brought about by designation of critical habitat.

182. The absence of a consultation history in Nebraska makes it difficult to determine what project modifications the Service would request for bridge and road projects in the area. The Service has indicated that it would likely require the same measures as those recommended by the Kansas Fish and Wildlife office on similar projects (presented above).[81] Further the DOT and USACE are subject to the same General Conditions in Nebraska as in Kansas with regard to in-stream projects. Therefore, this analysis assumes no additional cost due to project modifications on road and bridge construction projects in Nebraska.

Agriculture and Ranching-Related Activities

183. The NRCS anticipates participating in up to **three informal consultations** with the Service in Nebraska associated with construction of livestock waste facilities over the next ten years. These facilities lie within a half a mile of Taylor Creek and therefore have the potential to effect water quality through runoff. Because of the proximity of the potential waste facilities to the stream, it is possible that the Service will require more stringent standards. Typically these facilities are designed to withstand a hundred year storm.

184. The Nebraska office of the NRCS anticipates that the Service may request more rigorous measures to ensure against structural failure in the design of livestock waste

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[79] Personal communication with U.S. Fish and Wildlife Service, Nebraska Field Office, October 22, 2002.

[80] Personal communication with U.S. Fish and Wildlife Service, Nebraska Field Office, October 22, 2002.

[81] Personal communication with U.S. Fish and Wildlife Service, Nebraska Field Office, October 23, 2002.

facilities along Taylor Creek. The presence of the shiner may require extra design precautions to ensure there is no failure due to a higher intensity storm. These extra precautions go above and beyond the standard safety measure of securing facilities against damage from a 100 year storm and are anticipated to cost from $5,000 to $10,000 per facility.[82]

185. The NRCS partners with private landowners through a number of voluntary conservation programs including CRP, EQIP, and WHIP. Because these projects are beneficial in nature and are therefore not expected to result in any negative impact on species or habitats, the NRCS does not engage in consultations with the Service with respect to such programs.[83]

Streambank Stabilization, Stream Alignment, and Channelization

186. Bank stabilization projects along Taylor Creek are anticipated to result in **four consultations** within the next ten years.[84] The proposed stretch of creek, while mostly intersecting private lands primarily dedicated to rowcropping (corn and soybeans) and grazing, also includes a small portion that runs through the City of Madison, Nebraska and a golf course. In such areas, bank stabilization may be necessary because of the impact of frequent land use surrounding the creek bed. Stabilization activities may require a 404 permit from the USACE, and therefore a consultation with the Service. Two of the four consultations are expected to be informal.

187. USACE bank stabilization activities in Nebraska are not expected to result in project modifications because of the substantial protections afforded to the projects under the USACE General Conditions.

188. The NRCS anticipates participating in **one informal consultation** related to construction of a grade stabilization structure along Taylor Creek at some point over the next ten years. Construction of such structures, while beneficial to the shiner by preventing erosion, may impede passage through the stream. The Service may therefore require construction of a fish ladder along with the stabilization structure in order to facilitate fish passage and ensure the project does not interfere with migration patterns. This precautionary measure is anticipated to cost between $5,000 and $10,000.[85]

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[82] Personal communication with Steve Chick, Natural Resources Conservation Service, Nebraska office, October 31, 2002.

[83] Personal communication with Steve Chick, Natural Resources Conservation Service, Nebraska Office, October 28, 2002.

[84] Personal communication with U.S. Fish and Wildlife Service, Nebraska Field Office, October 22, 2002.

[85] Personal communication with Steve Chick, Natural Resources Conservation Service, Nebraska office, October 31, 2002.

Dam Construction/Rehabilitation and Related Water Operations

189. **One informal consultation** is anticipated to take place with respect to impoundment or pond creation activity on private land along Taylor Creek. Impoundments may be created by landowners to control flooding. Landowners frequently request assistance from the NRCS for such activities as impoundments may appreciably alter the natural flow and habitat of the stream. Specifically, the creation of the resulting pond may trap larger predatory fish in proximity to the shiner.[86]

190. The Service may require that the NRCS build larger dikes in order to control the passage of predatory fish.[87] The NRCS therefore anticipates that the Service may request that larger dikes be built in order to limit passage of the predatory fish. This project modification is expected to cost between $2,000 and $3,000.

Exhibit 4-4

ESTIMATED CONSULTATIONS AND TECHNICAL ASSISTANCE EFFORTS IN NEBRASKA (OVER TEN YEARS)

Nebraska Watershed	Nature of Activity	Nexus	Estimated Extent of Activity
Elkhorn River Watershed	Road/Bridge Construction and Maintenance	USACE	• 2 informal and 2 formal consultations
	Agriculture and Ranching Activities	NRCS	• 3 informal consultations
	Streambank Stabilization, Stream Alignment, and Channelization	USACE NRCS	• 2 informal and 2 formal consultations • 1 informal consultation
	Dam Construction and Related Water Operations	NRCS	• 1 informal consultation

Note: As only one watershed contains designated stream segments, all anticipated consultations in Nebraska are assumed to take place within that watershed. These consultations include those brought about through the species listing and designation of critical habitat for the shiner.

4.5 South Dakota

Anticipated Technical Assistance Efforts

191. The South Dakota Service Field Office predicts a substantial number of technical assistance efforts during the next ten years. These technical assistance efforts primarily involve work with State agencies that have been delegated authority to administer water

[86] Personal communication with U.S. Fish and Wildlife Service, Nebraska Field Office, October 22, 2002.

[87] Personal communication with Steve Chick, Natural Resources Conservation Service, Nebraska Office, October 31, 2002.

quality-related programs by EPA or have received funding from a Federal agency. This analysis anticipates **915 technical assistance efforts** during the next ten years associated with the following activities:

- Confined Animal Feeding Operations (CAFOs) - CAFOs "congregate animals, feed, manure, dead animals, and production operations on a small area."[88] These operations involve bringing feed to the animals rather than grazing or running the cattle in pastures. The primary impact of CAFO operations on the shiner and its habitat include the potential runoff of animal waste and wastewater into streams from breaks or spills of waste storage structures and non-agricultural application of manure to cropland.[89] The Service anticipates engaging in **50 technical assistance efforts** with the South Dakota Department of Environment and Natural Resources (SDDENR) during the next ten years regarding CAFO activities.[90] These efforts are not expected to require further modification as these projects typically require significant State-level baseline protective measures for the shiner and its habitat.

- Water quality certifications under section 401 of the Clean Water Act - the SDDENR makes water quality certifications pursuant to section 401 of the Clean Water Act for each individual permit issued by the USACE under section 404 of the Clean Water Act. The SDDENR works with the Service to ensure that these actions do not adversely impact the shiner or its habitat. Therefore, the Service anticipates engaging in **300 technical assistance efforts** with the SDDENR during the next ten years regarding section 401 water quality certification activities.[91]

- NPDES permits under the Clean Water Act - the Service anticipates engaging in **480 technical assistance efforts** with the SDDENR over the next ten years regarding NPDES permits in the areas proposed as critical habitat in South Dakota. Typically, private landowners contact the SDDENR to acquire NPDES permits. The SDDENR may then contact the Service to ensure that permitting these activities will not result in jeopardy to the shiner or adverse modification to shiner habitat. The Service does not anticipate that there will be potential harm to the species or habitat in most cases.[92] In instances where

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[88] U.S. Environmental Protection Agency, Animal Feeding Operations, National Pollutant Discharge Elimination System (NPDES), accessed at http://cfpubl.epa.gov/npdes/home on November 7, 2002.

[89] Id.

[90] Personal communications with U.S. Fish and Wildlife Service, South Dakota Field Office, October 29, 2002 and December 16, 2002.

[91] Personal communication with U.S. Fish and Wildlife Service, South Dakota Field Office, December 16, 2002.

[92] Personal communication with U.S. Fish and Wildlife Service, South Dakota Field Office, December 16, 2002.

there is potential for harm to the species or habitat, a consultation is initiated as detailed later in this section of the analysis.

- Bank stabilization, irrigation ditch clean out, and rural water projects - The Governor's Office of Economic Development (GOED) in South Dakota provides funding for bank stabilization, irrigation ditch clean out, and rural water projects through its community block grant program, which is funded by the Housing and Urban Development agency. The GOED prepares an environmental analysis of each project funded through the grant program and notifies the Service by letter of each environmental analysis. The Service typically provides the GOED with comments and recommends mitigation measures in instances where the proposed project may impact a threatened or endangered species or its habitat. The GOED anticipates participating in **ten technical assistance efforts** during the next ten years regarding activities funded under the community block grant that may affect the shiner. Potential mitigation measures for these projects may include restrictions on work below the mean high water line, surveys for the shiner, and rerouting drainages. No additional costs are associated with the restriction on work below the mean high water line. The GOED anticipates survey costs of $15,000 per project for projects along long rivers and additional administrative costs up to $5,000 per project if drainages need to be moved. The cost of additional construction associated with rerouting drainages depends on how far the drainage needs to be rerouted.[93] Based on uncertainty regarding the number of projects that will require surveys and/or the rerouting of drainages, costs associated with these project modifications are not quantified in this analysis.

- Projects Funded by the Rural Utilities Service (RUS) - RUS finances rural water and waste, electric, and telecom projects within the areas proposed as critical habitat in South Dakota. The RUS requires applicants to submit a report for each project that describes all potential environmental impacts that may result from the project, including any impacts on threatened and endangered species. As part of this environmental review process, applicants typically solicit comments from the Service regarding whether a proposed project may impact a threatened and endangered species. In response, the Service may negotiate mitigation measures with applicants such as timing restrictions and repairing stream bottoms. The RUS anticipates that applicants will engage in up to **75 technical assistance efforts** with the Service during the next ten years regarding rural water projects. The RUS does not anticipate becoming involved in any of these efforts.[94]

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[93] Personal communication with Steve Harding, Governor's Office of Economic Development, December 17, 2002.

[94] Personal communication with James Valer and Larry Wolfe, Rural Utilities Service, December 17 and 18, 2002.

Road/Bridge Construction and Maintenance

192. The South Dakota DOT (SDDOT) attempts to rectify any potential issues with the Service related to road/bridge construction in order avoid formal consultation. Therefore, the majority of past consultations for such activities have remained informal. This analysis anticipates that up to **500 informal consultations and 20 formal consultations** will occur during the next ten years.[95]

193. The SDDOT has developed a list of BMPs that apply to all road/bridge construction and maintenance projects.[96] Pertinent BMPs include:

- Minimizing in-stream construction activities;
- Implementing and monitoring comprehensive erosion and sedimentation controls;
- Bank stabilization/restoration (i.e., revegetation) upon completion of construction activity; and
- Utilizing temporary storage facilities for any hazardous materials to prevent spills.[97]

194. The SDDOT established these BMPs in order to comply with requirements under the Clean Water Act. Therefore, although they may offer some additional protection to the shiner, the costs associated with these BMPs are not attributable to section 7 implementation. The SDDOT and Pierre, South Dakota office of the USACE also implement Class IV Fishery Resource Conditions in all Class IV Fishery Resource areas, also at no or minimal additional cost to road/bridge construction and maintenance projects.[98]

195. However, past DOT road/bridge construction and maintenance projects in South Dakota have resulted in modifications above and beyond the conservation measures afforded through implementation of BMPs and Class IV Fishery Resource Conditions. Such project modifications include:

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[95] The SDDOT anticipates 250 informal and ten to 30 formal consultations while the Service anticipates 500 informal and 20 formal consultations during the next ten years. Personal communication with Dave Graves, South Dakota Department of Transportation, October 8, 2002; U.S. Fish and Wildlife Service, South Dakota Field Office, September 27, 2002.

[96] Personal communication with Dave Graves, South Dakota Department of Transportation, October 8, 2002.

[97] Personal communication with Dave Graves, South Dakota Department of Transportation, October 8, 2002; South Dakota Department of Transportation Topeka Shiner Best Management Practices.

[98] Personal communication with Steve Naylor, U.S. Army Corps of Engineers, Pierre South Dakota office, October 8, 2002; Consultation history for the shiner provided by the U.S. Fish and Wildlife Service South Dakota Field Office.

- Surveys. The South Dakota DOT expects that it may need to survey streams when work occurs in or around areas of shiner habitat. The cost of surveys may vary according to project scale and location, but average approximately $3,800.[99] This estimate is based on a recent survey conducted by the South Dakota DOT on the Vermillion River. If shiner are located in the project area, removal of shiners will likely be required prior to construction.

- Off-Site Mitigation Lands. The Service may require mitigation for activity in the critical habitat area, such as enhancing access to oxbows or creation of habitat. A current project in South Dakota involves creating a channel into an oxbow and will require a flood easement. However, there have been no costs associated with this project to date.

- Timing Restrictions. One likely modification for all proposed activity is the prohibition of in-stream construction activities during shiner spawning season.[100] This project modification may have an associated cost. However, as the State DOT and USACE offices in South Dakota were unable to identify this cost, it is assumed to be minor.

196. Accordingly, all DOT projects in South Dakota are expected to result in an incremental cost of $3,800 per project due to project modifications. This likely overstate costs, as not all projects are anticipated to require surveys, or may require less costly, low effort surveys.[101] While, the South Dakota Farm Bureau commented that this estimate for project modifications appears to be low,[102] the estimate is considered reasonable as it is based on actual South Dakota DOT project experience.

Agriculture and Ranching-Related Activities

197. Although the FSA routinely works with farmers on a variety of agricultural projects, these efforts typically do not involve consultations with the Service. FSA funding is used to purchase lands and machinery and support other operating expenses. In addition, the FSA currently holds seven inventory properties, four of which are less than ten acres each. Before property is sold, the FSA consults with the Service to determine whether there are any endangered or threatened species present on the property. Therefore, it is anticipated that

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[99] This estimate is based on a recent survey conducted along the Vermillion River. Personal communication with Dave Graves, South Dakota Department of Transportation, October 8, 2002.

[100] Shiner spawning seasons falls from late May to early July; U.S. Fish and Wildlife Service, *Topeka Shiner Recovery Plan (Draft)*, Manhattan, KS, 2001.

[101] Personal communication with U.S. Fish and Wildlife Service, South Dakota Field Office, December 6, 2002.

[102] Comment letter from Wayne Smith on behalf of the South Dakota Farm Bureau, April 14, 2004.

the FSA will initiate **seven informal consultations** over the next ten years regarding the sale of inventory property.[103]

198. The EPA is charged with oversight concerning the use of pesticides under the Federal Insecticide Fungicide and Rodenticide Act (FIFRA). Section 18 of this act offers emergency exemptions from FIFRA provisions to Federal agencies following approved EPA review of the activity and specific conditions that may necessitate exemption.[104] The Service anticipates participating in **60 informal consultations** regarding FIFRA section 18 activities over the next ten years.[105] For such consultations, the EPA is the Action agency and the South Dakota Department of Agriculture is the third party.[106]

199. The Service does not anticipate requiring project modifications for agriculture and ranching-related activities. Consultations involving the FSA are likely to be in regard to selling of inventory and are therefore not expected to have significant impact on the shiner or its habitat.[107] Additionally, consultations with respect to section 18 emergency exemptions permits are not expected to require further modification as such projects typically require significant baseline protective measures for the shiner and its habitat.[108]

200. Further, the NRCS in South Dakota supports several voluntary conservation partnership programs including EQIP, WHIP, and CRP. The NRCS anticipates engaging landowners in such programs up to 50 times per year resulting in up to **500 consultations** with the Service over ten years; **30 of these consultations are expected to be formal**. The main land use activities considered in these programs include development of livestock dugouts and streambank stabilization projects. Consultations with respect to voluntary conservation activities are not expected to require project modifications, because these

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[103] Personal communication with Mike Madsen, Farm Services Agency, South Dakota Office, November 6, 2002.

