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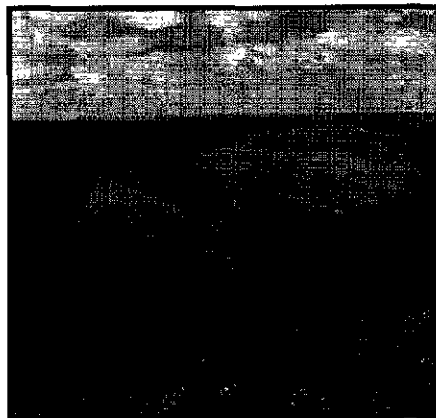
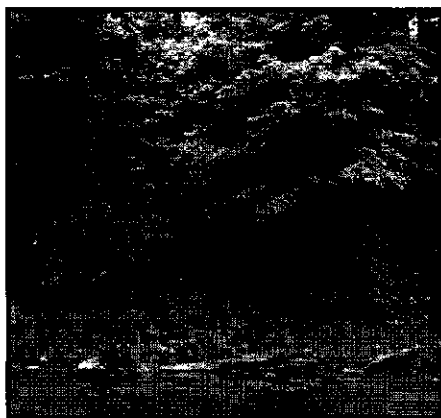
Volume 1

REX East Project

Rockies Express Pipeline, LLC

Docket No. CP07-208-000

FERC/EIS-0217F



Federal Energy Regulatory Commission
Office of Energy Projects
Washington, DC 20426

Cooperating Agencies



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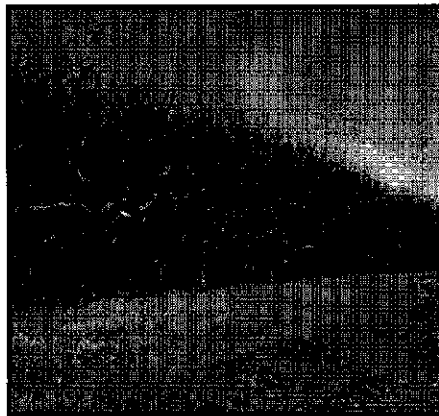
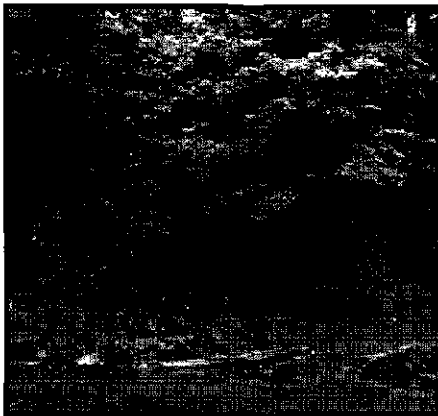
Final Environmental Impact Statement
Comment Response Document – Appendix K
Volume 2

REX East Project

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Federal Energy Regulatory Commission
Office of Energy Projects
Washington, DC 20426

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April 2008

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:
OEP/DG2E/Gas 2
Rockies Express Pipeline LLC
Docket No. CP07-208-000

TO THE PARTY ADDRESSED:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared this final Environmental Impact Statement (EIS) for the construction and operation of the natural gas pipeline facilities proposed by Rockies Express Pipeline LLC (Rockies Express) in the above-referenced docket. The Project facilities would be located in Wyoming, Nebraska, Missouri, Illinois, Indiana, and Ohio.

The final EIS was prepared to satisfy the requirements of the National Environmental Policy Act (NEPA). The U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, Natural Resources Conservation Service, and Illinois Department of Agriculture are cooperating agencies for the development of the EIS. A cooperating agency has jurisdiction by law or special expertise with respect to potential environmental impacts associated with the proposal and is involved in the NEPA analysis.

Based on the analysis included in the EIS, the FERC staff concludes that if the Project is constructed and operated in accordance with applicable laws and regulations, and the project sponsor's proposed mitigation, and the staff's additional mitigation recommendations, it would have mostly limited adverse environmental impacts and would be an environmentally acceptable action.

The Rockies Express (REX) East Project would consist of the construction and operation of approximately 639.1 miles of 42-inch-diameter natural gas pipeline and a total of 225,716 horsepower (hp) of new compression. The REX East Project would be part of the Rockies Express Pipeline System—a 1,679-mile natural gas pipeline system that would extend from Colorado to Ohio. The Project pipeline would deliver up to 1.8 billion cubic feet per day of gas to other interstate natural gas pipelines. The Project would provide access to an additional 19 inter- and intra-state natural gas pipelines at 13 interconnect points.

The EIS addresses the potential environmental effects of the construction and operation of the following natural gas pipeline facilities proposed by Rockies Express:

- 639.1 miles of 42-inch-diameter natural gas pipeline in Missouri, Illinois, Indiana, and Ohio;

- Seven new compressor stations (Mexico Compressor Station in Audrain County, Missouri; Blue Mound Compressor Station in Christian County, Illinois; Bainbridge Compressor Station in Putnam County, Indiana; Hamilton Compressor Station in Warren County, Ohio; Chandlersville Compressor Station in Muskingum County, Ohio; Arlington Compressor Station in Carbon County, Wyoming; and Bertrand Compressor Station in Phelps County, Nebraska; and
- 19 meter stations and associated interconnecting pipeline facilities at 13 locations along the proposed pipeline route and 42 mainline valves.

The final EIS has been placed in the public files of the FERC and is available for distribution and public inspection at:

Federal Energy Regulatory Commission
Public Reference Room
888 First Street, N.E., Room 2A
Washington, DC 20426
(202) 502-8371

Copies the final EIS have been mailed to federal, state, and local agencies, public interest groups, individuals who have requested the final EIS, or provided comments; libraries and newspapers in the Project area; and parties to this proceeding. Hard copy versions of this EIS were mailed to those specifically requesting them, and all others received a CD-ROM. A limited number of hard copies and CD-ROMs are available from the Public Reference Room identified above.

Additional information about the Project is available from the Commission's Office of External Affairs, at 1-866-208-FERC (3372) or on the FERC Internet website (<http://www.ferc.gov>). Using the "Documents and Filings" tab, click on the "eLibrary link," and select "General Search." Enter the project docket number excluding the last three digits (*i.e.*, CP07-208) in the "Docket Number" field. Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll free at 1-866-208-3676, or for TTY, contact (202) 502-8659. The eLibrary link on the FERC Internet website also provides access to the texts of formal documents issued by the Commission, such as orders, notices, and rulemakings.

In addition, the Commission offers a free service called eSubscription which allows you to keep track of all formal issuances and submittals in specific dockets. This can reduce the amount of time you spend researching proceedings by automatically providing you with notification of these filings, document summaries, and direct links to the documents. To register for this service, go to the eSubscription link on the FERC website (<http://www.ferc.gov/docs-filing/esubscription.asp>).

Kimberly D. Bose,
Secretary

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CD Document D	REX East Project HDD Contingency and Frac Out Plan
CD Document E	REX East Project Spill Prevention, Containment, and Countermeasure Plan
CD Document F	REX East Project Weed Management Plan
CD Document G	REX East Project Plans for Unanticipated Discovery of Historic Properties or Human Remains during Construction
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CD Document I	REX East Project Road and Railroad Crossings and Locations of Access Roads
CD Document J	REX East Project Additional Temporary Workspace
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ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
AEP	American Electric Power
AI	Agricultural Inspector
AIMP	Agricultural Impact Mitigation Plan
API	American Petroleum Institute
AQCR	Air Quality Control Regions
AQMD	Air Quality Management Districts
ASME	American Society of Mechanical Engineers
BA	Biological Assessment
BCC	Birds of Conservation Concern
bcf	billion cubic feet
BGEPA	Bald and Golden Eagle Protection Act
CAA	Federal Clean Air Act of 1970
CAAA	Clean Air Act Amendments
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
Certificate	Certificate of Public Convenience and Necessity
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic foot per second
CO	carbon monoxide
COA	Conservation Opportunity Area
COE	U.S. Army Corps of Engineers
CRP	Conservation Reserve Program
CWA	Clean Water Act
dBA	decibels on the A-weighted scale
DMRM	Divisions of Mineral Resources Management
DNL	day-night equivalent sound level
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
Dth/d	dekatherms per day
ECMR Program	Environmental Compliance Monitoring and Reporting Program
EAB	emerald ash borer
EI	Environmental Inspector
EIA	Energy Information Administration
EIS	Environmental Impact Statement
Entrega	Entrega Gas Pipeline, Inc.
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESD	emergency shut down
ESO	Environmental Services Office
EWPP-FP	Emergency Watershed Protection – Floodplain Easement
FERC or Commission	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FR	Federal Register
FSA	Farm Service Agency
FTE	full time equivalents

FWS	U.S. Fish and Wildlife Service
gpd	gallons per day
gpm	gallons per minute
HAP	hazardous air pollutants
HCA	high consequence area
HDD	horizontal directional drill
hp	horsepower
I-69	Interstate 69
IBA	Important Bird Area
IDEM	Indiana Department of Environmental Management
IEPA	Illinois Environmental Protection Agency
ILDNR	Illinois Department of Natural Resources
ILDOA	Illinois Department of Agriculture
ILDOT	Illinois Department of Transportation
ILEPA	Illinois Environmental Protection Agency
INDNR	Indiana Department of Natural Resources
INDOA	Indiana Department of Agriculture
INDOT	Indiana's Department of Transportation
ISO	International Organization for Standardization
IURC	Indiana Utility Regulatory Commission
Kinder Morgan	Kinder Morgan Energy Partners, L.P.
kPa	kilopascal
kW	kilowatt
$L_{eq(24)}$	24-hour equivalent sound level
LNG	liquified natural gas
MACT	Maximum Achievable Control Technology
MAOP	maximum allowable operating pressure
MBTA	Migratory Bird Treaty Act
MDC	Missouri Department of Conservation
Memorandum	Memorandum of Understanding on Natural Gas Transportation Facilities
MLV	mainline valve
MMBtu/hr	million British thermal units per hour
MOA	Memorandum of Agreement
MODNR	Missouri Department of Natural Resources
MP	milepost
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NBEM	National Bald Eagle Management
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NGA	Natural Gas Act
NHPA	National Historic Preservation Act
NLCD	National Land Classification Data
NNSR	Non-attainment New Source Review
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places

NRI	Nationwide Rivers Inventory
NSA	noise-sensitive areas
NSPS	New Source Performance Standards
NSR	New Source Review
NWI	National Wetlands Inventory
NWR	National Wildlife Refuge
O ₃	ozone
ODOT	Ohio Department of Transportation
OEP	Office of Energy Projects
ODNR	Ohio Department of Natural Resources
OEPA	Ohio Environmental Protection Agency
OPS	Office of Pipeline Safety
OPSB	Ohio Power Siting Board
ORV	Outstandingly Remarkable Values
Pb	lead
PCB	polychlorinated biphenyls
PCE	Phelps County Ethanol Inc.
PEPL	Panhandle Eastern Pipe Line Company
PHMSA	Pipeline and Hazardous Materials Safety Administration
our Plan	The FERC staff's Upland Erosion Control, Revegetation, and Maintenance Plan
PM10	particulate matter with a particle size of 10 microns or less
PM2.5	particulate matter with a particle size of 2.5 microns or less
ppm	parts per million
our Procedures	The FERC staff's Wetland and Waterbody Construction and Mitigation Procedures
Program	Platte River Recovery Implementation Program
Project	Rockies Express Eastern Phase Project
PSD	Prevention of Significant Deterioration
REX West Project	Rockies Express Western Phase Project
REX East Project	Rockies Express Eastern Phase Project
REX East Plan	REX East Upland Construction Plan
REX East Procedures	REX East Wetland and Waterbody Construction and Mitigation Procedures
Rockies Express	Rockies Express Pipeline, LLC
Rockies Express NOI	Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Rockies Express Pipeline Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meetings
RR	Re-route
Sempra	Sempra Pipelines and Storage
SHPO	State Historic Preservation Officers
SI	spark ignition
SIP	State Implementation Plan
SO ₂	sulfur dioxide
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan
SR	State Road
STATSGO	State Soil Geographic Database
SWPPP	Stormwater Pollution Prevention Plan
tcf	trillion cubic feet
TETCO	Texas Eastern Transmission Company
TIME II	Texas Eastern Incremental Market Expansion II
TSS	total suspended solids

tpy	tons per year
TSS	total suspended solids
$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
UMRSHNC	Upper Mississippi River Sub-basin Hypoxia Nutrient Committee
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
VOC	volatile organic compounds
WPA	Wellhead Protection Area
WRP	Wetland Reserve Program
WSR	Wild and Scenic Rivers Act

EXECUTIVE SUMMARY

INTRODUCTION

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared this Environmental Impact Statement (EIS) to assess the environmental impacts associated with the construction of facilities proposed by Rockies Express Pipeline LLC (Rockies Express) in accordance with the requirements of the National Environmental Policy Act (NEPA). This project is referred to as the Rockies Express East Project (the Project or the REX East Project). The purpose of this document is to inform the public, the FERC, and federal and state agencies about the potential environmental impacts of the Project and its alternatives, and to recommend mitigation measures that would avoid or reduce significant adverse impacts. The U.S. Army Corps of Engineers (COE), U.S. Fish and Wildlife Service (FWS), Illinois Department of Agriculture (ILDOA), and the Natural Resources Conservation Service (NRCS) are cooperating agencies and have participated in the development of this EIS.

PROJECT BACKGROUND

On June 13, 2006, we¹ approved a request by Rockies Express, a joint venture among Kinder Morgan Energy Partners, L.P. (Kinder Morgan), Semptra Pipelines and Storage (Semptra), and Conoco-Phillips (an equity partner), to use the FERC's pre-filing review for this project. On April 30, 2007, Rockies Express filed an application with the FERC in Docket Number CP07-208-000 under Section 7 of the Natural Gas Act (NGA), as amended, and Parts 157 and 284 of the Commission's regulations. On November 23, 2007, the FERC issued the draft EIS and filed it with the U.S. Environmental Protection Agency (EPA). Rockies Express is seeking a Certificate of Public Convenience and Necessity (Certificate) for the REX East Project.

PROPOSED ACTION

As currently proposed, the REX East Project would consist of the construction and operation of approximately 639.1 miles of 42-inch-diameter natural gas pipeline in Missouri, Illinois, Indiana, and Ohio. Seven compressor stations, totaling 225,716 new horsepower (hp) of compression, and ancillary facilities are proposed in Illinois, Indiana, Missouri, Nebraska, Ohio, and Wyoming.

The purpose of the REX East Project is to provide natural gas transportation service for gas produced in the Rocky Mountain region from the terminus of the REX West Project in Audrain County, Missouri to markets in the midwestern and eastern United States. The terminus of the REX East Project would be in Monroe County, Ohio. The Project pipeline would deliver up to 1.8 billion cubic feet (bcf) per day of gas to other interstate natural gas pipelines. The Project would provide access to an additional 19 inter- and intra-state natural gas pipelines at 13 interconnect points. These pipelines serve markets in the midwestern and eastern United States. The REX East Project would be part of the Rockies Express Pipeline System—a 1,679-mile natural gas pipeline system extending from Colorado to Ohio.

PUBLIC INVOLVEMENT

As part of the pre-filing process, the FERC staff worked with Rockies Express to develop a public outreach plan for issue identification and stakeholder participation. Rockies Express began implementing this outreach plan in June 2006 and sponsored 18 local, public open houses to inform landowners, government officials, and the general public about the REX East Project and invite them to

¹ "Our," "we," and "us" refer to the environmental staff of the Federal Energy Regulatory Commission's Office of Energy Projects.

ask questions and express their Project-related comments and concerns. Two additional open houses were held in October 2006 to provide information on two route alternatives and the relocation of the Brainbridge Compressor Station.

On August 16, 2006, the FERC issued a *Notice of Intent to Prepare an Environmental Impact Statement for the Proposed REX East Project, Request for Comments on Environmental Issues, and Notice of Joint Public Scoping Meeting* (Rockies Express NOI). The Rockies Express NOI was mailed to approximately 13,000 individuals and organizations including federal, state, and local agencies; elected officials; environmental and public interest groups; Native American tribes; local libraries and newspapers; other interested stakeholders; and affected landowners located along the pipeline route. The FERC staff continued to receive and consider comments during the entire pre-filing period and throughout the development of this EIS. The FERC staff held nine public scoping meetings along the Project route to provide the public an opportunity to learn more about the Project and comment on the scope of environmental issues to be included in the draft EIS. The public was also invited to attend site visits conducted by the FERC staff, which took place on July 17-20, 2007 and August 6-10, 2007.

Additionally, we initiated agency consultations to identify issues that should be addressed in the EIS. These consultations included interagency meetings from September 12 through September 14, 2006 and interagency conference calls on April 3, 5, 12; May 10; June 14 and 18; July 24; and September 18, 2007. Participants in these meetings and calls included representatives of COE, EPA, FWS, NRCS, U.S. Department of Transportation (DOT), National Park Service (NPS), Indiana Department of Environmental Management (IDEM), Indiana Department of Natural Resources (INDNR), State Historic Preservation Officers (SHPOs), Indiana Utility Regulatory Commission (IURC), Indiana Department of Agriculture (INDOA), Ohio Department of Natural Resources (ODNR), Ohio Power Siting Board (OPSB), Ohio Environmental Protection Agency (OEPA), Ohio Department of Development, Ohio Farm Bureau, ILDOA, Missouri Department of Natural Resources (MODNR), Missouri Department of Conservation (MDC), and Illinois Environmental Protection Agency (ILEPA).

From January 7 through 9, 2008 the FERC staff held 9 public comment meetings along the Project route to allow the public the opportunity to comment on issues addressed in the draft EIS or to discuss new areas of concern. Eighty-five commenters spoke at the public meetings. Also on those dates, the FERC staff conducted site visits with affected landowners to evaluate potential alternative routes along their properties. On January 8, 2008 an interagency meeting was held at the ILDOA. The ILDOA, Sangamon County Farm Bureau, and Illinois Agricultural Association (IAA) were in attendance to discuss the draft EIS. We received 225 written comments through March 14, 2008.

ENVIRONMENTAL IMPACTS

Construction and operation of the Project would result in numerous impacts to the environment. We evaluated the impacts to geology, soils, water resources, vegetation, wildlife, fisheries, special status species, land use, visual resources, socioeconomic, cultural resources, air quality, noise, and safety. We have proposed mitigation measures to minimize these impacts, and made recommendations to further avoid, minimize, and mitigate potential impacts. We also considered the cumulative impacts of this Project with other past, present, and reasonably foreseeable actions in the area. Section 5.2 of this EIS contains a compilation of our recommended mitigation.

Construction of the Project would disturb approximately 14,334.4 acres of land. After construction, 4,049.2 acres would be retained for the operation of the Project; this includes the permanent right-of-way, as well as aboveground facilities.

In general, bedrock is buried so deeply by glacial deposits or soils that it would not be encountered during construction. About 14 percent of the proposed pipeline route and none of the aboveground facilities may require blasting. Mineral resources that may be affected by the Project include gas and oil, coal, sand and gravel, and stone. Construction of the Project may restrict the surface extraction of some of these mineral resources. Geologic hazards in the Project area include seismicity, landslides, subsidence, and flood/scour. The Project would be located in an area of relatively low seismic risk. The topography near the Mississippi River and in eastern Indiana and eastern Ohio makes the area more susceptible to landslides. The proposed construction techniques, along with erosion control and slope stabilization, would reduce the potential for landslides. Subsidence may occur in portions of the Project area due to the formation of sinkholes in karst areas or the collapse of coal mines. We have recommended preconstruction identification of these areas, plans for dealing with any unidentified issues, and long-term monitoring in these areas. Although flooding does not present a risk to buried pipelines, bank erosion and scour could expose sections of pipe or cause them to become unsupported. In areas with potential for severe scour, the pipeline would be buried at a greater depth.

We believe that the implementation of Rockies Express' proposed, and our recommended, mitigation would minimize the impact to mineral resources and the impact from geological hazards.

Approximately 75 percent of the land disturbed by the Project is classified as agricultural. Construction of the Project facilities would disturb soils, resulting in increased potential for erosion, compaction, mixing of topsoil, and the introduction of rock into the soil. Rockies Express has proposed a number of mitigation measures, including Agricultural Impact Mitigation Plans (AIMPs) and an Upland Construction Plan (Plan), which would mitigate some of these concerns. We have recommended additional mitigation that would further reduce the impact on soils.

Standard pipeline construction procedures could affect groundwater resources by altering overland water flow and infiltration rates. Because the recharge areas are much larger than the footprint of the Project, changes in groundwater recharge as a result of the Project should not be significant. However, Rockies Express would repair or replace any water supply wells damaged during construction. The potential for contamination from spills of diesel fuel and hydraulic fluids is also a concern. Rockies Express has provided a plan to reduce the potential for spills and to control and remove any spills that may occur.

The REX East Project would cross 1,485 surface waterbodies: 326 perennial, 447 intermittent, 689 ephemeral, and 1 ephemeral/intermittent streams/rivers, and 22 open water areas. Rockies Express would use 21 HDDs to avoid impacts to 32 waterbodies. Construction of the pipeline could result in modification of aquatic habitat, increased sedimentation and turbidity, decreased dissolved oxygen concentrations, releases of chemical and nutrient pollutants from sediments, and introduction of chemical contaminants such as fuel and lubricants. Rockies Express has provided general mitigation measures to reduce these impacts on waterbodies. No long-term surface water impacts are anticipated as a result of constructing and operating the Project. The short-term or temporary impacts would be restricted to the construction through restoration phases of the Project.

The Project would cross eight waterbodies that are listed on the Nationwide Rivers Inventory (NRI), four in Indiana and four in Ohio. The Project would also cross two National Wild and Scenic Rivers, the Little Miami River and Big Darby Creek, both in Ohio. Both of these waterbodies would be crossed using the horizontal directional drill (HDD) method or microtunnel, if the HDD or microtunnel is unsuccessful. If the HDD or microtunnel is successfully completed, no significant impact on these two waterbodies should occur. We recommended alternative crossings that would reduce impacts to the Wild and Scenic Rivers if these methods fail.

The Mississippi River would also be crossed by the HDD method. The drill would be set up on Blackburn Island. Because access to the drill site would be by water, dredging for a temporary dock would be required. Rockies Express originally proposed to extend the drill to cross under the Sny Levee in Illinois. The Sny Levee District expressed concerns that this construction method could potentially destabilize the levee and requested that the pipeline cross over the top of the levee. Rockies Express conducted geotechnical studies and determined that crossing over the levee would be technically feasible with a shift of the drill exit point to the south; therefore, this crossing method has been adopted and is incorporated into this EIS.

Fisheries in the REX East Project area are classified as warmwater fisheries. No essential fish habitat, as defined by the Magnuson-Stevens Fishery Conservation and Management Act, would be affected by the Project. Of the 1,485 waterbodies crossed, 59 contain fisheries of special concern. The HDD method would be used to cross 17 of these waterbodies and 30 would be crossed by dry-ditch methods to avoid impacts on the fisheries. We have recommended that any of the remaining streams with fisheries of special concern that are 30 feet wide or less be crossed using a dry-ditch crossing method. A successful HDD or bore would avoid impacts on fisheries, while a dry-ditch crossing (e.g., dam and pump or flume) could result in less construction-related sedimentation and turbidity, thereby reducing impacts on the fisheries. Rockies Express would also implement erosion control and restoration measures that would reduce the impact on fisheries.

The primary impact of pipeline construction and right-of-way maintenance activities on wetlands would be the temporary and permanent alteration of wetland vegetation. Construction would disturb approximately 19.1 acres of emergent wetlands, 2.2 acres of scrub-shrub wetlands, and 16.5 acres of forested wetlands. The impact on the emergent and scrub-shrub wetlands would be temporary because the vegetation would be allowed to transition back into a community functioning similar to pre-construction wetlands. However, the clearing of forested wetlands would be a long-term or permanent impact due to the growth rate of trees. Approximately 5.3 acres of forested wetland would be permanently impacted by maintenance activities during the life of the Project. No wetlands would be permanently filled or drained as a result of the Project.

The HDD drill site for the Mississippi River and the Salt River would be on Blackburn Island, which includes a significant forested wetland system. Approximately 5.5 acres of wetlands would be impacted by construction on the island, including the permanent conversion of 0.7 acre of forested wetland to herbaceous emergent wetland.

Rockies Express would implement the mitigation measures in its Wetland and Waterbody Construction and Mitigation Procedures (Procedures) to control erosion and restore the grade and hydrology in wetlands. We have recommended that Rockies Express finalize agency consultations and its Wetland Mitigation Plan, which should include reforestation measures and compensatory mitigation.

The REX East pipeline route would cross 490.6 miles of agricultural and herbaceous open land and 143.5 miles of forested areas. Impacts from construction and operation (including maintenance mowing) of the Project on agricultural and open land would be temporary or short-term, while impacts to forested areas would be long-term to permanent. Rockies Express would implement erosion controls to contain disturbance to the work area. After construction, Rockies Express would revegetate nonagricultural lands.

The Project would affect Conservation Reserve Program (CRP) lands in Missouri, Illinois, Indiana, and Ohio, and classified forests in Indiana. We have recommended that Rockies Express identify CRP lands and prepare plans with the landowners that address the issues of constructing in these areas. The vegetation communities in Indiana include classified forests and wooded riparian corridors.

Most mobile wildlife would leave the Project area during construction. However, unfledged birds, young nonmobile animals, and slow-moving animals may be killed during construction. After construction, depending on their habitat requirements, most wildlife would return.

In areas where the Project does not parallel existing rights-of-way, forest fragmentation would result in loss of habitat to migratory birds. Rockies Express, in consultation with FWS, has developed and signed *Guidelines for Achieving Compliance with the Migratory Bird Treaty Act and Executive Order No. 13186 Through Voluntary Conservation Measures* (Conservation Guidelines) to minimize forest impacts and forest fragmentation impacts to migratory birds. The implementation of Rockies Express' Plan and Procedures, and the implementation of our recommendations, including compliance with the Conservation Guidelines would reduce impacts.

Ten federally listed threatened or endangered species and three candidate species may occur in the Project area. The Biological Assessment (BA) was issued on March 25, 2008. Based on our analysis in the BA, with the implementation of the Rockies Express mitigation measures, and our recommended mitigation measures, the Project would not affect 4 of the 10 federally listed threatened or endangered species (clubshell, decurrent false aster, eastern prairie fringed orchid, and prairie bush clover); the Project would not be likely to adversely affect the remaining 6 federally listed threatened or endangered species (Indiana bat, whooping crane, fanshell, fat pocketbook, northern riffleshell, and the running buffalo clover). We have provided the BA to FWS for its review and concurrence.

Rockies Express initially identified 23 state-listed threatened or endangered species as potentially occurring in the Project area. Ten of the state-listed species initially identified were eliminated from detailed review because they are either transient in the Project area, are unlikely to adversely respond to temporary and permanent impacts associated with the proposed facilities, or were determined after the initial review, in consultation with the agencies, to probably not occur in the Project area. A total of 15 state-listed species were identified as potentially affected by the Project. After review, it was determined that the project was unlikely to adversely affect any of the 15 state-listed species.

The primary land use that would be affected by the operation of the pipeline is agricultural (2,953.9 acres or about 73 percent). Other land uses that would be affected by the operation of the pipeline include forest land (885.7 acres or 22 percent²), open land (173.7 acres or 4 percent), open water (9.2 acres or less than 1 percent), and industrial/commercial land (19.7 acres or less than 1 percent). About 81 percent of the land that would be used for aboveground facilities is agricultural. During operation of the Project, the permanent pipeline right-of-way and aboveground facilities (including permanent access roads) would affect 2,953.9 acres of agricultural land. After construction, areas within the permanent right-of-way would generally be allowed to revert to preconstruction usage with certain restrictions, such as not allowing any permanent structures or trees.

Rockies Express has proposed to compensate landowners for reduced crop yields due to construction of pipeline facilities and use of the easement. Construction of the pipeline may affect the fertility of the agricultural fields for several years. We have recommended that Rockies Express develop and implement a 5-year post-construction monitoring program to evaluate crop productivity in areas impacted by Project construction. Rockies Express has developed AIMP's for each state to address construction and restoration issues unique to agricultural areas. Issues of concern identified in agricultural areas include drain tile repair, pipeline depth of cover, topsoil segregation, and working in wet fields; we have recommended mitigation for all of these issues. We believe that implementation of

² This includes the permanent loss of forest vegetation for aboveground facilities and the permanent right-of-way. This does not include temporary, long term construction impacts (see section 4.4.1).

the mitigation measures discussed above would minimize or mitigate the potential impacts to agricultural land uses.

There are 66 residences and 18 non-residential structures located within 50 feet of the proposed construction right-of-way. Rockies Express has adopted site-specific mitigation to reduce impacts to all 66 residences. Eighteen residences are within 25 feet of a proposed work area. Because of their proximity to construction activities, we have recommended that Rockies Express take measures to mitigate construction impacts on these residences. We also have included mitigation to repair or replace any septic systems damaged during construction.

The Project would cross 34 special-interest areas, including state parks and forests, trails, scenic highways, canoeing streams, wild and scenic rivers, and nature preserves. Impacts to these areas include clearing of vegetation, noise, dust, and the disruption of recreational uses. Operational impacts would include permanent changes in vegetation resulting from right-of-way maintenance and potential visual impacts associated with these features and aesthetics. In most cases, Rockies Express has not provided site-specific mitigation plans for the crossing of these areas; therefore, we have recommended that plans be prepared.

Rockies Express consulted with the Wyoming, Nebraska, Missouri, Illinois, Indiana, and Ohio SHPOs and performed cultural resource investigations for areas that would be affected by construction and operation of the Project. Cultural resource surveys are ongoing and the consultation process for the Project is not yet complete. Therefore, we have recommended that construction not be authorized until the required studies have been completed and we have received SHPO comments on such studies.

To date, cultural resources survey in Missouri identified 93 archaeological sites and architectural resources. Forty-five of these sites have been recommended as potentially eligible for listing on the National Register of Historic Places (NRHP). In Illinois, 481 archaeological sites and architectural resources were identified; 64 of these have been recommended as potentially eligible for the NRHP. In Indiana, 857 archaeological and architectural resources have been identified. To date, 58 were recommended as potentially eligible for listing on the NRHP. In Ohio, 639 archaeological and architectural resources have been identified. Of those, 72 are being treated as potentially eligible. In Nebraska, no cultural resources were identified at the compressor station site. One archaeology site was identified at the compressor station site in Wyoming; however, the site is not eligible for the NRHP. We have recommended that Rockies Express avoid all sites with the potential to contain human remains, and they are developing avoidance plans for five prehistoric mound sites and three historic cemeteries.

Rockies Express contacted 43 Native American tribes with cultural links to the Project area. In total, 22 tribes responded. Two tribes asked to participate in the consultation process, and 17 tribes asked to be notified if human remains were found.

Air quality would be affected by construction and operation of the Project. Most air emissions associated with the Project would result from the long-term operation of the compressor stations. Rockies Express would comply with all applicable air permit requirements from the appropriate state agencies for these facilities. A screening analysis for each station indicates that the National Ambient Air Quality Standards (NAAQS) would not be exceeded at any location. For the non-attainment areas, construction emissions were compared with, and were found to be less than, the *de minimis* threshold levels for General Conformity. The estimated emissions are based on the use of best available non-road construction equipment in the non-attainment areas. However, we believe this assumption is insufficient to demonstrate emissions would remain below General Conformity. We have recommended additional measures to demonstrate compliance.

Rockies Express performed detailed noise assessments for each of the proposed HDD locations. To mitigate significant impacts due to HDD activity at several noise sensitive areas (NSAs), Rockies Express has committed to using a temporary noise barrier at least 16 feet high and to ensure any diesel engines associated with HDD activities would include an adequate exhaust muffler to reduce noise levels at the nearest NSAs. During operation of the Project, potential noise impacts would be limited to the vicinity of the new compressor stations. All compressor stations would include design measures to minimize sound generation. The proposed compressor stations with noise mitigation measures implemented would comply with the FERC's day-night sound level limit of 55 decibels on the A-weighted scale (dBA) at the nearest NSAs.

The pipeline and aboveground facilities associated with the REX East Project would be designed, constructed, operated, and maintained to meet or exceed the DOT Minimum Federal Safety Standards in Title 49 Code of Federal Regulations (CFR) Part 192 and other applicable federal and state regulations. By designing and operating the Project in accordance with the applicable standards, the Project would not result in significant increased public safety risk.

Detailed descriptions of the impacts of the Project, Rockies Express' proposed mitigation measures, and our measures to further avoid, minimize, and mitigate these impacts are presented in section 4 of this EIS.

ALTERNATIVES CONSIDERED

The No Action and Postponed Action Alternatives were considered for the REX East Project. While the No Action or Postponed Action Alternatives would eliminate or minimize the environmental impacts identified in this EIS, U.S. markets would be denied the Project objective of delivering up to 1.8 bcf of natural gas from supply regions in the West to meet the increasing demand in the midwestern and eastern United States. By denying or delaying the Certificate for the REX East Project, the production and delivery from existing wells located in the Rocky Mountain basins may be delayed. A denial or a delay might result in more expensive and less reliable natural gas supplies for the end users and greater reliance on alternative fossil fuels, such as coal or fuel oil, or both.

