Summary

S.1 Introduction

This is a State of Montana Final Environmental Impact Statement (EIS) and the U.S. Department of Energy (DOE) Federal Final EIS (referred to herein as the EIS for both state and Federal purposes) prepared for the United States portion of the proposed Montana Alberta Tie Ltd. (MATL) 230-kilovolt (kV) transmission line.

The EIS consists of two volumes. Volume 1 consists of a Summary, a description of the proposal and alternatives, analysis of their impacts, and appendices. (Because of their length, the appendices are not printed as part of Volume 1. They are, however, included in full in the accompanying compact disk.) Volume 2 consists of the comments received on the Draft EIS (published in February 2008) and the agencies' responses to the comments.

MATL has proposed to construct an international 230-kV alternating current merchant (private) transmission line that would originate at the existing NorthWestern Energy (NWE) 230-kV Switchyard at Great Falls, Montana, and extend north to a new substation to be constructed northeast of Lethbridge, Alberta, crossing the U.S.-Canada international border north of Cut Bank, Montana (proposed Project). Approximately 130 miles of the 203-mile transmission line are proposed to be constructed in the U.S. The line would be constructed and owned by MATL, a private Canadian corporation owned by Tonbridge Power. The proposed line would be part of the Western Interconnection[1] (western grid), and a phase shifting transformer would be installed at the substation near Lethbridge to control the direction of power flows on the line. In order to develop the proposed Project, MATL must obtain Federal and State authorizations.

MATL submitted an application for a Certificate of Compliance (Certificate) to the Montana Department of Environmental Quality (DEQ) under the Montana Major Facility Siting Act (MFSA), (75-20-101, et seq., Montana Code Annotated [MCA]). MATL also applied to DOE for a Presidential permit (permit) to construct, operate, maintain, and connect facilities for the transmission of electric energy at the U.S.-Canada international border and to the U.S. Bureau of Land Management (BLM) for a right-of-way (ROW) grant for Transportation and Utility Systems and Facilities on Federal Land. MATL must receive all three authorizations before it can implement the proposed Project. In response to the application for a certificate, DEQ must prepare a

1 While the power system in North America is commonly referred to as "the grid," there are actually three distinct power grids or "interconnections." The Eastern Interconnection includes the eastern two-thirds of the continental United States and Canada from Saskatchewan east to the Maritime Provinces. The Western Interconnection includes the western third of the continental United States (excluding Alaska), the Canadian provinces of Alberta and British Columbia, and a portion of Baja California Norte, Mexico. The third interconnection comprises most of the State of Texas. The three interconnections are electrically independent from each other except for a few small direct current transmission lines that link them.

report, conduct an environmental review, and issue an approval before construction may begin. These are required by the Montana Environmental Policy Act (MEPA) and MFSA. The DOE and BLM actions also require an environmental review conducted in accordance with the National Environmental Policy Act (NEPA).

S.2 Purpose and Benefit to the State of Montana

The proposed MATL transmission line would connect the Montana electric system with the Alberta electric system, provide access to potential markets for new and existing power generation facilities in the vicinity of the proposed transmission line, and improve transmission access to markets seeking new energy resources. Expected benefits of the proposed Project are summarized below.

S.2.1 Benefits to Electricity Generators and Consumers in Montana

The proposed transmission line would have the capacity to carry up to 300 megawatts (MW) of electric power north and 300 MW south for a total capacity of up to 600 MW. However, due to constraints on the current system where the MATL line would tie in at Great Falls, the full capacity of 300 MW to the south may not be realized unless additional upgrades are made to the transmission system south of Great Falls. The added transmission capacity from the proposed MATL transmission line could support a modest increase in new power generation in Montana. While new generation in excess of 600 MW would need more transmission capacity than MATL's proposed Project could provide, the construction and operation of the proposed Project would provide opportunities for development of smaller energy generation projects of up to 600 MW, such as wind energy, in Montana. Currently, MATL has sold all the capacity of the line to prospective developers of wind farms. The development of wind farms along the MATL line is considered to be a reasonably foreseeable future action under Federal law and is analyzed under the cumulative impacts.

Additional expected benefits to Montana generators and consumers include: additional connection with markets that demand energy; additional wholesale electricity purchasing options for Montana utilities, which could result in lower electricity rates due to an increase in supplier competition; and increased opportunities for western grid optimization during high Montana export and low Alberta-to-British Columbia export scenarios.

S.2.2 Benefits to Existing Transmission Systems

A modified transmission system, including a tie line between Montana and Alberta, may also result in benefits to transmission system operators whose service areas include Montana and to utilities that provide transmission service within the state. A modified transmission system could provide more options for power routing within Montana, increase energy transactions between Montana and Alberta, and allow for easier balancing of energy surpluses and shortages within and between balancing authority areas. Because tie lines are able to connect with adjacent electric systems, different generation resources can combine to provide a level of reliability that one jurisdiction could not otherwise afford to provide if that jurisdiction had to cover the same resources independently. The MATL line could also create another opportunity for Montana's largest privately owned transmission and distribution utility, NorthWestern Energy (NWE), to obtain regulating reserves for its transmission system control area. Regulating reserves are likely to become increasingly important as more wind energy is built in NWE's jurisdiction.

S.2.3 Benefits as Stated by the Applicant

The MATL transmission line would be a merchant line, the primary purpose of which is to financially benefit the owner/operators. The MATL application for certification described the following benefits to MATL, the U.S., and Canada:

> *The Project would be the United States' first power transmission interconnection with Alberta and is expected to facilitate development of additional sources of generation (e.g., windfarms both in northern Montana, and southern Alberta), and improve transmission system reliability in Montana, Alberta, and on a regional basis in both the U.S. and Canada. In addition, the Project would promote increased trade in electrical energy across the international border, and provide a transmission route to balance energy surplus/shortage situations in an efficient and economic manner.*

In addition, MATL asserts that system stability studies conducted under the direction of the Western Electricity Coordinating Council Peer Review Group indicate that the proposed Project would not adversely affect transmission system stability (Tonbridge Power, Inc. 2007). A Transmission Line Interconnection Agreement between MATL LLC and NorthWestern Corporation (parent company of NWE) was executed on December 20, 2007 and became effective on January 31, 2008.

The proposed Project is needed to provide transmission capacity between Lethbridge and Great Falls. There is currently no direct high voltage power transmission connection between Alberta and Montana. Although additional capacity is not needed to provide power to Montana customers, additional capacity would allow increased

electricity trading between Alberta and Montana and could facilitate development of wind farms or other generation facilities in the vicinity.

Because Montana makes more electricity than it consumes, to be economically viable, any new generation resources in Montana must offer competitive pricing and have adequate transmission access to compete in out-of-state markets or replace an existing supplier choosing to take higher profits by selling out of state. Either way, additional transmission capacity is not needed to serve Montana customers, but it is essential for the viability of new generation enterprises (DEQ 2004).

S.3 General DOE, MFSA, NEPA/MEPA, and BLM Requirements

MEPA requires that decision makers consider the effects of their actions on the human environment. MFSA requires that need, environmental effects, costs, electric reliability and other factors are considered before making a decision. State agencies must inform the public of the decision making process and seek participation in the process. Similarly, NEPA requires that Federal decision makers be fully informed of the potential environmental consequences of their agency's proposed actions, provide an opportunity for public participation in the environmental review process, and document the reasons for their decisions. The information contained in this EIS will provide a basis for DEQ to make findings required for its certification decision and for DOE to determine whether it is in the public interest to grant a Presidential permit, and BLM to grant a ROW. DEQ, DOE, and the BLM will use this information to decide which alternative(s) could be implemented and which mitigation measures, if any, would be appropriate for inclusion as a condition of the certificate, permit, or ROW grant. DEQ, DOE, and BLM will document their decisions separately.

S.3.1 Purpose and Need for DOE Action

DOE has the responsibility for implementing Executive Order (E.O.) 10485 (September 9, 1953), as amended by E.O. 12038 (February 7, 1978), which requires the issuance of a Presidential permit for the construction, operation, maintenance, and connection of electric transmission facilities at the United States international border. DOE may issue the permit if it determines the project to be consistent with the public interest and after obtaining favorable recommendations from the U.S. Departments of State and Defense. In determining if a proposed Project is consistent with the public interest, DOE considers:

1. Potential environmental impacts in accordance with NEPA and Council on Environmental Quality (CEQ) and DOE implementing regulations at 40 Code of Federal Regulations (CFR) Parts 1500-1508 and 10 CFR Part 1021, respectively;

2. The proposed project's impact on electric reliability, that is whether the proposed Project would adversely affect the operation of the U.S. electric power supply system under normal and contingency conditions; and

3. Any other factors that DOE may consider relevant to the public interest.

DOE will consider this EIS in determining whether to grant a Presidential permit to MATL. DOE's action responds to MATL's request for a Presidential permit.

S.3.2 DEQ MFSA Requirements

Under MFSA, DEQ requires a certificate of compliance for construction of electric transmission lines defined as facilities. The purposes of MFSA are to: (1) ensure the protection of the state's environmental resources; (2) ensure the consideration of socioeconomic impacts; (3) provide citizens with an opportunity to participate in facility siting decisions; and (4) establish a coordinated and efficient method for the processing of all authorizations required for regulated facilities. DEQ must find that the selected alternative meets the set of criteria listed in 75-20-301, MCA, and applicable administrative rules to be eligible for transmission line certification.

DEQ would approve a transmission line facility as proposed or as modified or an alternative to the proposed facility if it finds and determines:

- the need for the facility;
- the nature of probable environmental impacts;
- that the facility minimizes adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives;
- what part, if any, would be located underground;
- the facility is consistent with regional plans for expansion of the appropriate grid of the utility systems serving the state and interconnected utility systems;
- the facility would serve the interests of utility system economy and reliability;
- that the location of the proposed facility conforms to applicable state and local laws;
- that the facility would serve the public interest, convenience, and necessity;
- that DEQ has issued all necessary decisions, opinions, orders, certifications, and permits; and,

- that the use of public lands for location of the facility was evaluated, and public lands were selected whenever their use is as economically practicable as the use of private lands (75-20-301[1], MCA).

S.3.3 BLM Requirements

BLM has responsibility to issue ROW grants for electric transmission lines on BLM-administered lands in accordance with the Federal Land Policy and Management Act of 1976 and regulations at 43 CFR Part 2800.

A ROW grant provides for the construction, operation, maintenance, and termination of a specific project for a specific period of time. Before issuing a ROW grant, BLM will:

- complete a NEPA analysis or approve a previously completed NEPA analysis;
- determine whether the project complies with Federal and State laws and land use plans;
- consult with other governmental entities;
- hold public meetings if sufficient public interest exists; and
- take any other action necessary to fully evaluate and decide whether to approve or deny the application.

It is BLM's policy to encourage proponents to locate projects within designated or existing ROW corridors to the maximum extent feasible. However, no designated or existing ROW corridor is present on approximately 0.3 mile of BLM land that would be crossed.

S.3.4 NEPA/MEPA Process

Initially, the DOE considered an environmental assessment (EA) to be the appropriate level of review under NEPA for the proposed Project while DEQ considered the appropriate level of review for MEPA to be an EIS analysis. DOE issued a "Notice of Intent to Prepare an Environmental Assessment and to Conduct Public Scoping Meetings and Notice of Floodplain and Wetlands Involvement; Montana Alberta Tie, Ltd." in the *Federal Register* on November 18, 2005 (70 FR 69962). In addition, DOE mailed a copy of the notice to each owner of land within and adjacent to the MATL-proposed corridor. Names were obtained from Montana land ownership records.

DEQ and DOE hosted public meetings in December 2005 and DEQ hosted a public meeting in June 2006. At these meetings the public was asked to identify issues and concerns to be addressed during the review. During each meeting, MATL and DEQ representatives presented briefings. Maps and other information were available for review, and representatives from each agency were available to discuss the project, answer questions, and receive public comments.

Meeting dates and locations were:

- Conrad on December 5, 2005
- Great Falls on December 6, 2005
- Cut Bank on December 7, 2005
- Cut Bank on June 26, 2006

In March 2007, the agencies published a document titled *Draft Environmental Impact Statement for the Montana Alberta Tie Ltd. (MATL) 230-kV Transmission Line* that served as a Draft EIS for DEQ and an EA for DOE (March 2007 document). In order to receive public comments, DEQ and DOE hosted three public hearings after the March 2007 document was issued:

- Conrad on March 27, 2007
- Cut Bank on March 28, 2007
- Great Falls on March 29, 2007

Based on comments received on the March 2007 document relating to land use and potential effects on farming, DOE determined an EIS to be the appropriate NEPA compliance document. Accordingly, on June 7, 2007, DOE published a Notice of Intent to Prepare an EIS and to Conduct Scoping in the *Federal Register* (72 FR 31569) and invited additional comments for a 30-day period. Throughout the scoping processes, stakeholders submitted comments via letters, phone calls, and emails.

DEQ decided to prepare a Supplemental Draft EIS to address issues raised in comments on the March 2007 document. Comments received on that document indicated additional analysis was needed to describe the costs of farming around the proposed structures and to compare these costs to the additional costs associated with alternative locations for the line. In addition, substantial changes to state tax law were enacted during Montana's May 2007 special legislative session which changed the analysis of socioeconomic impacts.

Under MFSA, the Montana Department of Transportation (MDT); Montana Department of Natural Resources and Conservation (DNRC); Montana Fish, Wildlife and Parks (FWP); Montana Department of Revenue; and the Montana Public Service Commission are required to report to DEQ information related to the impact of the proposed project on each agency's area of expertise. The report may include opinions on the advisability of granting, denying, or modifying the certificate (75-20-216[6], MCA). Other agencies having interest or responsibility in the project approval process include the Montana State Historic Preservation Office (SHPO), U.S. Department of Agriculture Farm Service Agency, and the U.S. Fish and Wildlife Service (FWS).

