

**APPENDIX I**

**Memorandum of Agreement**

**Tribal Consultation Summary**

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**Memorandum  
of  
Agreement**

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**FINAL DRAFT**

**MEMORANDUM OF AGREEMENT**

**Between**

**[Individual Signatory Tribe]**

**and**

**The Surface Transportation Board**

**and**

**The Dakota, Eastern & Minnesota Railroad Company**

**Regarding**

**The Environmental Impact Statement**

**For**

**THE POWDER RIVER BASIN EXPANSION PROJECT**

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## INTRODUCTION

This Memorandum of Agreement (MOA) has been developed at the request of and with the assistance of representatives of consulting tribes and Indian organizations. The intent of this MOA is to ensure tribal participation under the NEPA process in certain specific areas of particular concern to tribes, and sets forth in writing the commitment of the DM&E Railroad and the STB to address issues of concern that were raised by tribal representatives during consultation. This MOA is to be made part of the Environmental Impact Statement (EIS) for this project under the National Environmental Policy Act (NEPA) process. This document does not restrict tribal interest or involvement in any other areas addressed by the NEPA process in the EIS.

Consultation with tribes and tribal organizations identified as potentially affected by this project commenced in February of 1999. 34 federally recognized tribes and 4 Indian Organizations were contacted by letter and telephone and individual meetings, as requested, were held throughout the spring and summer of 1999 to provide information and discuss issues of concern to Indian people and how they would be addressed in the EIS process. To date 13 Tribes and 4 Indian Organizations continue to be actively involved in the process. Attachment 1 provides an overview of these consultation efforts.

An inter-tribal consultation meeting was held in May of 1999 in Williston, ND to review a draft Programmatic Agreement (PA) addressing Section 106 of the National Historic Preservation Act. The tribes in attendance at this meeting felt there were a variety of issues of concern to Indian people and Tribes and requested that an MOA be developed and included in the EIS which would be an umbrella document that would address concerns that could not be covered in the PA. A rough draft MOA was written at this time, a working group was selected to work on the content, and a second working group was selected to assist in providing input on the draft PA. A second meeting later in the summer was agreed upon.

The second inter-tribal meeting was held in Rapid City in July of 1999 to review both revised drafts of the MOA and the PA. At the close of this meeting it was decided that more work on the documents by the working groups was needed and that drafts would then be reviewed/circulated. The final drafts of these documents would be sent out to Tribes, Indian Organizations and Federal Agencies for comment.

A final draft of the MOA was sent out for comment in January of 2000. At a consultation meeting in February of 2000, to review the South Dakota archeological findings (as agreed in the draft MOA and draft PA) discussion of the draft MOA resulted in the request for an Introduction to the MOA which would explain what its purpose was and how it was created.

The following tribes and tribal organizations were in attendance at one or more of the inter-tribal meetings: Rosebud Sioux, No. Cheyenne, Ft. Peck Tribes, Lower Brule Sioux, Three Affiliated Tribes, Standing Rock Sioux, Crow Creek Sioux, Santee Sioux, Oglala Sioux, Cheyenne River Sioux, Yankton Sioux, Upper Sioux Community, the Kiowa Tribe, Medicine Wheel Coalition, Gray Eagle Society, Minnesota Indian Affairs Council and the Black Hills Sioux Nation Treaty Council. The federal agencies present at one or more of these meetings include: the Army Corps of Engineers (Omaha), the Forest Service, the Surface Transportation Board and the Advisory Council on Historic Preservation (DC and Denver).

The DM&E Railroad was also present at these meetings.

WHEREAS, the Surface Transportation Board (STB), the lead Federal agency, has received an application for the construction and operation of a rail line by the Dakota, Minnesota and Eastern Railroad Corporation (DM&E), extending its existing system into the Powder River Basin of Wyoming as defined in its decision of December 10, 1998; and,

WHEREAS, the STB has determined that the proposed project is an undertaking and may have an effect upon natural and cultural resources of American Indian people and pursuant to the National Environmental Policy Act (NEPA) is conducting an Environmental Impact Statement (EIS) with United States Forest Service Region 2 (USFS), the United States Department of the Interior - Bureau of Land Management Montana State Office and United States Department of the Interior – Bureau of Land Management Wyoming State Office (collectively referred to as BLM), the United States Army Corps of Engineers Omaha District and United States Army Corps of Engineers St. Paul District (collectively referred to as COE), the United States Department of Interior - Bureau of Reclamation (BOR), and the United States Coast Guard (USCG), as cooperating agencies. All of the above are signatories to this Agreement (Signatories); and,

WHEREAS, the STB is in consultation with the Cheyenne and Arapaho Tribes of Oklahoma, Cheyenne River Sioux Tribe, Comanche Nation of Oklahoma, Crow Tribe, Crow Creek Sioux Tribe, Eastern Shoshone Tribe, Flandreau Santee Sioux Tribe, Fort Peck Tribes, Ho-Chunk Nation, Kiowa Tribe, Lower Brule Sioux Tribe, Lower Sioux Community, Menominee Indian Tribe, Northern Arapaho Tribe, Northern Cheyenne Tribe, Oglala Sioux Tribe, Omaha Tribe, Pawnee Nation of Oklahoma, Ponca Tribe, Prairie Island Sioux Community, Rosebud Sioux Tribe, Sac & Fox Nation, Santee Sioux Tribe, Shakopee Mdewakanton Sioux, Sisseton-Wahpeton Sioux Tribe, Spirit Lake Tribe, Standing Rock Sioux Tribe, Three Affiliated Tribes, Turtle Mountain Band of Chippewa Tribe, Upper Sioux Community, West River Cheyenne, Winnebago Tribe, Yankton Sioux Tribe (collectively referred to as Signatory Tribes). All of the above may be signatories to this Agreement. Signatories to this Agreement will be the duly recognized Chairman or authorized representative by Tribal Resolution; and,

WHEREAS, the Medicine Wheel Coalition for Sacred Sites of North America, the Minnesota Indian Affairs Council, The Medicine Wheel Alliance and the Gray Eagle Society and the Black Hills Sioux Nation Council (collectively referred to as Indian Organizations) are also invited to be signatories to this Agreement; and,

WHEREAS, the United States Government has a trust relationship with American Indian Tribes, as evidenced by Treaty and in provisions in numerous laws including, but not limited to the National Historic Preservation Act of 1966 (NHPA), the American Indian Religious Freedom Act (AIRFA), the Native American Graves Protection and Repatriation Act (NAGPRA), the National Park Service Bulletin 38, the Archaeological Resources Protection Act (ARPA) and [reaffirmed in] President Clinton's Memorandum for Heads of Executive Departments and Agencies of April 1994, Executive Order 13084 on Government to Government Consultation, Executive Order 13007 on Indian Sacred Sites. The Federal Agencies and DM&E recognize the need to consult, to the greatest extent practicable and to the extent permitted by law, with the signatory tribal governments prior to taking actions that affect these native governments or their members; and,

WHEREAS the Federal Agencies and DM&E, in consideration of the trust responsibilities between the U.S. Government and American Indian Tribes, are committed to supporting the policy of Public Law 95-341 (the American Indian Religious Freedom Act of 1978), which states that "...it shall be the policy of the United States to protect and preserve for American

Indians their inherent right of freedom to believe, express and exercise the traditional religions of the American Indian, including, but not limited to, access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites”; and,

WHEREAS the Signatory Tribes recognize that cultural and natural resources, and traditional cultural properties potentially affected by this project are invaluable in the preservation of endangered tribal resources critical to the preservation of their cultural heritage and the pursuit of traditional lifeways for present and future generations; and,

WHEREAS, the DM&E Railroad has proposed a rail line to transport coal from the Powder River Basin Coal fields in Wyoming to Winona, MN, transecting aboriginal tribal homelands identified on the map in the US Indian Claims Commission Final Report, 1978. (Attachment 1) These boundaries indicated on this map represent the results of cases before the US Indian Claims Commission of the US Court of Claims, in which American Indian Tribes proved aboriginal occupancy of a tract within the continental United States; and

WHEREAS, to promote and support government-to-government relationships with federally recognized sovereign nations as defined and required by the President’s Executive Memorandum of April 1994, and Executive Orders 13007 and 13084, the Federal Agencies, are undertaking, through consultation, to work in partnership with the Signatory Tribes and concurring Indian Organizations to address and find solutions for the issues of concern on the Powder River Basin Expansion Project; and,

WHEREAS, the DM&E wishes to cooperate with the Federal Agencies who desire to fulfill their responsibilities to establish and maintain relationships with federally recognized sovereign nations for the purpose of building stable, long-term working relationships which result in positive, mutually understood and beneficial solutions to common situations; and,

WHEREAS, this MOA reflects the agreements of a formalized consultation process begun by the Federal Agencies and DM&E in January 1999, with the Signatory Tribes and concurring Indian Organizations in addressing the proposed Powder River Basin Expansion Project; and,

WHEREAS, the Federal Agencies and DM&E are committed to addressing concerns identified by signatory tribal governments regarding natural and cultural resource issues and other socio economic issues within their areas of responsibility, and to outline steps necessary and desired in resolving issues;

NOW THEREFORE, be it resolved that the Federal Agencies, the DM&E, and the signatory Tribes, and the concurring Tribal Organization (the Signatory Parties) agree that, to ensure the meaningful participation of the Signatory Tribes and concurring Tribal Organizations, the following stipulations/conditions be agreed upon:

## STIPULATIONS/(CONDITIONS)

1. The provisions of this MOA that expressly address the rights, duties and obligations of and to Signatory Tribes shall not be binding upon nor enforceable by an entity not a Party to this Agreement.
2. It is mutually advantageous for all signatory and concurring parties to cooperate in this opportunity to increase the knowledge and understanding of the historical significance of the American Indian people, and their resources.
3. This MOA will be made part of the Environmental Impact Statement (EIS), currently being prepared by the Federal Agencies.
4. The Signatory Tribes will be provided an invitation to fully participate in the development of the Programmatic Agreement (PA) being developed under the National Historic Preservation Act (NHPA), Section 106 and 110.
5. The signatory Tribes will be participants in the Identification, Planning and Treatment of other cultural areas (to include but not be limited to) Traditional Cultural Properties (TCPs), and Sacred Sites using the procedures and process agreed upon in the PA, as identified in the treatment plan.
6. NAGPRA regulations and procedures under federal, state and local laws will be identified and defined, and to the extent possible a unified process will be defined within the PA and the Identification Plan and Treatment Plan being developed for this project.
7. In the event DM&E obtains authority to construct a rail line, the Monitoring Program in use during the archeological survey work will be expanded to include a training component. This program will be utilized and implemented during all phases of the project (to include archeological work) and specifically in the event construction should occur if the project is approved. This plan should include opportunity for all Signatory Tribes to identify potential and qualified monitors, and to participate in the training of monitors in a uniform process for conducting the monitoring and relevant statutory compliance issues.
8. In the event DM&E obtains authority to construct a rail line, the Signatory Tribes and concurring Indian Organizations will have the opportunity to participate in a timely manner, the procedure and process of the development of any studies that may be performed of plants/ethnobotany, animals/aquatic plants and animals of the area of the proposed route.
9. In the event DM&E obtains authority to construct a rail line, the Parties will work together in the development of an ethno-historic record/report of the proposed rail road corridor.
10. The Signatory Tribes will participate in an examination of intellectual property rights in the control of data, in the confidentiality of information [on cultural areas] as determined by numbers 2, 3, 6 and 7 above, and any writing incorporating intellectual properties contributed by Native Americans in the course of this project.

11. The Endangered Species Act will be complied with.
12. The DM&E and the Signatory Tribes will work together to develop an active recruitment and training program for the employment of Indian people of the Signatory Tribes outside the monitoring program in carrying out construction activities in the building of the railroad in the event the appropriate agencies permit a route to be constructed. In the event DM&E obtains authority to construct a rail line, the DM&E will identify and recruit qualified personnel from the Signatory Tribes for long term employment and contract opportunities for qualified American Indian contractors.
13. In the event DM&E obtains authority to construct a rail line, the terms of this MOA will be rolled over into a Management Plan to ensure compliance with this MOA.
14. The Management Plan will include a notification procedure developed by the DM&E and Signatory Tribes. This procedure will ensure notification of Signatory Tribes in the event of unanticipated discoveries of human remains or artifacts during the life of the railroad.
15. The Signatory Tribes will establish a tribal mediation component (group, task force) for consensus building. This component would be included in the Management Plan and would provide oversight (both short and long term), and would be a long-term on-going liaison between the tribes and the project, responsible for inter-tribal conflict resolution and internal tribal disagreements as they pertain to the project.
16. Should a dispute or objection arise between the Signatory Parties regarding any aspect of this MOA, the parties agree to consult with each other in good faith to resolve the dispute or objection. If the dispute or objection cannot be resolved, the disputing parties agree to meet with a mutually acceptable mediator to attempt to resolve the dispute. All parties agree not to seek judicial relief to resolve the dispute or objection, or to otherwise sue to enforce this MOA, until the consultation and mediation attempts have been exhausted.
17. Amendments, supplements or revisions to this MOA may be proposed by any party to this agreement and shall become effective upon formal approval as set forth in 18.
18. The Signatory Parties recognize the logistical difficulty in obtaining simultaneous signatures to this MOA. Therefore, the Signatory Parties agree that this MOA will take effect upon the signature of the Federal agencies, the DM&E and any Signatory Tribes, but its provisions will not affect any party, until and unless that party signs the MOA on or before March 1, 2000.

FEDERAL AGENCIES

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The Surface Transportation Board Date

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The U.S. Army Corps of Engineers, Omaha District Date

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The U.S. Army Corps of Engineers, St. Paul District Date

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The U.S.D.A. Forest Service Region 2 Date

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The U.S.D.I. Bureau of Land Management Montana State Office Date

\_\_\_\_\_  
The U.S.D.I. Bureau of Land Management Wyoming State Office Date

\_\_\_\_\_  
The U.S.D.I. Bureau of Reclamation Date

\_\_\_\_\_  
The U.S. Coast Guard Date

APPLICANT

\_\_\_\_\_  
President, Dakota, Minnesota & Eastern Railroad Corporation Date

SIGNATORY TRIBES

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Chairman, Northern Arapaho Tribe Date

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Chairman, Eastern Shoshone Tribe Date

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Chairman, Northern Cheyenne Tribe Date

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Chairman, Ft. Peck Tribes Date

\_\_\_\_\_  
Chairman, Crow Tribe Date

Chairman, Oglala Sioux Tribe	Date
Chairman, Rosebud Sioux Tribe	Date
Chairman, Standing Rock Sioux Tribe	Date
Chairman, Spirit Lake	Date
Chairman, Turtle Mountain Band of Chippewa	Date
Chairman, Three Affiliated Tribes	Date
Chairman, Santee Sioux Tribe	Date
Chairman, Omaha Nation	Date
Chairman, Winnebago Tribe	Date
Chairman, Ponca Tribe	Date
Chairman, Upper Sioux Community	Date
Chairman, Lower Sioux Community	Date
Chairman, Prairie Island Sioux Community	Date
Chairman, Shakopee Mdewakanton Sioux	Date
Chairman, Kiowa Nation	Date
Chairman, Comanche Nation	Date
Chairman, Cheyenne-Arapaho Tribes of Oklahoma	Date

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Chairman, Pawnee Nation

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Date

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Chairman, Sac & Fox Nation of Oklahoma

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Chairman, Sac & Fox Nation in Iowa

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Chairman, Menominee Indian Tribe

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Chairman, Ho-Chunk Nation

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Chairman, Cheyenne River Sioux

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Chairman, Crow Creek Sioux

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Chairman, Yankton Sioux

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Chairman, Lower Brule Sioux

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Chairman, Sisseton-Wahpeton Sioux

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Chairman, Flandreau Santee Sioux

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Date

CONCURRING PARTIES

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President, Medicine Wheel Alliance

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Date

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President, Medicine Wheel Coalition for Sacred Sites

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Date

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Chairman, Minnesota Indian Affairs Council

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Date

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President, Gray Eagle Society

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President, Black Hills Sioux Nation Council

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Date

## GLOSSARY OF TERMS/ACRONYMS

<b>Concurring Party</b>	Those Indian Organizations concurring with the MOA.
<b>Cultural Resource</b>	A cultural resource is any prehistoric or historic district, site, building, structure or object in American history, architecture, engineering, archeology, or culture. This term includes artifacts, records, and remains that are related to and located within such properties. The term also includes properties of traditional religious and cultural importance to an Indian Tribe that may meet the National Register criteria, or criteria as defined in National Park Service Bulletin 38, and in Executive Order 13007 on Indian Sacred Sites.
<b>Federal Agencies</b>	Any Federal entity with a statutory obligation to fulfill the requirements of NEPA, NHPA and Executive Orders 13084 on Government to Government Consultation and 13007 on Indian Sacred Sites
<b>Ground Disturbance Area</b>	The [surface] area that will be impacted by construction
<b>Human Remains</b>	The physical remains of a human body.
<b>Identification Plan</b>	A proposal for the identification of properties eligible for inclusion to the National Register of Historic Places under Section 106 of the National Historic Preservation Act.
<b>Monitoring Program</b>	A program developed to ensure the presence of a Native American during archeological exploration and construction activities.
<b>MOA</b>	Memorandum of Agreement
<b>NAGPRA</b>	Native American Graves Protection and Repatriation Act
<b>NEPA</b>	National Environmental Policy Act
<b>NHPA</b>	National Historic Preservation Act
<b>P A</b>	Programmatic Agreement as defined by Section 106 of the National Historic Preservation Act.
<b>STB</b>	Surface Transportation Board
<b>Signatory Tribe</b>	Federally recognized tribes who are signatories to the MOA.
<b>TCP</b>	Traditional Cultural Property as defined in NPS Bulletin No. 38.

<b>THPO</b>	Tribal Historic Preservation Officer appointed or designated in accordance with the Act is the official representative of an Indian tribe for the purposes of Section 106.
<b>Treatment Plan</b>	A proposal for the mitigation of effects upon any historic property that a project would effect. It can include data recovery, documentation, restoration or other measures.
<b>Unassociated funerary objects</b>	Those funerary objects for which the human remains with which they were placed intentionally are not in the possession or control of a museum or Federal agency.
<b>Undertaking</b>	An undertaking is a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; those requiring a Federal permit; license or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a Federal agency.

## **Tribal Consultation Summary**

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**Tribal Consultation Summary**  
**Powder River Basin Expansion Project**  
**Attachment 1**

While none of the proposed Powder River Basin Expansion Project route alternatives cross any existing American Indian Reservations, Native American occupation of the area of the proposed route has been well documented, and extends from historic times to the present. In view of potential Native American concerns associated with the project, government-to-government consultation with potentially interested, federally recognized American Indian Tribes was initiated.

The Surface Transportation Board (STB), Section of Environmental Analysis (SEA), with the assistance of the cooperating Federal agencies, State Historic Preservation Office's (SHPO's) in WY, SD and MN, and recommendations from tribes, identified 32 federally recognized tribes having historic, aboriginal or current ties to the project area. Consultation was initiated with these tribes. It is the intent of consultation that each tribe be provided a reasonable opportunity to participate with the Federal government in addressing the potential impacts of the proposed project.

In September of 1998, and in February 1999, letters were sent to the Chairman (and any know cultural resource contact) for each of the 31 tribes outlining the proposed project and requesting their participation in consultation. (An additional tribe was added by request, bringing the total number of tribes to 32.) Only two responses were received. In February and March of 1999, contact was made by telephone with each tribal government to explain the request for consultation and the project. Each tribe was asked to appoint traditional and or cultural representatives to represent the tribe in the consultation efforts. Out of respect for cultural differences, the wisdom of elders and the historically unresolved issue of treaties, several tribal groups/organizations were invited to participate in consultation meetings.

The consultations to date have consisted of 1) two inter-tribal meetings to address tribal participation in the National Historic Preservation Act (NHPA), Section 106 process and to jointly develop a Memorandum of Agreement (MOA) between the tribes, the Federal agencies and the Dakota, Minnesota & Eastern Railroad Corporation (DM&E); 2) an inter-tribal meeting to review archeological findings in South Dakota; 3) several smaller meetings with tribal representatives; 4) personal appearances before tribal culture committees, elder groups, council chairman and individual council members; and, 5) treaty commissions. Throughout the process tribal representatives have been frequently consulted by phone.

The substantive participation of tribal representatives has resulted in a Memorandum of Agreement developed jointly between the tribes, SEA and DM&E. Tribal representatives have also participated with SEA, the Cooperating Federal Agencies, and SHPO's to develop a draft Programmatic Agreement providing tribes the opportunity for substantive participation in the decision making process under Section 106.

Continuing consultations will include: 1) an opportunity for an on-site review of the proposed new construction area and an opportunity to discuss the archeological survey work and offer

recommendations; 2) an inter-tribal meeting after release of the Draft EIS to discuss any areas of concern and offer recommendations on the draft; 3) individual or small group meetings on an as needed or as requested basis.

The following provides a summary of SEA's consultation efforts:

1. Sept 1998 and February 1999 – letters to all Tribal Chairman and known cultural contacts requesting consultation and providing information on the proposed project.
2. Feb 1999 and March 1999 – phone contact to each tribal Chair/tribal government office to notify as above and to request authorized contact person to represent tribe. This process had several purposes: 1) to make sure everyone received the initial correspondence letters and 2) to identify appropriate contact within the tribal structure and 3) to attempt to ascertain the tribal interest in participating in the consultation. (All tribes were contacted.<sup>1</sup>)

The tribes contacted and the results of those contacts are provided below.

<u>Northern Arapaho</u> –	Nelson White and Patrick Moss, Councilmen – William C’Hair was determined to be the tribal contact
<u>Eastern Shoshone</u> –	Del Clair and Hamen Wise, Cultural Resource Contacts (also sit on the Medicine Wheel Alliance)
<u>Northern Cheyenne</u> –	Mark Wandering Medicine, Chair of Cultural Committee, official contact of record, with Jenny Parker, Culture committee member as contact.
<u>Crow Tribe</u> –	Burton Pretty on Top, Cultural Resources contact
<u>Oglala Sioux</u> –	President Salway referred to Shawn Perkins as initial contact. Mike Graham upon appointment as 5 <sup>th</sup> Member is appropriate contact (Ron Zephier, Assistant) is unresponsive; Wilbur Between Lodges, Vice Chair is alternate contact
<u>Rosebud Sioux</u> –	Norman Wilson, President referred Terry Gray as contact
<u>Crow Creek Sioux</u> –	Harold Miller’s office referred Torin Crowe as cultural contact
<u>Yankton Sioux</u> –	Stephen Cournoyer, Chair – his office was unresponsive
<u>Lower Brule Sioux</u> –	Michael Jandreau, Chairman referred Scott Jones, cultural coordinator
<u>Cheyenne River Sioux</u> –	Greg Bourland’s office referred to Bronco Lebau, Tribal Historic Preservation Office (THPO) as contact.
<u>Sisseton-Wahpeton Sioux</u> –	Andrew Grey, Chair’s office referred to Jerry Flute, who sits on Medicine Wheel Coalition as contact
<u>Flandreau Santee Sioux</u> –	Thomas Ranfranz, Chair office was unresponsive
<u>Standing Rock Sioux</u> –	Tim Mentz, THPO is contact
<u>Spirit Lake</u> –	Myra Pearson, Chair – office unresponsive
<u>Chippewa</u> –	Richard LaFromboist, Chair – office unresponsive

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<sup>1</sup> Two phone calls were made. Unresponsive means that messages were not returned.

<u>Three Affiliated Tribes</u> –	Tex Hall, Chair - referred to Glenda Embry as primary contact along with Gail Baker, Sr.
<u>Santee Sioux</u> –	Arthur Denny, Chairs office referred Jim White, NAGPRA representative as contact
<u>Omaha</u> –	Gary Lasley, Chair – his office did not refer contact, said they would like to receive correspondence only
<u>Winnebago</u> –	Kenneth Mallory, Chair, referred to D. Smith as contact
<u>Ponca</u> –	Fred Leroy, Chair - office did not refer contact, said they would like to receive correspondence only
<u>Upper Sioux Community</u> –	Dallas Ross, Chair (also serves on Medicine Wheel Coalition)
<u>Lower Sioux Community</u> –	Roger Prescott, Chair – office referred Ernie Wabashaw NAGPRA representative as contact
<u>Prairie Island Sioux</u> –	Audrey Kohen, Chair – unresponsive
<u>Shakopee Mdewakanton Sioux</u> –	Stanley Crooks, Chair – unresponsive
<u>Kiowa</u> –	George Daingkau, Chair, Museum Committee
<u>Comanche Tribe</u> –	Chair's office referred Phyllis Attocknie as primary contact – Jimmy Arterberry as additional
<u>Cheyenne Arapaho</u> –	Chairs office referred Gordon Yellowman as contact. Gordon referred Robert Taylor as contact on the Arapaho side.
<u>Pawnee</u> –	William Howell, Tribal Council, NAGPRA rep
<u>Sac &amp; Fox - OK</u> –	Don Abney – unresponsive
<u>Sac &amp; Fox (Iowa)</u> –	David Old Bear, unresponsive
<u>Menominee</u> –	Chairs office unresponsive
<u>Ho-Chunk</u> –	Chairs office unresponsive
<u>Ft. Peck Tribes</u> –	Curly Youpee, Cultural Office is designated contact

Tribal Groups/organizations:

<u>Medicine Wheel Alliance</u> –	John Hill, Chair, Jo Smith is contact
<u>Medicine Wheel Coalition</u> –	Francis Brown, Chair, is contact
<u>Minnesota Indian Affairs Council</u> –	Joe Day, Executive Director, and Jim Jones are contacts
<u>Gray Eagle Society</u> –	Elaine Quiver, Coordinator, is contact

3. Tribal meetings<sup>2</sup>:

November 1998 – Medicine Wheel Alliance

This was an informational meeting initiating consultation. Attending were Crow, Shoshone and No. Cheyenne representatives – Group asked to continue to be informed.

December 1998 –Medicine Wheel Coalition

This was an informational meeting initiating consultation. The group asked to be a part of the process (especially the Section 106 process)

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<sup>2</sup> If initial response was unresponsive, tribes were re-contacted about meetings in their area.

1999 February 27 - Medicine Wheel Coalition / Minnesota Indian Affairs Council

This joint meeting was an attempt to initiate consultation with Minnesota tribes and provide a further information update to the Medicine Wheel Coalition (Coalition). Concerns raised included: Why the consulting tribes were not signing the Programmatic Agreement? and, would the consultation meetings address other issues/studies in the discussions? An additional meeting with the Coalition was asked for and set for April 1999. With the exception of the Minnesota Indian Affairs Council staff, Upper Sioux was the only tribe represented from MN. It was decided to plan another meeting for tribes within the MN area (NB, MN and eastern SD) Attending this meeting were Francis Brown, Dallas Ross, Jerry Flute, George Sutton, Joe Day and Jim Jones.

March 2 - Northern Cheyenne Tribe, Cultural Resources Committee

This was an informational meeting. Ian Ritchie and Clair Green met with Mark Wandering Medicine, Chair, Jenny Parker, Hugh Clubfoot, Butch Sootkis and two others. The DME project was presented and discussed, and copies of the initial Surface Transportation Board letter to tribal chairmen were passed out. Of particular discussion was the time frame, other tribes being consulted with, and the need for substantive tribal input into the Programmatic Agreement (PA) and its accompanying Identification Plan (ID). A second meeting was set up to go over the PA/ID plan. The meeting was set for March 9 with alternate date of March 16.

March 4 - Great Sioux Nations Treaty Council

Attending were Ian Ritchie, Dan Shinn Clair Green and Kevin Schieffer. Dan Shinn gave an informational overview of the project after brief remarks by Kevin. There was a lot of discussion about treaty infringements, and the lack of consultation to date. The result of the meeting was the passing of a Treaty Council Resolution which called for the STB to consult with the governments of members of the council and that the Treaty Council reserved decision on the matter until consultations were completed.

March 17 - Follow up meeting - Northern Cheyenne Culture Committee

This meeting was two hours late in starting and due to lack of attendance the PA was only briefly reviewed. – no substantive input.

March 22 - Grey Eagle Society, Pine Ridge Reservation

Clair Green, Dan Shinn and Brian Molyneaux met with Elaine Quiver, President of The Gray Eagle Society and about 15 of the member elders. This was an informational meeting, which reviewed the project and talked about DM&E hauling how the cultural issues were to be handled and discussed the monitor program. The group was concerned about contaminated waste. The group requested that Ben Rhodd be included as a monitor, and that they be kept informed as the process moved along.

March 23 - Rosebud Sioux Tribe

At the request of the Chairman, Clair Green met with Terry Gray, Marcella Banks, Freemont Fallis, and Roland Blackbull, the Chairman's representative. This was an informational meeting to explain the project, the current status of the process, and to solicit input on the PA/ID plans. Terry requested specific input into the PA. An interest in economic development and how the proposed project could help was expressed. This issue was deferred to a later (unspecified time)

meeting at a more appropriate stage in the process. The accelerated time frame of the project was talked about and tribal comment on the PA urged.

#### March 24 - Standing Rock Sioux Tribe

Clair Green met with Tim Mentz, Tribal Historic Preservation Officer, Bill Kurtz, his assistant, and members of the Cultural Resources Protection Consortium. This meeting was to discuss the project, review the route and express specific tribal concerns. The primary concerns expressed were tribal participation in the process and the protection of cultural resources. Unresolved treaty issues were also brought up.

#### March 25- Cheyenne River Sioux Tribe (THPO Office)

Clair Green met with Bronco LeBeau (THPO). The meeting was brief, reviewed the project in general and the map of the alternative routes. Bronco requested to be kept advised as the process progressed.

#### March 25 - Lower Brule Sioux Tribe

Clair Green met with Scott Jones (and later Chairman Jandreau). The project and alternatives were reviewed. Participation in the process was brought up as the most important issue, particularly as the project impacts not only cultural resources but economic development opportunities. The Chairman has already had some discussions with Kevin Schieffer regarding potential economic development issues. Although the Tribe see the project a difficult one, the tribe realizes the projects potential for development.

#### April 10 - Medicine Wheel Coalition Meeting

This was a follow-up meeting to address the PA and other issues. The Coalition would like to see a “meaningful relationship” for participation in discussions, not just compliance. The Coalition would like to see equal partnership with the tribes on the cultural issues, i.e. a collaborative effort with tribes on Treatment Plans discussed in the PA. The Coalition would like to see a noxious weed policy. The Coalition would also like to see an analysis of why existing routes don’t work, and a survey of ceremonial and medicinal plants for inclusion in the DEIS. The Coalition wants to see another draft of the PA with Tribes inserted.

#### April 30 - OK Tribal Reps - Boulder, CO

Four tribes were represented as they were attending another meeting in Colorado – the Comanche (Phyllis Attocknie), the Pawnee (Bill Howell), the Kiowa (George Daingkau) and the Cheyenne & Arapaho (Gordon Yellowman). An informational overview of the project and route was presented by Clair Green. Again, cultural resource protection was voiced as the main concern. Although these Tribes are further from the route than many others, they maintain a historical interest and would like to attend any other meetings in their area and be kept in the loop with any correspondence. Note: Ron Zephier from Oglala Sioux was expected to be in attendance and did not attend, although he was present at the other Boulder meeting.

#### May 6 and 7 - Northern Arapaho Tribe

Dan Shinn and Clair Green met with members of the Arapaho Economic Development Committee and interested members of both Arapaho and Shoshone tribes in an open meeting for tribal members. An informational overview of the project was provided, with maps and discussion of the process to date. There was little comment.

#### May 20 and 21 - Inter-tribal Meeting - Williston, ND

This meeting was set up to coincide with the annual meeting of the Keepers of the Treasurers. Tribal attendance at this meeting included Ft. Peck (Curly Youpee), Lower Brule, (Scott Jones), Medicine Wheel Coalition (George Sutton), Rosebud (Terry Gray), Santee Sioux (James White), MN Indian Affairs Council (Jim Jones), Three Affiliated Tribes (Glenda Embry and Gail Baker), Standing Rock (Tim Mentz), also respective Federal Agencies, SHPO's (SD and WY) and Advisory Council on Historic Preservation (ACHP) and Burns & McDonnell personnel. Tribes invited who were not in attendance included Crow Creek, Northern Cheyenne, Oglala Sioux, and Cheyenne River Sioux. The purpose of the meeting was to re-draft the Programmatic Agreement to include more tribal input. It was decided that in addition to the PA, a Memorandum of Agreement (MOA) be drafted as a part of the National Environmental Policy Act (NEPA) process to be included in the Environmental Impact Statement (EIS). This MOA would reflect tribal concerns above and beyond the Programmatic Agreement. It was also decided that the PA would be rewritten to include more input from tribes (and address requests that they be signators on the document), and, that the ID Plan and Treatment Plan issues would be rewritten with assistance from tribes. There would be a follow-up meeting to review these drafts.

#### June 17 - Crow Tribe

Clair Green met with Burton Pretty on Top, Cultural Office of the tribe. This was an informational meeting providing an overview of project and process to date. Clair requested that the Crow Tribe clarify their interest in participation. Burton said he was unsure of the tribal interest, would take the matter to his elders and let the STB know.

#### June 18 - Oglala Sioux Tribe

Clair Green met with Wilbur Between Lodges (Vice Chairman) and Teresa Two Bulls (Fifth Members Office). Also in attendance were Elaine Quiver, Gray Eagles, Oliver Red Cloud, Treaty Council, and Bernadine TallMan from the Bombing Range. The purpose of this meeting was to discuss how to continue consultation with the Tribe, as the Fifth Members office was unresponsive and the Tribal Council has passed a resolution in 1998 against the project. Clair expressed the importance of the EIS process for tribal input and said that participation in the process did not indicate support of the project. The various documents (MOA, PA, ID plan) were discussed. Cultural resource preservation and noise pollution were discussed as major areas of concern. Clair pointed to participation in the development of the aforementioned documents as important to the tribe. Economic development/job opportunities were also brought up. Clair pressed for resolution as to how the tribe should be consulted and Wilbur said he would take the issue up with the Executive Committee.

#### July 14 - Minnesota Indian Affairs Council

This was the third attempt to reach interested Minnesota tribes and those tribes in Nebraska, and eastern South Dakota to discuss the project. A total of 10 tribes were invited by letter. The letter was followed up by several phone calls to each tribe explaining the purpose of the meeting and urging them to attend. Letters were sent to the Chairmen and contacts at – Ponca Tribe, Winnebago Tribe, Omaha Tribe, Santee Sioux, Flandreau Santee Sioux, Sisseton Wahapeton, Lower Sioux, Upper Sioux, Prairie Island, Shakopee Mdewakanton. The only tribes represented at the meeting were Upper Sioux (Dallas Ross) and Lower Sioux (Ernie Wabashow), the Minnesota Indian Affairs Council (Joe Day and Jim Jones), and Sisseton Wahapeton (Charlene Miller). Clair Green and Dan Shinn provided an overview of the project and an update as to where we were in the process.