[104] U.S. Environmental Protection Agency, Federal Insecticide, Fungicide and Rodenticide Act, Section 18, Exemption of Federal and State Agencies, Title 7 U.S.C. 136p: "The Administrator may, at the Administrator's discretion, exempt any Federal or State agency from any provision of this Act if the Administrator determines that emergency conditions exist which require such exemption. The Administrator, in determining whether or not such emergency conditions exist, shall consult with the Secretary of Agriculture and the Governor of any State concerned if they request such determination."

[105] Personal communication with U.S. Fish and Wildlife Service, South Dakota Field Office, September 27, 2002.

[106] Personal communication with U.S. Fish and Wildlife Service, South Dakota Field Office, December 16, 2002.

[107] Personal communication with Mike Madsen, Farm Services Agency, South Dakota office, November 6, 2002.

[108] Personal communication with U.S. Fish and Wildlife Service, South Dakota Field Office, December 6, 2002.

projects typically include protective measures for the shiner and its habitat in the project design.[109]

Utilities Construction/Maintenance

201. The BOR anticipates engaging in **three informal consultations** over the next ten years on rural water projects in South Dakota. Additionally, the BOR anticipates reinitiating an informal consultation regarding the Lewis and Clark rural water system **two times** over the next ten years. The BOR typically tries to incorporate potential project modifications into the initial project planning process to avoid significant additional costs due to environmental impacts including implementing timing restrictions and mitigation measures for rural water projects. The BOR is unable to identify any significant costs associated with these project modifications.[110]

202. FERC regulates utility activities involving natural gas, oil, and electricity. The Service anticipates that FERC will initiate **25 informal consultations** during next ten years regarding utility activities.[111] Consultations associated with FERC regulated utility projects may involve project modifications. However, this analysis does not quantify the cost of project modifications associated with FERC activities due to uncertainty regarding the types and costs of project modifications the Service may recommend.

Streambank Stabilization, Stream Alignment, and Channelization

203. The USACE typically reviews 200 to 300 nation-wide permits per year in South Dakota. These nationwide permits cover rural water systems and utility line activities. Many of these nation-wide permits involve multiple locations (e.g., rural pipelines) and involve multiple water crossings (i.e, pipeline must cross over a stream). The USACE incorporates standardized BMPs into all nation-wide permit activities. Consultations are not conducted on actions taken under these nation-wide permits. If a project has the potential to adversely affect the shiner or its habitat, an individual permit will be required and will result in a consultation.[112]

204. The USACE predicts initiating **approximately 16 informal and two formal consultations** over the next ten years regarding individual permits for bank stabilization and channelization projects. The USACE anticipates implementing the same BMPs and Class IV Fishery Resource Conditions for streambank stabilization and channelization projects as

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[109] Personal communication with Mike Kuck, Natural Resource Conservation Service, December 16, 2002.

[110] Personal communication with Faye Streier, Bureau of Reclamation, South Dakota office, October 29, 2002.

[111] Personal communication with U.S. Fish and Wildlife Service, South Dakota Field Office, December 16, 2002.

[112] Personal communication with Steve Naylor, U.S. Army Corps of Engineers, Pierre South Dakota office, October 8, 2002 and October 29, 2002.

those required for road/bridge construction and maintenance projects and utility projects.[113] Again, these protection measures are not attributable to section 7 implementation.

205. Additionally, the SDDOT may initiate consultations regarding bank stabilization projects during the next ten years.[114] However, the number of future consultations and associated costs are not quantified at this time due to lack of sufficient information.

Dam Construction/Rehabilitation and Related Water Operations

206. Private landowners may seek funding from the NRCS for the construction of impoundments.[115] However, the number of future consultations and associated costs are not quantified at this time due to lack of sufficient information.

207. Further, the Service anticipates an additional two consultations per year, or **20 informal consultations** with regard to dam maintenance projects with the Service Federal Aid program. These consultations would remain informal and would not include project modifications as significant protective measures would be incorporated into project designs.[116]

Water Diversion Activities

208. Based on past water diversion projects permitted by the USACE, this analysis anticipates that **one informal** and **one formal consultation** will be initiated by the USACE for water diversion projects requiring 404 permits over the next ten years.[117] These bank stabilization projects may involve project modifications. However, project modification costs are not quantified at this time due to lack of sufficient information on the types of project modifications that may be requested or required by the Service.

Recreation and Conservation Activities

209. The South Dakota PFW program utilizes a flexible approach to promote wildlife conservation and sustainable agriculture that is responsive to the site-specific needs and

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[113] Personal communication with Steve Naylor, U.S. Army Corps of Engineers, Pierre South Dakota office, October 8, 2002.

[114] Personal communication with U.S. Fish and Wildlife Service, South Dakota Field Office, December 16, 2002.

[115] Personal communication with U.S. Fish and Wildlife Service, South Dakota Field Office, September 27, 2002.

[116] Personal communication with U.S. Fish and Wildlife Service, South Dakota Field Office, December 16, 2002.

[117] Id.

concerns of private landowners.[118] The program provides assistance to private landowners interested in implementing conservation practices, such as wetland restoration, grassland restoration, wetland development, riparian restoration, grassland enhancement, and prescribed burns. The Service anticipates initiating **60 informal consultations** regarding PFW projects in the areas proposed as critical habitat in South Dakota during the next ten years. The Service does not anticipate recommending any project modifications associated with these projects, because the agency makes an effort to ensure that all projects undertaken will not have an adverse affect on threatened or endangered species and their habitats.[119]

210. The South Dakota Department of Games, Fish and Parks is in the early stages of developing a statewide action plan directed at conserving the shiner and its habitat in the State.[120] The Service intends to review the South Dakota action plan to ensure that the standards put forth match or exceed those required of critical habitat designation for the species.[121] Therefore, approval of this plan would require **one formal consultation** with the Service. The South Dakota conservation plan currently in development is intended to protect the shiner and its habitat. No project modifications are anticipated regarding the development and implementation of this plan as protective measures to the shiner and its habitat are the objective of the plan.[122]

Water Quality Activities

211. The Service anticipates that EPA will initiate **100 informal consultations** associated with TMDL activities in proposed shiner habitat in South Dakota during the next ten years.[123] The Service also consults with the EPA on Section 319 grants for nonpoint source pollution management programs. The EPA anticipates engaging in up to **120 informal**

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[118] U.S. Fish and Wildlife Service, *South Dakota Partners for Fish and Wildlife Program*, July 2001.

[119] Personal communication with U.S. Fish and Wildlife Service, South Dakota Field Office, November 12, 2002.

[120] Personal communication with Jeff Shearer, South Dakota Department of Game, Fish and Parks, November 8, 2002.

[121] The State of Missouri also developed a statewide action plan offering special protection to the species and habitat that was as intensive or more intensive than that offered by the designation of critical habitat. The State of Missouri was exempted from critical habitat designation because of the special provisions afforded in the action plan. The Missouri Department of Conservation, *An Action Plan for the Topeka Shiner* (*Notropis topeka*) in Missouri, January 1999.

[122] Personal communication with Jeff Shearer, South Dakota Department of Game, Fish and Parks, November 8, 2002; personal communication with the U.S. Fish and Wildlife Service, South Dakota Field Office, September 27, 2002.

[123] Personal communication with the U.S. Fish and Wildlife Service, South Dakota Field Office, September 27, 2002; personal communication with Duane Murphy, South Dakota Department of Environment and Natural Resources, October 29, 2002.

consultations with respect to 319 programs during the next ten years.[124] For such consultations, the EPA is the Action agency and the SDDENR is the third party.[125]

212. Most NPDES activities will not require EPA oversight and, thus, will result in technical assistance efforts between the Service and the SDDENR as described at the beginning of this discussion of South Dakota. However, the Service anticipates that 20 NPDES permits may require increased effort by the EPA to ensure significant protective measures for the shiner and its habitat. Therefore, this analysis anticipates that **20 informal section 7 consultations** will take place over the next ten years with regard to NPDES permits. For such consultations, the EPA is the Action agency and the SDDENR is the third party.[126]

213. The SDDENR anticipates that its TMDL and NPDES projects will be subject to surveys for the location of shiners and spawning season restrictions. There are no expected additional costs associated with the imposition of timing restrictions, as such measures are already typically implemented for these activities. Surveys conducted in the past to determine whether shiner were present in the project area were provided by the South Dakota University Cooperative Unit at no cost to the SDDENR. However, because technical assistance efforts and consultations associated with activities planned in proposed critical habitat are likely to require surveys, the costs incurred by the South Dakota University Cooperative Unit are associated with CH.

214. The South Dakota State University Cooperative Unit developed maps of occupied areas for a variety of fish species, including the shiner, prior to the proposed designation of critical habitat for the shiner. For future consultations in areas where surveys have not been conducted, the Service may request the Action agency to conduct surveys. In such instances, Action agencies typically contact the South Dakota University Cooperative Unit to determine whether the shiner is present in the project area. The cost associated with South Dakota University Cooperative Unit staff time to review maps of fish species occupied areas associated with such future consultations is anticipated to be negligible.[127]

Tribal Activities

215. Proposed critical habitat for the shiner is bordered by lands of Sisseton-Wahpeton Sioux and Flandreau-Santee Sioux Tribes in South Dakota. The Service in South Dakota may work with the Bureau of Indian Affairs (BIA) to identify tribal activities with the potential to impact the shiner or its habitat. However, available information indicates that

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[124] Personal communication with Bruce Vander, EPA Region 8, November 22, 2002.

[125] Personal communication with U.S. Fish and Wildlife Service, South Dakota Field Office, December 16, 2002.

[126] Personal communication with U.S. Fish and Wildlife Service, South Dakota Field Office, December 16, 2002.

[127] Personal communication with Chuck Berry, South Dakota State University Cooperative Unit, November 2002; personal communication with U.S. Fish and Wildlife Service, South Dakota Field Office, September 27, 2002.

tribal lands do not overlap the proposed critical habitat area for the shiner. Additionally, the Service does not anticipate that the critical habitat proposed on non-tribal lands will effect tribal trust resources or the exercise of tribal rights.[128] Therefore, tribal activities are not expected to be impacted as a result of the designation.

Exhibit 4-5

ESTIMATED CONSULTATIONS AND TECHNICAL ASSISTANCE EFFORTS IN SOUTH DAKOTA (OVER TEN YEARS)

South Dakota Watershed	Nature of Activity	Nexus	Estimated Extent of Activity
Big Sioux Watershed	Technical Assistance	N/A	• 183 technical assistance efforts
	Road/Bridge Construction and Maintenance	DOT/ FHWA	• 100 formal and 4 formal consultations
	Agriculture and Ranching	FSA	• 1.4 informal consultations
		NRCS	• 94 informal and 6 formal consultations
		EPA	• 12 informal consultations
	Utilities Construction and Maintenance	FERC	• 5 informal consultations
		BOR	• 2.5 informal consultations
	Streambank Stabilization, Stream Alignment and Channelization	DOT/ FHWA	• unknown
		USACE	• 3.2 informal and 0.4 formal consultations
	Dam Construction and Related Water Operations	NRCS	• unknown
		FWS	• 4 informal consultations
	Water Diversion	USACE	• 0.2 informal and 0.2 formal consultations
	Recreation and Conservation	FWS	• 12 informal and 0.2 formal consultations
	Water Quality Activities	EPA	• 48 informal consultations

[128] U.S. Fish and Wildlife Service, *Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for the Topeka Shiner; Proposed Rule*, 50 CFR Part 17, August 2002.

Exhibit 4-5

ESTIMATED CONSULTATIONS AND TECHNICAL ASSISTANCE EFFORTS IN SOUTH DAKOTA (OVER TEN YEARS)

South Dakota Watershed	Nature of Activity	Nexus	Estimated Extent of Activity
Lower Big Sioux River Watershed	Technical Assistance	N/A	• 183 technical assistance efforts
	Road/Bridge Construction and Maintenance	DOT/ FHWA	• 100 formal and 4 formal consultations
	Agriculture and Ranching	FSA	• 1.4 informal consultations
		NRCS	• 94 informal and 6 formal consultations
		EPA	• 12 informal consultations
	Utilities Construction and Maintenance	FERC	• 5 informal consultations
		BOR	• 2.5 informal consultations
	Streambank Stabilization, Stream Alignment and Channelization	DOT/ FHWA	• unknown
		USACE	• 3.2 informal and 0.4 formal consultations
	Dam Construction and Related Water Operations	NRCS	• unknown
		FWS	• 4 informal consultations
	Water Diversion	USACE	• 0.2 informal and 0.2 formal consultations
	Recreation and Conservation	FWS	• 12 informal and 0.2 formal consultations
	Water Quality Activities	EPA	• 48 informal consultations
Vermillion River Watershed	Technical Assistance	N/A	• 183 technical assistance efforts
	Road/Bridge Construction and Maintenance	DOT/ FHWA	• 100 formal and 4 formal consultations
	Agriculture and Ranching	FSA	• 1.4 informal consultations
		NRCS	• 94 informal and 6 formal consultations
		EPA	• 12 informal consultations
	Utilities Construction and Maintenance	FERC	• 5 informal consultations
	Streambank Stabilization, Stream Alignment and Channelization	DOT/ FHWA	• unknown
		USACE	• 3.2 informal and 0.4 formal consultations

Exhibit 4-5

ESTIMATED CONSULTATIONS AND TECHNICAL ASSISTANCE EFFORTS IN SOUTH DAKOTA (OVER TEN YEARS)

South Dakota Watershed	Nature of Activity	Nexus	Estimated Extent of Activity
	Dam Construction and Related Water Operations	NRCS FWS	• unknown • 4 informal consultations
	Water Diversion	USACE	• 0.2 informal and 0.2 formal consultations
	Recreation and Conservation	FWS	• 12 informal and 0.2 formal consultations
	Water Quality Activities	EPA	• 48 informal consultations
Lower James River Watershed	Technical Assistance	N/A	• 183 technical assistance efforts
	Road/Bridge Construction and Maintenance	DOT/ FHWA	• 100 formal and 4 formal consultations
	Agriculture and Ranching	FSA NRCS EPA	• 1.4 informal consultations • 94 informal and 6 formal consultations • 12 informal consultations
	Utilities Construction and Maintenance	FERC	• 5 informal consultations
	Streambank Stabilization, Stream Alignment and Channelization	DOT/ FHWA USACE	• unknown • 3.2 informal and 0.4 formal consultations
	Dam Construction and Related Water Operations	NRCS FWS	• unknown • 4 informal consultations
	Water Diversion	USACE	• 0.2 informal and 0.2 formal consultations
	Recreation and Conservation	FWS	• 12 informal and 0.2 formal consultations
	Water Quality Activities	EPA	• 48 informal consultations

Exhibit 4-5

ESTIMATED CONSULTATIONS AND TECHNICAL ASSISTANCE EFFORTS IN SOUTH DAKOTA (OVER TEN YEARS)

South Dakota Watershed	Nature of Activity	Nexus	Estimated Extent of Activity
Upper James River Watershed	Technical Assistance	N/A	• 183 technical assistance efforts
	Road/Bridge Construction and Maintenance	DOT/ FHWA	• 100 formal and 4 formal consultations
	Agriculture and Ranching	FSA	• 1.4 informal consultations
		NRCS	• 94 informal and 6 formal consultations
		EPA	• 12 informal consultations
	Utilities Construction and Maintenance	FERC	• 5 informal consultations
	Streambank Stabilization, Stream Alignment and Channelization	DOT/ FHWA	• unknown
		USACE	• 3.2 informal and 0.4 formal consultations
	Dam Construction and Related Water Operations	NRCS	• unknown
		FWS	• 4 informal consultations
	Water Diversion	USACE	• 0.2 informal and 0.2 formal consultations
	Recreation and Conservation	FWS	• 12 informal and 0.2 formal consultations
	Water Quality Activities	EPA	• 48 informal consultations

Note: According to the Service, consultations regarding the shiner in South Dakota are expected to be distributed evenly across the watersheds that contain designated critical habitat. Additionally, the costs of the anticipated statewide Action Plan are allocated evenly across all watersheds. Because of this methodology, fractions of consultations are estimated for particular watersheds. These consultations include those brought about through the species listing and designation of critical habitat for the shiner.