Based on comments received from the participating agencies and the public, the following issues and concerns were identified:

(1) impacts on farming, ranching, and other land uses such as difficulties and hindrances of farming and spraying around the transmission line structures, potential for interference with Differential Global Positioning System (DGPS)-guided farm equipment, potential for noxious weed growth, interference with existing and future pivot or mechanical irrigation systems, and additional fencing needs;

(2) impacts on protected, threatened, endangered, special status, and sensitive animal and plant species and their critical habitats, such as increased perch opportunities for birds of prey that could result in increased predation on species such as the swift fox and sharp-tailed grouse, disturbance of rare plant species, interference with migratory and feeding flight paths of waterfowl, avian mortality from bird strikes, and potential impacts on critical wildlife habitats;

(3) impacts on floodplains and wetlands, such as size and degree of impacts on known and delineated floodplains, wetlands, waters of the U.S., and other special aquatic sites;

(4) impacts on cultural and historic resources including potential disturbance of Native American settlements and religious sites;

(5) impacts on human health and safety related to minimum ground clearance of the line, corona effects (including audible noise and radio and television interference), and other electromagnetic field effects;

(6) impacts on air, soil, and water, such as soil erosion and resultant sedimentation to surface water, mass movement of unstable geologic materials and soils, reclamation constraints, and impacts on existing air quality;

(7) visual impacts to homes, historic homesteads, and tribal landscapes;

(8) socioeconomic impacts to taxes and disturbance of residential property in Cascade, Teton, Chouteau, Pondera, Toole, and Glacier counties from the construction and operation of the line; and

(9) impacts from development of wind or other generation projects that could occur as reasonably foreseeable future actions.

On September 6, 2007, DOE invited the BLM to participate as a cooperating agency in the preparation of the EIS. DOE requested BLM's involvement to address BLM's authority to approve MATL's request for a ROW grant and the proposed Project's relationship to relevant BLM land use plans. The BLM accepted the invitation to be a cooperating agency on October 12, 2007.

The agencies published a State Supplemental Draft EIS and Federal Draft EIS (referred to hereafter as the Draft EIS) in February 2008. Following publication of the Draft EIS, the agencies held a 45-day comment period during which the public was invited to submit comments. Also during this time, the agencies held three public hearings, in Great Falls, Montana on March 11, 2008, in Cut Bank, Montana, on March 12, 2008 and in Conrad, Montana on March 13, 2008.

Three hundred fifty-two individuals and organizations submitted comments on the Draft EIS, either orally at public hearings or in writing. The agencies considered the comments received and provide their responses in Volume 2 of this Final EIS. Based on comments received from participating agencies and the public after the issuance of the Draft EIS, the following topics were identified as common themes or major issues and concerns:

- Avian and Wildlife Issues, including the quality of field surveys for wildlife, potential impacts on bird and wildlife habitat, potential impacts on birds from collisions with the transmission line, effects on flyways, and impacts of potential wind farms;
- Economic Issues, including the distribution of benefits and costs of the line and the line's effect on the cost of electric power;
- Farming Issues, including the issues farmers would face in having to farm around structures and how they would be compensated for their costs and inconvenience;
- Legal and Regulatory Issues related to NEPA, MEPA, Montana's MFSA, eminent domain, and other State and Federal requirements;
- Line Capacity Issues, including possible future increases in capacity and the ability of power to be shipped past the termination points of the MATL line;

- Line Issues, including its location, types of support structures, easement width, and the need for substations;
- Safety Issues related to clearance under the proposed transmission line and the safety of farming activities under and around the line;
- Socioeconomic Issues, including the expected impacts of the proposed Project and potential wind farms on local school enrollment, wages, and property tax revenues;
- Soils Issues, including concerns about potential compaction and erosion due to transmission line construction;
- Tax Issues, including questions about the taxation status of the proposed transmission line and affected farmland;
- Vegetation, Wetland and Weed Issues, including the potential for disturbance of wetlands and riparian areas, the potential for introduction of weeds, and the impacts of weed control;
- Visual Issues, including the effects of the transmission line and potential wind farms on views in and near Glacier National Park and the Rocky Mountain front;
- Wind Farm Issues, including potential impacts of bird and bat collisions, the effects of wind farms on views, and the potential for mitigation of wind farm impacts.

The agencies revised the EIS in response to comments, to correct errors, and to incorporate new information obtained since the Draft EIS. Principal changes in the Final EIS include:

- Updating of information and revision of analyses due to revisions made to MATL's MFSA application since publication of the Draft EIS. Principal revisions to the application are an increased right-of-way width, an increased commitment to use of monopoles on diagonal crossings of cropland and Conservation Reserve Program (CRP) land, an increased minimum line height over cropland to ensure safe operation of farm equipment, and a revised proposal for landowner compensation, including an alternative dispute resolution process.
- Analysis of minor variations to several Local Routing Options and one variation to a short segment of Alternative 2. These were evaluated due to specific concerns brought to the agencies' attention by affected landowners.
- Inclusion of additional information about migratory birds in the region.
- Inclusion of new information on wetlands locations and acreage in Teton County that became available after the publication of the Draft EIS.
- Updated analysis of costs for farming around transmission line structures, reflecting spring 2008 farming input costs and crop prices.

- Inclusion in the cumulative impacts analysis of new information on bird and bat mortality at the Judith Gap Energy Center.

In addition, the Final EIS includes identification of the agencies' preferred alternative.

The agencies will use this EIS in their respective decision making processes. Federal agency decisions will be issued subsequent to this EIS in the form of a Record of Decision for each agency or as a letter of concurrence, no sooner than 30 days after this Final EIS is available. DEQ may not make a final decision sooner than 15 days after the final EIS is available and may time a decision on whether to issue a certificate to coincide with the decisions of the Federal agencies.

S.4 Alternatives Description

This EIS evaluates the proposed Project, three action alternatives, several Local Routing Options, and minor variations. The No Action alternative, designated Alternative 1, reflects the status quo and serves as a benchmark against which the proposed Project and other alternative actions can be evaluated. The proposed Project is Alternative 2 (**Figure S-1**).[2] Alternative 3 was developed by MATL in response to a single siting criterion under MFSA that gives consideration to paralleling existing utility corridors. Alternative 4 describes an additional alignment (**Figure S-1**) that the Agencies developed based on comments and issues raised during the scoping process.

The Local Routing Options and minor variations, which could apply to Alternative 2 and in some instances to Alternative 4, were based on landowner or MATL input and comments on the March 2007 document and the Draft EIS. The agencies' preferred alternative consists of portions of Alternatives 2 and 4 and some local routing options as shown on **Figures S-4**, **S-5**, and **S-6** (See Section S.4.7)

S.4.1 Details Common to All Action Alternatives

Two types of transmission line support structures would be used: H-frame structures made of laminated wood poles, round wood poles, or steel structures for special applications, and metal monopoles (**Figure S-2**). The typical span between structures of either type (ruling span) would be about 800 feet, but could range from 500 feet to 1,600 feet. Approximately six to seven (average of 6.6) structures per mile would be required for an 800-foot ruling span.

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2 *Throughout this EIS, many references are made to the Project study area and analysis area. The Project **study area** is the area that includes the proposed and alternative alignments and areas where roads may be built or improved. The study area was defined by MATL in its MFSA application to DEQ. The **analysis area** is the area evaluated for each resource. Different resources have different analysis areas. For some resources, the analysis area is the entire study area. For other resources, it may be a smaller area defined by the potential extent of impacts or a larger region defined by the units (for example, counties) for which relevant data are available.*

Either type of support structure would incorporate 230-kV design standard synthetic insulators, hardware, and ground wires to provide nearly corona-free operation, as well as reduce audible noise and radio and television interference. The minimum ground clearance of MATL's proposed line would comply with the requirements of the National Electrical Safety Code. On cultivated and CRP lands[3], expected heights of the tallest farming equipment (20 feet), including antenna heights, were used to determine the new minimum clearance of 27.2 feet for the safe operation of farm equipment under the line. Spacing between the two poles of a typical 65-foot high H-frame structure would be about 23 feet. A typical monopole would be about 90 feet high.

MATL would install bird strike diverters or similar warning devices in high risk areas such as lakes, river crossings, wildlife refuge areas, and high ridge crossings. MATL would comply with appropriate regulations of the Federal Aviation Administration (FAA) and install FAA-recommended colored aerial markers for aviation safety at river crossings. In addition aerial markers would be installed at major pipeline crossings as determined by consultation with pipeline companies.

MATL proposes to construct a new substation on farmland or range/pasture land approximately 10 miles south of Cut Bank at a location next to the site where NaturEner USA has begun building the Glacier Wind Project (formerly known as the McCormick Ranch Wind Park). The approximate location of the substation would be in the southeast quarter of Sec. 27 T32N R5W. The interconnection at the existing Great Falls Switchyard would require NWE to enlarge the switchyard to accommodate the MATL tie line and other proposed lines. The expanded Great Falls 230-kV Switchyard would be located on farmland or range/pasture land. MATL has submitted a copy of an executed interconnection agreement with NWE to the agencies as an addendum to the MFSA application.

MATL anticipates only minimum development of access roads to construct, operate, and maintain the line because most of the proposed Project ROW would be accessed from public roads, existing two-track roads (unmaintained trails), and farm fields. MATL would reclaim any new access roads in coordination with landowners and appropriate agencies and to DEQ environmental specifications. MATL does not anticipate maintenance of these access points with the exception of certain gate installations.

[3] In this EIS, farmland, cropland, and cultivated land are used interchangeably.

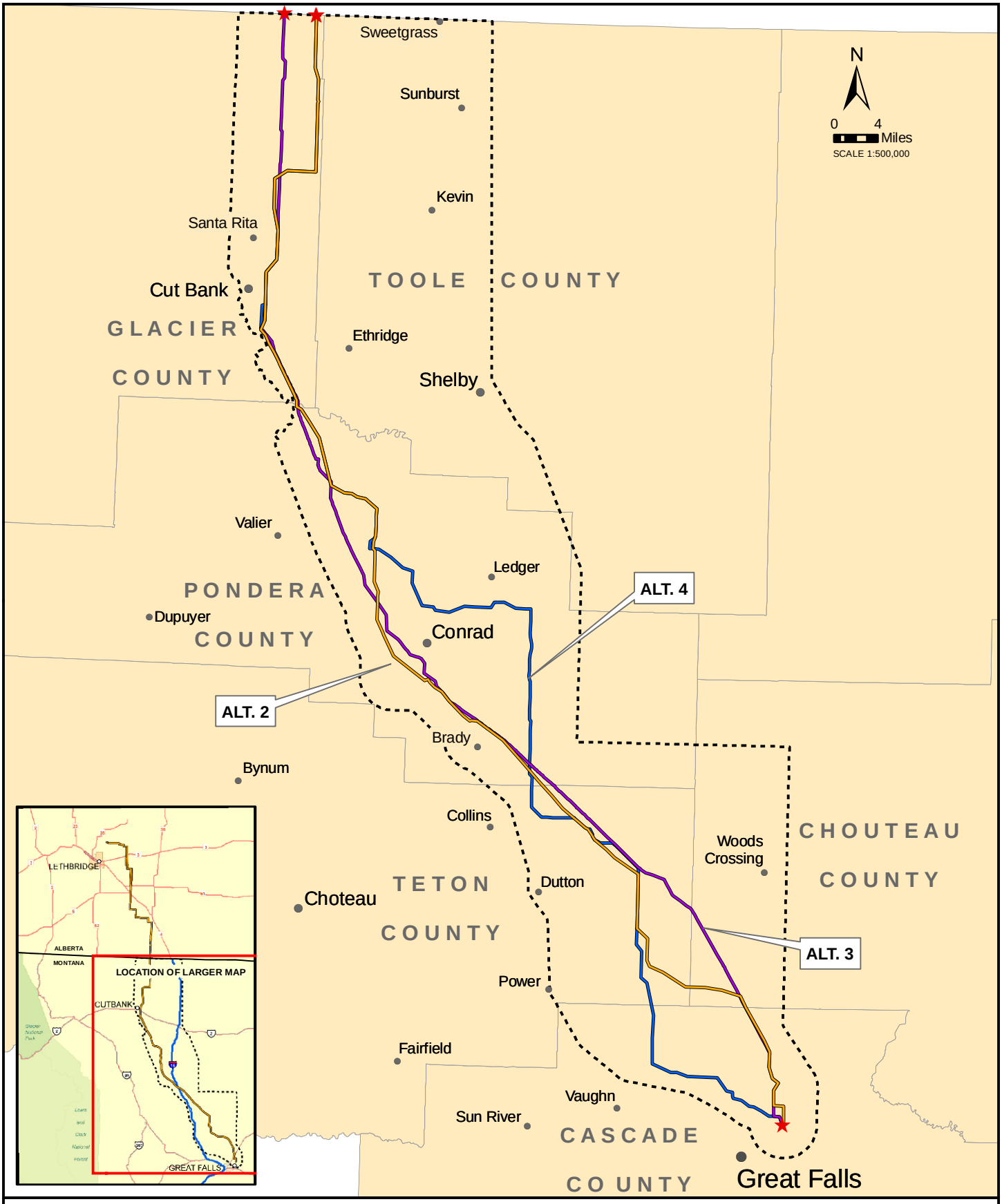

FIGURE S-1
PROJECT STUDY AREA

LEGEND

- ALT2 - ALIGNMENT
- ALT3 - ALIGNMENT
- ALT4 - ALIGNMENT
- CITIES AND TOWNS
- ALIGNMENT END AND EXIT POINTS
- STUDY AREA BOUNDARY