#### July 16 - Update to Lower Brule Tribe

Clair Green met with Scott Jones to work on the content of the MOA and, as the Tribal Council was in session, Clair provided a brief overview of the process of the project to date, including the MOA and PA. Preliminary draft copies of these documents were provided at Council request.

#### July 19 - Inter Tribal Meeting - Rapid City

The purpose of this meeting was a follow up to the meeting on May 20/21 to review drafts of the MOA and PA. The first day of the meeting was taken up with discussions of treaty issues and monitoring issues brought up by the groups in attendance. The draft of the PA was reviewed by SHPO's and Federal agencies and the draft of the MOA was reviewed and edited by tribes on Day 2 of the meeting. (Those items not finished were concluded by conference call). Ft. Peck (Curly Youpee), Lower Brule, (Scott Jones), Medicine Wheel Coalition (George Sutton), Rosebud (Terry Gray), MN Indian Affairs Council (Jim Jones), Three Affiliated Tribes (Glenda Embry and Gail Baker), Standing Rock (Tim Mentz), Crow Creek (Torin Crowe), No Cheyenne (Jenny Parker), and Oglala Sioux (Teresa Two Bulls/Fifth Members Office) were in attendance. Santee Sioux (James White) was unable to attend. Others in attendance included Sioux Nation Treaty Council representatives, Gray Eagle Society, and Medicine Wheel Coalition representatives. Other attendees included the US Forest Service, the Army Corp of Engineers, the Surface Transportation Board, and SHPO's (WY and SD). The DM&E railroad was also present.

#### 2000 - February 29th - March 2nd - Inter-tribal Meeting, Lower Brule, South Dakota

The purpose of this meeting was to review archeological findings to date in the South Dakota area of the project per agreement at earlier inter-tribal meetings and as agreed in the draft MOA. Attendees at this meeting included Grey Eagle Society/Oglala Sioux, Rosebud Sioux, Cheyenne River Sioux, Upper Sioux Community, Lower Brule Sioux, Standing Rock Sioux, Crow Creek Sioux, Yankton Sioux, and Kiowa Tribe, Northern Cheyenne. Cheyenne and No. Arapaho were unable to attend due to weather.

4. Inter-Tribal Meetings – The inter-tribal meeting of February 29, 2000 was to address the initial archeological work completed in SD. The inter-tribal meetings on May 20 and 21st and July 19, 1999 were to develop and put in final draft form, a draft Memorandum of Agreement (MOA)<sup>3</sup> for the Environmental Impact Statement (EIS) which addresses areas of tribal concerns and a Programmatic Agreement (PA) which addresses tribal participation and input into the Section 106 process. These meetings are addressed above in #3.
5. Further consultation – Additional planned consultation will offer tribal representatives opportunity to review the archeological findings (on site visit) and, to the extent possible, view areas of concern in the proposed new construction areas. An inter-tribal meeting (for tribal chairmen) after the release of the Draft EIS to solicit their comments and recommendations on all aspects of the project and the DEIS is also anticipated.

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<sup>3</sup> The draft MOA addresses issues other than and in addition to cultural resource issues, which are being coordinated between the tribes and DM&E (i.e. job training and opportunities, the monitor program as it applies to the rail line construction, etc.).

**APPENDIX J**

**Programmatic Agreement  
Identification Plan**

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**SEPTEMBER, 2000**  
**DRAFT**  
**PROGRAMMATIC AGREEMENT**  
**AMONG**  
**ADVISORY COUNCIL ON HISTORIC PRESERVATION**  
**SURFACE TRANSPORTATION BOARD**  
**WYOMING STATE HISTORIC PRESERVATION OFFICER**  
**SOUTH DAKOTA STATE HISTORIC PRESERVATION OFFICER**  
**MINNESOTA STATE HISTORIC PRESERVATION OFFICER**  
**U.S.D.I. BUREAU OF LAND**  
**MANAGEMENT, MONTANA STATE OFFICE**  
**U.S.D.I. BUREAU OF LAND**  
**MANAGEMENT, WYOMING STATE OFFICE**  
**THE U.S.D.A. FOREST SERVICE, REGION 2**  
**U.S. ARMY, CORPS OF ENGINEERS, OMAHA DISTRICT**  
**U.S. ARMY, CORPS OF ENGINEERS, ST. PAUL DISTRICT**  
**U.S.D.I. BUREAU OF RECLAMATION**  
**AND**  
**DAKOTA, MINNESOTA, & EASTERN RAILROAD CORPORATION**

**REGARDING THE**

**POWDER RIVER BASIN EXPANSION PROJECT**  
**Finance Docket No. 33407**

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WHEREAS, the Surface Transportation Board (STB)<sup>1</sup>, the lead Federal agency, has received an application for the construction and operation of a rail line by the Dakota, Minnesota, & Eastern Railroad Corporation (DM&E), extending their existing system into the Powder River Basin of Wyoming (undertaking) as defined in its decision of December 10, 1998; and,

WHEREAS, the STB has determined that the proposed project is an undertaking which may have an effect upon historic properties included on or eligible for inclusion on the National Register of Historic Places (NRHP), and is in consultation with the Advisory Council on Historic Preservation (Council); the United States Department of Agriculture, Forest Service Region 2 (USFS); the United States Department of the Interior - Bureau of Land Management Montana State Office and Bureau of Land Management Wyoming State Office (collectively referred to as BLM), the United States Army Corps of Engineers, Omaha District and the United States Army Corps of Engineers, St. Paul District (collectively referred to as COE), the United States Department of Interior - Bureau of Reclamation (BOR), the State Historic Preservation Officers of Wyoming, South Dakota, and Minnesota (collectively referred to as SHPOs), and the DM&E, pursuant to Section 800.14 of the regulations (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act, 16 U.S.C. 470f (NHPA). And all of the above are signatories to this Agreement (Signatories); and,

WHEREAS, the STB has invited the Cheyenne and Arapaho Tribes of Oklahoma, Cheyenne River Sioux Tribe, Comanche Nation of Oklahoma, Crow Tribe, Crow Creek Sioux Tribe, Eastern Shoshone Tribe, Flandreau Santee Sioux Tribe, Fort Peck Tribes, Ho-Chunk Nation, Kiowa Tribe, Lower Brule Sioux Tribe, Lower Sioux Community, Menominee Indian Tribe, Northern Arapaho Tribe, Northern Cheyenne Tribe, Oglala Sioux Tribe, Omaha Tribe, Pawnee Nation of Oklahoma, Ponca Tribe, Prairie Island Sioux Community, Rosebud Sioux Tribe, Sac & Fox Nation of Oklahoma, Sac & Fox Nation in Iowa, Santee Sioux Tribe, Shakopee Mdewakanton Sioux, Sisseton-Wahpeton Sioux Tribe, Spirit Lake Tribe, Standing Rock Sioux Tribe, Three Affiliated Tribes, Turtle Mountain Band of Chippewa Tribe, Upper Sioux Community, Winnebago Tribe, and the Yankton Sioux Tribe (collectively referred to as "invited signatories or Tribes") to sign this agreement; and,

WHEREAS, the Medicine Wheel Coalition for Sacred Sites of North America, the Minnesota Indian Affairs Council, The Medicine Wheel Alliance, the Gray Eagle Society and the Black Hills Sioux Nation Council (collectively referred to as Indian Organizations) are also invited to sign this agreement; and,

WHEREAS, the STB, in consultation with the Signatories, has developed an Identification plan (ID Plan) for inventory of cultural resources prior to construction; and,

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<sup>1</sup> The Surface Transportation Board (STB) was created with the passage of the Interstate Commerce Commission Termination Act of 1995 (Pub. L. No. 104-88). STB, an independent body within the U.S. Department of Transportation, is responsible for administering rail, pipeline, and certain adjudicatory function involving motor and water carriers. These responsibilities are similar to those duties formerly administered by the Interstate Commerce Commission. The STB is the lead agency under NEPA for the Powder River Basin Expansion Project.

WHEREAS, the applicable requirements of the NHPA, the American Indian Religious Freedom Act, 42 U.S.C. 1996 et. seq. (AIRFA), and the Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001 et. seq. and 43 CFR 10 (NAGPRA), have been considered in the development of the ID plan and this agreement does not waive the responsibilities of the Signatories under these regulations; and,

WHEREAS, the lead federal agency (STB) in cooperation with the USFS, BLM, BOR, and COE is preparing an Environmental Impact Statement (EIS) in accordance with the requirements of the National Environmental Policy Act (NEPA) to address the potential impacts of the undertaking on a variety of human and natural resources; and,

WHEREAS, the STB may use an independent third party contractor, working under its supervision, direction, and control, to assist in meeting the STB's responsibilities defined in the stipulations below; and,

NOW, THEREFORE, the Signatories to this agreement consent that the proposed undertaking shall be implemented in accordance with the following stipulations in order to consider the effect of the undertaking on historic properties and to satisfy all Section 106 NHPA responsibilities for all aspects of the project.

## **STIPULATIONS**

The STB has a statutory obligation as the lead Federal agency to fulfill the requirements of Section 106 (36 CFR 800), therefore the STB shall ensure that the measures in the following parts are carried out.

### **A. IDENTIFICATION PLAN**

The portions to be surveyed on the existing rail line and new construction will be determined through consultation with State Historic Preservation Officer(s) (SHPO), Tribal Historic Preservation Officer(s) (THPO)/cultural resource representative(s) designated by the Tribe(s), and Federal agencies. The Identification Plan (ID Plan) describes the APE, the methodology for the location, inventory, identification, recording, and evaluation of all cultural resources that have surface and exposed profile indications along the alternative alignment(s) proposed for construction. The Identification Plan also describes APE, the methodology for location, inventory, identification, recording, and evaluation of all cultural resources in portions of the existing rail line. The Identification Plan generally consists of a literature review to identify previously recorded sites along the proposed alignment, for both new construction and the existing rail line, an intensive survey for identification and evaluation of cultural resources, and preparation of reports of these investigations.

#### **1. IDENTIFICATION**

The parties to this Agreement consent that historic properties will be identified in accordance with the ID Plan (Attachment A) which was developed for this project, in coordination with the agencies, SHPO(s)'s, and consulting tribes.

## **2. SURVEY REPORTS**

STB shall prepare intensive survey and cultural resource NRHP evaluation recommendations (Reports), and findings of effect for those areas surveyed as outlined in the Identification Plan. Separate reports will be prepared for each of the states of Wyoming and Minnesota. Two reports will be prepared for South Dakota with one covering the existing system and one covering the new construction. Reports will include the results of literature review, intensive and reconnaissance surveys (to the extent that access from landowners is available), and the evaluation recommendations regarding cultural resources. Surveys of any additional ancillary facilities or reroutes, or non-accessible areas on either the new construction or the reconstruction portions found to be necessary after submittal of these reports will be addressed in addendum reports and submitted to the reviewing parties that reviewed the original reports.

## **3. SURVEY REPORT REVIEW**

STB shall provide Reports on the surveys conducted in accordance with the Identification Plan to the USFS, BLM, BOR, COE (collectively the reviewing agencies), and appropriate THPO(s)/cultural resources representative(s) designated by the Tribe(s). The reviewing agencies and appropriate THPO(s)/cultural resources representative(s) designated by the Tribe(s) shall have 30 days to review the Reports and comment upon them to the STB. These comments will address the adequacy of the intensive survey results, the eligibility of cultural resources identified during the intensive survey for inclusion on the NRHP and the effects of the project on any cultural resources considered to be historic properties.

**3.1** The reviewing agencies and appropriate THPO(s)/cultural resources representative(s) designated by the Tribe(s), participating in this Agreement will provide their recommendations for determinations of site eligibility based upon NRHP criteria (36 CFR 60.4) and their comment on STB's application of the criteria at 36 CFR 800.5(1) to the STB. Based on the comments received, the Report(s) may be revised or additional intensive survey(s) conducted, or both. Any revised Report(s) will be submitted by the STB to the same reviewing agencies and appropriate THPO(s)/cultural resources representative(s) designated by the Tribe(s) that received the preliminary Report(s) for a second 15 work-day review. If any reviewing agency or appropriate THPO(s)/cultural resources representative designated by the Tribe(s) has an objection to the Report(s), they shall notify STB within the 15 work-day review period in accordance with Stipulation M.

**3.2** Intensive surveys of any additional ancillary facilities or reroutes on either the new construction or the reconstruction portions found to be necessary after submittal of these Report(s), will be prepared as addendum to the original Report(s) and will be submitted to the same reviewing agencies that received the Reports and the appropriate THPO(s)/cultural resource representative(s) designated by the Tribe(s). Addendum reports will be commented on as outlined above. STB shall provide the Report(s) to the SHPO(s) for reviewing adequacy of the surveys and for consensus determinations of eligibility and effect for all

properties identified in the APE which is described in the Identification Plan. SHPO(s) shall be provided 60 days for this review and comment.

**4. ELIGIBILITY DISAGREEMENTS**

If consensus on the eligibility of any cultural resource cannot be reached, the STB shall forward objections or comments on determinations of eligibility to the Keeper of the National Register (Keeper) for resolution.

**5. NO CONSENSUS**

If a consensus of project effect upon a historic property cannot be reached, the STB will seek the Council's finding. Council's determination in matters pertaining to findings of effect are final (36CFR800.5(c)(3)).

**6. CONSTRUCTION AREAS WITH NO HISTORIC PROPERTIES**

(Phased Approval)

If after full review by the agencies and other consulting parties, the construction area or portions of the construction area have been determined by STB to be negative for historic properties, and Report(s) have been accepted by the STB (BLM, USFS, BOR, and COE if appropriate), the appropriate SHPO(s), THPO(s)/cultural resource representative(s) designated by the Tribe(s), then construction of project facilities in these areas may be allowed by STB, upon concurrence by the SHPO(s), THPO(s)/cultural resource representative designated by the Tribe(s), subject to DM&E obtaining permits or approvals as required.

**B. TREATMENT PLANS FOR HISTORIC PROPERTIES**

**1. FORMAT**

Upon completion of Stipulation A, the STB will develop a Treatment Plan for each site, group of closely related sites, or category of sites determined to constitute a historic property. Each Treatment Plan will be developed in consultation with the appropriate reviewing agency(s), the appropriate SHPO(s), THPO(s)/cultural resource representative(s) designated by Tribe(s), and the Council. Each Treatment Plan will address the historic property adversely affected and set forth means to mitigate the undertaking's effects where the STB, in consultation with the agencies, SHPO(s), and THPO(s)/cultural resource representative(s) designated by Tribe(s), determines it is not feasible or prudent to avoid effects by project relocation. The Treatment Plans will conform to the principles of the Council's "*Treatment of Archaeological Properties: A Handbook*", *Parts I and II*, the "*Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation*" (Federal Register, Vol. 48 No. 190, September 29, 1983, pp. 44716-44742) and appropriate SHPO guidelines. The STB will ensure the measures to be implemented will be responsive to the concerns of the consulting parties.

## 2. CONTENT

The Treatment Plans for the undertaking will include, but not be limited to:

### a. Historic Properties

Specification of all historic properties to be affected by the project, including a description of the nature of the effects.

### b. Treatment

A detailed description of the treatments proposed for historic properties or portions of historic properties eligible for the NRHP under 36 CFR Part 60.4 criteria (a), (b), (c) and/or (d), with an explanation or rationale provided for the choice of the proposed treatments. These treatments will take into account the setting, including, but not limited to, visual, auditory, and atmospheric elements, as appropriate, and be responsive to the qualities that contribute to the significance of the affected properties.

### c. Research Design

An archaeological research design for adversely affected properties eligible for the NRHP under 36 CFR Part 60.4 criteria (d) will be developed. The research design will specify and explain the following:

- where data recovery is determined by the STB to be appropriate mitigation response. Research questions to be explored through the data recovery efforts (taking into consideration that data recovery is an adverse effect)
- justification of the appropriateness of the chosen research questions
- data needed to explore the questions posed
- sites and portions of those sites to be further investigated
- methods used to collect data needed to explore the research questions posed, where the adverse effect of data recovery is deemed the appropriate treatment
- laboratory methods used in the examination of the physical material that is recovered
- proposed disposition of the recovered materials and records
- the timing for the preparation and distribution of reports

### d. Human Remains

The procedures for consulting about the treatment and disposition of Native American human remains and associated grave goods, if encountered, in accordance with the Identification Plan and Stipulations H and J.

### e. Monitoring

A description and rationale for selection of the areas proposed for construction monitoring (a qualified archaeologist as defined in the Secretary of Interiors' Professional Qualifications and Standards 48 FR 22716 September, 1983 and qualified Tribally recognized American Indian Monitors present to observe ground surfaces exposed during the actual construction activities) and construction inspection

conducted by a qualified archaeologist of areas of ground disturbance after specific phases of construction are completed.

**f. Distribution of Information**

The Treatment Plan must contain provisions for the creation of a popular account for disseminating the results of the Treatment Plans to the general public. These popular accounts will be consistent with the Archaeological Resources Protection Act (ARPA), Executive Order on Sacred Sites 13007 FR 61-104 dated May 24, 1996, Native American Graves Protection and Repatriation Act (NAGPRA), the Freedom of Information Act (FOIA), and Section 304 of the NHPA (16U.S.C. 4702-3).

**C. TREATMENT PLANS – REVIEW**

**1. DEVELOPMENT AND REVIEW**

The STB will develop, in cooperation with the reviewing agencies, appropriate SHPO(s), and appropriate THPO(s)/cultural resource representative(s) designated by the Tribe(s), each Treatment Plan to ensure that it addresses the concerns of the reviewing agencies, appropriate SHPO(s), and appropriate THPO(s)/cultural resource representative(s) designated by the Tribe(s) in accordance with Stipulation B 2 (b). Each Treatment Plan shall be submitted to the appropriate reviewing agencies, appropriate SHPO(s), and appropriate THPO(s)/cultural resource representative(s) designated by the Tribe(s) for their review. The reviewing parties shall have 30 days to comment on the Treatment Plan. If any party to this Agreement fails to comment within the review period, the STB shall assume that party's concurrence. Based upon comments received, revised Treatment Plan(s) will be prepared and submitted to all parties.

**2. SHPO AND ADVISORY COUNCIL REVIEW**

The resultant revised Treatment Plan(s) will be submitted to the appropriate SHPO(s), and the Council for a final 30-day comment period. The revised Treatment Plan(s) will also be provided to the reviewing agencies, THPO(s)/cultural resource representative(s) designated by the Tribe(s) for a final 30-day comment period. If any party has an objection to the final Treatment Plan(s) they shall notify STB within the 30-day comment period in accordance with subsection D. below. Disputes will be resolved in accordance with Stipulation M.

**D. TREATMENT PLANS - IMPLEMENTATION**

**1. CONSTRUCTION PLAN**

Upon SHPO concurrence, each Treatment Plan will be incorporated by DM&E into their Construction and Use Plan required for the project rights-of-way on Federal Lands, and the STB and/or the appropriate Federal or State agency shall provide authorization to proceed with the implementation of the Treatment Plan on lands under their jurisdiction. DM&E or its authorized representative will obtain Archaeological Resources Protection Act (ARPA) excavation and removal permits for Federal lands and/or required State permits. Termination of the project after initiation of the Treatment Plan(s) will require

completion of any work in progress, and amendment of each Treatment Plan as described below.

## **2. AMENDMENTS**

Amendments to the Treatment Plans will be incorporated by written agreement among the STB, the appropriate SHPO(s), THPO(s)/cultural resource representative(s) designated by the Tribe(s), DM&E, and the Council (BLM, COE, BOR, and USFS will be party to the written agreement if their managed lands are involved). Amendments to the appropriate ARPA permits will be submitted as part of the approval of the amendments.

**2.1** DM&E or its authorized representative shall prepare a progress report(s) to the STB, SHPO(s), and THPO(s)/cultural resource representative(s) designated by the Tribe(s) every two weeks documenting progress in the implementation of each Treatment Plan (BLM, COE, BOR, and USFS to be provided with a report every two weeks if their managed lands are involved or if requested). These progress reports will include:

- dates of mitigation work included in the progress reporting period
- historic properties where treatment was conducted
- type and amount of treatment performed
- a brief summary of the treatment results during the period covered by the report.
- concerns or comments of the principal investigator for plan implementation.

## **E. CHANGES IN ANCILLARY AREAS/CONSTRUCTION RIGHT-OF-WAY**

The STB will notify the reviewing agencies and appropriate SHPO(s), THPO(s)/cultural resource representatives(s) designated by the Tribe(s) of changes in the size or location of ancillary areas or the construction right-of-way that may become necessary during actual construction. If any changes result in the use of unsurveyed areas, the STB will ensure that these areas are subject to intensive survey in order to locate any potentially significant cultural resources and that those resources are evaluated for NRHP eligibility. The Reports addressing these areas will be reviewed in accordance with Stipulation A and Treatment Plans will be developed and implemented for those sites determined to be Historic Properties.

## **F. CONSTRUCTION AREAS WITH HISTORIC PROPERTIES**

In those areas where historic properties are present, the STB will be notified and will provide the results of the completed Treatment Plan to the appropriate SHPO(s) when implementation of the Treatment Plan is completed. Within 45 days of this notification of Treatment Plan completion, the STB, the SHPO(s), THPO(s)/cultural resource representative(s) designated by the tribes, (BLM, USFS, BOR, and COE, if lands under their administration are involved), will be invited to inspect the site of the historic property to concur that Treatment Plan implementation is complete. Upon concurrence of complete Treatment Plan implementation, STB may authorize construction along that portion of the project addressed by the completed Treatment Plan. If concurrence of complete Treatment

Plan implementation cannot be reached the dispute will be resolved in accordance with Stipulation M.

#### **G. DOCUMENTATION OF TREATMENT**

The STB will prepare a report documenting the implementation and results of the Treatment Plan(s). This report will be the Draft Final Cultural Resource Report for the project. The report will contain a detailed account of the information gained during implementation of the Treatment Plan(s), and the effectiveness of the work measures implemented to mitigate the adverse effects of construction. A review copy of the report will be distributed to the reviewing agencies, cultural resource representative(s) designated by the Tribe(s), SHPO(s)/THPO(s), and the Council. There will be a 30 calendar-day period to review and comment on the report. The Final Cultural Resource Report will be prepared based on comments received and distributed to the reviewing agencies, SHPO(s), THPO(s)/cultural resource representative(s) designated by the Tribe(s), and the Council within 120 calendar-days of receipt of the comments.

#### **H. DISCOVERY**

If a previously undiscovered archaeological, historical, or cultural property is encountered during construction, or previously known properties will be affected in an unanticipated manner, all activity will cease within 300 feet of the property to avoid or minimize harm to the property until the STB, the appropriate SHPO(s), THPO(s)/cultural resource representatives(s) designated by the Tribe(s), and, if on federal land, the agency responsible for administering the land, can evaluate and, if necessary, authorize steps to mitigate impacts to the new discovery. Evaluation and mitigation will be carried out in consultation with the reviewing agencies, the appropriate SHPO(s), THPO(s)/cultural resource representative(s) designated by the Tribe(s), and Council as expeditiously as possible in accordance with 36 CFR 800.13(b).

#### **I. CONFIDENTIALITY**

All parties shall ensure that shared data, including data concerning the precise location and nature of historic properties and properties of religious and cultural significance are protected from public disclosure to the greatest extent permitted by law, including conformance to Section 304 of the National Historic Preservation Act, as amended (the Act) and Section 9 of the Archeological Resources Protection Act and Executive Order on Sacred Sites 13007 FR 61-104 dated May 24, 1996.

#### **J. HUMAN REMAINS**

##### **1. NOTIFICATION AND TREATMENT**

If human remains are encountered on Federal lands, the STB shall notify the appropriate Federal land management agency, other consulting agencies if requested, appropriate SHPO(s), and designated Native American NAGPRA tribal contact. Treatment and disposition of remains and associated grave goods will be consistent with measures outlined in the Identification Plan, H, and applicable Federal and State laws. If human remains are encountered on State or Private lands, the STB will notify and consult with the State SHPO(s), THPO(s)/cultural resource representative(s) designated by the

Tribe(s). Treatment and disposition of remains and associated grave goods will be consistent with measures outlined in the Identification Plan and applicable Federal, Local and State laws.

**2. REINTERMENT**

STB will insure that every effort is taken to avoid disturbing known human burial sites. Where avoidance is not possible, and in consultation with appropriate [tribal] parties, burials will be removed prior to construction and reinterred in accordance with reburial procedures outlined in the Identification Plan and any applicable Federal and State laws.

**3. DISCOVERY**

If human remains are inadvertently discovered during construction activities, all construction will cease within 300 feet in all directions of the human remains and the STB will immediately notify the appropriate parties in accordance with the Identification Plan. Human remains and grave goods will be treated in accordance with the Identification Plan.

**K. CURATION**

**1. FEDERAL LANDS**

STB shall ensure curation of all records and other items (archaeologic and paleontologic) resulting from identification and data recovery efforts is completed in accordance with 36 CFR Part 79, and the provisions of 43 CFR 10 (NAGPRA). STB shall ensure that documentation of the curation of these materials is prepared and provided to the signatory and concurring parties to this Agreement within 10 days of receiving it. All archaeological materials recovered from Federal lands shall be curated in accordance with the Identification Plan.

**2. PRIVATE LANDS**

Private landowners will be encouraged to curate materials (archaeologic and paleontologic) recovered from their lands in accordance with the Identification Plan. Materials from private lands to be returned to the private landowners shall be maintained in accordance with 36 CFR Part 79 until all necessary analysis has been completed. STB shall document the return of materials to private landowners and submit copies of this documentation to the signatory parties to this Agreement.

**3. STATE LANDS**

STB will ensure that all cultural and paleontologic materials discovered on State lands will be curated in accordance with the Identification Plan.

**L. AUTHORITIES**

Compliance with the provisions of this programmatic agreement does not relieve the STB or other federal agencies of their responsibilities to comply with other legal requirements, including those imposed by the Native American Graves Protection and Repatriation Act (NAGPRA) (25 U.S.C. Section 3001 and 43 CFR 10), the Archeological Resources

Protection Act (ARPA) (16 U.S.C. Section 470aa-470ll), and the National Environmental Policy Act (NEPA) (42 U.S.C. Section 4321-4347), and applicable Executive orders.

#### **M. DISPUTE RESOLUTION**

Should any party to this Agreement provide notice, within 30 calendar-days of becoming aware of an action, to the STB of their objection to an action under this Agreement, the STB shall consult with the objecting party to resolve the objection unless otherwise specified in this document. If the STB determines that the objection cannot be resolved, the STB shall forward all documentation relevant to the dispute to the Council. Within 30 calendar-days after receipt of all pertinent documentation, the Council shall either; provide STB with recommendations, which STB shall take into account in reaching a final decision regarding the dispute; or notify STB that it will comment in accordance with 36 CFR Part 800 Subpart B. Any Council comment provided in response to such a request will be taken into account by STB in accordance with 36 CFR Part 800 Subpart B with reference to the subject of the dispute.

Any recommendation or comment provided by the Council will be understood to pertain only to the subject of the dispute; the STB's responsibility to carry out all actions under this Agreement that are not subject to dispute will remain unchanged.

#### **N. AMENDMENT**

Signatories to this Agreement may request that it be amended, whereupon the parties will consult in accordance with 36 CFR 800.14 to consider such amendment.

#### **O. TERMINATION**

##### **1. PARTICIPATION**

Any party to this Agreement may terminate their participation by providing 30 calendar-days written notice to the other parties. The parties shall consult during the period prior to termination of participation to seek agreement on amendments or other actions that would avoid termination. The Council will be afforded an opportunity to comment during this period as well.

##### **2. AGREEMENT**

The STB, SHPO(s), or DM&E may terminate this Agreement by providing 30 calendar-days written notice to the other parties; the parties shall consult during the period prior to the termination to seek agreement on amendments or other actions that would avoid termination. The Council will be afforded an opportunity to comment during this period as well. In the event of termination, the STB, SHPO(s), and DM&E will comply with 36 CFR 800 subpart B.

##### **3. TERM**

The term of this agreement shall be five (5) years from the date of execution unless otherwise terminated or amended by the signatory parties.

**P. FAILURE TO CARRY OUT THE TERMS OF THE AGREEMENT**

In the event that the terms of this Agreement are not carried out, the STB and all other agencies shall comply with 36 CFR 800 subpart B with regard to individual actions covered by this Agreement.

**Q. EXECUTION AND IMPLEMENTATION**

This Programmatic Agreement shall take effect when executed by the Council, the Agency Official and the appropriate SHPO(s). Execution and implementation of this Agreement evidences that the STB, BLM, COE, BOR, USFS and the Council have satisfied their National Historic Preservation Act Section 106 responsibilities for all individual actions of the Dakota, Minnesota & Eastern Railroad Corporation's Powder River Basin Expansion Project.

**Attachment A** – Identification Plan(s)

**Attachment B** – MOA

FEDERAL AGENCIES

_____	_____
The Surface Transportation Board	Date
_____	_____
The U.S. Army Corps of Engineers, Omaha District	Date
_____	_____
The U.S. Army Corps of Engineers, St. Paul District	Date
_____	_____
The U.S.D.A. Forest Service, Region 2	Date
_____	_____
The U.S.D.I. Bureau of Land Management, Montana State Office	Date
_____	_____
The U.S.D.I. Bureau of Land Management, Wyoming State Office	Date
_____	_____
The U.S.D.I. Bureau of Reclamation	Date

SIGNATORY TRIBES

_____	_____
Chairman, Northern Arapaho Tribe	Date
_____	_____
Chairman, Eastern Shoshone Tribe	Date
_____	_____
Chairman, Northern Cheyenne Tribe	Date
_____	_____
Chairman, Ft. Peck Tribes	Date
_____	_____
Chairman, Crow Tribe	Date
_____	_____
Chairman, Oglala Sioux Tribe	Date

Chairman, Rosebud Sioux Tribe	Date
Chairman, Standing Rock Sioux Tribe	Date
Chairman, Spirit Lake	Date
Chairman, Turtle Mountain Band of Chippewa	Date
Chairman, Three Affiliated Tribes	Date
Chairman, Santee Sioux Tribe	Date
Chairman, Omaha Nation	Date
Chairman, Winnebago Tribe	Date
Chairman, Ponca Tribe	Date
Chairman, Upper Sioux Community	Date
Chairman, Lower Sioux Community	Date
Chairman, Prairie Island Sioux Community	Date
Chairman, Shakopee Mdewakanton Sioux	Date
Chairman, Kiowa Nation	Date
Chairman, Comanche Nation	Date

_____	_____
Chairman, Cheyenne-Arapaho Tribes of Oklahoma	Date
_____	_____
Chairman, Pawnee Nation	Date
_____	_____
Chairman, Sac & Fox Nation of Oklahoma	Date
_____	_____
Chairman, Sac & Fox Nation in Iowa	Date
_____	_____
Chairman, Menominee Indian Tribe	Date
_____	_____
Chairman, Ho-Chunk Nation	Date
_____	_____
Chairman, Cheyenne River Sioux	Date
_____	_____
Chairman, Crow Creek Sioux	Date
_____	_____
Chairman, Yankton Sioux	Date
_____	_____
Chairman, Lower Brule Sioux	Date
_____	_____
Chairman, Sisseton-Wahpeton Sioux	Date
_____	_____
Chairman, Flandreau Santee Sioux	Date

SIGNATORY TRIBAL ORGANIZATIONS

_____	_____
President, Medicine Wheel Alliance	Date
_____	_____
President, Medicine Wheel Coalition for Sacred Sites	Date

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Chairman, Minnesota Indian Affairs Council

---

Date

---

President, Gray Eagle Society

---

Date

---

President, Black Hills Sioux Nation Council

---

Date

APPLICANT

---

President, Dakota, Minnesota & Eastern Railroad Corporation

---

Date

## **Glossary of Terms/Acronyms**

<b>Adverse Effect</b>	When an undertaking may alter, directly or indirectly, the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.
<b>APE</b>	The Area of Potential Effect (APE) is the geographic area within which the project may cause physical, visual or audible effects to the character or use of historic properties. It includes all areas of construction, such as rights-of-way (ROW), staging areas, extra-work spaces, yards, access roads, borrow areas, and other ancillary facilities. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.
<b>Ancillary Areas</b>	A general term that covers any additional areas that may be effected by the undertaking.
<b>Area of Potential Effect</b>	See APE
<b>Associated Funerary Objects</b>	Objects for which the human remains with which they were placed intentionally are also in the possession or control of a museum or Federal Agency. The term includes those funerary objects and cultural properties that were made for burial purposes or to contain human remains and those cultural properties that are a part of a burial site.
<b>Borrow Area(s)</b>	An excavated area where material has been or will be dug for use as fill at another location.
<b>Consulting Parties</b>	Consulting parties include SHPO/THPO, Indian tribes, representatives of local governments, applicants for Federal assistance, permits, licenses and other approvals, certain individuals and organizations with a demonstrated interest in the undertaking, and the public.

<b>Cultural Resource</b>	A cultural resource is any prehistoric or historic district, site, building, structure or object in American history, architecture, engineering, archeology, or culture. This term includes artifacts, records, and remains that are related to and located within such properties. The term also includes properties of traditional religious and cultural importance to an Indian Tribe that may meet the National Register criteria.
<b>Cultural Resource Management Group</b>	A professional archaeological firm that performs cultural resource investigations for a fee.
<b>Curation</b>	The preservation of material remains that are excavated or removed during a survey, excavation, or other study of a prehistoric or historic resource, and associated records that are prepared or assembled in connection with the survey, excavation or other study.
<b>Eligible for the National Register of Historic Places</b>	The term eligible for the National Register includes both properties formally determined as such in accordance with regulation of the Secretary of the Interior and all other properties that meet the National Register criteria.
<b>Evaluation testing</b>	Archaeological investigation of a prehistoric or historic site with a purpose of evaluating the site against National Register of Historic Places criteria contained in 36 CFR 60.4.
<b>Exposed Profile</b>	Any area where the soils are exposed such as stream cut banks, road cut banks, erosion gullies etc.
<b>Federal Agency(s)</b>	Any federal entity with a statutory obligation to fulfill the requirements of Section 106 who has jurisdiction over an undertaking and takes legal and financial responsibility for section 106 compliance in accordance with subpart B 36 CFR 800. The Federal Agency(s) has approval authority for the undertaking and can commit the Federal agency to take appropriate action for a specific undertaking as a result of Section 106 compliance.
<b>Ground Disturbance Area</b>	The surface area that will be impacted by construction.
<b>Haul Roads (New)</b>	Roads constructed where none previously existed to facilitate hauling of construction materials.
<b>Haul Roads (Upgraded)</b>	Roads or trails that require upgrading to accommodate hauling construction materials.