4.6 Total Costs Associated With Proposed Critical Habitat

216. This section presents low and high end cost estimates of technical assistance efforts, informal and formal consultations, and project modifications based on the number of section 7 efforts as quantified above.

217. Exhibit 4-6 summarizes the administrative costs of the consultations and technical assistance efforts involving the proposed critical habitat designation for the shiner as forecast in Exhibits 4-1 through 4-5. These estimates reflect the total consultation and technical assistance profiles associated with the proposed designation regardless of whether these

consultations or assistance efforts may be attributed co-extensively to the listing of the species. Further, this analysis employs the high-end estimate of expected consultations to derive the potential cost of the designation so as not to underestimate the potential impact of the rule. As a result, these estimates reflect an upper bound measure of the impact likely to be associated with this designation.

218. The administrative cost estimates in Exhibit 4-6 were calculated by multiplying the number of expected consultations or technical assistance calls (Exhibits 4-1 through 4-5) by the per effort cost of these actions (Exhibit 3-1).[129] Based on this analysis, the estimated total section 7 administrative costs for the shiner range from $9.85 million to $33.6 million . The high end estimate of administrative costs represents approximately 77 percent of the total section 7 costs associated with proposed critical habitat for the shiner. Third parties are anticipated to bear the majority of the administrative costs, approximately 52 percent, with the Service and other Federal agencies each bearing 24 percent of the administrative consultation costs.

Exhibit 4-6

ESTIMATED ADMINISTRATIVE CONSULTATION AND TECHNICAL ASSISTANCE COSTS ASSOCIATED WITH CRITICAL HABITAT FOR THE TOPEKA SHINER (OVER TEN YEARS)

Action	Range	Costs to the Service	Costs to Action Agencies	Costs to Third Parties	Total Costs
Technical Assistance	*Low*	$548,000	N/A	$1,270,000	$1,810,000
	High	$1,430,000	N/A	$3,160,000	$4,600,000
Informal Consultation	*Low*	$1,950,000	$2,530,000	$2,340,000	$6,820,000
	High	$6,040,000	$7,600,000	$13,400,000	$27,100,000
Formal Consultation	*Low*	$272,000	$341,000	$607,000	$1,220,000
	High	$530,000	$565,000	$861,000	$1,960,000
Total	***Low***	**$2,770,000**	**$2,870,000**	**$4,210,000**	**$9,850,000**
	High	**$8,000,000**	**$8,160,000**	**$17,500,000**	**$33,600,000**

Notes: Technical assistance costs represent administrative costs associated with various activities on private lands that do not involve a Federal nexus. These consultations include those brought about through the species listing and designation of critical habitat for the shiner.

Sources: IEc analysis based on data from the Federal Government General Schedule Rates, 1999, Office of Personnel Management, 2000, and information from biologists in the U.S. Fish and Wildlife Service.
Note: Third parties are defined as State agencies, local municipalities, and private parties. Estimates are reported in 2002 dollars. Estimates may not sum due to rounding.

[129] This cost model applies to all consultations excluding the development of a statewide action plan for South Dakota. Assumed costs of developing the action plan, $25,000 to $38,000, are based on development of a similar plan for the State of Missouri; personal communication with Harold Kerns, Missouri Department of Conservation, October 25, 2002; personal communication with Duane Murphy, South Dakota Department of Environment and Natural Resources, November 8, 2002.

219. The majority of costs presented in Exhibit 4-6 represent administrative costs associated with consultations for transportation-related activities. These administrative costs will primarily be borne by State DOTs. The project modification costs presented below are small in comparison to the total administrative costs. This is primarily due to the application of substantial existing protections to riverine habitat pursuant to Federal and State regulations and policies.

220. Exhibit 4-7 presents estimates of per effort and total project modification costs associated with activities affecting proposed critical habitat for the shiner. The cost estimates were calculated by multiplying the number of anticipated consultations likely to require modifications by the per effort cost of these actions. Based on this analysis, the upper-bound total cost of modifications for projects affecting the shiner is estimated to be approximately **$9.77 million over ten years**. Approximately 89 percent of these project modification costs are related to road and bridge construction projects, the main activity anticipated in the critical habitat area. Approximately 46 percent of the total project modification costs are attributable specifically to Iowa transportation projects.

Exhibit 4-7

ESTIMATED COSTS ASSOCIATED WITH POTENTIAL PROJECT MODIFICATIONS (PER EFFORT AND TOTAL OVER TEN YEARS)

State	Affected Activity (Entity Likely to Bear Cost)	Possible Project Modifications	Cost Range	Per Effort	Number of Consultations	Total
Iowa	Road and Bridge Construction and Maintenance Projects (State DOT)	• Restriction of in-stream construction • Building longer/higher bridges • Restriction of culvert building • Construction of alternative temporary crossings	*N/A*	$225,000	20	$4,500,000
Minnesota	Road and Bridge Construction and Maintenance Projects (State DOT)	• Spawning season restrictions • Restriction of in-stream construction	*N/A*	$50,000	44	$2,200,000
Kansas	Dam Construction/Maintenance Projects (NRCS)	• Dry dam construction • Revegetation of impact area • Spawning season restrictions	*N/A*	$75,000	14	$1,050,000
Nebraska	Livestock Waste Facilities (NRCS)	• Extra design precautions	*Low*	$5,000	3	$15,000
			High	$10,000	3	$30,000
	Grade Stabilization (NRCS)	• Installation of a fish ladder	*Low*	$5,000	1	$5,000
			High	$10,000	1	$10,000
	Impoundment Construction (NRCS)	• Construction of larger dikes	*Low*	$2,000	1	$2,000
			High	$3,000	1	$3,000
South Dakota	Road and Bridge Construction and Maintenance Projects (State DOT)	• Surveying for shiner	*N/A*	$3,800	520	$1,980,000

Exhibit 4-7

ESTIMATED COSTS ASSOCIATED WITH POTENTIAL PROJECT MODIFICATIONS (PER EFFORT AND TOTAL OVER TEN YEARS)

State	Affected Activity (Entity Likely to Bear Cost)	Possible Project Modifications	Cost Range	Per Effort	Number of Consultations	Total
Total Project Modification Costs		Iowa			20	$4,500,000
		Minnesota			44	$2,200,000
		Kansas			14	$1,050,000
		Nebraska			10	$22,000 to $43,000
		South Dakota			520	$1,980,000
		Total			**608**	**$9,770,000**

Note: Totals may not sum due to rounding. These estimates include all project modification costs, including both those associated with the species listing and designation of critical habitat for the shiner.

221. Based on this analysis, the total costs associated with the proposed critical habitat designation for the shiner (i.e., administrative costs as quantified in Exhibit 4-6 plus project modification costs as quantified in Exhibit 4-7) are likely to range from $19.6 million to $43.4 million over the next ten years. More detailed watershed and project-specific cost estimates are presented in Appendix A of this analysis.

222. Exhibit 4-8 provides an overview of the present value of total costs associated with the listing and designation of critical habitat for the shiner over a ten year period. To discount and annualize costs, guidance provided by the Office of Management and Budget (OMB) specifies the use of a real rate of seven percent. In addition, OMB recommends sensitivity analysis using other discount rates. One commonly applied rate is three percent, which some economists believe better reflects the social rate of time preference.[130] This analysis presents results using both of these rates.

Exhibit 4-8

PRESENT VALUE AND ANNUALIZED VALUES OF COSTS ASSOCIATED WITH THE LISTING AND DESIGNATION OF CRITICAL HABITAT FOR THE TOPEKA SHINER

	Total Estimated Costs
Nominal value of total section 7 costs (ten years)	$19.6 million to $43.4 million
Present Value (7% discount rate)	$13.8 million to $30.5 million
Present Value (3% discount rate)	$16.7 million to $37.0 million
Annualized over ten years*	$1.96 million to $4.34 million

* Annualized payments are equal at 7% and 3% because costs are assumed to be distributed evenly throughout the ten year time frame. Annualization at any discount rate therefore amounts to the ten year nominal value ($43.4 million) divided by the number of years over which it is to be distributed (10 years).

Notes: Estimates are rounded to three significant digits. Costs may not add up due to rounding. These estimates include all Section 7 costs, including both those associated with the species listing and designation of critical habitat for the shiner.

223. Approximately 63 percent of total costs will be borne by third parties (i.e., local and State government agencies). Further, 18 percent will be borne by the Service, and 19 percent by Action agencies. The driving factor in this expected allocation of costs is the fact that third parties are most likely to bear the cost of project modifications, which constitute about 23 percent of the total costs. The most cost-intensive activity is road and bridge construction and maintenance which accounts for approximately $20.9 million, or 48 percent, of the total costs.

224. Exhibit 4-9 presents the key assumptions of this economic analysis, as well as the potential direction of relative scale of bias introduced by the assumption.

[130] U.S. Office of Management and Budget, Circular A-4, September 17, 2003.

Exhibit 4-9 CAVEATS TO THE ECONOMIC ANALYSIS	
Key Assumption	**Effect on Cost Estimate**
Historic administrative consultation costs and costs of specific project modifications are good predictors of future consultation behavior.	+/-
Consultation rates will not decrease over time.	++
The presence of other species (i.e., piping plover, etc.) has no influence on consultation/project modification costs.	+
This analysis utilizes the high-end estimate of number of potential consultations to quantify economic impacts.	+
Where location specific information is not available the total number of consultations and associated costs is estimated to be a function of the total river miles within each watershed in Iowa, Minnesota, and Kansas. In South Dakota costs are evenly distributed across watersheds.	0
All Iowa DOT projects will be subject to all potential project modifications (i.e., timing restrictions, restriction of in-stream work, building of longer bridges, restriction on replacing bridges with culverts, and finding alternatives to construction of temporary road crossings during bridge construction).	+
All South Dakota DOT projects will be subject to surveys to determine presence of the shiner.	+
Action agency Best Management Practices are baseline protections that do not introduce additional costs.	+/-
Activities for which sufficient information was not available to predict future consultations (e.g., DOT streambank stabilization and NRCS impoundment projects in South Dakota) will not result in any costs over the next ten years.	-
- : This assumption may result in an underestimate of real costs. + : This assumption may result in an overestimate of real costs. ? : This assumption has an unknown effect on estimates. 0: This assumption does not change the total estimated cost within a State, but may distort the distribution of costs across watersheds within that State.	

4.7 Potential Impacts on Small Businesses

225. Under the Regulatory Flexibility Act (as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996), whenever a Federal agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (i.e. small businesses, small organizations, and small government jurisdictions).[131] However, no regulatory flexibility analysis is required if the head of an agency certifies that the rule will not have a significant economic impact on a substantial

[131] 5 U.S.C. 601 et. seq.

number of small entities.[132] SBREFA amended the Regulatory Flexibility Act to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities.

226. The proposed designation of critical habitat for the shiner is not expected to result in a significant economic impact on a substantial number of small entities. Approximately 37 percent ($16.2 million) of the total costs will be borne by Federal agencies. The majority of the remaining 63 percent of costs ($27.2 million) are largely associated with transportation-related activities. Specifically, approximately 48 percent of the total costs, or $20.9 million, are associated with road/bridge construction and maintenance projects. These costs will primarily be borne by State DOT and various Action agencies. While a portion of the costs detailed in this analysis may be borne by private entities, the Service expects these costs will be relatively small and therefore will not generate significant economic impacts on a substantial number of small entities.

[132] Thus, for a regulatory flexibility analysis to be required, impacts must exceed a threshold for "significant impact" **and** a threshold for a "substantial number of small entities." See 5 U.S.C. 605 (b).

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APPENDIX A
TOTAL COSTS FOR THE TOPEKA SHINER PER WATERSHED

TOTAL SECTION 7 COSTS FOR THE TOPEKA SHINER (OVER TEN YEARS)						
State	**Critical Habitat Impacts**	**Range**	**Costs to the Service**	**Costs to the Action Agency**	**Costs to Third Parties**	**Total Costs**
Iowa- Raccoon River Watershed	Technical assistance	*Low*	$216,000	n/a	$498,000	$714,000
		High	$564,000	n/a	$1,250,000	$1,810,000
	Informal Consultations	*Low*	$74,000	$96,200	$88,800	$259,000
		High	$229,000	$289,000	$511,000	$1,030,000
	Formal Consultations	*Low*	$6,200	$7,800	$13,800	$27,800
		High	$12,200	$13,000	$19,400	$44,600
	Project modifications	*Low*	$0	$0	$3,830,000	$3,830,000
		High	$0	$0	$3,830,000	$3,830,000
Iowa- Boone River Watershed	Technical assistance	*Low*	$19,800	n/a	$45,600	$65,400
		High	$51,700	n/a	$114,000	$166,000
	Informal Consultations	*Low*	$6,000	$7,800	$7,200	$21,000
		High	$18,600	$23,400	$41,400	$83,400
	Project modifications	*Low*	$0	$0	$225,000	$225,000
		High	$0	$0	$225,000	$225,000
Iowa- Rock River Watershed	Technical assistance	*Low*	$24,400	n/a	$56,400	$80,800
		High	$63,900	n/a	$141,000	$205,000
	Informal Consultations	*Low*	$9,000	$11,700	$10,800	$31,500
		High	$27,900	$35,100	$62,100	$125,000
	Project modifications	*Low*	$0	$0	$450,000	$450,000
		High	$0	$0	$450,000	$450,000
Minnesota- Big Sioux River Watershed	Technical Assistance	*Low*	$16,100	n/a	$37,200	$53,300
		High	$42,200	n/a	$93,000	$135,000
	Informal Consultations	*Low*	$83,000	$108,000	$99,600	$291,000
		High	$257,000	$324,000	$573,000	$1,150,000
	Project modifications	*Low*	$0	$0	$900,000	$900,000
		High	$0	$0	$900,000	$900,000

TOTAL SECTION 7 COSTS FOR THE TOPEKA SHINER (OVER TEN YEARS)