NOTE:
ALT = ALTERNATIVE

GIS map by Ed Madej -TTEMI-HE FigS-1_MATL_Project_Study_Area_012408.mxd

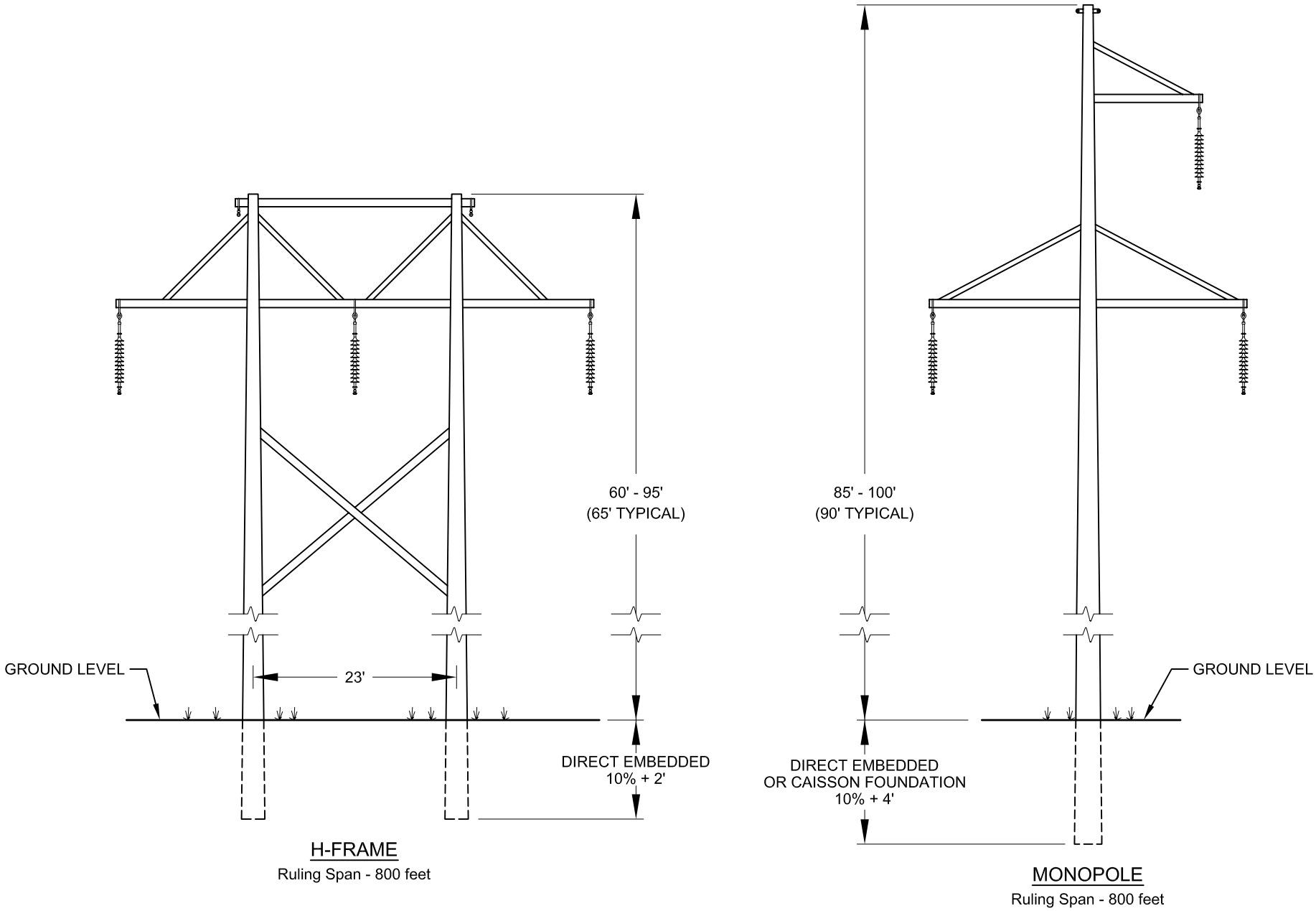

FIGURE S-2
PROPOSED MATL POWERLINE
TYPICAL SUPPORT STRUCTURES

Figure S-2_Typical Support Structures.dwg - DWH - 01/22/2008

Construction is anticipated to take 4 to 6 months to complete. A summary of construction tasks is included in **Table S-1**. Additional tasks would include the following:

- Pre-Construction: Environmental permitting, cultural resource clearance, final transmission structure siting, engineering design, land procurement, various utility studies, and major procurement.
- Surveying: survey control, alignment centerline location, and profile surveys. Light Detection and Ranging (LIDAR) would be used to provide much of this information. LIDAR is an airborne laser mapping technology that directly measures the shape of the earth's surface under the aircraft. LIDAR generates wide-area elevation information that can be used to make models showing details such as buildings, trees, and power lines.
- Geotechnical Survey: Investigations would be completed at selected key locations to establish foundation requirements. The geotechnical information is used to reduce problems during erection of the structures and assist with the cost estimate and bidding process for the project.
- Access Planning and Preparation: Crews would gain access primarily from existing public roads and trails as well as within the transmission line ROW. Graded surface access roads are planned for a few steep hillsides. Existing roads and trails would be left in comparable or better condition than before construction or to those conditions specified by landowners during easement lease negotiations.

  Gates would be installed where fences cross the ROW. Locks would be installed at landowner's request. Gates not in use would be closed but not locked unless requested by the landowner.

- Delivery and Assembly: Structure components, including poles, X-braces, cross-arms, insulators, and hardware for structures would be delivered and assembled.

  For H-frame structures poles would be set directly in holes and backfilled with compacted native soil or gravel. Any excess soil would be evenly regraded around the structure or hauled off site, depending on the landowner's preference. At heavy angled and dead-end structures, cast-in-place concrete footings would be installed.

  For monopoles after the pole is set in the hole, cement would be used, instead of soil, to backfill within approximately 1 foot of the soil surface. The salvaged topsoil material would be replaced on top of the cement. Any excess soil would be evenly regraded around the structure or hauled off site, depending on the landowner's preference.

TABLE S-1 SUMMARY OF CONSTRUCTION TASKS AND REQUIRED RESOURCES AND EQUIPMENT			
Task	**Crew Size**	**Typical Wage Level ($/hour)[a]**	**Equipment**
Access Fencing/Reclamation	2	$15 to $18	¾ –ton post pounder
Framing	6	$17 to $20	Teleking 5-ton crane, Bobcat, 1-ton crewcab pickup
Setting	8	$17 to $20	330 Texoma digger, 35-ton setting crane, gravel truck, concrete truck, air compressor w/ tamper, Bobcat, (2) 1-ton crewcab pickups
Anchoring	3	$20 to $22	radial arm digger or retrofitted trench hoe
Material Handling	2	$17 to $20	(2) trucks
Pole Hauling	3	$20 to $22	pole truck, pickup
Stringing	31	$20 to $26	Tensioner, puller, 30-ton crane and pickup, soft line winder and pickup, cat pulling sock line and pickup, crane and pickup, flat deck and small crane, rider pole crew digger, pole truck

Notes:
[a]Wage levels extrapolated from "Montana Prevailing Wage Rates – Heavy Construction" Rates Effective March 10, 2006

- Conductor Installation: After erecting structures, conductor and ground wires would be installed. Large reels of conductor and overhead ground wire would be delivered to pre-selected pulling and tensioning sites (about every 2 miles) along the transmission line alignment. Adjustments made during tensioning would prevent the cable from sagging too much to comply with the applicable regulations.
- Reclamation: All disturbed areas would be reclaimed. These efforts typically include gate repair as necessary, regrading and revegetation, and waste material removal.

MATL proposes to commence construction as soon as all property rights are obtained and all necessary state and Federal authorizations are issued. MATL may not begin any construction activities unless and until it obtains all required permits.

MATL would design, construct, operate, and maintain the proposed transmission system in accordance with the National Electrical Safety Code (NESC), U.S. Department of Labor Occupational Safety and Health Act (OSHA) Standards, and other requirements and guidance as appropriate.

Construction staging areas would be located in previously disturbed areas whenever possible. In general, construction staging areas would either be located in communities near the ROW where rail and truck service are available or in rural areas where equipment could be unloaded from tractor-trailers. Construction staging areas would be on private land and would be subject to landowner negotiations and agreements. Construction staging areas would likely be located near Cut Bank, Valier, Conrad, Brady, Dutton, or Great Falls. MATL expects that staging areas would be established in three locations, with each staging area occupying about 5 acres. However, a few smaller areas (about 2.5 acres) might be used.

NWE and Alberta Electric System Operator system dispatchers would direct normal line operations, using MATL's facilities to operate circuit breakers, determine the amount of power required to serve the loads and configure the power system accordingly, schedule the proper generation amount, and monitor the power system to ensure reliable service. Circuit breakers would operate automatically to ensure safe transmission line operation. Normal farming and other activities would be permitted on transmission line ROWs if these activities do not interfere with line operation and maintenance or create safety problems.

Maintenance programs would include routine aerial and ground patrols. Aerial patrols would be conducted annually and as needed to check for damage to conductors, insulators, or structures after severe wind, ice, wild fires, or lightning storms. Ground patrols generally would occur every 5 years to detect equipment in need of repair or replacement. Ground patrols and subsequent repair activities would be scheduled to minimize crop and property damage. Noxious weed control plans would help guide herbicide treatments. Vegetation clearing may also be required in certain areas to minimize fire hazards.

For emergencies, crews would respond promptly to repair or replace damaged equipment. MATL would meet with respective landowners to arrange compensation for any damages incurred during emergency repair operations.

In its applications to DEQ and DOE, MATL has committed to project-specific environmental protection measures that may be used to avoid or reduce the intensity and/or duration of the impacts to resources. MATL proposes to implement a worker education program and on-site monitors to ensure that the site-specific environmental protection measures are strictly followed. Other guidance MATL proposes to use includes Western Area Power Administration's (WAPA) Construction Standard 13 (WAPA 2001), and Raptor-Safe Power Line Construction Practices (Edison Electric Institute [EEI] and Avian Power Line Interaction Committee [APLIC] 1996).

S.4.2 Alternative 1 — No Action

Under Alternative 1 the proposed Project would not be approved or constructed. Existing electrical transmission service in north-central Montana would be maintained and operated at its current level. In addition, companies with plans to construct new generation facilities in the analysis area would need to consider other transmission alternatives or not build them.

S.4.3 Alternative 2 — MATL's Proposed Project

Alternative 2 is to construct and operate a 129.9 mile long, 230-kV merchant transmission line between Great Falls, Montana, and Lethbridge, Alberta, as described in MATL's application to DEQ, its application to DOE for a Presidential permit and its application to the BLM for a ROW grant. The proposed alignment would have an operational ROW width of 105 feet. The line would extend from the expanded 230-kV Great Falls Switchyard north of Great Falls to a proposed new substation south of Cut Bank, and then north to the Montana-Canada border at the western edge of the Red Creek Oil Field. Monopole structures would be used on about 56 miles of the line where it would cross cropland and CRP land diagonally. On the remaining 74 miles, H-frame structures would be used for this alternative.

S.4.4 Alternative 3 – MATL B

Alternative 3 would be 121.6 miles long and would be similar to Alternative 2 in that the width of the ROW, types of access roads, implementation, conductors, markers, substations, construction, operations, maintenance, and MATL's proposed environmental protection measures would be the same as those described for Alternative 2 and in details common to all alternatives. The Alternative 3 alignment would be different from Alternative 2 in that it would generally parallel an existing 115-kV transmission line along the entire route from the 230-kV Great Falls Switchyard to a substation near Cut Bank and use only H-frame structures. Alternative 3 was developed by MATL in response to a single siting criterion under MFSA that gives consideration to paralleling existing utility corridors (Circular MFSA-2). This alternative alignment was not intended to address potential land use issues or maintenance issues but is the shortest and potentially the least costly alternative under consideration.

S.4.5 Alternative 4 – Agencies' Alternative

Alternative 4 was developed by the agencies to address public concerns regarding line interference with farming activities and close proximity to residences. This alternative would be 139.6 miles long and would be similar to Alternative 2 in that width of the ROW, types of access roads, implementation, conductors, markers, substations, construction, operations, maintenance, and MATL's proposed environmental protection measures would be the same as those described for Alternative 2 and in details common to all alternatives. The differences in environmental impacts between Alternatives 2 and 4 are discussed in Section S.6.

The Alternative 4 alignment would use portions of the Alternative 2 alignment from north of Conrad to the Montana-Alberta border. In other areas it would maximize the use of range and pasture land, where available. Where cultivated land would be crossed, it would generally be located along field or strip boundaries. Alternative 4 would require the use of monopole structures on all 88.9 miles of cropland and CRP land, not just where cropland and CRP land are crossed on the diagonal as in Alternative 2.

Although Alternative 4 is analyzed as a whole, the agencies could select some or all parts of this alternative or other alignments (i.e., the Local Routing Options described in the following section) whose environmental impacts have been considered in this EIS.

MATL has indicated that because Alternative 4 is longer than the other alternatives this alternative would be more expensive than Alternatives 2 and 3. MATL estimates that Alternative 4 would result in up to a 12 month delay and a $5 million increase in total costs. MATL has stated that if Alternative 4 is selected, the project would be unlikely to be built since it would have difficulties obtaining adequate financing for the project due to additional costs and delays. Comments received from landowners indicate that Alternative 4 would minimize impacts to farmland.