<b>High Probability Area(s)</b>	An area suspected to have a better than average chance of containing cultural resources (e.g. water crossings, paralleling watercourses, historically prominent areas etc.).
<b>Historic Property</b>	Any prehistoric or historic district, site, building structure, or object included in or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian Tribe that meet the National Register criteria.
<b>Human Remains</b>	The physical remains of a human body.
<b>ID Plan</b>	Identification Plan
<b>Indian Tribe</b>	An Indian Tribe, band, nation, or other organized group or community, including a Native Village, Regional Corporation or Village Corporation, as those terms are defined in Section 3 of the Alaska Native Claims Settlement Act (43 U. S. C 1602) which is recognized eligible for the special programs and serviced provided by the United States to Indians because of their status as Indians.
<b>Intensive Survey</b>	An intensive survey is a systematic, detailed examination of an area designed to gather information about cultural resources sufficient to evaluate them against NRHP eligibility criteria of significance within specific historic contexts.
<b>Keeper of the National Register</b>	The Keeper is the individual who has been delegated the authority by the National Park Service (NPS) to list properties and determine their eligibility for the National Register. The Keeper may further delegate this authority as he or she deems appropriate.
<b>Lateral Area</b>	Any subsequent branch from the main line that may as yet not be identified but is a part of the undertaking.
<b>NAGPRA</b>	Native American Graves Protection and Repatriation Act
<b>National Register</b>	The National Register lists properties formally determined eligible for the NRHP.
<b>National Register Criteria</b>	National register criteria are criteria established by the Secretary of the Interior for use in evaluating the eligibility of properties for the National Register (36 CFR 60). The NRHP criteria are listed below:

The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship and feeling and:

- a. that are associated with the events that have made a significant contribution to the broad patterns of our history; or
- b. that are associated with the lives of persons significant in our past; or
- c. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic value, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- d. that yielded, or may be likely to yield, information on prehistory or history.

Criteria considerations: ordinarily cemeteries, birthplaces, or graves of historical figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations, commemorative in nature; and properties that have achieved their significance within the past 50 years shall not be considered eligible for the National Register of Historic Places (36 CFR 60.4).

<b>NRHP</b>	National Register of Historic Places
<b>OSHA</b>	Occupational Safety & Health Administration.
<b>PA</b>	Programmatic Agreement
<b>Popular Account</b>	A popular account is a comprehensive discussion of the information contained in professional report(s) on archaeological investigations that is written for the general public. A popular account will not contain any sensitive material, removes the technical language, yet can serve as an informational and educational tool.
<b>Reconnaissance Survey</b>	A reconnaissance survey is an examination of all or part of an area accomplished in sufficient detail to make generalizations about the types and distributions of historic properties that may be present.
<b>SADI's</b>	Scale Accurate Digital Image photographs with depictions of the construction right-of-way superimposed and geo-referenced.
<b>SHPO</b>	State Historic Preservation Officer

<b>Shovel Test</b>	A small circular test excavation, approximately 40 centimeters in diameter that is dug to a sufficient depth to reach culturally undisturbed soils.
<b>Site</b>	Defined by Willey and Phillips (1958:18), as any reasonably definable spatial unit that contains features or is fairly continuously covered with artifacts that are indicative of an occupation fifty years or older. A site may be defined as “a spatial cluster of cultural features, or items, or both” (Binford 1972:46). These definitions apply to both prehistoric and historic sites. Archaeological context may be defined by the inclusion of any of the following: soil staining, associated fire-cracked rock, ceramics, features, or a concentration of materials within a reasonably defined spatial boundary.
<b>Staging Area(s)</b>	Those areas outside the construction disturbance area used for storage of supplies and equipment used for construction.
<b>STB</b>	Surface Transportation Board
<b>Testing</b>	(See Evaluation testing)
<b>THPO</b>	Tribal Historic Preservation Officer appointed or designated in accordance with the Act is the official representative of an Indian tribe for the purposes of Section 106.
<b>Traditional Cultural Properties</b>	A traditional Cultural Property can be defined generally as one that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that communities history, and (b) are important in maintaining the continuing cultural identity of the community.
<b>Treatment Plan</b>	A proposal for the mitigation of effects upon any historic property that a project would effect. It can include data recovery, documentation, restoration or other measures.
<b>Unassociated funerary Objects</b>	Those funerary objects for which the human remains with which they were placed intentionally are not in the possession or control of a museum or Federal agency. Objects that were displayed with individual human remains as part of a death rite or ceremony of a culture and subsequently returned or distributed according to traditional custom to living descendants or other individuals are not considered unassociated funerary objects.

**Undertaking**

An undertaking is a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; those requiring a Federal permit; license or approval; and those subject to state or local regulation administered pursuant to a delegation or approval by a Federal agency.

**USGS**

United States Geological Survey

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## **Identification Plan**

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**September, 2000**  
**DRAFT**  
**Identification Plan**  
**for the Dakota Minnesota and Eastern Railroad Corporation's Proposed**  
**Powder River Basin Expansion Project**

**A. PURPOSE**

The development of this plan is required by the Programmatic Agreement (PA) to ensure the successful completion of the National Historic Preservation Act (NHPA) Section 106 process for this project. The purpose of this Identification Plan (ID Plan) is to ensure that the identification and evaluation of cultural resources is conducted in accordance with the Secretary of Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 FR 44716-44742) and 36 CFR 800.4. The Identification Plan and the Treatment Plan(s), developed for the identified historic properties, are integral parts of the Programmatic Agreement. While the Standards and Guidelines are not regulatory and do not set or interpret agency policy, they do provide technical advice about archeological and historic preservation activities and methods.

Identification of Historic properties 36 CFR 800.4 is regulatory in nature. The historic properties that should be identified include, any prehistoric or historic district site, building, structure, or object included in or eligible for inclusion in the National Register of Historic places maintained by the *Secretary of the Interior*. The term historic properties includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian Tribe or Native Hawaiian organization and that meet the National Register Criteria. The term eligible for inclusion in the National Register includes both properties formally determined as such in accordance with regulations of the *Secretary of the Interior* and all other properties that meet the National Register criteria. The level of identification needed varies depending on the nature of the property or property type, the nature of the agency's management authority, and the nature of the agency's possible effects on the property.

This Identification Plan describes three key elements: the Area of Potential Effect (APE), minimum standards and qualifications required for the cultural resource investigations, and American Indian and consulting party involvement.

**B. SAFETY**

All contractors and sub-contractors shall adhere to Occupational, Safety, and Health Administration (OSHA) standards while conducting activities related activities covered in the PA and ID Plan. Additionally, Corps of Engineers, U.S. Forest Service, Bureau of Land Management (BLM) and DM&E Railroad safety rules shall be adhered to when conducting activities on lands under the management or jurisdiction of these parties.

## **C. AREA OF POTENTIAL EFFECT (APE)**

The Area of Potential Effect (APE) and the methods of identification and evaluation will be in accordance with the Secretary of the Interior's Standards and Guidelines for Identification. The project has two distinct parts generally described as; (1) the portion of the proposed project that will involve reconstruction of existing rail lines, and (2) the portion of the proposed project that will involve new construction where rail lines currently do not exist.

### **1. APE for Reconstruction**

The APE for that portion of the project involving reconstruction, from Winona, Minnesota to Wall, South Dakota, and new construction in Minnesota will include:

1. The existing DM&E right-of-way.
2. Any newly acquired right-of-way needed for cut and fill.
3. Any newly acquired right-of-way for a proposed new connecting track near Owatonna, Minnesota.
4. Existing rail corridor and any newly acquired right-of-way required for new DM&E rail line through Mankato, Minnesota.
5. All lateral areas, borrow areas, haul roads (new or upgraded), staging areas and other ancillary areas related to the undertaking.
6. Any newly acquired right-of-way for proposed yards or sidings.
7. That area outside the existing right-of-way or outside any newly acquired right-of-way where there is the potential for the undertaking to have an adverse effect on historic properties as defined in 36 CFR 800.5. Identification of these areas will include consultation with the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer (THPO)/cultural resource representatives designated by the tribes, other identified consulting parties and Federal agencies.

### **2. Reconstruction Identification and Evaluation**

Identification and evaluation for the reconstruction will include:

1. Identification of known cultural resources through records search and literature review and through consultation with the SHPO, THPO/cultural resource representatives designated by the tribes, other identified consulting parties, and Federal agencies in accordance with 36 CFR 800.4.
2. Field identification and Section 106 evaluation of all structures within the APE by a qualified architectural historian.
3. Intensive Survey of the known cultural resources and other areas identified by the SHPO, THPO/cultural resource representatives designated by the tribes, other identified consulting parties, and Federal agencies in accordance with 36 CFR 800.4.
4. If the cultural resource is in the APE, necessary information to evaluate the cultural resource against NRHP eligibility criterion (36 CFR 60.4) shall be obtained. The guidance in the National Park Service Bulletin 38 and E. O. 13007 shall also be considered when evaluating sites for NRHP eligibility. If, in the opinion of the

investigator and the cultural resource representatives designated by the tribes, the cultural resource is recommended NRHP eligible sufficient information to formulate Treatment Plan(s) shall be obtained. (The Cultural Resource Representative designated by the Tribes will only make recommendations on cultural Resources having a prehistoric or historic Native American Component). No backhoe or block excavations shall be undertaken without a written plan and SHPO consultation and approval.

5. Intensive Survey to identify all cultural resources in other designated areas within the APE which have been identified by the SHPO, THPO/cultural resource representatives designated by the tribes, other identified consulting parties, and Federal agencies. (All Minnesota investigations shall be in accordance with approved research design).
6. The intensive survey shall gather information from American Indian tribes and elders to assist in identifying properties of religious and cultural significance to them and identifying properties that may be eligible for the NRHP.
7. A reconnaissance level survey of those areas outside the ground disturbance area where there is the potential for the undertaking to have an adverse effect, as defined in 36 CFR 800.5 on historic properties. Identification of these areas will include consultation with the SHPO, THPO/cultural resource representatives designated by the tribes, other identified consulting parties, and Federal agencies.

### **3. APE for New Construction**

The APE for the new construction portion of the project in South Dakota and Wyoming will include:

1. The construction right-of-way to include a twenty-foot buffer on either side of the fenced construction right-of-way along the entire new construction route (ground disturbance area).
2. All lateral areas, borrow areas, haul roads (new or upgraded), staging areas, and other ancillary areas related to the undertaking.
3. That area outside the construction or ground disturbance right-of-way where there is the potential for the undertaking to have an adverse effect on historic properties, as defined in 36 CFR 800.5. Identification of these areas will include consultation with the SHPO, THPO/cultural resource representatives designated by the tribes, other identified consulting parties, and Federal agencies.

### **4. Construction Identification and Evaluation**

Identification and evaluation for the new construction will include:

1. Identification of known cultural resources through records search and literature review and through consultation with the SHPO, THPO/cultural resource representatives designated by the tribes, other identified consulting parties, and Federal agencies in accordance with 36 CFR 800.4.

2. An intensive survey of the construction right-of-way plus 20 feet either side of the fenced construction right-of-way
3. An intensive survey of all lateral areas, borrow areas, haul roads (new and upgraded), staging areas, and other ancillary areas related to the undertaking.
4. An intensive survey of the construction right-of-way to identify all cultural resources. Testing will be done to evaluate the cultural resources against NRHP eligibility criterion (36 CFR 60.4). The guidance in the National Park Service Bulletin 38 and E. O. 13007 shall also be considered when evaluating sites for NRHP eligibility. If, in the opinion of the investigator and the cultural resource representative designated by the tribes, the cultural resource is to be recommended as a historic property, sufficient information to formulate Treatment Plan(s) shall be obtained. (The Cultural Resource Representative designated by the Tribes will only make recommendations on cultural resources having a prehistoric or historic Native American component). No backhoe or block excavations shall be undertaken without a written plan and SHPO consultation and approval.
5. A geomorphological survey of the construction right-of-way will be conducted to identify areas where buried cultural resources may exist and where deep testing may be necessary to identify cultural resources. The geomorphologist will also recommend construction monitoring areas and assist in evaluation of cultural resources against NRHP eligibility criteria (36 CFR 60.4) by providing identification of the soil(s), soil characteristics, soil dating, and analysis of the probability of the soils to contain cultural material.
6. A reconnaissance level survey of those areas outside the ground disturbance area where there is the potential for the undertaking to have an adverse effect, as defined in 36 CFR 800.5, on historic properties. Identification of these areas will include consultation with the SHPO, THPO/cultural resource representatives designated by the tribes, other identified consulting parties, and Federal agencies.

Any areas not originally identified within the APE but potentially affected by the undertaking must be identified by the SHPO, THPO/cultural resource representatives designated by the tribes, other identified consulting parties, and Federal agencies. The Surface Transportation Board (STB) will consult with the SHPO, THPO/cultural resource representatives designated by the tribes, other identified consulting parties (as defined in 36 CFR 800.2(c)), and Federal agencies to address their concerns.

#### **D. STANDARDS AND QUALIFICATIONS**

The intensive survey and NRHP eligibility recommendations will be consistent with the Secretary of the Interior's *Standards and Guidelines for Archaeology and Historic Preservation*, (48 FR 44716-44742), the Secretary of the Interior's *Professional Qualifications and Standards* 48 FR 22716 September 1983, 36 CFR 800, 36 CFR 60.4, National Park Service Bulletin 38, and E. O. 13007.

If there are unanticipated discoveries of cultural resources during implementation of the undertaking, the Agency Official (STB) shall satisfy the requirements of Section 106 in accordance with 36 CFR 800.13. Prior to conducting any work for which a permit is required,

the Cultural Resource Management group(s) (Contractor(s) who meet the *Secretary of the Interior's Professional Qualifications and Standards* 48FR 22716) shall obtain any necessary Federal, State or local permits/license.

## **E. REPORTS**

All reports for the Identification Plan will be submitted in two parts designed to be one report when combined. Each report will be modified from the outline below to address the specific requirements of the *state* where the survey was conducted. The first part of the report will include a comprehensive records search and literature review. The second part will include the results of field investigations, including NRHP evaluations of all cultural resources that are known to be within the APE.

The combined report should provide information for future research and justifiable and defensible NRHP recommendations for those historic properties identified as NRHP eligible. The report must also provide justifiable and defensible explanations of potential effects on historic properties and must comply with 36 CFR 800.5.

The reporting of results and discussions of the cultural resources investigated shall be organized in a logical sequence. (The Wyoming report will be sequenced by site number). In tables, site numbers shall be organized in sequence. A detailed outline of the required elements for the report is contained in the following:

### **PART 1**

#### **Cover**

Must include Report Title, Date of Report, Project No(s), Authors, Organization or who prepared the report.

#### **Cover page**

Must include Authors, Report Title, Date of the Report, Lead Agency, Preparer's Organization, Type of Report (Identification Plan/Class III, Phase I & II), Survey Methods (transects in meters), County(s), USGS quad(s), Land Owner(s), Legal Description (reference to project maps may be appropriate), Acreage (Federal, Non-Federal, Block and Linear with a total), File Search Date(s), Field work Date(s), Field Personnel, and a site summary table.

#### **Abstract**

#### **Table of Contents**

#### **List of Figures**

#### **List of Tables**

## Appendix(s)

1. Introduction
  - Project Description (Include appropriate permit and agency file #'s)
  - Personnel (Their roles and duties on the project)
  - Report Format (What is in each chapter of the report and who wrote or contributed to the chapter).
2. Environmental Overview
  - Topography
  - Geology
  - Drainages
  - Flora
  - Fauna
  - Climate
  - Paleoenvironment
3. Culture History
  - Paleoindian (Include a discussion of pre-Clovis)
  - Archaic etc. (Varies widely along the project),
  - Woodland and Plains Village (Plains Indian)
  - Contact period (Protohistoric)
  - Historic
4. Research Design and Methods
  - Archaeological Site Definition
  - Prehistoric Archaeological Research Orientation
  - Prehistoric Archaeological Research Questions
  - Historic Archaeological Research Orientation
  - Historic Archaeological Research Questions
  - Inventory and Research Methods
    - Record Search and Literature Review
    - Known Sites
    - Previous Investigations
  - Field Survey
    - Methods
    - Expected site types/locations
  - Field and Site Records
    - Methods
  - Laboratory Analysis
    - Prehistoric Artifact Collection and Analysis
      - Methods
    - Chipped-stone Technological and Functional Analysis
      - Methods
    - Historic Artifact Collection and Analysis
      - Methods

Curation  
Methods  
Facilities/Disposition  
References  
Appendix(s)  
(Geomorphology Report)  
Detailed Project Location Maps  
and  
Ethnographic Reports for all TCP's recommended eligible for the  
NRHP (If required to justify the recommendation)

## **PART 2**

Update and Revise Part 1 by Chapter and Section if additional information is needed.

5. Results of Investigation  
(A detailed discussion of each site that will include, as a minimum, the following information)  
  
Site Type, Component, USGS 7.5 minute Quadrangle, Site Area, Topography, elevation, Soil Type, Nearest Water, Survey Method, Site Condition, Site Description, Artifact Descriptions and Disposition, Interpretation, and Recommendation.  
  
Site and UTM locations will be confidential and only included in a removable appendix.
6. Research Findings (Answer research questions presented in Chapter 4)
  - Prehistoric Context
    - Site Distribution Relative to Environmental Variables Potential for Unanticipated Discovery
    - Site Density
    - Site Function
    - Temporal and Cultural Affiliation
  - Historic Context
    - Site Distribution Relative to Environmental Variables Potential for Unanticipated Discovery
    - Site Density
    - Site Function
    - Temporal and Cultural Affiliation

- 7. Conclusions and Recommendations (Appropriate text but also include tables to explain the recommendations)
  - Conclusions
    - Prehistoric Sites
    - Historic Sites
  - Recommendations (Eligibility recommendations)
    - Prehistoric Sites
    - Site Specific/Avoidance/Mitigation/other Historic Sites
    - Site Specific/Avoidance/Mitigation/other
- 8. References
- 9. Appendix(s)
  - (Geomorphology Report)
  - (Ethnographic)
  - (Site Forms)
  - (Maps)
  - (Correspondence)
  - (American Indian Coordination and Consultation Documentation and Description)
  - (American Indian Monitor Reports)
  - (Other ancillary studies for example: Radiocarbon, AMS, Faunal analysis, Phytolith analysis, pollen analysis etc.)

**F. FIELDWORK -- Project Requirements**

**1. Survey Methods**

- Shovel Testing

Shovel testing will be required if the surface visibility is less than 50% in the opinion of the project archaeologist/principle investigator, or if the terrain warrants the shovel tests. The shovel tests will be approximately 30 X 30 centimeters to a minimum depth of 50 centimeters or until sterile subsoil, or bedrock, or water are encountered. The shovel test will be spaced no further than 30 meters apart or closer if required by the state. Shovel tests will not be done if, in the project archaeologist's justifiable judgement (such as steep terrain or rocky or other etc.) they are unnecessary.

Regardless of surface visibility, a shovel test will be conducted and documented on each identified site or isolated find site. If a shovel test is not conducted, justification for not conducting a shovel test will be noted in the field notes, site form and report. Deviation from the above policies on shovel testing must be justified.

- Collection

All subsurface artifacts will be collected and properly labeled in the field. Surface collection of sites not within the ground disturbance area is not required. All obsidian artifacts shall be collected.

- Curation

Curation of all records and other items resulting from intensive survey, NRHP evaluation and mitigation efforts shall be completed in accordance with 36 CFR Part 79, and the provisions of the Native American Graves Protection and Repatriation Act: Final Rule (43 CFR 10) (NAGPRA). Documentation of the curation of these materials shall be provided to the STB, SHPO/THPO, cultural resource representatives designated by the tribes, and where appropriate, other signatories to the Programmatic Agreement within 30 calendar-days of acceptance of the Final Cultural Resource Report for the Project.

Private land owners will be encouraged to curate collections from their lands in an appropriate facility. Materials from private lands to be returned to the private landowners shall be maintained in accordance with 36 CFR Part 79 until any specified analysis is complete. Documentation of the return of these materials to the private land owner shall be provided to the STB, the appropriate SHPO/THPO, cultural resource representatives designated by the tribes, and where appropriate other signatories to the Programmatic Agreement within 30 calendar-days of acceptance of the Final Cultural Resource Reports for the Project.

Materials from State lands in Wyoming, South Dakota, and Minnesota will be provided to a State approved facility for curation. These materials shall be maintained in accordance with 36 CFR Part 79 until any specified analysis is complete. Documentation of the return of these materials to the State approved curation facility shall be provided to the STB and the appropriate SHPO/THPO or cultural resource representatives designated by the tribes within 30 calendar-days of acceptance of the Final Cultural Resources Reports for the project.

Materials from Federal lands will be maintained in accordance with 36 CFR Part 79 until specified analysis is complete. These materials will be curated in a Federally approved curation facility or repository in their state of discovery but shall remain the property of the Federal government. Materials from Native American sites shall be curated in their approved curation facility if these exist within the state of discovery but shall, as with the state curation facilities, remain the property of the Federal government. Documentation of the curation of these materials will be provided to the STB, the appropriate SHPO/THPO, or cultural resource representatives designated by the tribes within 30 calendar-days of acceptance of the Final Cultural Resources Reports for the project.

Materials from Native American sites may be curated in an Indian owned federally approved curation facility if these exist within the state of discovery, but the materials shall remain the property of the state, or if on Federal land, the property of the Federal government.

- Human Remains

General field rules if human remains or associated funerary objects or unassociated funerary objects are encountered :

1. If human remains are discovered, they shall be subjected to review under the discovery clause of the PA.
2. Immediately cease work within 300 feet of the remains.
3. DM&E will provide security for a 300 foot perimeter in all directions around the site.
  - a. The construction contractor (as per DM&E contract) will immediately notify the American Indian monitor on site, the appropriate law enforcement officer, and county coroner.
  - b. If on Federal land the first notification will be to the Federal agency followed by the American Indian monitor on site, the appropriate law enforcement officer, and the county coroner.
4. The construction contractor will immediately notify the SHPO/State Archaeologist and STB.
5. The construction contractor and the American Indian monitor will notify the NAGPRA representatives of each tribe from a list provided to the contractor and each monitor by DM&E.
6. STB shall notify the cooperating agencies, and if on Federal lands follow provisions of 43 CFR 10.
7. Notification of an inadvertent discovery will be made in two ways:
  - a. By phone immediately
  - b. By letter of notification to the STB and if on Federal lands or lands under Federal permit, to the controlling agency within 24 hours.
8. Do not resume construction within the 300 foot perimeter until the SHPO and STB have authorized it in writing, and, if on Federal lands or land under Federal permit, an authorization in writing from the controlling agency.
9. If on Federal land, refer to 43 CFR 10 and PL 101-601 25 USC (NAGPRA) procedures.

The STB shall ensure that any human remains encountered during the course of this undertaking shall be accorded equal treatment and respect for human dignity without reference to their ethnic origins, cultural backgrounds, or religious affiliations. All human remains shall be handled in accordance with the procedures in the PA, this ID Plan, and in consultation with the Council in accordance with Section 800.13. All unidentified remains or burials found outside of platted, recorded or identified cemeteries and in contexts which indicate antiquity greater than 50 years shall be dealt with as follows:

10. Minnesota

Minnesota Statute § 307.08, § 307.082, and Minnesota Session Laws 1997, Chapter 215, Sec. 42

If such burials are not Indian or their ethnic identity cannot be ascertained, they shall be dealt with in accordance with provisions established by the State Archaeologist.

If such burials are Indian, efforts shall be made by the state archaeologist, THPO/cultural resource representatives designated by the tribes, and the project archaeologist to ascertain their tribal identity.

If their probable tribal identity can be determined, such remains shall at the discretion of the state archaeologist and the THPO/cultural resource representatives designated by the tribes be turned over to the Indian Tribe(s) (43 CFR 10 Sec. 10.4 and PL 101-601 25 U.S.C. Sec 3 Ownership).

If tribal identity cannot be determined, the Indian remains must be dealt with in accordance with provisions established by the state archaeologist and the THPO/cultural resource representatives designated by the tribes and 43 CFR 10 Sec. 10.4 and PL 101-601 25 U.S.C. Sec 3 Ownership.

No authenticated and identified Indian burial ground may be relocated unless the request to relocate is approved by the THPO/cultural resource representatives designated by the tribes.

11. South Dakota

Code § 34-25-24, § 34-25-38, § 34-25-38.1, and SD 34-25-21

Shall be the same as Minnesota per agreement with the South Dakota Research Center and South Dakota SHPO.

12. Wyoming

W.S. § 6-4-501, W. S. § 35-1-420

The procedures outlined in the General Field rules listed in this section shall apply. (Note: There is no Wyoming statute requiring anyone to report the discovery of a dead body to the county sheriff, county coroner, etc.,)

If human remains are encountered on Federal lands, STB and the managing Federal agency shall consult with the Native American tribe or other ethnic

groups related to the human remains identified to determine the treatment and disposition measures consistent with the applicable Federal laws (e.g. NAGPRA), regulations, and policies.

If human remains are encountered on State or private lands, STB shall ensure, in consultation with the appropriate SHPO and the Native American tribe or other ethnic groups related to the human remains, that they are treated according to the provisions of the applicable Federal and State laws, regulations, or policies.

STB will ensure that unanticipated discovery of human remains, and associated or unassociated burial objects, found during implementation of the undertaking shall satisfy the requirements of the appropriate State and Federal Laws, regulations, policies, and Section 106 in accordance with 36 CFR 800.13.

- Evaluation Testing

Sufficient subsurface testing, as determined by the project archaeologist/principle investigator, SHPO, federal agency managing the land, and the Native American Monitor on those sites suspected to be NRHP eligible, will be conducted to allow the Cultural Resource Management groups to develop Treatment Plans or other alternatives to address any adverse effects.

- Minimum Field Recordation Standard

1. Prehistoric and Historic Sites

The appropriate site forms for each state will be completed while on the site (if possible). A sketch map and field notes (field notes should be kept by each crew member), and photographs of the site will be required. A description of the artifacts and features observed on each site shall be included in the field notes. The site will be noted on a 7.5 minute USGS quad.

All photographs will be keyed to the corresponding roll and frame number and identified as such on a photo log. The photo log will also include the site number or temporary site number, time of day, weather conditions at the time of the photograph, what was photographed, and the direction the photographer was facing. The ASA setting and the type of film (color or B&W) shall also be noted (Once the film is developed this information will be on the individual photograph along with the state assigned site number). Upon completion of the project and acceptance of the Final Cultural Resources Report all photographs and negatives shall be shipped to the appropriate curation facility.

2. Standing Structures (includes buildings, bridges and other structures)

The appropriate site forms for each state will be completed while on the site. The field notes will include the address or location, the present condition and integrity of the property; a description of the prominent architectural/engineering features with emphasis on the primary facade; a documented or estimated date of original construction; identification of obvious alterations/additions; and a designation of style or vernacular type, when applicable. A 3 ½" x 5" black and white photograph of each property will be taken using 35mm format. Each photograph will be keyed with the corresponding roll and frame number and identified as such on the individual photographs (See photo log above). Original negatives and contact sheets will be included with the final report (Structures should be evaluated in the field by a qualified architectural historian). Upon completion of the project and acceptance of the Final Cultural Resources Report all photographs and negatives shall be shipped to the appropriate curation facility.

**G. CONFIDENTIALITY**

*Maintaining the confidentiality of information provided by tribes and traditional practitioners will be one of the most important issues to be addressed in the consultation process.*

*Confidentiality of the information received from Native American monitors or other Native Americans shall be maintained and only released to reviewing individuals or agencies identified in the Programmatic Agreement.*

## **Glossary of Terms/ Acronyms**

<b>Adverse Effect</b>	When an undertaking may alter, directly or indirectly, the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.
<b>APE</b>	The Area of Potential Effect (APE) is the geographic area within which the project may cause physical, visual or audible effects to the character or use of historic properties. It includes all areas of construction, such as rights-of-way (ROW), staging areas, extra-work spaces, yards, access roads, borrow areas, and other ancillary facilities. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.
<b>Ancillary Areas</b>	A general term that covers any additional areas that may be effected by the undertaking.
<b>Area of Potential Effect</b>	See APE
<b>Associated Funerary and Objects</b>	Objects for which the human remains with which they were placed intentionally are also in the possession or control of a museum or Federal Agency. The term includes those funerary objects and cultural properties that were made for burial purposes or to contain human remains and those cultural properties that are a part of a burial site.
<b>Borrow Area(s)</b>	An excavated area where material has been or will be dug for use as fill at another location.
<b>Consulting Parties</b>	Consulting parties are those individuals and groups identified in 36 CFR 800.2 (c).

<b>Cultural Resource</b>	A cultural resource is any prehistoric or historic district, site, building, structure or object in American history, architecture, engineering, archeology, or culture. This term includes artifacts, records, and remains that are related to and located within such properties. The term also includes properties of traditional religious and cultural importance to an Indian Tribe that may meet the National Register criteria.
<b>Cultural Resource Management Group</b>	A professional archaeological firm that performs cultural resource investigations for a fee.
<b>Curation</b>	The preservation of material remains that are excavated or removed during a survey, excavation, or other study of a prehistoric or historic resource, and associated records that are prepared or assembled in connection with the survey, excavation or other study.
<b>Eligible for the National Register of Historic Places</b>	The term eligible for the National Register includes both properties formally determined as such in accordance with regulation of the Secretary of the Interior and all other properties that meet the National Register criteria.
<b>Evaluation Testing</b>	Archaeological investigation of a prehistoric or historic site with a purpose of evaluating the site against National Register of Historic Places criteria contained in 36 CFR 60.4.
<b>Federal Agency(s)</b>	Any Federal entity with a statutory obligation to fulfill the requirements of Section 106 who has jurisdiction over an undertaking and takes legal and financial responsibility for section 106 compliance in accordance with subpart B 36 CFR 800. The Federal Agency(s) has approval authority for the undertaking and can commit the Federal Agency to take appropriate action for a specific undertaking as a result of Section 106 compliance.
<b>Ground Disturbance Area</b>	The surface area that will be impacted by construction
<b>Haul Roads (New)</b>	Roads constructed where none previously existed to facilitate hauling of construction materials.
<b>Haul Roads (Upgraded)</b>	Roads or trails that require upgrading to accommodate hauling construction materials.

<b>High Probability Area(s)</b>	An area suspected to have a better than average chance of containing cultural resources (e.g. water crossings, paralleling water courses, historically prominent areas etc.).
<b>Historic Property</b>	Any prehistoric or historic district, site, building structure, or object included in or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian Tribe that meet the National Register criteria.
<b>Human Remains</b>	Any physical remains of a human body.
<b>ID Plan</b>	Identification Plan
<b>Intensive Survey</b>	An intensive survey is a systematic, detailed examination of an area designed to gather information about cultural resources sufficient to evaluate them against NRHP eligibility criteria of significance within specific historic contexts.
<b>Lateral Area</b>	Any subsequent branch from the main line that may as yet not be identified but is a part of the undertaking.
<b>NAGPRA</b>	Native American Graves Protection and Repatriation Act
<b>National Register</b>	The National Register lists properties formally determined eligible for the NRHP
<b>NRHP</b>	National Register of Historic Places
<b>OSHA</b>	Occupational Safety & Health Administration
<b>PA</b>	Programmatic Agreement
<b>Reconnaissance Survey</b>	A reconnaissance survey is an examination of all or part of an area accomplished in sufficient detail to make generalizations about the types and distributions of historic properties that may be present
<b>SADI's</b>	Scale Accurate Digital Image photographs with depictions of the construction right-of-way superimposed and geo-referenced.
<b>SHPO</b>	State Historic Preservation Officer

<b>Shovel Test</b>	A small circular test excavation, approximately 40 centimeters in diameter, excavating sufficient depth to reach culturally sterile soils.
<b>Site</b>	Site definition is different for each state but is generally defined by Willey and Phillips (1958:18), as any reasonably definable spatial unit that contains features or is fairly continuously covered with artifacts that are indicative of an occupation 50 years or older. A site may be defined as "a spatial cluster of cultural features, or items, or both" (Binford 1972:46). These definitions apply to both prehistoric and historic sites. Archaeological context may be defined by the inclusion of any of the following: soil staining, associated fire-cracked rock, ceramics, features, or a concentration of materials within a reasonably defined spatial boundary.
<b>Staging Area(s)</b>	Those areas outside the construction disturbance area used for equipment and material storage.
<b>STB</b>	Surface Transportation Board
<b>Testing</b>	(See Evaluation testing)
<b>THPO</b>	Tribal Historic Preservation Officer
<b>Treatment Plan</b>	A proposal for the mitigation of effects upon any historic property that a project would effect. It can include data recovery, documentation, restoration or other measures.
<b>Unassociated Funerary Objects</b>	Those funerary objects for which the human remains with which the human remains with which they were placed intentionally are not in the possession or control of a museum or Federal agency. Objects that were displayed with individual human remains as part of a death rite or ceremony of a culture and subsequently returned or distributed according to traditional custom to living descendants or other individuals are not considered unassociated funerary objects.
<b>USGS</b>	United States Geological Survey

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**APPENDIX K**  
**Biological Assessment**

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# PART 1

## INTRODUCTION

### 1.1 PROPOSED PROJECT DESCRIPTION

The current Dakota, Minnesota & Eastern Railroad Corporation (DM&E) system includes approximately 700 miles of east-west mainline track across southern and central South Dakota and southern Minnesota, extending westward from the Mississippi River at Winona, Minnesota, through Rochester, Owatonna, Waseca, and Mankato and into South Dakota. The mainline passes through Brookings, Huron, Pierre, and Rapid City, South Dakota before turning northwest through Sturgis and Belle Fourche, Minnesota and South Dakota on to Colony, Wyoming. The system also consists of several hundred miles of secondary track extending off the mainline into northwestern Nebraska, northern Iowa, and other portions of South Dakota and (Figure 1-1). DM&E currently operates four to eight trains per day over various sections of its system, transporting a wide variety of commodities including grain and other agricultural products, bentonite and kaolin clays, cement, and wood products.