State	Critical Habitat Impacts	Range	Costs to the Service	Costs to the Action Agency	Costs to Third Parties	Total Costs
Minnesota-Rock River Watershed	Technical Assistance	*Low*	$22,900	n/a	$52,800	$75,700
		High	$59,800	n/a	$132,000	$192,000
	Informal Consultations	*Low*	$121,000	$157,000	$145,000	$424,000
		High	$375,000	$472,000	$835,000	$1,680,000
	Project modifications	*Low*	$0	$0	$1,300,000	$1,300,000
		High	$0	$0	$1,300,000	$1,300,000
Kansas-Cottonwood River Watershed	Technical assistance	*Low*	$4,680	n/a	$10,800	$15,500
		High	$12,200	n/a	$27,000	$39,200
	Informal Consultations	*Low*	$101,000	$131,000	$121,000	$354,000
		High	$313,000	$394,000	$697,000	$1,400,000
	Formal Consultations	*Low*	$34,100	$42,900	$75,900	$153,000
		High	$67,100	$71,500	$107,000	$245,000
	Project modifications	*Low*	$0	$0	$450,000	$450,000
		High	$0	$0	$450,000	$450,000
Kansas-Kansas River Watershed	Technical assistance	*Low*	$5,980	n/a	$13,800	$19,800
		High	$15,600	n/a	$34,500	$50,100
	Informal Consultations	*Low*	$126,000	$164,000	$151,000	$441,000
		High	$391,000	$491,000	$869,000	$1,750,000
	Formal Consultations	*Low*	$43,400	$54,600	$96,600	$195,000
		High	$85,400	$91,000	$136,000	$312,000
	Project modifications	*Low*	$0	$0	$525,000	$525,000
		High	$0	$0	$525,000	$525,000

TOTAL SECTION 7 COSTS FOR THE TOPEKA SHINER (OVER TEN YEARS)

State	Critical Habitat Impacts	Range	Costs to the Service	Costs to the Action Agency	Costs to Third Parties	Total Costs
Kansas- Big Blue River Watershed	Technical assistance	*Low*	$520	n/a	$1,200	$1,720
		High	$1,360	n/a	$3,000	$4,360
	Informal Consultations	*Low*	$12,000	$15,600	$14,400	$42,000
		High	$37,200	$46,800	$82,800	$167,000
	Formal Consultations	*Low*	$6,200	$7,800	$13,800	$27,800
		High	$12,200	$13,000	$19,400	$44,600
	Project modifications	*Low*	$0	$0	$75,000	$75,000
		High	$0	$0	$75,000	$75,000
Kansas- Smoky Hill River Watershed	Technical assistance	*Low*	$260	n/a	$600	$860
		High	$680	n/a	$1,500	$2,180
	Informal Consultations	*Low*	$3,000	$3,900	$3,600	$10,500
		High	$9,300	$11,700	$20,700	$41,700
Nebraska- Elkhorn River Watershed	Informal Consultations	*Low*	$9,000	$11,700	$10,800	$31,500
		High	$27,900	$35,100	$62,100	$125,000
	Formal Consultations	*Low*	$12,400	$15,600	$27,600	$55,600
		High	$24,400	$26,000	$38,800	$89,200
	Project modifications	*Low*	$0	$0	$22,000	$22,000
		High	$0	$0	$43,000	$43,000
South Dakota- Big Sioux River Watershed	Technical assistance	*Low*	$47,600	n/a	$110,000	$157,000
		High	$124,000	n/a	$275,000	$399,000
	Informal Consultations	*Low*	$282,000	$367,000	$339,000	$988,000
		High	$875,000	$1,100,000	$1,950,000	$3,920,000
	Formal Consultations	*Low*	$34,000	$42,400	$75,900	$152,000
		High	$65,800	$70,000	$108,000	$244,000
	Project modifications	*Low*	$0	$0	$395,000	$395,000
		High	$0	$0	$395,000	$395,000

TOTAL SECTION 7 COSTS FOR THE TOPEKA SHINER (OVER TEN YEARS)

State	Critical Habitat Impacts	Range	Costs to the Service	Costs to the Action Agency	Costs to Third Parties	Total Costs
South Dakota-Lower Big Sioux River Watershed	Technical assistance	*Low*	$47,600	n/a	$110,000	$157,000
		High	$124,000	n/a	$275,000	$399,000
	Informal Consultations	*Low*	$282,000	$367,000	$339,000	$988,000
		High	$875,000	$1,100,000	$1,950,000	$3,920,000
	Formal Consultations	*Low*	$34,000	$42,400	$75,900	$152,000
		High	$65,800	$70,000	$108,000	$244,000
	Project modifications	*Low*	$0	$0	$395,000	$395,000
		High	$0	$0	$395,000	$395,000
South Dakota-Vermillion River Watershed	Technical assistance	*Low*	$47,600	n/a	$110,000	$157,000
		High	$124,000	n/a	$275,000	$399,000
	Informal Consultations	*Low*	$280,000	$364,000	$336,000	$979,000
		High	$867,000	$1,090,000	$1,930,000	$3,890,000
	Formal Consultations	*Low*	$34,000	$42,400	$75,900	$152,000
		High	$65,800	$70,000	$108,000	$244,000
	Project modifications	*Low*	$0	$0	$395,000	$395,000
		High	$0	$0	$395,000	$395,000
South Dakota-Lower James River Watershed	Technical assistance	*Low*	$47,600	n/a	$110,000	$157,000
		High	$124,000	n/a	$275,000	$399,000
	Informal Consultations	*Low*	$280,000	$364,000	$336,000	$979,000
		High	$867,000	$1,090,000	$1,930,000	$3,890,000
	Formal Consultations	*Low*	$34,000	$42,400	$75,900	$152,000
		High	$65,800	$70,000	$108,000	$244,000
	Project modifications	*Low*	$0	$0	$395,000	$395,000
		High	$0	$0	$395,000	$395,000

TOTAL SECTION 7 COSTS FOR THE TOPEKA SHINER (OVER TEN YEARS)

State	Critical Habitat Impacts	Range	Costs to the Service	Costs to the Action Agency	Costs to Third Parties	Total Costs
South Dakota-Upper James River Watershed	Technical assistance	*Low*	$47,600	n/a	$110,000	$157,000
		High	$124,000	n/a	$275,000	$399,000
	Informal Consultations	*Low*	$280,000	$364,000	$336,000	$979,000
		High	$867,000	$1,090,000	$1,930,000	$3,890,000
	Formal Consultations	*Low*	$34,000	$42,400	$75,900	$152,000
		High	$65,800	$70,000	$108,000	$244,000
	Project modifications	*Low*	$0	$0	$395,000	$395,000
		High	$0	$0	$395,000	$395,000
All	**Total Costs**	***Low***	**$2,770,000**	**$2,870,000**	**$14,000,000**	**$19,600,000**
		High	**$8,000,000**	**$8,160,000**	**$27,200,000**	**$43,400,000**

Source: Based on past consultation records and conversations with Federal agencies potentially affected by the proposed critical habitat designation.

Notes: Technical assistance costs represent administrative costs associated with various activities on private lands that do not involve a Federal nexus. These costs are primarily borne by private landowners.
Estimates may not sum due to rounding. Figures have been rounded to three significant digits and are reported in 2002 dollars.

APPENDIX B
SUPPLEMENTAL ECONOMIC IMPACT ANALYSIS OF PROPOSED CRITICAL HABITAT FOR THE TOPEKA SHINER

INTRODUCTION

227. In August 2002, the U.S. Fish and Wildlife Service (the Service) proposed designating critical habitat for the Topeka shiner (*Notropis topeka*) (hereafter shiner) under the Endangered Species Act of 1973, as amended (the Act). This proposal encompassed 186 stream segments, totaling approximately 3,765.9 kilometers (2,340 miles) of stream in the states of Iowa, Kansas, Minnesota, Nebraska, and South Dakota. Because the Act requires an economic analysis of the critical habitat designation, the Service released a "Draft Economic Analysis of Critical Habitat Designation for the Topeka Shiner" (hereafter the DEA) for public review and comment. This DEA only addressed impacts to areas proposed for designation in the proposed rule.

228. The Service requested this Supplemental Economic Analysis because a recent federal district court opinion (Center for Biological Diversity v. Norton, Civ. No. 01-409 TUC DCB (D. Ariz. Jan. 13, 2003) called into question the Service's interpretation of section 3(5)(a) of the Act, which defines critical habitat. The Service's position prior to this recent court opinion was not to define areas as critical habitat that do not need special management considerations or protection. The proposed designation did not include the Fort Riley Army Installation in Kansas or proposed habitat in Missouri because the Service found that the shiner and its habitat within these areas received long-term protection and management and therefore were not in need of additional special management considerations or protection (67 FR 54262, 54272-54274). Therefore, in light of the uncertainty created by the recent court opinion described above, this Supplemental Economic Analysis analyzes the economic impact of critical habitat designation on the Fort Riley Army Installation in Kansas, and on the Bonne Femme, Moniteau, and Sugar Creek Watersheds in Missouri. In addition, this analysis considers the Stray Horse Creek in the Upper Big Sioux Watershed in South Dakota, proposed as critical habitat by the Service following receipt of additional species and habitat information since the publication of the August 21, 2002, proposed rule. The methodology for estimating impacts, scope of analysis, and timeframe of analysis (ten years) are identical to those used in the economic analysis (hereafter the EA).

RELEVANT AREAS

229. The Service has proposed critical habitat designation for the shiner on 16 stream segments, representing 131 miles of stream in the States of Missouri and South Dakota and on the Fort Riley Army Installation in Kansas. The proposed designation includes portions of the following creeks and associated tributaries: Wildcat Creek, Sugar Creek, Moniteau Creek, Bonne Femme Creek, and Stray Horse Creek.

230. The majority of proposed critical habitat in Missouri and South Dakota is in private ownership. These private lands are primarily used for grazing and agriculture, but also include areas with or near private homes. Additionally, within the Bonne Femme Creek Complex of Missouri, the proposal includes a portion of the Charles Green State Wildlife Management Area, owned by the State of Missouri and managed by the Missouri

Department of Conservation. The area proposed on the Fort Riley Military Installation is federally owned and managed by the Department of the Army. The primary use of this area is for infantry training activities.

Fort Riley Army Installation

231. The proposed designation for the Fort Riley Army Installation includes Wildcat Creek and portions of two tributary streams, Little Arkansas Creek and Wind Creek. These stream segments retain relatively good habitat quality that is dominated by tallgrass prairie uplands and some woodlands.

Bonne Femme Creek Watershed

232. Proposed critical habitat within the Bonne Femme Creek Watershed includes five stream segments composed of a portion of mainstem Bonne Femme Creek and four tributary streams, Turkey Creek, Bass Creek, and two unnamed tributaries to Bass Creek. This basin is characterized by extensive watershed modification due to Columbia, Missouri growth spreading through the watershed from the north.

Moniteau Creek Watershed

233. The Service has proposed four stream segments as critical habitat for the shiner within the Moniteau Creek Watershed composed of portions of Moniteau Creek, an unnamed tributary to Moniteau Creek, Smiley Creek, and Pisgah Creek. The Moniteau Creek Watershed drains a mosaic of cropland, woodlands, and pastureland.

Sugar Creek Watershed

234. Proposed critical habitat within the Sugar Creek Watershed consists of three stream segments, including portions of the mainstem Sugar Creek, Tombstone Creek, and an unnamed tributary to Sugar Creek. The proposed designation contains moderate quality habitat with the watershed draining a mosaic of cropland and pastureland.

Stray Horse Creek in the Upper Big Sioux Watershed

235. Stray Horse Creek (one stream segment), Hamlin County, South Dakota. The stream reach proposed for designation runs upstream from the confluence with the Big Sioux River, including adjacent off-channel pool habitat.

SOCIOECONOMIC PROFILE OF PROPOSED CRITICAL HABITAT AREAS

Population

236. A majority of the proposed critical habitat area is under private ownership. Agriculture and grazing are the primary activities on these private lands, although proposed habitat also includes small portions of urban, suburban and industrial areas. The remaining area of the proposed lands consist of small scattered tracts under state and Federal ownership. Exhibit 1 lists the population size, per capita income, and population density for each county containing proposed critical habitat in the States of Missouri and South Dakota, and on Fort Riley in Kansas. Although these measures vary across the

designation, these data suggest that the majority of the areas proposed as critical habitat are less densely populated and support a lower than average income per capita than respective statewide averages.

Exhibit 1

SOCIOECONOMIC PROFILE OF COUNTIES CONTAINING CRITICAL HABITAT FOR THE TOPEKA SHINER (2000)

State	County	Population	Percent of State	Per Capita Income (2000$)	Persons per square mile
Missouri	**State Total**	**5,595,211**	**100%**	**$27,206**	**81.2**
	Boone	135,454	2.42%	$26,851	197.6
	Cooper	16,670	0.30%	$20,728	29.5
	Daviess	8,016	0.14%	$21,621	14.1
	Harrison	8,850	0.16%	$20,233	12.2
	Moniteau	14,827	0.26%	$19,156	35.6
Kansas	**State Total**	**2,691,750**	**100%**	**$27,374**	**32.9**
	Riley	62,845	2.33%	$23,566	103.1
South Dakota	**State Total**	**755,509**	**100%**	**$25,958**	**9.9**
	Hamlin	5,547	0.73%	$21,234	10.9

Source: U.S. Census Bureau, Population, Housing, Units, Area, and Density by County, 2000 on February 26, 2003.

Economic Activity

237. Exhibit 2 provides economic statistics for the seven counties containing proposed critical habitat for the shiner. The "Number of Establishments" columns present the total number of physical locations within the relevant counties at which business activities were conducted with one or more paid employee in the year 2000. These figures provide a measure of the average density of commercial and industrial establishments in those areas proposed as critical habitat. Exhibit 2 also highlights the annual payroll of each economic sector. In both Missouri and Kansas, services maintain the greatest share of annual payroll. In South Dakota, manufacturing maintains the greatest share of annual payroll.

238. The above industrial portrait of the area may be somewhat misleading. Although it presents an accurate picture of the economic contributions of the various industries within the counties containing designated streams, it is the stream segments up to the bankfull discharge stream elevation level that comprise the designated critical habitat. Therefore, although the economic activities presented in Exhibit 2 occur within the counties, they are often remote from the designated area and are unlikely to suffer significant economic impact from the designation of critical habitat.

Exhibit 2

ECONOMIC ACTIVITY WITHIN COUNTIES CONTAINING TOPEKA SHINER CRITICAL HABITAT, BY INDUSTRY

Economic Activity	Missouri		South Dakota		Kansas	
	No. of establishments	Annual payroll ($1000)	No. of establishments	Annual payroll ($1000)	No. of establishments	Annual payroll ($1000)
Agriculture, Forestry, Hunting, and Fishing	301	$28,303	1	$0	24	$1,064
Mining	304	$178,427	0	$0	59	$4,586
Utilities	405	$1,022,684	0	$0	38	$9,780
Construction	15,590	$5,178,244	25	$1,524	1,137	$293,528
Manufacturing	7,307	$11,662,038	10	$3,658	343	$485,864
Wholesale Trade	9,072	$5,458,046	11	$1,832	432	$187,432
Retail Trade	23,911	$6,257,818	24	$3,259	1,806	$367,268
Transportation and Warehousing	4,932	$2,740,591	14	$1,099	295	$45,994
Information	2,491	$3,868,710	2	$0	184	$151,919
Finance and Insurance	9,275	$5,660,416	12	$1,280	714	$292,471
Real Estate	5,775	$965,710	4	$39	400	$37,022
Services	63,450	$28,620,445	45	$2,485	4,729	$1,604,940
Auxiliaries	308	$492,135	0	$0	19	$23,511
Unclassified	1,634	$62,229	1	$0	130	$198
TOTAL	**144,755**	**$72,195,796**	**149**	**$15,176**	**10,310**	**$3,505,577**

Source: U.S. Census Bureau, *2000 County Business Patterns*, accessed at http://censtats.census.gov/cgi-bin/cbpnaic/cbpsect.pl on February 26, 2003.
Note: Payroll estimates are in 2000 dollars.