S.4.6 Local Routing Options

Based on public comments received on the March 2007 document and the Draft EIS, the agencies worked with landowners to refine Alternatives 2 and 4 to address landowner concerns related to costs, impacts to farming, impacts to other land uses, and proximity to residences. They developed 11 Local Routing Options for Alternative 2 (**Figure S-3**), a subset of which could also be included in Alternative 4. Subsequent to the publication of the Draft EIS, the agencies developed minor variations to four of the Local Routing Options to help mitigate and minimize impacts to existing and future land uses. One short variation to Alternative 2 was developed north of the Great Falls 230-kV Switchyard (Great Falls 230-kV Switchyard Variation). The suggested minor variations are described in more detail in the sections below.

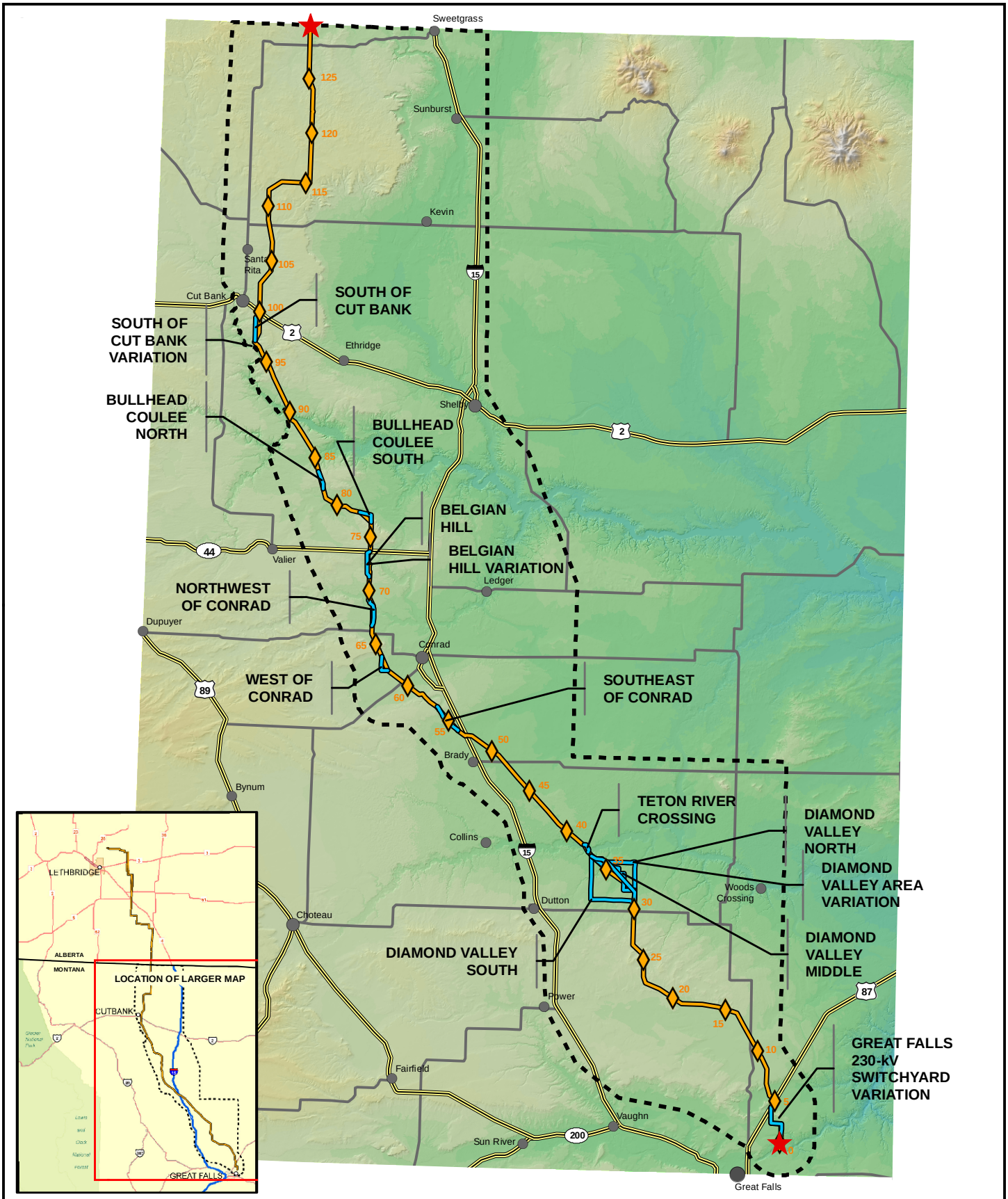

FIGURE S-3
LOCAL ROUTING OPTIONS AND VARIATIONS

N

0 10 Miles

LEGEND

- ALT 2 - PROPOSED ALIGNMENT
- MILE MARKERS
- LOCAL ROUTING OPTIONS
- MAJOR HIGHWAYS
- SECONDARY ROADS
- STUDY AREA BOUNDARY
- CITIES AND TOWNS
- ALIGNMENT END AND EXIT POINTS

GIS map by Ed Madej -TTEMI-HE FigS-3_MATL_Local_Routing_Options_All_091208.mxd

The Local Routing Options would not change environmental impacts for most resource areas. Several of the Local Routing Options would result in fewer impacts on crop production, including lower costs for farming around transmission line structures.

Diamond Valley Local Routing Options. Three Local Routing Options (Diamond Valley South, Diamond Valley Middle, and Diamond Valley North) were identified for the Diamond Valley area. These are alternative alignments for one segment of the line, applicable to both Alternatives 2 and 4. All three options would result in less diagonal crossing of farm fields, but two options (Diamond Valley Middle and Diamond Valley North) could interfere with aerial spraying because they would create acute angles with the existing NWE 115-kV transmission line. Also, the Diamond Valley North option could require relocation of a grain bin to avoid safety problems. Compared with Alternative 2, the Diamond Valley North option would reduce by one the number of residences within 1/2 mile of the alignment; the Diamond Valley Middle option would increase by one the number of residences within this distance; and the Diamond Valley South option would decrease the proximity of the line to one residence.

In comments on the Draft EIS, landowners suggested a variation on Local Routing Options in the Diamond Valley area as indicated on **Figure S-3.** It would better avoid one residence but would be slightly longer than Alternative 2. It would still involve crossing cultivated land with monopole structures. Compared to Alternative 2, it would cross an additional 1.3 miles of farmland (5.1 miles for Diamond Valley minor variation versus 3.8 miles for Alternative 2). MATL has indicated it would attempt to locate structures on field boundaries regardless of the selected route, but limitations in span length and possibly line tension would result in some structures being placed in mid-field locations.

Teton River Crossing Local Routing Option. The Local Routing Option for the Teton River Crossing Area could apply to Alternatives 2 and 4. It would allow one transmission line structure to be on a slightly more elevated terrace that would avoid an area that is reported to have flooded in 1964. It would also locate structures at the edge of fields to reduce interference with farming. It could, however, result in some clearing of tall growing riparian vegetation.

Southeast of Conrad Local Routing Option. The Southeast of Conrad Local Routing Option for Alternative 2 would reduce the crossing of cropland, but would increase by one the number of residences within 1/2 mile of the alignment and would increase the chance of encountering cultural resource sites.

West of Conrad Local Routing Option. The West of Conrad Local Routing Option for Alternative 2 would decrease the diagonal crossing of cropland and reduce potential interference with aerial crop dusting. A landowner has suggested that monopoles be used along field edges of this Local Routing Option. When presented with a choice

between H-frame structures at the edge of the field and monopoles crossing the fields diagonally, the landowner indicated that the monopole option would be preferable (Jones 2008).

Northwest of Conrad Local Routing Option. The Northwest of Conrad Local Routing Option for Alternative 2 would decrease the diagonal crossing of cropland, but increase the chance of encountering cultural resource sites. This Local Routing Option would increase the use of private range and pastureland instead of cropland (**Figure S-3**).

Belgian Hill Area Local Routing Option. The Belgian Hill Road area Local Routing Option for Alternative 2 would increase the distance between the transmission line and nearby residences, slightly reduce the diagonal crossing of cropland, and reduce but not fully avoid the crossing of irrigated fields. Portions of this option also could be used for Alternative 4. Like the Local Routing Option for Alternative 2, the option for Alternative 4 would increase the distance between the transmission line and nearby residences and reduce but not fully avoid the crossing of irrigated fields. The option for Alternative 4 would also decrease by one the number of residences within ½ mile of the alignment and avoid diagonal crossing of farmland.

In comments on the Draft EIS, the agencies learned of plans to develop a center-pivot irrigation system in the vicinity of the Belgian Hill Local Routing Option described in the Draft EIS. Thus, a minor variation resulted in the Local Routing Option being revised (**Figure S-3**). The Local Routing Option would remain about 0.5 mile from houses along Belgian Hill Road. However, it would increase the amount of cropland crossed by approximately 0.64 mile and add 0.50 mile of total line length compared to Alternative 2.

Bullhead Coulee South Local Routing Option. The Bullhead Coulee South Local Routing Option for Alternatives 2 and 4 would avoid interference with the planned location of a wind turbine unrelated to the proposed MATL transmission line, but would increase the potential for soil erosion.

Bullhead Coulee North Local Routing Option. The Bullhead Coulee North Local Routing Option for Alternatives 2 and 4 would reduce interference with farming. A minor variation to this Local Routing Option since the Draft EIS would reduce farming costs by placing more structures on field edges and has greater potential for landowner acceptance.

South of Cut Bank Local Routing Option. The South of Cut Bank Local Routing Option for Alternatives 2 and 4 would follow property boundaries better, would be located farther away from one residence, and would have greater potential for general local acceptance. This routing option would generally parallel Alternative 2. The agencies identified a minor variation for the southern ¼ mile of the South of Cut Bank Local

Routing Option that would eliminate several angle structures and keep the transmission line along the section line.

Great Falls 230-kV Switchyard Variation. A variation to Alternative 2 was developed by MATL and two landowners north of the Great Falls 230-kV Switchyard to mitigate and minimize impacts to existing and future land uses in this area. The variation would apply to Alternative 2 for the first approximately 5.1 miles of the alignment north of the Great Falls Switchyard. The variation involves constructing approximately 4.3 miles of the line using monopole structures capable of supporting two 230-kV transmission lines (double-circuit 230 kV line construction). The remaining 0.8 mile, from MP 4.3 to MP 5.1 would remain a single-circuit H-frame construction but would be relocated across to the northwest side of Highway 87.

The minor variation would also involve moving the Alternative 2 alignment to the east side of the existing 115-kV line between MP 0.9 and MP 1.9. The existing distribution line would be removed between MP 1.4 and MP 1.9 to provide the room for MATL's 230-kV alignment. MATL would pay for the existing distribution line to be placed underground or for the construction of a new overhead distribution line, depending on the landowner's permission and preference.

S.4.7 The Agencies' Preferred Alternative

The preferred alternative consists of portions of Alternatives 2 and 4 and some local routing options as shown on **Figures S-4, S-5,** and **S-6** and described in detail in Section S.6.3. It begins at the Great Falls Switchyard and follows Alternative 4 for 27.3 miles. From that point to Milepost 103.1 it primarily follows Alternative 2, but includes the Diamond Valley South, Teton River, Southeast of Conrad, Northwest of Conrad, Belgian Hill, Bullhead Coulee South, Bullhead Coulee North, and South of Cut Bank Local Routing Options. North of Milepost 103.1 the preferred alternative coincides with Alternatives 2 and 4 to join with Canada's approved route at the border crossing. The total length of the preferred alternative is 133.5 miles and would consist of about 83.6 miles of monopoles and 49.9 miles of H-frames.

The DEQ selected the preferred alternative because it represents the best balance between avoidance of impacts to farmland, cost, avoidance of houses, public acceptance, and use of public lands. DOE has also selected the described alternative as its preferred alternative.