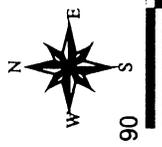
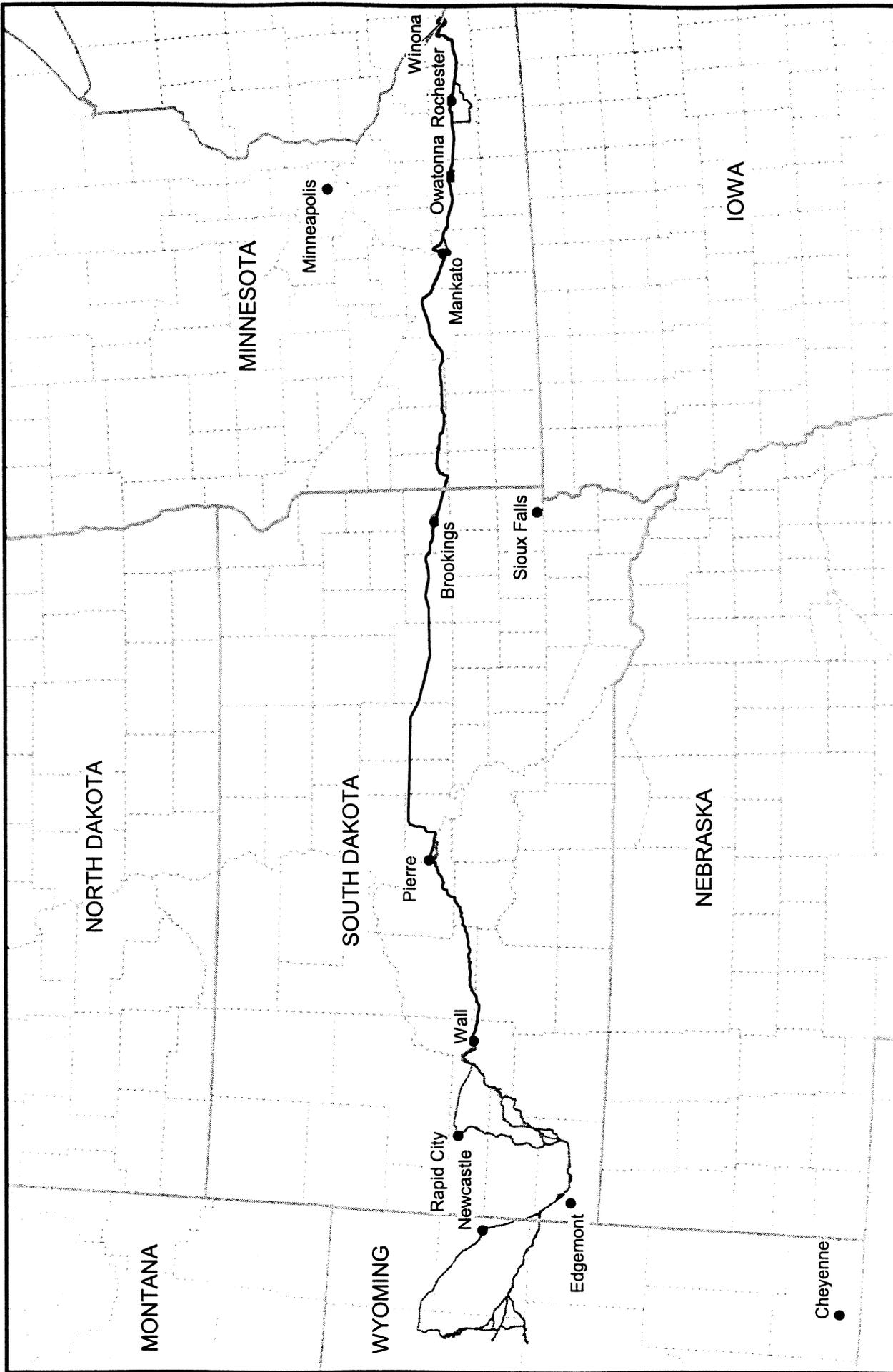
DM&E is seeking authority to construct and operate new rail line facilities in south-central Minnesota, southwest South Dakota and east-central Wyoming. This construction and operation would extend DM&E's existing system westward into the Powder River Basin region of Wyoming, allowing DM&E to connect to coal producing mines. Construction and operation of this project would provide an additional rail carrier access to the region and facilitate transport of coal eastward from the mines over DM&E's existing system.

The Powder River Basin Expansion Project (PRB Expansion Project) involves approximately 300 miles of new rail line construction. Additionally, as part of the proposed project, DM&E would rebuild approximately 600 miles of its existing rail line along its current system to standards acceptable for operation of unit coal trains.

New rail construction would include approximately 300 miles of rail line extending off DM&E's existing system near Wall, South Dakota, extending generally southwesterly to Edgemont, South Dakota, and then westerly into Wyoming to connect with existing coal mines located south of Gillette, Wyoming. New rail construction would also include approximately 14 miles or less of rail line at Mankato, Minnesota, within Blue Earth County. DM&E currently has trackage on both sides of Mankato, accessed by trackage rights on rail line operated by Union Pacific Railroad Company (UP). The proposed Mankato construction would provide DM&E direct access between its existing lines and avoid operational conflicts with UP.

The final proposed segment of new rail construction would involve a connection between the existing rail systems of DM&E and I&M Rail Link (I&M). The connection would include construction and operation of approximately three miles or less of new rail line near Owatonna, Minnesota, within Steele County. The connection would allow interchange of rail traffic between the two carriers.

In order to transport coal over the existing system, DM&E proposes to rebuild approximately 600 miles of its existing rail line. The majority of this, approximately 580 miles, would be along DM&E's mainline between Wall, South Dakota, and Winona, Minnesota. Approximately 5 miles of existing rail line near Smithwick, South Dakota, would also be rebuilt. Rail line rebuilding would include rail, tie, and ballast replacement, additional sidings, signals, grade crossing improvements, and other systems.



— Existing Rail Line  
 - - - - - New Construction Alternatives  
 ······ County Lines

Figure 1-1  
POWDER RIVER BASIN EXPANSION PROJECT  
Project Overview

## **1.2 MINNESOTA AND SOUTH DAKOTA REBUILD**

### **1.2.1 Minnesota**

DM&E's existing line crosses the counties of Winona, Olmsted, Dodge, Steele, Waseca, Blue Earth, Brown, Redwood, Lyon, and Lincoln. DM&E's existing line originates at Winona, Minnesota and closely parallels U.S. Highway 14 west across much of the state (Fig. 1-2).

### **1.2.2 South Dakota**

The rebuild of the existing DM&E rail line continues in eastern Brookings County, southeast of Elkton at the South Dakota/Minnesota state line (Fig. 1-3). The proposed project area is located primarily in rural areas in the following counties: Brookings, Kingsbury, Beadle, Hand, Hyde, Hughes, Stanley, Jones, Haakon, Jackson, and Pennington. The line closely parallels U.S. Highway 14 west across South Dakota. The rebuild portion of the project terminates at Wall, South Dakota (Pennington County).

## **1.3 MINNESOTA NEW CONSTRUCTION**

### **1.3.1 Mankato**

#### **1.3.1.1 M-1 (No Action)**

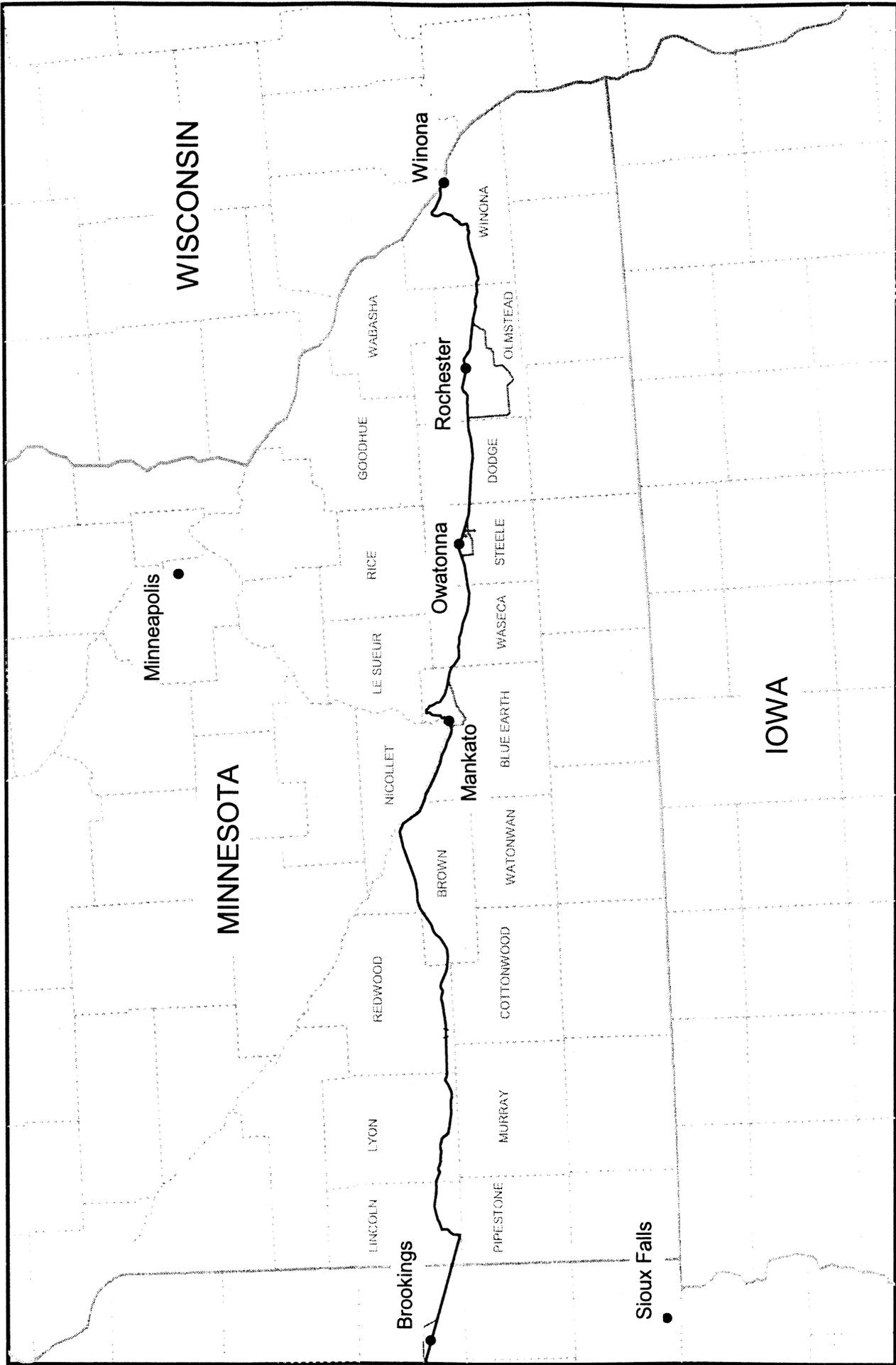
The no-action alternative, M-1, is project denial.

#### **1.3.1.2 M-2 (Proposed Action or Southern Alternative)**

This alternative involves construction of a new rail line in a loop south of Mankato to connect DM&E trackage on the west and east sides of the city (Fig. 1-4). The new rail line would extend from DM&E's existing line approximately 1.25 miles east of Eagle Lake. This alternative would join with the existing DM&E rail line approximately 0.6 miles west of where the existing DM&E and UP rail lines merge. M-2 would result in approximately 13.3 miles of new construction and would require construction of bridges across the Blue Earth River.

#### **1.3.1.3 M-3 (Existing Corridor or Middle Alternative)**

This alternative would bypass the UP track through Mankato by using the existing DM&E rail line to the point where it merges with the UP rail line and then constructing new rail line within the existing UP rail corridor. It would connect to the existing DM&E rail line where it currently merges with the UP rail line on the east side of Mankato. This alternative would require construction of bridges across the Blue Earth River, the rebuilding of approximately 10.1 miles of existing DM&E track and approximately 5.5 miles of new construction adjacent to the UP rail line (Fig. 1-4).

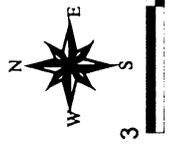
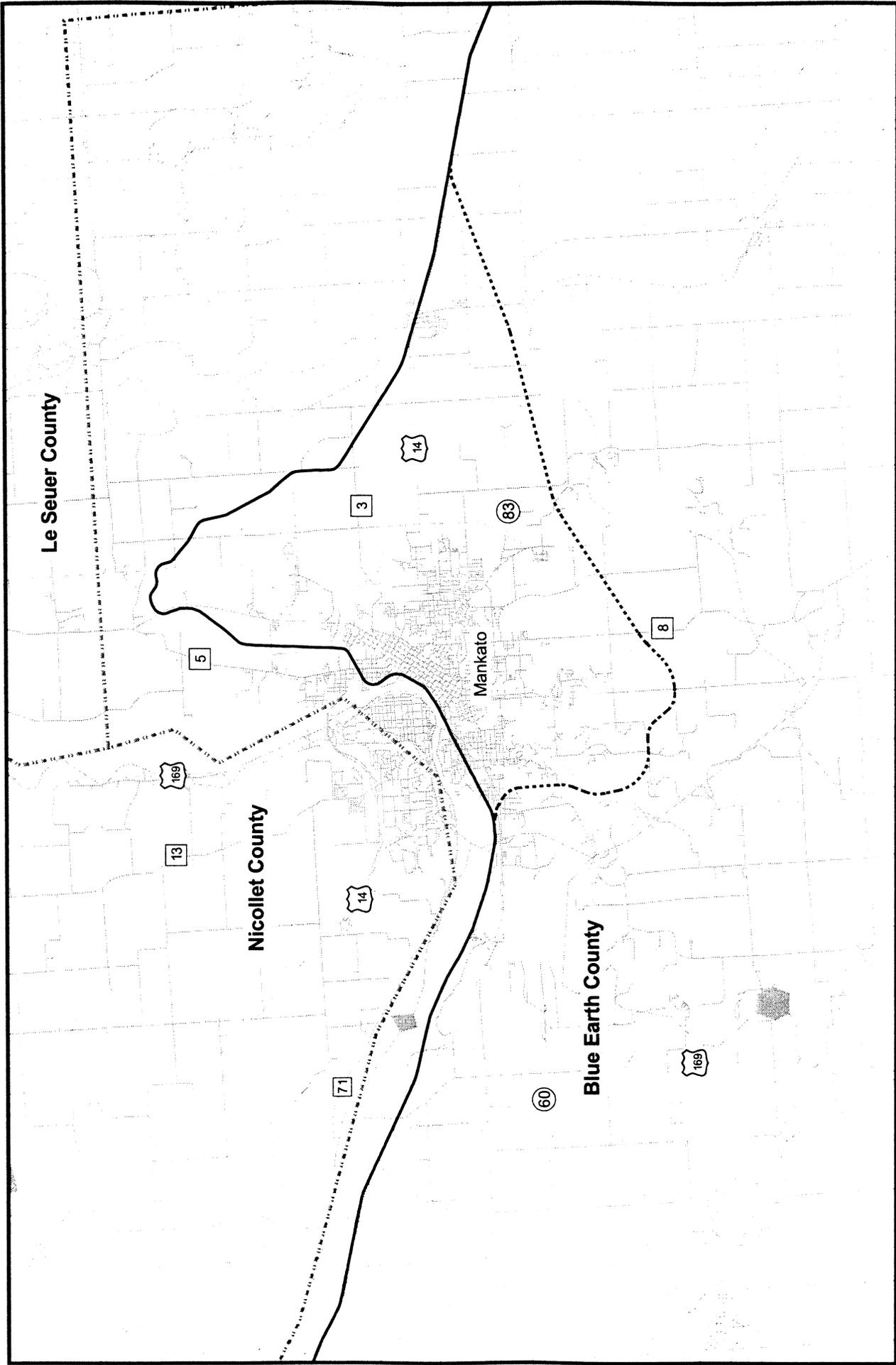


**Figure 1-2**  
POWDER RIVER BASIN EXPANSION PROJECT  
Minnesota Overview

Existing Rail Line    New Construction Alternatives  
County Lines

40 Miles





- Existing Rail Line
- New Construction
- Roads
- County Line
- Streams

Figure 1-4  
 POWDER RIVER BASIN EXPANSION PROJECT  
 Mankato Alternative  
 Mankato, Minnesota

## **1.3.2 Owatonna**

### **1.3.2.1 O-1 (No Action)**

The no-action alternative, O-1, would include overall project approval, but denial of authority to construct and operate a connecting track to the I&M. No permits would be issued for the necessary construction. DM&E and I&M would continue to be unable to interchange traffic at Owatonna, although their lines are in close proximity. They would only be able to interchange traffic at Winona, via trackage rights over Canadian Pacific Railway Company (CP), which provides a less efficient routing of traffic to various markets in central Minnesota, Iowa, and Missouri. The O-1 Alternative would not allow either

DM&E or I&M to explore potential opportunities to acquire additional rail traffic due to having a more efficient rail route for specific shippers, nor would the potential corresponding savings in fuel be recognized.

### **1.3.2.2 O-2 (Proposed Action)**

Alternative O-2 would include construction and operation of approximately 2.94 mile connecting track, to allow interchange of rail traffic with I&M. This connection would provide a north-south connection, with access to Chicago and the Twin Cities, as well as to various Mississippi River ports. The connection would form a “Y” to allow rail traffic movements both northbound through Owatonna, or southbound on the I&M (Fig. 1-5).

### **1.3.2.3 O-3 (Alternative Alignment)**

A second alternative for connection to the I&M rail line, Alternative O-3, would include approximately 1.25 miles of new rail line construction. Alternative O-3 would begin at a point southeast of Owatonna, approximately 1.0 mile from Owatonna in the northeast. The alternative would split to form a “Y” and each spur would connect to I&M, creating north- and southbound connections (Fig. 1-5).

## **1.3.3 Bypasses**

### **1.3.3.1 Owatonna Bypass**

The Owatonna Bypass would include approximately 13 miles of new rail line. It would begin approximately 1.4 miles southeast of Havana, Minnesota on the existing DM&E line. It would extend westward from the existing DM&E rail line. The bypass would turn north connecting to the existing DM&E rail line. It would include connections to I&M to allow north- and southbound rail interchange (Fig. 1-5).

### **1.3.3.2 Rochester Bypass**

The Rochester bypass would be approximately 34.1 miles in length. It would extend south from the existing DM&E rail line in Dodge County, Minnesota approximately 0.8 miles west of the Olmsted County line. The route would curve south, entering Olmsted County approximately 250 feet south of the existing rail line. Eventually the line would head north and join the existing DM&E rail line approximately 2,000 feet west of Eyota (Fig. 1-6).

### **1.3.3.3 Brookings Bypass**

The bypass would extend the existing DM&E line 1.5 miles west of the town of Volga. The total length of the Brookings bypass is approximately 15.2 miles. The bypass would head west around the north side of Brookings eventually joining the existing DM&E rail line approximately 0.5 mile west of Aurora (Fig. 1-7).

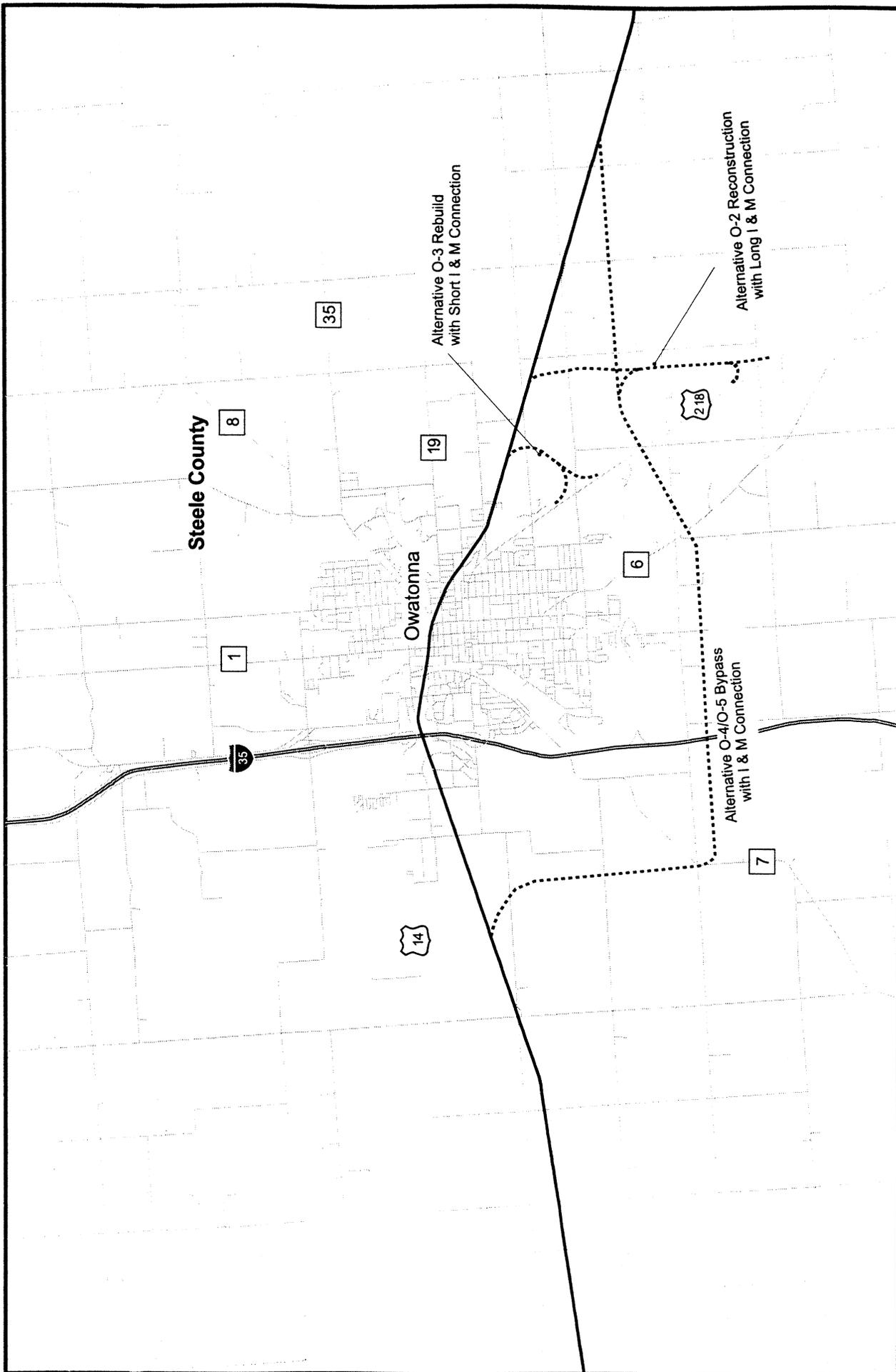


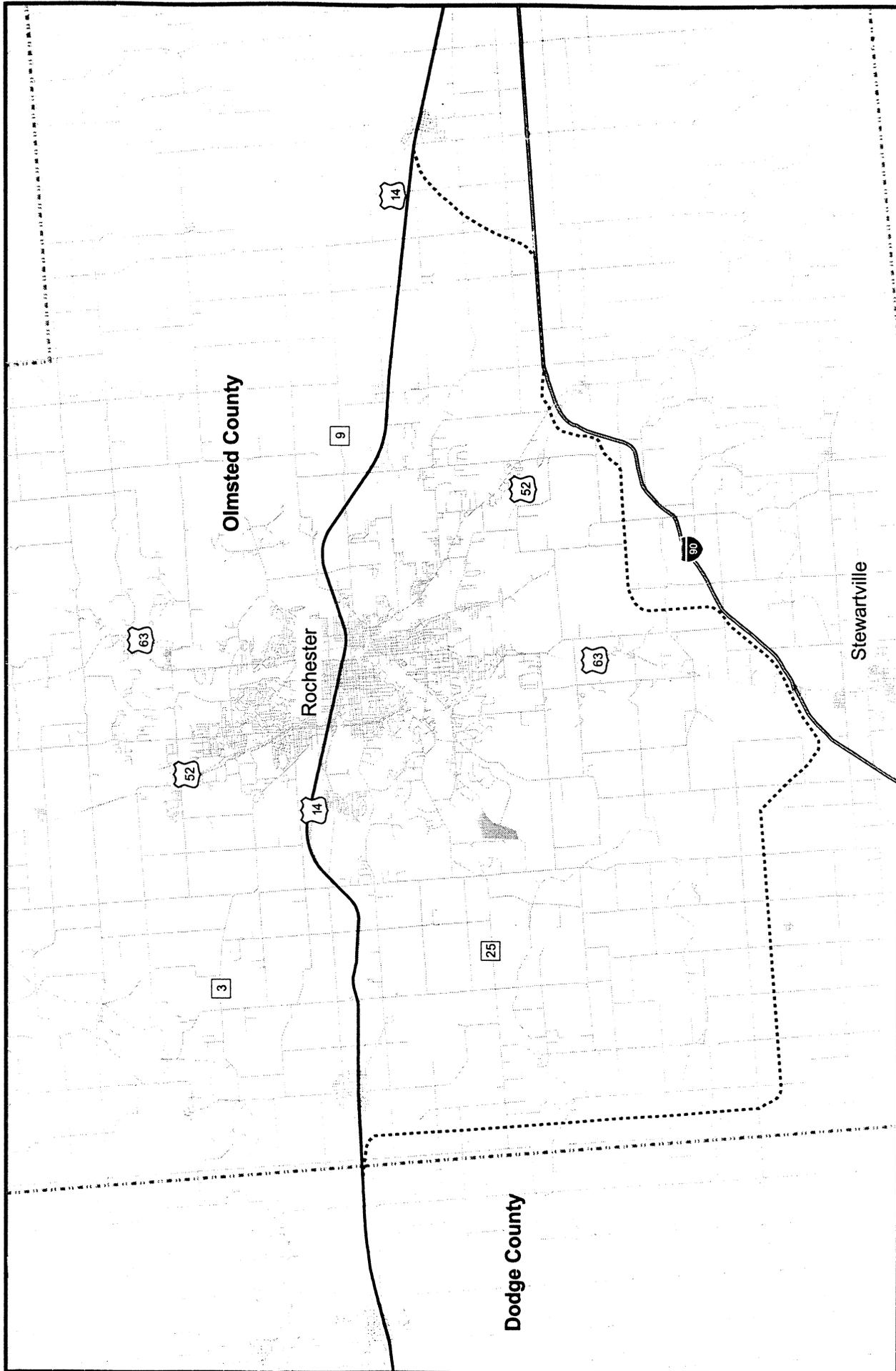
Figure 1-5  
 POWDER RIVER BASIN EXPANSION PROJECT  
 Owatonna Alternatives  
 Owatonna, Minnesota

Existing Rail Line

Roads

New Construction

2 0 2 Miles



**Figure 1-6**  
**POWDER RIVER BASIN EXPANSION PROJECT**  
 Rochester Alternative  
 Rochester, Minnesota

Existing Rail Line      Roads  
 New Construction      County Line  
 Streams

5 Miles  
 0

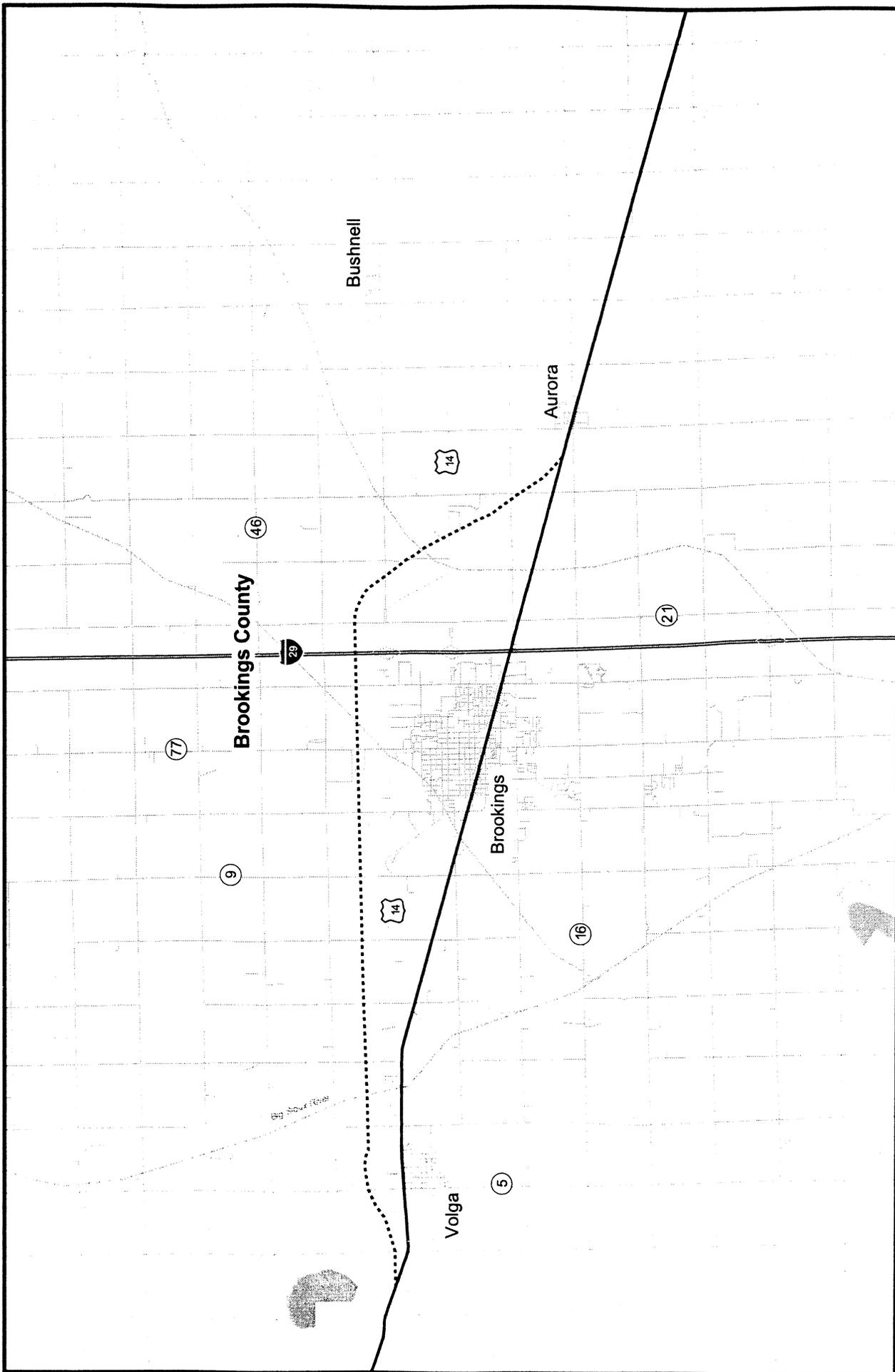


Figure 1-7  
 POWDER RIVER BASIN EXPANSION PROJECT  
 Brookings Alternative  
 Brookings, South Dakota

Existing Rail Line  

 New Construction  
 Roads  
 Streams

0 3 Miles

### **1.3.4 Staging Yards**

#### **1.3.4.1 Middle East Staging and Marshaling Yard (Mankato)**

The location of this yard is between MP 146.9 and MP 149.4. The dimensions of the yard are 400 feet by 2.5 miles. This yard would serve as a staging yard for loaded and empty coal trains and would support the interchange with UP at Mankato. This yard would be designed to accommodate a small amount of maintenance-of-way equipment. It would also serve as a crew change point. Approximately 250 to 300 jobs would be located here at full operations (DM&E 1999).

#### **1.3.4.2 Waseca Marshaling Yard**

This yard is planned to serve as a marshaling yard for traffic to and from the surrounding communities. Way freights would be based here and non-coal trains would stop to set out and/or pickup cars. This yard may contain a very small mechanical facility designed to accomplish emergency repairs on cars and locomotives and also the refueling of some locomotives. It would also accommodate a small amount of maintenance-of-way equipment. It is likely that 75 to 100 jobs would be based here at full operations (DM&E 1999).

#### **1.3.4.3 East Staging and Marshaling Yard**

This yard is planned to serve as a staging yard for loaded and empty coal trains moving to and from Minnesota City, Minnesota. It would also serve as a marshaling yard and support the interchange of traffic with UP and CP at Minnesota City. Helper locomotives to provide additional braking capability for trains moving down Lewiston Hill would be based here. This yard would contain a very small mechanical facility designed to accomplish emergency repairs to cars and locomotives and also the refueling of some locomotives. This yard would be designed to accommodate a limited amount of maintenance-of-way equipment. It would have a small office from which supervisors would oversee local operations. This would also be a crew base location for all train crews starting and finishing work between Utica and Winona. It is likely that 40 to 50 jobs would be based here at full operation (DM&E 1999).

## **1.4 SOUTH DAKOTA AND WYOMING NEW CONSTRUCTION**

Extending the existing DM&E system to access Powder River Basin (PRB) coal mines would require construction of approximately 300 miles of new rail line along new rail right-of-way (ROW).

### **1.4.1 Alternative A (No Action)**

The No-Action Alternative, Alternative A, would include no new construction of rail line or reconstruction of existing DM&E line in Minnesota, South Dakota, and Wyoming. The application before the Board for authority to construct, maintain, rebuild and operate the DM&E Railroad would not be approved. The Special Use Application submitted by DM&E for an easement under the Federal Land Management Policy Act of 19 (FLPMA) to cross portions of the BGNG in South Dakota and TBNG in Wyoming would not be granted by the U.S. Forest Service (USFS). The application for a right-of-way crossing portions of land administered by the U.S. Department of the Interior, Bureau of Land Management (BLM) in sections of South Dakota and Wyoming would not be granted. The U.S. Army Corps of Engineers would not issue a permit for impacting waters of the United States or wetlands. The U.S. Coast Guard (USCG) would not issue a permit for construction of rail bridge facilities over the Missouri River. The U.S. Department of the Interior, Bureau of Reclamation (Bureau) would not issue a permit for project impacts to lands and facilities that are part of the Angostura Reservoir and Irrigation Project. No state or local permits would be issued. Coal would continue to be mined in the PRB and transported by UP and BNSF. Coal mines would continue to open and increase production, potentially

increasing rail service problems both in the PRB at the mines and for the customers. As coal production increased, rail traffic would also increase. Upgrades to the existing joint line would be likely. Communities the existing coal traffic currently is transported through would likely experience increases in rail traffic and associated impacts related to noise, traffic delay, safety, and air emissions.

#### **1.4.2 Alternative B (Proposed Action)**

Alternative B would extend from the existing DM&E system north of Wall (Pennington County) and continue generally southwest along the Cheyenne River Valley. It would generally northwestward across Niobrara and Weston counties, splitting into a "Y" configuration to serve the mines in Converse and Campbell counties (Fig. 1-8).

#### **1.4.3 Alternative C (Modified Proposed Action)**

Alternative C, the Modified Proposed Action, was developed by realigning Alternative B to avoid environmentally sensitive areas. This alignment avoids RARE-2 areas and reduces impacts to the Cheyenne River Valley. However, for engineering reasons, in many areas it follows much the same alignment as Alternative B. This alignment uses DM&E's existing track westward to Wall, South Dakota. New construction would extend from the existing DM&E system north of Wall (Pennington County) and continue southwest (Fig. 1-8). This alignment avoids RARE-2 areas and reduces impacts to the Cheyenne River Valley. It would continue west toward the coal mines where it would split into a "T" configuration to service the mines south of Gillette, Wyoming. Chapter 2 of the DEIS provides a detailed description of this alternative.