A system alternative for the REX East Project would have to be able to transport large volumes of natural gas from the Rocky Mountain basins directly to markets in the Midwest and East. We are not aware of any existing pipeline systems with expansion plans that could meet the purpose and need of the REX East Project. Therefore, we have concluded that the use of existing pipeline systems is not a viable alternative.

We have also evaluated ten major route alternatives based on public comments to determine if impacts could be avoided or reduced on environmentally sensitive resources that would be affected by the Project. These major route alternatives included alternatives to the Mississippi River crossing to avoid Blackburn Island, alternative routes placed to the north of Indianapolis, and alternative route crossings of the Little Miami River and Big Darby Creek.

In addition, we have considered 64 requests for route variations by landowners and evaluated 27 variations in detail. Our evaluation of these variations was based on comment letters received from landowners or other stakeholders. Of the 27 variations evaluated in detail, we have recommended that 19 be incorporated into a revised Project route including 4 Rockies Express agreed to adopt in previous filings. We have also recommended Rockies Express continue consultations with landowners for four variations that would affect new landowners. The variations would increase the overall Project length by 1.4 miles, but would address landowner concerns, limit forest fragmentation and reduce forest impacts by 0.9 mile crossed.

CONCLUSIONS AND RECOMMENDATIONS

We conclude that if the REX East Project were constructed and operated in accordance with applicable laws and regulations, Rockies Express' proposed mitigation, coupled with the additional mitigation recommendations presented in section 5.2 of this EIS, the Project would have mostly limited adverse environmental impact and would be an environmentally acceptable action. Although many factors were considered in this determination, the principal reasons are:

- Rockies Express collocation of the REX East pipeline: more than 59 percent would follow existing rights-of-way.
- The Project would be consistent with or in conformance with federal resource management plans.
- Rockies Express would implement resource- or activity-specific plans, procedures, and agreements to protect natural resources, avoid or limit environmental impacts, and promote restoration of all disturbed areas during construction and operation of the Project.
- Rockies Express would use Agricultural Inspectors knowledgeable in farming practices along the proposed route who would provide input and guidance during construction in agricultural areas.
- The use of the HDD method would avoid disturbances to a number of major and sensitive waterbodies along the route, including the Salt and Mississippi Rivers in Missouri; the Sny Canal and Embarras River in Illinois; the Wabash, Big Blue, and Whitewater Rivers in Indiana; and several waterbodies in Ohio, including Big Darby Creek and the Little Miami River.
- The appropriate consultations with FWS, SHPOs, and other affected land management agencies, and any appropriate compliance actions resulting from these consultations, would be completed before Rockies Express would be allowed to begin construction in any given area.
- An environmental inspection and monitoring program would be implemented to ensure compliance with all mitigation measures, Certificate conditions, and other stipulations included in permits from other authorizing federal, state, and local agencies.

We have developed specific mitigation measures to further reduce the environmental impact that would otherwise result from construction of the various Project components. The additional studies or field investigations that we have recommended typically would result in site-specific mitigation and further reduction of impact; therefore, we are recommending that these mitigation measures be attached as conditions to any Certificate issued by the Commission. We believe that the recommended mitigation measures would reduce potential environmental impacts from Rockies Express' proposed action to less than significant levels.

1.0 INTRODUCTION

The staff of the Federal Energy Regulatory Commission (FERC or Commission) have prepared this Environmental Impact Statement (EIS) to assess the environmental impacts associated with the construction of facilities proposed by Rockies Express Pipeline LLC (Rockies Express) in accordance with the requirements of the National Environmental Policy Act (NEPA) (42 United States Code (U.S.C.) 4321 *et seq.*). This project is referred to as the REX East Project (or the Project). As currently proposed, the REX East Project would consist of the construction and operation of approximately 639.1 miles of natural gas pipeline and a total of 225,716 horsepower (hp) of new compression. The REX East Project would be part of the Rockies Express Pipeline System—a 1,679-mile natural gas pipeline system that would extend from Colorado to Ohio. Figure 1.0-1 presents an overview of the pipeline route proposed by Rockies Express. For more detailed location maps of the Project, see appendix B. A detailed discussion of the proposed REX East Project pipeline and facilities is presented in section 2 of this EIS.

On April 30, 2007, Rockies Express, a joint venture among Kinder Morgan Energy Partners, L.P. (Kinder Morgan), Sempra Pipelines and Storage (Sempra), and Conoco Phillips (an equity partner), filed an application with the FERC in Docket Number CP07-208-000 under Section 7 of the Natural Gas Act (NGA), as amended, and Parts 157 and 284 of the Commission's regulations. Rockies Express is seeking a Certificate of Public Convenience and Necessity (Certificate) for its REX East Project that would include the construction and operation of a pipeline in Missouri, Illinois, Indiana, and Ohio, and construction and operation of compression and ancillary facilities in Wyoming, Nebraska, Missouri, Illinois, Indiana, and Ohio.

The vertical line in the margin identifies text that has been substantially modified in the final EIS and differs from the corresponding text in the draft EIS.

1.1 PROJECT PURPOSE AND NEED

The purpose of the REX East Project is to provide natural gas transportation service for gas produced in the Rocky Mountain gas region from the terminus of the Rockies Express Western Phase Project (REX West Project) in Audrain County, Missouri to markets in the midwestern and eastern United States.¹ The terminus of the REX East Project would be in Monroe County, Ohio. The Project pipeline would deliver up to 1.8 billion cubic feet (bcf) per day of gas to other interstate natural gas pipelines. The Project would provide access to an additional 19 inter- and intra-state natural gas pipeline systems at 13 locations. These pipelines serve markets throughout the Midwest and eastern United States.

According to the Energy Information Administration (EIA), natural gas usage will represent about 22 percent of all energy consumption in the United States by 2025. Total gas consumption in the United States is expected to increase at an average rate of 1.1 percent per year. According to the EIA 2006 predictions, 60 percent of the projected growth in domestic natural gas consumption through 2030 will occur east of the Mississippi River, while the Rocky Mountains and Alaska will provide most of the natural gas.

¹ Gas from the Rocky Mountains would be transported from the Cheyenne Hub, Wyoming to Audrain County, Missouri by the REX West Pipeline. The REX West Pipeline was approved by the Commission in Docket Nos. CP06-354-000, CP06-401-000, and CP06-423-000 and is currently under construction. When completed, this pipeline will deliver gas from the Rocky Mountain region to Audrain County, Missouri.

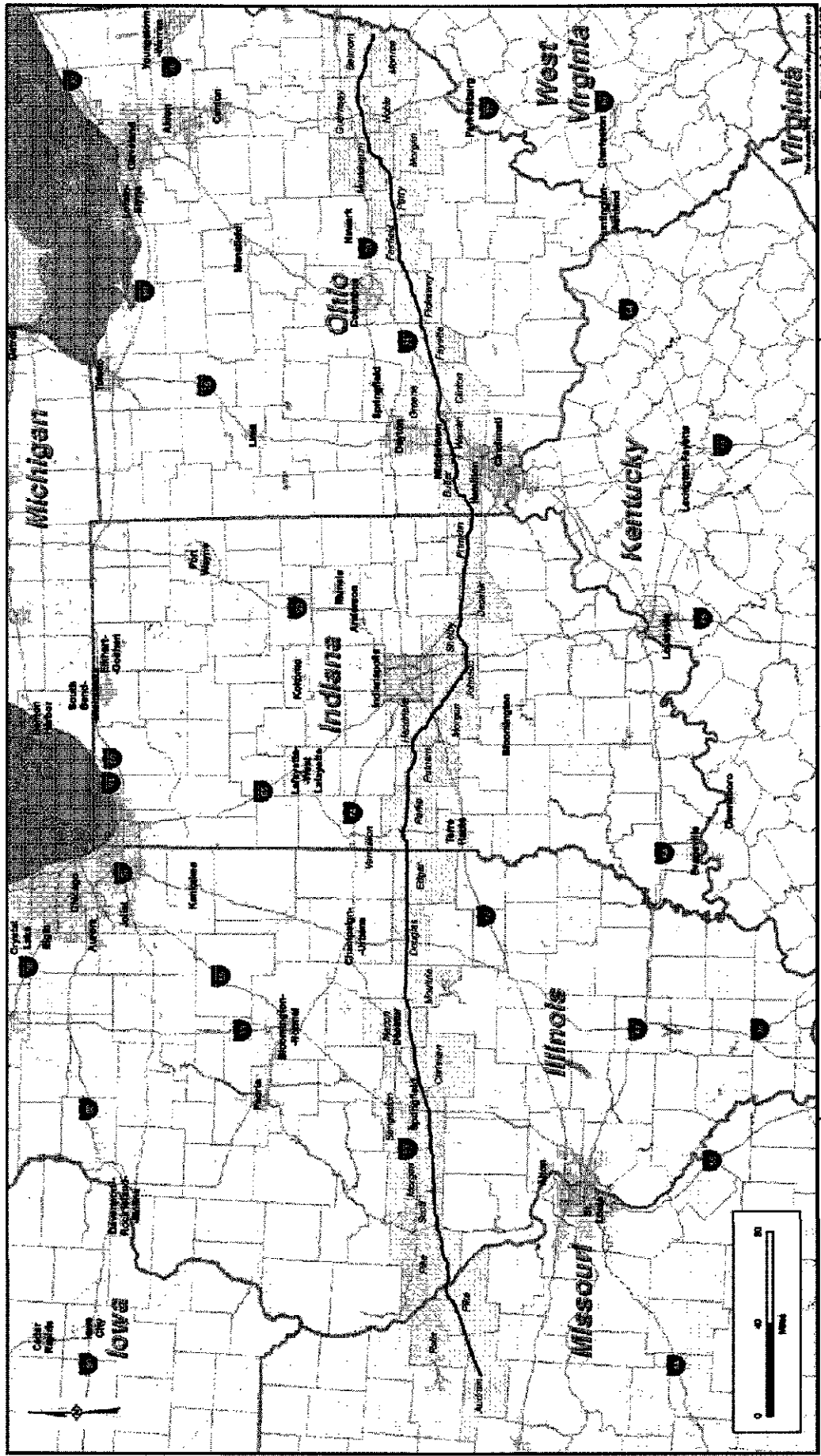


Figure 1.0-1
Pipeline Location Map

EIA anticipates that consumption of natural gas in the United States will grow from 22.0 trillion cubic feet (tcf) per year in 2005 to 26.1 tcf by 2030 (EIA, 2007a). The growth in natural gas demand is being driven primarily by increased use of natural gas for electricity generation and industrial applications. The electric power sector, industry, and buildings account for roughly 90 percent of the demand for natural gas consumption (EIA, 2007a).

The U.S. natural gas supply currently comes from three main sources: (1) domestic production; (2) pipeline imports from Canada and Mexico; and (3) imports of liquefied natural gas (LNG). Net pipeline imports of natural gas from Canada and Mexico are expected to decline in coming years. Total net imports of LNG to the United States are projected to increase from 0.6 tcf in 2005 to 4.5 tcf in 2030 (EIA, 2007a).

In 2006, net imports were about 15.7 percent of natural gas consumption in the United States (EIA, 2007b). Domestic production of natural gas will continue to account for the majority of total U.S. consumption, with onshore production expected to account for the bulk of that supply (EIA, 2007a). Onshore production of natural gas from unconventional sources (e.g., shale, tight sands, and coalbed methane) is expected to be a major contributor to that growth. The EIA predicts that unconventional natural gas production in the lower 48 states will account for about 50 percent of total domestic production by 2030 (EIA, 2006).

The midwestern and eastern portions of the United States have experienced growth in traditional local distribution company deliveries, with the greatest increase in demand coming from gas-fired electric power generation plants. This increased market demand has continued without an associated increase in the availability of gas supplies, partly due to an inability to bring to market the increased gas production from the Rocky Mountain region. According to Rockies Express, the REX East Project would help to alleviate this constraint on gas distribution by increasing transportation capacity, thereby increasing gas supply in the United States and moderating gas prices. Without additional supply, gas costs could increase and available supplies could be stressed to meet current and future user demands.

1.2 PURPOSE AND SCOPE OF THE EIS

The FERC is the federal agency responsible for evaluating applications to construct and operate interstate natural gas pipeline facilities. Certificates are issued under Section 7(c) of the NGA and Part 157 of the Commission's regulations if the Commission determines that the project is required by public convenience and necessity. We² prepared this EIS in compliance with the requirements of NEPA and the Council on Environmental Quality's (CEQ) Regulations for Implementing NEPA (40 CFR [Code of Federal Regulations] Parts 1500 – 1508) and the Commission's Regulations for Implementing NEPA (18 CFR Part 380).

The U.S. Army Corps of Engineers (COE), U.S. Fish and Wildlife Service (FWS), Illinois Department of Agriculture (ILDOA), and Natural Resources Conservation Service (NRCS) are cooperating agencies and have participated in the development of this EIS. A cooperating agency has jurisdiction by law or has special expertise with respect to environmental impacts involved with the proposal and is involved in the NEPA analysis.

² "We," "us," and "our" collectively refer to the environmental staff of the Office of Energy Projects, part of the Commission staff.

Scope of the Environmental Review

Our principal objectives in preparing this EIS are to:

- Identify and assess potential impacts on the natural and human environment that would result from the implementation of the proposed actions;
- Describe and evaluate reasonable alternatives to the proposed actions that would avoid or minimize adverse effects on the environment; and
- Identify and recommend specific mitigation measures, as necessary, to minimize the environmental impacts.

Our analysis in this EIS focuses on the facilities that are under the FERC's jurisdiction (i.e., the natural gas pipeline and compression facilities proposed for construction by Rockies Express), as well as the nonjurisdictional facilities that are integrally related to the development of the Project (i.e., electric transmission facilities—see section 1.4).

The environmental topics addressed in this EIS include geology; soils; water resources; wetlands; vegetation; fisheries; wildlife; threatened, endangered, and other special status species; land use (including agricultural and residential impacts) and visual resources; socioeconomic; cultural resources; air quality; noise; reliability and safety; cumulative impacts; and alternatives. The EIS describes the affected environment as it currently exists, discusses the environmental consequences of the Project, and compares potential impacts of the REX East Project to those of alternatives. The EIS also presents our conclusions and recommended mitigation measures.

The Commission will consider the findings of the EIS as well as non-environmental issues in its review of these proposals to determine whether a Certificate should be issued for the REX East Project. A Certificate would be granted only if the FERC finds that the evidence produced on financing, rates, market demand, gas supply, existing facilities and service, environmental impacts, long-term feasibility, and other issues demonstrates that the Project is required by public convenience and necessity. Environmental impact assessment and mitigation development are important factors in the overall public interest determination.

On September 15, 1999, the FERC issued a Policy Statement (88 FERC 61,227; Docket No. PL 99-3-000) to provide guidance on how it would evaluate proposals for certificating new construction. The Policy Statement established the criteria for determining whether there is a need for a project and whether such a project would serve the public interest. Further, the Policy Statement explains that, in deciding whether to authorize the construction of major new natural gas transportation facilities, the FERC balances the public benefits against the potential adverse consequences of a project. In evaluating new pipeline construction, the goal of the criteria is to give appropriate consideration to the enhancement of competitive transportation alternatives, possibility of overbuilding, subsidization by existing customers of an applicant's responsibility for unsubscribed capacity, avoidance of unnecessary disruptions of the environment, and the unneeded exercise of eminent domain.

1.3 PUBLIC REVIEW AND COMMENT

1.3.1 Public Review Process

Pre-filing Review Process

We initiated review of the REX East Project using the FERC's pre-filing process. This environmental review process was developed to facilitate and encourage the early involvement by citizens, government entities, non-governmental organizations, the FERC staff, and other interested parties. We worked with Rockies Express during the pre-filing process to identify and resolve issues, where possible, prior to Rockies Express' filing a formal application with the FERC. As part of this process, we assigned the REX East Project a pre-filing docket number (Docket No. PF06-30-000) to place information and comments into the public record generated by Rockies Express, the FERC, other agencies, and citizens. Initial contacts were made with federal and state natural and cultural resource agencies and other stakeholders having an interest in the Project. These initial contacts included a brief description of the Project and a request for information regarding the applicable permitting or other regulatory review authority. After the filing of the second draft of the REX East Project resource reports, we established a monthly teleconference with federal and state resource agencies to discuss the Project and the environmental review process as well as other relevant issues.

Open House Meetings

As part of the pre-filing process, the FERC staff worked with Rockies Express to develop a public outreach plan for issue identification and stakeholder participation. Rockies Express began implementing this outreach plan in June 2006 by meeting with local and state officials, and other non-governmental organizations to provide information about the Project and address any issues and concerns. Rockies Express sponsored 18 local, public open houses in June 2006 to inform landowners, government officials, and the general public about the REX East Project and invite them to ask questions and express their Project-related comments and concerns. Rockies Express mailed approximately 13,000 invitations to the open houses to affected landowners, nearby residents, public officials, and the media and placed notifications in 41 local newspapers. Two additional open houses were held in October 2006 to provide information on two route alternatives and the relocation of the Bainbridge compressor station that were incorporated into the route alignment after the completion of the June open houses. A final open house was held by Rockies Express on January 3, 2007 in Monroe, Ohio to provide information on the relocation of the Hamilton Compressor Station.

Table 1.3.1-1 provides a list of the public open houses held by Rockies Express. The FERC staff also participated in all of the open houses held in June and October 2006 and provided information to the public regarding the environmental review process.

Public Scoping Period

On August 16, 2006, the FERC issued a *Notice of Intent to Prepare an Environmental Impact Statement for the Proposed REX East Project, Request for Comments on Environmental Issues, and Notice of Joint Public Scoping Meeting* (Rockies Express NOI). The Rockies Express NOI was published in the Federal Register (FR) on August 22, 2006 (21 FR 48920 – 48923). The Rockies Express NOI was mailed to approximately 13,000 interested parties including federal, state, and local agencies; elected officials; environmental and public interest groups; Native American tribes; local libraries and newspapers; other interested stakeholders; and affected landowners located along the pipeline route. The

Table 1.3.1-1 List of Rockies Express' Public Open Houses	
Meeting Date	Meeting Locations
June 19, 2006	Bowling Green, MO; Cambridge, OH
June 20, 2006	Springfield, IL; Zanesville, OH
June 21, 2006	Winchester, IL; Woodsfield, OH
June 22, 2006	Decatur, IL; Ashville, OH
June 23, 2006	Danville, IL; Lancaster, OH
June 26, 2006	Tuscola, IL; Wilmington, OH
June 27, 2006	Rockville, IL; Mason, OH
June 28, 2006	Franklin, IN; Hamilton, OH
June 29, 2006	Plainfield, IN; Greensburg, IN
October 10, 2006	Bainbridge, IN
October 11, 2006	Franklin, IN
January 3, 2007	Monroe, OH

issuance of the Rockies Express NOI established a closing date of September 29, 2006 for comments regarding the scope of the environmental review to be conducted. However, the FERC continued to receive and consider comments during the entire pre-filing period and during development of this EIS.

The FERC also held nine public scoping meetings in September 2006 along the Project route to provide the public an opportunity to learn more about the Project and comment on environmental issues to be included in the EIS. Notice of the scoping meeting dates and locations appeared in the Rockies Express NOI dated August 16, 2006. Table 1.3.1-2 lists the locations and dates of the FERC scoping meetings.

Table 1.3.1-2 List of the FERC Public Scoping Meetings	
Meeting Date	Meeting Locations
September 11, 2006	Mexico, MO; Greensburg, IN
September 12, 2006	Springfield, IL; Greenwood, IN
September 13, 2006	Pittsfield, IL; Trenton, OH
September 14, 2006	Rockville, IN; Ashville, OH
September 15, 2006	Zanesville, OH

The public was also invited to attend two site visits, which took place on July 17-20, 2007 and August 6-10, 2007.

On September 28, 2007, the FERC issued a letter stating that Rockies Express had revised the locations of the Hamilton and Chandlersville Compressor Stations, the Clarington Meter Station, and portions of the pipeline, and that the scoping period for these relocated facilities would be extended through October 30, 2007. A copy of this letter was mailed directly to landowners added to the mailing list because of the newly relocated facilities.

1.3.2 Summary of Scoping Comments and Responses

Transcripts from the scoping meetings, along with all written comments, appear in the public record for the REX East Project and are available on the FERC Web site at www.ferc.gov. A total of 111 comments were provided by individuals at the scoping meetings. We received a total of 380 written comments from interested stakeholders, including COE, the U.S. Environmental Protection Agency (EPA), the National Park Service (NPS), state and local agencies, elected officials, organizations, affected landowners, and other interested parties (as of October 24, 2007). Table 1.3.2-1 lists the issues raised during the scoping period and where they are addressed in this EIS.

Table 1.3.2-1 Issues Identified and Comments Received During the Public Scoping Process		
Issue	Comment	Section in EIS Where Issue/ Comment is Addressed
Overall Project Comments	Schedule, purpose, right-of-way width, availability of information, eminent domain	2.0, 4.8
Alternatives	Variations to avoid specific features/resources, suggesting to use existing corridors and alternative energy, locate outside populous areas	3.0
Geology/Soils	Topsoil segregation, erosion, blasting, soil compaction, highly erodable soils, strip mine area in eastern Ohio, coal veins, depth of pipe, chemical properties of soils, rock removal, earthquakes/fault lines, rugged terrain, abandoned mines, landslides	4.1, 4.2
Water Resources	Floodplains, springs, ponds/lakes/reservoirs, rivers/streams, waterbody crossings, wells, aquifers, water contamination, wild/scenic/outstanding watersheds or rivers, water withdrawal/discharge from surface waters	4.3
Vegetation	Invasive species, forests, prairies, Classified Forest Program in Indiana, Conservation Reserve Program (CRP)	4.4
Wetlands	Wetland Reserve Program (WRP) or other conservation programs, loss of wetlands	4.3
Wildlife Resources	Federally and state-listed threatened and endangered species, wildlife management areas	4.5, 4.6, 4.7
Land Use	Decreased yield in agricultural products, heat from pipes during operations, drainage tiles, easement/compensation, eminent domain, aesthetics, future use of right-of-way, proximity to homes/buildings, state and local parks, septic/utility systems, interference with state/local projects (e.g., Hunter Lake), hinder development growth, recreational hunting, land management and conservation programs	4.8
Socioeconomics	Property values, insurance costs, taxes	4.9
Cultural Resources	Native American artifacts, burial grounds, historical canals, underground railroad, cemeteries, historic buildings/properties/farms, unanticipated discoveries	4.10
Air	Operation of compressor stations, temporary effects from construction, dust	4.11.1
Noise	Operation of pipes and compressor stations, disruption of residences/livestock, temporary effects from construction	2.0, 4.11.2
Reliability/Safety	Terrorism, maintenance, accidents, explosions, leaks, emergency response, proximity to homes/schools/quarry, depth of pipe, pressure, pipe thickness, grade of pipe, earthquake/lightning, farming operations on top of pipe	4.12
Mitigation	Soil mitigation, agricultural impact mitigation plans, wetland mitigation	All sections and 5.2

Additionally, we initiated agency consultations to identify issues that should be addressed in the EIS. These consultations included interagency meetings on September 12 through September 14, 2006 and interagency conference calls on April 3, 5, 12; May 10; June 14 and 18; July 24; and September 18, 2007. Participants in these meetings and calls included representatives of COE, EPA, FWS, NRCS, U.S. Department of Transportation (DOT), NPS, Indiana Department of Environmental Management (IDEM), Indiana Department of Natural Resources (INDNR), State Historic Preservation Officers (SHPO), Indiana Utility Regulatory Commission (IURC), Indiana Department of Agriculture (INDOA), Ohio Department of Natural Resources (ODNR), Ohio Power Siting Board (OPSB), Ohio Environmental Protection Agency (OEPA), Ohio Department of Development, Ohio Farm Bureau, ILDOA, Missouri Department of Natural Resources (MODNR), Missouri Department of Conservation (MDC), and the Illinois Environmental Protection Agency (ILEPA).

1.3.3 FERC Public Comment Meetings for the DEIS

On November 23, 2007, the FERC issued the draft EIS for the Rockies Express East Project and filed it with EPA. A formal notice was published in the Federal Register on December 4, 2007 announcing that the draft EIS was available and had been mailed to individuals and organizations on the distribution list prepared for the Project. In accordance with the CEQ's regulations for implementing NEPA, the public was allowed about 45 days (or until January 14, 2008) to comment on the draft EIS.

The FERC mailed approximately 5,800 copies of the draft EIS to interested parties, including federal, state, and local agencies; elected officials; environmental and public interest groups; Native American tribes; landowners along the pipeline route under consideration; local libraries and newspapers; and other interested stakeholders. The FERC also conducted public comment meetings in Springfield, Illinois, Rockville, Indiana, and Zanesville, Ohio on January 7; Springfield, Illinois, Pittsfield, Illinois, Greensburg, Indiana, and Ashville, Ohio on January 8; and Mexico, Missouri, Greenwood, Indiana, and Trenton, Ohio on January 9, 2008.

A total of 85 commenters spoke at the 9 public comment meetings. We received a total of 225 written comments from interested stakeholders, including COE, EPA, NPS, state and local agencies, elected officials, organizations, affected landowners, and other interested parties (through March 14, 2008). Transcripts from the public comment meetings on the draft EIS, along with all written comments, appear in the public record for the REX East Project and are available on the FERC Web site at www.ferc.gov. Comments on the draft EIS and the FERC staff's responses to those comments are provided in appendix K of this document.

In addition, we initiated agency consultations to discuss issues in the final EIS. These consultations included an interagency call on January 24, 2008. All agencies who participated in the scoping period agency calls were invited to participate.

Rockies Express Amendment

On February 5, 2008, Rockies Express filed a Notice of Amendment stating that Rockies Express had relocated the proposed Hamilton Compressor Station and had realigned 3.9 miles of the associated pipeline in Warren and Butler Counties. The FERC issued a letter to affected landowners and a comment period was opened through February 26, 2008. On January 30, 2008, the FERC issued a letter to additional landowners regarding these changes and other pipeline realignments. A comment period was opened through March 3, 2008. Rockies Express hosted an open house meeting on January 3, 2008 for those landowners within a half mile of the newly proposed site for the Hamilton Compressor Station.

Final EIS

This EIS was mailed to the agencies, individuals, and organizations on the distribution list provided in appendix A, and was submitted to EPA for formal issuance of a Notice of Availability (NOA).

In accordance with CEQ's regulations implementing NEPA, no agency decision on a proposed action may be made until 30 days after EPA publishes an NOA of the final EIS. However, the CEQ regulations provide an exception to this rule when an agency decision is subject to a formal internal process that allows other agencies or the public to make their views known. In such cases, the agency decision may be made at the same time the notice of the final EIS is published, allowing both periods to run concurrently. Should the FERC issue the Applicant's Certificate for the proposed action, it would be subject to a 30-day rehearing period. Therefore, the FERC could issue its decision concurrently with EPA's NOA.

1.4 NONJURISDICTIONAL FACILITIES

Under Section 7 of the NGA, the FERC considers, as part of its decision to authorize interstate natural gas facilities, all factors bearing on the public convenience and necessity. The facilities under the FERC's jurisdiction for the REX East Project are described in detail in section 2.1.

Occasionally, proposed projects have associated facilities that are not under the FERC's jurisdiction. Nonjurisdictional facilities may be integral to the need for such a proposed project or they may merely be associated as a minor, non-integral component of the jurisdictional facilities.

One such nonjurisdictional facility is the transmission lines associated with the Hamilton Compressor Station. The Hamilton Compressor Station would receive electricity for its compressors and station utilities from Duke Energy (Ohio) by means of two 138-kilovolt (kV) transmission lines. One of the 138-kV transmission lines would loop through a substation at the compressor station from the south, starting at about 0.3 mile south of the substation and following Interstate 75 north to the substation (figure 1.4-1). The other transmission line would be about 1.6 miles long and would enter the compressor station from Greentree Road to the north. The environmental impact from construction of the power lines would consist of ground disturbance from installing the wood poles to support the power lines and maintenance of a 100-foot-wide easement as open grass/pasture. The areas proposed for these transmission lines are currently agricultural fields adjacent to roads. Duke Energy (Ohio) would design and construct these transmission lines, which would be under Ohio Power Siting Board jurisdiction, and would obtain the required permits and authorizations (see table 1.4-1). To ensure that the Endangered Species Act and the National Historic Preservation Act are complied with, **we recommend that:**

- **Rockies Express defer obtaining service from Duke Energy's planned transmission line until comments of the SHPO and FWS on the transmission line have been filed with the Secretary and the Director of OEP issues written approval to obtain service.**

Table 1.4-1 lists the permits that may be required for the construction of additional nonjurisdictional facilities.

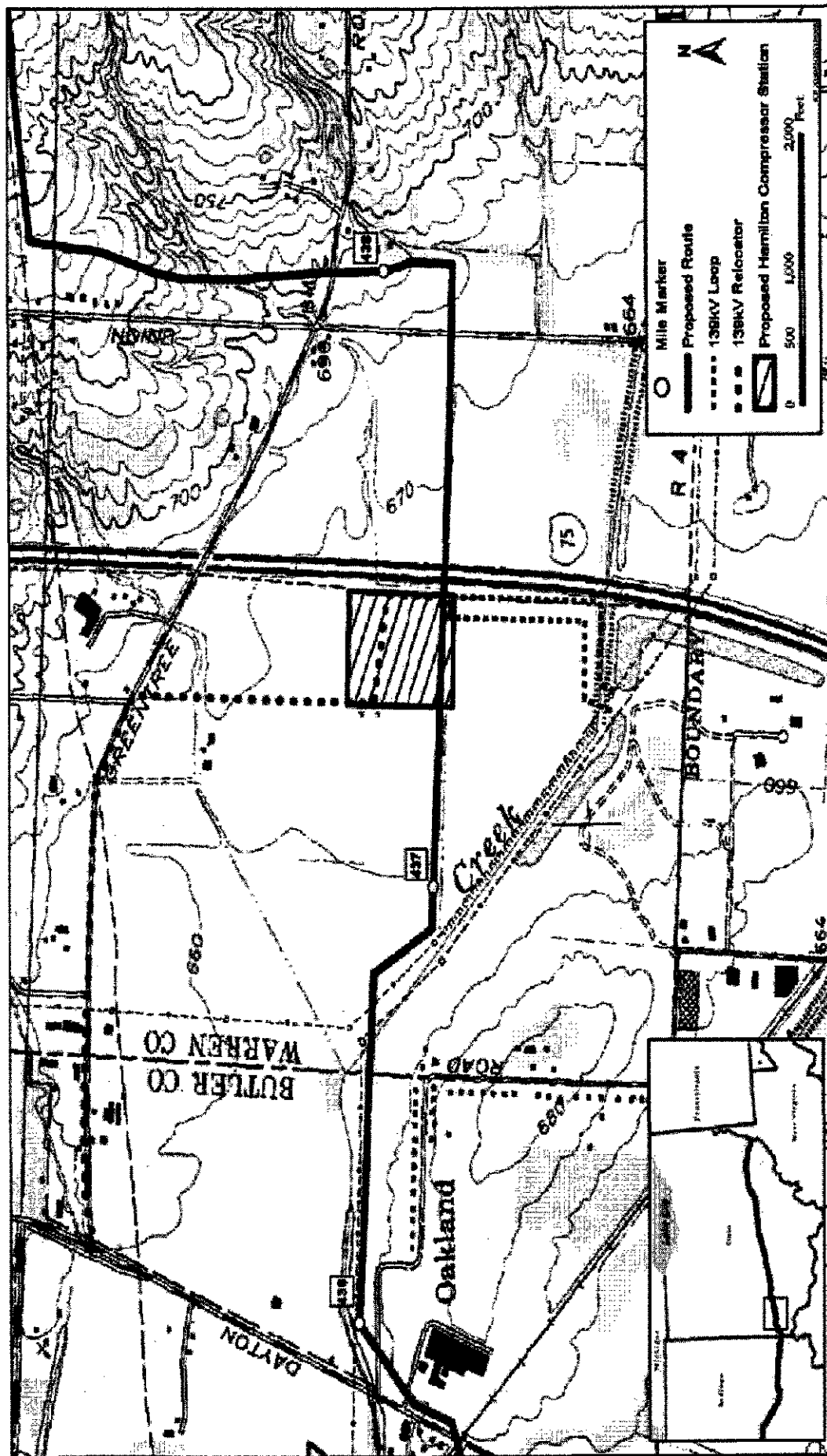


Figure 1.4-1
Hamilton Compressor Station, Warren County, Ohio, Transmission Lines

Table 1.4-1 Major Permits, Licenses, and Authorizations Likely Required To Be Obtained by the Nonjurisdictional Power Company for the Electric Transmission Line Required for the Hamilton Compressor Station	
Administering Agency	Permit/Approval or Consultation
FEDERAL	
US Fish and Wildlife Service	Endangered Species Act (ESA), Section 7 Consultation
Advisory Council on Historic Preservation	National Historic Preservation Act (NHPA), Section 106 Consultation
U.S. Army Corp of Engineers	Nationwide 12 Permit
STATE	
Ohio Department of Natural Resources	Water Withdrawal Registration
Ohio Environmental Protection Agency	Section 401 Water Quality Permit
Ohio Environmental Protection Agency	NPDES Construction Stormwater Discharge Authorization under General Permit OHC00002
Ohio Power Siting Board	Letter of Notification for Transmission Line Tap
LOCAL	
Warren County Soil and Water Conservation District	SWP3 Submittal
Warren County Soil and Water Conservation District	Earth Moving Permit
Warren County	Burning Permit

1.5 PERMITS, APPROVALS, AND REGULATORY REQUIREMENTS

As the lead federal agency for the REX East Project, the FERC is required to comply with Section 7 of the Endangered Species Act (ESA), Section 106 of the National Historic Preservation Act (NHPA), and the Wild and Scenic Rivers Act (WSR) of 1968. These statutes have been taken into account in the preparation of this EIS.