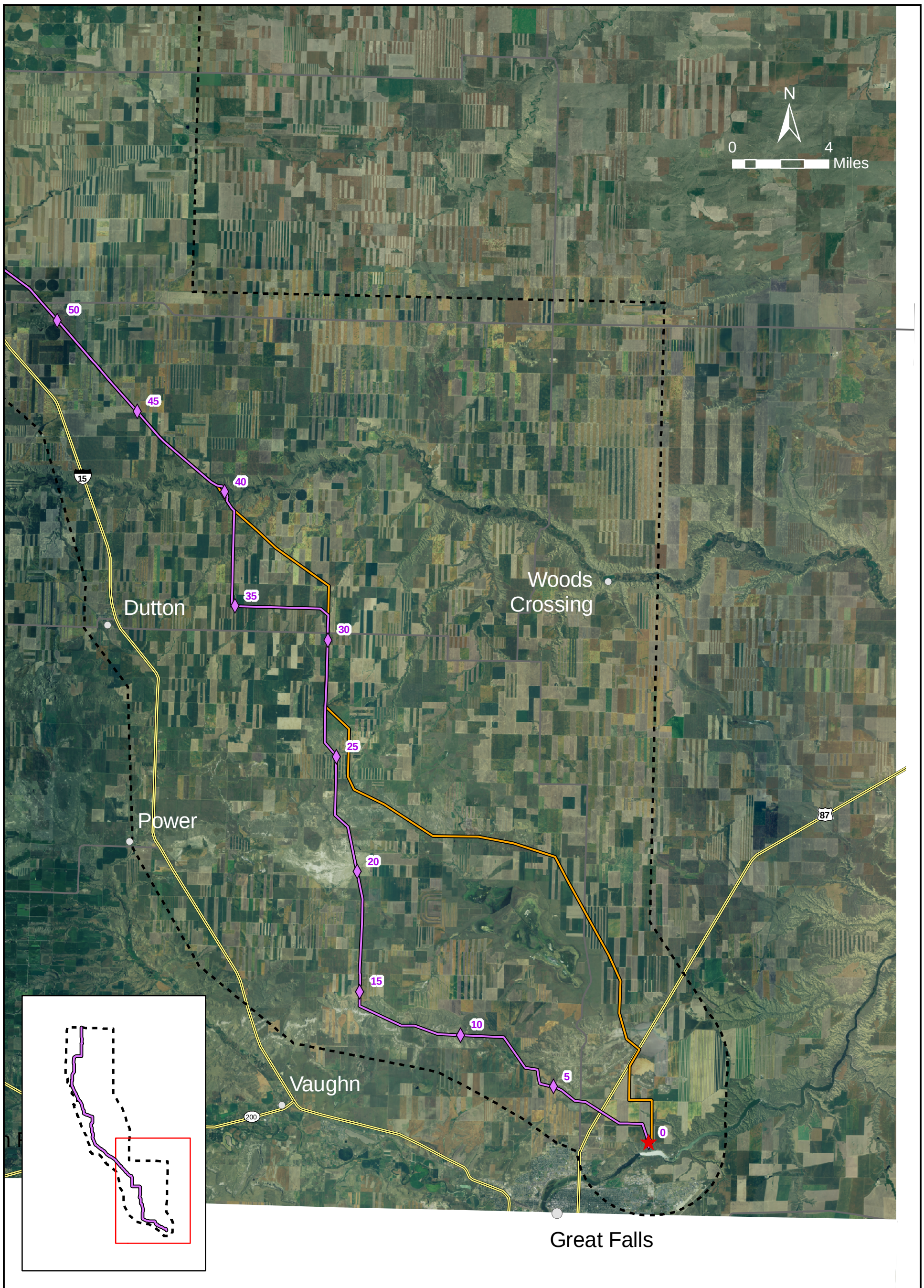

FIGURE S-4
AGENCIES' PREFERRED ALIGNMENT
SOUTH

LEGEND

- APPLICANT'S PROPOSED ALIGNMENT ALT 2
- AGENCIES' PREFERRED ALIGNMENT
- AGENCIES' MILE MARKERS
- CITIES AND TOWNS
- ALIGNMENT END AND EXIT POINTS
- STUDY AREA BOUNDARY
- MAJOR HIGHWAYS
- SECONDARY ROADS

NOTE:
ALT = ALTERNATIVE

GIS map by Ed Madej -TTEMI-HE FigS-4_MATL_PREFERRED_Alignment_South_091208.mxd

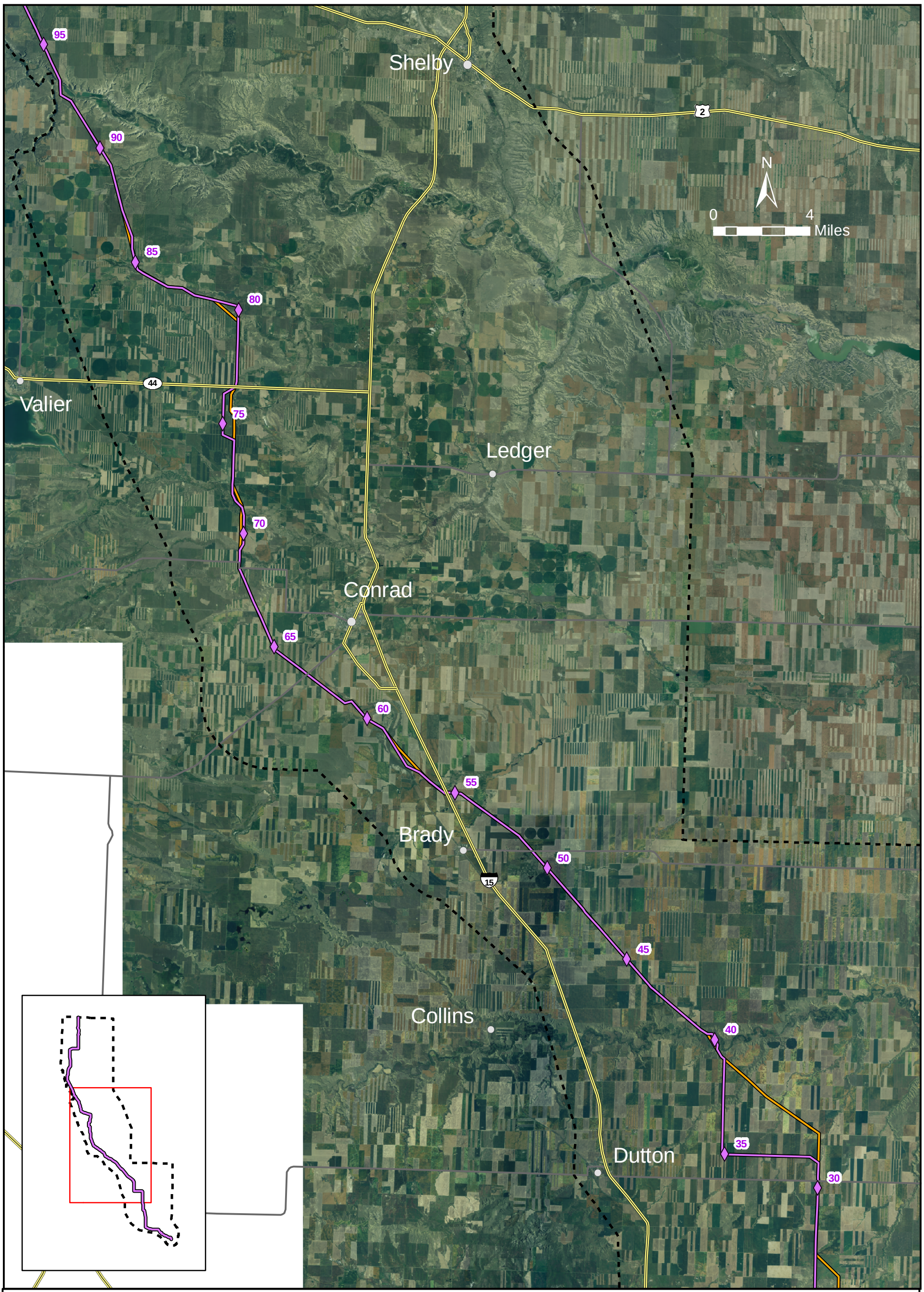

FIGURE S-5
AGENCIES' PREFERRED ALIGNMENT
MIDDLE

LEGEND

- APPLICANT'S PROPOSED ALIGNMENT ALT 2
- AGENCIES' PREFERRED ALIGNMENT
- AGENCIES' MILE MARKERS
- CITIES AND TOWNS
- ALIGNMENT END AND EXIT POINTS
- STUDY AREA BOUNDARY
- MAJOR HIGHWAYS
- SECONDARY ROADS

NOTE:
ALT = ALTERNATIVE

GIS map by Ed Madej -TTEMI-HE FigS-5_MATL_MTEDQ_PREFERRED_Alignment_Middle_091008.mxd

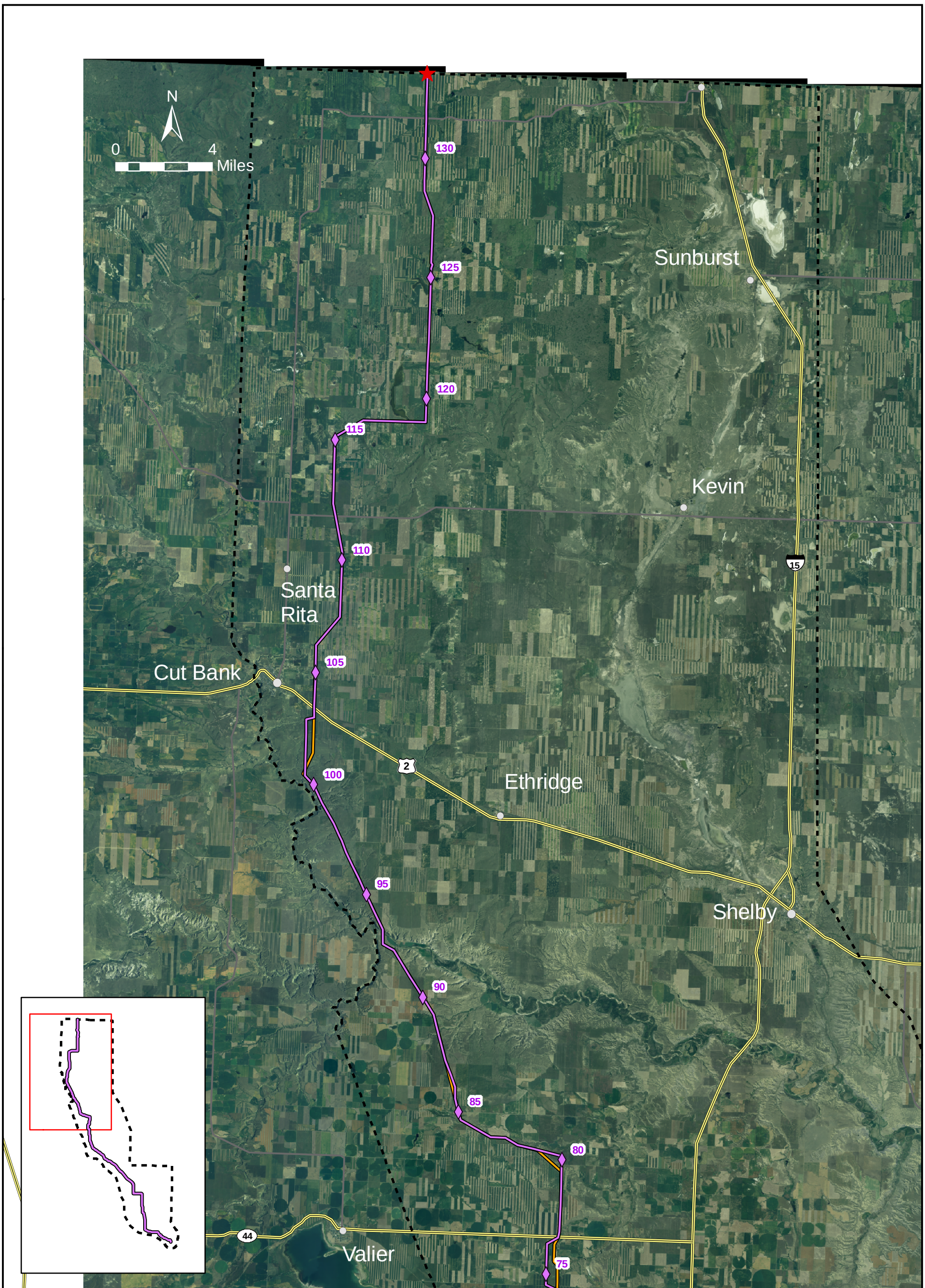

FIGURE S-6
AGENCIES' PREFERRED ALIGNMENT
NORTH

LEGEND

- APPLICANT'S PROPOSED ALIGNMENT ALT 2
- AGENCIES' PREFERRED ALIGNMENT
- AGENCIES' MILE MARKERS
- CITIES AND TOWNS
- ALIGNMENT END AND EXIT POINTS
- STUDY AREA BOUNDARY
- MAJOR HIGHWAYS
- SECONDARY ROADS

NOTE:
ALT = ALTERNATIVE

GIS map by Ed Madej -TTEMI-HE FigS-6_MATL_PREFERRED_Alignment_North_091208.mxd

S.4.8 Alternatives Considered But Dismissed

Several alignment and construction-detail alternatives were considered but eliminated from detailed study.

- Many additional local routing options
- MATL C alignment
- Building the line underground
- Unguyed, self-supporting angle and dead-end structures
- Requiring the use of helicopters to string the line
- Requiring monopole structures in all areas
- Cut Bank to Shelby alternatives
- NWE 115-kV transmission line rebuild alternative

Numerous local routing options were considered but eliminated from detailed analysis for one or more of the following reasons: did not address local land use concerns; did not reduce impact to farming; encountered greater geologic and topographic constraints compared to others being carried forward, would be more costly than the estimated cost savings to farmers, or would not reduce farming and land use impacts as well as others being carried forward.

The MATL C Alignment is in the MFSA application. It was dismissed from detailed study because it did not fully address issues raised during scoping. Specifically, although it would cross less cropland diagonally than Alternative 2, it would have crossed more farm land diagonally in the segment beginning south of Brady and continuing to approximately 10 miles north of Conrad. This alternative also would be located very close to several residences, and would not use as much range and pasture land, or parallel existing transmission lines as much as other alignments.

Building the line underground was dismissed because it would cost between two and 15 times more than overhead construction and because digging the trenches required to bury the line would result in greater construction disturbance to the land and require more time to install. The use of unguyed, self supporting angle and dead-end structures would reduce some of the impacts on land uses but this alternative was dismissed because of the substantially higher costs for these structures. Similarly, the use of helicopters to string the line would avoid the construction of some access roads but would significantly increase the cost of construction. Also, helicopters are most commonly used in extremely hilly terrain or in large marshy areas where ground access would be difficult. This alternative was dismissed because most of the study area is accessible from the ground.

The use of monopole support structures instead of H-frame structures for the entire length of the line was dismissed because of added costs with little additional land use benefits on rangeland. However, the use of monopoles is now proposed by MATL for about 56 miles of cropland and CRP crossed diagonally under Alternative 2 and is also analyzed for all cropland and CRP crossings (89 miles) under Alternative 4.