#### **1.4.4 Alternative C with the Phiney Flat Variation**

This route modification of Alternative C was proposed to avoid environmentally sensitive areas associated with Spring Creek, a tributary to the Cheyenne River (Custer and Pennington counties) (Fig. 1-8). Chapter 2 of the DEIS provides a detailed description of this alternative.

#### **1.4.5 Alternative C with the W G Flat Variation**

This route modification of Alternative C was proposed to avoid environmentally sensitive areas associated with Hay Canyon, a tributary to the Cheyenne River (Fig. 1-8). Chapter 2 of the DEIS provides a detailed description of this alternative.

#### **1.4.6 Alternative D (Existing Corridor Alternative)**

This alternative uses existing track westward to Wall, South Dakota. The rail line would head southwest to Edgemont. From Edgemont the line would continue northward paralleling the existing BNSF right-of-way northwest to Donkey Creek Junction. At Donkey Creek Junction the line would follow the Joint Line south to access the mines. This alternative involve would utilization and rebuilding of existing DM&E rail line and new construction between Smithwick and Donkey Creek Junction and immediately adjacent to the existing Joint Line. Chapter 2 of the DEIS provides a detailed description of this alternative (Fig. 1-8).

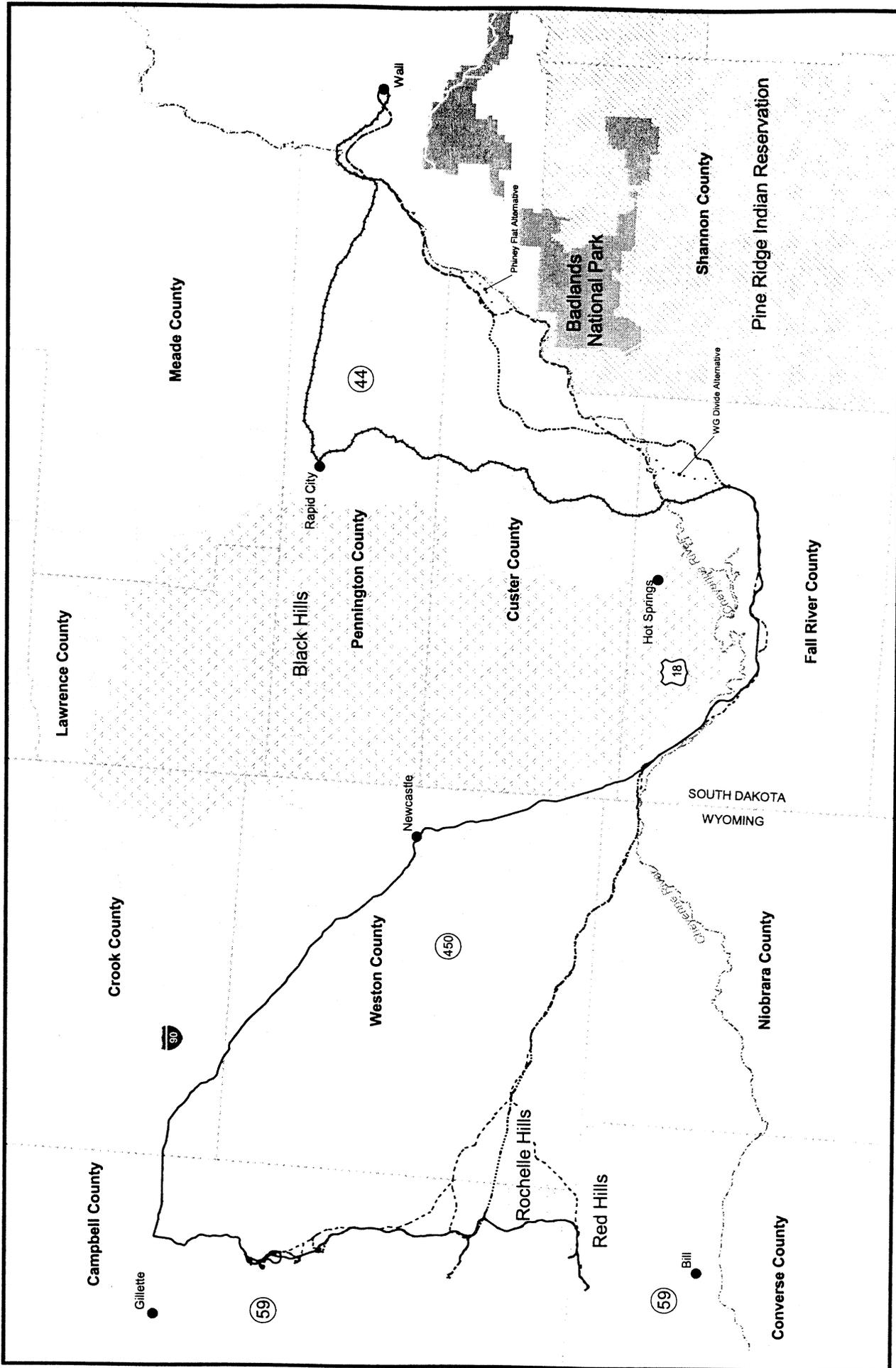


Figure 1-8  
**POWDER RIVER BASIN EXPANSION PROJECT**  
 Alternatives B, C, and D,  
 Including Phiney Flat Alternative and WG Divide Alternative

Existing Rail Line	Alternative C	Alternative D- new construction	Alternative D- along existing line
Variations			

N  
E  
W  
S

20 0 20 Miles

### **1.4.7 Staging Yards under Alternative B**

#### **1.4.7.1 Middle West Staging and Marshaling Yard (Wall/Philip/Midland, South Dakota)**

The location of this yard would be between MP 590.4 and MP 592.5. The dimensions of the yard would be 300 feet wide by 2.1 miles long. This yard is planned to serve as a staging yard for loaded and empty coal trains moving to and from mines in Wyoming. It would contain two marshaling tracks for use by manifest, grain, and way freight trains in serving local area customers. This yard would also serve as a crew change. It is likely that 40 to 50 jobs would be based here (DM&E 1999).

#### **1.4.7.2 Middle Staging and Marshaling Yards and Shops (Huron-Wolsey, South Dakota)**

This yard is planned to serve as the center of DM&E operations and maintenance. It would be designed to serve as the principal inspection and maintenance facility for all coal train equipment. Empty westbound coal trains would be inspected and switched here, receive freshly serviced and fueled locomotives and also receive the 1000-Mile Train Inspection and Certificate. Loaded eastbound coal trains would also be fully fueled and serviced here. Empty and loaded coal trains that could not be advanced would be held on staging tracks. This yard would have sufficient capacity to receive, classify, dispatch and store freight cars (DM&E 1999).

There would be a rail welding plant vehicle repair and maintenance shop and signal and communications repair shops. The yard would have an operations center and a central crew facility. All trains change crews at this yard. This yard would also serve as an interchange facility with the BNSF Railroad. It is likely that about 600 jobs would be located here at full operations. However, this number does not include contractor or support related jobs (DM&E 1999).

#### **1.4.7.3 BNSF Interchange Yard (Dudley, South Dakota)**

This yard would be located between MP 720.0 and MP 723.0 on the north side of the rail line. The dimensions of the yard would be 150 feet by 3.0 miles. This yard would be designed to be an interchange facility with the BNSF Railroad at Edgemont (Dudley), South Dakota. It would consist of a small group of tracks where the two railroads could deliver and pickup cars to and from the other. No employees are expected to be based at this yard (DM&E 1999).

#### **1.4.7.4 West Staging Yard (Newcastle/Edgemont/Moorcroft, Wyoming)**

The West Staging Yard would be located northwest of Edgemont in Weston County, Wyoming between MP 760.0 and MP 764.0 on the north side of DM&E's rail line. The dimensions of the yard are 1,300 feet by 3.1 miles. The yard would serve as a base of operations for trains serving the 11 coal mines in the immediate area. It would serve as a staging yard for empty trains and unit-train-only interchange between BNSF and DM&E. The yard would also have a small maintenance facility to provide emergency repairs to locomotives and cars and to provide locomotive refueling if required. The operating plan calls for fully fueled trains to leave the Middle Yard, load at the mines, and return to the Middle Yard without refueling. However, refueling capability would be provided at the West Staging Yard in case of disruptions due to severe weather, operating problems, or locomotives being reassigned enroute due to emergency situations. Also, maintenance work trains would need to be refueled at this yard. This yard would also have a small facility for maintenance-of-way equipment that would be used to maintain the tracks on the western end of the railroad.

This yard would have a major crew lodging and eating facility on the premises. It is likely that about 300 jobs would be based here at full operations. However, this would not include contract or support related jobs (DM&E 1999).

### **1.4.8 Staging Yards under Alternative C**

#### **1.4.8.1 Middle West Staging and Marshaling Yard (Wall/Philip/Midland, South Dakota)**

The location of this yard would be the same as for Alternative B.

#### **1.4.8.2 Middle Staging and Marshaling Yards and Shops (Huron-Wolsey, South Dakota)**

The location of this yard would be the same as for Alternative B.

#### **1.4.8.3 BNSF Interchange Yard (Dudley, South Dakota)**

Under this alternative the yard would be located at MP 761.75. The dimensions of the yard would be 150 feet by 1.5 miles.

#### **1.4.8.4 West Staging Yard (Newcastle/Edgemont/Moorcroft, Wyoming)-OPTION A**

Under Option A the location of this yard would be between MP 787.0 and MP 793.0. The yard would be located on the Campbell Weston County line. The yard would be 1,300 feet by 6 miles and would impact 71 acres of National Forest Service (NFS) land, 78 acres of state land, and 101 acres of private land.

#### **1.4.8.5 West Staging Yard (Newcastle/Edgemont/Moorcroft, Wyoming)-OPTION B**

Option B is a 250 acre alternative for this yard. This alternative would avoid impacts to NFS lands, and is composed of private and state properties. The yard is located between MP 787.0 and MP 793.0.

### **1.4.9 Staging Yards under Alternative D**

#### **1.4.9.1 Middle West Staging and Marshaling Yard**

The yard would be located in Custer County, South Dakota between MP 65.8 and 68.9. This segment of Alternative D would parallel the existing Chicago and Northwestern rail line. The yard would begin north of Fairburn and end just south of the city. The yard would be 300 feet by 3.1 miles.

#### **1.4.9.2 Middle Staging and Marshaling Yards and Shops (Huron-Wolsey, South Dakota)**

The location of this yard would be the same as discussed for Alternative B.

#### **1.4.9.3 BNSF Interchange Yard (Dudley, South Dakota)**

The location of this yard would be the same as discussed for Alternative B.

#### **1.4.9.4 West Staging Yard (Newcastle/Edgemont/Moorcroft, Wyoming)**

The West Staging Yard is located in Crook County, and is southeast of Moorcroft. All facilities and yard operations would be located between MP 563.0 and 568.0. The proposed yard would be 1,300 feet by 5 miles.

### **1.5 Rebuild Construction Activities**

Because of years of deferred maintenance, much of DM&E's existing system is in poor condition. All of DM&E's existing system operates as either excepted track <sup>1</sup>, or under speed restrictions (some as slow as 5 mph with 40 mph being the maximum allowed on the system), and generally limited to 263,000 pound cars (286,000 pound cars are considered the industry standard). Existing rail is generally 90-100 pound,

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<sup>1</sup> Federal Railroad Administration term, defined at 49 CFR, § 213.4. By definition operation of trains in excess of 10 miles per hour, revenue passenger operations, and trains with more than five cars requiring hazardous materials (as defined in 49 CFR part 172) placards are prohibited on excepted track.

much of which is still jointed rail and as much as 100 years old. The existing system has limited sidings and other facilities such as maintenance yards, crew-change sites, and switching yards. Main line transit time averages approximately 150 hours (over 6 days), with rail car cycle times being approximately 12 days. Rebuilding of the existing system is necessary to facilitate safe and efficient transport of existing train traffic as well as unit coal trains.

The rebuild of the existing DM&E mainline from Winona, Minnesota westward to Wall, South Dakota would occur in such a way as to enable the line to be kept largely operational during the construction period. Sections of the rail line would be taken out of service for 12 to 24 hours, as is standard industry practice for rail line construction and maintenance. Rebuilding of the existing line would occur at several locations simultaneously. Some portions of the line would be closed to train traffic for a short period but closures could be scheduled around lower train traffic times, such as before crops are harvested.

The majority of the existing railbed is suitable for rebuilding the existing line to standards acceptable for 315,000-pound rail cars. While all the mainline would have the rail, ties, and ballast replaced, it is currently estimated that approximately 20 percent (approximately 120 miles) of the existing railbed subgrade<sup>2</sup> may require earthwork to improve its condition and suitability for the proposed project. In areas where subgrade or subballast work would be required, the line would be taken out of service, the ballast, ties and rail removed and suitable equipment brought in to repair the damaged or deteriorated sections of sub-grade and/or sub-ballast. Following rehabilitation of the railbed, new ballast, ties and rail would be installed.

For the majority of the main line, no rehabilitation of the sub-ballast or sub-grade would be necessary. Rebuilding of the existing line would be accomplished largely by rail-mounted equipment or equipment operating within the existing rail right-of-way. Sections of rail and ties would be removed by rubber-tired or rail-mounted equipment (such as boom trucks or cranes) and loaded onto rail flat cars. Ballast would be removed by front-end loaders and hauled off in dump trucks or rail cars or incorporated into the existing subgrade. Because of the deteriorated condition of DM&E's system, it is unlikely much of the rail, ties or ballast could be recycled or reused. Rail and ties of acceptable quality may be stockpiled for use along other sections of DM&E's system or in the construction of sidings. However, most of the material removed would be sold for scrap or disposed of consistent with environmental regulations.

Installation of new ballast, rail and ties would be done as described for the new construction. All new materials would be used; including 136 pound continuously welded rail, wood or concrete ties, and special fasteners in curves.

Numerous sidings, 35-45, would be constructed along the existing line to accommodate the additional rail mounted equipment necessary for construction and provide for continued rail service along the line. Sidings would be located within existing rail right-of-way, thus their locations would be limited to those areas where a sufficient right-of-way width, approximately 150 to 200 total feet, is available. Sidings would be constructed in similar fashion to other track construction, with earthmoving equipment expanding the existing rail bed to accommodate a siding and mainline track laid as previously discussed.

Additional sidings would be constructed during the rebuild process that would be necessary for operation of the system following completion of construction. Initially, the number of sidings and their locations

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<sup>2</sup> The subgrade is the earthen or fill portion of the railbed upon which the subballast material is placed. Ballast is placed over the subballast.

would be established based on DM&E hauling its existing train traffic and the addition of 40 million tons of coal annually. As coal transport increases to the total of 100 million tons annually projected by DM&E, additional sidings would be added to accommodate traffic increases. Under the annual transport of 100 million tons of coal scenario, sidings would be approximately 3 to 7 miles long and spaced approximately 12 miles apart over the entire mainline, including the new rail line in South Dakota and Wyoming. Additionally, DM&E would upgrade many of its existing sidings and facilities serving its existing customers. Sidings would be designed to allow entry of trains from the main line at 40 mph.

Installation of grade crossings and crossing protection would be the same as for the new construction. Completion of the rebuild of the existing rail line is anticipated to take two construction seasons, generally the period between April 1 and November 1.

Following completion of project construction and existing line rebuild, the mainline DM&E system would consist of all new 136 pound, continuously welded rail. The system would be designed to accommodate 315,000-pound cars, although initially the largest cars would be the 286,000 pound variety.

### **1.6 New Construction Activities**

Approximately 280 miles of new rail line would be constructed along new right-of-way. New rail line would be designed for 315,000 pound rail cars, operating in a maximum of 135-cars, either 3-6,000 horsepower locomotive or 4-4,400 horsepower locomotive trains, approximately 7,400 feet (1.4 miles) in length. Locomotives would be distributed throughout the train, with two in series at the lead and the third located either at the end of the train or located approximately two-thirds of the way back from the front of the train. Maximum operating speed on the new rail line would be 49 miles per hour (mph) for empty coal trains and other commodity trains and 45 mph for loaded coal trains. The new rail line would consist of 136 pound, continuously welded rail. Ties would be wood spaced at 19.5 inches or concrete spaced at 24 inches. Maximum grade for the line would ideally be 1.0 percent along tangent sections and 1.0 percent compensated on curves.

If the proposal is approved, right-of-way would be acquired and fenced. The right-of-way width for new rail line would be a minimum of 200 feet, centered on the rail line in most areas. In areas requiring significant cut or fill, additional right-of-way may be required to maintain railbed sideslopes. The construction area for the right-of-way would be restricted to the permanent right-of-way plus an additional 20 feet on either side of the permanent right-of-way's outer boundaries for fence construction, drainage, firebreaks, and access.

Rail line construction would likely occur at several locations simultaneously, starting with bridge and crossing construction. Five to seven bridge construction crews, consisting of approximately 50 workers each, could be working simultaneously, constructing bridges, culverts, cattle guards, and road, livestock and wildlife crossings. Cranes, dozers, and front-end loaders would be the equipment typically used. Much of the construction would involve placement of precast, concrete structures. The site would be prepared and the precast structures installed or cast structures formed and poured. Bridge and crossing construction would likely occur year-round. DM&E has indicated a precast concrete plant and staging yard would be established in Edgemont, South Dakota. Equipment and materials would be delivered by rail to this facility and construction crews would work east and west from Edgemont.

Construction and preparation of the rail bed would occur following bridge and crossing construction. As with bridges and crossings, five to seven crews of approximately 50 workers each would work on the railbed at different locations simultaneously, working east and west from Edgemont. Because of the

variable nature of area topography, gently rolling to steeply sloped, and the need to maintain a slight grade slope (ideally 1.0 percent or less), significant cut and fill would be necessary along some sections of the line. Cut and fill would be accomplished using heavy earthmoving equipment such as scrapers, dozers, power shovels, draglines, front-end loaders, and belly-dump trucks. Blasting in some areas may be necessary as part of cut activities. Cut material would be used for fill in other locations. Efforts would be made to have fill requirements equal cut material. However, haul distances between cut and fill areas or additional fill requirements may require borrow areas be found outside the rail right-of-way for access to fill material in closer proximity to fill areas. Additionally, extra right-of-way may be required to deposit cut material if it is not usable for fill in other areas due to its composition.

New rail bed construction would be accomplished using earthmoving and grading equipment, including bulldozers, scrapers, and dump trucks. Existing vegetation would be cleared and disposed of according to landowner requests and appropriate federal, state, and local requirements. The right-of-way would be grubbed and topsoil removed and stockpiled for later revegetation. Gravel and other materials required for the railbed would be acquired from local sources to minimize haul distances. Sub-grade material would be acquired within the permanent right-of-way or trucked from source areas. Sub-grade material would be installed and compacted to provide a stable, raised bed of 28 feet in width, comprised of gravels and soils upon which ballast, ties and rail would be laid.

During earthmoving activities, water trucks would be used to water the right-of-way and haul roads to help control dust. Water would also be applied to fill material to aid in compaction. Water would be moved along the right-of-way using irrigation piping and stored in pits along the right-of-way throughout the construction area. Water is anticipated to be obtained primarily from private stock ponds and wells, with the owners being compensated for the water used. Some water may be withdrawn from the Cheyenne River, if it is available and appropriate use agreements are obtained.

Disturbed areas would be revegetated after grading and earthmoving activities are completed. Areas disturbed during construction adjacent to the railbed would be graded as necessary and stockpiled topsoil spread over the area. Disturbed areas would be reseeded and mulched to help maintain soil stability and protect the seed until it can germinate and vegetation becomes established. Water trucks could be used if necessary to water revegetated areas until sufficient ground cover is established.

Following preparation of the sub-grade, sub-ballast material would be placed on the sub-grade and compacted to a depth of 6 to 12 inches. Ties and continuous welded rail would be laid on the sub-grade and welded in place. Signal and communication facilities would be installed. Ballast would be brought in by bottom drop rail cars. The rail and tie sections would be lifted by rail mounted tamping equipment and ballast dumped on the sub-grade and around the ties. Ballast would be compacted into place using tamping equipment to a minimum depth of 12 inches along tangent sections and in curves less than 2 degrees. Additional ballast would be used in curves of greater than 2 degrees. Following ballast compaction, the line section would be inspected and any flaws corrected. All new materials, including sub-ballast, ballast, ties and rail would be used.

It is likely that roads and bridges in the project area would be inadequate to handle the type of traffic and equipment required for construction of this project. DM&E would coordinate with the agency responsible for maintenance of each specific road (anticipated to be the State Departments of Transportation, county Highway Departments, United States Forest Service (FS), and Bureau of Land Management (BLM)) to develop and implement bridge and roadway requirements suitable for continued and safe use of roads accessing the construction areas.

Completion of construction is anticipated to take three construction seasons (April 1 through November 1). Bridge and crossing construction would occur year-round. However, earthwork could not be done when the ground is frozen, generally limiting railbed construction to April 1 through November 1.

Construction crews would work double shifts, between 7 am and midnight, six days a week. Equipment maintenance crews would work from midnight to 7 am.

### **1.7 Project Operations**

Up to 100 million tons of coal (approximately 750,000 cars) and approximately 66,000 freight cars transporting primarily corn, wheat, soybeans, bentonite and kaolin clay, cement, and wood products would be transported over the system annually. Through coal trains would be an average of 115-135 cars in length, using either 4-4,400 horsepower or 3-6,000 horsepower locomotives, distributed within the train. Maximum train speeds would be 49 miles per hour. Four track maintenance periods up to six hours each, could be incorporated into the system operation every day.

Eastbound traffic would primarily consist of loaded trains, both coal and mixed freight, traveling at approximately 45 miles per hour. Westbound traffic would consist of primarily empty trains traveling at approximately 49 miles per hour. Westbound, empty trains would slow and switch onto passing sidings to allow loaded, eastbound trains to pass without need to stop or slow. Empty, westbound trains would generally not stop but would only slow to 40 miles per hour on sidings. However, occasionally they may be required to stop for a short period. After the loaded train had cleared, the empty train would switch back onto the mainline and accelerate up to normal operating speed.

Trains would be loaded at the various mines and dispatched to a western staging yard. From this yard, trains would be dispatched eastward. The train would continue, non-stop, to the next staging yard. Staging yards would be spaced based on transit times of approximately 7 hours, between 225 and 275 miles apart.

### **1.8 Maintenance Activities**

DM&E would construct a new locomotive and rail car maintenance and repair facility as part of this project to accommodate the additional rolling stock and associated maintenance needs. This would be a state-of-the-art facility for scheduled maintenance, overhaul, inspection, testing, fueling, and major repairs, capable of maintaining 300 or more locomotives. In addition, staging yards would contain maintenance capabilities to handle common maintenance problems. Trains would be stopped at staging yards for equipment inspection and crew changes. Following inspection of rail cars and locomotives, any identified maintenance problems could be addressed at the staging yard or more substantial problems identified and referred to the main maintenance facility. Trains would be inspected at each staging yard and cleared before being dispatched onto the line. Rail cars and locomotives would receive scheduled maintenance and overhaul based on industry standards and recommendations.

DM&E personnel would perform general maintenance-of-way activities. Nine maintenance-of-way section headquarters for crews and equipment would be established at intervals throughout the system. In addition, contractors would be used for rail flaw testing, rail grinding, tie change-out, vegetation control, and other specialized tasks. Four, 6-12 hour windows would be available each day to perform maintenance activities on the line.

Vegetation control activities would also be part of regular maintenance along the rail line. Vegetation control measures would be designed to control noxious weeds and reduce the potential for rail-related fires. Herbicides approved by the Environmental Protection Agency (EPA) would be applied to the

railgrade, including the area of ballast, rail and ties by licensed personnel. In addition, DM&E would perform vegetation control activities as part of its fire prevention and suppression plan that would include one or more of the following:

- plowing or sterilizing a fire guard at least 10 feet wide on both sides of the right-of-way, 50 feet from the centerline of the main track where practical and necessary,
- burning the right-of-way on both sides of the track 50 feet from the centerline of the main track where practical and necessary,
- sterilizing the right-of-way for 12 feet on both sides of the centerline,
- applying a herbicide for 50 feet on both sides of the centerline where practical and necessary.

### **1.9 Potential Species Impacts**

Construction of the PRB Expansion Project would involve potential impacts to certain federally listed endangered and threatened species. Requirements for the project include authorization by the Surface Transportation Board (STB), easements under the Federal Land Management Policy Act from the USFS, rights-of-way from the BLM and a permit from the U.S. Army Corps of Engineers (COE) pursuant to Section 404 of the Clean Water Act. All of these are federal actions that require compliance with the Endangered Species Act (ESA). This biological assessment summarizes the results of surveys for endangered and threatened species, and their habitats, along several proposed alternatives and provides information pertaining to the potential benefits of the project upon these species. It is submitted to the U.S. Fish and Wildlife Service (USFWS) in accordance with Section 7 of the ESA. In response, USFWS is requested to provide a Biological Opinion on the anticipated project effects and measures necessary to protect or conserve potentially impacted endangered or threatened species as they pertain to the environmentally preferred alternative.

Sixteen species of plants and animals known to occur, or potentially occurring, within the proposed project area are protected as ENDANGERED or THREATENED SPECIES or are under review for such statutes under the ESA (Table 1-1). The ESA affords protection to those species to be determined either endangered or threatened and their habitats. As defined by the ESA, an endangered species is “any species which is in danger of extinction throughout all or a significant portion of its range.” A threatened species is “any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” Under the ESA, it is illegal to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect listed endangered or threatened species. Violations of the ESA can result in substantial civil/criminal penalties, including fines and/or imprisonment.

A proposed species is one “for which a proposal to list the species has appeared in the Federal Register, and a final rule is pending.” Species that have been evaluated and determined eligible for listing as endangered or threatened, but whose listing is currently precluded because of a need to take action on higher priority species, are listed as candidate species.

**Table 1-1  
ENDANGERED, THREATENED, CANDIDATE OR PROPOSED SPECIES**

Common Name	Scientific Name	Federal Status
Black-footed Ferret	<i>Mustela nigripes</i>	Endangered
Peregrine Falcon	<i>Falco peregrinus</i>	Delisted <sup>1</sup>
Piping Plover	<i>Charadrius melodus circumcinctus</i>	Endangered
Whooping Crane	<i>Grus americana</i>	Endangered
Interior Least Tern	<i>Sterna antillarum</i>	Endangered
Topeka Shiner	<i>Notropis topeka</i>	Endangered
Pallid Sturgeon	<i>Scaphirhynchus albus</i>	Endangered
American Burying Beetle	<i>Nicrophorus americanus</i>	Endangered
Minnesota Dwarf Trout Lily	<i>Erythronium propullans</i>	Endangered
Higgin's Eye Pearly Mussel	<i>Lampsilis higginsii</i>	Endangered
Winged Mapleleaf Mussel	<i>Quadrula fragosa</i>	Endangered
Karner Blue Butterfly	<i>Lycaeides melissa samuelis</i>	Endangered
Ute Ladies'-tresses Orchid	<i>Spiranthes diluvialis</i>	Threatened
Prairie Bush-Clover	<i>Lespedeza leptostachya</i>	Threatened
Leedy's Roseroot	<i>Sedum integrifolium ssp. leedyi</i>	Threatened
Western Prairie Fringed Orchid	<i>Platanthera praeclara</i>	Threatened
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Threatened <sup>2</sup>
Mountain Plover	<i>Charadrius montanus</i>	Proposed
Swift Fox	<i>Vulpes velox</i>	Candidate
Sturgeon Chub	<i>Macrhybopsis gelida</i>	Candidate
Black-tailed Prairie Dog	<i>Cynomys ludovicianus</i>	Candidate

<sup>1</sup>-Peregrine falcons were originally included in the Biological Assessment; however, on August 25, 1999 the USFWS determined that the American peregrine falcon is no longer an endangered or threatened species pursuant to the Endangered Species Act of 1973. Therefore, the peregrine falcon is not discussed further in this document.

<sup>2</sup>-USFWS has proposed to remove the bald eagle from the endangered species list but potential impacts to bald eagles are included and analyzed in the BA.

## PART 2

# RELEVANT ECOLOGICAL IMPACTS

Habitat and other impacts to populations of endangered and threatened species can have an effect on the size or viability of these populations. Habitat availability is often a limiting factor for endangered and threatened species and the short- or long-term loss of suitable habitat can contribute to the decline of the populations. Plant species occurrence can depend upon local soil conditions within the species range.

The following describes habitats in the proposed project area that are significant to the endangered and threatened species discussed in this biological assessment and which may be affected by construction and/or operation of the railroad.

### 2.1 GRASSLANDS

#### 2.1.1 Minnesota

Common vegetative species in southern Minnesota include big bluestem (*Andropogon gerardii*), Indian grass (*Sorghastrum nutans*) and prairie dropseed (*Sporobolus heterolopis*). Minnesota natural vegetation originally consisted of northern coniferous forest, eastern deciduous forest and tall grass prairie. However, most of these areas were cleared for agriculture and today less than 1 percent of tall grass prairie exists. The proposed project passes through approximately 66 miles of pastureland, 200 miles of cropland and over 130 miles of woody vegetation (MDNR 1999).

#### 2.1.2 South Dakota

Mixed grass prairie communities exist west of the Missouri River in South Dakota. These communities are made up of wheatgrass (*Elymus* spp.), needle grass (*Stipa* spp.), blue grama (*Bouteloua gracilis*), buffalo grass (*Buchloe* spp.) and little bluestem (*Schizachyrium scoparium*). Central South Dakota, from the Missouri River to the James River, is a transition zone between the drier western prairie and the wetter eastern part of the state. Common plant species include wheatgrass, little bluestem and needle grass. Plant communities found in eastern South Dakota include Indian grass and switchgrass (*Panicum virgatum*). The extreme eastern part of the project area is located within the historic range of the tall-grass prairie; however, this area is now mostly agriculture (McGregor et al. 1986).

#### 2.1.3 Wyoming

The Powder River Basin can be characterized as a vast grasslands area, despite large expanses of sagebrush. Grasslands may be defined as areas with less than 50% sagebrush cover. Shrubland is defined as areas of greater than 50% sagebrush cover (Zeimans and Walker 1977). Most of these communities are currently used as rangeland.

Grasslands provide habitat for numerous species such as mountain plovers, swift fox, and black-footed ferrets. Even though some areas of grasslands in the Great Plains have been plowed for winter wheat production, large tracts of grass and shrub-dominated vegetation remain.

Mixed grass prairie communities are located in eastern Wyoming. Blue grama and buffalo grass dominate short-grass prairie. Mixed grass prairies can be divided into several types, but are all characterized by needle-and-thread grass (*Hesperostipa comata*), western wheatgrass (*Agropyron smithii*), threadleaf sedge (*Carex filifolia*), needleleaf sedge (*Salix interior*), junegrass (*Koeleria* spp.), Indian rice grass (*Oryzopsis hymenoides*), prickly pear cactus (*Opuntia polyacantha*), scarlet globe mallow (*Sphaeralcea coccinea*), fringed sagewort (*Artemisia* spp.), and various species of milkvetch (*Astragalus* spp.) and locoweed (*Oxytrapis lambertii*). Mixed-grass prairies in the foothills are typically dominated by bluebunch wheatgrass (*Agropyron spicatum*) and sideoats grama (*Bouteloua curtipendula*).

On sandy soils, prairie sandreed (*Calamovilfa longifolia*), sand dropseed (*Sporobolus heterolepis*), sand sagebrush (*Artemisia* spp.), and yucca (*Yucca glauca*), may be common. Saline soils lead to an increased abundance of such halophytes as alkali sacaton (*Puccinellia airoides*), four-wing saltbush (*Atriplex canescens*), greasewood (*Sarcobatus vermiculatus*), and inland saltgrass (*Distichylis stricta*) (Zeimans and Walker 1977).

In addition to short- and mixed-grass prairie, there are also small tracts of tall-grass prairie on sandy soils or along streams. Common tall-grass prairie species include big bluestem, Indian grass, prairie dropseed, sideoats grama, and switchgrass (McGregor et al. 1986).

## 2.2 WOODLANDS

### 2.2.1 Minnesota

Southeastern, central and parts of western Minnesota contain deciduous forests, including the Maple-Basswood Forest, Oak Forest, and Lowland Hardwood Forest. The Maple-Basswood Forest is common from southeastern to west central Minnesota. Basswood (*Tilia americana*) and sugar maple (*Acer saccharum*) are common canopy species in this forest community. The Oak Forest is most common on dry to dry-mesic sites. Northern pin oak (*Quercus ellipsoidalis*) and white oak (*Quercus velutina*) dominate this forest. The Lowland Hardwood Forest communities can be found in areas of abundant soil moisture. Most are located along floodplains. Common Lowland Hardwood Forest species include silver maple (*Acer saccharinum*), cottonwood (*Populus deltoides*), and elm (*Ulmus* spp.) (MDNR 1999).

### 2.2.2 South Dakota

On the eastern edge of the proposed project area closer to the Black Hills, scattered woodlands of ponderosa pine (*Pinus ponderosa*), limber pine (*Pinus flexilis*), and juniper (*Juniperus* spp.) occur on outcrops of sandstone, limestone, scoria and shale bedrock resistant to grass growth.

### 2.2.3 Wyoming

The woodlands that exist in eastern Wyoming consist of ponderosa pine and occur on outcrops of sandstone and shale. Pine grows in many places throughout the Powder River Basin. In most cases, the trees will be scattered on the ridgetops only, with the sloping hillsides being covered with juniper and grass or sagebrush. Ponderosa pine is the major species, although some areas do contain limber pine. Shrubs contained in the understory are skunkbush sumac (*Rhus trilobata*), creeping juniper (*Juniperus horizontalis*), rocky mountain juniper (*Juniperus scopulorum*), and western snowberry (*Symphoricarpos occidentalis*) (Zeimans and Walker 1977).

The herbaceous layer is mostly grasses such as green needlegrass (*Stipa viridula*), sandberg bluegrass (*Poa secunda*), prairie junegrass (*Koeleria cristata*), stoney hills muhly (*Muhlenbergia cuspidata*), or side oats grama. Sites with coarser soils will contain bluebunch wheatgrass, little bluestem (*Andropogon scoparius*), or porcupine needlegrass (*Stipa spartea*). Silver sage (*Artemesia cana*) may also be present (Zeimans and Walker 1977).