Construction, operation, and maintenance of the Project would be in accordance with applicable federal, state, county, and local permits and approvals. Applicable permits, approvals, and consultations for the Project are summarized in table 1.5-1. Major permit and approval actions for the Project would include environmental reviews by the FERC for authorization under Section 3(a) and a Certificate under Section 7(c) of the NGA; by COE for a Section 10 of the Rivers and Harbors Act/404 of the Clean Water Act (CWA) Permit, dredge disposal approval, and right-of-way easement; by EPA for authority under the CWA and the Clean Air Act (CAA); and by NPS for approvals under the WSR. In four locations along the proposed route COE owns or administers the lands, and permits are required to cross those areas. Several Illinois, Indiana, Missouri, Nevada, Ohio, and Wyoming state agencies have been delegated permitting responsibilities under the CWA and CAA, but with oversight by the appropriate federal agency. Rockies Express would be responsible for obtaining the required permits and approvals to implement the Project, regardless of whether they appear in table 1.5-1.

Section 7 of the ESA, as amended, states that any project authorized, funded, or conducted by any federal agency should not "jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined...to be critical..." (16 U.S.C. § 1536(a) (2) (1988)). Thus, the FERC staff, or Rockies Express as a non-federal representative, is required to consult with FWS to determine whether any federally listed

Table 1.5-1 Major Permits, Licenses, Authorizations, and Clearances Required		
Administering Agency	Permit/Approval or Consultation	Status
FEDERAL		
Federal Energy Regulatory Commission	Certificate of Public Convenience and Necessity	Pre-filing Process Request approved on June 13, 2008. FERC application filed April 2007.
U.S. Department of the Interior National Park Service	Wild and Scenic Rivers Act Section 7 (a) Determination	Consultations were initiated in July 2006 and are ongoing.
U.S. Fish and Wildlife Service: Columbia Field Office Marion Field Office Bloomington Field Office Reynoldsburg Field Office Grand Island Field Office Cheyenne Field Office	Endangered Species Act Section 7 Consultation	Consultations have been initiated and are ongoing.
U.S. Army Corps of Engineers - St Louis District (Missouri and Illinois)	Clean Water Act Section 404 Rivers and Harbors Act Section 10	Application filed August 14, 2007.
- Rock Island District	Clean Water Act Section 404 Rivers and Harbors Act Section 10	Application filed August 14, 2007.
- Rock Island District	Easement to cross Federal lands - Upper Mississippi COA	Pending.
- Louisville District (Illinois/Indiana)	Clean Water Act Section 404 Rivers and Harbors Act Section 10	Application filed (August 14, 2007/September 18, 2007).
- Louisville District	Easement to cross Federal lands - Cecil M Harden Lake	Pending.
- Huntington District a/	Clean Water Act Section 404 Rivers and Harbors Act Section 10	Application filed September 5, 2007.
US Army Corps of Engineers Huntington District, Realty Division	Easement to cross Federal lands Deer Creek Lake Project	COE/ODNR-Parks Div./ODNR-Wildlife & Fish currently reviewing two possible routes across properties. Easement negotiations would commence when route finalized.
	Congressional approval needed by COE HQ pursuant to Corps Real Estate regulating ER-405-1-12, Chapter 8	Status unknown.
US Army Corps of Engineers Louisville District, Realty Division	Easement to cross Federal lands Caesar Creek Lake Project	COE/ODNR-Wildlife & Fish agree with current route proposal. Easement negotiations have not commenced.
Advisory Council on Historic Preservation	Comment on the undertaking and its effect on historic properties	Pending.

Table 1.5-1 (continued)		
Major Permits, Licenses, Authorizations, and Clearances Required		
Administering Agency	Permit/Approval or Consultation	Status
U.S. Environmental Protection Agency Region V and VII b/	National Pollutant Discharge Elimination System (NPDES) In conjunction with the appropriate state, review stormwater and hydrostatic test water discharge	Consultations have been initiated and are ongoing.
U.S. Department of Agriculture Natural Resource Conservation Service	Restoration Consultation	Consultations have been initiated and are ongoing.
STATE		
Missouri		
Department of Conservation	State-listed Endangered Species Review	Consultations have been initiated and are ongoing.
State Historic Preservation Office	Consultation under Section 106 of NHPA	Consultations have been initiated and are ongoing.
Department of Natural Resources	Clean Water Act Section 401 Water Quality Certification	Application filed August 14, 2007.
	Clean Air Act Construction Air Permit Operation Permit	Application filed June 20, 2007.
	Notification of Hydrostatic Testing Under Permit By Rule	Application approved January 18, 2008.
	NPDES General Permit for Land Disturbance Greater than 1 Acre (MO-R101000).	NPDES permit requirements for stormwater discharges exempt per EPA Final Rule dated June 12, 2006. Confirming permit is exempt per EPA final rule.
	Major Water Use Registration (Greater than 100,000 gallons per day (gpd) or 70 gallons per minute (gpm)	Application to be filed 2 nd quarter 2008.
Department of Transportation	Crossings of state-maintained roads and highways	Status unknown.
Missouri County Engineers (3 Total)	Road crossings	Status unknown.
Illinois		
Illinois Historic Preservation Agency	Consultation under Section 106 of NHPA	Consultations have been initiated and are ongoing.
Illinois Department of Natural Resources	State-listed Endangered Species Review	Consultation complete. See letter from the ILDNR dated March 19, 2007.
	Statewide Permit No. 8 – Underground Pipeline and Utility Crossings	The Project meets the terms and conditions of Statewide Permit No. 8.

Table 1.5-1 (continued)		
Major Permits, Licenses, Authorizations, and Clearances Required		
Administering Agency	Permit/Approval or Consultation	Status
Illinois Environmental Protection Agency	Clean Water Act 401 Water Quality Certification	Status unknown.
	Clean Air Act Construction Air Permit Operation-Permit	Application approved December 13, 1007.
	Reissued General NPDES Permit for Hydrostatic Testing of Pipelines and Tanks (ILG67)	Status unknown.
	General NPDES Permit For Stormwater Discharges From Construction Activities. Also authorizes the discharges of uncontaminated groundwater.	NPDES permit requirements for stormwater discharges exempt per EPA Final Rule dated June 12, 2006.
Illinois Department of Agriculture	Farmland Protection Policy Act (7, USC 4201 et sep.) consistency with state and local programs to protect farmland.	Consultations have been initiated and are ongoing.
Illinois Department of Transportation	Crossings of state-maintained roads and highways	Status unknown.
Illinois' County Engineers (9 Total)	Road Crossings; Zoning (Administrative/BP, etc.); Floodplain-applicability determination pending	Meetings regarding the Project route have been held. Status unknown.
Illinois Townships (30 Total)	Right-of-way Use Permits – Township Road Crossings	Status unknown.
Indiana		
Department of Historic Preservation and Archeology	Consultation under Section 106 of NHPA	Consultations have been initiated and are ongoing.
Indiana Department of Natural Resources, Natural Heritage Data Center	State Listed Endangered Species Review	Consultation complete. See e- mail from the INDNR dated July 27, 2007.
Indiana Department of Natural Resources	Significant Water Withdrawal Registration (>100,000 gpd) IC-14-25-7	Registration to be filed within 3 months after the project is completed.
	Temporary Construction Dewatering Report IC-14-25-7	Report to be filed within 3 months after the project is completed.
	Flood Control Act	Status unknown.
Indiana Department of Environmental Management	Clean Water Act 401 Water Quality Certification	Status unknown.
	Clean Air Act Construction Air Permit Operation Permit	Application approved January 23, 2008.
	Wastewater Discharge Associated with Hydrostatic Testing of Commercial Pipelines	Status unknown.

<p align="center">Table 1.5-1 (continued) Major Permits, Licenses, Authorizations, and Clearances Required</p>		
Administering Agency	Permit/Approval or Consultation	Status
	Rule 5 Permit – Stormwater Runoff Associated with Land Disturbing Activity	NPDES permit requirements for stormwater discharges exempt per EPA Final Rule dated June 12, 2006. Confirming permit is exempt per EPA final rule.
Department of Transportation	State maintained Highway & Route crossings	Status unknown.
Indiana – County Engineers (9 Total)	Right-of-way Use Permit - Road Crossings Zoning Floodplain-applicability determination pending Drainage Crossings	Status unknown.
Ohio		
Ohio Historical Society	Consultation under Section 106 of NHPA	Consultations have been initiated and are ongoing.
Ohio Department of Natural Resources	State Listed Endangered Species Review Water Withdrawal Facility Registration (>100,000 gpd)	Consultations have been initiated and are ongoing. Registration to be filed within 3 months after the project is completed.
Ohio Department of Natural Resources – Parks Division	Easement to cross Perry State Forest and Blue Rock State Forest	Consultations have take place with ODNR – Easement negotiations have not commenced.
Ohio Environmental Protection Agency	Clean Water Act Section 401 Water Quality Certification Clean Air Act Construction Air Permit Operation Permit General Permit for Discharges of Hydrostatic Test Water (NPDES Permit No. OHH000001) Authorization for Stormwater Discharges Associated with Construction Activity under the NPDES (OHC000002)	Application filed September 5, 2007. Status unknown. Status unknown.
Ohio Department of Transportation (Districts – 5, 6, 8, 10, 11)	Right-of-way Use Permit – 57 State Roads – Two Interstates	Status unknown.
Ohio – County Engineers (13 Total)	Right-of-way Use Permit - County Road Crossings	Status unknown.
Ohio - Townships	Right-of-way Use Permits – Township Road Crossings	Status unknown.
Ohio City of Middletown	Zoning Use Permit	Hamilton Compressor Site – location currently zoned industrial (Conforms to current zoning). Negotiations have begun with City of Middletown.

Table 1.5-1 (continued)		
Major Permits, Licenses, Authorizations, and Clearances Required		
Administering Agency	Permit/Approval or Consultation	Status
Ohio – Muskingum County	Lot Split	Chandlersville Compressor Site –Application submitted 10-04-07.
Ohio – Counties / Townships	Zoning / Special Use Requirements	Verification of requirements ongoing.
Ohio – County Flood Plain Administrator	Flood Plain Permit	Verification of requirements ongoing.
Ohio – County Flood Plain Administrator	Flood Plain Permit	Verification of requirements ongoing.
Nebraska		
Department of Historic Preservation and Archeology	Consultation under Section 106 of NHPA	Consultation has been completed.
Department of Environmental Quality	Clean Air Act Construction Permit Operation Permit	Application approved December 28, 2007.
	General NPDES Permit Authorizing Hydrostatic Test Discharges from Pipelines and Storage Tanks (NEG 672000)	Application to be filed at least 10 days prior to discharge.
	General Permit Authorizing Dewatering Discharges	Application to be filed at least 10 days prior to discharge.
	NPDES general Permit for Stormwater Discharges From Construction Sites (NER 100,000)	NPDES permit requirements for stormwater discharges exempt per EPA Final Rule dated June 12, 2006. Confirming exempt status with Nebraska Department of Environmental Quality.
Wyoming		
Department of Historic Preservation and Archeology	Consultation under Section 106 of NHPA	Consultations have been completed.
Department of Environmental Quality	Clean Air Act Construction Permit Operation Permit	Application filed on October 2, 2007.
	General Permit to Discharge Stormwater Associated with Large Construction Activity Under the Wyoming Pollutant Discharge Elimination System (WYR10-0000)	Application to be filed at least 30 days prior to discharge.
	General Permit for Hydrostatic Discharges	Application to be filed at least 30 days prior to discharge.
Wyoming Game and Fish Department	State-listed Endangered Species Review	Consultations have been completed.
<p>a/ Approximately 17 miles of the Project is located within the Pittsburgh District; however, the Huntington District would include this segment in its permitting.</p> <p>b/ Although the Agency is allowed the opportunity to review the project, no official permit or authorization is issued.</p>		

or proposed threatened or endangered species and/or their designated critical habitat occur in the vicinity of the Project. We have determined that these species or habitats may be affected by the Project and has prepared a biological assessment (BA). The BA identifies our recommended measures that would avoid the habitat and/or species and reduce potential impacts to acceptable levels. Section 4.7 of this EIS summarizes the findings of the BA. The BA is included on the CD of additional documents accompanying this EIS (CD Document M).

Section 106 of the NHPA requires the FERC to take into account the effects of our undertakings (including authorizations under Section 7 of the NGA) on historic properties, and afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment. Historic properties include prehistoric or archeological sites, districts, buildings, structures, objects, or sites of traditional religious or cultural importance that are listed or may be eligible for listing on the National Register of Historic Places (NRHP). In accordance with the ACHP procedures for implementing Section 106, at 36 CFR Part 800, the FERC is required to consult with the appropriate SHPO regarding the NRHP eligibility of cultural resources and the potential effects of the proposed undertaking on NRHP-listed or NRHP-eligible properties. Also, under the ACHP regulations, the FERC would consult with Native American Indian tribes, local governments, land managing agencies, and other parties interested in the potential impacts the Project may have on historic properties. Rockies Express, as a non-federal party, is assisting the FERC in meeting our obligations under Section 106 by preparing the necessary information and analyses. See section 4.10 of this EIS for the status of this review.

The WSR established the National Wild and Scenic Rivers System to protect those rivers and adjacent land with important scenic, recreational, fish and wildlife, and other values as identified by Congress. Four federal land management agencies, Bureau of Land Management (BLM), NPS, FWS, and the U.S. Forest Service administer the WSR to protect rivers' identified values, free-flowing condition, and associated water quality. Under Section 13(g) of this Act, the Secretary of the Interior or the Secretary of Agriculture, as appropriate, may grant easements and rights-of-way through, above, or under any component of the National Wild and Scenic Rivers System in accordance with laws applicable to the river-administering agency. Sections 7(a) and (b) of the Act prohibit the FERC from licensing a project that NPS determines would "have a direct and adverse effect" on the values for which a river is included or proposed to be included in the National Wild and Scenic Rivers System. The FERC, after a proponent files an application, consults with the river-administering agency. In the case of the REX East Project, the river-administering agency is NPS. If the river-administering agency determines that the Project would be "on or directly affect" a designated wild and scenic river or congressionally authorized study river, the permit, license, or exemption may be dismissed without further processing. The FERC may license projects, after consultation with the river-administering agency, "below or above a wild, scenic, or recreational river" or a congressionally authorized study river that would not "invade the area or unreasonably diminish the scenic, recreational, and fish and wildlife values." Rockies Express, as a non-federal party, has assisted the FERC by obtaining the necessary information and preparing analyses to identify whether the Project would have an effect on wild and scenic rivers or authorized study rivers. The Wild and Scenic Rivers Environmental Assessment is included with this EIS as appendix H.

The FERC encourages cooperation between applicants and state and local agencies, but this does not mean that state and local agencies, through the application of state or local laws, may prohibit or unreasonably delay the construction or operation of facilities approved by the FERC. Any state or local permits issued with respect to the jurisdictional facilities must be consistent with the conditions of any authorization issued by the FERC.³

³ See, for example, *Schneidewind v. ANR Pipeline Co.*, 485 U.S. 293 (1988); *National Fuel Gas Supply v. Public Service Commission*, 894 F.2d 571 (2d Cir. 1990); and *Iroquois Gas Transmission System, L.P., et al.*, 52 FERC ¶ 61,091 (1990) and 59 FERC ¶ 61,094 (1992).

2.0 DESCRIPTION OF PROPOSED ACTION

2.1 PROPOSED FACILITIES

The REX East Project would involve construction and operation of both pipeline and aboveground facilities. The environmental analysis presented in this EIS evaluates the facilities proposed by Rockies Express as detailed below.

2.1.1 Pipeline Facilities

Table 2.1-1 presents a listing of the pipeline facilities Rockies Express proposes. The REX East Project would comprise approximately 639.1 miles of 42-inch-diameter natural gas pipeline. The pipeline would begin at the proposed Mexico Compressor Station in Audrain County, Missouri (milepost [MP] 0.0), proceed eastward through Illinois and Indiana, and terminate at the proposed interconnect with the pipeline facilities that Dominion Transmission, Inc., Dominion East Ohio, and Texas Eastern Transmission Company (TETCO) operate at the Clarington Hub in Monroe County, Ohio (MP 639.1).

Rockies Express is also proposing to construct laterals and interconnects in order to deliver gas to the customers. The lengths of the laterals and interconnects are included in table 2.1-1.

Rockies Express' proposed route is shown on figure 1.0-1 in section 1 of this EIS.

2.1.2 Aboveground Facilities

Table 2.1-2 presents a list of the aboveground facilities proposed. These facilities are further described below.

Rockies Express proposes to construct seven new compressor stations as part of the REX East Project. Five would be constructed along the route of the proposed pipeline:

- The *Mexico Compressor Station*, at MP 0.0 in Audrain County, Missouri would provide 41,000 hp of compression using two gas turbines.
- The *Blue Mound Compressor Station*, at MP 144.1 in Christian County, Illinois would provide 35,174 hp of compression using five gas reciprocating units.
- The *Bainbridge Compressor Station*, at MP 277.3 in Putnam County, Indiana would provide 41,000 hp of compression using two gas turbines.
- The *Hamilton Compressor Station*, at MP 473.3 in Warren County, Ohio would provide 35,000 hp of compression using two electric-driven centrifugal units.
- The *Chandlersville Compressor Station*, at MP 575.0 in Muskingum County, Ohio would provide 19,538 hp of compression using three gas reciprocating units.

Table 2.1-1
REX East Pipeline Facilities

Facility and Location (State)	Diameter (inches) <u>a/</u>	Length (miles) <u>b/</u>	MPs <u>c/</u>
Missouri			
<u>Mainline</u>	42	43.1	0.0 – 43.1
Subtotal		43.1	
Illinois			
<u>Mainline</u>	42	195.2	43.1 – 238.2
<u>Lateral and Interconnect:</u> Natural Gas Pipeline Company <u>d/</u>	42	0.2	Near 178.7
<u>Interconnect:</u> Ameren Power Company	42	0.1	Near 180.4
<u>Lateral and Interconnect:</u> Trunkline Gas Company	42	<0.1	Near 195.7
<u>Lateral and Interconnect:</u> Midwestern Gas Transmission Company	42	0.2	Near 231.9
Subtotal		195.7	
Indiana			
<u>Mainline</u>	42	166.2	238.2 – 404.7
<u>Lateral and Interconnect:</u> Panhandle Eastern Pipeline Company	42	<0.1	Near 274.5
<u>Lateral and Interconnect:</u> Citizen Gas and Coke Utility	42	0.2	Near 305.9
<u>Lateral and Interconnect:</u> Indiana Gas Company	42	<0.1	Near 316.4
<u>Lateral and Interconnect:</u> ANR Pipeline Company	42	<0.1	Near 342.3
Subtotal		166.4	
Ohio			
<u>Mainline</u>	42	234.6	404.7 – 639.1
<u>Lateral and 5 Interconnects:</u> Lebanon Hub: includes Columbia Gas, Dominion Transmission, Texas Eastern Transmission, Texas Gas Transmission, and Vectren	42	1.8	Near 444.0
<u>Lateral:</u> Columbia Gas Transmission Company	42	<0.1	Near 539.6
<u>Lateral and Interconnect:</u> Tennessee Gas Company	42	0.7	Near 592.4
<u>Lateral and Interconnect:</u> Dominion Transmission, Inc.	42	<0.1	Near 612.3
<u>Lateral and 3 Interconnects:</u> Clarington Hub: includes Dominion Transmission, Dominion East, and Texas Eastern Transmission Company	42	0.4	Near 639.1
Subtotal		237.5	
Project Total		642.7	

a/ Diameter of the lateral is 42 inches, the diameter of the interconnects will vary between 8 inches and 24 inches.

b/ Length includes the length of all laterals and interconnects at this location.

c/ Distance between mileposts does not necessarily equal a mile due to topography and changes in the route.

d/ A lateral is a pipeline which connects the REX East pipeline to the meter station. An interconnect is a pipeline which connects the meter station to the third-party pipeline.

Table 2.1-2 REX East Proposed Aboveground Facilities			
Facility	Horsepower (hp)	MP ^{a/}	Location (County, State)
Compressor Stations			
Arlington Compressor Station	19,794	237.0 ^{b/}	Carbon, WY
Bertrand Compressor Station	34,210	286.8 ^{c/}	Phelps, NE
Mexico Compressor Station	41,000	0.0	Audrain, MO
Blue Mound Compressor Station	35,174	144.1	Christian, IL
Bainbridge Compressor Station	41,000	277.3	Putnam, IN
Hamilton Compressor Station	35,000	437.3	Warren, OH
Chandlersville Compressor Station	19,538	575.0	Muskingum, OH
Meter Stations			
Natural Gas Pipeline Company of America	—	178.7	Moultrie, IL
Ameren Power Company	—	180.4	Moultrie, IL
Trunkline Gas Company	—	195.7	Douglas, IL
Midwestern Gas Transmission Company	—	231.9	Edgar, IL
Panhandle Eastern Pipe Line Company	—	274.5	Putnam, IN
Citizen Gas and Coke Utility	—	305.9	Morgan, IN
Indiana Gas Company	—	316.4	Morgan, IN
ANR Pipeline Company	—	342.3	Shelby, IN
Columbia Gas Transmission Corporation	—	444.0	Warren, OH
Dominion Transmission, Inc.	—	444.0	Warren, OH
Texas Eastern Transmission Company	—	444.0	Warren, OH
Texas Gas Transmission, LLC	—	444.0	Warren, OH
Vectren Company	—	444.0	Warren, OH
Columbia Gas Transmission Corporation	—	539.6	Fairfield, OH
Tennessee Gas Company	—	592.4	Guernsey, OH
Dominion Transmission, Inc.	—	612.3	Noble, OH
Dominion Transmission, Inc.	—	639.1	Monroe, OH
Dominion East Ohio	—	639.1	Monroe, OH
Texas Eastern Transmission Company	—	639.1	Monroe, OH
^{a/} Distance between mileposts does not necessarily equal a mile due to topography and changes in the route. ^{b/} Milepost represents distance along the REX Entrega route. ^{c/} Milepost represents distance along the REX West route.			

The sixth compressor station would be located along the route of the Rockies Express Pipeline – Entrega Project (Docket No. CP06-354-000). The *Arlington Compressor Station*, at MP 237.0 in Carbon County, Wyoming would provide 19,794 hp of compression using three gas reciprocating units. The site on which the compressor station would be located has been certificated for the installation of a pig¹ launcher/receiver under Docket No. CP04-413-000.

¹ A pig is a mechanical cleaning and inspection device that passes through the interior of a pipeline from a launcher attached to the pipeline at one location to a receiver attached to the pipeline at another location.

The seventh compressor station would be located along the route of the Rockies Express Pipeline -- Western Phase Project (Docket No. CP04-413-000). The *Bertrand Compressor Station*, at MP 286.8 in Phelps County, Nebraska, would provide 34,210 hp of compression using five gas reciprocating units.

Each compressor station would consist of a compressor building, a utility building (including control room, utility room, and storage/shop room), valves, and piping. The Hamilton Compressor Station would receive electricity for its compressors and station utilities from Duke Energy (Ohio) by means of two 138-kilovolt (kV) transmission lines. For a further discussion of Duke Energy's facilities, see section 1.4.

Rockies Express would construct 19 meter stations and associated interconnecting pipeline facilities at 13 locations along the proposed pipeline route. Rockies Express would also install 42 mainline valves (MLV) along the route, 5 of which would be located within compressor station sites, 1 within the Clarington Hub, and the remaining 36 within the operations right-of-way. Rockies Express has attempted to position its aboveground facilities (compressor stations, meter stations, and MLVs) adjacent to roads, wherever possible, to attempt to reduce disruption to land uses, and to facilitate access.

In order to enable periodic cleaning and inspection of the REX East pipeline by pigging, Rockies Express would construct facilities for the periodic attachment of portable pig launchers and/or receivers to the pipeline at the five compressor stations along the route of the proposed pipeline. A facility to accommodate a portable pig launcher would be installed at the Mexico Compressor Station; a facility to accommodate a portable pig receiver would be installed at the Chandlersville Compressor Station; and one of each such facilities would be installed at the Blue Mound, Bainbridge, and Hamilton Compressor Stations. (Pigs, pig launchers, and pig receivers would be transported by truck and trailer and attached and operated as needed.)

2.2 LAND REQUIREMENTS

Rockies Express has stated that up to 14,334.4 acres would be required during the Project construction phase. After construction, 4,049.2 acres would be retained for Project operation. Land requirements are summarized in table 2.2-1.

The location of new access roads and existing roads to be modified are provided on the accompanying CD (CD Document I), as well as appendix B, and the associated impacts are discussed in section 4.

2.2.1 Areas Disturbed by Pipeline Construction

Rights-of-Way

During construction, Rockies Express proposes to use a 125-foot-wide temporary construction right-of-way in upland areas, a 100-foot-wide temporary construction right-of-way for non-saturated herbaceous and shrub/scrub wetlands, and a 75-foot-wide right-of-way for forested and saturated wetlands. Maps of the proposed route are provided in appendix B. Rockies Express proposes a wider than normal construction right-of-way because of the large pipeline (42-inch-diameter) and the larger equipment that would be used during construction. We believe that a 75-foot-wide right-of-way is sufficient for all wetland areas and have recommended its use in 2.3.2. Rockies Express proposes to retain a 50-foot-wide permanent right-of-way during pipeline operation.

Table 2.2-1 REX East Land Requirements		
Project Component	Construction (acres)	Operations (acres)
Pipeline		
Mainline right-of-way	9,678.5	3,871.7
Laterals and interconnects	36.7	24.4
Additional temporary workspace	4,163.1	0.0
Pipe storage/contractor yards	303.1	0.0
Subtotal	14,181.4	3,896.2
Aboveground Facilities		
Facilities	153.0 ^{a/}	153.0 ^{a/}
Project Total	14,334.4	4,049.2
^{a/} Includes compressor stations, meter stations (and access roads to them), valves, and pig launcher and receiver facilities.		

The pipeline would be adjacent to existing utility rights-of-way for about 377.1 miles, approximately 59 percent of its length. When paralleling existing pipelines other than those of the Panhandle Eastern Pipeline Company (PEPL), Rockies Express would use part of the existing pipeline's permanent right-of-way for storage, which would reduce the amount of new disturbance.

The REX East pipeline would parallel PEPL lines for about 193.3 miles, approximately 30 percent of its length. In the area where the two systems would be parallel, PEPL has four pipelines, the 100, 200, 300, and 400 lines. The 100 and 200 lines were built in the early twentieth century using mechanical couplings (Dresser coupling) to join the pipes. Lines 300 and 400 were constructed using modern welding techniques. The pipeline parallels different PEPL lines depending on the location. PEPL has raised concerns that earth movement due to trenching, topsoil segregation, and use of heavy construction equipment in close proximity to the 100 and 200 lines could have adverse affects. Because of these concerns, Rockies Express proposes to use an 8-foot right-of-way overlap and a 65-foot separation between its pipeline and PEPL's lines. Although there may be a reason for this increased separation when paralleling the 100 and 200 lines, these precautions are not necessary for pipeline sections adjacent to the newer 300 and 400 lines. Using Rockies Express' proposed construction method while paralleling all portions of the PEPL system would result in expanding the width of the pipeline unnecessarily. The width of these corridors can be an issue on some properties that could end up with five pipelines. Although the existence of the easements may not affect all activities on the property, it does place restrictions on the use. In order to reduce impacts on the landowner while maintaining the integrity of the existing pipelines, we have modified our recommendation from the draft EIS to limit the increased overlap of rights-of-way to areas where the REX pipeline would parallel PEPL's 300 and 400 lines. Therefore, we recommend that:

- In areas where the pipeline parallels PEPL's 300 and 400 lines (MP 33.8 to MP 69.2; MP 98.3 to MP 128.0; MP 194.1 to MP 220.1; and MP 259.0 to MP 274.4), Rockies Express revise its construction plans in order to overlap, for spoil storage purposes, 15 feet of the existing PEPL permanent right-of-way.

In addition, Rockies Express would offset its pipeline within the proposed permanent right-of-way so that it would be 10 feet from the outer edge and 40 feet from the edge nearest PEPL's permanent right-of-way. This would result in a 65-foot-wide unused space between the two pipelines. When

paralleling other pipelines, Rockies Express would center its pipeline within the proposed permanent right-of-way, resulting in the proposed pipeline being placed 50 feet from the existing pipeline. The purpose of the permanent right-of-way is to provide a buffer between the pipeline and third-party activities. Placing the pipeline near the edge of the permanent right-of-way would allow encroachment within 10 feet of the pipeline. In addition, although we are not aware of any future plans to place additional pipelines in this area, in order to avoid future issues with pipeline placement and the width of construction and permanent rights-of-way, we recommend that:

- **Rockies Express revise its construction plans to center the pipeline within the permanent right-of-way in areas where it is currently shown within 10 feet of the edge of the permanent right-of-way, unless this would decrease the separation distance between its pipeline and the PEPL 100 and 200 lines to less than 65 feet, and incorporate these revisions in its pre-construction planning, revising the REX East right-of-way configurations as necessary. Rockies Express should file the revised right-of-way configurations with the Secretary prior to the start of construction.**

Additional Temporary Workspace

Temporary workspace would be required at various locations along the construction right-of-way, such as at the beginning of each construction spread (crew and equipment) for mobilizing construction equipment; for stringing truck turnaround areas; where the proposed pipeline crosses over an adjacent pipeline; where the pipeline crosses under buried features (e.g., foreign pipelines, utility lines); at road crossings, railroads, wetlands, and waterbodies; in residential areas; and at directionally drilled crossings. Additional temporary workspace also would be required in areas with side slopes to create level and safe work areas. The total acreage of additional temporary workspace would be 4,163.1 acres. In general, we do not believe that Rockies Express has filed sufficient site-specific information to justify the number and size of its additional workspaces. Therefore, we recommend that:

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of Office of Energy Projects (OEP) the proposed use and site-specific justification for the size of each of its proposed additional temporary workspaces.**

Further, Rockies Express has requested 35-foot-wide temporary workspaces in areas where topsoil would be segregated. Rockies Express has stated that the additional 35 feet is necessary to allow for full right-of-way topsoil stripping. The state of Ohio has indicated that it would prefer that full right-of-way topsoil stripping be mandatory.

We do not believe that full right-of-way topsoil segregation is necessarily better than trench-and-spoil side topsoil segregation. Both methods have benefits and drawbacks. Full right-of-way stripping normally disturbs a larger area potentially affecting more drain tiles. Partial right-of-way stripping may reduce impacts to drain tiles, but may also increase the potential for compaction. Mitigation or repair would be required if either of these impacts occurs. We believe that the proposed construction right-of-way width of 125 feet is sufficient to store segregated topsoil in agricultural areas. However, in some cases a landowner may prefer the use of a wider construction right-of-way, which may reduce the potential for commingling of subsoil and topsoil. Therefore, we recommend that:

- **Rockies Express not exercise eminent domain authority granted under Section 7(h) of the NGA to acquire an additional 35-foot-wide temporary workspace for the storage of topsoil. Rockies Express may negotiate for the use of these additional workspaces for topsoil storage.**

Access Roads

Rockies Express would use 87 existing public and private roads and construct 54 new, permanent roads to gain access to the pipeline right-of-way (during construction and operation of the Project) and pipe storage and contractor yards (during construction). The Project would require a total of 141 access roads (CD Document I). The length of newly constructed roads would range from 16 to 2,083 feet, with an average length of 216 feet. Based on an average width of 30 feet (compressor and meter stations) and 16 feet (MLV access roads), new permanent roads would occupy approximately 6.7 acres. In addition, two existing roads would provide permanent access to the ANR Pipeline meter station (MP 342.3) and the MLV 12 (MP 233.8).

Pipe Storage and Contractor Yards

Rockies Express has identified 11 potential areas for pipe storage and contractor staging during construction of Project facilities: 1 in Missouri, 2 in Illinois, 2 in Indiana, and 6 in Ohio. The 11 sites range from commercial/industrial sites to non-disturbed areas, which would be used temporarily during construction. Pipe storage/contractor yards would be used on a temporary basis, for the storage of pipe joints and stationing of construction equipment, and would be restored when construction is completed. The area required for pipe storage and contractor yards would be 303.1 acres in the construction phase.

Table 2.2-2 gives the acreage and location for each temporary pipe storage/contractor yard. The locations of the temporary pipe storage/contractor yards are shown on maps included in appendix B.