239. Although it accounts for a relatively small portion of economic activity in each state, agriculture is the major land use activity in the immediate vicinity of the proposed critical habitat, and historically and culturally small-scale and family-owned farming operations are prominent institutions in the area of the designation. These farms often participate in any of a number of Federal technical assistance and farm subsidy programs as described in Section 3 of the EA. Impacts of the designation on farming in Missouri, South Dakota, and Fort Riley are discussed in greater detail later in this appendix.

Existing Protections to the Shiner

240. This section discusses protections to the shiner in addition to those identified in Section 2.2 of the EA.

Kansas Threatened and Endangered Species

241. The shiner is listed as a threatened species in the state of Kansas.[133] Critical habitat has been designated by the State of Kansas on Fort Riley on portions of Wildcat Creek and Little Arkansas Creek in Riley County.[134] Provisions for threatened species in the state include immediate release if caught while fishing and issuance of an action permit for proposed land use activities to ensure there are sufficient mitigating or compensating measures for protection of either critical habitat, listed species, or both.

Fort Riley Endangered Species Management Plan (ESMP)

242. The ESMP was completed in 1997 and addressed five species including the Topeka Shiner.[135] The 2001 revised edition incorporated the listing of the Topeka Shiner and refined requirements for other species. The ESMP was completed to comply with Army regulations and a desire by the Fort to develop a systematic approach for addressing endangered species.

Missouri Threatened and Endangered Species Protection Program

243. Enacted in 1972, Missouri's Threatened and Endangered Species Protection Program prohibits the importation, transportation, or sale of any endangered species of fish or wildlife, or the sale or possession with intent to sell any article made in whole or in part from the skin, hide or other parts of any endangered species of fish or wildlife. The Topeka shiner is listed as endangered by the state of Missouri.

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[133] Kansas Department of Wildlife and Parks, K.A.R. 115-15-1, *Threatened and Endangered Species; General Provisions*.

[134] Kansas Department of Wildlife and Parks, Topeka Shiner Status, January 2000. http://www.kdwp.state.ks.us/PDF/EnvSrvs/TEFish/topekashiner.pdf

[135] Personal communication with Dave Jones, Fort Riley Personnel, October 23, 2003.

Missouri Pesticide Use Act

244. The Missouri Pesticide Use Act regulates the sale, handling, and use of pesticides. Specifically, the Act requires all pesticide applicators to obtain an applicator or operator license prior to the use of any restricted use pesticide. Additionally, this Act prohibits any person from discarding, transporting, or storing any pesticide or pesticide containers in a manner that may cause injury to humans, vegetation, crops, livestock, wildlife, beneficial insects, or pollute any waterway. Furthermore, all pesticides must be registered prior to sale, distribution, or transport.[136]

Missouri Nonpoint Source Management Plan

245. The Missouri Nonpoint Source Management Plan (NPSMP) was developed by the Missouri Department of Natural Resources (DNR) in response to Federal requirements provided in section 319 of the Water Quality Act of 1987. The plan's mission is to protect state water quality from NPS impairments through activities that enhance statewide water quality assessment processes and prioritize watersheds affected by NPS pollution. Additionally, the plan promotes the management of an effective and flexible Nonpoint Source Management Program that is able to meet changing environmental conditions and regulations. Under this plan, the State of Missouri has designated the following three priority nonpoint sources as areas of major concern for water quality in the State: agricultural nonpoint sources; urban nonpoint sources; and acid mine drainage from abandoned coal mined lands. The NPSMP promotes the development of voluntary water quality management plans (WQMP) and/or TMDLs to restore and protect impaired waters.[137]

Missouri Soil and Water Conservation Program Loan Interest-Share Program

246. The Missouri Soil and Water Conservation Program provides a loan interest-share program to landowners interested in soil conservation activities. Under the program landowners may receive refunds of a portion of their annual expenses on loans used for soil conservation.[138]

Missouri Clean Water Law

247. The Missouri Clean Water Law was established to protect and improve water quality within the State for a variety of uses including, public water supplies, agriculture, industrial, and recreational uses. The law prohibits the discharge of waste into waters of the State without first receiving necessary treatment to meet Federal requirements and protect beneficial uses of state waters. Furthermore, any person who wishes to discharge

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[136] Mo. Rev. Stat. Chapter 281.

[137] State of Missouri Nonpoint Source Management Plan, Missouri Department of Natural Resources Water Pollution Control Program, March 15, 2000, revised November 2002.

[138] Missouri Department of Conservation, Soil and Water Conservation Program, Loan Interest-Share Program, accessed at www.dnr.state.mo.us/wpscd/swcp/swcp_lis.htm on February 26, 2003.

water contaminants from any point source or wastewater treatment plant must obtain a permit from the Missouri Clean Water Commission.[139]

Missouri Action Plan for the Topeka Shiner

248. The Missouri Department of Conservation developed a statewide action plan in January 1999 offering special protection for the shiner and its habitat in the state.[140] The focus of this action plan is encouraging conservation on private lands by promoting mutual benefits to both landowners and streams through cooperative conservation efforts. As such, this action plan describes several cooperative conservation programs designed to implement Best Management Practices (BMPs) for stream protection as well as provide benefits to landowners, such as improved land-use practices.

249. The action plan discusses the possible threats to the Topeka shiner and its habitat and proposes one or more strategies to address each threat. The possible threats to the shiner and its habitat include: (1) sedimentation and stream bank erosion; (2) urbanization on Topeka shiner watersheds; (3) nutrient input into shiner watersheds; (4) point source pollution; (5) watershed impoundments; (6) gravel removal and stream channelization. The plan outlines tasks planned to achieve each strategy, including but not limited to: the development of filter strips and riparian forest buffers along streams impacted by livestock and row crop production; development and implementation of BMPs for land development activities; development of nutrient management plans; development of incentives for alternative practices to pond construction in shiner watersheds; and restoring altered pool-riffle complexes on vertically stable stream reaches. The plan also discusses the threats and objectives to address the identified threats specific to the three watersheds known to have shiner populations, Bonne Femme Creek, Moniteau Creek, and Sugar Creek Watersheds.

Topeka Shiner (*Notropis topeka*) Management Plan for the State of South Dakota

250. This management plan, developed in February 2003, was a cooperative effort lead by South Dakota Game, Fish and Parks.[141] The goals of this state management plan are to maintain habitat integrity in shiner streams, and establish a point-based management goal for the State in contribution towards national recovery efforts. Specific objectives need to meet these goals include: 1) management actions that address stream hydrology, geomorphology, and water quality; 2) establishment of monitoring and assessment protocol to evaluate the States's point-based recovery goal; and 3) development of public outreach and education strategies to inform all entities involved about shiner management in the State. "A short term goal of this plan is to exclude the need to designate critical habitat in

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[139] Mo. Rev. Stat. §644.006 through 644.082.

[140] An Action Plan for the Topeka Shiner (*Notropis Topeka*), Missouri Department of Conservation, Topeka Shiner Working Group, January 26, 1999.

[141] South Dakota Game, Fish and Parks. *Topeka Shiner (Notropis topeka) Management Plan for the State of South Dakota*. February 2003.

South Dakota by identifying and enacting those conservation strategies listed in this plan."[142]

SECTION 7-RELATED COSTS

Anticipated Activities

251. Numerous Action agencies permit and conduct activities and projects in or adjacent to proposed critical habitat areas. These activities may lead to section 7 consultations with the Service, and in some cases specific projects may require modification in order to protect the shiner and/or its habitat. The primary activities that may be affected by section 7 consultations associated with implementation of critical habitat designation for the shiner are:

- Activities associated with the Fort Riley Army Installation;
- Federal Disaster Assistance;
- Road/bridge construction and maintenance and associated activities;
- Agriculture and ranching-related activities;
- Utilities construction/maintenance;
- Streambank stabilization, stream alignment, and channelization;
- Recreation and conservation activities;
- Water quality activities;
- Sand and gravel mining;
- Other Army Corps of Engineers permitted activities; and
- Habitat Conservation Plans (HCPs).

Federal Involvement

252. This section discusses additional Federal nexuses of the land use activities identified above within and/or affecting proposed critical habitat designation for the shiner expected to generate section 7 impacts not discussed in Section 3 of the EA.

[142] Ibid.

Federal Disaster Assistance

253. The Federal Emergency Management Agency (FEMA) provides Federal disaster assistance to States, local governments, other public entities, and certain non-profit organizations. FEMA funded projects have the potential to impact the shiner if facility construction or repair occurs in or adjacent to the shiner habitat. FEMA may provide funding through the following programs:

- Public Assistance Program- Provides Federal disaster grant assistance for the repair, replacement, or restoration of publicly owned and certain private non-profit organization facilities.

- Hazards Mitigation Grant Program- Provides Federal grants to states and local governments to implement long term hazard mitigation measures after a disaster declaration.

254. FEMA disaster assistance for the repair, replacement, or restoration of low water crossings, bridges, roads, and utility crossings, and grants for state acquisition and conversion of flood prone areas to open space have the potential to impact the shiner.[143]

Agriculture and Ranching-Related Activities

255. In addition to the NRCS conservation programs discussed in Section 3 of the EA, Missouri NRCS anticipates consulting with the Service regarding the PL-566 Small Watershed Program. The PL-566 Small Watershed Program (also known as Public Law 566) provides technical and financial assistance for plan development and implementation of projects that solve natural resource and related economic problems on a watershed basis.[144] Projects can include flood prevention and damage reduction, development of rural water supply sources, erosion and sediment control, fish and wildlife habitat enhancement, wetland creation and restoration, and increased recreational opportunities. Pond creation projects, for the control of sedimentation and erosion, are most likely to impact the shiner by reducing downstream flow and providing habitat to predatory fish.[145]

Anticipated Consultations

256. This section **quantifies the frequency of consultations** for each activity listed above in the discussion of *Section 7-Related Costs*. The project modifications expected for each activity are also discussed.

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[143] Personal communication with Ken Sessa, Environmental Officer, Federal Emergency Management Agency, October 28, 2003.

[144] Watershed Protection and Flood Prevention Act of 1954, Public Law 86-566.

[145] Personal communication with Chris Hamilton, Biologist, Columbia Missouri Natural Resources Conservation Service, November 12, 2003; November 13, 2003.

Fort Riley Army Installation

257. During the next ten years Fort Riley anticipates initiating **100 to 195 informal consultations** with the Service.[146] No project modifications are anticipated in addition to those prescribed in the ESMP.[147] Fort Riley personnel, indicated in the past three years no measures beyond what was included in the ESMP have ever been recommended by the Service and no additional project modification costs are expected to be incurred as a result of critical habitat. Thus, no additional project modification costs are anticipated as a result of the critical habitat designation for the Topeka Shiner.

Federal Disaster Assistance

258. If a flood or tornado were to cause a Federal disaster in shiner critical habitat section 7 consultations would result. However, it is unknown if and/or how many Federal disasters will occur in shiner critical habitat over the next ten years.[148] No past disasters have impacted the shiner, all potential impact estimates of what could happen if a disaster were to occur in shiner habitat were based on impacts to projects with a FEMA nexus affecting the Niangua Darter (*Etheostoma nianguae)* following a 2002 flood event. Therefore, no consultations are estimated for FEMA disaster relief program projects.

Road/Bridge Construction and Maintenance and Associated Activities

259. The Missouri Department of Transportation (MoDOT) anticipates **15 to 20 informal consultations** regarding road/bridge construction and maintenance activities over the next ten years.[149] These consultations will typically involve bridge projects. Project modification costs are expected to be minimal. Most likely nine project restrictions currently in place for the Niangua Darter (ranging from timing restrictions, to using clean rock as fill) will be implemented for the shiner as project modifications.

260. The USACE anticipates **123 informal consultations** regarding road and bridge construction activities over the next ten years.[150] All USACE permits currently contain additional requirements that provide baseline protection to the shiner, specifically seasonal

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[146] Personal communication with Gibran Suleiman, Fort Riley Personnel, October 21, 2003.

[147] Personal communication with Gibran Suleiman, Fort Riley Personnel, October 21, 2003. Directorate of Environment and Safety. 2001. Endangered Species Management Plan for Fort Riley, Kansas. Directorate of Plans, Training, and Mobilization, Staff Judge Advocate, Fort Riley, Kansas.

[148] Personal communication with Ken Sessa, Environmental Officer, Federal Emergency Management Agency, October 28, 2003.

[149] Personal communication with Alan Leary, Missouri Department of Transportation Personnel, October 31, 2003.

[150] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

restrictions, BMPs for erosion control, and riparian restoration requirements.[151] Project modifications that are likely to be recommended include temporary trapping and relocation of fish in the work area, and onsite construction observation by State Conservation Agents.[152] The costs of these project modifications are anticipated to be minimal.

Agriculture and Ranching-Related Activities

261. The NRCS anticipates **1 programmatic and 105 informal consultations** regarding agriculture and ranching related activities over the next ten years.[153] The NRCS anticipates completing a programmatic consultation for all NRCS practices that may impact the shiner, both positively and negatively, within one year. In the interim NRCS anticipates there may be 15 informal consultations regarding PL-556 Small Watershed Program pond projects (five per unit) and 90 informal consultations (30 per unit) regarding all other NRCS practices that may impact the shiner.[154] Many of these projects are likely to have positive effects on the shiner and its habitat, however project modifications may be recommended for certain practices. Project modifications that are likely to be recommended are unknown at this time because no consultations with the NRCS have occurred in the past for the shiner and the programmatic consultation for all NRCS practices has not been initiated.[155] Modest restrictions may be recommended. For example, for pond projects the Service may recommend that the depth be limited to eight feet and/or that predatory fish not be stocked. Less expensive alternatives projects may also be recommended, such as bank stabilization projects with defined livestock access points instead of creating ponds for erosion and sediment controls.

262. The USACE anticipates **28 informal consultations** regarding agriculture and ranching related activities over the next ten years.[156] Five of these consultations will

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[151] U.S. Army Corps of Engineers, *Nationwide Permits and Conditions*, Federal Register Vol. 60, No. 10, January 15, 2002.

[152] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[153] Personal communication with Chris Hamilton, Biologist, Columbia Missouri Natural Resources Conservation Service, November 12, 2003; November 13, 2003.

[154] NRCS practices in Missouri that may impact the shiner include: residue management, contour farming, cover and green manure crop, critical area planting, residue management seasonal, field border, riparian forest buffer, filter strip, pasture and hayland planting, prescribed burning, heavy use area protection, nutrient management, water well, multiple purpose dams, sediment basin, diversion, flood water retarding dams, grade stabilization structure, and structures for water control.