## 2.3 RIPARIAN AREAS

### 2.3.1 Minnesota

The rivers in the proposed project area include the Mississippi, South Fork Whitewater, Zumbro, Straight, Minnesota, Blue Earth, Little Cottonwood, and Cottonwood. Floodplain forests occur within the floodplains of the major rivers and are well developed on floodplains in the Mississippi and Minnesota rivers. The Silver Maple Subtype, a type of floodplain forest, occurs mainly in the deciduous forest-woodland zone along the Minnesota and lower Mississippi rivers. Silver maples (*Acer saccharinum*) dominate the tree canopy in this subtype, and are present in the subcanopy and shrub layer as well. Green ash (*Fraxinus pennsylvanica*), cottonwood, and American elm (*Ulmus americana*) are often present in the canopy, but are most common as seedlings and saplings. The understory of the Silver Maple Subtype is

open, with less than 25% cover by tree seedlings and saplings. Herbs in the nettle family, including wood nettle (*Laportea canadensis*) and clearweed (*Pilea pumila*), dominate the groundlayer. Woody and herbaceous climbers are common, especially wild grape (*Vitis riparia*), wild cucumber (*Echinocystis lobata*), burcucumber (*Sicyos angulatus*), groundnut (*Apios americana*) and hog-peanut (*Amphicarpa bracteata*). In southern Minnesota, silver maple, black willow (*Salix nigra*), and cottonwoods are common canopy dominants. Scattered individuals or patches of river birch (*Betula nigra*), American elm, slippery elm (*Ulmus rubra*), green ash (*Fraxinus pennsylvanica*) and swamp white oak (*Quercus alba*) are also common in stands in southern Minnesota (MNHP 1993).

### 2.3.2 South Dakota

There are several floodplains in the proposed project area associated with the Cheyenne, Belle Fourche, and Missouri rivers. Riparian shrub and forest areas occur along floodplains of each of these larger rivers. Common species include cottonwood and willow (*Salix* spp.). Eventually, with succession due to dam control these forests will change to green ash with choke-cherry (*Prunus virginiana*) and silver buffalo berry (*Shepherdia argentea*) as understory. Sand and gravel bars located in the rivers and streams provide excellent sites for the establishment of cottonwoods and various species of willow.

### 2.3.3 Wyoming

Riparian communities in Wyoming are generally restricted to floodplains. The floodplains are typically arranged in terraces where former floodplains have become elevated because of stream downcutting and deposition. Terraces rarely flood and instead create an environment that can be transitional between the riparian and upland landscapes. Salt accumulation is often higher on terraces than in the floodplain. Consequently, halophytes, such as greasewood, typically occur on terraces, whereas the less salt-tolerant silver sage and Wyoming big sagebrush (*Artemisia tridentata*) occur in the lower floodplain that receives more water. Riparian areas provide habitat for wintering and nesting raptors and nesting areas for shorebirds such as least terns and piping plovers. In these riparian landscapes, meandering of the channel is typical except where rivers have cut canyons through the landscape or where steeper gradients lead to the formation of braided streams (Zeimans and Walker 1977).

Riparian forest vegetation occupies lower stream terraces and point bars as well as sandy islands within stream channels. It includes plains cottonwood trees (*Populus sargentii*), sandbar willow (*Salix interior*) and peach-leaf willow. Shrubby riparian habitats are usually dominated by willows and sedges. They are most often distributed along streams and near seeps (Zeimans and Walker 1977).

This zone is delineated as far as possible on the accompanying map. The presence of cottonwoods was the prime determinant for mapping purposes, but it should be kept in mind that the lush bottomland grasses, without cottonwoods, would extend up the small intermittent drainages. The presence of cottonwood signals a definite streamside community even if water is not flowing on the surface for most of the year. Three cottonwood species grow in the Powder River Basin: Plains cottonwood, narrow leafed cottonwood (*Populus angustifolia*), and lance leafed cottonwood (*Populus acuminata*). Under the cottonwoods, rocky mountain juniper may grow. Another more infrequent member of the community is the boxelder (Zeimans and Walker 1977).

Also along the stream channel grow willows such as the peach leafed willow (*Salix amygdaloides*), sandbar willow, and coyote willow (*Salix exigua*). The understory can be quite dense and complex containing such species as wild rose, chokecherry, sand cherry (*Prunus pumila*), bearberry (*Arctostaphylos uva-ursi*), currents (*Ribes* spp.) and other fruiting trees and bushes (Zeimans and Walker 1977).

Stream channel grasses tend to be taller and more lush than those on the surrounding hills. They include prairie cordgrass (*Spartina pectinata*), tufted hairgrass (*Deschampsia caespitosa*), basin wildrye (*Elymus*

*cinereus*) and Canada wildrye (*E. canadensis*), slender wheatgrass (*Agropyron trachycaulum*), bearded wheatgrass (*Agropyron caninum*), western wheatgrass, inland sedge (*Carex interior*), and mat muhly (*Muhlenbergia richardsonis*). Some forbes present are licorice (*Glycyrrhiza* spp.), aster (*Aster* spp.), golden pea (*Thermopsis* spp.), starwort (*Stellaria* spp.), virginsbower (*Clematis* spp.) and yarrow (*Achillea* spp.) (Zeimans and Walker 1977).

## 2.4 WETLANDS

There are several types of wetlands typically associated with the geographic region that the proposed project area traverses. These include palustrine, lacustrine, and riverine wetlands. Palustrine wetlands have emergent vegetation like cattails and bulrushes, or less aquatic plants such as smartweed (*Polygonum* spp.) and spikerush. Lacustrine systems include artificial impoundments or reservoirs, where riverine systems include rivers and streams. Semipermanently and permanently flooded palustrine and riverine wetlands are also associated with river drainages throughout the proposed project area.

Wetlands provide several environmental benefits within the proposed project area. Environmentally, wetlands provide important breeding and resting habitat for neotropical migrants and waterfowl, habitat for fish and amphibians, retention of flood flows and water purification. About 90% of wildlife use wetlands daily for water, cover, or foraging. Additionally, plants such as Ute ladies'-tresses orchid (*Spiranthes diluvialis*) are limited to very specific wetland areas as discussed in Section 3.12 of Part 3.

### 2.4.1 Minnesota

Southern and Western Minnesota contain the Prairie Pothole Region. Prairie potholes are shallow, water-holding depressions of glacial origin (Sloan 1972). These wetlands have great variability in size, depth and water permanence (Sloan 1972, Stewart and Kantrud 1972). The potholes range from seasonally flooded basins that hold water for only a few weeks to wet prairies, marshes, and permanent water. These temporary water holding basins frequently have an abundance of plant seeds and invertebrates, which makes them ideal feeding and resting areas for migrating waterfowl and shorebirds.

The dominant emergent species in Minnesota wetlands are usually graminoids such as cattails (*Typha* spp.), common reed grass (*Phragmites australis*), bulrushes (*Scirpus* spp.), rushes (*Juncus* spp.), spike rushes (*Eleocharis* spp.), and some umbrella sedges (*Cyperus* spp.) (MNHP 1993).

### 2.4.2 South Dakota

Seepage associated with distribution and application of irrigation water has increased wetland acreage, especially on the Bureau of Reclamation (BOR) irrigation projects in western South Dakota (primarily Belle Fourche and Angostura Reservoirs). In many parts of South Dakota, flowing artesian wells modified for livestock watering or fish production have increased wetland areas. In the unglaciated western part of South Dakota, stock ponds and dugouts constructed for livestock watering constitute an important part of area wetlands. About 60% of the wetlands in western South Dakota occur in association with stock ponds (McGregor et al. 1986).

### 2.4.3 Wyoming

Wet meadow vegetation occupies the lowest terrace level along stream channels as well as areas along vegetated channel banks. Wet meadow vegetation occurs along all sections of Antelope Creek and along major tributaries. This type of vegetation generally lacks an overstory of trees or shrubs, and forb and grass species dominate. Species include sedges, Baltic rush (*Juncus* spp.), alkali bluegrass (*Poa juncifolia*), prairie cordgrass (*Spartina pectinata*), saltgrass (*Distichylis stricta*), spikerush (*Eleocharis* spp.), and smooth scouring rush (*Juncus* spp.). The wetter meadows have shrub components consisting of willow (*Salix* spp.), and some of the drier meadows have a sagebrush (*Artemisia* spp.) component (Zeimans and Walker 1977).

## **2.5 SOILS**

### **2.5.1 Minnesota**

Soils in Minnesota have formed in loess and underlying glacial till. These soils are extremely fertile and productive. They can be classified into three taxonomic orders; 1) entisols, 2) alfisols, and 3) mollisols. Entisols are found in underdeveloped landscapes such as alluvial basins and steep slopes. Surface texture is mainly silt loam. Alfisols are found in upland areas of nearly level to moderately steep slopes. Organic matter is present in surface horizons. Surface texture is silt loam. Mollisols are similar to alfisols, but with larger accumulation of organic matter. Surface texture is silt loam.

### **2.5.2 South Dakota**

The most productive soils in South Dakota are chernozems (black earth soils), which cover most of the state east of the Missouri River. These soils are rich in humus. Soils in western South Dakota are formed from weathering of sedimentary rocks. Soils in this region are classified as 1) entisols, 2) alfisols, 3) mollisols and; 4) aridisols. Aridisols are found on slopes and are formed from weathered shale. Some riparian zones have relatively stable soil profiles because the creek or river is at the bottom of a V-shaped valley incised in bedrock. In contrast, riparian mosaics on the alluvial soils of broad floodplains change rapidly due to disturbance by flooding. Additionally, freshly deposited alluvium along the channels of meandering streams form sandbars, usually composed of sand or gravel (Glass 1993, Blackstone 1988).

### **2.5.3 Wyoming**

The soils of the Powder River Basin are typical, semiarid grassland soils found throughout the Western United States. Organic material is slow to accumulate due to the climate and vegetative conditions. The soils are residual in nature (ie: developed in place) and most were formed from weathered sandstone and shale bedrock materials. Alluvial soils are also present and are developed along stream bottoms from material derived from highland areas and deposited along the streams. These alluvial soils usually contain a fair amount of organic matter (Atlantic 1976a:14). The soils in the proposed project area are generally shallow and not well developed because of an abundance of erodible soil types, and a dry, relatively cool environment that slows soil development. Soils that are deeper occur at the lower topographic elevations in the proposed project area because of more rapid soil development or downslope sediment accumulation.

## PART 3

# POTENTIALLY IMPACTED SPECIES

### 3.1 BLACK-FOOTED FERRET

Though never common, black-footed ferrets once ranged over most of west-central North America as far north as Alaska. Historically, its range was almost identical to the range of three species of prairie dogs: black-tailed, Gunnison's, and white-tailed (USFWS 1988a). The slaughter of prairie dogs in the early 1900's, agricultural cultivation, and sylvatic plague have severely reduced the range and abundance of prairie dogs, which nearly resulted in the extinction of the black-footed ferret (USFWS no date-a). The black-footed ferret was listed as endangered in March 1967<sup>1</sup> under a law that preceded the ESA.

The black-footed ferret is nocturnal and extremely cryptic (Whitaker 1980). It lives in arid prairies in proximity to prairie dog colonies. Black-footed ferrets feed primarily on prairie dogs (90%) and utilize their burrows for dens. Large prairie dog towns are needed to support viable populations of ferrets. However, numerous small prairie dog towns may support ferrets, if the ferrets can move easily between them.

Four to five young are born in May or June. The young stay in the burrow until they are about 6 weeks old. By September the young have become increasingly solitary. Sexual maturity is reached at age 1 to 1.5 years. Life expectancy is probably less than 5 years (USFWS 1988a).

By 1972 the black-footed ferret was thought to be extinct. However, in 1981 a dog killed a black-footed ferret on a ranch near Meeteetse, Wyoming, which led to the discovery of a small ferret population. The population was closely monitored from 1982 to 1984. An advisory board was established in 1982 to determine what actions were needed to encourage the recovery of the ferret. Mark and recapture surveys and radio telemetry data estimated the population as 88 in 1983 and as 129 in 1984. In September 1984, the board suggested that a captive breeding program be established (USFWS 1988a).

In October 1985, six ferrets were taken into captivity for breeding. During the fall of 1986 and the spring of 1987, the last of 18 known wild ferrets were taken from the wild and placed into captivity (USFWS 1988a). A captive-breeding program was started at Sybille Canyon, Wyoming (now known as the National Black-footed Ferret Conservation Center). The original goal of the program was to establish 240 breeding adults in captivity and continue their return to the wild (USFWS no date-b).

A taskforce was put together in 1996 to make recommendations to USFWS. The long-term goal is to establish 10 free ranging populations of black-footed ferrets that each has a population made up of 30 or more breeding adults. By the year 2010, it is hoped that 1,500 free-ranging black-footed ferrets will live in the wild (USFWS 1988a, USFWS no date-b).

#### Project Area

According to available information compiled by Clark (1978), the Wyoming Game and Fish Department (WGFD) (Kinter and Martin 1992), USFWS (Jobman and Anderson 1991), Wyoming Natural Diversity Database (WNDDDB 1999), and South Dakota Natural Heritage Database (SDNHDB 1998), historical evidence exists for black-footed ferrets within the project area. In South Dakota the following sightings or physical evidence exists for black-footed ferrets: 3 in Custer County, 2 in Fall River County, 5 in Pennington County and 3 in Shannon County. In Wyoming the following sightings or physical evidence exists for black-footed ferrets: 16 in Campbell County, 14 in Converse County, 6 in Niobrara County, and

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<sup>1</sup> Federal Register, March 11, 1967, 32(48):4001.

6 in Weston County. Some of these sightings were rated by the various sources as "confirmed," "positive," or "probable" but most are farther than 20 miles from any project alternative. Those closer than 20 miles are listed in Table 3-1. Only three of these, (records of 2 skulls and 1 skin), are unquestionably physical evidence.

The USFWS's recent Biological Opinion in regards to the Continental Divide/Wamsutter II proposed project states that since Wyoming is relatively unique in retaining vegetation and wildlife communities largely unchanged from pre-settlement times extant populations of black-footed ferrets may still exist (USFWS 2000). Therefore, there is the chance of the discovery of an extant population of the species.

County, State	Year Observed	Location T R Sec	Description or Sec	Distance from Alternative	Observation Rating
Pennington, SD	1921	3S 12E	17	1 mile, B & C	Not Rated /1
	1927	2S 9E	08	11 miles, C 6 miles, D	Not Rated /1
Fall River, SD	1980	near the city of Edgemont		<2 miles, B & C	Probable /2
	1983	9S 3E	07	<1 mile, B	Confirmed /2
Custer, SD	1984	6S 9E	17-20	1 mile, B & C	Probable /2
	1988	55N 5E	26	13 miles, C	Probable /2
Weston, WY	1895	near the city of Newcastle		<2 miles, D	Positive, Skin /3
	1910	near the city of Newcastle		<2 miles, D	Positive, Skull /3
	1930	18 mi. southwest of Upton on Deep Water Creek		18 miles, D	Positive /3
	1920-35	46N 65W	22-23	15 miles, D	Not Rated /1
	1972	5 miles S. Hwy 16 by South Dakota		4 miles, D	Not Rated /1
	1972	5 mi. south of Hwy 16 on South Dakota border		2 miles, D	Positive /3
Niobrara, WY	1976	36 miles N. Lusk, Hwy 85		12 miles, B & C	Confirmed /2
Crook, WY	1930	Four Horse Creek, south of Moorcroft		6-15 miles, D	Positive /3
	1971	Middle-Osage Comm. Pasture		> 10 miles, D	Positive /3
	1973	3 miles east Crook Co. line, 8 mile north I-90.		8 miles, D	Probable /3
	1977	Hwy 14 near Keyhole Res.		8 miles, D	Not Rated /1
Converse, WY	1972	41N 69W	21	<1 mile, B	Possible/Probable /1
	1979	41N 70W	32	<1 mile, B & C	Positive, Skull /1, 3
	1983	39N 71W	SE 1/4	10 miles, B & C	Possible/Probable /1
Campbell, WY	1972	41N 69W	26	1 mile, C	Possible/Probable /1
	1974	43N 73W	05	16 miles, B & C	Confirmed /2
	1976	43N 70W	30	1.5 miles, B & C	Possible/Probable /1
	1976	43N 73W	24	13 miles, B & C	Possible/Probable /1
	1981	43N 72W	02	6.5 miles, B & C	Probable /1
	1981	43N 72W	11	9 miles, B & C	Confirmed /2
	1986	43N 70W	30	1 mile, B & C	Possible/Probable /1
	1987	45N 71W	23	5.5 miles, C	Possible/Probable /1
Notes:	1 Ratings of Possible/Probable not differentiated by Kinter and Martin, 1992 2 Ratings of Confirmed or Probable provided by USFWS 1981 and update (Jobman and Anderson, 1991) 3 Ratings of Positive or Probable from Clark, 1980 3 Information with no observation ratings from South Dakota Natural Heritage Database, 1998				

Experimental populations of black-footed ferrets have been reintroduced to federally managed lands in South Dakota from 1994 through 1997. In 1996 reintroduction began in the Conata Basin/Badlands which are within portions of the BGNG and Badlands National Park. All black-tailed prairie dog colonies within the reintroduction area were mapped. Data obtained from the mapping indicates lower densities (number of prairie dogs per acre) on the periphery of core reintroduction areas (USFWS unpub. info.). Therefore, densities of black-tailed prairie dog colonies are low on BGNG that would be closest to the proposed project area.

The Black-footed Ferret Recovery Implementation Team has identified Thunder Basin National Grasslands (TBNG) as a high-priority reintroduction site for black-footed ferrets. The USFS has worked with The Nature Conservancy to block up USFS ownership in the vicinity of Rosecrans, south of the alternatives for this project. These blocked-up USFS lands would form the core of the TBNG's ferret reintroduction site. If the site is successful, ferrets may expand to prairie dog towns that would be crossed by the alternatives.

### 3.2 PIPING PLOVER

The piping plover is one of six belted plovers found in North America. Piping plover populations have declined dramatically since the early 1900's (USFWS 1994a). Decline of piping plovers in the Missouri River basin has been related to construction of dams and reservoirs that alter water flows making nesting habitat unavailable, river channelization that alters river hydraulics that likewise adversely affect nesting sites on unvegetated islands and sandbars, bioaccumulation of selenium, and human recreational use of nesting areas during the breeding period (Dinsmore 1983, Kruse et al. 1993). These population declines prompted USFWS to list the piping plover under the ESA in December 1985<sup>2</sup>. Piping plovers breeding on the Great Plains were listed as threatened, while those breeding on the Great Lakes were listed as endangered.

Piping plover arrive on the breeding grounds between mid-April and mid-May (Prindiville-Gaines and Ryan 1988, Haig and Oring 1985, Wiens 1986). The piping plover utilizes sandbars, sand pits, and gravel pits for nesting. Sandbar habitats used by this species are transient and dependent on the dynamic forces of the river. Sandbars used for nesting change from year to year as erosion and deposition by the river break down and reform sandbars, or vegetation encroaches. Additionally, during some years, no sandbars are exposed because of high flows. Some plovers have adapted to these changing conditions by shifting to sand pits along the river. While these areas do not necessarily provide optimal nesting habitat, they do provide the opportunity for some individuals to successfully reproduce when river sandbars are unavailable.

For sandbars to be successful nesting sites, they must be free of vegetation and surrounded by sufficient water to limit access by predators. Therefore, an optimal flow regimen must exist which is sufficiently high to create new sandbars in spring, low enough during the breeding season to expose the sandbars, but not so low that the sandbars become joined to adjacent terrestrial habitats. The magnitude of the optimal flow regimen may differ from year to year depending on the location, shape, and height of the sandbars created previously.

Males and females begin courtship and construct several nest scrapes which consist of shallow depressions scratched in the sand or gravel and frequently lined with small pebbles or shells (Haig 1992, USFWS 1994a). Eggs are laid beginning in May. One egg is laid per day for four days. Incubation lasts for 25 to 31 days (Wilcox 1959, Cairns 1977, Prindiville 1986, Wiens 1986, Haig and Oring 1988). Eggs hatch from late May to mid-June. Chicks are precocial (capable of moving around on their own soon after hatching) and able to leave the nest and begin feeding themselves within several hours (USFWS 1994a). Broods generally remain within the parents' territory. Chicks fledge between 21 and 35 days (Haig and Oring 1988, Wilcox 1959). Plovers generally start departing the breeding grounds in mid-July and are gone by the end of August (Wiens 1986).

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<sup>2</sup> Federal Register, December 11, 1985, 50(238):50726-50734.

Piping plovers feed on a variety of invertebrates that they capture by picking and gleaning. Food taken includes worms, insects, crustaceans, mollusks, beetles, and grasshoppers (Bent 1929, Lingle 1988). Foraging activity generally occurs within a few inches either side of the water's edge.

### Project Area

The piping plover only occurs in the project area during the breeding and nesting season. They have been recorded near Pierre, South Dakota on islands or sandbars in the Missouri River (SDNHDB 1998). Searches for piping plovers along the Cheyenne River and Lake Oahe revealed their presence but none were found nesting on sandbars in the Cheyenne River during 1986 and 1987 (Dirks et al. 1993a). Searches were conducted for piping plovers along 20 miles of the Cheyenne River in Custer and Pennington counties in 1994, but no evidence for the species was found (Hetlet 1994). Likewise, no piping plovers were observed during a survey conducted along approximately 28 miles of the Cheyenne River between Spring Creek and Wasta, South Dakota on June 26, 1999. Water flow rates measured at a USGS gauging station downstream of Wasta, South Dakota (Table 3-2) indicated that suitable nesting habitat for piping plovers was unavailable on this section of the river in 1999. USGS flow rate data indicates that suitable nesting habitats on sand bars and islands on the Cheyenne River have probably been submerged and/or scoured during the month of May, when the birds usually begin nesting, in 10 out of 15 years between 1983 and 1998.

<b>Table 3-2</b>			
<b>River Flow Data at 3 USGS Gauging Stations on the Cheyenne River, South Dakota</b>			
(in vicinities where interior least terns were observed nesting compared to river flows recorded before, during and after a survey for interior least terns and nesting piping plovers on June 26, 1999)			
Interior Least Tern Observed Nesting Date	River Flows (Cubic Feet per Second) at Gauging Stations (with USGS Station Numbers) on the Cheyenne River, South Dakota		
	06423500-Downstream from Wasta, Pennington County	06438500-Near Plainview, Ziebach County	06439300-Near Cherry Creek, Ziebach County
June 7, 1986 /1	150	No data	486
June 1986 /2	1338 (June 1986 average)	No data	2,022 (June 1986 average)
August 4, 1987 /1	77	No data	339
June 26, 1988 /3	82	No data	204
June 30, 1995 /3	1,120	2,500 (estimated value)	No data
June 26, 1997 /3	876	No data	No data
June 27, 1997 /3	841	No data	No data
<b>This Survey, Before and After:</b>			
June 22, 1999	3,500 (350 = median for date)	7,500 (925 = median for date)	No data
June 26, 1999	2,300 (250 = median for date)	4,250 (700 = median for date)	No data
June 28, 1999	1,880 (9300 = median for date)	3,780 (675 = median for date)	No data
Notes: /1 data from South Dakota Ornithologists' Union, 1991, nesting on lower Cheyenne River near mainstream of Missouri River.			
/2 observation reported by Michael Melius, Hermosa, South Dakota nesting on Cheyenne River island between Rapid Creek.			
/3 data from SDNHDB, 1999, nesting on Cheyenne River in northern Pennington County near Haakon County.			

### 3.3 WHOOPING CRANE

The whooping crane is found only in North America. Historically, its range extended from the Arctic coast south to central Mexico and from the Rocky Mountain region in Utah eastward to the Atlantic coast; but only two natural populations exist today (Tesky 1993). However, recent management actions in the United States and Canada have resulted in a gradual increase in their numbers. The ESA of 1973 (16

USC, 1531-1534;87 Stat. 884) resulted in the establishment of the Whooping Crane Recovery Team and development of the 1994 Whooping Crane Recovery Plan. The whooping crane was listed as threatened in 1967 (32 FR 4001) and as endangered in 1970.

Fall migration begins in September, and whooping cranes normally migrate in small flocks of less than 10. After spending about six months in their wintering grounds, they return to their nesting grounds in the north. Whooping cranes use a variety of habitats during migration such as croplands for feeding and riverine habitat for roost sites (Lingle et al. 1991). Cranes roost on submerged sandbars in wide unobstructed channels that are isolated from human disturbance (Armbruster 1990). Habitats utilized by whooping cranes in South Dakota include marshes, wet meadows, and grain fields near water. Similar habitats are utilized in Wyoming during the cranes' migrations (Ashton and Dowd 1991, Dorn and Dorn 1990). Large palustrine wetlands are also used for roosting and feeding during migration. Whooping cranes' diet includes crustaceans, amphibians and invertebrates (Allen 1952).

Today, most whooping cranes migrate from Wood Buffalo National Park in Canada to Aransas National Wildlife Refuge on the Texas coast. This route passes southeastward through northeastern Alberta, south central Saskatchewan, northeastern Montana, western North Dakota, western South Dakota, central Nebraska and Kansas, west central Oklahoma, and east central Texas. Scattered occurrences have been reported in adjacent states and provinces (USFWS 1994b).

In December 1993, there were approximately 261 whooping cranes. Until several years ago, whooping cranes occurred in western Wyoming (Ritter 1990). These birds were from the experimental flock from the Grays Lake National Wildlife Refuge in Idaho, which was initiated in 1975 as an experiment to cross-foster whooping crane eggs in nests of sandhill cranes (USFWS 1986a). The cross-fostering program was discontinued in 1989 and there are only 2 birds from the Grays Lake flock known to be alive in 1999. The wild populations consist of the Aransas/Wood Buffalo population, the only self-sustaining natural wild population; the reintroduced Florida population in the Kissimmee Prairie; and the Rocky Mountain population (USFWS 1994b). The largest captive population of 41 birds, including nine breeding pairs, is located at the Patuxent Research Refuge near Laurel, Maryland.

The need for protection and restoration of prime habitat along the migration corridors was identified by the USFWS in 1981. River management plans along the Platte River have been implemented to protect and maintain roosting sites in wetland meadows and marshes adjacent to the river channel. Human activity near these sites is restricted during the migration periods. Protection of instream flows in areas where impoundments and dams are present has been addressed, and studies of the effects of disturbance have been conducted in the wintering areas. The reduction in mortality for whooping cranes may be achieved through the minimization of the risks of chemical spills near critical habitat and reduction of the risk of collision with utility lines and fences. Utility lines are the principle known cause of loss during migration (USFWS 1994b). Collisions with utility lines are known to have accounted for the death or serious injury of at least 19 whooping cranes since 1956. Restrictions of detrimental human activities such as construction periods, aircraft altitude and flight path, and recreation in habitat areas may also provide benefit.

### **Project Area**

The migration path of the Aransas/Wood Buffalo flock that nests in northern Canada and migrates to the Gulf of Mexico passes through central and western South Dakota, mainly in the Missouri River basin (Binkley and Miller 1988, Ashton and Dowd 1991). From 1957 through 1990, there have been 5 confirmed sightings of whooping cranes from Beadle County, 14 sightings from Hughes County, 20 sightings from Stanley County, 2 sightings from Haakon County, 7 sightings from Jackson County, and 5 sightings from Pennington County (USFWS unpub. data).

During the spring migration in 1988, a small group (4 adults and 1 young) of whooping cranes was observed feeding in a grain field north of Rapid Creek approximately 3 miles from Alternative D in Pennington County. A small group (5) of whooping cranes were observed a week later approximately 11

miles southeast of Wall in eastern Pennington County (SDNHDB 1999). The following year, 1989, one whooping crane was seen flying 3 miles east of Ellsworth Airforce Base in Pennington County during fall migration (USFWS 1989).

### 3.4 INTERIOR LEAST TERN

The interior least tern is one of three subspecies of New World least terns. The interior least tern was formally listed as federally endangered in 1985<sup>3</sup>. The decline of interior least terns throughout their breeding range in the Mississippi and Missouri river basins has been related to construction of dams and reservoirs that alter water flows making nesting habitat unavailable, river channelization that alters river hydraulics that likewise adversely affect nesting sites on unvegetated islands and sandbars, and human recreational use of nesting areas during the breeding period (Erwin 1983). In addition, bioaccumulation of contaminants in adults, particularly selenium derived from seleniferous soils and shales along the Missouri River, may be sufficient to cause embryo death or deformities (Dinsmore 1983, Kruse et al. 1993).

The interior least tern is a migratory species, breeding along large rivers within the interior of the United States. Interior least terns return to breeding and nesting areas from late April to early June (Faanes 1983, Hardy 1957, Wilson 1984, Wycoff 1960, Youngworth 1930).

Interior least terns nest in colonies on sand islands and sandbars in rivers. A key factor for nest site selection is continuous exposure of the site above water for at least 100 days during the nesting period from mid-May to the end of August (Smith and Renkin 1993). Suitable nesting areas contain little vegetation (less than 10 percent), with the vegetation present being less than four inches tall (Dirks et al. 1993a). Because nests are on the ground near water level they are vulnerable to flooding following natural precipitation pulses but also during hydroelectric dam operational water releases. Nests are also susceptible to avian and mammal predators and human disturbance (Rimmer and Deblinger 1992, Mayer 1993, Kruse et al. 1993, Schwalbach et al. 1993, Smith and Renkin 1993). Interior least terns also nest on alkaline flats where they are also susceptible to flooding, predators, and human disturbance (Koenen et al. 1996).

Interior least terns excavate shallow scrapes in sand, soil or gravel (Carreker 1985). Suitable nesting habitat has apparently been created at pits created by sand and gravel mining operations adjacent to the Platte River in Nebraska (Sidle and Kirsch 1993). Once natural vegetation regrowth or reclamation occurs on abandoned pits, their suitability for nesting by interior least terns diminishes (Sidle and Kirsch 1993).

Interior least terns begin laying eggs around the end of May. If a nest of eggs or chicks is lost, the pair may nest a second time. The second nesting may occur as late as mid- to late July (Lingle 1988). Average clutch size is approximately 2.5 eggs per nest (Lingle 1988). Eggs are incubated for 17 to 31 days (Faanes 1983, Hardy 1957, Moser 1940, Schwalbach 1988, Cairns 1977). Chicks are precocial, but depend on their parents for food and care until fall migration (Massey 1972). Chicks fledge at approximately 21 days of age (Kirsch 1990). Parents and chicks will remain in the area of nesting colonies until departing for the winter. By early September, terns have usually left the colonies for southern wintering areas (Bent 1921, Hardy 1957, Stiles 1939).

Sandbar habitats used by interior least terns for nesting are ephemeral; thus, the terns are highly susceptible to loss of nests, eggs, or chicks because of high water. Although nesting usually is initiated during high flow periods causing terns to nest on higher areas of sandbars, Lingle (1988) found flooding to be the main cause of nest loss in riverine habitats. In some areas and during abnormally high or late spring flows, artificial habitats such as gravel and sandpits may provide the only suitable nesting habitat in an area (Lingle 1988). While these areas provide suitable nesting habitat, they require adult birds to fly

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<sup>3</sup> Federal Register, May 28, 1985, 50(102)21784-21792.

greater distances to forage and may subject nests and chicks to a greater likelihood of loss from predators or human disturbance (Lingle 1988, Lackey 1994).

In addition to the presence of suitable nesting substrate, nesting sites are selected for presence of food fish such as shiners, suckers, killifish, gizzard shad and sunfish (Erwin 1983, Carreker 1985). Occasionally, crustaceans, insects, mollusks, and annelids may be taken (Whitman 1988). Foraging areas are usually near nesting sites; however, terns may travel several miles to fish (Talent and Hill 1985).

### **Project Area**

Interior least terns occur in South Dakota. Successful nesting has been documented on the Missouri and Cheyenne rivers (Dirks et al. 1993b). Initiation of nesting in South Dakota may be dependent on water levels, occurring earlier during years with low water levels. Nesting usually begins in late May and chicks fledge by mid-July (Schwalbach et al. 1993).

Suitable nesting sites and foraging areas apparently occur along the Cheyenne River near its confluence with the Missouri River at Lake Oahe (Dirks et al. 1993a), upstream from Pierre, South Dakota. Two records of interior least terns on the Missouri River in the vicinity of Pierre, Hughes County and Fort Pierre, Stanley County were provided by SDNHDB (1998) but there were no records in the project area. Biologists with the BGNG conducted a search for interior least terns along 20 miles of the Cheyenne River in Pennington and Custer counties in 1994 but no evidence of the birds was found (Hetlet 1994). However, interior least terns were observed nesting on an island in the Cheyenne River in 1986, approximately midway between the confluence with Rapid Creek and Wasta, South Dakota (Melius 1999).

From 1988 through 1997, least terns have nested along the Cheyenne River in Pennington County several miles downstream from where the river is crossed by Alternative D (SDNHDB 1999). There are sand and gravel bars in the Cheyenne River where it parallels Alternatives B and C upstream from the Alternative D crossing but most are small and some partially covered with vegetation and may not be suitable for nesting (Hetlet 1994).

Interior least terns are known to nest along the Cheyenne River, upstream from its embayment at Oahe Reservoir but their occurrence farther upstream where the river parallels the proposed project is unknown. Mud, sand and gravel bars in the Cheyenne River have been mapped from 1:2400 scale aerial photographs in the area where the river is adjacent to both alternatives. The suitability of those sites for nesting by interior least terns has not been determined. Inundation frequencies prior to and during the nesting period, amount of vegetation cover established on bars, local abundance of food fish (fish less than 4 inches long) and concentration of predators all affect site suitability as nesting habitat (Carreker 1985). Minimum habitat areas required for nesting sites are unknown but small colonies of interior least terns have nested on a 0.22-acre island and 0.45-acre sandbar (Carreker 1985). These areas are larger than most potential nesting sites in the project area.

As part of this project a survey for interior least terns and piping plovers was conducted in June 1999 along approximately 28 miles of the Cheyenne River between Spring Creek and Wasta, South Dakota. No interior least terns were seen. During the survey, USGS water flow data on the river at Wasta, South Dakota (Table 3-2) indicated flows of 2,300 cubic feet per second (cfs). Many of the sand and gravel bars in the survey area had been under water several days prior to the survey, probably on June 22, 1999 when flows reached 3,500 cfs.

Comparisons of flows on the June 26, 1999 survey date with flows recorded at the Wasta USGS gauging station and other stations downstream on the Cheyenne River indicate much lower water flows on dates when least terns had been observed nesting in the past. Thus, during the June 26, 1999 survey water levels may have been too high for nesting to be initiated or sustained successfully.

### 3.5 TOPEKA SHINER

The Topeka shiner once inhabited waterways in Kansas, Iowa, Minnesota, Missouri, Nebraska, and South Dakota. The fish now occupies less than 10 percent of its original geographic range. Remaining populations inhabit small tributaries in several states including Minnesota and South Dakota (Tabor 1998, American Rivers 1997, USFWS no date-c). Much of the decrease has occurred over the past 25 years. The decline is due to increased sedimentation, eutrophication (enrichment of water in dissolved nutrients as in phosphates and often shallow with a seasonal deficiency in dissolved oxygen) and the introduction of piscivorous (fish eating) fish. Increased sedimentation and eutrophication can be attributed to human activities such as agriculture, water use, impoundment of water in lakes, construction of watering ponds, urban development, and highway construction (Cross and Collins 1995, American Rivers 1997). The USFWS designated the Topeka shiner as endangered under the Endangered Species Act on December 15, 1998<sup>4</sup>.