Table 2.2-2			
REX East Pipe Storage/Contractor Yards			
Name of Yard	Size (acres)	Township, Range, Section	Location (County, State)
Bowling Green	35	T-53-N, R-3-W, Sec. 27	Pike, MO
Springfield	35	T-13-N, R-5-W, Sec. 9	Sangamon, IL
Metcalf	35	T-16-N, R-13-W, Sec. 34	Edgar, IL
Green Castle	32	T-14-N, R-4-W, Sec. 4	Putnam, IN
Franklin	31	T-11-N, R-5-E, Sec. 21	Johnson, IN
Middletown	18	T-2-E, R-4-N, Sec. 8	Butler, OH
Hamilton	19	T-2-E, R-2-N, Sec. 29	Butler, OH
Jeffersonville	20	Virginia Military District	Fayette, OH
Pickaway	35	T-11-N, R-21-W, Sec. 31	Pickaway, OH
Lancaster	14	T-15-N, R-19-W, Sec. 27	Fairfield, OH
Guernsey	29	T-2-N, R-2-W, Sec. 0	Guernsey, OH
Total	303		

2.2.2 Aboveground Facilities

Table 2.2-3 provides the land requirements for the 7 compressor station sites and 13 meterstation locations (for 19 meter stations in total) during the construction and operations phases. Land requirements for the construction phase total 150.8 acres (114.8 acres for the compressor station sites and 36.0 acres for the meter station sites). Land requirements total 153.0 acres for the operations phase (114.8 acres for the compressor station sites, 36.0 acres for the meter station sites, and 2.2 acres for the MLVs).

Table 2.2-3 REX East Land Requirements for Aboveground Facilities			
Facility	Location (County, State)	Temporary Construction (acres)	Permanent Operation (acres)
Compressor Stations <u>a/</u>			
Arlington Compressor Station	Carbon, WY	15.0	15.0
Bertrand Compressor Station	Phelps, NE	17.7	17.7
Mexico Compressor Station	Audrain, MO	12.8	12.8
Blue Mound Compressor Station	Christian, IL	12.9	12.9
Bainbridge Compressor Station	Putnam, IN	21.3	21.3
Hamilton Compressor Station	Warren, OH	15.2	15.2
Chandlersville Compressor Station	Muskingum, OH	19.9	19.9
Subtotal		114.8	114.8
Meter Stations <u>a/</u>			
Natural Gas Pipeline Company of America	Moultrie, IL	5.6	5.6
Ameren Power Company	Moultrie, IL	1.2	1.2
Trunkline Gas Company	Douglas, IL	2.6	2.6
Midwestern Gas Transmission Company	Edgar, IL	1.2	1.2
Panhandle Eastern Pipe Line Company	Putnam, IN	1.2	1.2
Citizen Gas and Coke Utility	Morgan, IN	1.2	1.2
Indiana Gas Company	Morgan, IN	2.0	2.0
ANR Pipeline Company	Shelby, IN	2.2	2.2
Vectren, Texas Gas Transmission, LLC, Dominion Transmission, Inc., Texas Eastern Transmission Company, and Columbia Gas Transmission Corporation	Warren, OH	6.8	6.8
Columbia Gas Transmission Corporation	Fairfield, OH	2.2	2.2
Tennessee Gas	Guernsey, OH	2.2	2.2
Dominion Transmission, Inc	Noble, OH	1.5	1.5
Dominion Transmission, Dominion East Ohio, and Texas Eastern Transmission Company	Monroe, OH	6.1	6.1
Subtotal		36.0	36.0
Mainline Block Valves <u>b/</u>			
Subtotal		0.0 <u>c/</u>	2.2
Total		150.8	153.0
<u>a/</u> Includes area to be disturbed by permanent access roads.			
<u>b/</u> Includes only the 36 mainline block valves, which would be located outside of the fenced area at proposed compressor stations or meter stations. Block valves located within the fence line of other aboveground facilities are counted with those aboveground facilities.			
<u>c/</u> Areas disturbed during construction are accounted for in the acreage disturbed by the construction pipeline right-of-way.			

These land requirement values include the area to be disturbed by access roads to the aboveground facilities.

Each of the 36 MLVs that would not be within the fence line of a proposed compressor or meter station site would be installed in a 50-foot-wide by 50-foot-wide (0.06-acre) fenced-in area, which would be within the permanent pipeline right-of-way.

Permanent components of the pig launcher and pig receiver facilities would be located entirely within compressor station sites, and so their land requirements are included in those of the compressor stations.

Rockies Express has attempted to locate aboveground facilities adjacent to roads, wherever possible, to reduce disruption to land uses and to facilitate pipeline operations and maintenance.

2.3 CONSTRUCTION PROCEDURES

The proposed facilities would be designed, constructed, operated, and maintained in accordance with 49 CFR Part 192 "Transportation of Natural Gas and Other Gas by Pipeline: Minimum Federal Safety Standards," 18 CFR Part 380.15 "Guidelines to be followed by Natural Gas Pipeline Companies in the Planning, Clearing, and Maintenance of Rights-of-Way and the Construction of Aboveground Facilities," and other applicable federal and state regulations. Rockies Express has submitted its own Upland Construction Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures), which are based on the FERC's Plan and Procedures, with certain proposed modifications that Rockies Express believes appropriate to the Project (CD Documents A, B). A summary of the proposed modifications to the FERC Plan and Procedures is provided in tables 2.3-1 and 2.3-2. Our Plan and Procedures are included on the accompanying CD.

We have reviewed the differences between the FERC's Plan and Procedures and the REX East Project Plan and Procedures. We do not agree with all of the alternative mitigation proposed by Rockies Express. Therefore, **we recommend that:**

- **Rockies Express revise its Plan and Procedures to be consistent with tables 2.3-1 and 2.3-2 of this EIS. Rockies Express should file its revised Plan and Procedures with the Secretary prior to the start of construction.**

2.3.1 General Construction Procedures

In upland areas, Rockies Express would use conventional overland construction techniques. Construction would follow a set of sequential operations shown on figure 2.3.1-1. The construction spread would proceed along the pipeline right-of-way in one continuous operation; construction at any single point along the pipeline, from initial surveying and clearing to backfilling and finish grading, would typically last approximately 8 to 12 weeks. The entire process would be coordinated to minimize the total time that a given tract of land is disturbed, exposed to erosion, and temporarily unavailable for normal use. Rockies Express proposes to use seven construction spreads for the Project.

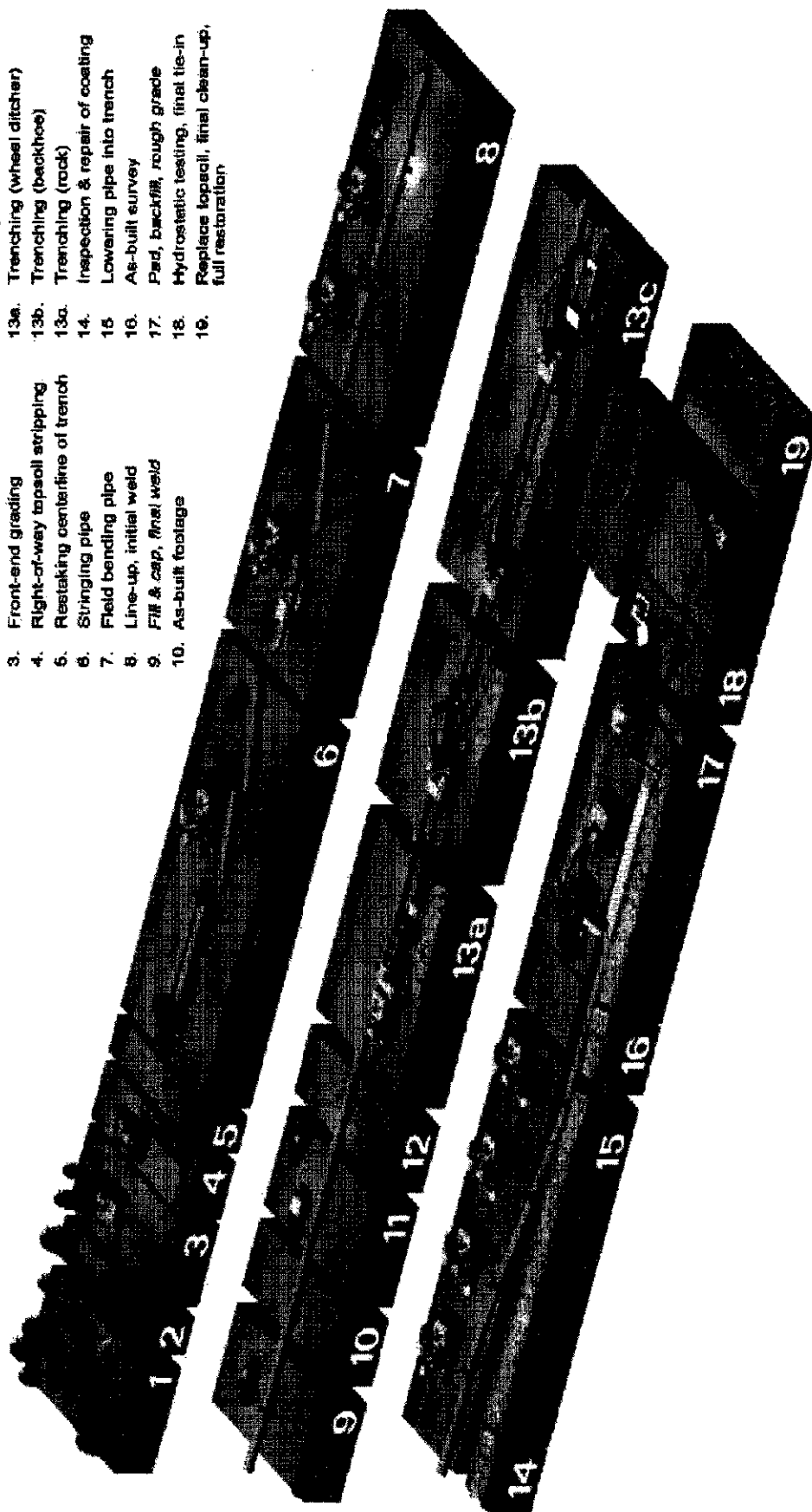
The REX East Procedures require that a site-specific explanation be filed for Commission review and approval for each additional workspace that is within 50 feet of a waterbody or wetland. Rockies

Table 2.3-1 Differences between the REX East Project's Plan and the FERC's Plan			
Section Number of the FERC Plan	Alternative Mitigation	Accepted	Reason
I.A	Addition of Agricultural Impact Mitigation Plan	Yes	Adds additional mitigation for construction in agricultural areas.
III.A.2	Wording change to state that Rockies Express has already expanded and will continue to expand the required cultural resources and endangered species surveys	Yes	Adds a more stringent requirement.
III.C	Addition of "as necessary and practical" to the requirement to defer grazing	Yes	Rockies Express would nonetheless have to continue to monitor and maintain the disturbed construction area for revegetation and/or erosion problems resulting from construction.
III.G	Addition of "...where appropriate" to the requirement to make available the Stormwater Pollution Prevention Plan for each construction spread	No	The Stormwater Pollution Prevention plan must be made available for each construction spread.
IV.A.2	Change of construction right-of-way width from 100 feet to 125 feet	Yes	Generally larger construction equipment necessitates wider right-of-way.
IV.B.1.d	Included Conservation Reserve Program land among the lands where topsoil segregation must be performed	Yes	Adds a more stringent requirement.
IV.E.2	Added the adjective "suitable" to qualify the fabric to be used to support crushed-stone access pads	No	Suitable has not been defined.
IV.F.1.a	Added sediment logs to the list of acceptable slope breakers	Yes	Sediment logs may be better on certain slopes.
V.D.3.g	Removed the word "imprinter" and inserted the word "roller"	No	A "roller" is not specific. An "imprinter" is a type of roller specially designed to assist revegetation.

Table 2.3-2
Differences between the REX East Project's Project Procedures
and the FERC's Procedures

Section Number	Alternative Mitigation	Accepted	Reason
I.A	Addition of Agricultural Impact Mitigation Plan	Yes	Adds additional mitigation for construction in agricultural areas.
I.B.1.a, b, c	Replacement of "...at the time of crossing..." with "...at the time of construction..."	Yes	Adds a more stringent requirement.
II.B.3	Removal of requirement to limit construction right-of-way width to 75 feet unless specific construction plans are filed	No	The FERC recommends that Rockies Express use a 75-foot-wide right-of-way for wetlands. See section 2.3.2.
IV.A.1.D	Addition (to the requirements on parking and refueling) of the requirement that no refueling occur within 200 feet of a private well nor within 400 feet of a municipal well	Yes	Adds a more stringent requirement.
V.B.7 and V.B.8	Allow pipe segments to be welded and strung above and across a waterbody prior to installation (in order to expedite installation)	No	Welding materials may fall into the waterbody. There is no indication how high above the waterbody the pipe would be strung.
VI.A.3	Widening the limit on right-of-way width from 75 feet to 100 feet	No	The FERC recommends that Rockies Express use a 75-foot-wide right-of-way for wetlands. See section 2.3.2.

- | | |
|-----------------------------------|---|
| 1. Survey and staking | 11. X-ray inspection, weld repair |
| 2. Clearing | 12. Coating field welds |
| 3. Front-end grading | 13a. Trenching (wheel ditcher) |
| 4. Right-of-way topsoil stripping | 13b. Trenching (backhoe) |
| 5. Restaking centerline of trench | 13c. Trenching (rock) |
| 6. Stringing pipe | 14. Inspection & repair of coating |
| 7. Field bending pipe | 15. Lowering pipe into trench |
| 8. Line-up, initial weld | 16. As-built survey |
| 9. Fill & cap, final weld | 17. Pad, backfill, rough grade |
| 10. As-built footage | 18. Hydrostatic testing, final tie-in |
| | 19. Replace topsoil, final clean-up, full restoration |



Typical Pipeline Construction Sequence_081107

Figure 2.3.1-1
Typical Pipeline Construction Sequence in Uplands

Express has identified over 100 additional workspaces that would be within 50 feet of waterbodies or wetlands but has provided no site-specific justification. Therefore, we recommend that:

- **Rockies Express file with the Secretary for review and written approval by the Director of OEP a site-specific justification for each additional workspace that is within 50 feet of a wetland or waterbody, prior to the start of construction.**

Staking the Construction Right-of-Way

The initial step in preparing the right-of-way for construction would be to stake the outside limits of the construction right-of-way, the centerline of the proposed pipeline trench, and additional temporary workspaces. Sensitive areas to be avoided would be flagged, as appropriate, and wetland boundaries would be clearly marked using readily identifiable flagging and/or temporary signage. Before construction, Rockies Express would contact One-Call systems for the various states so that facility owners can identify and flag buried utilities to prevent accidental damage during pipeline construction.

Clearing and Grading

The construction work area would be cleared of trees, large rocks, brush, and roots. Trees would be removed only when necessary for construction purposes. Timber and other vegetative debris would be chipped for use as erosion-control mulch, burned, cut and stacked along the right-of-way, or otherwise disposed of in accordance with applicable federal and local regulations and landowner requirements. However, we believe more information is required on how material would be disposed of; therefore, we recommend that:

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP, a bulk material disposal plan for excess rock, trees, brush, and other construction debris.**

In areas containing livestock, Rockies Express would coordinate with landowners on disposal or removal of shrub and tree waste that might harm livestock. Burning would be conducted in a manner that minimizes fire hazards and prevents heat damage to surrounding vegetation, and would follow appropriate state restrictions. We have recommended in section 4.7.1, that burning not take place within 500 feet of Indiana bat habitat.

Fences would be cut and braced along the right-of-way, and temporary gates would be installed to provide right-of-way access. The construction area would then be graded (i.e., leveled) to enable construction equipment to operate. Segregated topsoil would be placed along the right-of-way in a manner that would not impede access, material transport, and pipe assembly. Sufficient space would be left between separate piles of topsoil and subsoil stored on the same side of the right-of-way so that the subsoil can be returned without disturbing the topsoil pile.

Temporary erosion control measures, such as sediment barriers (silt fencing, staked straw bales) and temporary slope breakers, would be installed during clearing and grading. After installation, the barriers would be regularly inspected and maintained until construction is complete or permanent erosion control measures are installed to replace them.

Trenching

Rockies Express would typically use a rotary ditching machine to excavate trenches. Where rotary ditching is not possible, track-mounted excavators and backhoes or other similar equipment would

be used. Rock substrates could be excavated using rippers or hammers. Any required blasting would be consistent with Rockies Express' Blasting Plan (CD Document C) and with all applicable laws and company standards (see section 2.3.2). In agricultural or residential areas, subsoil and rock would be stockpiled separately from topsoil. For safety and to minimize sloughing of topsoil into the ditch, the trench sides would be sloped in accordance with the stability of the soils present. Typically, the trench would be excavated to a depth sufficient to provide a minimum of 3 feet of cover over the pipeline. In consolidated rock areas at least 2 feet of cover would be provided.

Stringing

Individual sections of pipe would be 40 to 60 feet long and protected with a fusion-bonded, factory-applied epoxy coating. The beveled ends would be left uncoated to facilitate welding. Pipe joints would be shipped to strategically located storage yards, where they would be loaded onto stringing trucks. The stringing trucks would travel along the right-of-way and lay the individual pipe sections on temporary supports (skids) along the working side of the trench in preparation for subsequent bending, line-up, welding, joint coating, lowering-in, backfill, and inspection activities. The amount of pipe required for waterbody crossings would typically be stockpiled in temporary work areas on one or both banks of the waterbody.

Pipe Bending

A hydraulic pipe-bending machine would be used to bend straight pipe joints to enable the pipeline to conform to ground contours and directional changes. Some factory-bent pipe might be used at certain Project locations (e.g., at waterbody crossings).

Pipe Line-up and Welding

Following stringing and bending, the pipe joints would be aligned and welded together using multiple passes to achieve a full penetration weld. Rockies Express intends to use automatic welding. Welders would be qualified according to, and welding procedures would comply with, applicable American National Standards Institute, American Society of Mechanical Engineers (ASME), American Petroleum Institute (API), including API 1104 – Welding of Pipelines and Related Facilities, and 49 CFR Part 192 (Transportation of Natural and Other Gas by Pipeline: Minimum Safety Standards).

Radiographic Inspection and Weld Repair

To ensure that the assembled pipe meets or exceeds design strength requirements, the welds would be visually inspected by a qualified inspector and non-destructively examined by means of radiographic (X-ray) or other approved test methods, in accordance with 49 CFR Part 192, API 1104, and ASME standards. Defective welds would be repaired or removed, in which case the new weld would be installed and tested.

Coating Field Welds, Inspection and Repair

Following welding, the construction field welds and pipe joint ends would be coated in the field with an approved material compatible with the factory-applied pipeline coating. The pipeline coating would be inspected for defects, and any damaged areas repaired, before the pipe is lowered into the trench.

Pipe Lowering

Before the pipe is lowered into the trench using track-mounted side booms and/or backhoes, the trench would be inspected to ensure that its size is correct and that all foreign material has been removed. In rocky areas, either the bottom of the trench would be padded or the pipe would be lowered onto sandbag or foam pipe supports ("pillows"). A protective wrap (rock jacket) might be used to protect the pipeline coating from any sharp rocks located on the trench bottom.

If necessary during the lowering process, trench dewatering would be accomplished in a manner designed to prevent heavily silt-laden water from flowing into wetlands or waterbodies, as described in the Rockies Express Plan and Procedures. When dewatering trenches in agricultural and wetland areas, Rockies Express would minimize erosion and/or crop damage by controlling discharge rates, dewatering to filter bags, and discharging to existing canals or ditches.

Padding and Backfilling

After the pipe is lowered into the trench, the trench would be backfilled. Backfill material generally would consist of the material excavated from the trench. Previously excavated subsoil would be pushed back into the trench first by means of bladed equipment or backhoes. Padding or a protective coating would be used to prevent damage to the pipe coating from rocky trench spoil. Padding typically would consist of trench subsoil spoil that has been screened to remove rocks, which would be disposed of in accordance with Rockies Express' Plan, or other approved suitable material (e.g., soil, sand) that would be brought to the site. Topsoil would not be used for padding. After backfilling, a small crown of material might be left to account for any future soil settling.

Trench breakers would be installed around the pipeline in the trench as needed to minimize the potential for subsurface water flow around the pipe. Trench breakers also would be installed at the base of slopes adjacent to waterbodies and wetlands.

Hydrostatic Testing and Final Tie-in

To verify its integrity and to ensure its ability to withstand the maximum allowable operating pressure (MAOP), the pipeline would be hydrostatically tested before it is put into service. Pipeline test segments would be capped and filled with water. The pipe test section would then be pressurized and hydrostatically tested in accordance with DOT regulations. Loss of pressure that cannot be attributed to specific factors such as temperature changes would be investigated. Detected leaks would be repaired and the test section retested.

Hydrostatic test water would be obtained in compliance with state regulations and existing water rights. Rockies Express would minimize the potential effects of hydrostatic testing on surface water resources by placing a screen on intake hoses to minimize entrainment and entrapment of fish. Topography and the availability of test water would determine the length of each segment to be tested. Table 4.3.6-1 lists the preliminary supply and discharge locations and the estimated volumes of the water that would be used for the hydrostatic testing.

Upon completion of the testing, the water would either be pumped to the next segment for testing or else discharged. Transfer of test water between basins would not be permitted unless previously authorized. Test water would be discharged through energy dissipating devices (e.g., hay bale filters, sediment bags) in accordance with the requirements of a NPDES hydrostatic discharge permit. Test water would contact only new pipe and no chemicals would be added. Once a segment of pipe has been

successfully tested and dried, the test cap and manifold would be removed and the pipe tied in to the remainder of the pipeline.

Both our Procedures and those of Rockies Express require information on hydrostatic test water to be filed before construction (i.e., source or discharge locations, screening of intake structures, maintaining downstream flows). To fully evaluate any issues associated with hydrostatic test water withdrawal and discharge, **we recommend that:**

- **Rockies Express develop a Hydrostatic Testing Plan that includes, but is not limited to, the following information:**
 - a. **The screen size proposed for use on intake hoses to prevent entrainment of fish; and**
 - b. **Documentation that appropriate federal and state agencies have been consulted regarding the establishment of water withdrawal rates to ensure the withdrawals would have minimal impact on flows, fisheries, and downstream water users.**

This Hydrostatic Testing Plan should be filed with the Secretary for review and written approval by the Director of OEP, prior to the start of construction.

Additional recommendations for the Hydrostatic Testing Plan to mitigate impacts to mussels are described in section 4.7.1.

Clean-up and Restoration

Clean-up operations, including final grading, topsoil replacement, and installation of permanent erosion-control structures would begin following backfill operations. We have recommended that Rockies Express file a bulk material disposal plan. If seasonal or other weather conditions, including wet soil conditions, prevent compliance with these timeframes, Rockies Express would maintain temporary erosion controls (temporary slope breakers and sediment barriers) until conditions allow completion of clean-up activities.

Construction debris would be removed from the right-of-way and disposed of in accordance with applicable regulations. Rockies Express would grade the construction right-of-way to restore pre-construction contours and leave the soil in proper condition for planting. In areas where Rockies Express places topsoil on its travel lane, the topsoil would be pulled back onto the construction right-of-way when establishing the original contours. Decompaction would be completed as necessary in accordance with Rockies Express' Plan, recommendations of the NRCS or other agricultural agencies, and landowner requirements. Such decompaction would include any necessary at the contractor/pipe yards and on temporary access roads the Project uses. Permanent erosion- and sediment-control measures, including diversion terraces, would be restored or installed, and any required reseeding or other forms of revegetation would be completed. Private and public property, such as fences, gates, driveways, and roads the pipeline construction disturbs, would be restored to original or better condition.

2.3.2 Special Construction Procedures

Rockies Express would use various special construction procedures for the crossing of roads and railroads, wetlands, waterbodies, residential areas, agricultural areas, commercial and industrial areas, steeply sloping areas, areas of shallow bedrock, and foreign pipelines. These procedures are described below.

Road and Rail Crossings

Construction of pipelines across major paved highways, railroads, and unpaved roads where traffic cannot be interrupted would be accomplished by boring under the roadbed. Horizontal boring is a method that would involve pushing the pipe through a hole below a surface feature such as a road, railroad or canal. First, a bore pit would be dug on one side of the crossing and a receiving pit on the other. The bore pit would be excavated to a depth such that the bore would be at the proper depth for installation of the pipe. A boring machine would then be lowered to the bottom of the bore pit and placed on supports. The boring machine would cut a horizontal shaft by means of a cutting head mounted on an auger. The pipe would then be pushed through behind the auger. This method may be used for small waterbody crossings.

Most smaller, unpaved roads and drives would be crossed by open trenching and then restored to pre-construction or better condition. If a road being crossed by the open-cut method requires extensive construction time, provisions would be made for detours or other measures to permit traffic flow during construction. Rockies Express would work with landowners to determine the least disruptive method to cross privately owned roads. Rockies Express would repair all road damage caused by construction of the pipeline. The pipelines would be buried to the depth required by applicable road crossing permits/approvals and would be designed to withstand anticipated external loadings. Railroad crossings would be installed (typically using a bore) in accordance with the requirements of the railroad.

Wetland Crossings

Wetlands would be crossed following the methods outlined in Rockies Express' Procedures. These wetland construction methods are briefly outlined below.

During clearing, sediment barriers (such as silt fencing and staked straw bales) would be installed and maintained adjacent to all wetlands and within additional temporary workspace areas as necessary to minimize the potential for sediment runoff. Sediment barriers would be installed across the full width of rights-of-way and additional workspaces at the base of slopes that are adjacent to wetland boundaries. The pipeline construction method used in the wetland would depend largely on the soil stability at the time of construction. Where wetlands are saturated and the trench fills with water, the pipeline segment would be assembled in an upland area and installed using the push-pull or float method. Where wetland soils are sufficiently stable to support the pipe, the pipeline segment would be assembled in the wetland using a conventional construction technique. The time that the excavated ditch is kept open would be minimized, as practicable, to minimize the effect on wetland soils. For wetlands located in actively cultivated or rotated cropland, construction techniques would be similar to those used in conventional upland cross-country construction.

The construction right-of-way may be used for access when the wetland soil is firm enough to support equipment or the construction right-of-way has been appropriately stabilized (e.g., with timber riprap, prefabricated equipment mats, or terra mats). In wetlands that cannot be appropriately stabilized, all construction equipment, other than that needed to install the wetland crossing, would use access roads located in upland areas. In areas where no reasonable access exists, construction equipment would be permitted to cross through the wetland once using the construction right-of-way. The top 1 foot of topsoil would be segregated from the trench area, except where standing water is present or soils are saturated or frozen. Segregated topsoil would be immediately restored to its original location after backfilling is complete.

Restoration of wetland contours to pre-construction levels would be accomplished during backfilling. Prior to backfilling, trench breakers would be installed where necessary to prevent the

subsurface drainage of water from the wetland. Rockies Express would monitor and record the success of wetland revegetation annually for the first 3 years after construction or until wetland revegetation is successful. Additional information on wetland crossings is presented in section 4.3.7.

We do not dictate which construction methods an applicant or contractor should use when constructing through wetlands. Instead, we apply a performance-based standard designed to ensure impacts on wetlands are minimized to the maximum extent practicable. Some standard performance-based measures are qualitative and vary in applicability and are subject to wetland type and other site-specific factors. In general, minimizing impacts on wetlands requires foregoing standard upland-construction methods when in wetlands. It is incumbent upon the applicant to develop a construction plan that meets these performance standards to minimize wetland impacts.

Rockies Express proposes to use a 75-foot-wide construction right-of-way for forested and saturated wetlands and (in order to accommodate the deeper pipeline ditch and the amount of spoil temporarily sidecast during pipe installation) a 100-foot-wide construction right-of-way for non-saturated herbaceous and scrub/shrub wetlands. Rockies Express is requesting an additional 15 feet (for a total of 40 feet) on the spoil side to accommodate the deeper pipeline ditch and amount of spoil temporarily sidecast due to the fact that a larger diameter pipeline (42-inch) would be installed. Rockies Express anticipates that the large equipment necessary for the installation of the proposed 42-inch diameter pipeline would require the typical 50 feet plus 10 additional feet (60 feet total) of workspace on the access side of the right-of-way. Rockies Express would use only the area needed at each crossing. We disagree. Experience with construction of other 42-inch diameter pipelines has shown us that they can be constructed using a 75-foot wide construction right-of-way. Using this smaller construction right-of-way would reduce disturbance in wetlands by 40 percent. Therefore, **we recommend that:**

- **Rockies Express revise its Procedures to use a 75-foot wide construction right-of-way for wetlands. Rockies Express should incorporate these revisions in its pre-construction planning, revising the REX East construction alignment sheets, as necessary, to accommodate the revised work areas. For wetlands that Rockies Express believes would require a right-of-way width greater than 75 feet, Rockies Express should file with the Secretary, site-specific justification in its implementation plan for the Project for review and written approval by the Director of OEP, prior to the start of construction.**

Waterbody Crossings

Conventional Open-cut Waterbody Crossings

Rockies Express proposes the open-cut crossing method for most minor waterbody crossings. As proposed, these crossings would involve excavation of the pipeline trench across the waterbody, installation of the pipeline, and backfilling of the trench with no effort to isolate flow from construction activities. Excavation and backfilling of the trench would be accomplished using backhoes or other excavation equipment working from the banks of the waterbody. Trench spoil would be stored at least 10 feet from the banks (topographic conditions permitting). A section of pipe long enough to span the entire crossing would be fabricated on one bank and either pulled across the bottom to the opposite bank, floated across the stream, or carried into place and submerged into the trench. The trench would then be backfilled and the bottom of the watercourse and banks restored and stabilized. Sediment barriers, such as silt fencing, staked straw bales, or trench plugs would be installed to prevent spoil and sediment-laden water from entering the waterbody from adjacent upland areas.

Dry Waterbody Crossings

According to Rockies Express' Procedures, a "dry-ditch" crossing method would be used for some minor and intermediate waterbodies.

A flumed crossing involves installation of a temporary dam and a flume pipe to divert the entire stream flow over the construction area and allow for trenching of the crossing in dry or nearly dry conditions. Dams would be constructed of sand bags alone, sand bags with plastic sheeting, inflatable bladders, or similar materials to direct the flow into the flume pipe. Spoil removed during the trenching would be stored at least 10 feet away from the water's edge (topographic conditions permitting). A section of pipe long enough to span the entire crossing would be fabricated on one bank and slipped under the flume pipe to the opposite bank. The trench would be backfilled and the bottom of the watercourse and banks restored and stabilized before the flume pipe and dams are removed. Sediment barriers, such as silt fencing, staked straw bales, or trench plugs would be installed to prevent spoil and sediment-laden water from entering the waterbody from adjacent upland areas.

The dam-and-pump dry-ditch crossing method would involve damming the stream with sandbags or equivalent materials on both sides of the construction work area and pumping the stream flow around the construction zone. Excavation of the trench, installation of the pipeline, and restoration would be similar to that described above for the flumed crossing.

Horizontal Directional Drill Method

A horizontal directional drill (HDD) construction method is a trenchless installation process by which a pipeline is installed beneath obstacles or sensitive areas. The primary advantage to the HDD method is that there is minimal disturbance of the ground surface between the entry and exit points of the HDD. The length of pipeline that can be installed by the HDD method depends on factors such as access to the entry and exit points, subsurface conditions (geology), and pipe diameter.

Rockies Express proposes to install 21 HDDs crossings on the following 32 waterbodies:

- In Missouri: Salt River (MP 42.5), Tributary to Salt River (MP 42.7);
- In both Missouri and Illinois: Mississippi River (MP 43.2);
- In Illinois: Sny Canal (MP 47.3), Illinois River (MP 71.2), Embarras River (MP 202.9);
- In Indiana: Wabash River (MP RR 2032-MP 242.9+4.0), Tributary to Big Walnut Creek (MP 281.4), Big Walnut Creek (MP 281.5), White Lick Creek (MP 312.4), two tributaries to White Lick Creek (MP 312.5), Open Water Area (MP 312.5), Big Blue River (MP 340.8), Whitewater River (MP 393.1); and
- In Ohio: Four Mile Creek (MP 421.6), Seven Mile Creek (422.7), Great Miami River (MP 430.7), Miami & Erie Canal (MP 430.8), Tributary to Great Miami River (MP 430.8 & MP 430.9), Tributary to Newman Run (MP 451.2), Little Miami River (MP 451.3), Caesar Creek (MP 459.6), Deer Creek (MP 499.6), Tributary to Big Darby Creek (MP 509.1), Big Darby Creek (MP 509.2), Scioto River (MP 514.6), Walnut Creek (MP 515.9), Ohio & Erie Canal (MP 516.0), Hocking Valley Canal (MP 534.0), Tributary to Hocking Valley Canal (MP 534.1), and Muskingum River (MP 577.2).

An HDD method is a multi-stage process that consists of establishing a small-diameter pilot hole along a crossing profile, followed by enlargement of the pilot hole (reaming) to accommodate pullback of the pipeline. The pilot hole is drilled using rotation cutting and/or jetting with a jetting assembly attached to the drill pipe. The cutting action of the drill head is remotely operated to control its orientation and direction. Bentonite drilling fluid (bentonite, a non-toxic, naturally occurring sedimentary clay, is composed of weathered and aged volcanic ash) is delivered to the cutting head through the drill string to provide the hydraulic cutting action, lubricate the drill bit, help stabilize the hole, and remove cutting spoil as the drilling fluid is returned to the entry point. Drilling fluid would also be used during the reaming process to remove cutting spoil. The position of the drill string is electronically monitored and directional corrections made as necessary to ensure that the drill string maintains the desired alignment.