[155] Personal communication with Fish and Wildlife Service Personnel, Missouri Ecological Services Field Office, November 13, 2003. Personal communication with Chris Hamilton, Biologist, Columbia Missouri Natural Resources Conservation Service, November 12, 2003; November 13, 2003.

[156] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

involve NRCS watershed dam construction, and 23 consultations will involve farm channel modification. Project modifications for projects that include upstream impoundments may include measures to prevent the escape of predatory fish in addition to those discussed for USACE permitted road and bridge construction activities.

Utilities Construction/Maintenance

263. The USACE anticipates **147 informal consultations** regarding utility line work over the next ten years.[157] Project modifications are likely to be the same as those discussed for USACE permitted road and bridge construction activities.

Streambank Stabilization, Stream Alignment, and Channelization

264. The USACE anticipates **79 informal consultations** regarding streambank stabilization activities over the next ten years.[158] Project modifications are likely to be the same as those discussed for USACE permitted road and bridge construction activities.

Recreation and Conservation Activities

265. The USACE anticipates **10 informal consultations** regarding recreation and conservation activities over the next ten years.[159] Six consultations are anticipated for wetland and/or stream restoration activities, and four consultations are anticipated regarding boat ramp construction. Project modifications are likely to be the same as those discussed for USACE permitted road and bridge construction activities.

Water Quality Activities

266. EPA anticipates **2 informal consultations** regarding water quality activities over the next ten years.[160] These two informal consultations are anticipated in response to efforts by the State of Missouri to revise water quality standards for various criteria pollutants.

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[157] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[158] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[159] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[160] Personal communication with Jack Generaux and Emily Detrich, Environmental Protection Agency Personnel, October 30, 2003. Personal communication with Pat Costello, Environmental Protection Agency Personnel, November 5, 2003. Personal communication with John Dunn, Environmental Protection Agency Personnel, November 5, 2003.

Sand and Gravel Mining

267. The USACE anticipates **33 informal consultations** regarding sand and gravel mining activities over the next ten years.[161] Project modifications are likely to be the same as those discussed for USACE permitted road and bridge construction activities.

Other Army Corps of Engineers Permitted Activities

268. The USACE anticipates **31 informal consultations** regarding other activities they permit, over the next ten years.[162] Approximately 21 of these consultations will involve permits for the maintenance of an existing structure, four for activities requiring a permit for the fill of less than 10 cubic yards, and six for miscellaneous activities. Project modifications are likely to be the same as those discussed for USACE permitted road and bridge construction activities.

Habitat Conservation Plans (HCPs)

269. One HCP is anticipated within the boundaries of this proposed designation, in South Dakota. In February 2003 South Dakota developed a management plan for the shiner. This management plan has been identified as a component in establishing an HCP.[163] Development of HCPs within critical habitat would require an internal section 7 consultation with the Service. The EA estimated **1 formal consultation** regarding the South Dakota HCP, in the next ten years.

270. Under section 10(a)(1)(B) of the Act, a non-Federal entity (i.e., a landowner or local government) may develop an HCP for an endangered animal species in order to meet the conditions for issuance of an incidental take permit in connection with the development and management of a property.[164] The HCP intends to counterbalance potential harmful effects that a proposed activity may have on a species, while allowing the otherwise lawful activity to proceed. As such, the purpose of the habitat conservation planning process is to ensure that the effects of incidental take are adequately minimized and mitigated. Thus, HCPs are developed to ensure compliance with section 9 of the Act and to meet the requirements of section 10 of the Act.

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[161] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[162] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[163] South Dakota Game, Fish and Parks. *Topeka Shiner (Notropis topeka) Management Plan for the State of South Dakota*. February 2003.

[164] U.S. Fish and Wildlife Service, "Endangered Species and Habitat Conservation Planning." From: http://endangered.fws.gov/hcp/, as viewed on August 6, 2002. Sections 9 and 10 of the Act do not apply to plants.

271. However, a connection may exist between the creation of HCPs and the costs these plans impose and the designation of critical habitat. The Service, being a Federal entity, must formally consider whether an HCP will jeopardize a listed species or adversely modify its designated critical habitat before approving the plan. This review process may be a direct impact under section 7 of the Act. However, in certain circumstances, the effort involved in creating the HCP and associated conservation actions may also generate indirect effects associated with the designation of critical habitat. For example, in one past instance, landowners preemptively developed HCPs in an effort to avoid having their property designated as critical habitat.[165] In this case, the effort involved in creating the HCP and undertaking associated conservation actions were considered to be an effect of designation.

272. The following scenarios regarding HCP creation provide general guidance regarding the degree to which associated costs should be considered within the context of a critical habitat economic analysis:

- In cases in which an HCP existed prior to a proposed designation, the costs of developing the HCP and the added costs of management imposed by the HCP <u>should not be</u> considered in the analysis of the effects of the designation. These costs are appropriately considered to be part of the regulatory baseline, because their creation was driven by the listing of the species and the need to avoid take, which is prohibited under section 9 of the Act. However, in cases where designated critical habitat overlaps with completed HCPs, the economic analysis will need to consider the cost to the Service to re-consult on the plan's impact to critical habitat and whether or not this process may result in additional conservation actions.

- In cases in which an HCP is proposed, or reasonably foreseeable absent the designation of critical habitat, the administrative costs associated with the required internal section 7 consultation <u>should be</u> included in the economic analysis of total section 7 costs, because the Service will need to consider the effects of the plan on designated critical habitat. In addition, if as a result of the designation additional project modifications will be recommended by the Service and incorporated into the HCP in order to avoid adversely modifying critical habitat, the costs of these project modifications <u>should also be</u> included in the economic analysis of critical habitat.[166]

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[165] See Industrial Economics, Incorporated, *Economic Analysis of Critical Habitat Designation for the Nine Bexar County Texas Invertebrate Species*, prepared for the U.S. Fish and Wildlife Service, March 3, 2003.

[166] Project modification costs associated with the jeopardy standard are not considered for the following reason. Section 10(a)(2)(B) of the Act requires that for the issuance of an incidental take permit, the HCP must assure that "the taking will not appreciably reduce the likelihood of survival and recovery of the species in the wild." According to the Service's *Habitat Conservation Planning and Incidental Take Permit Processing Handbook*, "the wording of this criterion is identical to the "jeopardy" definition under the section 7 regulations (50 CFR Part

- In cases in which development of one or more HCPs can be documented as being precipitated by critical habitat designation (i.e., to avoid designation or to reduce the costs of the designation), the costs of development of the HCP and the added costs of management imposed by the HCP should be included in the critical habitat economic analysis. In such cases the analysis should be presented with appropriate caveats as to the uncertainty regarding the extent to which the HCP would have existed absent critical habitat designation.

Stray Horse Creek Activities

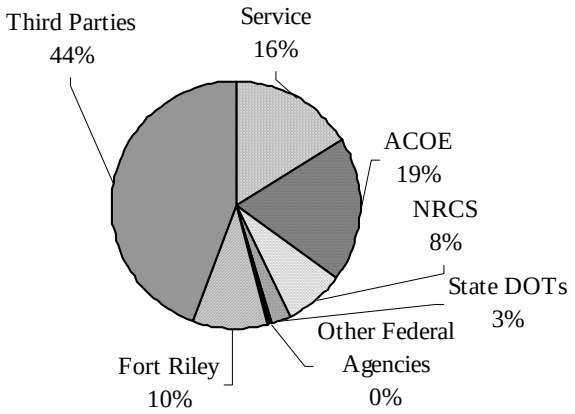
273. The Stray Horse Creek is within the Upper Big Sioux Watershed. The EA estimated technical assistance efforts, and consultations regarding road/bridge construction and maintenance, agriculture and ranching, utilities construction and maintenance, streambank stabilization, stream alignment, and channelization, dam construction and related water operations, water diversion, recreation and conservation, and water quality activities in the Big Sioux Watershed.

Total Costs

274. This section discusses the total costs of the designation of critical habitat for the shiner in Missouri and on the Fort Riley Army Installation. Total costs will range from $3.3 million to $9.4 million. Because project modifications are expected to be minimal the administrative costs represent almost 100 percent of the total costs associated with proposed critical habitat for the shiner. As shown in Exhibit 3 most of these costs will be borne by third parties, and Action Agencies (NRCS and USACE). In the high cost scenario (presented in the graph below) third parties are anticipated to bear the majority of the total costs, approximately 44 percent while Action agencies bear approximately 39 percent of the total cost. The Service is expected to bear 16 percent of the total cost.

402.02)...Congress was explicit about this link, stating in the Conference Report on the 1982 ESA amendments that the Services will determine whether or not to grant a permit, "in part, by using the same standard as found in section 7(a)(2) of the ESA, as defined by the [Services'] regulations.'" (U.S. Department of the Interior and U.S. Department of Commerce, *Habitat Conservation Planning and Incidental Take Permit Processing Handbook*, November 4, 1996). As a result, during the HCP process, actions undertaken to meet the jeopardy provision of section 7 are also required under section 10 of the Act. Therefore, in circumstances where an HCP is reasonably foreseeable absent the designation of critical habitat, these actions are considered to be part of the baseline of this economic analysis.

Exhibit 3
CONSULTATION COST BY PARTY



275. Total costs associated with formal consultations, informal consultations, and technical assistance efforts **presented by party** bearing the cost for Missouri and Fort Riley are presented in Exhibit 4.

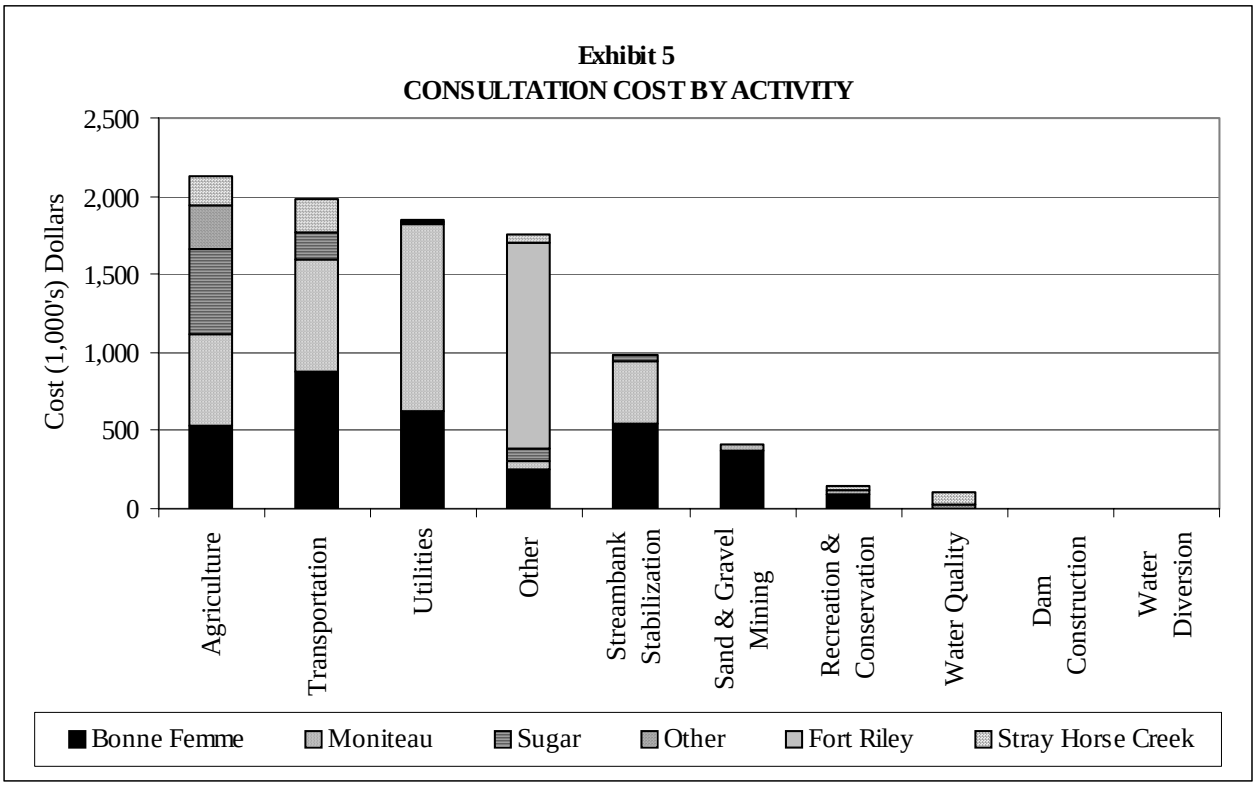
Exhibit 4

ESTIMATED COSTS ASSOCIATED WITH CRITICAL HABITAT FOR THE TOPEKA SHINER (OVER TEN YEARS)

Action	Range	Costs to the Service	Costs to Action Agencies	Costs to Third Parties	Total Costs
Technical Assistance	*Low*	$10,000	N/A	$10,000	$20,000
	High	$10,000	N/A	$30,000	$40,000
Informal Consultation	*Low*	$1,250,000	$1,510,000	$730,000	$3,490,000
	High	$1,470,000	$3,560,000	$4,210,000	$9,240,000
Formal Consultation	*Low*	<$10,000	<$10,000	<$10,000	$20,000
	High	$10,000	$10,000	$10,000	$30,000
Total Admin Cost	*Low*	$1,260,000	$1,510,000	$750,000	$3,520,000
	High	$1,500,000	$3,570,000	$4,250,000	$9,320,000
Project Modifications	*Low*	Minimal	Minimal	$40,000	$40,000
	High	Minimal	Minimal	$40,000	$40,000
Total	***Low***	**$1,260,000**	**$1,510,000**	**$790,000**	**$3,560,000**
	High	**$1,500,000**	**$3,570,000**	**$4,300,000**	**$9,360,000**

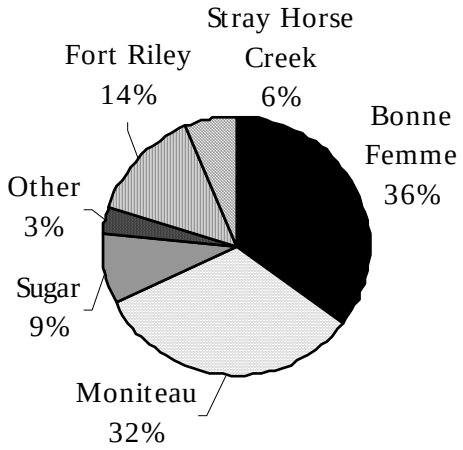
Notes: Technical assistance costs represent administrative costs associated with various activities on private lands that do not involve a Federal nexus. These consultations include those brought about through the listing and designation of critical habitat for the shiner.
Sources: IEc analysis based on data from the Federal Government General Schedule Rates, 1999, Office of Personnel Management, 2000, and information from biologists in the U.S. Fish and Wildlife Service.
Note: Third parties are defined as State agencies, local municipalities, and private parties. Estimates are reported in 2002 dollars. Estimates may not sum due to rounding.

276. Total costs associated with formal consultations, informal consultations, and technical assistance efforts **presented by activity** for Missouri, South Dakota, and the Fort Riley Army Installation are presented in Exhibit 5. Agricultural activities are expected to generate most of the costs of the designation in Missouri and the Fort Riley Army Installation, 24 percent. Of the remaining costs 23 percent stem from road/bridge construction and maintenance projects, 21 percent stem from utilities construction and maintenance, 20 percent from other activities which includes all Fort Riley Army operations, 11 percent stem from streambank stabilization projects, and less than five percent for all other activities.