The Topeka shiner inhabits clear, clean open pools near headwaters of streams having bottoms composed of sand, gravel or rubble. Most of these streams are perennial; however, some streams may cease flowing during dry seasons, but permanent pools are maintained by the percolation of water through the streambed. The fish feed on midge larvae, aquatic insects, and other organisms found on stream bottoms (Cross and Collins 1995, American Rivers 1997, Pflieger 1975).

The green sunfish is the most common predator inhabiting the Topeka shiner range. Introduction of game fish such as largemouth bass, crappie, white bass, northern pike, and channel catfish may affect the shiner during drought periods when the fish seeks refuge in impoundments or permanent stream pools occupied by these introduced fishes (Tabor 1998).

The Topeka shiner is reported to spawn over green sunfish and orange-spotted sunfish nests. Males establish territories around nests. Spawning occurs from late June to August with the young maturing in one year. Their life span is between two to three years (Cross and Collins 1995). Little else is known regarding breeding habits and development (Tabor 1998).

Land use practices, maintenance of altered waterways, and continuing tributary impoundment and channelization represent the greatest existing threats to the Topeka Shiner. Additionally, over-grazing of riparian zones and the removal of riparian vegetation diminish a watershed's ability to filter sediments, organic wastes, and other impurities from the stream system resulting in increased sedimentation and eutrophication (Manci 1989).

#### Project Area

In Minnesota the Topeka shiner has been found in Flandreau and Spring creeks (Lincoln County) which are crossed by the existing rail line. The fish may also inhabit tributaries to these creeks. The MNHDB has a 1973 record of the species from Lincoln County approximately 1 mile from the DM&E existing right-of-way. In South Dakota, as recently as 1997, the shiner was found in two streams in Brookings County (Tabor 1998). Recent collections of Topeka shiners have been made in the Big Sioux River watershed that includes the Medary, Deer, Sixmile and North Deer creeks and their tributaries in Brookings County. In Beadle and Kingsbury counties the Topeka Shiner has been recorded from the James River water shed which includes Middle Pearl and Pearl creeks and their tributaries (USFWS 1998 unpub. data). Cain Creek in Beadle and Hand counties is a potential Topeka shiner stream. Additionally, there are tributaries to Topeka shiner streams that cross the proposed project area in Hand County, South Dakota. This species was collected in the late 1960's from the Cheyenne River embayment at Lake Oahe. However, none have been reported in collections made since then.

No surveys have been completed for Topeka shiners near any of the new railroad alternatives in South Dakota.

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<sup>4</sup> Federal Register, December 15, 1998, 63(240):69008-69021.

### 3.6 PALLID STURGEON

Despite being one of the largest freshwater fish in North America, the pallid sturgeon was not described as a species until 1905 (Forbes and Richardson 1905). Before that, pallid sturgeon were considered to be a different color morph of shovelnose sturgeon. The relatively late recognition of the sturgeon as a distinct species may have been because it was never very common. Pallid sturgeon are only rarely captured and the species may be close to extinction (USFWS 1993a). On September 6, 1990, the pallid sturgeon was listed as federally endangered (55 FR 36647).

Pallid sturgeon are a big river species. The fish is generally noted as a species of the Missouri River and its major tributaries (Keenlyne 1989). They occur within the mainstem of the Mississippi River downstream from its confluence with the Missouri River, the mainstem of the Missouri River as far upstream as Fort Benton, Montana, and the lower stretches of several major tributaries to these rivers. River stretches where pallid sturgeon have been recorded generally include turbid, swift waters with firm sand or gravel substrate (Bailey and Cross 1954).

USFWS (1993a) estimated sexual maturity for males to occur between ages 5 and 7. Females were estimated to begin egg development at 7 to 9 years of age, with sexual maturity not being reached until between age 15 and 20. Pallid sturgeon are believed to spawn only once every several years.

Pallid sturgeon are assumed to spawn between March and July, depending on location (Forbes and Richardson 1905, Gilbraith et al. 1988, Keenlyne and Jenkins 1993, Keenlyne 1996). Eggs are very adhesive and attach to bottom substrates and remain unattended until hatching (Keenlyne 1996, Gilbraith et al. 1988). Upon hatching, the larvae are buoyant and active and disperse with the current (Moyle and Cech 1982).

#### Project Area

Records of pallid sturgeon were provided by SDNHDB (1998). The records were from the Missouri River in Pierre, Hughes and Stanley counties (Lake Sharpe) between 1967 and 1989. The sturgeon is native to the Missouri and Mississippi rivers and persists in Lake Sharpe, South Dakota (Dryer and Sandvol 1993). Since pallid sturgeons prefer main channels of large, turbid rivers where they feed on fish and aquatic insects along the bottom (Kallemeyn 1983), suitable habitat does not exist in the vicinity of the alternatives paralleling the Cheyenne River. No evidence from any surveys exists for their occurrence in the Cheyenne River (Hampton 1998, USFWS 1993a)

### 3.7 AMERICAN BURYING BEETLE

The American burying beetle once ranged throughout the entire eastern United States and portions of extreme southeastern Canada (Anderson and Peck 1985). Historically, these areas were covered by vast expanses of mature deciduous forest. Portions of the species' western range also included tall- and short-grass prairie. The range and occurrence of the American burying beetle have declined significantly. Habitat loss (Anderson and Peck 1985) and forest fragmentation (NGPC 1995) appear to be the most likely reasons for decline. Because of the dramatic decline of the species and the probable extinction of the species throughout much of its historic range, the American burying beetle was listed as federally endangered in July 1989<sup>5</sup>.

American burying beetles are active from late April through September (USFWS 1991). The American burying beetle is nocturnal and is generally active only when nighttime temperatures exceed 60 degrees Fahrenheit for several consecutive days. After emerging, adults set out in search of suitable carrion for brood production (Scott and Traniello 1989).

American burying beetles are the largest member of the genus and therefore capable of using larger carrion than other members of the genus. Optimal carrion size is 3.5 to 7.0 ounces (USFWS 1991a). A pair of American burying beetles will bury a carcass and the female will deposit her eggs above it. After

<sup>5</sup> Federal Register, July 13, 1989, 54(133):29652-29655.

the eggs hatch, the larvae fall from the egg chamber onto the carcass and as they grow, the parents actively feed or assist the larvae in feeding themselves (Milne and Milne 1976, Wilson and Fudge 1984, Fetherson et al. 1990).

The adults remain with their brood until the larvae pupate. At that time the young burrow into the soil. The pupated larvae emerge in 48-60 days as adults capable of reproducing. Adults emerging early in the season may successfully reproduce during the remaining year (Lomolino et al. 1994). Others will overwinter until the following season (USFWS 1991a, Kozol et al. 1988).

Preferred habitat for the American burying beetle has not been determined (Ratcliffe and Jameson 1992, Raithel 1991, Kozol et al. 1988). However, a variety of habitats have been suggested including riparian woodlands with rich humus, mixed agricultural land, and grasslands (Ratcliffe and Jameson 1992, Raithel 1991, Jameson and Ratcliffe 1989). However, grasslands are seldom used as breeding habitats because litter is nearly absent and grassland soils are often compacted, making carcass burial difficult (Lomolino and Creighton, 1996). American burying beetles have been found in the sandhills of northcentral Nebraska where there is sufficient carrion, even though sandy soils may make carcass burial difficult (Ratcliffe and Jameson, 1992). Recent studies in Oklahoma and Arkansas suggest American burying beetles prefer mature upland forest with low shrub growth, followed by grasslands (Lomolino et al. 1994). These studies also seem to indicate that the American burying beetle is more of a generalist, using a wider range of habitats than other burying beetles and that the presence of appropriate soil for carcass burial was more important than habitat type.

### **Project Area**

The SDNHDB (1998) has a record of the beetle's occurrence in Brookings County within 1 mile of the existing railroad; however, no date was given. The USFWS lists records of the species occurrence in Brookings, Haakon, and Union counties for 1946. There is also an historic record (no date) of specimens collected near Nowlin and Haakon counties (Backlund and Marrone 1997, Lomolino et al. 1995). That collection site is the most western extension of the beetle in South Dakota and was apparently within the immediate vicinity of the existing rail line in the Bad River floodplain.

The existing railroad passes through nearly 51 miles of herbaceous rangeland and 4 miles of deciduous forest lands in South Dakota. These may be suitable for American burying beetles as well as the nearly 228 miles of right-of-way that traverses croplands and pastures in the state. Although the new railroad alternatives are farther west than the known range of the species (recent searches in Badlands National Park and Wind Cave National Park were unsuccessful - Backlund 1999), each alternative would affect herbaceous rangeland, forested (cottonwood) wetlands, croplands and pastures in varying amounts.

Given the proximity of collections in Cherry County, Nebraska and that the beetle is a strong flier and can travel long distances in search of carrion, they may be present in suitable habitats (USFWS 1991). At this time, any habitat in South Dakota with significant humus and/or topsoil suitable for burying carrion is considered potential beetle habitat.

### **3.8 MINNESOTA DWARF TROUT LILY**

Minnesota dwarf trout lily occurs in woodland habitat, adjoining floodplains dominated by elm and cottonwood and on rich slopes where maple and basswood are dominant. It is the only plant species known to be endemic to Minnesota and probably has always been considered rare. It requires rich, moist areas in undisturbed forests. It is a glacial relict only occurring in Steele, Rice, and Goodhue counties in Minnesota. With increased urban sprawl, additional lands being used for agriculture and logging, the few remaining populations could be threatened. It is believed that the plant establishes new populations by becoming uprooted during high waters and being carried downstream. Conversion of floodplains to croplands reduces the possibility of establishment of new populations downstream and can erode the soils

and increase siltation in the areas the lily now inhabits (Sather no date). Minnesota dwarf trout lily was listed as a federally endangered species on March 26, 1986<sup>6</sup>.

The plant's unusual reproduction strategy could be another factor contributing to its rareness. The Minnesota dwarf trout lily almost never produces seeds. It grows from an underground bulb. Population size increases when the underground stem of a flowering plant produces a single offshoot runner bearing a new bulb. Because only a small proportion of plants flower in any given year, only about one-tenth of all plants actually produce offspring (Sather no date).

It is believed that the Minnesota dwarf trout lily evolved from the white trout lily shortly after the last glaciation. Floodwaters could have uprooted the plants from their original location along the Cannon River and redeposited them downstream. This would account for the plant's limited geographical range at elevations of 960 to 1000 feet within the Cannon River watershed and tributaries (Sather no date).

### **Project Area**

Most colonies of the Minnesota dwarf trout lily occur along a 7.5 miles stretch of the Straight and Cannon Rivers near Faribault, Minnesota. This area is approximately 15 miles upstream of the proposed construction in Owatonna, Minnesota.

### **3.9 HIGGIN'S EYE PEARLY MUSSEL**

The Higgin's eye pearly mussel is a freshwater mussel. The present distribution of Higgin's eye pearly mussel is the St. Croix River, Wisconsin River and upper Mississippi River from Pool 6 to Pool 20. The mussel is found in waters of the states of Minnesota, Wisconsin, Iowa and Illinois. Between 1890 and 1920, Higgin's eye pearly mussel was one of many species heavily harvested to make mother-of-pearl buttons and pins. Higgin's eye pearly mussels initially may have declined due to commercial harvesting. However, impoundments, decreasing water quality, and channel dredging are the primary factors responsible for recent declines (USFWS 1983). Contemporary threats include pollution from agricultural and industrial runoff. By 1982, data indicated that this species had undergone a 53% decrease in its known range (USFWS 1997a). On June 14, 1976, it was listed as federally endangered (41 FR 24064).

The mussel inhabits areas of swift current, where it buries itself in mud-gravel bottoms. Depth of water is approximately 15 feet. The mussel leaves only the edge of its shell and its feeding siphons exposed. Reproduction requires a stable, undisturbed habitat, and a sufficient population of sauger and freshwater drum that play host to Higgin's eye larvae. When the male discharges sperm into the current, females downstream siphon in the sperm in order to fertilize their eggs, which they store in their gill pouches until the larvae hatch. The females then expel the larvae. Those larvae which manage to attach themselves to the gills of a host fish grow into juveniles with shells of their own. At that point, they detach from the host fish and settle into the streambed. They may live up to 50 years (USFWS no date-d).

### **Project Area**

The mussel is found in the Mississippi River downstream from the Twin Cities and some of its larger northern tributaries. Although several collections of mussels have been made in the Minnesota River, South Fork of Zumbro River, and Straight River (tributary to the Cannon River) in the vicinity of the proposed project, no Higgin's eye pearly mussels have been collected in the project area (MNHBD 1998).

### **3.10 WINGED MAPLE LEAF MUSSEL**

The historic range of the winged maple leaf covered eleven states in the north central portion of the United States; however, it has been eliminated from 99% of this range (Eldridge 1991). Siltation, chemical and agricultural pollution, and the damming of rivers to create reservoirs have eliminated the winged maple leaf from areas where it once existed. Currently the only known population exists in the St. Croix River, Wisconsin. The population in the St. Croix appears to be very small and localized, making it prone to stochastic (random) disturbances. Additional threats to the remaining population include

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<sup>6</sup> Federal Register, March 26, 1986, 51(58):10521-10523.

expanded agricultural or modified land use, toxic substance spills, point discharges of harmful chemicals, low water levels, and large recreational boat traffic. It was listed as a federally endangered species by the USFWS on June 20, 1991 (56 FR 28349).

The winged maple leaf mussel is found in shallow gravel bars or riffles of medium to large clear-water rivers and streams. It buries itself in the gravel, sand or mud with only its feeding siphons exposed. Reproduction requires a stable, undisturbed habitat and a sufficient population of fish hosts to complete the mussel's larval development. When the male discharges sperm into the current, females downstream siphon in the sperm in order to fertilize their eggs, which they store in their gill pouches until the larvae hatch. The females then expel the larvae. Those that manage to find a fish host to clamp onto by means of clasping valves, grow into juveniles with shells of their own. At that point they detach from the host fish and settle into the streambed. An adult mussel may live up to 50 years (USFWS 1997b).

### **Project Area**

The only known extant population in the Midwest occurs in the St. Croix River, Wisconsin. This population occurs just below the St. Croix Falls Dam and is approximately 125 miles upstream of Winona, Minnesota (Hornbach et al. 1996).

### **3.11 KARNER BLUE BUTTERFLY**

The Karner blue butterfly occupies oak barren/savanna habitats where wild lupine grows. The plant serves as host for several of the insect's larval stages. Historically, the butterfly occurred in a narrow band extending from eastern Minnesota, across portions of Wisconsin, Illinois, Indiana, Michigan, Ohio, Canada, Pennsylvania, New York, Massachusetts, and New Hampshire. Since 1992 it has been extirpated from Ohio, Pennsylvania, and Massachusetts. The species decline can be attributed to the loss of habitat because of suppression of wildfires, development, and clearing of land for agricultural purposes (USFWS no date-e, Mitchell and Carnes no date). Today the butterfly is restricted to a few isolated spots where lupine is present (Scheider 1998). The butterfly was listed as endangered on December 14, 1992<sup>7</sup>.

The butterfly produces two broods a year. In April, larvae hatch from the eggs that over-wintered from late summer of the previous year. The larvae enter the pupa stage, and emerge from their pupas as adult butterflies during the end of May and early June. The newly hatched adults mate and lay their eggs during June on or near wild lupine plants. The eggs hatch within a week and the larvae feed on the lupine for about three weeks. The larvae then pupate and emerge as adult butterflies in July. This generation will mate and lay eggs that won't hatch until the following spring (Scheider 1998). Winter snowpack protects the eggs from freezing; therefore, the range of the Karner blue only overlaps with the range of wild lupine where there is sufficient winter snowpack (USFWS no date-e).

Declining habitat suitability and size has accelerated the rate of localized population extinction. Additionally, Givnish et al. (1988) estimate that maximum dispersal distance for colonization of unoccupied habitats is approximately 0.5 miles. Since optimal habitats have become increasingly fragmented due to succession and alteration, colonization has become increasingly difficult (Shuey 1997).

### **Project Area**

The butterfly has been recorded from the Whitewater Wildlife Management Area, Winona County in Minnesota. This area is approximately 3 miles from the existing DM&E rail line to be rebuilt. In 1998 the Minnesota County Biological Survey (MCBS) surveyed DM&E's existing line in Minnesota. No federally listed species were found during the survey. (However, due to the unique nature of working within active railroad rights-of-way, combined with the relatively short duration of the project, several important issues regarding data interpretation and limitations must be noted: 1) Time constraints precluded MCBS botanists from timing surveys in order to maximize the chances of observing rare species. Therefore, unobserved rare species may occur in these rights-of-way and not be reflected in the data, 2) Safety concerns of railroad companies strictly forbade field staff to cross the railroad track, except

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<sup>7</sup> Federal Register, December 14, 1992, 57(240):59236-59244.

at public crossings; and 3) Time constraints precluded field staff from essentially conducting the survey twice. As a result, the survey effort rarely included both sides of the track. Although the inventory could not be repeated, botanists observed both sides of the right-of-way and took general notes, which are available with other survey data, and 4) There is great variation in the width of the railroad rights-of-way. The above limitations prevent area calculations from MCBS data therefore the 1998 results are linear (MDNR 1999). Additionally, information provided from the MNHDB did not report wild lupine occurring in the proposed project area. Since no wild lupine was reported from either source, it is doubtful that Karner blue butterflies exist within the proposed project area.

The existing route in southeastern Minnesota partially coincides with oak savanna/barrens, so Karner blue butterflies could be present or in the vicinity of the existing railroad (Aaseng et al, 1993). There are approximately 4.9 miles of existing railroad that coincide with deciduous forests in Winona County but, if no wild lupine occurs within the right-of-way, it is doubtful that Karner blue butterflies exist within the proposed project area.

### 3.12 UTE LADIES'-TRESSES ORCHID

Suitable Ute ladies'-tresses orchid habitat is becoming uncommon with increased disturbances to stream systems and conversion of land to urban uses. Total population of Ute ladies'-tresses has declined to approximately 20,500 individuals. Geographic distribution of the plant includes the eastern Great Basin of western Utah and adjacent Nevada, the Colorado River drainage of eastern Utah, the eastern slope of the Rocky Mountains in southeastern and central Wyoming, south central Idaho and Montana. In eastern Wyoming, the orchid is known from Converse, Goshen, Laramie and Niobrara counties. It has not been recorded from South Dakota (Intermountain Ecosystems 1998). Ute ladies'-tresses orchid was listed as a federally threatened species in February 17, 1992<sup>8</sup>.

The orchid flowers from late July through August depending on location and climatic conditions. However, the plant may not flower every year. *Spiranthes magnicamporum*, another species of *Spiranthes*, has been reported to bloom as rarely as once in every 20 years (Magrath 1973). Bumblebees are the main pollinators. Fruits of the orchid appear during late August through September (Dresler 1981, Sheviak 1984, Sipes et al. 1993, USFWS 1995a).

Ute ladies'-tresses orchid generally occurs between 4,300 to 7,000 feet in seasonally moist soils such as wet meadows, old stream channels, and seeps (Stone 1993). Suitable habitat includes open vegetation that is not densely overgrown or overgrazed. However, it may occur in grazed pastures with introduced grasses or in heavily disturbed sites that have been revegetated. The plant is flood tolerant and prefers well-drained soils with high moisture content, such as fine silt/sand to gravel and cobbles. It is not tolerant of extremely saline/alkaline soils (> 8.0 pH) or of long term standing water (USFWS 1995a). Plants often occur in clumps of two or more. White sweetclover (*Melilotus alba*), arrowgrass (*Triglochin* spp.), creeping bentgrass (*Agrostis stolonifera* L.), and baltic rush (*Juncus* spp.) are some of the plant species that appear to occur with the orchid in Wyoming (Hazlett 1996).

#### Project Area

Searches for Ute ladies'-tresses along the alternatives were conducted in South Dakota and Wyoming in September 1998. Because access to potential sites on private lands was restricted, only 22 sites could be adequately evaluated with four considered potential habitat for the species (Intermountain Ecosystems 1998). The four sites were at Hay Canyon South and Dry Creek in South Dakota (Fall River County) and at Lodgepole and School creeks in Wyoming (Weston County) (Table 3-3). Additionally, much of the proposed project area in the range of Ute ladies'-tresses orchid is substantially below 4,300 feet. The report prepared for the survey is included as Appendix

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<sup>8</sup> Federal Register, January 17, 1992, 57(12):2048-2053.

Site Name	USGS Quad/Legal Description	NWI Maps	Plant Association	Direct Access to Row	Potential Habitat
Box Elder Creek	Wasta, SD T1N, R14E, NE4, S31	R2UBA	cottonwood, sandbar willow	No	No
Spring Creek	Scenic SW, SD T2S, R12E, SW4, S29; NE4, S31	PEMA	cottonwood, sandbar willow	No	No
Battle Creek	RedShirt, WY T3S, R10E, NW4, S31	PEMA	cottonwood, American elm	No	No
French Creek	Fairburn NE, SD T5S, R9E, S5	PEMCH	no data	No	No data
Cheyenne River at Hay Canyon	Smithwick, SD NE/T7S, R8E, S1	R2UBG	cottonwood, sand vcrbar willow, cordgrass	Yes	No
Hay Canyon North	Smithwick, SD NE/T7S, R8E, S12	PEMC	cordgrass, cattails	Yes	No
Hay Canyon South	Smithwick, SD NW/T8S, R8E, SE4, S2	PEMA, PUBH	cattails, bulrush, cordgrass	No	Yes
Sand Creek	Smithwick, SD T8S, R8E, NW4, S31	PEMC	cottonwood, plum	No	No
Horsehead Creek	Lone Well Creek East, SD T9S, R7E, S21	PEMA, PUB	cottonwood, red ash, cordgrass	No	No
Dry Creek	Lone Well Creek West, SD T9S, R6E, NE4, S29	PEMA	cattails, cordgrass, threesquare bulrush	Yes	Yes
Hat Creek	Hepner, SD T9S, R4E, SW4, S25	PEMA	cottonwood, cordgrass, wildrye	Yes	No
Plum Creek	Rumford, SD T9S, R4E, S31	PABFH	no data	No	No data
Red Canyon Creek	Edgemont, SD T8S, R3E, NW4, S29	PEMC	cottonwood, sand sagebrush	No	No
Beaver Creek	Twenty One Divide, WY T7S, R1E, S16	PEMC	cordgrass	No	No
Bobcat Creek	Riverview, WY T40N, R61W, S9	PEMA	sagebrush	No	No
Alkali Creek	Little Alkali Creek, WY T40N, R62W, S4	PEMA	greasewood, alkali sacaton	Yes	No
Lodgepole Creek	The Nose East, WY T42N, R64W, SW4, S32	PEMC	baltic rush, threesquare bulrush, cordrush	Yes	Yes
Lion Creek	Darlington Draw East, WY T42N, R67W	PEMA	sagebrush	No	No
Piney Creek	Darlington Draw West, WY T42N, R68W, S2	PEMA	sagebrush, cottonwood	No	No
Little Thunder Creek	Piney Canyon NW, WY T43N, R69W, SW4, S30	PEMA, PABFH	cordgrass	No	Low
School Creek	Piney Canyon NW, WY T42N, R69W, NW4, NE4, S6	PABFH	cordgrass	Yes	Yes
West Fork of Beckwith Creek	Piney Canyon SW, WY T41N, R69W, NE4, S8	PEMB, PABH	sagebrush	No	No
Black Thunder Creek	Open A Ranch, WY T44N, R70W, S14	PABFH	sagebrush	No	Low
East Fork Coal Creek	Rough Creek, WY T45N, R70W, S11	PEMAH	no data	No	No data
Dry Creek	Saddle Horse Butte, WY T47N, R70W, S29	PEMAH	no data	No	No data
Belle Fourche River	Saddle Horse Butte, WY T47N, R70W, S30	PEMAH, PEMCH	no data	No	No data
Caballo Creek	Saddle Horse Butte, WY T48N, R71W, S35	PEMCH, PABFH	no data	No	No data

### 3.13 PRAIRIE BUSH-CLOVER

Prairie bush-clover is one of twelve North American bush-clovers. It inhabits dry open areas in glaciated regions of Illinois, Iowa, Minnesota, and Wisconsin (Smith 1981). The plant grows on soils that are usually well drained. The largest populations of the plant occur in southwestern Minnesota and northwestern Iowa. Contributing factors to the decline of Prairie bush-clover include agricultural development, highway expansions, pipeline easements, and herbicide use (USFWS 1988b). The plant was listed as a federally threatened species on January 9, 1987<sup>9</sup>.

Prairie bush-clover is found in coarse soils on north-facing slopes of 10-15 degrees. The plant tolerates disturbance well, occurring on rights-of-way and places which have been exposed to fires (Fernald 1950, Gleason and Cronquist 1963, Gleason 1952, Sather 1986, Clewell 1966a, Smith 1981). Prairie bush-clover reproduces by seed. Both chasmogamous (cross-pollinating) and cleistogamous (self-pollinating) flowers are produced (Clewell 1966b, Sather 1986). It appears reproductive success is more dependent on self pollinating flowers, than the pollinator dependent flowers (Sather 1988). Germination of the clover occurs from mid-May to mid-July with formation of leaf buds forming from late May through late August. Flowering occurs from July through August. Fruiting is from mid-August through September with seed dispersal occurring from mid-September through to the following summer (Sather 1986, Smith and Sather 1986). The pollinator is unknown at this time.

#### Project Area

Prairie bush-clover is known to occur in Brown, Dodge, Olmsted and Redwood counties in Minnesota. It has been recorded as recently as 1997 in Dodge County within 1 mile of the existing line (MNHDB 1998). In Brown County, between 1988 and 1992, eight sites were reported. Two of these sites were on cut-banks of former Chicago and Northwestern railbeds and another site found in 1992 was where DM&E's existing tracks intersect the Chicago and Northwestern track. These 3 sites are within MDNR Cottonwood Prairie Scientific and Natural Area, approximately 3 miles southwest of Springfield in Brown County (MNHDB, 1998).

The MCBS inventoried the entire DM&E rail line in Minnesota (278 miles) for prairie fragments and rare features. Thirty-six total miles of prairie within the right-of-way were identified. Prairie bush-clover was not found within DM&E right-of-way during the 1998 survey. (However, due to the unique nature of working within active railroad rights-of-way, combined with the relatively short duration of the project, several important issues regarding data interpretation and limitations need to be addressed: 1) time constraints precluded MCBS botanists from timing surveys in order to maximize the chances of observing rare species. Therefore, unobserved rare species may occur in these rights-of way and not be reflected in the data, 2) Safety concerns of railroad companies strictly forbade field staff to cross the railroad track, except at public crossings. Time constraints precluded field staff from essentially conducting the survey twice. As a result, the survey effort could rarely include both sides of the track. Although the inventory could not be repeated, botanists could observe both sides of the right-of-way and took general notes, which are available with other survey data, and 3) There is great variation in the width of the railroad rights-of-way. The above limitations prevent area calculations from MCBS data therefore the 1998 results are linear (MDNR 1999)).

### 3.14 LEEDY'S ROSEROOT

Leedy's roseroot is found in six locations in Minnesota and New York. Four populations are found in Filmor and Olmsted counties, Minnesota and the other two are found in upstate New York. Only one of the six populations occurs on Minnesota public land. The plant was listed as a federally threatened species on April 22, 1992<sup>10</sup>.

Leedy's roseroot is found on limestone cliffs. Cracks in the limestone lead to underground caves where groundwater seeps to the surface and cool air provides a cool and wet environment for the species. The

<sup>9</sup> Federal Register, January 9, 1987, 52(6):781-785.

<sup>10</sup> Federal Register, April 22, 1992, 57(78):14649-14653.

caves often connect with sinkholes above ground and usually uphill. In Minnesota ground water contamination is the greatest threat to the continued survival of the plant (USFWS 1993b, Harrison 1992). The source of contamination can be from application of fertilizers and pesticides being applied to nearby fields and lawns and through filling or dumping in sink holes adjacent to the cliffs (USFWS 1998, Harrison 1992). Flowering occurs in early June. Bees and syrphus flies appear to be the pollinators (Clausen 1975). The seeds are wind dispersed.

### **Project Area**

The plant has been recorded growing high on limestone cliffs along the Root River in Olmsted County. All Minnesota sites are found in drainages of the Root and Whitewater rivers at elevations between 900 and 1,240 feet. Neither river is in the proposed project area. Additionally, no suitable habitat for the species has been identified within the proposed project area.

### **3.15 WESTERN PRAIRIE FRINGED ORCHID**

The western prairie fringed orchid historically occurred throughout central North America. It was found within the western Central Lowlands (U.S.), eastern Great Plains (U.S.), and Interior Plains (south-central Canada) (Lobeck 1957, Brownell 1984). In the United States, western prairie fringed orchids are known historically from 81 counties in 8 states. These states are North Dakota, South Dakota, Minnesota, Iowa, Nebraska, Kansas, Missouri, and Oklahoma. Currently, the species is believed extirpated from South Dakota and Oklahoma, and has been significantly reduced in areas of occurrence in Iowa, Kansas, Missouri, and Nebraska. Although the species has been found in 28 new counties since 1970, it has been found to no longer occur in approximately 75 percent of the original counties of occurrence (USFWS 1995b). The majority of populations of western prairie fringed orchids in the United States are located in the Red River Valley of North Dakota and Minnesota. Decline in the species is due to several factors such as conversion to cropland, overgrazing, intensive hay mowing, and draining of wetlands (Harrison 1989). The western prairie fringed orchid was listed as a federally threatened species by the USFWS on September 28, 1989<sup>11</sup>.

Flowering occurs sporadically. A plant may flower several consecutive years, not flower for several years, or flower at random years over its lifetime. Exactly what stimulates flowering is unknown. However, it is proposed that flowering may be caused by burning (Bowles 1983, Bowles and Duxbury 1986), above average precipitation, and/or the number of growing degree days (Pleasants 1994). Flowering may last for up to 3 weeks, with individual flowers lasting up to 10 days.

Throughout its range the western prairie fringed orchid occurs in a variety of habitats. These include mesic portions of tallgrass prairie, sedge meadows, loess prairies, hay meadows and at the edge of wetlands. Prairies where the orchid is known to occur are dominated by typical tallgrass species which include big bluestem, little bluestem, and Indian grass. Within these areas, western prairie fringed orchids usually occur in the wetter areas where tufted hairgrass and switchgrass are common. Sedge meadow communities include sedges, rushes, and willows (USFWS 1995b). Although tallgrass prairie and sedge meadows appear to be the preferred habitat, western prairie fringed orchids have been found in non-climax communities. These communities include borrow areas, abandoned fields, and along roadways. These occurrences may indicate that some disturbance in an area, such as fire or intense grazing, may be necessary for orchid establishment (USFWS 1995b).

### **Project Area**

The orchid was previously recorded from Dodge and Nicollet counties in Minnesota, although a search of the MNHDB did not result in any records of the western prairie fringed orchid occurring in the proposed project area (1998). Additionally a survey by the MCBS in 1998 along the existing DM&E rail line did not result in occurrences of the orchid (1999).

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<sup>11</sup> Federal Register, September 28, 1989, 54(187):39857-39863.

### 3.16 BALD EAGLE

The bald eagle is a large bird of prey. It occurs throughout North America and once maintained breeding populations in Canada, Alaska, and 45 of the lower 48 states. It is the only sea eagle regularly occurring on this continent (AOU 1983). Bald eagle populations declined in the nineteenth and twentieth centuries because of hunting, trapping, habitat loss, development, mercury poisoning and organochlorine insecticides (Grier et al. 1983). In some areas of the historic breeding and nesting range, disturbance caused by human development may prevent current and future eagle nesting (Murphy 1965, Retfalvi 1965, Juenemann 1973, Weekes 1974, Grubb 1976, Anthony and Isaacs 1989), as well as result in abandonment of wintering areas (Stalmaster and Newman 1978, Knight and Knight 1984, Smith 1988).

The decline in bald eagle numbers prompted the species listing as federally endangered in 1978. Through research, conservation, management, and protection, the species population within the lower 48 states is increasing, as has its breeding range (Federal Register 1999). Since 1963, when the earliest census of the bald eagle's breeding population was taken (450 nesting pairs), there has been a ten-fold increase (USFWS 1995c). Improvements in the species status led to it being down-listed to federally threatened in July 1995 (60 FR 36010). On July 6, 1999 the USFWS proposed to remove the bald eagle from the List of Endangered and Threatened Wildlife.

Bald eagles may live as long as 30 years (Grier et al. 1983) with sexual maturity being obtained at 4 to 6 years of age. Mortality of juvenile birds is thought to be high and dependent on available winter habitat and the severity of winter weather. After surviving one or two winters, continued survivorship of immature eagles becomes more likely (Sherrod et al. 1977).

Once sexually mature, bald eagles may still not breed for several years. Bald eagles tend to use the same area for nesting in successive years and often use the same nest. Nests may reach considerable size, measuring several feet in diameter and depth and weighing several hundred pounds. As a result, bald eagles generally nest in large trees with strong branches or on rock cliffs (Sherrod et al. 1977).

A minimum of one square mile of essential habitat around a nest is considered necessary to successfully raise young (Grier et al. 1983). Nesting activities begin in late winter or early spring, depending on the latitude. One, two or occasionally, three eggs are laid. Fledging of chicks occurs approximately four months after eggs are laid.

The bald eagles' primary food source is fish (Grier et al. 1983). Both live and dead fish are eaten. Because of the bald eagles reliance on fish, nesting occurs in proximity to large water bodies, including lakes, rivers, and oceans.

Wintering bald eagles are found throughout the United States, but are most abundant in the Midwest and west. Each year, thousands of eagles winter in Utah, Colorado, South Dakota, Nebraska, Kansas, Oklahoma, and Missouri. These seven states account for over 90 percent of the bald eagles recorded during midwinter surveys in the Midwest and west, and nearly half the eagles counted nationwide (Grier et al. 1983).

Suitable wintering areas require an abundant and easily available food supply and cover for protection from the cold. Specific food items consumed by wintering bald eagles vary by geographic area and availability of items (Steenhof 1978). In western Wyoming, bald eagles consume carcasses of mule deer and domestic livestock (Jenkins 1982) including big game killed by trains and vehicles (Reeve unpub. data). Importance of big game and livestock carrion to wintering bald eagles in the Powder River Basin of northeast Wyoming have also been documented by Anderson and Patterson (1988). Thus, wintering

eagles may spend considerable time away from water in search of food. At night, bald eagles will select areas offering protection from the wind and severe weather. These areas are often dense stands of trees in areas where the topography helps afford protection from the elements.