Enlarging the pilot hole is accomplished incrementally by multiple reaming passes, depending on the pipeline diameter and subsurface geology, to increase the hole diameter. Upon successful completion of the reaming operation, a cylinder-shaped swab is pulled through the hole to ensure the integrity of the completed hole and prepare for pullback of the pipe. The pre-assembled, hydrostatically tested section of pipeline would then be pulled into the completed hole.

Both our Procedures and those of Rockies Express require site-specific HDD plans for wetland or waterbody crossings to be filed with the Secretary for review and approval by the Director of OEP. Rockies Express has submitted site-specific plans for the HDD crossings that include estimates of the volume of drill spoils and drill fluid and a description of the disposal method. Table 2.3.2-1 lists the volume of spoil and fluid for each HDD site. Disposal of drill fluid and spoils would be in accordance with its Plan at an approved landfill or by mixing with topsoil at an approved site. The disposal sites would be determined by the contractor and submitted to Rockies Express for approval prior to use.

Table 2.3.2-1 HDD Drill Spoil and Drill Fluid Volumes		
HDD Location	Volume (cubic feet)	
	Drill Spoil	Drill Fluid
Salt River (MP 42.3)	57,431	37,475
Mississippi River (MP 43.1)	59,720	38,858
The Sny Canal (MP 47.5)	26,346	18,707
Illinois River (MP 71.2)	63,982	41,430
Embarras River (MP 202.9)	34,106	23,392
Wabash River (MP 247.2)	37,492	25,437
Big Walnut Creek (MP 281.5)	33,104	22,787
Pennington Road (MP 312.4)	28,779	20,176
Big Blue River (MP 340.8)	24,295	17,469
White Water River (MP 393.1)	28,382	19,936
Four Mile Creek (MP 421.4)	30,210	21,040
Seven Mile Creek (MP 422.7)	24,804	17,776
Great Miami River (MP 430.7)	31,323	21,712
Little Miami River (MP 451.4)	51,119	33,664
Caesar Creek (MP 459.6)	33,597	23,085
Deer Creek (MP 499.6)	51,596	33,952

Table 2.3.2-1 (continued)		
HDD Drill Spoil and Drill Fluid Volumes		
HDD Location	Volume (cubic feet)	
	Drill Spoil	Drill Fluid
Big Darby Creek (MP 509.1)	30,846	21,424
Scioto River (MP 514.6)	23,945	17,258
Walnut Creek (MP 516.0)	25,456	18,170
Bus. Hwy. 33, Canal & RR (MP 534.0)	37,190	25,254
Muskingum River (MP 577.1)	26,823	18,995
HDD Total	760,546	517,997

Microtunneling

To ensure that the proposed crossings of Big Darby Creek and the Little Miami River are conducted in accordance with NPS requirements and the NPS oversight of these waterbodies pursuant to the WSR, Rockies Express has agreed to use microtunneling as a contingency crossing method if the HDD method is unsuccessful. This technique was developed as an alternative to Rockies Express' preferred contingency of using an open-cut method for these two waterbodies.

Microtunneling is a technique for installing underground pipes, ducts, and culverts. It is similar to the HDD method in that it places the pipeline underneath the waterbodies, but the method of placement is similar to that of a "bore" of a roadway, rather than the bending of pipe done with the HDD method.

Microtunneling is currently the most accurate pipeline installation method available. Microtunneling uses a remotely controlled microtunnel boring machine combined with the pipejacking technique to directly install pipelines underground in a single pass. Pipejacking is a method of installing pipe where the section of pipe is placed at the opening of the excavation and is jacked, or pushed, into the bore hole towards the advancing boring machine. A typical microtunnel equipment spread consists of a microtunnel boring machine matched to the expected subsurface conditions and the pipe diameter to be installed; a hydraulic jacking system to pipejack the pipe segments; a closed loop slurry system to remove the excavated tunnel spoil; a slurry cleaning system to remove the spoil from the slurry water; a lubrication system to lubricate the exterior of the pipeline during installation; a guidance system to provide installation accuracy; and an electrical supply and distribution system to power all of the above equipment. Topside equipment used to support the tunneling operation typically includes a crane, pile driving and dewatering equipment for shaft construction, backhoe and front end loader for shaft excavation and spoil handling, and truck transport for equipment moves. We have been unable to ascertain exactly what fluids would be used for lubrication and cutting return in this process. We believe that an inert, nontoxic material should be used in order to protect the groundwater and other resources. Therefore we recommend that:

- **Prior to the use of the micotunneling technique, Rockies Express file with the Secretary for review and written approval a list of fluids that would be used during the tunneling process. No microtunneling should take place until the list has been approved by the Director of OEP.**

Stovepipe and Drag Section Construction

The stovepipe and drag section construction techniques would be used to minimize the duration and area of impacts to residences where driveways would be crossed by the pipeline route. Stovepipe construction requires digging a short section of trench, placing a section of pipe into the trench, welding it into place, and then backfilling the trench immediately. This technique minimizes the period of time that the trench is open and the size of the construction work area. The drag section construction technique involves the trenching, installation, and backfill of a prefabricated length of pipe containing several segments all in one day. At the end of each day, after the pipe is lowered in, the trench is backfilled and/or covered with steel plates or timber mats. Use of the drag section technique requires adequate staging area outside of the residential location for assembly of the prefabricated sections.

Residential Areas

Where residences are within 50 feet of the construction work area, Rockies Express would use alternative construction methods and conduct various activities to mitigate impacts to residences. For locations of these residences, see section 4.8.3. Such activities would include notifying the landowner before construction and arranging work hours to accommodate landowners' needs. Dust minimization techniques would be used onsite, and all litter and debris would be removed daily from the construction work area. During construction, the edge of the work area would be fenced for safety purposes to a distance of 100 feet on either side of the residence. Mature trees and landscaping would be preserved to the extent possible, while ensuring the safe operation of construction equipment. Site-specific construction drawings showing the temporary and permanent rights-of-way and noting special construction techniques would be prepared for all residential structures within 50 feet of the construction area (see appendix D).

Where residences are less than 25 feet from the construction work area, the pipe section would be welded and inspected, and welds would be coated before trench excavation begins. The trench would not be excavated until the pipe is ready for installation and would be backfilled immediately after pipe installation. Every effort would be made to excavate the trench, lower the pipeline, make tie-ins, and backfill the trench in 1 day. Immediately after backfilling the trench, all lawn areas and landscaping within the construction work area would be restored.

Agricultural Areas

Rockies Express proposes to use a Project-specific Agricultural Impact Mitigation Plan (AIMP) in conjunction with the Rockies Express Plan and Procedures in agricultural areas. For further discussion of the AIMP see section 4.8.2. An example of an AIMP is provided as appendix I; the Plan describes the following:

- Provision of Agricultural Inspectors (AI) during and after Project construction;
- Segregation of up to 16 inches of topsoil;
- Minimum covering of 36 inches for the pipeline;
- Repair of any drainage systems damaged during pipeline construction;
- Compensation for any crop damages resulting from construction activities; and

- Negotiation with livestock farmers regarding the exclusion of livestock from the right-of-way.

Commercial and Industrial Areas

Impacts on commercial and industrial areas would be limited to the construction and post-construction restoration periods when construction activities could inconvenience business owners, employees, and customers. Rockies Express would maintain close coordination with business owners to maintain access to businesses, decrease construction duration, and generally minimize construction-related disruptions.

Steep Slopes

In areas where the Project pipeline would cross steep slopes, additional grading may be required to enable the accommodation and use of pipeline construction equipment. The slopes would be cut and spoils stored temporarily in adjacent additional temporary workspace. Temporary sediment barriers and slope breakers such as silt fencing and staked straw bales would be installed during clearing to prevent disturbed soil from moving off the right-of-way. Temporary slope breakers consisting of mounded and compacted soil would be installed across the right-of-way during grading. After the pipeline is installed, the slopes would be reconstructed to their pre-construction contours and permanent slope breakers would be installed. Seed would be applied to steep slopes and the right-of-way would be mulched or covered with erosion-control fabric. Sediment barriers would be maintained across the right-of-way until permanent vegetation is established.

Areas of Shallow Bedrock

Rockies Express anticipates that limited blasting could prove necessary in areas where shallow bedrock or boulders are encountered that cannot be removed using an excavator with a bulldozer or a hoe-ram.

Approximately 1,333.9 acres of the soils that would be affected by construction contain bedrock within 60 inches of the surface.² Around half of this bedrock is soft and/or weathered and likely would not require blasting during construction. The softer bedrock could be removed by conventional excavation with an excavator, ripping with a bulldozer followed by trackhoe excavation, or hammering with a trackhoe-attached device (hoe-ram) followed by excavation. The presence of hard bedrock could necessitate blasting or other special construction techniques.

If blasting proves necessary, the strict safety precautions specified in the Rockies Express Blasting Plan would be followed. Blasting mats or soil cover would be used as necessary to prevent the scattering of loose rock. Rock resulting from blasting activities would be hauled off the right-of-way and disposed of properly. In some cases, blast rock would be placed back into the trench up to the top of the undisturbed surround rock. Care would be exercised to avoid damage to underground structures, cables, conduits, pipelines, and underground watercourses or springs. Rockies Express would provide advance notice of blasting to adjacent landowners or tenants to protect property or livestock. Blasting activity would be performed only during daylight hours.

² Based on a 125-foot-wide construction right-of-way in upland areas and a 75-foot-wide construction right-of-way in wetland areas.

Foreign Pipeline and Electric Transmission Line Crossings

Crossings of foreign pipelines would be installed at the depth necessary to meet normal soil cover and separation requirements. Temporary additional workspace would be required to accommodate the increased excavation depths and, for safety reasons, to avoid placing the spoil or construction equipment over the existing pipelines.

Where the proposed pipeline would cross electric transmission lines, Rockies Express would maintain minimum clearances between the power line and pipeline construction equipment to avoid accidental contact. Also, pipelines crossing or constructed parallel to electric power transmission lines may be subject to electrostatic and electromagnetic induced voltages and currents. Therefore, additional protection would be used to prevent damage due to fault currents and induced voltages. These measures may include proper grounding and insulation of all equipment operating near power lines.

We received several comments during the draft EIS comment period expressing safety concerns relating to the close proximity of the pipeline to electric transmission lines. Safety concerns exist during construction with the use of equipment near the power lines and during operation when the pipeline could be subject to electrostatic and electromagnetic induced voltages and currents, which could increase corrosion, due to the close proximity of the pipeline and power line. Because Rockies Express has not identified any special construction or operational techniques for these areas, **we recommend that:**

- **Rockies Express, in consultation with DOT and the power company, develop a construction plan for all locations where the REX East Pipeline would cross or be constructed along or with power line rights-of-way. In addition, the plan should include any additional measures that would be used in these areas during operation to prevent damage to the pipeline that could be caused by fault currents and induced voltages. Rockies Express should file this plan with the Secretary, prior to the start of construction.**

2.3.3 Aboveground Facility Construction

Typical construction activities associated with compressor stations are summarized below. General construction activities and storage of construction materials and equipment would be confined to areas within the approved compressor station construction sites. Debris and waste generated from construction would be disposed of appropriately.

Installation of the meter stations and MLVs would meet the same standards and requirements established for the compressor stations and pipeline construction. Valves would be installed within the permanent pipeline right-of-way and proposed compressor stations, and would require no additional space.

Foundations

Excavation would be performed as necessary to accommodate the reinforced concrete foundations required for the new compressor units. Forms would be set, rebar installed, and the concrete poured and cured in accordance with applicable standards. Concrete pours would be randomly sampled to verify compliance with minimum strength requirements. Backfill would be compacted in place, and excess soil would be used elsewhere or distributed around the site.

Equipment

The compression equipment typically would be shipped to the site by truck and stored onsite. The compressors would be offloaded and, when ready for installation, positioned on the foundation, leveled, grouted, and secured.

Piping

All pipe connections associated with the new compressors that are not flanged or screwed would be welded. All welders and welding procedures would be qualified in accordance with API Standards. All welds in gas piping systems would be X-rayed (or verified by another nondestructive testing method) to ensure compliance with code requirements.

Hydrostatic Testing

All components in high-pressure natural gas service would be hydrostatically tested prior to being placed into service. Also, before being placed into service, all controls; safety equipment and systems, including emergency shutdown; relief valves; gas and fire detection; engine overspeed; and vibration would be checked or tested.

Launchers and Receivers

All pig launchers and receivers would be located on the compressor station sites and would require no additional land for construction. The installation of the pig launchers and receivers would meet the same standards and requirements established for the compressor station and pipeline construction.

2.4 CONSTRUCTION SCHEDULE

Rockies Express proposes to begin construction of Project facilities in June 2008 and expects that all facilities would be placed into service by December 2008, except for the Arlington and Chandlersville Compressor Stations, which would be placed into service by June 2009.

2.5 ENVIRONMENTAL INSPECTION, COMPLIANCE MONITORING, AND POST-APPROVAL FOR ALTERNATIVE MEASURES

2.5.1 Environmental Inspection

Under the NGA, the FERC may impose conditions on any Certificate it grants for the REX East Project. These conditions could include additional requirements and mitigation measures recommended in this EIS to minimize the environmental impacts that would result from Project construction and operation.

Rockies Express would assign Environmental Inspectors (EIs) to each construction spread during construction. The EI responsibilities are outlined in the Rockies Express Plan and Procedures and are summarized below. Rockies Express would also augment its inspection program by using third-party agency environmental monitors (see section 2.5.2).

Rockies Express would construct its facilities using 7 construction spreads that would range in length from 52.1 to 123.1 miles. To adequately inspect all construction and mitigation activities of the

right-of-way and perform the other duties outlined above, Rockies Express has agreed to employ a team of EIs (i.e., two or more) on each construction spread. The EIs:

- Would monitor and ensure compliance with all mitigation measures required by the Commission's Order and other grants, permits, certificates, or other authorizing documents;
- Would be responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract and any other authorizing document;
- Would have authority to order correction of acts that violate the environmental conditions of the Commission's Order and any other authorizing document;
- Would hold full-time positions, separate from all other inspector positions;
- Would document compliance with the environmental conditions of the Commission's Order, as well as any *environmental conditions/permit requirements* other federal, state, or local agencies impose;
- May oversee cultural resource monitors and/or biological monitors that may be required to monitor and evaluate construction impacts on resources as specified in this EIS;
- Would be responsible for maintaining status reports that would be available to agencies for review;
- Would report to the Rockies Express Chief Inspector, but have independent status; and
- Would have stop-activity authority if a noncompliance issue requires corrective action.

In addition, Rockies Express would retain a qualified AI on each construction spread that crosses agricultural land. The AI positions would be separate and in addition to the EI positions, and would include many of the same duties. The AI would inspect onsite construction and restoration efforts in agricultural areas and would be knowledgeable of midwestern agricultural practices, such as terracing, pivot irrigation, and drain tile repair. The AI would report directly to the lead EI. Inspectors from the FERC would conduct field inspections during construction. Other federal and state agencies also may oversee or monitor inspection to the extent determined necessary by the individual agency.

After construction is completed, the FERC would continue to oversee inspection and monitoring. If any of the proposed monitoring timeframes are determined to be inadequate to assess the success of restoration, Rockies Express would be required to extend post-construction monitoring programs.

We believe that environmental compliance must start with every person who sets foot on the worksite. Our standard mitigation measure in section 5.2 requires that all personnel receive environmental training for this Project, including those who worked on the REX West Project.

2.5.2 Compliance Monitoring

Rockies Express has agreed to fund a third-party environmental monitoring program for the FERC. We believe that the third-party independent Environmental Compliance Monitoring and Reporting Program (ECMR Program) provides several benefits, both to agencies and to Rockies Express. The overall objective of an ECMR Program is threefold: (1) to assess environmental compliance during

construction so that a high level of environmental compliance is achieved throughout the project, (2) to assist the FERC's staff in screening and processing variance requests during construction, and (3) to create and maintain a database of daily reports documenting compliance and instances of noncompliance. In order to fully evaluate any issues associated with environmental compliance monitoring, we recommend that:

- **Rockies Express file with the Secretary for review and written approval by the Director of OEP a draft third-party environmental monitoring program and obtain proposals from potential contractors to provide monitoring services, and file the program and proposals with the Secretary for review and written approval by the Director of OEP at least 60 days prior to the anticipated start of pipeline construction. The monitoring program should include:**
 - a. **The employment by the contractor of one or two full-time onsite monitors per construction spread;**
 - b. **The employment by the contractor of at least one full-time onsite monitor with knowledge of agricultural practices in the Project area;**
 - c. **The employment by the contractor of a full-time compliance manager to direct and coordinate with the monitors, manage the reporting systems, and provide technical support to the FERC staff;**
 - d. **A systematic strategy for the review and approval by the contract compliance manager and monitors of variances to certain construction activities as may be required by Rockies Express based on site-specific conditions;**
 - e. **The development of an Internet Web site for posting daily or weekly inspection reports submitted by both the third-party monitors and Rockies Express' EIs; and**
 - f. **A discussion of how the monitoring program can incorporate and/or be coordinated with the monitoring or reporting and other ongoing communication that may be required by other federal, state, and local agencies.**

2.5.3 Post-approval Process for Alternative Measures

Surface disturbance locations and acreages identified in this EIS and through our recommendations are anticipated to be sufficient for construction and operation (including maintenance) of the REX East Project and all ancillary improvements. However, route alignments and other Project refinements often continue past the project review phase and into the construction phase. As a result, work area locations and disturbed acreages described in this EIS may require refinement after Project approval. These changes frequently involve minor route realignments or shifting approved additional workspace, adding new temporary workspace, and adding access roads to work areas and associated temporary workspace areas. This section describes the procedure used for assessing impacts on workspace areas outside those evaluated in this EIS and the procedure for obtaining OEP approval for their use.

Analyses in this EIS cover more area than would be required for the proposed facilities. When an additional workspace is shifted along the right-of-way or additional workspace is requested, it would typically be within the previously surveyed area. Such requests would be analyzed using a variance process.

The request for new or additional temporary workspace locations and a copy of the survey results would be documented and forwarded to the FERC in the form of a "variance request." The FERC would then take the lead on reviewing the request and deciding whether to approve it. Typically no further agency consultation is required if the request is within previously surveyed areas. At the conclusion of the Project, as-built drawings would be provided to the FERC.

The procedures for assessing impacts on workspace areas outside those evaluated in this EIS and for approving their use are similar. Additional inventory and evaluation would be performed to ensure that impacts on biological, cultural, and other resources would be avoided or minimized to the maximum extent practicable and that landowner approval has been obtained. After any additional consultations are completed, the new workspace location and survey results would be documented and forwarded to the FERC in the form of a variance request, which would be evaluated in the manner described above. Appropriate agency consultations and approvals would be conducted and obtained prior to approval of the variance. At the conclusion of the Project, as-built drawings would be provided to the FERC.

2.6 OPERATION AND MAINTENANCE PROCEDURES

Operational activities on the pipeline would be limited to maintenance of the right-of-way and inspection, repair, and cleaning of the pipeline. Periodic aerial and ground inspections by pipeline personnel would assist in identification of the following conditions: soil erosion that may expose the pipe, surface visual clues that may indicate a leak in the line, conditions of the vegetative cover and erosion control measures, unauthorized encroachment on the right-of-way, excavation activities in the vicinity of the right-of-way, and other conditions that could present a safety hazard or require preventative maintenance or repairs. The pipeline cathodic protection system also would be monitored and inspected by pipeline personnel periodically to ensure proper and adequate corrosion protection. Appropriate corrective action to conditions observed during inspection would be taken as necessary.

2.6.1 Right-of-Way Monitoring and Maintenance

To maintain accessibility of the right-of-way and to accommodate pipeline integrity surveys, vegetation on the permanent right-of-way (50 feet wide) would be maintained by mowing, cutting, and trimming in all areas except for active agricultural areas (including rangeland and pasture), Conservation Reserve Program (CRP) areas, and wetlands. The right-of-way would be allowed to revegetate; however, large brush and trees would be periodically removed as described in Rockies Express' Plan and Procedures. Trees or deep-rooted shrubs could damage the pipeline's protective coating, obscure periodic surveillance and inspection, or interfere with potential repairs and thus would not be allowed to grow within 10 feet in uplands (15 feet in wetlands) of either side of the pipeline. In particular, large tree growth would typically be restricted within 25 feet of either side of the pipeline. However, Rockies Express has agreed with FWS and IDEM, in specific areas identified as sensitive by these agencies, to maintain the right-of-way similarly to that described in the Rockies Express Procedures for forested wetlands. Such vegetation maintenance normally would not be required in agricultural or grazing areas. The pipeline facilities would be clearly marked at line-of-sight intervals and at crossings of roads, railroads, and other key points. Efforts would be made to minimize the number of markers located in actively cultivated fields, particularly those where pivot irrigation is used. Wherever possible, markers would be placed at fence lines or field margins. The markers would clearly indicate the presence of the pipeline and provide a telephone number and address where a company representative can be reached in the event of an emergency or prior to any third-party excavation in the area of the pipeline. Rockies Express would participate in all One-Call systems.

2.6.2 Pipeline and Compressor Station Integrity

Rockies Express' pipeline facilities would be operated and maintained in accordance with the federal safety standards of 49 CFR Part 192. Operation and maintenance of the REX East Project facilities would be performed by or at the direction of Rockies Express. The pipeline would be inspected periodically from the air and on foot as operating conditions permit, but no less frequently than as required by 49 CFR Part 192. These surveillance activities would provide information on possible encroachments and nearby construction activities, erosion, exposed pipe, and other potential concerns that may affect pipeline safety and operation. Evidence of population changes would be monitored and class locations changed as necessary. Rockies Express also would inspect MLVs annually and document the results.

Compressor station crews would operate and maintain the station equipment. Station personnel would perform routine checks of the facilities, including calibration of equipment and instrumentation, inspection of critical components, and scheduled and routine maintenance of equipment. Safety equipment, such as pressure relief, fire detection, and gas detection systems, would be tested periodically for proper operation. Rockies Express would take corrective action for any identified problem.

The compressor stations would be equipped with combustible gas and fire detection alarm systems, and with an emergency shutdown system. The compressor stations also would be equipped with relief valves or pressure protection devices to protect the station piping from overpressure if station or unit control systems fail. A telemetry system would notify operations personnel locally and at the gas control headquarters of the activation of safety systems and alarms that would in turn dispatch maintenance personnel to investigate and take proper corrective actions.

2.7 FUTURE PIPELINE AND FACILITY PLANS AND ABANDONMENT

At the time of the publication of this EIS, public information was available on several potential pipeline projects that may connect to the REX East pipeline, if built. This following discussion of possible future projects is not meant to be exhaustive, but represents an indication of publicly expressed interests by the companies indicated below. Most of these projects have yet to initiate pre-filing with the FERC. Any plans for these additional pipelines would require a separate environmental review and a separate authorization from the Commission.

Williams Inc.³ held an "open season" from September 26 to October 29, 2007 to obtain shipper interest in a proposed interstate pipeline, the "Rockies Connector Pipeline," that would extend approximately 250 miles from Williams' Transco Station 195 in York County, Pennsylvania to connect to the eastern terminus of the REX East pipeline. In November 2007, Williams reported that the open season demonstrated significant interest in the project, which would transport approximately 688,000 dekatherms per day (Dth/d). Williams plans to pre-file with the FERC in spring 2008, and would follow with an application in late 2008. Williams' planned in-service date for this project is November 2010.

Tennessee Gas Pipeline Company, a subsidiary of El Paso Corporation, has proposed the Northeast Passage Project.⁴ This proposed 36-inch pipeline would stretch 471 miles from Clarington, Ohio to Pleasant Valley, New York. This project is designed to provide new transportation service between the terminus of the REX East pipeline and northeastern markets. An open season was held from December 2007 to January 2008. El Paso has stated that it plans to file all necessary applications for the

³ http://www.williams.com/gas_pipeline/rockiesconnector.aspxwww.williams.com/newsroom

⁴ <http://www.elpaso.com/northeastpassage/presentation.shtm>

project in late 2008. The company hopes to commence construction in 2010, and to bring the pipeline expansion into service in the fall of 2011.

In August 2007, Dominion announced that it had secured firm, long-term commitments from Rockies Express to receive gas from the REX East pipeline in Ohio and deliver it to points in the Northeast or Mid-Atlantic regions. The proposed pipeline projects are called Dominion Hub I and Dominion Hub III. A report on Dominion's Web site⁵ states that Dominion Hub I would move up to 200,000 Dt/d of supplies to the northeastern market. Dominion has entered into interconnect agreements with Rockies Express and has filed an application with the FERC seeking approval of Dominion Hub I. Dominion aims to begin firm service of Dominion Hub I in November 2009.

National Fuel Gas Supply Corporation is currently evaluating a project to transport additional volumes of gas through its existing system by developing additional new routes from its westside system (including Rockies Express) to eastern points including Leidy, Ellisburg, Independence, and the Millennium Pipeline. At the time of publication of this EIS, this project did not have a name, proposed route, or timeline.

Spectra Energy has proposed a project called the Northern Bridge that would transport up to 500 million cubic feet of natural gas per day from Clarington, Ohio to Oakford, Pennsylvania.⁶ Spectra also states that Northern Bridge would offer strategic interconnections with all transmission pipelines and several storage markets along its path. Spectra has indicated that this project would probably consist of 11 miles of replacement pipeline and additional compression at 2 existing compressor stations all in Pennsylvania. Spectra held an open season for the pipeline in September 2007. The pipeline is expected to begin operations in late 2009. Spectra plans to file with the FERC in late 2008 or early 2009.

Southern Star Central Gas Pipeline, Inc., has proposed the Highland Trails Pipeline, which would connect the Fayetteville Shale gas supplies in Arkansas with the Rockies Express pipeline in Audrain County, Missouri.⁷ No details as to the exact location of the proposed link in Audrain County are available. The company held a non-binding open season for the pipeline in June and July 2007. If the company determines that there is sufficient interest in the project, it could hold a binding open season, and, based on the level of interest, may proceed by filing an application with the FERC. A proposed project timeline is currently not available.

Kinder Morgan Energy Partners and Sempra Energy, the Rockies Express partners, have proposed a 375-mile extension of the REX East pipeline from its terminus in Clarington, Ohio to Princeton, New Jersey.⁸ In December 2007, the companies announced that they had completed a successful non-binding open season. Rockies Express has proposed an in-service date of late 2011. No indications of a timeline for pre-filing with the FERC have been given for this project.

Rockies Express projects a minimum 50-year useful life for the Project. Regardless of the duration of operation of the Project, abandonment of any Project facilities would be subject to applicable federal, state, and local regulations.

⁵ <http://www.dom.com/news/gas2008/pr0108.jsp>

⁶ http://www.spectraenergy.com/businesses/projects/northern_bridge/

⁷ <http://www.sscgp.com/News/archive/2007/NonBindingOpenSeason.htm>

⁸ <http://news.moneycentral.msn.com/ticker/article.aspx?Feed=PR&Date=20071212&ID=7934463&Symbol=SRE>

3.0 ALTERNATIVES

In accordance with NEPA and the FERC policy, we identified and evaluated a range of reasonable alternatives to the proposed action to determine if they would be environmentally preferable. These alternatives include the No Action and Postponed Action alternatives, energy alternatives, system alternatives, major route alternatives, route variations, and aboveground facility site alternatives. Our analysis is based on our review of publicly available information such as aerial photographs and United States Geological Survey (USGS) topographical maps, input provided by the public and state, local, and federal agencies, information filed by Rockies Express, and site visits. We considered alternatives identified by landowners, resource agencies, and other stakeholders during the public scoping period.

The evaluation criteria for selecting potentially environmentally preferable alternatives are:

- technical feasibility and practicality;
- clear environmental advantages over the REX East Project; and
- ability to meet the Project objective of delivering up to 1.8 bcf per day of Rocky Mountain natural gas from the terminus of REX West in Audrain County, Missouri to customers located in the midwestern and eastern United States.

Recognizing that not all conceivable alternatives are technically feasible and practical is important. Our analysis had to consider existing technologies and logistics in determining whether an alternative was feasible and practical.

In reviewing an alternative, we first determined whether it would meet the stated Project objectives. Next, we analyzed the potential impacts associated with the alternative to generate a comparison of the alternative to the REX East proposal. Those alternatives that met the Project objectives, appeared to be the most reasonable technically, and appeared to have similar or lower levels of environmental impact were reviewed in detail. The results of our analysis are presented below.

3.1 NO ACTION OR POSTPONED ACTION ALTERNATIVES

The FERC can take one of the following three actions in processing applications under Section 7 of the NGA: (1) deny the requested authorization (i.e., the No Action Alternative); (2) postpone action pending further filings or study (i.e., the Postponed Action Alternative); or (3) grant the Certificate with or without conditions (i.e., the proposed action).

According to the EIA's 2006 predictions, 60 percent of the projected growth in domestic natural gas consumption through 2030 will occur east of the Mississippi River, while the Rocky Mountains and Alaska will provide most of the increase in domestic production (EIA, 2006a). Thus, satisfying the increasing gas demand in the eastern United States from these domestic sources would require additional east-west pipeline capacity.

Although it would be purely speculative and beyond the scope of this analysis to attempt to predict what actions might be taken by policymakers or end users in response to the No Action or Postponed Action Alternatives, it is likely that potential end users would: (1) attempt to make other arrangements to obtain natural gas; (2) use alternative fossil-fuel energy sources (such as fuel oil or coal) and other traditional long-term fuel source alternatives (such as nuclear power or hydroelectric power); and/or (3) use renewable energy sources, such as wind power. It is also possible that energy conservation

practices could be used to offset the demand for natural gas in markets that would be supplied by the Project.

Each of these alternative approaches to meeting the energy needs of the target market would result in some level of environmental impacts. Considered both individually and in combination, specific energy alternatives or conservation measures could either: (1) not provide the projected energy needs of the regional markets; (2) satisfy the Project objectives by providing the projected regional energy demands with equal or less environmental impact; or (3) provide the required amount of energy but result in greater environmental impacts than those associated with the Project if implemented with our recommended mitigation measures.

If the FERC denies the proposal, the short and long-term environmental impacts identified in this EIS would not occur. If the FERC postpones action on the application, the environmental impacts would be delayed; or—if the applicant decided not to pursue the Project—the impacts would not occur at all. If the FERC selects the No Action Alternative, Rockies Express would not be able to deliver up to 1.8 bcf per day of Rocky Mountain natural gas from the Mexico Compressor Station in Audrain County, Missouri to the high-demand markets in the midwestern and eastern United States, and the objectives of the Project would not be met.

3.2 ENERGY ALTERNATIVES

In evaluating energy alternatives to the Project, we considered the use of renewable energy sources, energy conservation, and renewable energy combined with energy conservation. Energy conservation strategies or renewable energy alternatives, such as wind, hydropower, municipal solid waste, solar, and wood and other biomass, are projected to have an increasing role in the country's energy needs. State regulators and the federal government are promoting energy conservation programs, aimed primarily at residential and commercial markets, through broad-based efficiency programs, demand side management, and integrated resource planning initiatives. These programs rely on economic tests of avoided energy costs to determine which designs and technologies should be implemented. If the Project were not constructed, less natural gas entering the market would result in slightly higher gas prices, which in turn would improve the economics of conservation, as well as the attractiveness of other less costly but more polluting fuels. Such effects would be small in the markets the Project would serve.

Green energy programs have been around for many years. States promote green energy through the establishment of requirements in a set of renewable portfolio standards which require a certain percentage of a utility's power plant capacity or generation to come from renewable sources by a given date. In general, public participation rates do not demonstrate a willingness to pay what are typically from \$5 to \$20 monthly fees to substitute green energy for energy generated via fossil-fuel combustion or nuclear reaction. According to the Department of Energy (DOE, 2006), customer participation rates have exceeded 6.5 percent in only two of the more than 500 green energy programs, and typical participation rates are below 1 percent. While energy conservation strategies or renewable energy alternatives will have an increasing role in meeting the country's energy needs, a DOE study determined that, over the next 20 years, the available mix of alternative energy sources would not replace the demand for natural gas (EIA, 2006a). The combined use of renewable energy and energy conservation programs as an alternative to the Project could help reduce the need for natural gas, but they are not sufficiently available—physically or commercially—in the market region to be a viable substitute for the Project.

Even if efficiency gains, conservation efforts, and use of renewable resources increased, it is not evident that a reduction in natural gas consumption would follow. These gains would likely be used to facilitate the reduced use of other fuels that have greater associated environmental costs. Collectively, the gains achieved through better management, increased efficiency, and renewable energy use would reduce

the energy demands by only a small fraction of the total projected energy demand in the foreseeable future. Thus, energy alternatives would not be able to satisfy the Project objective to bring up to 1.8 bcf per day of natural gas, or its energy equivalent, to the target markets.

3.3 SYSTEM ALTERNATIVES

System alternatives are alternatives to a proposed action that would make use of other existing, modified, or proposed transmission systems to meet the Project's stated objectives. A system alternative would make the construction in all or part of the Project unnecessary. Some modifications or additions to another pipeline system may be required to increase its capacity and reach the Project's intended customers, or another entirely new system may need to be constructed. The impact of a system alternative could be less than, similar to, or greater than that associated with the Project.