277. Total costs associated with formal consultations, informal consultations, and technical assistance efforts **presented by unit** for Missouri and Fort Riley are presented in Exhibit 6, for a more detailed presentation of costs by unit please refer to Exhibit 8. Under the high cost scenario the Bonne Femme Creek Watershed Unit is expected to generate most of the costs of the designation in Missouri and Fort Riley, $3.3 million. Of the remaining units the Moniteau Creek Watershed unit is expected to generate $3.0 million in costs, the Fort Riley Army Installation unit $1.3 million, the Sugar Creek Watershed unit $0.8 million, The Stray Horse Creek segment is expected to generate $0.6 million, and $0.3 million in other costs that cannot be assigned to a unit including state water quality and a programmatic consultation by NRCS.

Exhibit 6
CONSULTATION COST BY UNIT



Consultation Costs

278. This section presents the per-effort administrative cost of technical assistance, informal consultation, and formal consultation, and the number and cost of consultations per activity by unit.

279. Per-effort costs associated with formal consultations, informal consultations, and technical assistance efforts in Missouri are presented in Exhibit 7. Per-effort administrative costs of consultations for the Fort Riley Army Installation are presented in Section 3.2 of the EA.

Exhibit 7

ESTIMATED ADMINISTRATIVE COSTS OF CONSULTATION AND TECHNICAL ASSISTANCE EFFORTS FOR THE TOPEKA SHINER IN MISSOURI (PER EFFORT)

Critical Habitat Impact	Scenario	Service	Action Agency	Third Party[1]
Technical Assistance Effort	*Low*	$260	N/A	$600[1]
	High	$680	N/A	$1,500[1]
Informal Consultation	*Low*	$1,650[2]	$1,300	$1,200
	High	$1,650[2]	$3,900	$6,900
Formal Consultation	*Low*	$8,250[2]	$3,900	$6,900
	High	$8,250[2]	$6,500	$9,700

Sources: IEc analysis estimates based on data from the Federal Government General Schedule Rates, 1999, Office of Personnel Management, 2000.
Notes: [1]Third parties may be state agencies.
[2] Service costs for the Columbia, Missouri Field Office. Personal communication with Fish and Wildlife Service Personnel, October 29, 2003.
Low and high estimates primarily reflect variations in staff wages and time involvement by staff reported in 2002 dollars. The high-end estimate for informal consultations, and all formal consultation estimates, include the cost of a biological assessment.

Fort Riley Army Installation

280. During the next ten years Fort Riley anticipates initiating **100 to 195 informal consultations** with the Service.[167] Activities occurring on Fort Riley anticipated to require informal consultation include:

- Military training (50 to 80);
- Timber sales (zero to two);
- Agricultural leases (five to ten);
- Recreation (five to ten);
- Road maintenance (30 to 50);
- Archeological exploration (five to 20);
- Noxious weed control (zero to ten);
- Pest control (zero to two);
- Fire break maintenance (five to ten); and
- Fuel wood cutting (zero to one).

Approximately three to ten informal consultations annually will require a biological assessment. More biological assessments may be required over the next ten years if the military mission of the installation changes. The administrative consultation costs associated with these informal consultations over the next ten years ranges from approximately $491,000 to $1,319,000 depending on the range of consultations and effort required. Fort

[167] Personal communication with Gibran Suleiman, Fort Riley Personnel, October 21, 2003.

Riley will incur $328,000 to $914,000 in administrative costs over the next ten years, the Service will incur the remainder of these costs as there are no third parties involved in these consultations. As discussed above no project modifications are anticipated in addition to those prescribed in the Fort Riley Endangered Species Management Plan (ESMP), thus, no additional project modification costs are incurred as a result of the critical habitat designation for the Topeka Shiner.[168]

Bonne Femme Creek Watershed

Road/Bridge Construction and Maintenance and Associated Activities

281. The Missouri Department of Transportation (MoDOT) anticipates **8 to 10 informal consultations** regarding road/bridge construction and maintenance activities in the Bonne Femme Creek Watershed over the next ten years.[169] The USACE anticipates an additional **60 informal consultations** regarding road/bridge construction and maintenance activities over the next ten years.[170] The administrative cost associated with these consultations ranges from $282,000 to $872,000 over the next ten years, depending on the number of consultations and level of effort involved. Project modification costs are expected to be minimal.

Agriculture and ranching-related activities

282. The NRCS anticipates **35 informal consultations** regarding agriculture and ranching-related activities in the year prior to the completion of a programmatic consultation on all NRCS practices that may impact the shiner.[171] Approximately five informal consultations are anticipated regarding PL-566 Small Watershed Program Practices and 30 informal consultations regarding various NRCS practices over the next ten years. The USACE anticipates an additional **8 informal consultations** regarding farm channel modification projects over the next ten years.[172] The administrative cost associated with these consultations ranges from $178,000 to $535,000 over the next ten years, depending on

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[168] Personal communication with Gibran Suleiman, Fort Riley Personnel, October 21, 2003. Directorate of Environment and Safety. 2001. Endangered Species Management Plan for Fort Riley, Kansas. Directorate of Plans, Training, and Mobilization, Staff Judge Advocate, Fort Riley, Kansas.

[169] Personal communication with Alan Leary, Missouri Department of Transportation Personnel, October 31, 2003.

[170] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[171] Personal communication with Chris Hamilton, Biologist, Columbia Missouri Natural Resources Conservation Service, November 12, 2003; November 13, 2003.

[172] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

the number of consultations and level of effort involved. Project modification costs are expected to be minimal.

Utilities construction/maintenance

283. The USACE anticipates **50 informal consultations** regarding utility line work over the next ten years.[173] The administrative cost associated with these consultations ranges from $208,000 to $623,000 over the next ten years, depending on the level of effort involved. Project modification costs are expected to be minimal.

Streambank stabilization, stream alignment, and channelization

284. The USACE anticipates **44 informal consultations** regarding streambank stabilization over the next ten years.[174] The administrative cost associated with these consultations ranges from $183,000 to $548,000 over the next ten years, depending on the level of effort involved. Project modification costs are expected to be minimal.

Recreation and conservation activities

285. The USACE anticipates **8 informal consultations** over the next ten years, four regarding wetland and stream restoration and four on boat ramp construction over the next ten years.[175] The administrative cost associated with these consultations ranges from $33,000 to $100,000 over the next ten years, depending on the level of effort involved. Project modification costs are expected to be minimal.

Sand and gravel mining

286. The USACE anticipates **30 informal consultations** regarding sand and gravel mining activities over the next ten years.[176] The administrative cost associated with these consultations ranges from $125,000 to $374,000 over the next ten years, depending on the level of effort involved. Project modification costs are expected to be minimal.

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[173] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[174] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[175] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[176] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

Other Army Corps of Engineers permitted activities

287. The USACE anticipates **20 informal consultations** regarding other activities they permit over the next ten years.[177] Approximately 12 informal consultations will be conducted on permits for the maintenance of an existing structure, four informal consultations for activities requiring a permit for the fill of less than 10 cubic yards, and four informal consultations for miscellaneous activities. The administrative cost associated with these consultations ranges from $83,000 to $249,000 over the next ten years, depending on the level of effort involved. Project modification costs are expected to be minimal.

288. The Center for Biological Diversity and the Ozark Chapter of the Sierra Club commented that the Economic Analysis overestimates costs in Missouri, particularly in the Bonne Femme Creek Watershed.[178] This analysis relies on information from a variety of sources including the Action Agencies conducting, permitting, or funding projects, such as USACE and NRCS, to determine the expected activities within each watershed likely to be impacted by conservation measures associated with the shiner.

289. The USACE estimates that over the next ten years the Bonne Femme Creek watershed is likely to experience growth resulting in up to twice as many projects as were permitted over the previous ten years.[179] The USACE bases this estimate on the high rate of conversion of agriculture and forest lands into residential, commercial, golf courses, and hobby farm development. Note that the population of Boone County is expected to increase approximately 14 percent from 2005 to 2015, compared to the State of Missouri which is forecast to increase approximately five percent over the same time period.[180]

290. Although there have been no consultations regarding agriculture and ranching activities for the shiner in the past, NRCS anticipates future consultations.[181] NRCS bases this forecast on historical program participation in the watersheds. NRCS expects pond construction activities to be an issue over the next ten years (of all the watershed practices that may impact the shiner pond construction is the most common). Both the Service and NRCS anticipate completing a programmatic consultation on all NRCS program activities within the next year. Therefore, it is reasonable, given currently available information, to

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[177] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[178] Robin Cooley, on behalf of the Center for Biological Diversity, April 16, 2004. John D. Hoskins, Director of the Ozark Chapter of the Sierra Club, on behalf of the Ozark Chapter of the Sierra Club, April 15, 2004.

[179] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[180] Missouri Office of Administration. *Projections of the Population of Missouri Counties By Age and Sex: 1990 to 2025.* May 1999.

[181] Personal communication with Chris Hamilton, Biologist, Columbia Missouri Natural Resources Conservation Service, November 12, 2003; November 13, 2003.

expect consultation activity regarding agriculture in the next ten years regarding the shiner in these watersheds.

Moniteau Creek Watershed

Road/bridge construction and maintenance and associated activities

291. The Missouri Department of Transportation (MoDOT) anticipates **5 to 7 informal consultations** regarding road/bridge construction and maintenance activities in the Moniteau Creek Watershed over the next ten years.[182] The USACE anticipates an additional **51 informal consultations** regarding road/bridge construction and maintenance activities over the next ten years.[183] The administrative cost associated with these consultations ranges from $195,000 to $585,000 over the next ten years, depending on the number of consultations and level of effort involved. Project modification costs are expected to be minimal.

Agriculture and ranching-related activities

292. The NRCS anticipates **35 informal consultations** regarding agriculture and ranching-related activities in the year prior to the completion of a programmatic consultation on all NRCS practices that may impact the shiner.[184] Approximately five informal consultations are anticipated regarding PL-566 Small Watershed Program Practices and 30 informal consultations regarding various NRCS practices over the next ten years. The USACE anticipates an additional **12 informal consultations** regarding farm channel modification projects over the next ten years.[185] The administrative cost associated with these consultations ranges from $195,000 to $585,000 over the next ten years, depending on the number of consultations and level of effort involved. Project modification costs are expected to be minimal.

Utilities construction/maintenance

293. The USACE anticipates **96 informal consultations** regarding utility line work over the next ten years.[186] The administrative cost associated with these consultations ranges from

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[182] Personal communication with Alan Leary, Missouri Department of Transportation Personnel, October 31, 2003.

[183] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[184] Personal communication with Chris Hamilton, Biologist, Columbia Missouri Natural Resources Conservation Service, November 12, 2003; November 13, 2003.

[185] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[186] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

$398,000 to $1,195,000 over the next ten years, depending on the level of effort involved. Project modification costs are expected to be minimal.

Streambank stabilization, stream alignment, and channelization

294. The USACE anticipates **32 informal consultations** regarding streambank stabilization over the next ten years.[187] The administrative cost associated with these consultations ranges from $133,000 to $398,000 over the next ten years, depending on the level of effort involved. Project modification costs are expected to be minimal.

Recreation and conservation activities

295. The USACE anticipates **2 informal consultations** regarding wetland and stream restoration over the next ten years.[188] The administrative cost associated with these consultations ranges from $8,000 to $25,000 over the next ten years, depending on the level of effort involved. Project modification costs are expected to be minimal.

Sand and gravel mining

296. The USACE anticipates **3 informal consultations** regarding sand and gravel mining activities over the next ten years.[189] The administrative cost associated with these consultations ranges from $12,000 to $37,000 over the next ten years, depending on the level of effort involved. Project modification costs are expected to be minimal.

Other Army Corps of Engineers permitted activities

297. The USACE anticipates **5 informal consultations** regarding other activities they permit, over the next ten years.[190] Approximately three informal consultations will be conducted on permits for the maintenance of an existing structure and two informal consultations for miscellaneous activities. The administrative cost associated with these consultations ranges from $21,000 to $62,000 over the next ten years, depending on the level of effort involved. Project modification costs are expected to be minimal.

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[187] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[188] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[189] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[190] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

Sugar Creek Watershed

Road/bridge construction and maintenance and associated activities

298. The Missouri Department of Transportation (MoDOT) anticipates **2 to 3 informal consultations** regarding road/bridge construction and maintenance activities in the Sugar Creek Watershed over the next ten years.[191] The USACE anticipates an additional **12 informal consultations** regarding road/bridge construction and maintenance activities over the next ten years.[192] The administrative cost associated with these consultations ranges from $58,000 to $187,000 over the next ten years, depending on the number of consultations and level of effort involved. Project modification costs are are expected to be minimal.

Agriculture and ranching-related activities

299. The NRCS anticipates **35 informal consultations** regarding agriculture and ranching-related activities in the year prior to the completion of a programmatic consultation on all NRCS practices that may impact the shiner.[193] Approximately five informal consultations are anticipated regarding PL-566 Small Watershed Program Practices and 30 informal consultations regarding various NRCS practices over the next ten years. The USACE anticipates an additional **8 informal consultations**, three regarding farm channel modification projects and five regarding NRCS dam construction over the next ten years.[194] The administrative cost associated with these consultations ranges from $178,000 to $535,000 over the next ten years, depending on the number of consultations and level of effort involved. Project modification costs are expected to be minimal.

Utilities construction/maintenance

300. The USACE anticipates **1 informal consultation** regarding utility line work over the next ten years.[195] The administrative cost associated with these consultations ranges from $4,000 to $12,000 over the next ten years, depending on the level of effort involved. Project modification costs are expected to be minimal.

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[191] Personal communication with Alan Leary, Missouri Department of Transportation Personnel, October 31, 2003.

[192] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[193] Personal communication with Chris Hamilton, Biologist, Columbia Missouri Natural Resources Conservation Service, November 12, 2003; November 13, 2003.

[194] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[195] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

Streambank stabilization, stream alignment, and channelization

301. The USACE anticipates **3 informal consultations** regarding streambank stabilization over the next ten years.[196] The administrative cost associated with these consultations ranges from $12,000 to $37,000 over the next ten years, depending on the level of effort involved. Project modification costs are expected to be minimal.

Other Army Corps of Engineers Permitted Activities

302. The USACE anticipates **6 informal consultations** regarding permits for the maintenance of an existing structure over the next ten years.[197] The administrative cost associated with these consultations ranges from $25,000 to $75,000 over the next ten years, depending on the level of effort involved. Project modification costs are expected to be minimal.

Missouri Other

Agriculture and Ranching-Related Activities

303. The NRCS anticipates **1 programmatic consultation** regarding all NRCS practices that may impact the shiner.[198] The NRCS anticipates the programmatic consultation will be completed in one year and that the annual cost of completing the consultation and running the program will be $30,000 annually. The Service anticipates $16,500 in administrative costs to complete the programmatic consultation.[199] Thus, the total administrative cost of the programmatic consultation is $287,000 over the next ten years.

Water Quality

304. EPA anticipates **2 informal consultations** regarding efforts by the State of Missouri to revise water quality standards for various criteria pollutants, over the next ten years.[200] The total administrative costs associated with these consultations ranges from $8,000 to $25,000 over the next ten years.

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[196] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[197] Personal communication with Mark Frazier, Regulatory Program Manager and Assistant Branch Chief, Kansas City District Army Corps of Engineers, October 29, 2003; November 6, 2003.