Disturbance of a roost may lead to abandonment of the site (Steenhof 1976, Hansen et al. 1981, Keister 1981). Skagen (1980) reported that almost 43% of wintering eagles along the Skagit River flushed when approached within 500 meters by boats, people or vehicles. Bald eagle nesting territories in the Greater Yellowstone Ecosystem (GYE) and elsewhere have been abandoned as a result of human activities (GYE Bald Eagle Working Team 1983). One study indicated that nesting bald eagles flushed from nests when approaching humans were an average of 1,500 feet from the nest (Fraser et al. 1979).

### **Project Area**

The bald eagle is a winter and nesting resident in the proposed project area. It is known to use lands adjacent to the project area for feeding, perching, and roosting. In Minnesota along the existing line the MNHDB reported nesting bald eagles in Winona County in 1997 along the spillway in the Upper Mississippi River Wildlife and Fish Refuge approximately 8 miles south of the city of Winona. Another report was recorded in 1994 along the Minnesota River north of Mankato in Nicollet County.

USFWS has monitored bald eagle communal roosts and winter concentration areas along the Missouri River, upstream and down from the DM&E bridge crossing at Pierre, South Dakota. Three nocturnal roosts (Suiter roost, Riverbank roost and Compton roost) are present within 0.25 and 0.75 mile of the existing line as it crosses the Missouri River on the west bank (USFWS 1991b). Concentrations of wintering eagles have been documented between DM&E's existing bridge at Pierre, South Dakota and Oahe Dam approximately 7 miles downstream of where the existing rail line veers from the Missouri River to pass along Medicine Knoll Creek (USFWS 1991).

Biologists with BGNG conducted ground surveys for bald eagles wintering along the Cheyenne River in South Dakota since 1994 (Hetlet 1995, 1996a, 1997a, 1998). Those survey results are provided in Table 3-4 and indicate considerable variation between years. However, distributions of bald eagles recorded in December of each year, 1994-1997, generally coincide with bald eagles observed during aerial surveys reported here for February 1999.

Available data indicates that bald eagles vacate the middle reaches of the Cheyenne River in South Dakota, at least between Edgemont and Wasta, South Dakota by late March. USFWS conducted an aerial survey of the Cheyenne River on March 26, 1998 (Peterson USFWS-Lake Andes National Wildlife Refuge, Lake Andes, SD unpub. data). Bald eagles were seen near Angostura Reservoir and on the lower reach of the Cheyenne River near its confluence with the Missouri River but none were observed on the middle reach. Similarly, USFS conducted surveys in May 1996 and 1997 along the same portions of the Cheyenne River that were included in December surveys but no bald eagles were seen either year (Hetlet 1996b, 1997b).

Data provided by the Wyoming Natural Diversity Database (WNDDDB) listed several sightings of bald eagles within TBNG (WNDDDB 1999). Bald eagles have attempted to nest on TBNG at least twice in the past, but both nests were unsuccessful (Byer 1992 unpub. data). Communal roosts in the vicinity of alternatives have been documented on TBNG by USFS (Byer USFS-TBNG unpub. data). Many of these have also been documented on the WGFD WOS as well as other observations of bald eagle winter concentration areas (Table 3-5). With few exceptions, habitats associated with those sites are coniferous woodlands, consistent with results of studies that demonstrate the thermal protection provided by conifers such as ponderosa pine.

Aerial surveys for nesting bald eagles and other raptors were conducted from April 11-13, 1999 along the new railroad alternatives B and C in South Dakota and Wyoming and the rebuild section from Wall, South Dakota (Pennington County) to Blunt, South Dakota (Hughes County). Ground surveys were conducted from April 22-28, 1999 along the remainder of the rebuild section from Winona, Minnesota to Blunt, South Dakota. Only one pair of bald eagles was seen perched near a nest on private land along the Cheyenne River in Wyoming (Weston County) on April 11; however, no follow-up survey was conducted. The site was more than 1 mile from any new railroad alternative.

Results of field surveys conducted in February 1999 along the alternatives are provided in Table 3-6. Most observations were of single eagles perched in deciduous cottonwood trees adjacent to rivers. All eagles that were observed along creeks and rivers were associated with stretches of ice-free water; no bald eagles were seen where water was frozen.

Table 3-4

Observations of Bald Eagles During Winter Surveys

Conducted by BGNB along the Cheyenne River in South Dakota from 1994 through 1997

December 1994			December 1995			December 1996			December 1997		
Number Seen <sup>1</sup>	T R Sec	Distance to Nearest Alternative (miles) <sup>2</sup>	Number Seen	T R Sec	Distance to Nearest Alternative (miles)	Number Seen	T R Sec	Distance to Nearest Alternative (miles)	Number Seen	T R Sec	Distance to Nearest Alternative (miles)
1 imm	3S 12E 19NE	2.1 - S	1 imm	4S 11E 21 SW	0.5 - B	1 imm	4S 11E 31 NW	0.2 - B	1 ad	3S 12E 08 SE	1.9 - S
1 ad	4S 11E 29 NE	0.2 - B	1 ad	4S 10E 36 NE	0.6 - B	4 ads	5S 9E 27 NW	0.6 - B	1 imm	3S 12E 19 NE	2.0 - S
1 imm	4S 11E 32	0.2 - B	2 ads	4S 9E 13 SE	0.5 - B	2 ads	6S 9E 16 NW	1.8 - B	1 imm	3S 12E 19 NW	2.0 - S
1 ad	NW	0.1 - B	2 ads	5S 9E 27 NW	0.4 - B				1 ad	4S 11E 21 NW	0.4 - B
2 imm	5S 10E 18	0.2 - B	1 imm	5S 9E 27 NW	0.4 - B				2 ads	4S 11E 21 SW	0.5 - B
1 ad	NW	0.1 - B	1 ad	5S 9E 28 NE	0.3 - B				1 imm	4S 11E 28 SW	0.5 - B
1 imm	5S 9E 13 SW	0.4 - B	3 imm	5S 9E 28 SW	0.1 - B				1 ad	4S 11E 28 SW	0.4 - B
1 ad	5S 9E 22 NE	2.2 - B	1 ad	5S 9E 33 NE	0.5 - B				1 ad	4S 11E 32 NE	0.2 - B
1 imm	5S 9E 33 SW	2.2 - B	1 ad	5S 9E 33 NW	0.1 - B				1 ad	4S 11E 31 NW	0.3 - B
	6S 9E 21 SW								3 ads	5S 9E 23 NW	0.2 - B
	6S 9E 21 SW								1 imm	5S 9E 22 NE	0.1 - B
									1 ad	5S 9E 22 NE	0.1 - B
									2 ads	5S 9E 22 NW	0.1 - B
									1 ad	5S 9E 27 NW	0.5 - B
									1 imm	5S 9E 33 NW	0.1 - B
									1 imm	5S 9E 31 SW	0.1 - C
									1 ad	6S 9E 36 SE	0.1 - C
									1 imm	6S 8E 01 NE	0.1 - C

<sup>1</sup> - ad = adult eagle, imm = immature eagle

<sup>2</sup> - Alternative routes are S = Shared, B = Alternative B, C = Alternative C.

<b>Table 3-5 Bald Eagle Winter Roosts and Concentration Sites with 5 or More Eagles Seen During Winter in Wyoming</b>						
<b>Date Observed</b>	<b>Number Seen</b>	<b>Habitat (WGFD Code)</b>	<b>T</b>	<b>R</b>	<b>Sec</b>	<b>Approximate Distance to Nearest Alternative (miles)</b>
2/4/83	12	not recorded	40N	69W	13	3.6 - B >8.0 - C
1/15/88	16	1.40 Ponderosa pine savannah	41N	68W	06 NW	2.0 - B 3.4 - C
2/21/83	6	5.11 Basin big sagebrush	41N	68W	34 SW of NE	3.0 - B 6.5 - C
1/18/83	10	not recorded	41N	69W	01 NW	2.5 - B
2/4/83	15	not recorded				3.2 - C
3/27/85	10	not recorded				
1/5/88	7	1.40 Ponderosa pine savannah				
1/9/89	17	1.80 Pine-juniper				
3/5/79	5	not recorded	41N	70W	25 NW of	0.2 - B
3/11/79	9	1.40 Ponderosa pine savannah	SW			1.8 - C
2/5/80	12	1.81 Pinyon pine-juniper				
1/19/82	16	1.80 Pine-juniper				
1/10/83	8	not recorded				
3/1/79	12	not recorded	41N	70W	25 SE	0.1 - B 2.5 - C
1/30/81	9	not recorded	42N	69W	05 NE of NE	>8.0 - B
1/19/82	3	1.80 Pine-juniper				1.1 - C
1/9/85	8	1.40 Ponderosa pine savannah				
11/7/90	6	1.40 Ponderosa pine savannah	42N	69W	24	3.6 - B 3.8 - C
12/3/80	1	4.11 Basin big sagebrush	43N	69W	01 SW	0.2 - B
1/18/83	22	not recorded				4.0 - C
3/27/85	2	not recorded				
1/30/83	10	not recorded	43N	70W	26	1.5 - B 1.0 - C
1/9/85	6	4.12 Wyoming big sagebrush	43N	71W	25 NW of	2.5 - B
			NE			2.5 - C
3/2/79	5	1.40 Ponderosa pine savannah	47N	70W	21 NW of	1.5 - B
2/23/80	7	1.81 Pinyon pine-juniper	SW			1.5 - C

Wyoming Game and Fish Department Wildlife Observation System

**Table 3-6**  
**Observations of Bald Eagles Seen During 1999 Winter Bald Eagle Survey**  
**(Alternatives B and C in South Dakota and Wyoming)**

Date Observed	Number/Age Seen	Habitat	State	County	Quad	T R Sec	Lat/Long	Approximate Distance to Nearest Alternative (miles)
2/13/99	1 adult	cottonwood riparian Antelope Creek	WY	Converse	Dugout Creek	41N 70W 33 NE SW SW	43°28.70NN 105°16.76NW	0.1 - C
	1 adult	cottonwood riparian Ha Creek	WY	Campbell	Piney Canyon NW	43N 69W 04 SE SW SW	43°43.56NN 105°09.57NW	< 0.1 - B
	1 adult	cottonwood riparian Robbers Roost Creek	WY	Niobrara	Riverview	40N 61W 09 SW SE NE	43°27.55NN 104°11.24NW	0.3 - C
	1 adult	cottonwood riparian Cheyenne River	WY	Niobrara	Twentyone Divide	40N 60W 20 NE NE NE	43°26.14NN 104°05.04NW	< 0.1 - B & C
	1 adult	Ponderosa pine woodland	SD	Fall River	Rumford	9S 4E 27 NW NW SW	43°14.28NN 103°38.47NW	0.6 - C
2/14/99	1 immature 2 adults	riparian bluff Cheyenne River	SD	Custer	Red Shirt NE	4S 11E 16 SE NW NE	43°42.36NN 102°48.27NW	0.4 - B
	1 adult	cottonwood riparian Cheyenne River	SD	Pennington	Red Shirt NE	4S 11E 10 NE SW NW	43°42.98NN 102°47.48NW	1.0 - B
	1 adult	cottonwood riparian Cheyenne River	SD	Custer	Red Shirt SW	5S 10E 18 NE NE SE	43°37.05NN 102°58.05NW	0.2 - B
	3 adults	cottonwood riparian Cheyenne River	SD	Custer	Red Shirt SW	5S 9E 13 SW NE SW	43°36.68NN 102°59.96NW	0.2 - B
	2 adults	cottonwood riparian Cheyenne River	SD	Custer	Fairburn SE	5S 9E 22 NW SW SE	43°35.79NN 103°01.97NW	< 0.1 - B
	1 adult	cottonwood riparian Cheyenne River	SD	Custer	Fairburn SE	5S 9E 28 NE NW NE	43°35.52NN 103°03.06NW	0.3 - B
	1 immature 2 adults	cottonwood riparian Bad River	SD	Jones	Capa NW	2N 27E 17 NW SE SE	44°07.68NN 100°53.42NW	0.7 - existing

### 3.17 MOUNTAIN PLOVER

The summer range of the Mountain plover once extended over the short-grass prairies of the western Great Plains from northern Montana to southern Mexico. However, both their numbers and range have sharply decreased with loss of breeding and wintering habitats. These losses are attributed to conversion of native prairies to cropland, range management practices, oil and gas exploration, chemical spraying, urban sprawl and prairie dog extermination. Breeding strongholds exist in small areas of native prairie in Montana and Colorado. The plover also breeds in Wyoming, New Mexico, Oklahoma and Texas (NGPC no date-a). The mountain plover is proposed for listing as a threatened species<sup>12</sup>.

Mountain plovers inhabit flat, short-grass prairie, and sagebrush grasslands that historically supported large herbivores such as bison and pronghorn antelope (Knopf 1996). In Montana and Wyoming, the plover is closely associated with prairie dog colonies. However, research from Colorado (Graul 1975) and Utah (Ellison 1998) suggests that the occurrence of breeding mountain plovers may be distributed more in relation to other breeding plovers (aggregation of nest sites) rather than apparently suitable habitat. Nests are scrapes on the ground, commonly in exposed areas or may be next to conspicuous objects. Nests may also be lined with materials found nearby such as lichens, grasses, and cow manure chips (Leachman and Osmundson 1990).

Results of a study conducted in northeast Wyoming showed that mountain plovers nested at sites with low or absent shrub growth and where grasses and forbs were also short (Parrish et al. 1993). In that study, mountain plovers seldom nested on prairie dog colonies but adults with broods were seen on colonies (Parrish et al. 1993).

In eastern Wyoming, the birds arrive in April from wintering grounds in southern California and northern Mexico. Eggs are laid from mid-April into early June. The average clutch contains 3 eggs that are dark olive buff with black markings. The incubation period is 29 days during which time there is a high incidence of egg mortality caused by predation, hail, and livestock. Chick mortality is highest the first three days. According to Graul (1976) only half of the chicks reach fledging age of 33-34 days. Chick mortality is attributed to predation, poor nutrition, disease, and separation from the adult (Leachman and Osmundson 1990).

Young mountain plovers reach sexual maturity at one year of age and probably breed for two years. Some birds return to the same nesting area each year and some chicks return to the area where they were hatched. The birds leave their principal breeding grounds between August and October for wintering areas.

The diet of mountain plovers is primarily insects, particularly beetles, grasshoppers, and crickets. Foraging generally occurs in areas of extensive ground disturbance or areas where vegetation is less than one inch tall. Such areas include prairie dog towns, heavily grazed pastures, dirt or gravel roads, and recently plowed fields (Knopf 1996).

#### Project Area

Surveys for occurrence of mountain plovers on black-tailed prairie dog colonies were conducted on TBNG annually since 1993. During the 1997 survey a total of 26 adults and 20 juvenile plovers were seen within approximately 4,900 acres of prairie dog colonies surveyed (Byer USFS-TBNG unpub. report). Sites were recorded on either side of State Highway 450 and on the east side of State Highway 59. Mountain plovers were seen on one National Biological Survey breeding bird survey route (Newcastle) in Wyoming but none were reported on breeding bird survey routes in South Dakota.

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<sup>12</sup> Federal Register: February 16, 1999, 64(30):7587-7601.

Mountain plovers have also been documented in annual wildlife monitoring reports on coal mines and nearby areas in Campbell County, Wyoming near the alternatives (WNDDDB 1999).

### 3.18 SWIFT FOX

The historical range of the swift fox included the area between the Rocky Mountains on the west, the western border of Minnesota and Iowa on the east, west central Texas and eastern New Mexico on the south, and the southern regions of British Columbia, Alberta, Saskatchewan and Manitoba on the north. Today, the swift fox can be found in South Dakota, Wyoming, Montana, Nebraska, Colorado, Oklahoma, Kansas, New Mexico, Texas, and as reintroduced populations in Canada (Dunn 1977).

The swift fox is unafraid of man therefore it has been easily trapped and poisoned by efforts aimed at coyotes and wolves. Other factors affecting the decline of the swift fox include fragmentation or destruction of suitable habitat, interspecies competition, prey reduction by rodent control, hunting, and predation. Studies conducted in western Kansas and Colorado indicate predation by coyotes is as high as 87% among juveniles and 65% among adults. The swift fox was previously listed as endangered in 1970, but was removed from listing in the U.S. because of controversy over its taxonomy. However, it has remained listed in Canada. In 1995 a petition to list the swift fox as endangered in the northern part of its range was submitted to the USFWS. The USFWS concluded their listing as warranted, but precluded by higher listing priorities. The swift fox is currently federally listed as a candidate species (50 CFR Part 17).

The swift fox is currently state listed as endangered in Nebraska, threatened in South Dakota and protected in Wyoming. In contrast, they are still legally harvested in Colorado, New Mexico, Kansas, and Texas (Dunn 1997).

The fox occupies short- and mixed-grass prairies, and other arid areas and often inhabit prairie dog colonies (Carbyn 1993). Native grasses in this habitat include buffalo grass, blue grama, and western wheat grass. Shrubs present include sagebrush (*Artemisia* spp.) and saltbush (*Atriplex* spp.). Common sunflower (*Helianthus annuus*), western ragweed (*Ambrosia psilostachya*), and prickly pear occur in swift fox habitats that were previously cultivated. Soil in the area of the den ranges from clay-loam to sandy loam (Dunn 1997).

The fox excavates its own den or enlarges another animal's den. Denning sites of the swift fox are usually well-drained slopes or hilltops with short or sparse vegetation. The den usually has 3 to 4 entrances. Unlike other canids, swift fox use dens all year-round. This solitary fox seldom ventures more than 1.9 miles from its den (Dunn 1997).

The fox is nocturnal and an opportunistic feeder. Its diet includes rabbits, rats, mice, birds, insects, grasses, carrion, and berries. Studies conducted on the stomach contents of the fox show that a majority of its diet during the summer season is grasshoppers (Dunn 1997).

Pair bonds develop during October and November. The female swift fox is monoestrous, breeding from late December to February. Gestation is 51 days with 3 to 5 young born in March to April. The pups emerge from the den in one month and are weaned at 6 to 7 weeks. They are fully grown in 4 to 5 months with a life span of 8 to 10 years. Dispersal of pups begins in August and they are capable of breeding during the first breeding season following birth (Carbyn 1993).

#### Project Area

There are records of swift fox from the project vicinity in Custer and Fall River counties, South Dakota (SDNHDB 1998) and on the Wall Creek and Fall River Ranger Districts, BGNG (Hetlet and Hodorff 1997).

Recent surveys conducted in central and eastern Wyoming included sites in Weston, Campbell, Niobrara and Converse counties. Swift foxes have been recorded from Converse and Weston counties, roughly coinciding with distributions reported by trappers and USFS observations on TBNG (Woolley et al. 1995).

### 3.19 STURGEON CHUB

The sturgeon chub occurs throughout the Missouri River drainage and the lower Mississippi River (USFWS 1993c). Alterations of the larger rivers through impoundment, channelization, and snag removal that have reduced the amount of riffle habitats appear to be some of the causes of the decline of the sturgeon chub. These alterations have also resulted in changes to the historic hydrograph of the river, reducing or eliminating dramatic seasonal changes in flow. Releases from impoundments have altered the normal temperature of the river by reducing water temperatures that may be an important cue for spawning. Additionally, predation from piscivorous sport fishes stocked in the Missouri River basin may be contributing to population declines. The sturgeon chub was federally listed as a Category 2 species in the 1980's. The sturgeon chub was reclassified as a Category 1 (Candidate) species in July 1994. USFWS is preparing documents that would recommend the species for listing as an endangered species (USFWS 1999b)<sup>13</sup>.

This member of the minnow family inhabits shallow sand or gravel bottom zones in areas with strong currents in warm and highly turbid medium to large rivers (Lee et al., 1980). Little is known about overall life history of the sturgeon chub because their habitat makes detailed observation and study difficult (USFWS 1993c). The species is believed to live up to four years with both sexes maturing at 2 years of age (Stewart 1981, Werdon 1992). Spawning is expected to occur from June through July, depending on the location, with spawning occurring later in more northerly portions of the range (Stewart 1981, Jenkins 1980, Werdon 1992, Cross 1967). Fertilized eggs drift downstream, hatching in approximately one day. Young grow quickly until mature at 2 years, after which, growth slows (Stewart 1981, Werdon 1992). The diet of the sturgeon chub is larval aquatic insects (Collins et al. 1995).

#### Project Area

Sturgeon chub have been repeatedly documented in South Dakota in the Cheyenne River in Pennington and in Custer counties as recently as 1994 (USFWS 1993a, USFWS 1993b, SDNHDB 1998). A study conducted by SDSU, USGS and BRD in 1996 between Angostura Dam and Lake Oahe did not locate any sturgeon chub until sampling below Red Shirt, South Dakota where turbidity increased. No chubs were collected between the Angostura Dam and Red Shirt, South Dakota.

While their occurrence in the portion of the Cheyenne River proximate to Alternatives B and C for the new railroad has been demonstrated repeatedly, they may also still occur in tributary streams to the Cheyenne River, given collections made in similar stream habitats in Wyoming. Surveys were conducted during October 1999 in several tributary streams at or near proposed railroad crossing by Alternatives B and C. The sampled streams, all with flowing water, included Spring Creek, Rapid Creek, and Box Elder Creek (Pennington County); Cottonwood Creek, French Creek, Battle Creek (Custer County); and Hat Creek (Fall River County). No sturgeon chubs were collected at any of the sites.

In Wyoming, populations of sturgeon chub are only known to occur in the Powder River in Campbell County.

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<sup>13</sup> Federal Register: January 18, 1995, 60(11):3613-3615.

### 3.20 BLACK-TAILED PRAIRIE DOG

Black-tailed prairie dog numbers once reached into the billions. They inhabited over 100 million acres of short-grass prairie. However, since the turn of the century, the black-tailed prairie dog has declined by 98% and its historic range has been reduced to less than one percent (Johnson 1997). It is estimated that only 700,000 acres of prairie dog habitat remain (NWF 1997a). Today, large complexes of black-tailed prairie dogs occur in only three states: Montana, South Dakota, and Wyoming (NWF 1997b). This decline is a result of habitat fragmentation through agriculture and urban development, active poisoning, population reduction through state and federally supported animal control programs, recreational shooting, and wildlife disease (Johnson 1997).

Prairie dogs are social animals and live in large colonies or towns in short- and mid-grass prairie. The colonies are further divided into wards by topographical barriers and finally into coterie. The coterie consist of one adult male, one to four adult females and any offspring less than two years of age. The prairie dog is diurnal and is active from sunrise to sunset. They excavate extensive tunnels and burrows for shelter and protection (Nowak 1991). The prairie dog's diet consists of grasses and forbs.

A prairie dog is sexually mature at approximately two years of age (Zoo. Soc. 1996). Breeding takes place in March and early April with gestation lasting approximately one month. Four to six young are born and stay in the burrow for six weeks (NGPC no date-b). Young males leave the coterie as juveniles and usually gain control of another coterie. Females stay in their natal coterie (Nowak 1991).

Prairie dogs play an important role in their ecosystem. Badgers, coyotes, weasels, golden eagles, hawks, black-footed ferrets and other predators feed upon the prairie dog. Additionally several species such as rabbits, other small rodents, burrowing owls, snakes and black-footed ferrets use vacant burrows. Mountain plover, grasshopper sparrows, and other ground nesting birds are found in greater numbers in prairie dog towns and native grasses are also more abundant (NGPC no date-b). The prairie dogs' continued survival is imperative to the federally endangered black-footed ferrets' survival. The USFWS has determined that the listing of the species is warranted but precluded by other higher priority actions<sup>14</sup>.

#### Project Area

Black-tailed prairie dog colonies occur throughout the project area in western South Dakota and Wyoming. Black-tailed prairie dog colonies were mapped along Alternative C from black-and-white aerial photographs (1:2,400) extending to approximately 1,000 feet on each side of the alternative's centerline. Additional colonies have been mapped by the Forest Service (as current as 1998) and the WGFD mapped colonies through the late 1980's. Maps of colonies on private lands have been provided by county weed and pest control district agents in South Dakota and Wyoming. These data are compiled in Table 3-7 and show that all alternatives would affect prairie dog colonies but that Alternative C would cross the most colonies (a function of mapping effort conducted along that alternative). Mapped prairie dog colonies intersected by Alternative B are not as complete as for Alternative C since, except for those sections that coincide with or closely parallel Alternative C, no aerial photography exists along Alternative B.

The current activity status of each prairie dog colony is unknown: some colonies have become inactive due to sylvatic plague epizootics and others have been poisoned by county weed and pest control agents and/or private land owners. For most of the colonies that have been mapped there is no additional information about the extent or proximity of other colonies that would form a local colony complex.

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<sup>14</sup> See Federal Register: February 4, 2000, 65(24):5476.

<b>Table 3-7</b>						
<b>Miles of proposed right-of-way under Alternatives B, C, and D that would intersect black-tailed prairie dog colonies in South Dakota and Wyoming</b>						
<b>Alternative</b>	<b>State</b>	<b>Miles of Proposed ROW per Land Owner Intersecting Prairie Dog Colonies</b>				
		<b>USFS</b>	<b>BLM</b>	<b>State</b>	<b>Private</b>	<b>Total</b>
<b>B<sup>1</sup></b>	South Dakota	0.2	0	0	3.2	3.4
	Wyoming	1.7	0	1.5	4.9	8.1
	<b>Total</b>	<b>1.9</b>	<b>0</b>	<b>1.5</b>	<b>8.1</b>	<b>11.5</b>
<b>C<sup>2</sup></b>	South Dakota	0	0	0.2	4.9	5.1
	Wyoming	1.7	0	1.6	9.1	12.4
	<b>Total</b>	<b>1.7</b>	<b>0</b>	<b>1.8</b>	<b>14.0</b>	<b>17.5</b>
<b>D<sup>3</sup></b>	South Dakota	0	0	0.1	2.8	2.9
	Wyoming	0.3	0	0.2	2.8	3.3
	<b>Total</b>	<b>0.3</b>	<b>0</b>	<b>0.3</b>	<b>5.56</b>	<b>6.2</b>

<sup>1</sup> - Prairie dog colonies mapped from aerial photographs where Alternative B coincides with Alternative C, by USFS on TBNG, and by WGFD.

<sup>2</sup> - Prairie dog colonies mapped from aerial photographs, by USFS on TBNG, and by WGFD.

<sup>3</sup> - Prairie dog colonies mapped from aerial photographs where Alternative D coincides with Alternative C, by USFS on TBNG, and by WGFD.

## PART 4

# IMPACT EVALUATION

This Part discusses general impacts common to all alternatives and the potential impacts of each project action alternative on the Federally listed endangered and threatened species, species proposed for listing and candidate species potentially occurring in the project area. When the impacts of alternatives are similar it is noted. Additionally, impacts to each species occurring in Minnesota and South Dakota along only the rebuild portion of the proposed construction would not be differently affected by Alternatives B, C, or D, therefore; impacts for each individual alternative are not listed. Species impacts are not addressed for alternatives if impacts to the species are not anticipated.

Project activities which may cause short-term impacts if species or habitat is present include direct mortality by field vehicles and construction machinery, avoidance of habitats and/or temporary habitat loss near construction sites and potential short-term degradation of habitats.

Project activities that may cause long-term impacts, if species or their habitats are present, are similar to the short-term impacts listed above. Long-term impacts include direct mortality by trains and maintenance vehicles, avoidance of habitats that are near the tracks, and potential long-term deterioration of habitats. Aquatic habitats could be affected where there was sediment discharge or accidental release of toxic substances (fuels or oil). Additionally, long-term herbicide use could degrade habitats. To mitigate these potential impacts DM&E would employ measures to minimize and control the sediment discharge. Additionally, the chance of spills during construction and operation of the rail line would be minimal because fuel would be stored away from waterways and a contingency plan would be in place.

Potential indirect long-term impacts to ground nesting birds could also occur if predators are drawn to a nesting area because of carrion concentrations along tracks. Long-term impacts to habitats used by terrestrial and aquatic species due to surface disturbances are also expected to be similar to those described under short-term impacts. However, once construction machinery is withdrawn from the right-of-way and revegetation is successful, the total amount of some habitats affected by surface disturbance are expected to be reduced over the long-term.

Noise due to train traffic is expected to be a long-term impact to some species. The degree to which anticipated noise levels displace species is unknown and undoubtedly varies by species and local conditions. Abandonment of occupied habitats within some distance of the railroad is likely, particularly by nesting birds.

Long-term runoff of sediments could impact aquatic organisms downstream in much the same way as described under short-term impacts.

### **4.1 BLACK-FOOTED FERRET**

#### **4.1.1 Minnesota**

This species does not occur in Minnesota; therefore, there would be no impacts.

#### **4.1.2 South Dakota and Wyoming**

Black-footed ferrets have been reintroduced to the Conata Basin/Badlands in South Dakota as a nonessential experimental population. Similarly, black-footed ferrets are being considered for reintroduction to TBNG in Wyoming. There are approximately 15,000 acres of a prairie dog complex within the potential reintroduction area, known as the Rosecrans Site (Byer and Luce no date), but only 5,502 acres of that complex on TBNG have been managed to exclude poisoning with rodenticides and

recreational shooting (Byer and Luce no date). Elsewhere on TBNG prairie dogs continue to be subject to recreational shooting although control through poisoning has been temporarily halted on Forest Service lands.

As potential habitat for black-footed ferrets, black-tailed prairie dog colonies occur throughout the project area in South Dakota and Wyoming. Locations of prairie dog colonies coinciding with each alternative were obtained from diverse sources (Table 3-7) and some of those were mapped by WGFD during the late 1980's and are not current. The extent of potential black-footed ferret habitat with relatively high habitat function and value (active prairie dog colonies within large complexes not threatened by sylvatic plague, poisoning or recreational shooting) that would be affected by any alternative is unknown.

#### **4.1.2.1 Alternative B (Proposed Action)**

##### **4.1.2.1.1 Construction Impacts**

The only documented evidence of black-footed ferrets are a 1983 confirmed (Jobman and Anderson, 1991) sighting in the vicinity of Edgemont, South Dakota; a ferret skull found in Converse County, Wyoming in 1979; 2 confirmed sightings (1974 and 1981) in Campbell County and 1 confirmed sighting from Niobrara County (all within 16 miles of proposed route alternatives).

Alternative B would cross 4.9 miles of the proposed black-footed ferret reintroduction site, the Rosecrans Reintroduction Area, on TBNG. Construction impacts and long-term operational impacts to this area would likely make it unsuitable for reintroduction of the species.

##### **4.1.2.1.2 Operational Impacts**

If black-footed ferrets are found in the proposed project areas impacts could include deaths caused by train and increased vehicle traffic, fragmentation of habitat (prairie dog colonies), increased predator presence, spread of disease by predators and increased shooting of prairie dogs (Case 1978, Bennett 1991). Recreational shooting can reduce local prairie dog populations by 35 to 69 percent (Knowles 1988; Vosburgh and Irby 1998). Additionally, ferret mortality can occur by ingesting dead prairie dogs killed with rodenticides (Hillman 1968).

County weed and pest control agents provided locations of scattered prairie dog colonies along Alternatives B and C within all counties in South Dakota and Wyoming and indicated many have been treated by them or by landowners with poisoned grain during the past decade. Typically, prairie dog populations can recover from shooting in one year (B. Perry personal communication with PIC Technologies, Inc. 1999); while recovery following cessation of poisoning can take one to two years (Knowles 1986; Cincotta et al. 1987; Apa et al. 1990). Recovery of populations following plague, however, occurs much slower and some populations may never recover to pre-epizootic levels (Mulhern and Knowles 1995). Sylvatic plague is fatal to black-footed ferrets (Williams et al. 1994). Table 3-7 lists the miles of short- and long-term disturbances of prairie dog habitat.

#### **4.1.2.2 Alternative C (Modified Proposed Action)**

##### **4.1.2.2.1 Construction Impacts**

Construction of Alternative C would have similar impacts as Alternative B. The possibility that black-footed ferrets exist in the proposed project area is remote; however, if an extant population exists deaths could result from vehicles during construction.

##### **4.1.2.2.2 Operational Impacts**

Operational impacts include black-footed ferret deaths caused by train and increased vehicle traffic, fragmentation of habitat (prairie dog colonies), increased recreational shooting of prairie dogs, spread of disease and an increase in predators. Table 3-7 lists the miles of short- and long-term disturbances of prairie dog habitat.

#### **4.1.2.3 Alternative C with the Phiney Flat Variation**

Impacts for this alternative would be similar to Alternatives B and C.

#### **4.1.2.4 Alternative C with the W G Flat Variation**

Impacts for this alternative would be similar to Alternatives B and C.

#### **4.1.2.5 Alternative D (Existing Transportation Corridors)**

##### **4.1.2.5.1 Construction Impacts**

Construction of Alternative D would have similar impacts as Alternatives B and C. If an extant population exists deaths could result from vehicles during construction.

##### **4.1.2.5.2 Operational Impacts**

Black-footed ferrets could be impacted by increased vehicular and train traffic, fragmentation of prairie dog colonies, increased recreational shooting and the spread of disease by an increase in predators. Table 3-7 lists the miles of short- and long-term disturbances of prairie dog habitat.

## **4.2 PIPING PLOVER**

### **4.2.1 Minneosta**

This species does not occur in Minnesota; therefore, there would be no impacts.

### **4.2.2 South Dakota and Wyoming**

#### **4.2.2.1 Alternative B (Proposed Action)**

##### **4.2.2.1.1 Construction Impacts**

Noise disturbance due to construction could affect nesting piping plovers, although most reports of plovers vacating nests have focused on humans approaching nests on foot rather than noise levels and vehicular frequencies associated with railroads or highways (Dinsmore 1983). Depending on where the work camps are located and the level of human activity in the project area more piping plovers may be affected.

Spills of petroleum products such as diesel fuels or lube oils during construction of the proposed project could affect aquatic invertebrates which piping plovers rely on for their food source. However, DM&E would store these substances (fuels and oil) away from drainages and a Spill Prevention Control and Countermeasure (SPCC) plan would be in place.

The presence of selenium and other trace elements in soils within the project area is unknown. If present in similar concentrations to those found in marine shales along the Missouri River (4.79-13.60 mg/kg dry weight) increased selenium loads in the Cheyenne River could occur following erosion and runoff from construction sites (Ruelle 1993). However, this is unlikely since DM&E would employ erosion and sedimentation control measures during construction activities to minimize impacts on water resources.

Bioaccumulation of selenium and possibly other trace elements could adversely affect piping plovers known to nest on the Cheyenne River downstream. Also, construction adjacent to the river may require riprap or more substantial structures to stabilize the riverbank that in turn could change river flow dynamics. Change in river flow could alter existing deposition and erosion regimes that created local mud, sand, or gravel bars that provide suitable nesting habitats. However, these areas could be lost and others created. Habitats currently overgrown could be scoured, making them again suitable for nesting. Many of the piping plovers found in the proposed project area have adapted to nesting at sandpits, which would be unaffected by changes in river flows.