Producers of natural gas in the Rocky Mountains have made precedent agreements with Rockies Express to deliver up to 1.8 bcf per day of their natural gas from the Mexico Compressor Station to 17 gas distributors along the route. These gas distributors interconnect with the REX East Project in 12 locations spread across Illinois, Indiana, and Ohio. Three additional distributors have expressed interest in building additional capacity from their pipelines in Clarington, Ohio to points farther east. Figure 1.0-1 in chapter 1 shows the locations of Rockies Express' customers along the pipeline route. We reviewed the locations of the Rockies Express gas distributors in relation to existing natural gas systems. Given that the focus of the REX East Project is to service these customers and reach eastern markets, a desirable system alternative should deliver natural gas to these distributors while limiting construction of new infrastructure, and subsequent environmental impacts. In general, this requires that the interstate pipeline be proximal to its delivery points so that extensive distribution pipelines are unnecessary.

We reviewed existing natural gas systems and identified a system alternative that would utilize the existing Panhandle Eastern Pipe Line Company (PEPL) system. The REX East Project would begin at the terminus of REX West in Audrain County, Missouri. The PEPL system also connects with REX West at that point. PEPL potentially could be used to transport gas eastward as far as the Indianapolis area. In eastern Missouri, PEPL has a capacity of about 1.4 bcf per day and is currently operating at a load capacity factor of about 85 percent. Thus, PEPL only has additional capacity available for approximately 0.2 bcf per day and this system alone does not have the capacity to handle the 1.8 bcf per day that the REX East Project proposes to transport. Integrating the REX East Project with PEPL would require creating a parallel pipeline, which offers no clear advantage over the proposed action. That is, construction of a loop on the PEPL system would generate similar environmental impacts as would construction of the REX East pipeline. Additionally, the PEPL system terminates near the Indianapolis area. The majority of the Rockies Express customers (Rockies Express has 17 distributors) are located east of Lebanon in Ohio and would not receive gas under this alternative. We, therefore, do not consider PEPL a viable system alternative.

3.4 MAJOR ROUTE ALTERNATIVES

In developing the Project route, Rockies Express considered route alternatives to address environmental and constructability issues. Rockies Express first developed a base pipeline route based on maximizing collocation with existing pipeline rights-of-way as a first step toward minimizing environmental impacts. To identify routing and siting constraints, Rockies Express reviewed publicly available information—including USGS topographic maps, National Wetlands Inventory (NWI) maps, and aerial photographs taken in 2005—and completed field surveys.

Once potential constraints such as sensitive resources and population centers had been identified, Rockies Express devised route modifications to the base pipeline route and incorporated certain

modifications to create the preliminary pipeline route. Rockies Express then used the preliminary pipeline route to consult with federal and state regulatory and review agencies, farm bureaus, elected officials, landowners, and other stakeholders during open-house and Project introductory meetings in June and October 2006. As a result of these consultations and further on-the-ground civil and environmental surveys, Rockies Express considered additional route modifications to minimize environmental impacts or to avoid route constraints. The route modifications that Rockies Express considered before filing the application with the FERC on April 30, 2007 are described in appendix E, table E-1. One of these route modifications was made in Johnson County. The route was shifted south in order to reduce residential impacts. Landowners along this southern route asked the FERC to evaluate this route modification. This discussion is found in section 3.4.5.

In response to stakeholder concerns, Rockies Express adopted another alternative route into the Project route that is evaluated in this EIS. This is a re-route around Barnesville Reservoir in Belmont County, Ohio. The Village of Barnesville, U.S. Senator George Voinovich, U.S. Congressman Charles Wilson, and various citizens expressed concern over the possible contamination and damage that pipeline construction or rupture could cause to the water supply. The re-route addresses these concerns by avoiding Barnesville Reservoir and crossing Slope Creek, a tributary, 0.7 mile south (downstream) of the Reservoir. We were asked to evaluate this route variation and have added this evaluation to the EIS in section 3.4.10.

We independently reviewed the Project route to determine whether impacts could be avoided or reduced on environmentally sensitive resources, while maintaining the proposed locations of meter stations. Meter stations are placed at interconnects between the REX East Project and distribution pipelines. For our review, we used the proposed meter station locations so that distribution pipelines would not need to be increased in length to interconnect with the Project. We reviewed the pipeline segments between meter stations to determine whether the need to create new rights-of-way could be minimized by routing pipelines adjacent to existing utility rights-of-way. No major modifications to the Project route were recommended based on this review.

We also received comments from agencies, communities, landowners, and other stakeholders requesting a review of changes to the Project route. This review resulted in the definition and evaluation of ten major route alternatives and numerous route variations. The major route alternatives, evaluated in turn in the following subsections, follow different alignments for a significant length of the Project route, have been raised by communities or groups of multiple landowners, and/or are considered for the purpose of avoiding or reducing impacts to significant features. The route variations, evaluated in section 3.5, are relatively short deviations from the Project route that would potentially avoid or reduce Project impacts on specific localized resources, such as individual residences or site-specific environmental conditions.

3.4.1 Mississippi River Crossing Alternatives

During the development of the REX East Project, the crossing of the Mississippi River was initially located just south of Blackburn Island as identified by the "Preliminary Route" in figure 3.4.1-1. This crossing location would have been constructed with a single HDD under the entire Mississippi River and the Sny Levee without having to use an island. This same crossing location was raised as an alternative to Blackburn Island impacts during a public meeting on the EIS in Illinois. This route alternative would cross about 1.0 mile of steep side-sloping topography adjacent to the existing PEPL pipelines between State Route (SR) 79 and the Mississippi River in Illinois. However, based on engineering evaluations of the Preliminary Route, there would not be sufficient space available on the west side of the Mississippi River (in Missouri) to complete an HDD crossing of the Mississippi River due to the existence of residential development, four existing PEPL pipelines, a railroad track, and steep

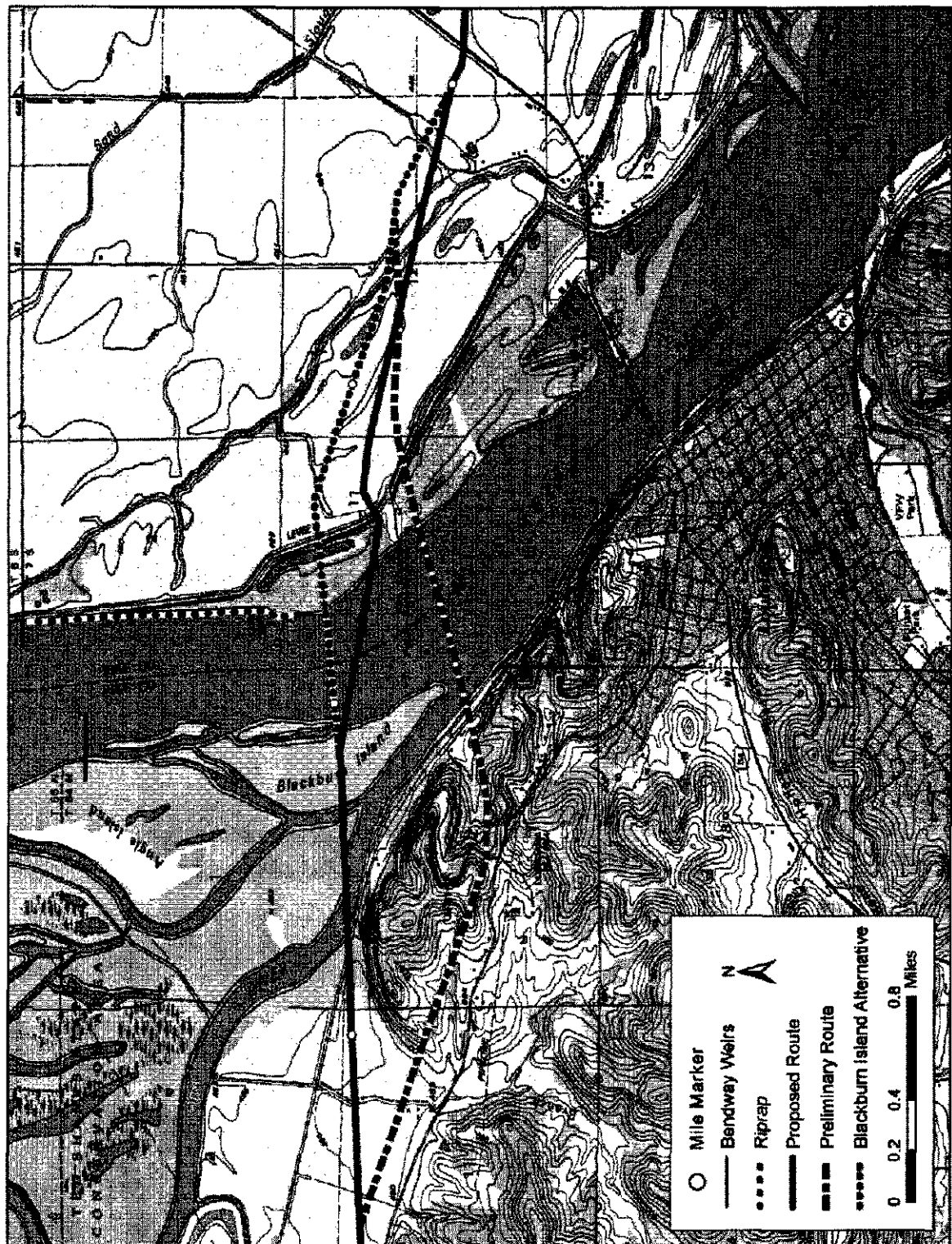


Figure 3.4.1-1
 REX East Project Mississippi River Crossing Location Alternatives Near Blackburn Island
 3-5

side-sloping topography. Therefore, this crossing is not considered to be feasible and is not evaluated further in this EIS.

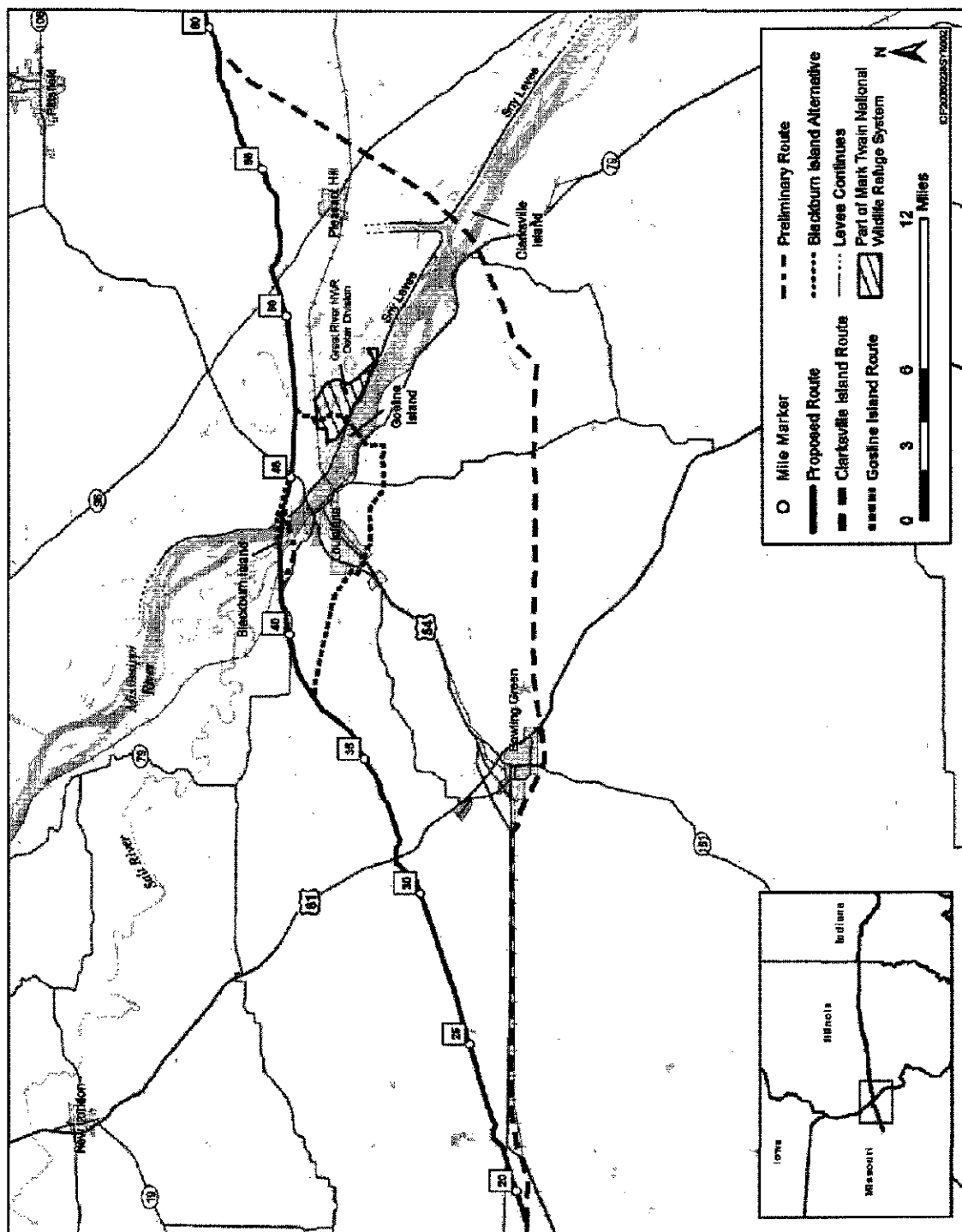
Rockies Express has proposed to cross the Mississippi River at the confluence of the Salt River (MP 42.5) and the Mississippi River (MP 43.2) using two HDDs from Blackburn Island, as shown in figures 3.4.1-1 and 3.4.1-2. Blackburn Island is located between the two rivers and is part of the Upper Mississippi Conservation Opportunity Area (COA) owned by the COE, leased to FWS, and managed by the MDC. This operation would require clearing 5.4 acres of forested wetlands on Blackburn Island for the HDD site, staging area, and access road. Rockies Express also would dredge approximately 4,500 cubic yards from the Mississippi River on the east side of Blackburn Island to enable barge access to the island. The HDD to the west would pass underneath the Salt River, and the HDD to the east would pass underneath the Mississippi River but would exit at a point that would allow the pipeline to be installed over the Sny District Levee. Underneath the Mississippi and Salt Rivers, a minimum of 40 feet of separation between the river bottom and the Project pipeline alignment would be maintained.

FWS, COE, state agencies, and the Sny Levee District have expressed concerns regarding the proposed location of the Mississippi River crossing at Blackburn Island. FWS, COE, and state agencies expressed concern over the loss of forested habitat on Blackburn Island. Previously, Rockies Express had proposed extending the HDD to pass under and to the east of the Sny Levee. The Sny Levee District raised concerns about the potential structural impacts on the Sny Levee from the HDD passing under the levee. The Sny Levee District requested Rockies Express to terminate the HDD on the river side (west side) of the levee and then bring the pipeline up and over the top of the levee. Rockies Express conducted geotechnical studies and determined this would be technically feasible with a shift of the exit point to the south by 0.2 mile. The Blackburn Island Alternative discussion below compares the proposed route that crossed over the levee to the alternative where the route would cross under the levee. To address FWS, COE and state agency concerns over the loss of habitat on Blackburn Island, we evaluated two major route alternatives that would use other islands for the Mississippi River Crossing, as discussed after the Blackburn Island Alternative.

Blackburn Island Alternative

As shown in figure 3.4.1-1, the Blackburn Island Alternative would deviate from the Project route at MP 42.9 on Blackburn Island. The HDD would extend east beyond the levee and maximize the depth below the levee at the crossing point and the distance between the levee and the HDD exit point. At the Blackburn Island crossing, the Mississippi River is 1,800 feet wide due east from the HDD site and the exit would be located approximately 500 feet to the east of the levee. The exit point would be placed in a field. The field is 2,200 feet wide and lies between the levee and a small stream, which would allow the exit point to be adjusted based on geotechnical requirements for the drill and would provide room for the pipeline pull string. From the exit point, the pipeline route would travel southeast 1.45 miles to rejoin the Project route at MP 44.2.

Table 3.4.1-1 presents a general environmental comparison of the Project route and the Blackburn Island Alternative between MP 42.9 to MP 44.2. Both routes would be relatively similar in length and would have generally similar impacts during pipeline construction and operation. Both routes would cross two wetlands. While the Blackburn Island Alternative centerline would cross about 416 feet more wetland than the Project route, the Project route's construction right-of-way would affect about 0.1 acre more wetland area. The Blackburn Island Alternative would require five more open cut waterbody crossings than the Project route. Both routes would cross similar amounts of agricultural land, developed land, and open water, and would affect the same landowners. The Project route would cross more forested wetlands, particularly those located near the HDD exit site between the Mississippi River and Sny Levee.



**Figure 3.4.1-2
Overview of Mississippi River Crossing Alternatives**

Table 3.4.1-1
Comparison of the Proposed Route and Blackburn Island Alternative
(MP 42.9 to MP 44.2)

Environmental Factor	Unit	Project Route	Blackburn Island Alternative	Source
GENERAL DESCRIPTION				
Total Length	miles	1.5	1.5	Digital Route
Total Number of Wetlands	no.	2	2	Wetland delineation surveys
Total Length of Wetlands	feet	960	1,376	Wetland delineation surveys
Waterbody Crossings	no.	3	9	Wetland delineation surveys
Waterbodies Crossed by HDD	No.	1	2	
Agricultural Land Crossed	feet	4,002	3,982	USGS Land Use Land Class (LULC) data
Forest Land Crossed	feet	1,018	836	LULC data
Developed Land Crossed	feet	62	93	LULC data
Open Water Crossed	feet	115	115	LULC data

The Blackburn Island Alternative and Project route have similar environmental consequences. The Project route would reduce the number of open cut waterbody crossings but the Project route would affect more forested wetlands. However, the Sny Levee District expressed strong concerns that an HDD conducted under the levee would cause structural damage to the levee and requested the pipe be constructed over the levee. The Project route extends the drill length under the river to allow safe construction over the levee. Therefore, we do not recommend the Blackburn Island Alternative. Construction drawings and correspondence on this construction technique are included in appendix F.

Alternative Islands for Crossing the Mississippi River

We received comments that the Mississippi River crossing be relocated to use an island other than Blackburn Island. We evaluated two major route alternatives in addition to the variations discussed above. Figure 3.4.1-2 provides an overview of all the Mississippi River crossings that we evaluated. First, Rockies Express proposed a route alternative that would cross the Mississippi River at Clarksville Island, which is approximately 12 miles southeast of the Project route. This alternative would use Clarksville Island to cross the Mississippi River and is referred to as the Clarksville Island Route Alternative. Second, during our field visit in August 2007, the COE suggested an alternative crossing that was received from a landowner. The second route would cross the Mississippi River approximately 4 miles southeast of the Project route at Gosline Island. We independently analyzed this alternative, which is referred to as the Gosline Island Route Alternative.

The Clarksville Island Route Alternative (figure 3.4.1-3) would deviate from the REX East Project route at MP 17.7 and proceed eastward for 3.6 miles where it would intersect with the Illinois Central Gulf Railroad. The alternative would follow the railroad for 9.8 miles. It would then pass south of Bowling Green, Missouri for about a mile until it adjoins an electricity transmission line corridor, which it would parallel for 10.2 miles. From there, the alternative would continue eastward for 8.4 miles, crossing agricultural and forested land until it reaches the Mississippi River. Crossing the Mississippi River in this area would involve crossing Clarksville Island, three river channels, and the Sny Levee on the eastern bank. After crossing the river, the route alternative would run through open farmland and forested areas for 10.6 miles until it rejoins the Project route at MP 59.5.

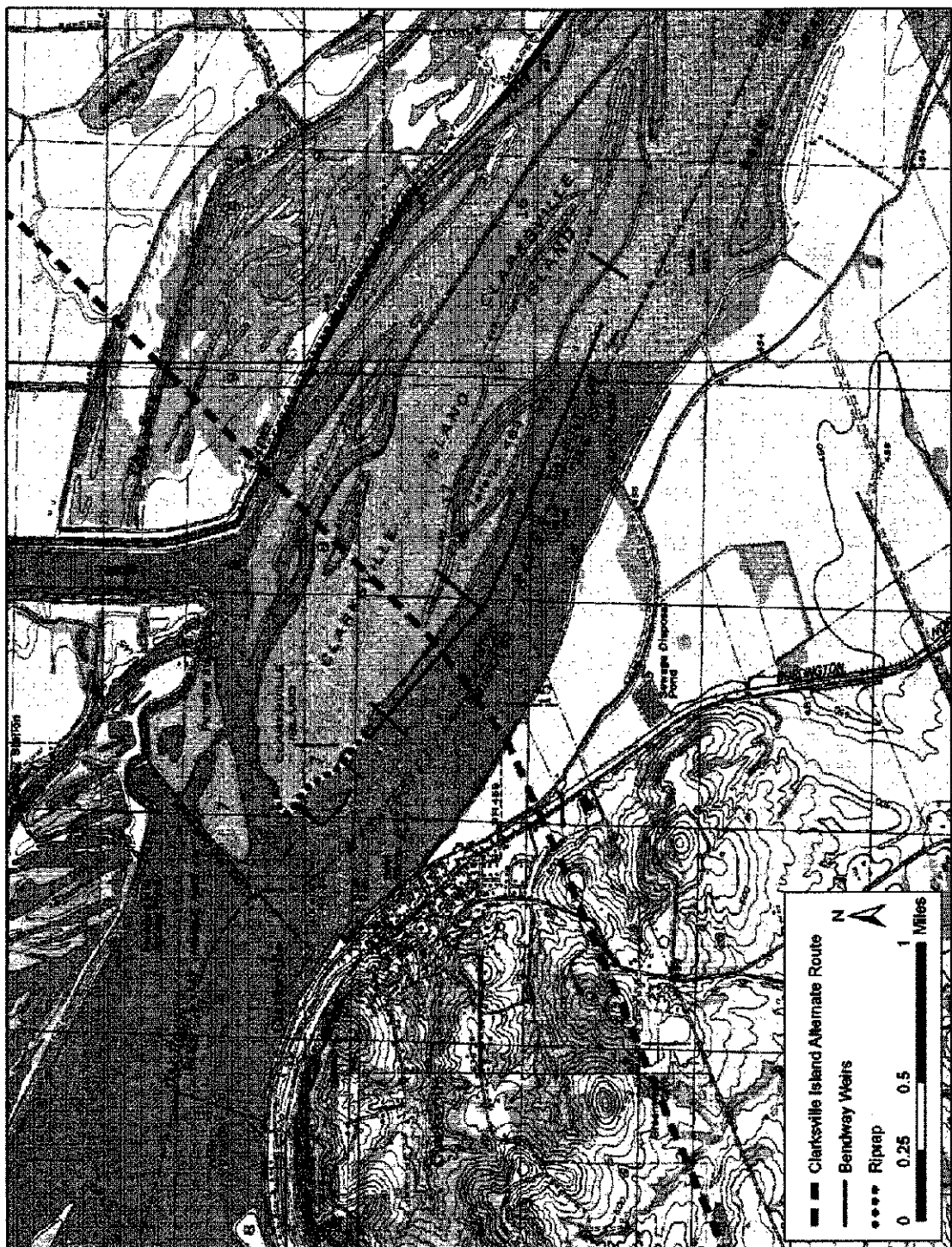


Figure 3.4.1-3
Detail of Clarksville Island Crossing Location at the Mississippi River



Figure 3.4.1-4
Detail of Gosline Island Crossing Location at the Mississippi River
3-10

The Gosline Island Route Alternative (figure 3.4.1-4) would deviate from the REX East Project route just before MP 38, heading southeast and proceeding approximately 4.3 miles alongside an electricity transmission line corridor before crossing Route 54 west of Louisiana, Missouri. It would continue along the transmission line corridor for 2 miles to State Highway D and proceed east toward the Mississippi River. Approximately 1 mile before passing Route 79, the route would deviate from the transmission line corridor, turn north and then northeast across the Mississippi River and Gosline Island. After crossing the Mississippi River, the route would cross the Sny Levee and pass through 2.3 miles of the Great River National Wildlife Refuge (NWR), Delair Division, which is part of the Mark Twain NWR complex, owned and managed by FWS. It would continue along mostly agricultural land in a northeast direction until it rejoins the Project route near MP 47.

The Delair Division was purchased with funds from the sale of migratory waterfowl stamps. The division lies completely within the 52-mile long Sny Agricultural Levee District and is separated from the Mississippi River by the Sny Levee. When originally acquired, the area was almost entirely cropland. Of the 440 acres currently set aside for farming, 90 acres are left idle each year to provide habitat for grassland birds. The remaining 350 acres are cooperatively farmed annually—with corn, soybeans, and winter wheat—to provide supplemental food for waterfowl. Semi-permanent and permanent waterbodies make up 480 acres of Delair, providing feeding and resting areas for waterfowl and many other wetland bird species. Water level management, mowing, and discing are used to create diverse vegetative habitat within the wetland units. FWS has commented that any proposed pipeline crossing of the refuge would require a greater level of environmental impact assessment before FWS could grant approval for such a crossing.

Table 3.4.1-2 presents a general environmental comparison of the Project route, the Clarksville Island Route Alternative, and the Gosline Island Route Alternative between MP 17.7 to MP 59.5. Based on these factors, neither the Clarksville Island Route Alternative nor the Gosline Island Route Alternative would result in a clear environmental advantage over the proposed route. The Project route crosses slightly fewer wetlands, waterbodies, and forested land than do the alternatives. The Gosline Island Route Alternative is collocated with 32.1 miles (76.6 percent) of existing powerline rights-of-way and would disturb fewer cultivated lands and protected lands than would the Project route. Protected lands include FWS NWR and State COAs. The Gosline Island Route Alternative also provides the shortest HDD crossing of the river. The Clarksville Island Route Alternative is 3.1 miles longer than the others and follows existing rights-of-ways for 20.0 miles (44.4 percent). It would affect a comparable number of wetlands, waterbodies, and forested land as the Project route.

The Sny Levee would be crossed by each route alternative. Regardless of the route, Rockies Express would follow the same COE requirements and perform all construction in accordance with an approved HDD construction and contingency plan as described above for the REX East Project route. The width of the Mississippi River and geotechnical conditions require the river to be crossed with two HDDs from an island within the river. The different crossing locations affect the length of each drill and the types of landcover that would be affected by the drill installation. At the Blackburn Island crossing, the river is 1,800 feet wide and the exit is located approximately 500 feet from the levee. The exit point would be placed in a field. The field is 2,200 feet wide and lies between the levee and a small stream, which would allow the exit point to be adjusted based on geotechnical requirements for the drill and would provide room for the pipeline pull string.

Along the Gosline Island Route Alternative, the Mississippi River is narrower and the island is located closer to the west bank of the river. The shorter HDD length reduces the risk of encountering a problem with drill installation. The HDD would cross 1,200 feet of river and the exit would be located in a crop field managed by FWS. This field would allow for adjustment of the HDD exit point location to

<p align="center">Table 3.4.1-2 Comparison of the Mississippi River Crossing Alternatives—Project Route, Clarksville Island Route Alternative, and Gosline Island Route Alternative (MP 17.7 to MP 59.5)</p>					
Environmental Factor	Unit	Project Route	Mississippi River—Clarksville Island Route Alternative	Mississippi River—Gosline Island Route Alternative	Source
Total Length	miles	41.9	45.0	41.9	Digital Route
Length Adjacent to Existing Right-of-Way (percent)	miles	25.4 (60.6)	20.0 (44.4)	32.1 (76.6)	Digital Route
Wetlands Crossed	miles	0.9	1.2	1.9	FWS (2007f)
Waterbody Crossings	no.	11	11	13	ESRI (2005a;c)
Cultivated Land Crossed	miles	32.9	33.2	25.8	USGS (2001)
Forest Land Crossed	miles	6.6	9.4	11.8	USGS (2001)
Commercial Land Crossed	miles	<0.1	<0.1	<0.1	USGS (2001)
Residences Within 50 Feet of Construction Work Area	no.	2 <u>a/</u>	4 <u>a/</u>	0 <u>a/</u>	Rockies Express, Aerial Photography
Minimum Length of HDDs (west side; east side)	feet	4,000; 4,700	3,800; 2,900	3,200; 3,500	Rockies Express; Estimated Data
Protected Land Crossed <u>b/</u>	miles	9.1	0.0	2.3	FWS (2007f); Rockies Express
<u>a/</u> Houses could not be counted along 9 miles of the routes due to poor resolution of available imagery. <u>b/</u> Protected land includes FWS National Wildlife Refuge and State Conservation Opportunity Areas.					

optimize the setback from the levee and other factors such as the location of the pipeline pull string. Our review indicates that a setback from the levee of between 650 and 850 feet would be possible. At Clarksville Island, the main river channel lies to the east. Toward the Sny Levee, the HDD would cross two small channels and forested wetlands at an approximate length of 3,000 feet from the center of the island to the levee. The HDD exit point would be approximately 800 to 1,000 feet from the levee and would be placed in a forested wetland that extends 3,700 feet from the levee. The pull string would be placed within the cleared pipeline right-of-way that continues to the northeast in order to minimize impacts to the forested area.

Rockies Express has proposed that the pipeline go over the Sny Levee to address the Sny Levee District's concerns of potential structural impacts caused by an HDD under the levee. Under the proposed Mississippi River crossing, the HDD exit would be on the bank of the river before the levee. Here the bank is 700 feet wide and can support an HDD exit. The Gosline Island and Clarksville Island Route Alternatives have less than 100 feet of land along the bank, which is insufficient to support an HDD exit.

Flooding during installation of an HDD could cause additional impacts to the islands and surface water quality. Additional discussion on this issue is included in section 4.1.3. The elevation on Blackburn Island is similar to the elevations on both Gosline and Clarksville Islands and we would expect similar flood potentials at all three locations.

Most of the wetlands on each island (Blackburn, Gosline, and Clarksville) along the Project or alternate routes are forested wetlands. The construction area on each island would encompass

approximately 5.4 acres and would clear forested wetlands on all of the islands. Based on aerial photography, Blackburn Island and Clarksville Island appear to have mature forests while the vegetation at the center of Gosline Island appears to be either at an earlier stage of maturity or at least partially comprised of herbaceous or shrubby communities. Table 3.4.1-2 shows that the Clarksville Island Route Alternative would affect approximately 0.3 more linear mile of wetlands than the Project route, and the Gosline Island Route Alternative would affect approximately one more linear mile of wetlands than the Project route.

The 4,500 cubic yards of dredging required for the Project route is assumed to be necessary at both Gosline and Clarksville Islands. At Gosline and Clarksville Islands, any dredging would have to avoid the existing riprap and bendway weirs associated with the maintained navigation channel in the Mississippi River. No such structures are located in the immediate vicinity of the Blackburn Island crossing.

The segment of the Mississippi River that contains each route alternative is located within the Mississippi Flyway, a major route for migrating waterfowl. Each island (Blackburn, Gosline, and Clarksville) that would be used as an HDD drill site is used by migratory birds. Blackburn Island is part of the Upper Mississippi COA and located adjacent to the Ted Shanks State Conservation Area. The area is generally known as the Ted Shanks Alluvial Complex and is recognized as an Important Bird Area by the National Audubon Society and BirdLife International (Jensen, 2007). Gosline Island is adjacent to the Great River NWR, which is part of the Mark Twain NWR complex, and the pipeline along this route would pass through the refuge. Clarksville Island was transferred from the Nature Conservancy to a non-profit organization, the Elizabeth Elliot Foundation, in 1982 and has remained in its natural state. Surveys for protected species along the REX East Project route, including Indiana bat surveys and mussel surveys, found no Indiana bats or mussels on or adjacent to Blackburn Island. Information is not currently available for protected species at Gosline Island or Clarksville Island and surveys for the Indiana bat, mussels, and decurrent false aster (a flowering plant) would have to be conducted to document their presence or absence. Information available from the Great River NWR documents that bald eagles and a pair of barn owls (an Illinois state endangered bird) have nested on the refuge.

Our analysis shows there is no clear environmental advantage of the alternative routes compared to the Project route. Further, with the incorporation of an aboveground crossing of the Sny Levee, Rockies Express has eliminated a major concern expressed by the Sny Levee District. The resolution of this concern would not be possible using either of the alternatives. Therefore, we have not recommended that an alternative route be adopted by Rockies Express.

3.4.2 Macon County Beltway Alternative

During the development of the REX East Project, Macon County proposed an alternative route that would reroute the pipeline in the area south of Mt. Zion adjacent to their proposed Beltway alignment (the Macon County Beltway Alternative). The Macon County Board, U.S. Congressman Timothy Johnson, the village of Mt. Zion, and various citizens expressed concerns over both environmental impacts and the impact of the Project route on the village's long-term residential development plan and the proposed Beltway alignment. The Macon County Board passed a resolution on December 13, 2007 in opposition to the project, and on February 14, 2008 passed another resolution in support of an alternative route that would parallel the proposed Beltway. Macon County is specifically concerned about the Project's impact on residential growth in areas south of Mt. Zion. They state that by collocating with the Beltway, the Project would minimize cumulative impacts to forested areas and existing homes, and lower the cost of the federally funded Beltway project by minimizing utility conflicts.