Two alternatives between Cut Bank and Shelby were identified but dismissed. In one alternative, MATL would build the proposed line from the border to Shelby where it would tie into WAPA's transmission system. Energy producers or other subscribers would then have to pay MATL for the use of its project between the border and Shelby and then pay WAPA for the use of its transmission system from Shelby to Great Falls. This alternative was dismissed because it would result in a substantial increase in transmission costs for those proposing to ship energy into the Great Falls area. In the second alternative, MATL and WAPA would jointly rebuild portions of WAPA's existing Shelby-Great Falls 230-kV line to a double circuit configuration. However, WAPA declined to pursue this alternative because it would reduce the reliability of its system.

MATL also considered an alternative that would combine its proposed transmission line with a rebuilt and updated version of NWE's existing 115-kV line between Cut Bank and Great Falls. This alternative was dismissed because it would create unacceptable operating logistics to maintain electric service while the line was being rebuilt and upgraded and because of the economics associated with the partnership.

S.5 Affected Environment

The 1,444,790-acre Project study area (Figure S-3) contains sparsely populated semi-arid rolling hills, gentle ridges, and plateaus bisected by alluvial corridors of the Marias and Teton rivers and their tributaries. The area has low topographic relief with elevations ranging from 4,372 feet above sea level in the northwest corner of the study area to about 3,016 feet above sea level on the Missouri River in the southeast corner of the area. Winters are extremely cold with desiccating winds and snow. May and June are the wettest months; however, perennial streams and rivers are sustained primarily from moisture derived from mountain snowpack.

The bedrock geologic units are primarily glaciated Cretaceous shales and sandstones. This region includes portions of eight hydrologic subbasins in Montana, all of which contribute to the lower Missouri River Basin. The primary surface water features in the analysis area are Cut Bank Creek, the Marias River and the Dry Fork Marias River, Pondera Coulee, the Teton River, Benton Lake, Hay Lake, and the Missouri River. Isolated prairie potholes, lakes, and stock reservoirs are scattered throughout the analysis area.

The majority of the land (90 percent) is privately owned, with the remainder being owned or managed by state, Federal, and local government agencies. Over 88 percent of the Project study area is considered agricultural lands, including irrigated and non-irrigated cropland and rangeland. Some dry land crops and grazing occur on state and Federal lands. Management of agricultural lands can involve the use of Differential Global Positioning System (DGPS)-guided farming equipment and vehicles (e.g., tractors, sprayers, combines) and other equipment used for irrigation, aerial and ground based spraying, plowing, seeding, fertilizing, and harvesting. These activities occur on 73 percent of the Project study area. This agricultural land base gives the landscape its characteristic and dominant patterns of linear strips of dryland cultivation and circular and rectangular shapes associated with irrigated fields. Views are typically expansive throughout the entire Project area, extending across rolling uplands and plains to the Rocky Mountain Front and island mountain ranges such as the Sweet Grass Hills and Highwood Mountains. Portions of Cascade, Chouteau, Glacier, Pondera, Teton, and Toole counties are in the Project study area.

Numerous oil and gas fields are located within the northern portion of the study area. Gathering lines and pipelines between 8 and 20 inches in diameter occur within or traverse the Project study area, including main lines, and transmission/trunk lines. Existing electric and magnetic fields (EMF) levels in the project vicinity are primarily dominated by EMF from common household appliances. Existing transmission and distribution lines also contribute to EMF levels.

S.6 Comparison of Alternatives and Impacts

No natural resources would experience a substantial impact from implementation of any action alternative. Potential impacts and cumulative impacts are similar for all three action alternatives.

S.6.1 No Action Alternative

The no action alternative would forgo the socioeconomic benefits of the proposed Project. Under this alternative there would be no additional employment from construction or operation of the transmission line, no increase in county or state tax revenue, and no additional impacts or compensation to farmers for use of their land. There would be no increased transmission capacity for new or existing power generators.

S.6.2 Alternatives 2, 3, and 4

All of the action alternatives would result in some loss of and interference with crop production. Alternative 3 would have the most impacts to crop production because it would include the most diagonal crossing of crop lands and because H-frame structures would be used on all cropland crossings. Alternative 3 would add to impacts associated with farming around structures because this alternative would closely parallel an existing 115-kV transmission line between Great Falls and Cut Bank. Alternative 4 would have less impact to crop production than the other action alternatives because it would include the least diagonal crossing of cropland and CRP land and would use monopoles on all cropland crossings. The minimum ground clearance of MATL's proposed line would comply with the requirements of the National Electrical Safety Code. On cultivated and CRP lands, expected heights of the tallest farming equipment (20 feet), including antenna heights, were used to determine the new minimum clearance of 27.2 feet for the safe operation of farm equipment under the line. Construction activities under all of the action alternatives could result in increased soil erosion and release of sediment to streams, lakes, and wetlands, although best management practices would reduce or avoid potential impacts. The 500-foot wide analysis area associated with Alternative 4 would have the highest potential for soil erosion and sediment discharge to surface waters because it would cross the largest area of potentially unstable soils and the most streams. The analysis area associated with Alternative 2 would cross the smallest area of unstable soils and the fewest wetlands, while analysis area for Alternative 3 would cross the least number of streams but the largest area of wetlands and the largest number of lakes.

All action alternatives would produce some localized short-term emissions of particulate matter during construction. In addition, all action alternatives would emit very small amounts of greenhouse gases, principally from vehicle and equipment operations during construction. Construction-related greenhouse gas emissions were estimated using the Urban Emissions 2007 Model, and found to be negligible.

Under all action alternatives some bird mortality could result from collisions with transmission lines even after mitigating measures are applied; potential impacts would be somewhat less under Alternative 4 than the other alternatives because Alternative 4 would not be located as close to the Benton Lake National Wildlife Refuge. Under all action alternatives, portions of the transmission line would cross some potential habitat for special status species. Additional grouse lek surveys were conducted by MATL's consultant on April 30 (ground) and May 2 (aerial), 2008. Although some isolated sharp-tailed grouse were seen, no leks were observed. Observation of isolated grouse does not signify the presence of leks. Although no adverse effects to special status species are expected from any of the action alternatives, Alternative 2 would cross more potential habitat for special status species than Alternatives 3 and 4. In a letter dated September 16, 2008, the FWS has concurred with DOE's determination that the

proposed Project would not adversely affect any species listed as threatened or endangered under the Endangered Species Act.

Under all action alternatives, nearby residents and motorists using travel corridors would be exposed to views of a transmission line; Alternative 3 would expose the largest number of nearby residences and the longest length of travel corridors to near-field views within ½ mile of the proposed line. Alternative 4 would have the lowest overall visibility to nearby residences and travel corridors, but Alternatives 2 and 4 would have a similar number of residences within 1/4 mile.

Under any of the alternatives, no disproportionately high and adverse impacts would be expected to minority or low-income populations.

S.6.3 Agencies' Preferred Alternative

Beginning at the Great Falls Switchyard at Milepost 0, the agencies' preferred alternative includes a 27.3 mile segment of Alternative 4 because it better avoids cultivated and CRP land than Alternative 2. Compared to Alternative 2, this portion of Alternative 4 crosses 5.79 fewer miles of farmland, crosses 7.73 fewer miles of farmland diagonally, and has fewer nearby residences. Overall, this segment is 0.39 miles longer than the corresponding Alternative 2 segment and crosses 2.46 miles less state land. Much of this line segment parallels the WAPA-230 kV line that was sited during the 1980s to avoid cropland where possible.

From Milepost 27.3 to Milepost 31 the agencies' preferred alternative coincides with Alternative 2. From Milepost 31 the preferred alternative follows the Diamond Valley South Local Routing Option as far as milepost 39.2. While the Diamond Valley South option is 2 miles longer than the corresponding segment of Alternative 2, it better avoids diagonal crossings of farmland and better avoids houses. Compared to the Diamond Valley North Local Routing Option, it parallels fewer miles of field roads, better avoids a grain bin, and has two fewer crossings of NorthWestern Energy's 115-kV line.

At the crossing of the Teton River (Milepost 39.2) the agencies' preferred alternative incorporates the Teton River Local Routing Option because this crossing would remain higher above the river channel than Alternative 2, avoiding potential flood inundation, and largely remains along field edges north of the river.

From the Teton River the agencies' preferred alternative coincides with Alternative 2 as far as Milepost 56.2. Here, the preferred alternative uses the Southeast of Conrad Local Routing Option that locates the line on rangeland and field boundaries better than Alternative 2. From Milepost 59.2 to Milepost 69.3 the agencies' preferred alternative coincides with Alternative 2. Between Mileposts 69.3 and 72.2 the Northwest of Conrad

Local Routing Option was selected because it better avoids crossing farmland diagonally by using the range and pasture land available in the area.

From Milepost 72.2 to approximately Milepost 74 (the beginning of the Belgian Hill Local Routing Option) the preferred alternative coincides with Alternative 2. From Milepost 74 to Milepost 76.8 the Belgian Hill Local Routing Option was selected to avoid close proximity to several houses.

Between Milepost 48.1 and Milepost 75.5 Alternative 4 is not preferred. Compared to Alternative 2 as modified by Local Routing Options, this portion of Alternative 4 is 5.33 miles longer, resulting in additional environmental impacts and construction and maintenance costs. This portion of Alternative 4 also crosses 1.05 miles of additional farmland. Although this portion of Alternative 4 crosses 11.09 fewer miles of farmland diagonally than under Alternative 2 as modified by the Local Routing Options, MATL has committed to working with landowners to place interior structures along field strip boundaries where the landowner farms in strips that are narrower than a full quarter section. About half of this portion of Alternative 2 could be located on range or on field strip boundaries. Finally, the agencies have modified Alternative 2 to require the same use of monopoles wherever cropland and lands enrolled in CRP are crossed as required under Alternative 4.

From Milepost 76.8 to Milepost 79.5 the agencies' preferred alternative coincides with Alternative 2. From Milepost 79.5 to Milepost 81.2 the Bullhead Coulee South Local Routing Option was selected because, at the request of an affected landowner, it would allow construction of a wind turbine that would otherwise be precluded by Alternative 2.

From Milepost 81.2 to Milepost 85.5 the preferred alternative coincides with Alternative 2. From Milepost 85.5 to Milepost 87.2 the Bullhead Coulee North Local Routing Option was selected to reduce the amount of cropland crossed diagonally. From Milepost 87.2 to Milepost 100.5, the preferred alternative coincides with Alternative 2. The preferred alternative would cross BLM-owned land between Milepost 93.4 and Milepost 94.0. Beginning at Milepost 100.5 the preferred alternative uses the South of Cut Bank Local Routing Option because it would locate the line on field boundaries and better avoid a house without a large increase in line length. North of Milepost 103.1 the preferred alternative coincides with Alternatives 2 and 4 to join with Canada's approved route at the border crossing.

Although Alternative 3 is the shortest route, north of Cut Bank it is not preferred because it does not join with Canada's approved route. South of Cut Bank, Alternative 3 was developed to closely parallel an existing 115-kV line that was built in the 1960s prior to passage of MFSA. Alternative 3 is not the agencies' preferred alternative in that

area because it crosses more crop and irrigated land diagonally than Alternatives 2 and 4 and has little public acceptance or support.

S.6.4 Cumulative Impacts

CEQ regulations implementing the procedural provisions of NEPA define cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR § 1508.7). The regulations further explain that "cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

MEPA defines cumulative impacts as "the collective impacts on the human environment of the proposed action when considered in conjunction with other past, present, and future actions related to the proposed action by location or generic type" (75-1-220(3), MCA). Related future actions may only be considered when these actions are under concurrent consideration by any agency through pre-impact statement studies, separate impact statement evaluations, or permit processing procedures (75-1-208(11), MCA). DEQ considers cumulative impacts when making the findings under MFSA (Administration Rules of Montana (ARM) 17.20.1604 (1)(b) and 1607(1)(a)(vii)).

Pursuant to ARM 17.4.627, whenever a state agency prepares a joint environmental impact statement that must comply with NEPA and MEPA, the joint document must be prepared in compliance with both statutes. The State agency may accede to and follow more stringent Federal requirements, such as additional content. NEPA requires reasonably foreseeable future actions to be included in the cumulative impacts analysis, not just those undergoing concurrent review.

Analysis of cumulative environmental impacts of a proposed Project and other actions helps to ensure that agency decisions consider the full range of consequences of the agencies' actions to the extent information is available.

At least 17 pipelines and 8 transmission lines transect the Project study area and vicinity. Other present and past activities in the vicinity of the proposed Project include farming (irrigated and non-irrigated), grazing, weed management, hunting and general recreation; growth of cities and towns, residential areas, and industrial and commercial areas; and development of Federal and state highways and county roads, railroads and railroad rights–of-way, communication facilities, military installations, conservation easements, airports, and national trails. Reasonably foreseeable future actions that could occur in the Project study area include the development of wind farms, rebuilding and relocating a WAPA transmission line, the Southern Montana Electric Highwood Generating Station 250 MW coal-fired power plant proposed to be built

outside Great Falls and the transmission line that would connect it to the local electric system, the proposed gas-fired Great Falls Energy Center 275 MW power plant, development of irrigation systems, and the potential for MATL to upgrade the capacity of the line from 300 MW to 400 MW in each direction.