[198] Personal communication with Chris Hamilton, Biologist, Columbia Missouri Natural Resources Conservation Service, November 12, 2003; November 13, 2003.

[199] Personal communication with Fish and Wildlife Service Personnel, October 29, 2003.

[200] Personal communication with Jack Generaux and Emily Detrich, Environmental Protection Agency Personnel, October 30, 2003. Personal communication with Pat Costello, Environmental Protection Agency Personnel, November 5, 2003. Personal communication with John Dunn, Environmental Protection Agency Personnel, November 5, 2003.

305. The Center for Biological Diversity commented that this amount includes possible water quality monitoring, stating it is inaccurate as the EPA does not undertake water quality sampling.[201] However, the forecast costs include efforts by the State of Missouri to revise water quality standards and not costs associated with EPA water quality monitoring.

Stray Horse Creek Activities

306. Future consultations regarding the shiner in South Dakota, presented in the EA, were estimated on a statewide basis considering the shiner habitat as it appeared in the August 2002 proposed rule. Consultations and the associated costs were then evenly distributed across the watersheds that contain proposed critical habitat. In the Big Sioux Watershed 183 technical assistance efforts, 100 informal and four formal consultations regarding road/bridge construction and maintenance, 107.4 informal and six formal consultations regarding agriculture and ranching, 7.5 informal consultations regarding utilities construction and maintenance, 3.2 informal and 0.4 formal consultations regarding streambank stabilization, stream alignment, and channelization, four informal consultations regarding dam construction and related water operations, 0.2 informal and 0.2 formal consultations regarding water diversion, 12 informal and 0.2 formal consultations regarding recreation and conservation, and 48 informal consultations regarding water quality activities are anticipated over the next ten years. A per river mile cost of $37,000 was estimated in this watershed associated with these consultations.

307. The supplemental rule proposes designating an additional 15 river miles of critical habitat on Stray Horse Creek. The area surrounding Stray Horse Creek is characteristic of the of the Upper Big Sioux Watershed region proposed as critical habitat for the shiner.[202] No large projects are proposed by the two main Action agencies in this watershed, determined by volume of future consultations.

308. Because 1) future consultations regarding shiner critical habitat in South Dakota were estimated on a statewide basis, 2) the surrounding area is characteristic of the Upper Big Sioux Watershed, and 3) no large projects are anticipated by the predominant Action agencies, it is appropriate to apply the average river mile cost for the Upper Big Sioux Watershed to the Stray Horse Creek segment now proposed as critical habitat for the shiner.[203] Therefore, the total cost associated with the designation of critical habitat for the shiner in Stray Horse Creek could be $190,000 to $560,000.

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[201] Robin Cooley, on behalf of the Center for Biological Diversity, April 16, 2004.

[202] Personal communication with Dave Graves, South Dakota Department of Transportation, December 29, 2003; Personal communication with Connie Vicuna, Biologist South Dakota Natural Resources Conservation Service, December 19, 2003.

[203] Confirmed by personal communication with Dave Graves, South Dakota Department of Transportation, December 29, 2003; and personal communication with Connie Vicuna, Biologist South Dakota Natural Resources Conservation Service, December 19, 2003.

POTENTIAL IMPACTS ON SMALL ENTITIES

309. This analysis is intended to facilitate determination of whether this critical habitat designation potentially affects a "substantial number" of small entities in counties supporting critical habitat areas. It also quantifies the probable number of small businesses and governments likely to experience a "significant effect." In both tests, this analysis examines the total estimated section 7 costs calculated in earlier sections of this report, including those impacts that may be "attributable co-extensively" with the listing of the shiner. This results in a conservative estimate (i.e., more likely to overstate impacts than understate them), because it utilizes the upper bound impact estimate from the earlier analysis.

310. Federal courts and Congress have indicated that a Regulatory Flexibility Act/SBREFA analysis should be limited to direct and indirect impacts on entities subject to the requirements of the regulation. As such, entities indirectly impacted by the shiner listing and designation of critical habitat, and, therefore, not directly regulated by the listing or critical habitat designation, are not considered in this screening analysis.

Identifying Activities That May Involve Small Entities

311. In the discussion of *Total Costs* this report identifies activities that are within, or will otherwise be affected by, the designation of critical habitat for the shiner. Third parties are not involved in several of the activities potentially affected by the designation of critical habitat for the shiner (i.e., only the Action agency and the Service are involved in the consultation). Of the remaining activities potentially affected by the designation of critical habitat for the shiner and involving a third party, many have no directly-regulated small businesses or governments involvement. Private entities are forecast to incur 34 percent of the administrative costs. State and local governments are expected to incur 11 percent of the administrative costs. Because administrative costs of informal consultation and project modification costs are expected to be minimal, small entities should not be directly impacted:

- **Fort Riley Army Installation (Department of Defense)**. Informal consultations are anticipated involving Fort Riley Army Installation activities. Project modifications in addition those prescribed in the Fort Riley Endangered Species Management Plan are not anticipated.

- **Road and bridge construction and maintenance (Missouri Department of Transportation, Army Corps of Engineers).** Informal consultations are anticipated regarding road and bridge construction and maintenance. Project modifications could include timing restrictions, using clean rock as fill, temporary trapping and relocation of fish in the work area, BMPs for sediment control, onsite construction observation by State Conservation Agents, restricting disturbance of buffers, and mitigation by riparian restoration or riffle/pool construction. This analysis anticipates that most costs associated with project modification compliance will either be borne directly by or passed on to the Federal government, which accordingly will ultimately bear the majority of the costs of these modifications.

- **Agricultural activities (Natural Resources Conservation Service, Army Corps of Engineers)**. Informal consultations are anticipated involving agricultural

activities (such as critical area planting, nutrient management, multiple purpose dams, and structures for water control). In addition to those discussed for USACE permitted road and bridge construction activities project modifications may limit pond depth to eight feet, preclude the stocking of predatory fish, and include measures to prevent the escape of predatory fish. Any project modification costs associated with these consultations are expected to be minimal.

- **Utilities construction and maintenance (Army Corps of Engineers)**. Informal consultations are anticipated involving utility line work. Project modifications are expected to be similar to those discussed for road and bridge construction and maintenance projects, and to be minimal.

- **Streambank stabilization, stream alignment, and channelization (Army Corps of Engineers)**. Informal consultations are anticipated involving streambank stabilization. Project modifications are expected to be similar to those discussed for road and bridge construction and maintenance projects, and to be minimal.

- **Recreation and conservation activities (Natural Resources Conservation Service, Army Corps of Engineers)**. Informal consultations are anticipated regarding conservation and recreation projects are designed to benefit the shiner and habitat, and boat docks. Third parties may be impacted by consultations regarding recreation projects, however, project modifications are anticipated to be minimal.

- **Sand and gravel mining (Army Corps of Engineers)**. Informal consultations are anticipated involving sand and gravel mining projects. Project modifications are expected to be similar to those discussed for road and bridge construction and maintenance projects, and to be minimal.

- **Water quality activities (Environmental Protection Agency)**. Environmental Protection Agency conducts activities to protect water quality under the CWA. These may include EPA review of State water quality standards.

- **Other Army Corps of Engineers permitted activities (Army Corps of Engineers)**. Informal consultations are anticipated involving permits for the maintenance of existing structures, activities requiring permits for the fill of less than 10 cubic yards, and other miscellaneous permitted activities. Project modifications are expected to be similar to those discussed for road and bridge construction and maintenance projects, and to be minimal.

- **Habitat Conservation Plans**. The costs of the one HCP anticipated to be undertaken are expected to be incurred by the State of South Dakota, which does not qualify as a small entity.

After excluding the consultations on activities above from the total universe of potential impacts identified in the body of the analysis, no consultations and Action agencies remain. The above actions feature activities that do *not* directly regulate small entities.

REFERENCES

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Missouri Department of Conservation, Soil and Water Conservation Program, Loan Interest-Share Program, accessed at www.dnr.state.mo.us/wpscd/swcp/swcp_lis.htm on February 26, 2003.

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Personal communication with Dave Graves, South Dakota Department of Transportation Personnel, December 29, 2003.

Personal communication with Dave Jones, Fort Riley Personnel, October 23, 2003.

Personal communication with Emily Detrich, Environmental Protection Agency Personnel, October 30, 2003.

Personal communication with Gibran Suleiman, Fort Riley Personnel, October 21, 2003.

Personal communication with Jack Generaux, Environmental Protection Agency Personnel, October 30, 2003.

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U.S. Census Bureau, *2000 County Business Patterns*, accessed at http://censtats.census.gov/cgi-bin/cbpnaic/cbpsect.pl

Exhibit 8

ESTIMATED TOTAL ECONOMIC COSTS OF ASSOCIATED ACTIVITIES (TEN YEARS)

Activity	No. of Informal/ Formal Consultations	Informal Consultation	Formal Consultation	Project Modifications	Total Costs
Bonne Femme Creek					
Transportation	68-70/0	$280,000 to $870,000	$0	Minimal	$280,000 to $870,000
Agriculture	43/0	$180,000 to $540,000	$0	Minimal	$180,000 to $540,000
Utilities	50/0	$210,000 to $620,000	$0	Minimal	$210,000 to $620,000
Streambank stabil.	44/0	$180,000 to $550,000	$0	Minimal	$180,000 to $550,000
Recreation & cons.	8/0	$30,000 to $100,000	$0	Minimal	$30,000 to $100,000
Sand & gravel mining	30/0	$120,000 to $370,000	$0	Minimal	$120,000 to $370,000
Other	20/0	$80,000 to $250,000	$0	Minimal	$80,000 to $250,000
Subtotal	263-265/0	$1,090,000 to $3,300,000	$0	Minimal	$1,090,000 to $3,300,000
Moniteau Creek					
Transportation	56-58/0	$230,000 to $720,000	$0	Minimal	$230,000 to 720,000
Agriculture	47/0	$200,000 to $590,000	$0	Minimal	$200,000 to $590,000
Utilities	96/0	$400,000 to $1,200,000	$0	Minimal	$400,000 to $1,200,000
Streambank stabil.	32/0	$130,000 to $400,000	$0	Minimal	$130,000 to $400,000
Recreation & cons.	2/0	$10,000 to $20,000	$0	Minimal	$10,000 to $20,000
Sand & gravel mining	3/0	$10,000 to $40,000	$0	Minimal	$10,000 to $40,000
Other	5/0	$20,000 to $60,000	$0	Minimal	$20,000 to $60,000
Subtotal	241-243/0	$1,000,000 to $3,030,000	$0	Minimal	$1,000,000 to $3,030,000

Exhibit 8

ESTIMATED TOTAL ECONOMIC COSTS OF ASSOCIATED ACTIVITIES (TEN YEARS)

Activity	No. of Informal/ Formal Consultations	Informal Consultation	Formal Consultation	Project Modifications	Total Costs
Sugar Creek					
Transportation	14-15/0	$60,000 to $190,000	$0	Minimal	$60,000 to $190,000
Agriculture	43/0	$180,000 to $540,000	$0	Minimal	$180,000 to $540,000
Utilities	1/0	<$10,000 to $10,000	$0	Minimal	<$10,000 to $10,000
Streambank stabil.	3/0	$10,000 to $40,000	$0	Minimal	$10,000 to $40,000
Recreation & cons.	0/0	$0	$0	Minimal	$0
Sand & gravel mining	0/0	$0	$0	Minimal	$0
Other	6/0	$20,000 to $70,000	$0	Minimal	$20,000 to $70,000
Subtotal	67-68/0	$280,000 to $850,000	$0	Minimal	$280,000 to $850,000
Missouri Other					
NRCS Programmatic	1/0	$290,000	$0	Minimal	$290,000
Water Quality	2/0	<$10,000 to $20,000	$0	Minimal	<$10,000 to $20,000
Fort Riley					
All activities	100-195/0	$490,000 to $1,320,000	$0	$0	$490,000 to $1,320,000
Subtotal	100-195/0	$490,000 to $1,320,000	$0	$0	$490,000 to $1,320,000

Exhibit 8

ESTIMATED TOTAL ECONOMIC COSTS OF ASSOCIATED ACTIVITIES (TEN YEARS)

Activity	No. of Informal/ Formal Consultations	Informal Consultation	Formal Consultation	Project Modifications	Total Costs
Stray Horse Creek					
Transportation	11/1	$40,000 to $160,000	$10,000	$40,000	$90,000 to $210,000
Agriculture	12/1	$40,000 to $170,000	$10,000 to $20,000	$0	$50,000 to $180,000
Utilities	1/0	<$10,000 to $10,000	$0	$0	<$10,000 to $10,000
Streambank stabil.	<1/0	<$10,000 to $10,000	<$10,000	$0	<$10,000 to $10,000
Recreation & cons.	1/0	<$10,000 to $20,000	<$10,000	$0	$10,000 to $20,000
Dam construction	1/0	<$10,000 to $10,000	$0	$0	<$10,000 to $10,000
Water diversion	<1/<1	<$10,000	<$10,000	$0	<$10,000
Water quality	5/0	$20,000 to $80,000	$0	$0	$20,000 to $80,000
Technical Assistance	n/a	$0	$0	$0	$20,000 to $40,000
Subtotal	32/1	$110,000 to $440,000	$20,000 to $30,000	$40,000	$190,000 to $560,000
TOTAL	**706-806/1**	**$3,270,000 to $9,240,000**	**$20,000 to $30,000**	**$40,000**	**$3,350,000 to $9,360,000**

Note: Numbers may not sum due to rounding. Other costs include EPA water quality activities and a programmatic consultation with NRCS.
Source: Conversations with State and Federal agencies potentially affected by the proposed critical habitat designation.

Exhibit 8

ESTIMATED TOTAL ECONOMIC COSTS OF ASSOCIATED ACTIVITIES (TEN YEARS)

Activity	No. of Informal/ Formal Consultations	Informal Consultation	Formal Consultation	Project Modifications	Total Costs
Stray Horse Creek					
Transportation	11/1	$40,000 to $160,000	$10,000	$40,000	$90,000 to $210,000
Agriculture	12/1	$40,000 to $170,000	$10,000 to $20,000	$0	$50,000 to $180,000
Utilities	1/0	<$10,000 to $10,000	$0	$0	<$10,000 to $10,000
Streambank stabil.	<1/0	<$10,000 to $10,000	<$10,000	$0	<$10,000 to $10,000
Recreation & cons.	1/0	<$10,000 to $20,000	<$10,000	$0	$10,000 to $20,000
Dam construction	1/0	<$10,000 to $10,000	$0	$0	<$10,000 to $10,000
Water diversion	<1/<1	<$10,000	<$10,000	$0	<$10,000
Water quality	5/0	$20,000 to $80,000	$0	$0	$20,000 to $80,000
Technical Assistance	n/a	$0	$0	$0	$20,000 to $40,000
Subtotal	32/1	$110,000 to $440,000	$20,000 to $30,000	$40,000	$190,000 to $560,000
TOTAL	**706-806/1**	**$3,270,000 to $9,240,000**	**$20,000 to $30,000**	**$40,000**	**$3,350,000 to $9,360,000**

Note: Numbers may not sum due to rounding. Other costs include EPA water quality activities and a programmatic consultation with NRCS.
Source: Conversations with State and Federal agencies potentially affected by the proposed critical habitat designation.