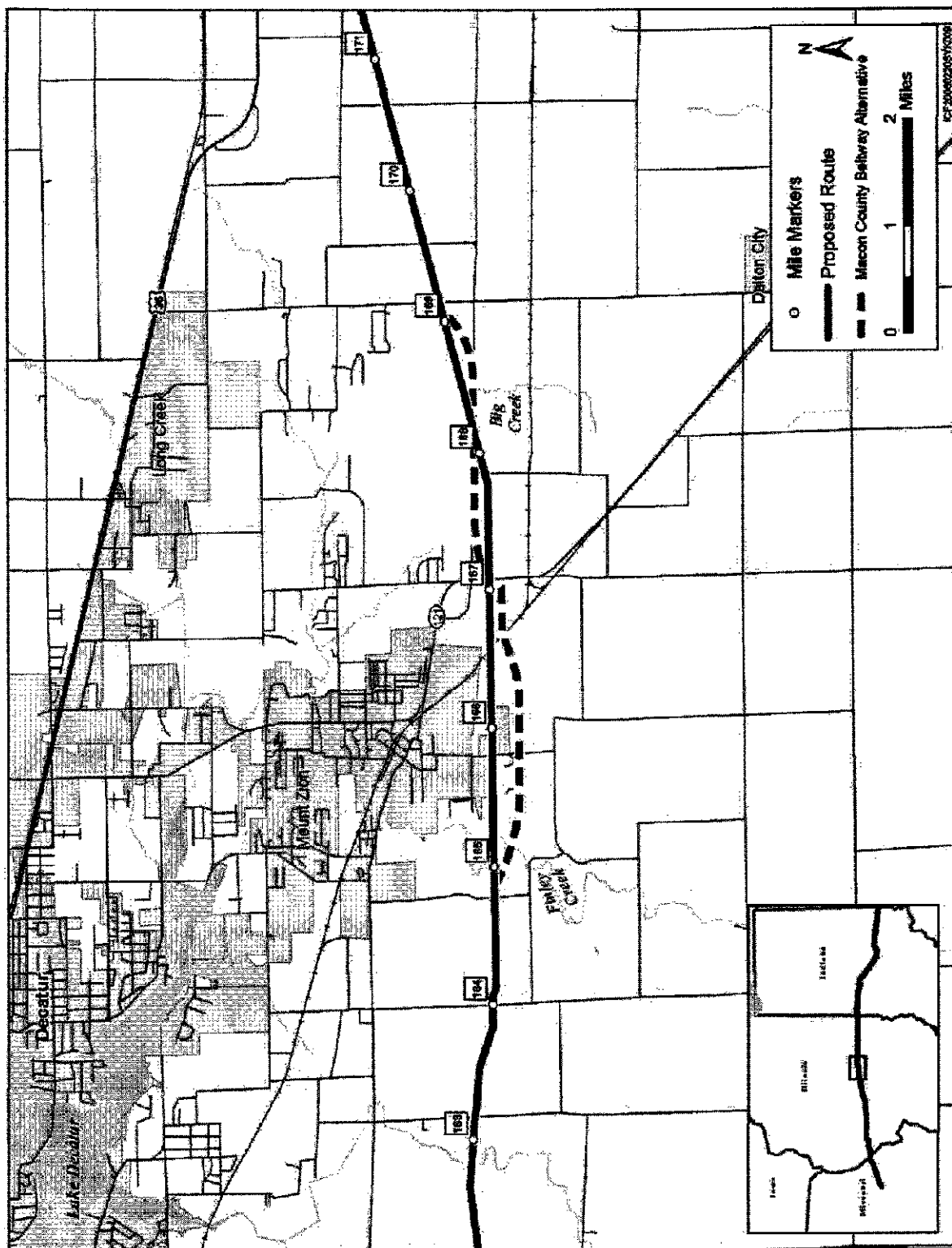


Figure 3.4.2-1
Macon County Beltway Alternative

As shown in figure 3.4.2-1, the 4.4 mile Macon County Beltway Alternative would deviate from the Project route at MP 164.6 and follow the proposed Beltway alignment for 4.4 miles until rejoining the Project route at MP. 169.0. Table 3.4.2-1 provides an environmental comparison of the Macon County Beltway Alternative and the Project route. The Project route would be 0.2 miles shorter than the alternative route and would cross slightly less developed land (0.4 mile) than the alternative route. The alternative route would avoid 0.4 mile of forest land compared to the Project route. The Project route and the Macon County Beltway Alternative would cross an identical number of waterbodies and the same length of wetlands.

Table 3.4.2-1 Comparison of the Macon County Beltway Alternative to the Corresponding Segment of the Project Route (MP 164.6 to MP 169.0)				
Environmental Factor	Unit	Project Route	Macon County Beltway Alternative	Source
Total Length	miles	4.0	4.2	Digital Route
Length Adjacent to Existing Right-of-Way	miles	0	0	Field Review
Wetlands Crossed	miles	0.1	0.1	FWS, 2007f
Waterbody Crossings	no.	1	1	ESRI (2005a;c)
Cultivated Land Crossed	miles	3.0	3.3	USGS, 2001
Forest Lands Crossed	miles	0.8	0.4	USGS, 2001
Developed Land Crossed	miles	0.1	0.5	USGS, 2001
Open Land Crossed	miles	0.1	0.1	USGS, 2001

Based on the above analysis, the alternative route does not provide a clear environmental advantage over the Project route. The chief potential advantage of the route alternative would be paralleling the proposed Macon County Beltway alignment. The proposed Macon County Beltway is in the preliminary planning stage, having not yet completed its NEPA study. As such, the Beltway alignment has not been fully studied for impacts to environmental or cultural resources. Further, the alignment may continue to change. We are not aware of reasons why the Beltway cannot be safely constructed once the REX East Project is completed. Because the Macon County Beltway is still in the planning phases and subject to future modifications and Because the alternative route also does not provide a clear environmental advantage, we do not recommend this alternative be included in the Project route.

3.4.3 Wabash River Alternative

Rockies Express originally considered a route that would cross land encumbered under an NRCS Emergency Watershed Protection – Floodplain Easement (EWPP-FP) located on the west side of the Wabash River near the Town of Highland in Vermillion County, Indiana. According to NRCS policy, proposed infrastructure projects must avoid EWPP-FP easements because the agency does not have the authority to modify easement terms. Therefore, the original route was not feasible. Rockies Express developed a route alternative and incorporated it into the Project route. As shown in figure 3.4.3-1, the Project route would turn northeast from the original route around MP 242.9, cross Little Raccoon Creek at MP 245.2, and cross the Wabash River at MP 247.0 at a location that is approximately 1.6 miles north of the Wabash River crossing location that was originally considered. This crossing location would be well outside of the boundaries of the NRCS protected land.

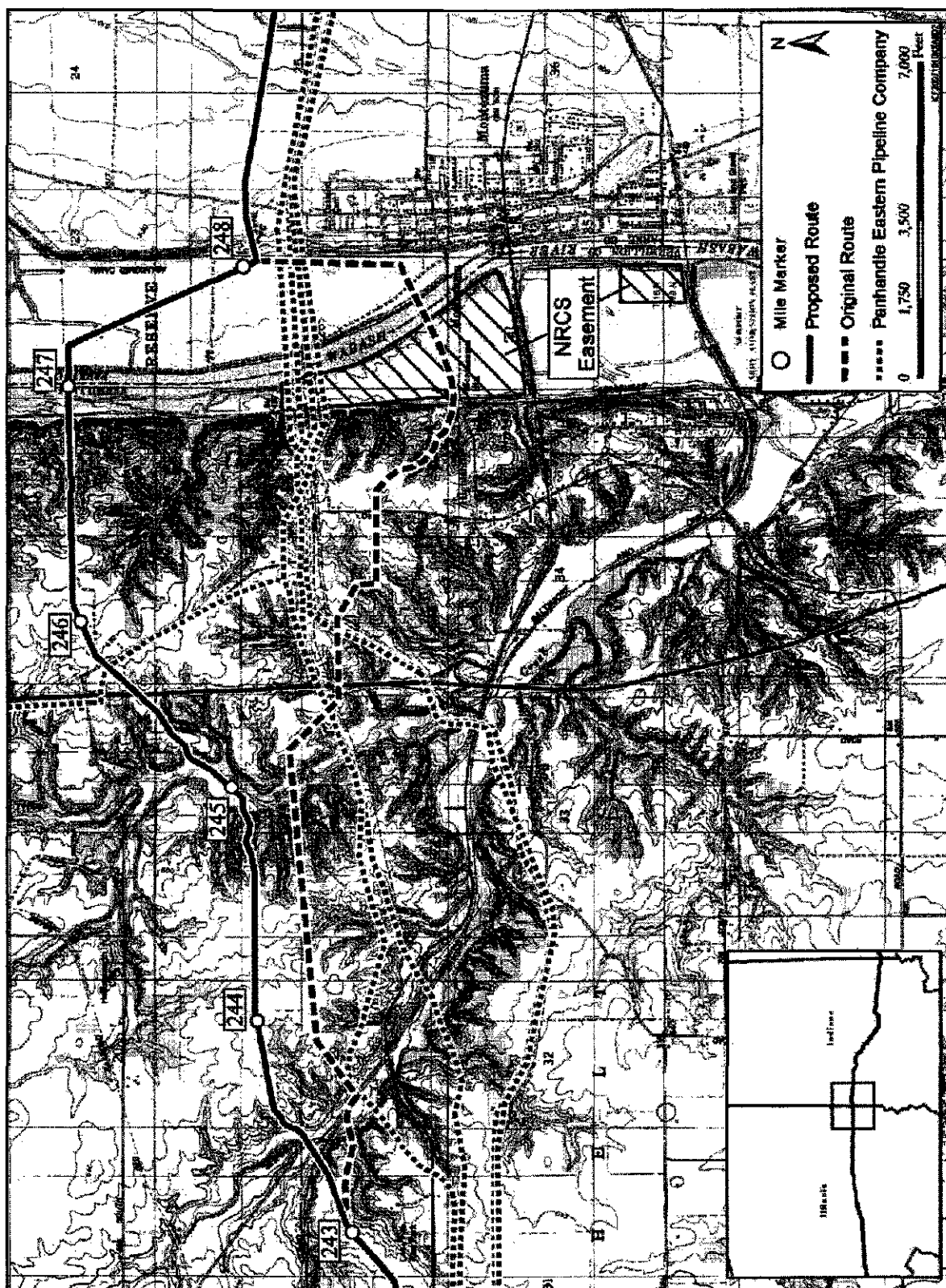


Figure 3.4.3-1
Wabash River Alternative
3-16

We examined this Project route in a site visit and evaluated the possibility of another alternative following an existing Panhandle pipeline right-of-way, shown in figure 3.4.3-1. However, we determined that this alternative is not feasible because it would also cross the land protected by the NRCS floodplain easement. Also, based on our field observations, following the existing pipeline right-of-way would not be preferable because there are residences currently abutting the right-of-way in some segments and there would be limited space to install another pipeline. Therefore, we did not identify an environmentally preferable alternative to the Project route crossing of the Wabash River.

3.4.4 Indianapolis North Alternatives

Numerous residents in the counties south of Indianapolis have requested that the FERC and Rockies Express consider an alternate route that follows the existing pipeline corridors that PEPL and TETCO use north of Indianapolis. These residents are concerned that the Project route would cause soil erosion due to construction in unstable soils and rolling terrain, damage field drainage tiles, remove valuable habitat for various wildlife including the endangered Indiana bat, and reduce the value of farm property in an area that is expected to develop in the near future. In response to these comments, we identified two specific route alternatives that would extend north of Indianapolis: Indy North 1 and Indy North 2. We asked Rockies Express to provide an analysis of Indy North 1, and based on those results, we developed and analyzed another variation, called Indy North 2. Figure 3.4.4-1 shows these major route alternatives in relation to the Project route.

The Indy North 1 Route Alternative would deviate from the Project route at MP 279.4. It would follow an existing PEPL corridor northeast, veer around Zionsville on the northwest side of Indianapolis, and then cross Little Eagle Creek. After that crossing, the alternative route would continue northeast following the existing PEPL corridor until reaching Westfield. It would then turn southeast, pass between Noblesville and Fishers, cross Fall Creek, and continue southeast until rejoining the Project route at MP 376.0. The southeastern half of the Indy North 1 Route Alternative is not collocated along an existing corridor.

The Indy North 2 Route Alternative would approximate a route recommended by many commentors. It would turn northeast from the Project route at MP 274.5 and follow an existing PEPL corridor through Putnam and Hendricks Counties on the western side of Indianapolis. Just south of Zionsville, the alternative route would turn more north-northeast, continuing to follow the existing pipeline corridor to the point where it intersects a TETCO corridor in Grant County south of Marion. It would then turn and follow the TETCO corridor southeast, skirt the eastern edge of Muncie, and continue southeast until rejoining the Project route at MP 444.0. The entire Indy North 2 Route Alternative is collocated with existing pipeline corridors.

Table 3.4.4-1 provides an environmental comparison of the Project route and the Indy North 1 and Indy North 2 Route Alternatives. As shown, Indy North 2 is the longest of the three, approximately 31.5 miles longer than the Project route and 22.6 miles longer than Indy North 1. However, Indy North 2 would be adjacent to an existing right-of-way for 100 percent of its length, compared to 6.0 percent for the Project route and 27.7 percent for Indy North 1. All three routes cross very few wetlands, with Indy North 2 crossing the least (0.90 mile) and Indy North 1 crossing the most (1.8 miles). Indy North 2 also crosses the fewest waterbodies at 64, compared to 77 waterbodies crossed by the Project route and 86 waterbodies crossed by Indy North 1. In terms of land uses and land covers, Indy North 2 would cross almost twice as much cultivated land as the other two routes and about half as much forest as the other two routes (the Project route and Indy North 1 are comparable in terms of their cultivated land and forest crossings). All three routes cross very little commercial land and are comparable from that standpoint.

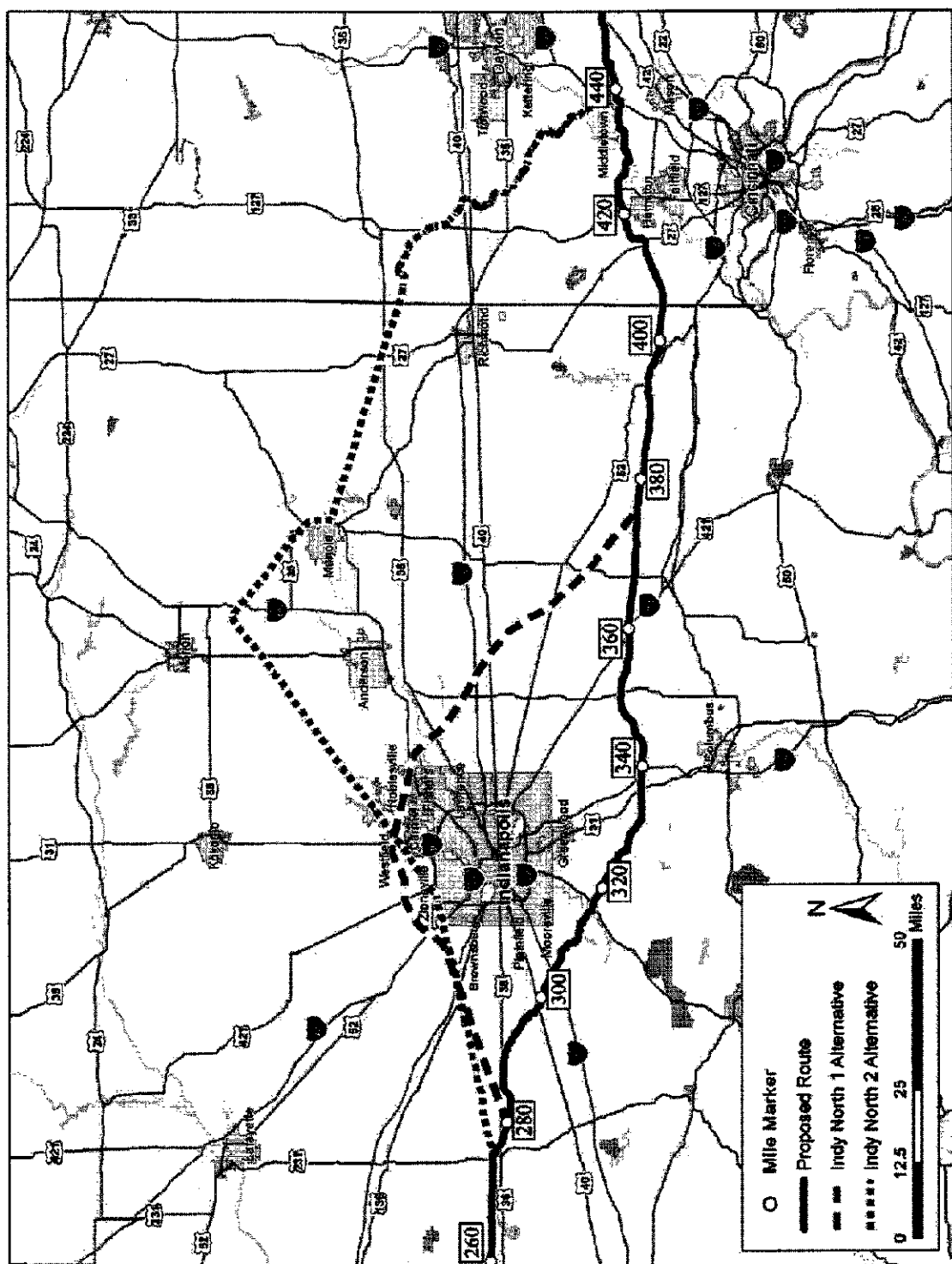


Figure 3.4.4-1
Indianapolis North Route Alternatives

<p align="center">Table 3.4.4-1 Comparison of the Indy North 1 and Indy North 2 Route Alternatives to the Corresponding Segment of the Project Route (MP 274.5 to MP 444.0)</p>					
Environmental Factor	Unit	Project Route	Indy North 1 Route Alternative	Indy North 2 Route Alternative	Source
Total Length	miles	161.7	170.6	193.2	Digital Route
Length Adjacent to Existing Right-of-Way (percent)	miles	9.7 (6.0)	47.3 (27.7)	193.2 (100.0)	DOE Unpublished Data (2005)
Wetlands Crossed	miles	1.6	1.8	0.9	FWS, 2007f
Waterbody Crossings	no.	77	86	64	ESRI (2005a;c)
Cultivated Lands Crossed	miles	90.0	96.7	164.7	USGS, 2001
Forest Land Crossed	miles	11.3	10.5	5.5	USGS, 2001
Commercial Land	miles	<0.1	1.3	0.8	USGS, 2001
Residences Within 50 Feet of Construction Work Area	no.	11	462	>231 <u>a/</u>	Rockies Express, Google Earth (2007)
<p><u>a/</u> Houses could not be counted along 47.1 miles of the Indy North 2 Route Alternative due to poor resolution of available imagery.</p>					

The three routes are distinguished in terms of their proximity to existing residences. Based on a review of available NRCS datasets, Indy North 2 would cross 19.0 miles of residential land compared to 10.9 miles for Indy North 1 and 3.8 miles for the Project route. Recognizing that these data are current only through 2001, we evaluated the potential impacts on residences by conducting site visits and by examining recent aerial photography. Our site visits found that much of the existing pipeline corridors for Indy North 1 and Indy North 2 would abut dense housing developments. In many places, there is insufficient room to install another pipeline without significantly disrupting these existing developments. This finding is corroborated by our review of aerial photographs, which indicates that Indy North 1 and Indy North 2 would have more than 462 and 231 residences, respectively, within 50 feet of construction work areas; whereas the Project route would have 11 residences within 50 feet of construction work areas.

As noted previously, residents and other stakeholders raised four main concerns about the Project route. First, they expressed concern that the Project route would cause soil erosion due to construction in unstable soils and rolling terrain. Based on a review of soil classification data available from NRCS, approximately 24 percent of the soils crossed by the Project route between MP 274.5 and MP 444.0 are considered highly water erodible and 0.5 percent are considered highly wind erodible. The soils to the north of Indianapolis are slightly less water erodible (22 percent highly erodible for Indy North 1 and 14 percent highly erodible for Indy North 2), but are the same as the Project route in terms of wind erodibility. With respect to the issue of rolling terrain, our analysis of the topography along the three routes indicates that the terrain is slightly more undulating to the south of Indianapolis and flattens out as the routes move north, with Indy North 2 having the largest fraction of its length across relatively flat stretches.² However, we do not believe that these minor differences in erodibility and topography create a clear environmental advantage for either of the northern alternatives relative to the Project route. Erosion

² To evaluate rolling terrain, we examined variability in elevation across 1-mile segments for the entire lengths of the three alternative routes.

control measures, as specified in the Rockies Express Plan and Procedures, would be employed during construction and would minimize the erosion of soils.

Second, residents expressed concerns that the Project route south of Indianapolis would damage their field drainage tiles. All three routes would cross substantial stretches of cropland as shown in table 3.4.4-1. Regardless of the pipeline route, impacts to agricultural resources would be minimized and fields would be restored to pre-construction function. Rockies Express has developed an AIMP (see appendix I) for dealing with construction and restoration issues unique to agricultural areas. The purpose of the AIMP is to help protect, conserve, and restore agricultural lands that may be affected by construction and/or operation of the Project pipeline. Rockies Express would follow the policies outlined in the AIMP for all activities occurring on privately owned farmland. Further, to ensure that fields with drain tiles can be fully restored, we are recommending that Rockies Express bury the pipeline at a minimum depth of five feet where the pipeline would cross agricultural fields with prime soils unless otherwise negotiated with landowners (see section 4.8.2).

Third, residents expressed concern that the Project route south of Indianapolis would remove valuable habitat for various wildlife including the endangered Indiana bat. More habitat areas would be affected along the Indy North alternatives, because of their greater lengths, but these impacts are similar to those that would be experienced along the Project route. The majority of all three routes cross agricultural and residential land. Species that commonly inhabit agricultural land are accustomed to habitat disturbance from farming activities and could temporarily use adjacent agricultural land until the area is restored. A portion of all three routes would cross forest land, although the Project route would cross the most (11.3 miles), Indy North 1 would cross almost as much as the Project route (10.5 miles), and Indy North 2 would cross the least (5.5 miles). Forest lands cleared by the pipeline construction may require more than 30 years to return to preconstruction conditions and would be prevented from re-establishing on the permanent right-of-way during operation of the pipeline. Forested areas also have the potential to be Indiana bat habitat. Surveys of the Project route in Pike County, Indiana found one male and one female Indiana bat within the Project right-of-way. Surveys would have to be conducted to determine the presence of Indiana bats in the forests that would be crossed by the route alternatives north of Indianapolis. Tree removal and pipeline construction methods would be done in accordance with FWS consultations and guidelines in all areas where Indiana bats are found to avoid or minimize serious impacts.

Fourth, residents expressed concern that the route south of Indianapolis would reduce the value of farm property in an area that is expected to develop in the near future. The only development currently planned along the Project route is the Disney Residential Development at MP 297.5. Although this development was platted in 1978, construction has not yet begun. We do not believe the Project route would significantly affect this development, because the total pipeline length across the development would be only 0.5 mile and because Rockies Express has sited its pipeline route along the property boundaries to minimize disturbance. Based on our current research, any other new developments near the Project route are only speculative at this time. The Indy North 1 and Indy North 2 would avoid the Disney Residential Development. However, we contacted planning staff in each of the counties that would be crossed by the alternatives and discovered that there are a number of planned developments along those routes as well. For example, Indy North 1 would be in the vicinity of two approved new developments in Boone County, Indiana; a recently approved development in Fishers in Hamilton County, Indiana; and a proposed new development in Hancock County, Indiana. Indy North 2 would come near land recently rezoned for development in Marion County, Indiana; 21 pending and approved residential subdivisions in Hamilton County, Indiana; and a new single family residential subdivision in Middletown in Warren County, Ohio. Based on these findings, we believe that either of the northern route alternatives would encounter as much or more planned developments, and would face the same issue as the Project route regarding speculative developments and associated land values.

In addition, neither of the Indianapolis North alternatives could connect to Rockies Express' three customers located south of Indianapolis without long laterals causing additional environmental impact. In particular, Rockies Express has made commitments to deliver natural gas to Citizen Gas and Coke Utility and Indiana Gas in Morgan County, Indiana and ANR Pipeline Company in Shelby County, Indiana. To meet the needs of these customers with a route north of Indianapolis, Rockies Express would have to build lateral pipelines to interconnect these pipeline systems. These laterals would increase the areas that would be affected by crossing at least an additional 25 miles of land. These laterals could run north to south through the suburban and urban areas of Indianapolis, but would likely run south of the city from west to east affecting many of the same areas in Putnam, Hendricks, Morgan, Johnson, and Shelby Counties.

Based on the above analysis neither of the alternative routes provides a clear environmental advantage over the Project. While the northern route alternatives would be adjacent to existing rights-of-way for greater lengths than the Project route to the south, there exists numerous locations where there is little or no room to install the pipeline without encroaching on much larger numbers of existing residences. Because the other environmental concerns raised by commentors and analyzed above do not differ significantly across the three alternatives, the alternative routes do not provide a clear environmental advantage.

3.4.5 Johnson County North Alternative

During the development of the REX East Project, Rockies Express considered two routes through Johnson County, Indiana. The preliminary route crossed seven existing or planned developments located south of Indianapolis, Indiana. In order to avoid platted residential and commercial developments, Rockies Express relocated the pipeline to a less residential area farther south in Johnson County. This route was incorporated into the Project route prior to filing the Certificate Application. During public meetings held on the EIS in Indiana, several residents asked for the northern Johnson County route to be reconsidered. This northern route is referred to as the Johnson County North Alternative in this discussion.

Figure 3.4.5-1 shows the Johnson County North Alternative in relation to the Project route. At MP 307.4, the Johnson County North Alternative would leave the Project route and proceed east for four miles across a mixture of agricultural and forested lands to the White River. After crossing the White River, the Johnson County North Alternative would proceed southeast for five miles across a mixture of agricultural and forested lands to a point approximately one mile northwest of Bargserville, Ohio. From there it would proceed across agricultural lands in a generally easterly direction for 23 miles, bypassing Franklin, Ohio to the north (by two miles) before rejoining the Project route at MP 348.9.

An environmental comparison of the Project route and Johnson County North Alternative is presented in table 3.4.5-1. The Project route slightly reduces the number of structures located within 100 feet of the centerline; and avoids planned residential and commercial developments. Although the Project route would be slightly longer, it follows existing easements for 3 miles. The Project route crosses through slightly more agricultural land, and similar lengths of wetlands. The Project route crosses one less waterbody than the Johnson County North Alternative and would impact slightly more forested land (0.3 mile). Overall, the environmental impacts are similar. The main differences are that the Project route would cross fewer planned developments, fewer structures would be located within 100 feet of the centerline, and it would be collocated with an existing right-of-way for 3 more miles than the Johnson County North Alternative. Weighing these advantages against the slight increase in forest impacts, we determined that the Project route was preferable to the alternative route.

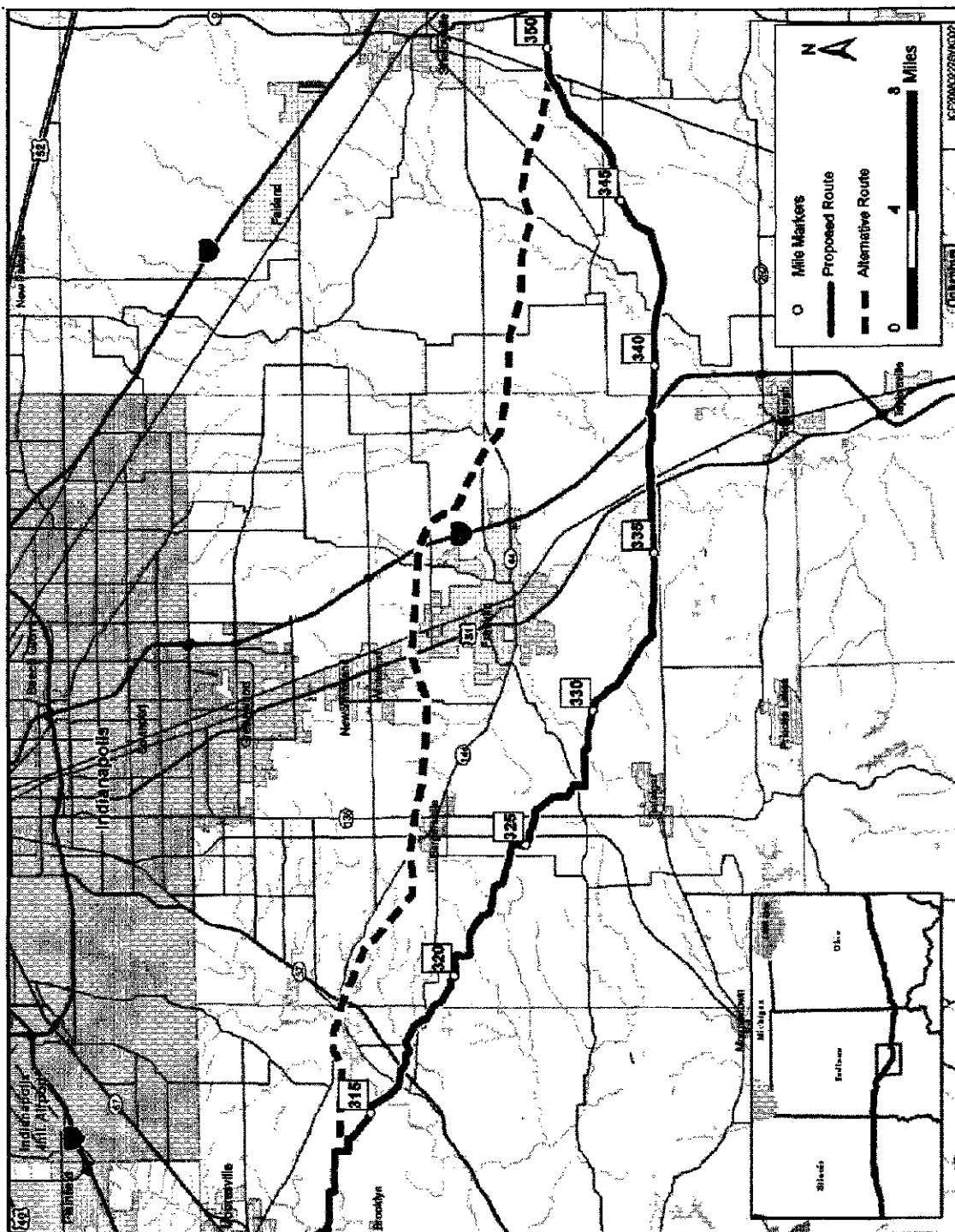


Figure 3.4.5-1
Johnson County North Alternative

Table 3.4.5-1 Comparison of the Project Route to the Corresponding Segment of the Johnson County North Alternative (MP 307.4 to MP 348.9)				
Environmental Factor	Unit	Project Route	Johnson County North Alternative	Source
Total Length	miles	35.1	31.5	Digital Route
Adjacent to Existing Pipeline Right-of-Way (percent)	miles	3.0 (8.5)	0 (0)	Field Review
Wetlands Crossed	miles	0.61	0.60	FWS, 2007f
Waterbody Crossings	no.	14	15	ESRI (2005a;c)
Agricultural Land Crossed	miles	32.8	29.5	USGS, 2001
Forest Land Crossed	miles	1.9	1.6	USGS, 2001
Existing Structures Within 100 Feet of Centerline	no.	8	10	Rockies Express, Google Earth 2007
Planned Residential or Commercial Developments	miles	0	4	Rockies Express, 2007

3.4.6 Little Miami River Alternative

The REX East Project would cross the Little Miami River at MP 451.3 in Warren County, Ohio. Rockies Express proposes to use HDD at the crossing. The river is a designated Wild and Scenic River pursuant to Section 2(a)(ii) of the Wild and Scenic River Act. The State of Ohio is responsible for the day-to-day management of the river and the NPS is the Federal river-administering Agency. The river is also listed in the Ohio State Scenic Rivers Program as an Outstanding State Water. The OEPA also has designated the river as an exceptional warmwater fisheries habitat. The river extends south approximately 100 miles from Clark County, Ohio to the Ohio River. At the REX East crossing, the Little Miami is designated recreational, and recognized for the following outstandingly remarkable values (ORVs): Aquatic and Terrestrial Floral and Fauna, Historic and Archaeological, Geologic, Scenic, and Recreational attributes.

We asked Rockies Express to evaluate a route alternative that would avoid or minimize crossing the designated portion of the river. One alternative that was identified would be routed to the north to avoid all designated segments, but would cross the densely populated suburbs of Dayton, Ohio and therefore was not considered further. An alternative to the south to avoid all designated segments was also not evaluated in detail because the designation extends to the confluence with the Ohio River in Cincinnati. This southern route would also cross densely populated areas and add significant length to the project. An alternative was identified that would cross the Little Miami River at a different river segment that is also designated recreational. We evaluated this second alternative, called the Little Miami River Route Alternative, in more detail.