DOE views wind development as a reasonably foreseeable future action. Various developers of wind farms that would be located near the MATL transmission line have purchased all the line capacity. However, wind farm developers that have purchased the capacity on the MATL line might not be the same power suppliers that use the line in the future. MATL has indicated that its transmission service rights contracts do not require the holder to supply any particular form of power generation. In light of the foregoing, DOE believes that MATL's proposed Project is separate from and has an existence and utility independent from the wind farms. While the wind farms would be the first users, it is reasonably foreseeable that other shippers can own the right to ship electricity over the proposed line. As a result, DOE does not view the currently subscribed wind farms as "connected actions" as defined in 40 C.F.R. § 1508.25(a) (1). Therefore, the impacts from potential wind farms are evaluated as cumulative impacts of the proposed Project, consistent with 40 C.F.R. § 1508.7.

Table S-2 summarizes impacts to natural resources, including cumulative impacts, considerations of environmental justice, and impacts to the existing transmission system (engineering and electric system reliability) among the alternatives analyzed.

S.6.5 Unavoidable Adverse Impacts

Unavoidable short-term adverse impacts from the proposed Project would be expected to occur to wetlands, land use (including transportation), noise, visuals, and native vegetation. Unavoidable long-term adverse impacts would occur to land use, birds, and visuals.

Construction activities could have short-term adverse impacts on land use, transportation, noise, and visuals, due to construction traffic and the establishment of staging areas, tensioning sites, access, and structure assembly areas. Construction activities could also have short-term adverse impacts on wetland resources from the alteration of surface water drainage patterns, disturbances and trampling of vegetation during construction, and from an increase in sedimentation to localized wetland areas from disturbances on adjacent properties. MATL's transmission line structures would not be placed in wetland areas, so no long-term impacts are expected for wetland resources. Native vegetation would be unavoidably disturbed, and weed infestations may occur for the short term during construction and before reclamation.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Land Use – General Impacts Comparative impacts of action alternatives depend on overall length of alignment, length on cropland, extent of diagonal crossing of cropland (diagonal crossings of cropland result in more interference with farming), and use of H frames vs. monopoles (use of monopoles reduces interference with farming)	There would be no additional impacts.	Facility construction traffic may conflict with movement of farm equipment on roads. Loss of and interference with crop production due to structures and roads, increased potential for weed introduction and spread, potential for equipment damage from hitting a structure, increased time to farm around poles, and some DGPS-guided equipment may be affected. Cropland crossings also increase the potential for crop duster accidents.	Same as Alt 2	Same as Alt 2	New projects would generally have short-term construction impacts and longer term changes to land use depending on the project. Wind development is generally compatible with a wide variety of land uses and generally would not preclude recreational, wildlife habitat conservation, military, livestock grazing, oil and gas leasing, dry land farming, or other activities that currently occur.
Land Use – Total Amount of Land Crossed		129.9 miles.	121.6 miles. Alt 3 disturbs the least.	139.6 miles. Alt 4 disturbs the most.	Impacts would depend on the type, location and design of development.
Land Use – Total Cropland Crossed		93.3 miles	95.3 miles. Alt 3 crosses the most.	88.9 miles. Alt 4 crosses the least.	
Land Use – Total Cropland Crossed Diagonally		54.9 miles	68.4 miles. Alt 3 crosses the most cropland diagonally.	28 miles. Alt 4 crosses the least cropland diagonally.	
Land Use – Total Ground Disturbance during Construction		330 acres	315 acres, Alt 3 disturbs least.	348 acres, Alt 4 disturbs most.	

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Land Use – Type of structure used on cropland		Monopoles used on about 56 miles of diagonal crossings of cropland; H-frames used on the remaining 74 miles	H-frames on the entire line, including cropland	Monopoles used for all 88.9 miles of cropland crossed	
Land Use –Total distance crossing Public Land, Special Management Areas and conservation easements		35.3 miles	24.7 miles. Alt 3 would cross the least	43.9 miles. Alt 4 would cross the most	
State Land (FWP owned) crossed, Great Falls Shooting Sports Complex		0.7 miles crossed	0.5 miles crossed	Alt 4 would avoid the Great Falls Shooting Sports Complex.	
State Land – Lewis and Clark Heritage Greenway Conservation Easement.		0.1 miles at the edge of the Lewis and Clark Heritage Greenway Conservation Easement.	Same as Alt 2.	Same as Alt 2.	
Montana State Trust Lands crossed		10.6 miles crossed	5.9 miles. Alt 3 would cross the least.	11.0 miles. Alt 4 would cross the most.	
Conservation easements crossed		USFWS – 0.0 miles CRP - 23.6 miles	USFWS - 3.8 miles CRP - 14.3 miles	USFWS - 1.7 miles. CRP – 30.8 miles	
BLM Land crossed		0.3 miles	0.1 miles	0.3 miles	

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Geology – Miles on Soil and Geologic Resources Prone to Mass Movement	There would be no additional impacts.	5 miles. Potential impacts would largely be mitigated by pole placement designed to span sensitive slopes and engineering design.	3 miles. Alt 3 has the least potential for mass movement that could result in pole instability. Potential impacts would largely be mitigated by pole placement designed to span sensitive slopes and engineering design.	20 miles. Alt 4 has the most potential for mass movement that could result in pole instability. Potential impacts would largely be mitigated by pole placement designed to span sensitive slopes and engineering design.	Impacts would depend on the type, location and design of development.
Soils – Miles on Unstable Soils (greater than 20 percent slope)	There would be no additional impacts.	16 miles. Soil erosion impacts would be mitigated by erosion control measures.	12 miles. Alt 3 has the least potential for soil erosion. Soil erosion impacts would be mitigated by erosion control measures.	24 miles. Alt 4 has the most potential for soil erosion. Soil erosion impacts would be mitigated by erosion control measures.	Additional development could cause increased soil erosion. Erosion control and storm water control would mitigate impacts.
Engineering- The structural reliability of electric transmission facilities in the area.	There would be no additional impacts.	No adverse impact to structural reliability is anticipated. All facilities are proposed to be constructed in compliance with accepted engineering standards.	Same as Alt 2	Same as Alt 2	None expected.

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Hazardous Materials	There would be no additional impacts.	Wood structures would be treated with pentachlorophenol. Hazardous materials and wastes would be managed in accordance with State and Federal requirements	Same as Alt 2, except more wood poles would be used.	Same as Alt 2, except more wood poles would be used.	Construction, operation, and decommissioning future activities could require the use of some hazardous materials. Wastes would have to be managed as required by state and Federal law.
Electric and Magnetic Fields– Exposure Levels	There would be no additional impacts. Exposure levels in the project vicinity are primarily dominated by EMF from common household appliances.	Exposure levels outside the 500-foot-wide alignment would be less than 3.8 mG	Same as Alt 2.	Same as Alt 2.	If the line capacity increased to 400 MW in each direction, the electric field and the mean magnetic field would be higher, but electric field strength would remain below the state standard of 1 kV/m at the edge of the 500-foot-wide alignment in subdivision and residential areas, and the increase in the mean magnetic field would be slight

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Electric and Magnetic Fields– To ensure safety, pipelines near a transmission line would need to be grounded Length of 500-foot-wide Alignment Buffer Zone Within 100 feet of a Pipeline	There would be no additional impacts.	7.0 miles of the alignment would be within 100 ft of a pipeline 8″ or larger.	9.8 miles of the alignment would be within 100 ft of a pipeline 8″ or larger. Alt 3 has the longest distance where pipelines may need to be grounded.	5.7 miles of the alignment would be within 100 ft of a pipeline 8″ or larger. Alt 4 has the shortest distance where pipelines may need to be grounded.	Impacts would depend on the type and location of development
Electric and Magnetic Fields– Radio, TV, or DGPS Interference	There would be no additional impacts.	None anticipated for nearby residents. May be some potential for interference with DGPS guidance systems. MATL would correct DGPS interference.	Same as Alt 2. MATL would correct DGPS interference.	Same as Alt 2. MATL would correct DGPS interference.	There is a potential for wind farm power lines to cause interference, but this impact would depend on the type, location and design of development and might be avoided by proper siting and design.

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Water – General Impacts	There would be no additional impacts.	Minor short-term adverse impacts to surface water quality could occur by temporarily increasing sources of sediment from the time of construction to reclamation completion. This impact would be mitigated by avoiding disturbance of water and riparian areas or by implementing measures to reduce sediment transport. The potential for impact is related to the number of stream and lake crossings.	Same as Alt 2.	Same as Alt 2.	Future development activities combined with the proposal could increase sediment and other pollutants to water resources in the analysis area and potentially affect water quantity and quality. Construction would likely cause increased stormwater runoff and soil erosion. Because projects would be required to reduce the potential for sedimentation, require proper pesticide application, and comply with waste water discharge requirements, and to employ mitigation measures, these impacts are likely to be minor and short term.
Water – Potential Number of Perennial Stream or River Crossings	There would be no additional impacts.	10 crossings within the 500-foot wide alignment	6 crossings. Alt 3 poses the lowest potential for impact within the 500-foot wide alignment.	17 crossings. Alt 4 poses the greatest potential for impact within the 500-foot wide alignment.	Impacts would depend on the type and location of development.

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Water – Potential Number of Lake Crossings	There would be no additional impacts.	4 crossings within the alignment.	6 crossings. Alt 3 poses the greatest potential for impact within the alignment.	2 crossings. Alt 4 poses the least potential for impact within the alignment.	Impacts would depend on the type and location of development.
Wetlands - General	There would be no additional impacts.	Other than one structure that would be located in Black Horse Lake, structures would not be placed in wetlands. Construction disturbance could result in a change in wetland plant community if wetland hydrology is altered. This impact would be mitigated if wetlands were undisturbed during construction and maintenance. Potential impact is related to the area of wetlands crossed.	Same as Alt 2.	Same as Alt 2, except that Alt 4 would not require a structure in Black Horse Lake.	Impacts would depend on the type, location and design of development.
Wetlands – Total Wetlands and Potential Wetlands Crossed	There would be no additional impacts.	71.9 acres crossed within the 500-foot-wide alignment, including 68.5 acres of marshland, 0.8 acre lake wetlands, and 2.6 acres of river wetlands. Alt 2 would cross the least total area of wetlands.	78.1 acres crossed within the 500-foot-wide alignment, including 73.8acres of marshland, 0.8 acre lake wetlands, and 3.5 acres of river wetlands. Alt 3 would cross the most total area of wetlands.	77.4 acres crossed within the 500-foot-wide alignment, including 75.1 acres of marshland and 2.4 acres of river wetlands.	Impacts would depend on the type and location of development.

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Floodplains	There would be no additional impacts.	Line would cross floodplains at the Teton, Dry Fork Marias, and Marias river crossings, but no transmission line structures would be placed in 100-year floodplains. A Local Routing Option for the Teton River crossing would place a structure in a slightly higher location that was not inundated in the 1964 flood.	Same as Alt 2, except that the Local Routing Option is not applicable.	Same as Alt 2.	There are no reasonably foreseeable future actions that would impact floodplains
Vegetation – General	There would be no additional impacts.	Temporary loss of vegetation and increased potential for weed emergence and dispersion in disturbed areas until reclaimed. Potential impact is dependent on the size of the construction disturbance.	Same as Alt 2.	Same as Alt 2.	Future activities would likely disrupt vegetation in a similar manner. Revegetation would likely make impacts minor and short term.
Vegetation – Number of non-cropland acres to be disturbed for construction	There would be no additional impacts.	214 acres.	206 acres. Alt 3 would disturb the fewest acres.	240 acres. Alt 4 would disturb the most acres.	Impacts would depend on the type, location and design of development.

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Vegetation – Native range, forest and riparian vegetation cover crossed	There would be no additional impacts.	33.0 miles of grassland/shrubland and riparian vegetation would be crossed	22.5 miles of grassland/shrubland, riparian vegetation, and forest would be crossed	47.8 miles of grassland/shrubland, riparian vegetation, and forest would be crossed	Impacts would depend on the type, location and design of development.
Wildlife - General	There would be no additional impacts.	Short-term impacts include loss of individuals during construction or direct disturbance of species during critical periods in their life-cycles. Long-term impacts include habitat alterations, electrocutions, and collisions. Collisions would be reduced by line marking.	Same as Alt 2.	Same as Alt 2.	Activities would result in disturbance and displacement of wildlife during construction, followed by some permanent loss of habitat. Bird and bat mortalities would be expected due to collisions with wind turbines.
Wildlife – Mule Deer Winter Range	There would be no additional impacts.	19.4 miles of habitat would be crossed. Minor to no impact to mule deer population relative to the size of the existing habitat and individual mobility.	20.5 miles of habitat would be crossed. Minor to no impact to mule deer population relative to the size of the existing habitat and individual mobility.	27.7 miles of habitat would be crossed. Minor to no impact to mule deer population relative to the size of the existing habitat and individual mobility.	Impacts would depend on the type, location and design of development. Herd animals could be affected if developments are placed along migration paths or in fawning areas.

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Wildlife – Birds	There would be no additional impacts.	Collisions with transmission line could result in bird loss. The potential for bird collisions would be greatest in those portions of the line located near wetlands and the Benton Lake National Wildlife Refuge.	Similar to Alt 2.	Similar to Alt 2, but line would be farther from the Benton Lake National Wildlife Refuge	Additional development could reduce habitat. Wind farms potentially associated with the proposed line could cause estimated 2 to 3 mortalities per year of raptors (such as eagles and hawks) and 720 to 960 mortalities per year other birds from collisions with turbines. From other reasonably foreseeable wind farms, that could be built but are not directly associated with the MATL project, bird mortalities could range from 454 to 603 per year.

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Wildlife – Bats	There would be no additional impacts.	There would be no additional impacts.	There would be no additional impacts.	There would be no additional impacts.	Wind farms potentially associated with the MATL project could cause an estimated 28 to 7,142 bat mortalities per year from encounters with turbines. From other reasonably foreseeable wind farms that could be built but not potentially associated with the MATL project, bat mortalities could range from 18 to 4,550 per year.
Fish – Expected impacts to habitat due to changes in water quality	There would be no additional impacts.	Fish habitat may be slightly affected by construction activity that contributes sediment to streams. Potential for impact is related to potential for impact to rivers and streams – 10 perennial river or stream crossings in the 500-foot wide alignment but no in-stream activities anticipated.	Similar to Alt 2, – 6 perennial river or stream crossings in the 500-foot wide alignment, but no in-stream activities anticipated. Alt 3 has the least potential to slightly affect fish habitat.	Similar to Alt 2, – 17 perennial river or stream crossings in the 500-foot wide alignment, but no in-stream activities anticipated. Alt 4 has the highest potential to slightly affect fish habitat.	Cumulative impacts that adversely affect water resources could adversely affect fish and fish habitats.

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Special Status Species – Vegetation	There would be no additional impacts.	All known occurrences of special status plant species (all of which are riparian or wetland plants) are located outside the study area. Potential for impact is based on amount of riparian area crossed. Alt 2 crosses least amount of riparian habitat, 1.4 miles.	Alt 3 crosses 1.7 miles of riparian habitat.	Alt 4 crosses most riparian habitat, 1.9 miles.	Construction activities could affect threatened, endangered, and sensitive species in the same manner that vegetation could be affected.
Special Status Species – Wildlife Habitat crossed. Although no black-footed ferrets are found in the area, prairie dog towns if crossed by the proposed alignments may be habitat for this federally listed endangered species. Alternatives also would cross actual or potential habitat for 5 bird species listed as sensitive species by the Montana Natural Heritage Program (MNHP) and/or BLM and 3 fish species listed as sensitive by MNHP.	There would be no additional impacts.	19.9 miles. Alt 2 crosses the most habitats for one or more special status species. FWS concurred with the biological assessment's conclusion that there would be no effect on black-footed ferrets or their critical habitat.	11.3 miles. Alt 3 crosses the least habitat for special status species.	11.7 miles.	Construction activities could affect threatened, endangered, and sensitive species in the same manner that wildlife and aquatic resources could be affected in general.

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Air Quality – General Air quality in the analysis area is designated as attainment for all criteria pollutants.	There would be no additional impacts.	Some localized short-term emissions of particulate matter would occur during construction.	Same as Alt 2.	Same as Alt 2.	Construction of new facilities such as wind farms and other electrical generating facilities would generally have short-term impacts similar to construction impacts of the transmission line, but because of differences in timing, few impacts would likely be cumulative with air quality impacts of the proposed action. Operation of future facilities could increase other emissions, but few impacts would be cumulative with air quality impacts of the proposed action.
Air Quality – Greenhouse Gases	There would be no additional impacts.	Impacts would be negligible.	Same as Alt 2.	Same as Alt 2	Construction and operation of new facilities could either help reduce or contribute to emissions of greenhouse gases; this depends on the type, size, and quantity of any generation built.

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Noise – General	There would be no additional impacts.	Short-term, localized construction noise. Operation of the transmission line would not add substantially to existing background noise levels.	Same as Alt 2.	Short-term, localized construction noise. In one subdivided area (0.16 mile), noise from rain or wind on the transmission line would be below the Bonneville Power Administration and U.S. Department of Housing and Urban Development guidelines, but may exceed the DEQ standard.	Construction of new facilities such as wind farms and other electrical generating facilities would generally have short-term impacts that would vary in magnitude and duration based on the size and complexity of the project. Operation of wind turbines would result in noise; noise levels would depend on the observer's location.
Social Resources	No change to existing conditions and trends.	Increased short-term construction and long-term maintenance employment opportunities. Potential for impact to local schools, community structure and social services from influx of workers is small.	Same as Alt 2.	Same as Alt 2.	Any large development or numerous simultaneous small developments could strain local services. Smaller projects would have impacts similar to Alt 2. There could be a perception that wind turbines change the local character of a given area. There could be disagreement over wind turbine location.

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Economics – Short term	There would be no change in employment opportunities.	There would be short-term construction-related employment opportunities.	Same as Alt 2.	Same as Alt 2. MATL has stated it would take longer to build and be more costly.	Depending on the size and number of activities and location, impacts could vary from very minor to large.
Economics – Counties	There would be no opportunities for long-term operation and maintenance employment and no increased county tax revenues.	There would be opportunities for long-term operation and maintenance employment. County tax revenues would increase.	Same as Alt 2. (Except that farmers would have higher additional costs from having transmission structures on their land.)	Same as Alt 2. (Except that costs to farmers from having transmission structures on their land would be less.)	Depending on the size and number of activities and location, impacts could vary from very minor to large. Such impacts would include jobs, income, taxes and effects on social services.
Economics – State	There would be no increased opportunity for power import or export, no increased competition that could reduce costs to ratepayers, less opportunity for wind or other power generation facility start up and no increased state tax revenues.	Opportunities to import or export electric power would increase. Increased competition may reduce cost to ratepayers. Creation of opportunities to start up wind generation facilities. State tax revenue would increase.	Same as Alt 2.	Same as Alt 2. MATL has stated it would take longer to build and be more costly.	Depending on the size and number of activities, impacts could vary from very minor to large. Such impacts would include jobs, income, and taxes, as well as changes in the local electric system.

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Economics – Landowners and Farmers	No change in existing conditions and trends.	Farmers would incur additional costs estimated at $ 57,000 to $213,000 per year. MATL would compensate landowners with one time easement payments, annual per-pole payments, and annual flat fees for the additional costs of farming caused by the transmission line. Some agricultural landowners would also receive a state property tax exemption for property within 660 feet of the centerline. Long-term impacts on land values are likely to be small.	Additional cost to farmers is estimated to be $ 75,000 to $ 271,000 per year. Compensation would be provided as described for Alt 2. Alt 3 would have the highest cost to farmers before compensation. Some agricultural landowners would also receive a state property tax exemption for property within 660 feet of the centerline. Long-term impacts on land values are likely to be small.	Additional cost to farmers is estimated to be $ 41,000 to $ 146,000 per year. Compensation would be provided as described for Alt 2. Alt 4 would have the lowest cost to farmers before compensation. Some agricultural landowners would also receive a state property tax exemption for property within 660 feet of the centerline. Long-term impacts on land values are likely to be small.	Depending on the size and number of activities and location, impacts could vary from very minor to large.
Paleontological Resources – The Two Medicine Formation is the geologic unit with a high probability of containing fossils.	There would be no additional impacts.	Construction activity could disturb fossil sites. Since most of the Two Medicine Formation is covered by 1 to 15 feet of material, little or no impact is anticipated.	Similar to Alt 2.	Similar to Alt 2.	Future activities could uncover or destroy currently unknown paleontological resources.

TABLE S-2
SUMMARY OF IMPACTS BY RESOURCE AREA

Resource	No Action	Alternative 2	Alternative 3	Alternative 4	Cumulative Impacts
Cultural Resources	There would be no new impacts to cultural resources or Traditional Cultural Properties.	Construction could disturb archaeological or historical resources. The 500-foot wide analysis area would encompass 8 known sites eligible for the NRHP and 33 sites of undetermined eligibility. Traditional Cultural Properties or potential locations identified by knowledgeable Tribal members would be avoided.	Similar to Alt 2. Alt 3 would encompass 7 sites eligible for the NRHP and 9 sites of undetermined eligibility.	Similar to Alt 2. Alt 4 would encompass 4 sites eligible for the NRHP and 19 sites of undetermined eligibility.	Future activities could uncover or destroy currently unknown cultural resources.
Visuals – General	There would be no additional impacts.	Decline in aesthetic quality of viewsheds, increase in visual contrast or landscape change due to contrast with natural landscape. Potential impact is primarily dependent on proximity of viewers and residences to the transmission line.	Same as Alt 2.	Same as Alt 2.	Impacts would depend on the type and location of development. Future activities would increase the developed character of the landscape for the long term. In particular, wind farms would be highly visible because of the introduction of turbines into rural landscapes with few other comparable structures.
Visuals – Residences within ¼ mile	No residences would be exposed to the view of a new transmission line.	20 residences.	25 residences. Alt 3 would be visible from the highest number of residences within this distance.	20 residences.	

TABLE S-2 SUMMARY OF IMPACTS BY RESOURCE AREA					
Resource	**No Action**	**Alternative 2**	**Alternative 3**	**Alternative 4**	**Cumulative Impacts**
Visuals – Number of Residences ¼ - ½ mile	No residences would be exposed to the view of a new transmission line.	51 residences.	65 residences. Alt 3 would be visible from the highest number of residences within this distance.	45 residences. Alt 4 would be visible from the lowest number of residences within this distance.	
Visuals – Residences within ½ to 1 mile	No residences would be exposed to the view of a new transmission line.	111 residences.	139 residences. Alt 3 would be visible from the highest number of residences within this distance.	111 residences.	
Visuals – Within ½ mile of a travel corridor (I-15 and US Highways 2 and 87)	No travel corridors would be exposed to the view of a new transmission line.	6.1 miles.	7.6 miles. Alt 3 would have the longest near-field visibility from travel corridors.	5.0 miles. Alt 4 would have the shortest near-field visibility from travel corridors.	
Environmental Justice	No change in existing conditions.	No disproportionately high and adverse impacts to minority or low-income populations were identified.	Same as Alt 2	Same as Alt 2	Future activities could have an impact on environmental justice depending on location and size of the project.
Electric System Reliability – The ability of the electric system to operate within established criteria under normal and emergency conditions.	No change.	No adverse effect on electric system reliability.	Same as Alt 2	Same as Alt 2	Depending on the project, there might be changes in the local electric system.

TABLE S-2 (Cont.)
SUMMARY OF IMPACTS BY RESOURCE AREA

Notes:

Alt	Alternative
BLM	Bureau of Land Management
CRP	Conservation Reserve Program
DGPS	Differential Global Positioning System
EMF	Electric and Magnetic Field
FWP	Montana Dept. of Fish, Wildlife and Parks
kV/m	Kilovolt per meter
mG	Milligauss
MW	Megawatt
NA	Not applicable
NRHP	National Register of Historic Places
ROW	Right of Way
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service

Long-term impacts to land use include loss of production of farmland, increased risk to aircraft, and interference with farming activities. An increase in avian mortality would be unavoidable and long term. Visual resources would experience unavoidable adverse impacts to the aesthetic quality of the landscape by transmission lines.

S.6.6 Irreversible or Irretrievable Commitments of Resources

If concrete footings are used, the concrete would be left in place and irreversibly committed. Fuel used during construction and decommissioning would be irreversibly committed. If wood structures are used, it is probable that these poles would not be available for future transmission projects and would be irreversibly committed. Energy lost during transmission line operation (line losses) would be irretrievably committed.

Paleontological and cultural resources, including traditional cultural properties, are nonrenewable resources. The MATL project would increase access to the areas where these resources may be located. This increased access could lead to intentional damage from looting and vandalism, including unauthorized relic collecting, theft, and defacement, and result in the loss of information and destruction of the resource. Any impacts to these resources would constitute an irreversible commitment of resources.

S.6.7 Short-Term Use and Long-Term Productivity

Short-term uses are characterized by existing land use as affected by the proposed Project and all activities that such land use facilitates. Long-term productivity involves sustaining the interrelationships of each resource in a condition sufficient to support ecological, social, and economic health.

All action alternatives would manage resources within requisite regulatory standards for air quality, water quality, cultural resource preservation, and wildlife management. Impacts from any of the action alternatives to visual resources and farming activities would not adversely affect long-term productivity of the resource. Overall impacts to socioeconomic resources would be beneficial for all action alternatives. Because Alternative 4 contains additional environmental mitigation measures for avoiding adverse impacts to farming, riparian areas, visual resources, and surface water, this alternative presents the most protective alternative for the maintenance and enhancement of long-term productivity of the environment while benefiting socioeconomic resources.

S.7 Regulatory Restrictions Analysis

MEPA requires the disclosure of any regulatory impacts on the private property rights of an applicant. These impacts are usually estimated in terms of economic cost. Alternatives and mitigation measures are designed to further protect environmental, cultural, visual, and social resources, although they add to the cost of the Project. Alternatives and mitigation measures that are required by Federal or state laws and regulations to meet minimum environmental standards do not need to be evaluated for extra costs to the project proponent. If approved, DEQ would require that the project meet standards for noise and electric field strength in residential and subdivided areas, unless affected landowners waive these requirements. The project would be required to meet minimum standards set forth in the National Electrical Safety Code and Federal Aviation Administration requirements for marking the line.

Project costs and costs of mitigation are presented in **Table S-3**. Monetary values of impacts, except for estimated costs to farmers, cannot reasonably be quantified. Many potential adverse environmental impacts are minimized through measures proposed by the applicant and the application of environmental specifications. A plan for monitoring the facility is described in environmental specifications for the project, as required by administrative rules implementing MFSA and further detailed in ARM 17.20.1901.

TABLE S-3
PROJECT COSTS

	Alternative 2	**Alternative 3**	**Alternative 4**
Length (miles)	129.9 (56 miles monopoles, 74 miles H-frames)	121.6 (all H-frames)	139.9 (88.9 miles monopoles, 51 miles H-frames)
Estimated Construction cost [a]	$44,036,832	$39,287,987	$48,430,930
Estimated Total cost with mitigating measures	$44,769,832	$39,931,987	$49,296,930

[a] H-frame structures $323,092 per mile; monopole structures $359,429 per mile (MATL 1/26/07 Canadian costs were updated using the August 8, 2008, exchange rate).