Figure 3.4.6-1 shows the Little Miami River Route Alternative in relation to the Project route. The alternative would deviate from the Rockies Express' Project route at MP 432.9, follow a transmission line to the southeast and south for about 15.2 miles, and cross the Little Miami River at a point where it parallels an existing transmission line crossing. The alternative route would then continue to the east and northeast following the transmission line for nearly 8 miles. The alternative would join Penn Central Railroad, continuing two miles where it would meet State Route 22. The alternative would then continue across open farm lands for 9 miles. At that point, it would run adjacent to Interstate 71 for 7 miles. Near Interchange 50, the route alternative would turn north and rejoin the REX East Project route at MP 467.2.

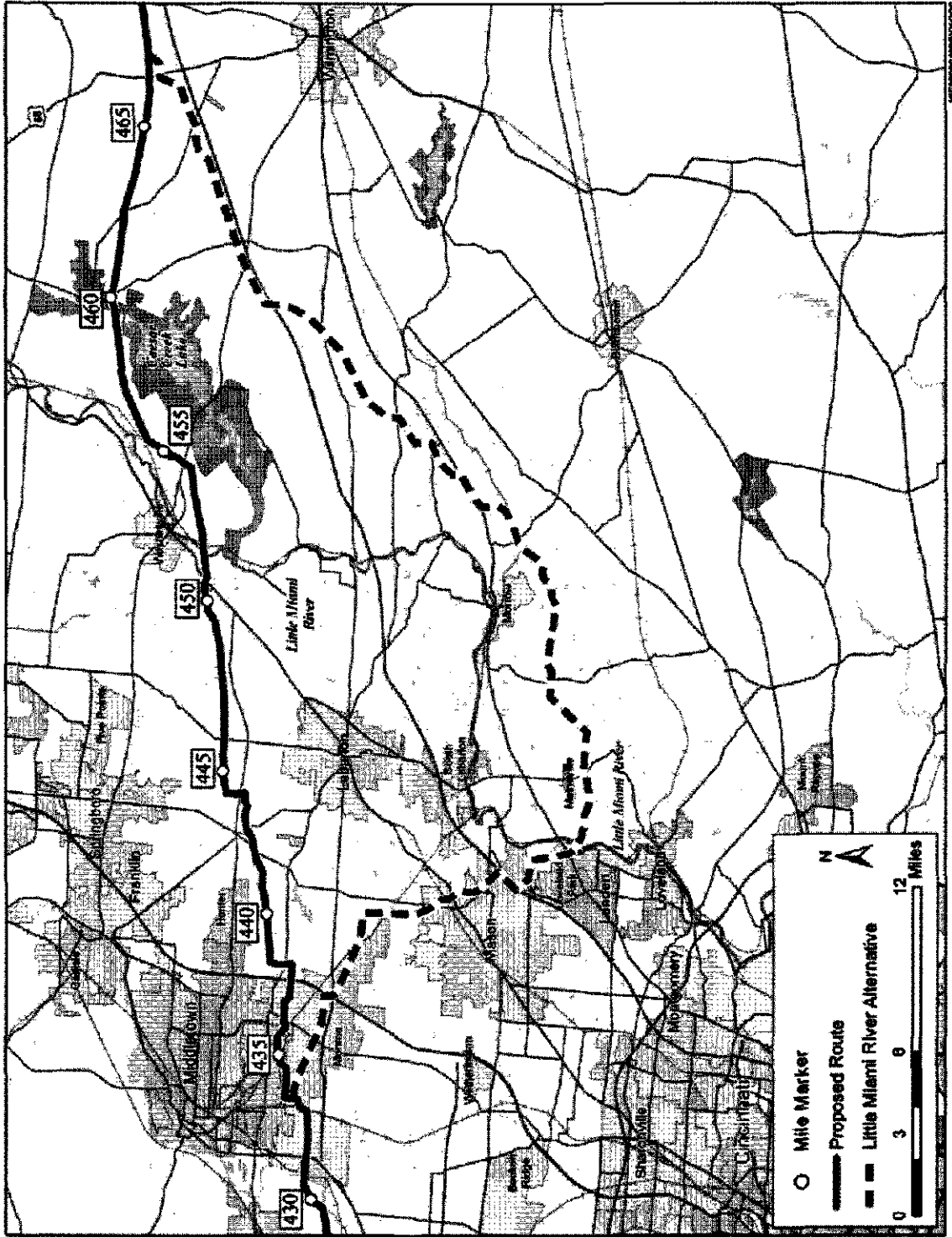


Figure 3.4.6-1
Little Miami River Route Alternative

Table 3.4.6-1 provides an environmental comparison of the Project route and the Little Miami River Alternative. As shown, the alternative is 12.3 miles longer than the Project route and would follow existing corridors for 68.5 percent of its length, compared to 92.7 percent for the Project route. Compared to the Project route, the route alternative would cross 10 more waterbodies, 5.5 more miles of cultivated land, 3.7 more miles of forest, and 0.8 more mile of commercial land. The Project route and route alternative would cross a roughly equivalent length of wetlands. The two routes are also distinguished in terms of their proximity to existing residences. There are substantially more residences within 50 feet of the construction work area for the route alternative (see table 3.4.6-1).

Table 3.4.6-1 Comparison of the Little Miami River Route Alternative to the Corresponding Segment of the Project Route (MP 432.9 to MP 467.2)				
Environmental Factor	Unit	Project Route	Little Miami River Route Alternative	Source
Total Length	miles	34.3	46.6	Digital Route
Length Adjacent to Existing Right-of-Way (percent)	miles	31.8 (92.7)	31.9 (68.5)	Digital Route
Wetlands Crossed	miles	0.15	0.17	FWS, 2007f
Waterbody Crossings	no.	21	31	ESRI, 2005a;c
Cultivated Lands Crossed	miles	30.0	35.5	USGS, 2001
Forest Land Crossed	miles	3.9	7.6	USGS, 2001
Commercial Land Crossed	miles	0.1	0.9	USGS, 2001
Residences Within 50 Feet of Construction Work Area	no.	6	77	Rockies Express
Federal Land Crossed (Caesar Creek State Park)	mile	0.3	0.0	ESRI, 2005b

Based on the comparison above, the REX East Project route would result in fewer environmental impacts. The Project route minimizes the total land area affected by the project and maximizes the use of existing rights-of-way.

At the proposed crossing, Rockies Express plans to use HDD to cross the Little Miami River, which would preserve the water quality and integrity of the riverbanks. In addition, Rockies Express would not clear any large trees between the entrance and exit point of the drilling, which would protect the scenic properties of the river. A geotechnical study of the crossing found soil and bedrock materials suitable for successful HDD installation. Because of the impacts other types of construction methods would have on the protected resources, any open cut construction method across the Little Miami River would not be acceptable as part of a contingency plan in case of an HDD failure. Rockies Express has committed to using microtunneling in case of an HDD failure. Microtunneling, described in section 2, is another trenchless method which would avoid surface impacts. We recommended in section 4.3.4 that Rockies Express develop a contingency plan utilizing the alternative route and crossing location evaluated here, in case both the HDD and microtunneling fail. We further recommend that Rockies Express not construct in the Project segment between MP 432.9 to MP 467.2 until the HDD has been successfully installed.

3.4.7 Mowrey Alternative

Dean and Nancy Mowrey submitted comments asking us to evaluate a route alternative in Warren and Clinton Counties, Ohio that would reroute the pipeline south of Caesar Creek Lake to follow the

existing Dominion Transmission, Inc. pipeline corridor. The Mowreys have expressed various concerns about the environmental impacts of a new pipeline right-of-way through their community. They point out that the Project route would affect forests, waterbodies, wetlands, endangered species habitat, and historically significant property.

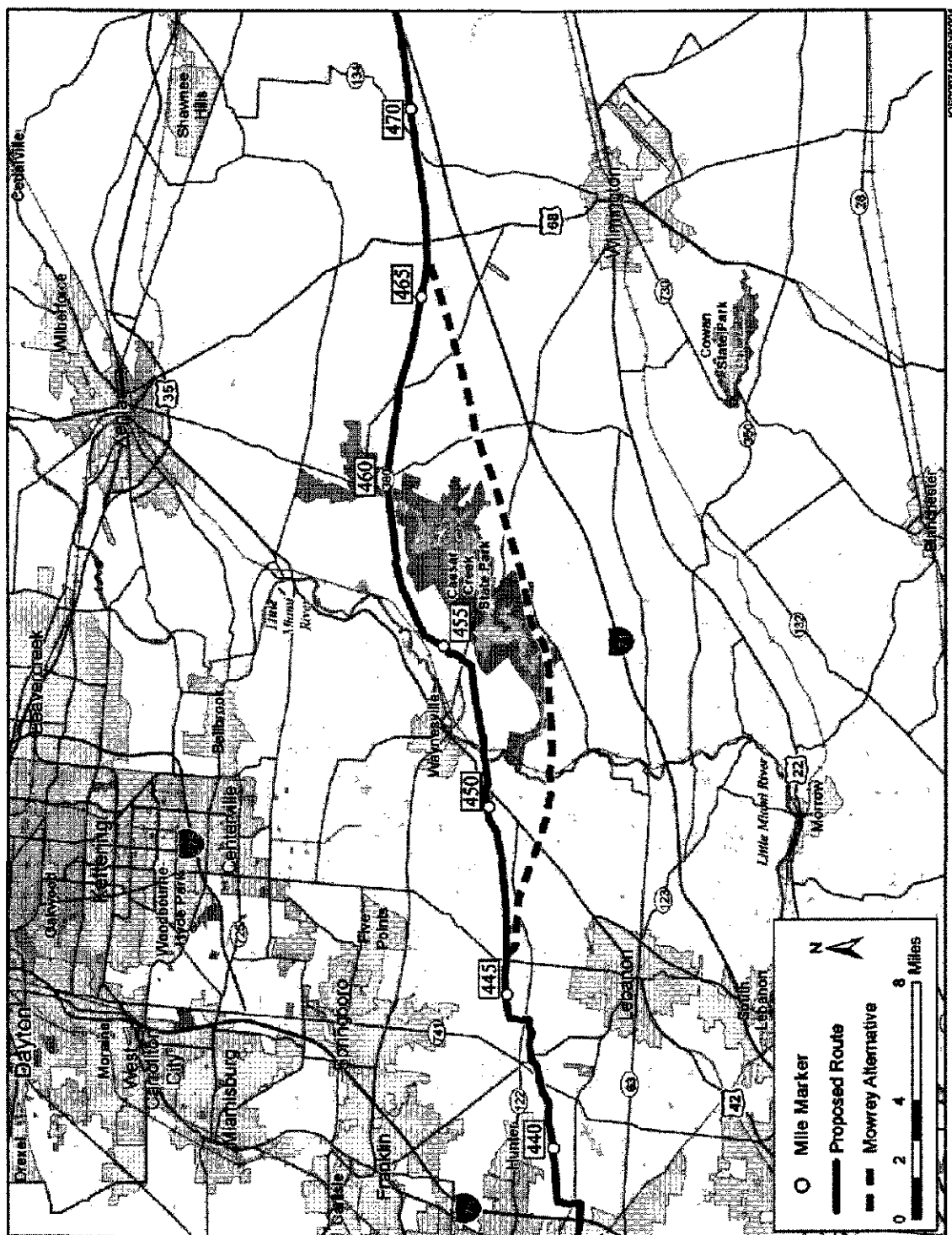
The 19.6-mile route alternative identified by the Mowreys would deviate from the Project route at MP 446.0 and follow the existing pipeline right-of-way southeast from the Project route. It would follow this existing pipeline right-of-way for nearly the entire length of the alternative. As shown in figure 3.4.7-1, from MP 446.0 the route alternative would run to the southeast for approximately 2.5 miles before crossing U.S. Route 42. It would continue to the southeast through a large forested area for approximately 1.5 miles and then turn to the east to cross the Little Miami River between North Waynesville Road and Corwin Road. The alternative would continue following the existing right-of-way east for approximately 3.0 miles before crossing into Caesar Creek State Park just south of Caesar Creek Lake. It would then turn to the northeast through Caesar Creek State Park for 2.6 miles. After departing the park, the route alternative would continue to the northeast across State Route 73 through forested and agricultural areas for approximately 6.0 miles before rejoining the Project route near MP 466.2.

Table 3.4.7-1 provides a comparison of the environmental impacts of the Project route and the Mowrey Route Alternative. The Mowrey Route Alternative would be 0.6 mile shorter, would affect two fewer wetlands would come within 50 feet of 8 fewer residences and would follow an existing right-of-way for 98 percent of its length. It would also cross five additional waterbodies, 2.8 additional miles of forested land, and 2.3 additional miles within Caesar Creek State Park.

Along the Project route, Rockies Express would cross the Little Miami River by HDD from one agricultural field to another. This would eliminate the need to clear trees and would preserve the scenic quality of this designated Wild and Scenic River. The crossing at the Mowrey Route Alternative has extensive riparian forest on either side of the river. On the west side of the river, Rockies Express would have to clear forest to set up the HDD.

The environmental analysis of the alternatives shows a trade-off of environmental impacts. While the Mowrey Route Alternative would cross more waterbodies and forested land, as well as more land within Caesar Creek State Park, it would come within 50 feet of fewer residences and would be collocated with an existing right-of-way and affect previously disturbed areas. The Mowrey Route Alternative crossing of the Little Miami River may also clear forest along the west side of this Wild and Scenic River. Further revision of the Mowrey Route Alternative, however, may reduce these impacts. For example, an agricultural field suitable for an HDD site on the west bank of the Little Miami River is located approximately 500 feet south of the existing right-of-way followed by the Mowrey Route Alternative. In addition, the existing right-of-way crosses an agricultural field approximately 1,600 feet from the east bank of the river. An HDD site could be located in this field without the need to clear any forest. If the HDD crossing was extended into this agricultural field, forest land cleared would be reduced by approximately 0.9 acre, assuming a standard HDD workspace size.

The environmental consequences of the Mowrey Route Alternative and the Project route each have their trade-offs, but are overall comparable. Consequently, we do not have a compelling environmental reason to recommend the incorporation of this route alternative into the REX East Project.



<p align="center">Table 3.4.7-1 Comparison of the Mowrey Route Alternative to the Corresponding Segment of the Project Route (MP 446.0 to MP 466.2)</p>				
Environmental Factor	Unit	Project Route	Mowrey Route Alternative	Source
Total Length	miles	20.2	19.6	Digital Route
Length Adjacent to Existing Right-of-Way (percent)	miles	5.6 (27.7)	19.3 (98.4)	Digital Route
Wetlands Crossed	miles	<0.1	<0.1	FWS, 2007f
Waterbody Crossings	no.	12	17	ESRI, 2005a,c
Cultivated Land Crossed	miles	15.6	12.1	USGS, 2001
Forest Land Crossed	miles	3.5	6.3	USGS, 2001
Residential Land Crossed	miles	0.0	<0.1	USGS, 2001
Commercial Land Crossed	miles	0.0	0.0	USGS, 2001
Residences Within 50 Feet of Construction Work Area <u>a/</u>	no.	13	5	Alignment Sheets and Aerial Photography
Federal Parkland Crossed (Caesar Creek State Park)	miles	0.3	2.6	Aerial Photography

3.4.8 Deer Creek Lake State Park Alternative

The Project route would cross Deer Creek Lake State Park in Pickaway County, Ohio between MP 499.9 and MP 500.8. The Huntington District of COE manages the park. In correspondence with Rockies Express, COE requested that Rockies Express consider an alternative route that would follow the existing TETCO easement across the park. In their comments on the draft EIS, the COE asked that we also consider a "No Action" alternative that would avoid the Deer Creek Lake State Park. The Big Darby Creek Alternative, discussed in section 3.4.9, would avoid the State Park.

As shown in figure 3.4.8-1, the 5.2 mile route alternative, called the Deer Creek Lake State Park Route Alternative, would deviate from the Project route at MP 496.9 and rejoin the Project route at MP 502.6. From MP 496.9, the Deer Creek State Park Route Alternative would cross agricultural land for approximately 1.7 miles before intersecting the state park. Inside the park, the route alternative would cross 1.1 miles of forested land, 0.2 mile of open water in Deer Creek Lake, and an existing campground. The alternative route would exit the park and continue east-northeast across Deer Creek Road and Yankeetown Pike for approximately 1.2 miles before rejoining the Project route near MP 502.6.

Table 3.4.8-1 compares the route alternatives using available electronic. Data presented in this table for the Project route may not match other survey-based data presented in this EIS such as in appendix G in order to allow for a direct comparison. Based on this comparison, the environmental impacts of the route alternative and the Project route would be very similar. The route alternative would require crossing one additional waterbody, 0.2 mile of open water on Deer Creek Lake, and 0.5 mile of additional forested land. The alternative route is slightly shorter, impacts less cultivated land, and avoids creating a new right-of-way through Deer Creek Lake State Park by collocating with the existing TETCO pipeline corridor. However, the alternative route runs through the middle of the park and would interrupt operation of the park during construction. Expanding the existing right-of-way would require relocating or removing several camp sites, would be within 50 feet of Clark Run Lake, and within 150 feet of a

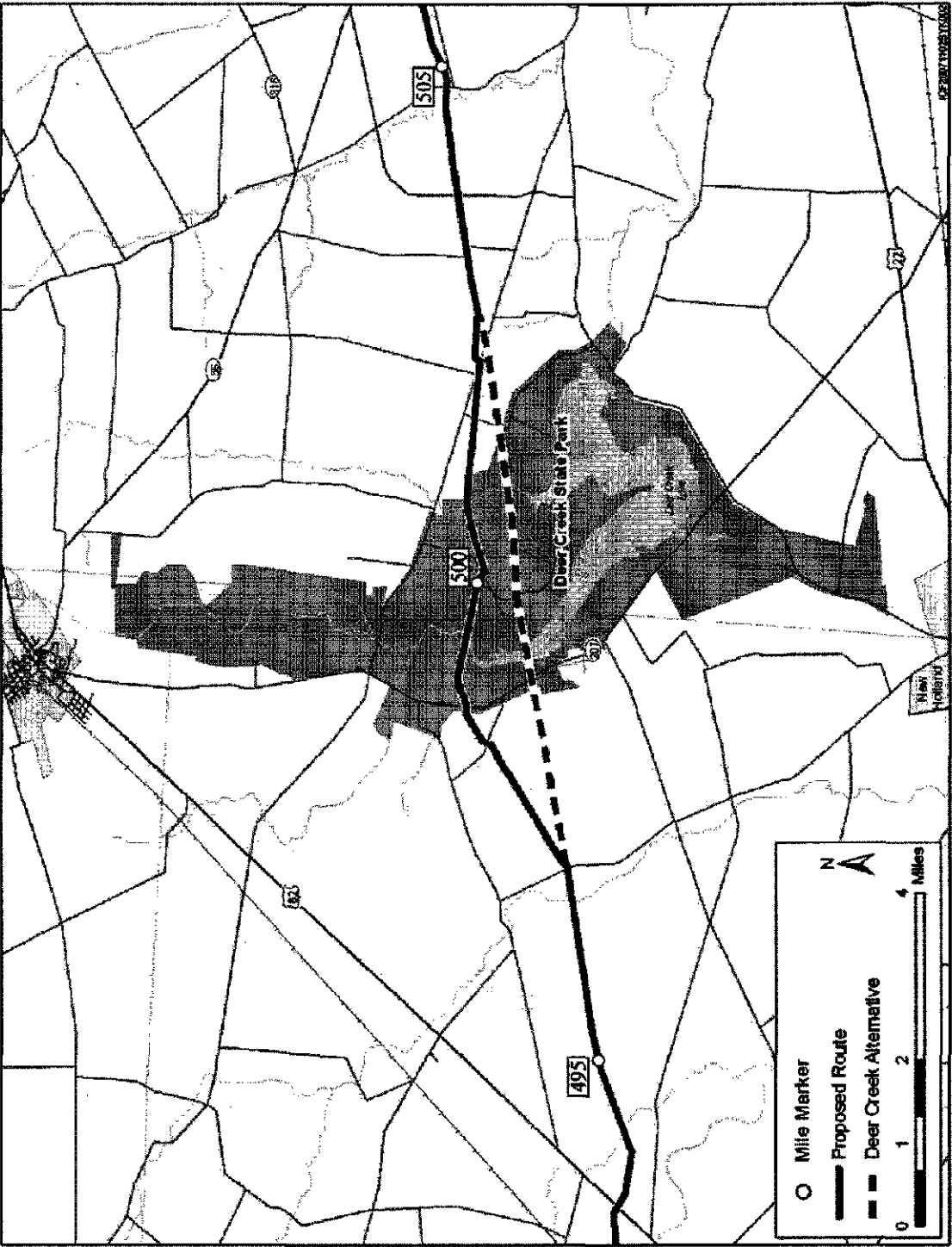


Figure 3.4.8-1
Deer Creek Lake State Park Route Alternative

Table 3.4.8-1
Comparison of the Deer Creek Lake State Park Route Alternative to the
Corresponding Segment of the Project Route
(MP 496.9 to MP 502.6)

Environmental Factor <u>b/</u>	Unit	Project Route	Deer Creek Lake State Park Route Alternative	Source
Total Length	miles	5.5	5.2	Digital Route
Length Adjacent to Existing Right-of-Way (percent)	miles	0.0 (0)	5.2 (100)	Digital Route
Wetlands Crossed	miles	<0.1	0.1	FWS, 2007f
Waterbody Crossings	no.	5	6	ERSI, 2005a;c
Cultivated Land Crossed	miles	4.3	3.1	USGS, 2001
Forest Land Crossed	miles	1.2	1.7 <u>a/</u>	USGS, 2001
Commercial Land Crossed	miles	0.0	0.0	USGS, 2001
Residences Within 50 Feet of Construction Work Area	no.	0	0	Alignment Sheets and Aerial Photography
Federal Parkland Crossed (Deer Creek Lake State Park)	miles	2.2	2.4	ESRI, 2005b
Recreational Areas Crossed	no.	0	2	Deer Creek State Park Map

a/ Impacts to forested habitat may be reduced through the use of an HDD at Deer Creek Lake.

b/ Impacts to cultural resources could not be compared because surveys were not conducted along the alternative route.

basketball and volleyball court. The alternative route would also cross several hiking and horse riding trails. The Project route crosses the northern portion of the Deer Creek Lake State Park near the park entrance. Visitors would notice construction activities on their way into the park, but construction would not affect facilities such as camp grounds and recreational facilities. The alternative route would require crossing Deer Creek Lake while the Project route would cross north of Deer Creek Lake, but would cross Deer Creek. Rockies Express would use an HDD to cross Deer Creek along the Project route to avoid impacts to riparian areas.

We have confirmed with Deer Creek Lake State Park officials and COE that they prefer the Project route to the alternative route. We agree that the Project route is preferable because it lessens the impacts to visitor use of the Park by avoiding facilities such as campgrounds and recreational areas.

3.4.9 Big Darby Creek Alternative

The REX East Project would cross Big Darby Creek at MP 507.6 in Pickaway County, Ohio. Rockies Express proposes to cross the creek using HDD. Big Darby Creek is approximately 86 miles long and crosses through Union, Madison, Franklin, and Pickaway Counties in Ohio. Big Darby Creek is a designated Wild and Scenic River pursuant to Section 2(a)(ii) of the Wild and Scenic Rivers Act. The State of Ohio is responsible for the day-to-day management of the river. The NPS is the Federal river-administering Agency. Big Darby Creek's free-flowing condition, water quality, and ORVs are protected by the Act. The creek's ORVs include its diverse fish and mussel communities.

To avoid impacts to Big Darby Creek, we evaluated the shortest route alternative that would eliminate the need to cross the Creek. That alternative, shown in figure 3.4.9-1, would run south of the Project route and cross the Scioto River south of its confluence with Big Darby Creek. The alternative would start by heading east and then southeast from MP 494.1 of the REX East Project route paralleling Bloomingburg New Holland Road for 4.4 miles. It would then run north of the town of New Holland where it would join and run adjacent to the Penn Central right-of-way for 14.5 miles, except for small deviations to avoid the town of Atlanta and the hamlets of Woodlyn and Kinderhook. The route alternative would cross the Scioto River, continue east through agricultural areas and sparse residential development south of Circleville, Ohio, and then turn northeast. Near Stoutsville, Ohio, the alternative would follow an abandoned railroad for 4.6 miles. West of the town of Amanda, it would run adjacent to State Route 22 for 2.6 miles. The alternative would then leave the road and head to the northeast for 6.3 miles, where it would rejoin the Project route at MP 533.9.

Table 3.4.9-1 provides an environmental comparison of the Big Darby Creek Route Alternative and the Project route. The Project route would be 5.8 miles shorter than the alternative. The additional length of the alternative crosses cultivated and commercial land. The alternative maximizes length along existing rights-of-way and crosses one less waterbody. It also avoids 0.1 mile of forested land crossed and almost 0.1 mile of residential land crossed. The alternative would also avoid crossing Deer Creek State Park, which is managed by the Huntington District COE. We believe that the primary impacts to Deer Creek State Park would mainly result in temporary disturbance to park visitors during construction and long term impacts to forested areas. These impacts would be mitigated as described in section 4.

Although the route alternative is longer, it would avoid Big Darby Creek and Deer Creek State Park. However, Rockies Express proposes to cross Big Darby Creek by HDD. A successful HDD would not disturb the banks, vegetation, or water quality of the creek, and would protect the scenic values of the river. A geotechnical study for the HDD stated that the soils and rock in the area are generally considered suitable for an HDD. However, the study points out that cobbles and boulder size materials may be encountered within a layer of unconsolidated materials found above the limestone bedrock. The boulder/cobble zone may be problematic during drilling operations. Rockies Express has committed to using microtunneling, a trenchless crossing method, if the HDD is unsuccessful. Other alternative construction methods would cause permanent impacts to the scenic resources of Big Darby Creek and would not be acceptable as a contingency plan.

Based on the analysis presented above, we conclude the REX East Project route is environmentally preferable provided that an HDD crossing of Big Darby Creek is successful. Because the avoidance of Deer Creek State Park would result in increased length and associated impacts, we do not believe the No-Action Alternative for Deer Creek State Park is environmentally preferable for the REX East Project. Open-cut crossing methods, if used, could cause permanent impacts that would degrade Big Darby Creek's ORVs. Therefore, we recommend in section 4.3.4 that Rockies Express use the alternative route and crossing location analyzed here if a successful HDD or microtunnel can not be completed. We further recommend that Rockies Express not construct in the Project segment between MP 494.1 to MP 533.9 until the HDD has been successfully installed.

3.4.10 Barnesville Reservoir Alternative

The REX East Project's route filed in the application involved a 515-foot crossing of the Barnesville Reservoir in Belmont County, Ohio. The Village of Barnesville, U.S. Senator George Voinovich, U.S. Congressman Charles Wilson, and various citizens expressed concern over the possible contamination and damage that pipeline construction or rupture could cause to the water supply. Rockies Express adopted a route to avoid Barnesville Reservoir and cross Slope Creek, a tributary, 0.7 mile south

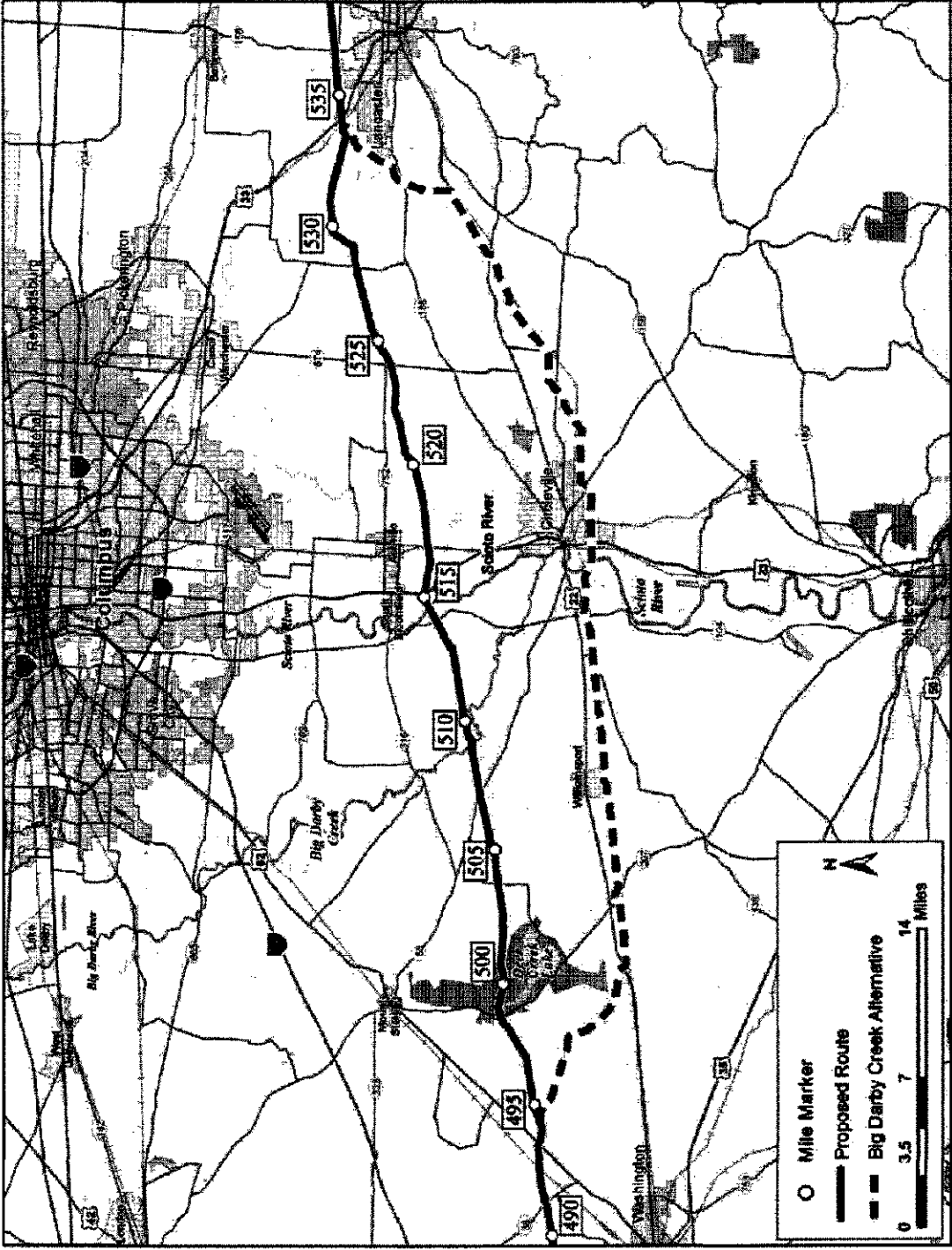


Figure 3.4.9-1
Big Darby Creek Route Alternative

<p align="center">Table 3.4.9-1 Comparison of the Big Darby Creek Route Alternative to the Corresponding Segment of the Project Route (MP 494.1 to MP 533.9)</p>				
Environmental Factor	Unit	Project Route	Big Darby Creek Route Alternative	Source
Total Length	miles	40.1	45.9	Digital Route
Length Adjacent to Existing Right-of-Way (percent)	miles	17.7 (44.1)	25.0 (54.0)	Digital Route
Wetlands Crossed	miles	0.2 <u>a/</u>	<0.1 <u>a/</u>	FWS, 2007f; USGS, 2001
Waterbody Crossings	no.	32	31	ESRI, 2005a,c
Cultivated Lands Crossed	miles	37.1	42.2	USGS, 2001
Forest Land Crossed	miles	2.5	2.4	USGS, 2001
Commercial Land Crossed	miles	<0.1	0.2	USGS, 2001
Residences Within 50 Feet of Construction Work Area	no.	5	5	Rockies Express
Federal Parkland Crossed (Deer Creek Lake State Park)	miles	2.2	0.0	ESRI, 2005b
<p><u>a/</u> NWI maps were not digitally available for 25.5 miles of the Project route and 36.6 miles of the Big Darby Creek Route Alternative. Instead, National Landcover data were used to estimate wetland impacts where NWI maps were not available.</p>				

(downstream) of the Reservoir. This is considered part of the Project route, as presented and analyzed throughout section 4. The original route is referred to as the Barnesville Reservoir Alternative in this discussion.

Figure 3.4.10-1 shows the Barnesville Reservoir Alternative in relation to the Project route. The Barnesville Reservoir Alternative would leave the Project route at MP 619.8 and proceed in a generally easterly direction across a mixture of agricultural and forested lands, and (at MP 622.0) the Barnesville Reservoir itself, before rejoining the Project route at MP 625.4.

Table 3.4.10-1 provides an environmental comparison of the Barnesville Reservoir Alternative and the Project route. As shown, the Project route is 0.4 mile longer than the Barnesville Reservoir Alternative and would not follow any existing corridors, whereas the Barnesville Reservoir Alternative would parallel an existing right-of-way for 80 percent of its length. However, compared to the Barnesville Reservoir Alternative, the Project route would cross two fewer wetlands, 18 fewer waterbodies, but 0.1 mile more cultivated land and 0.3 mile more forested land.

Based on the analysis above, which indicates that the Project route is environmentally preferable, and concerns over possible water supply contamination with the Barnesville Reservoir Alternative, we have assessed the impacts of the Project route in the final EIS. However, since a lack of field surveys prevents a meaningful comparison of impacts on threatened and endangered species, we have included a recommendation in section 4.7.1 that Rockies Express complete threatened and endangered species surveys prior to construction.

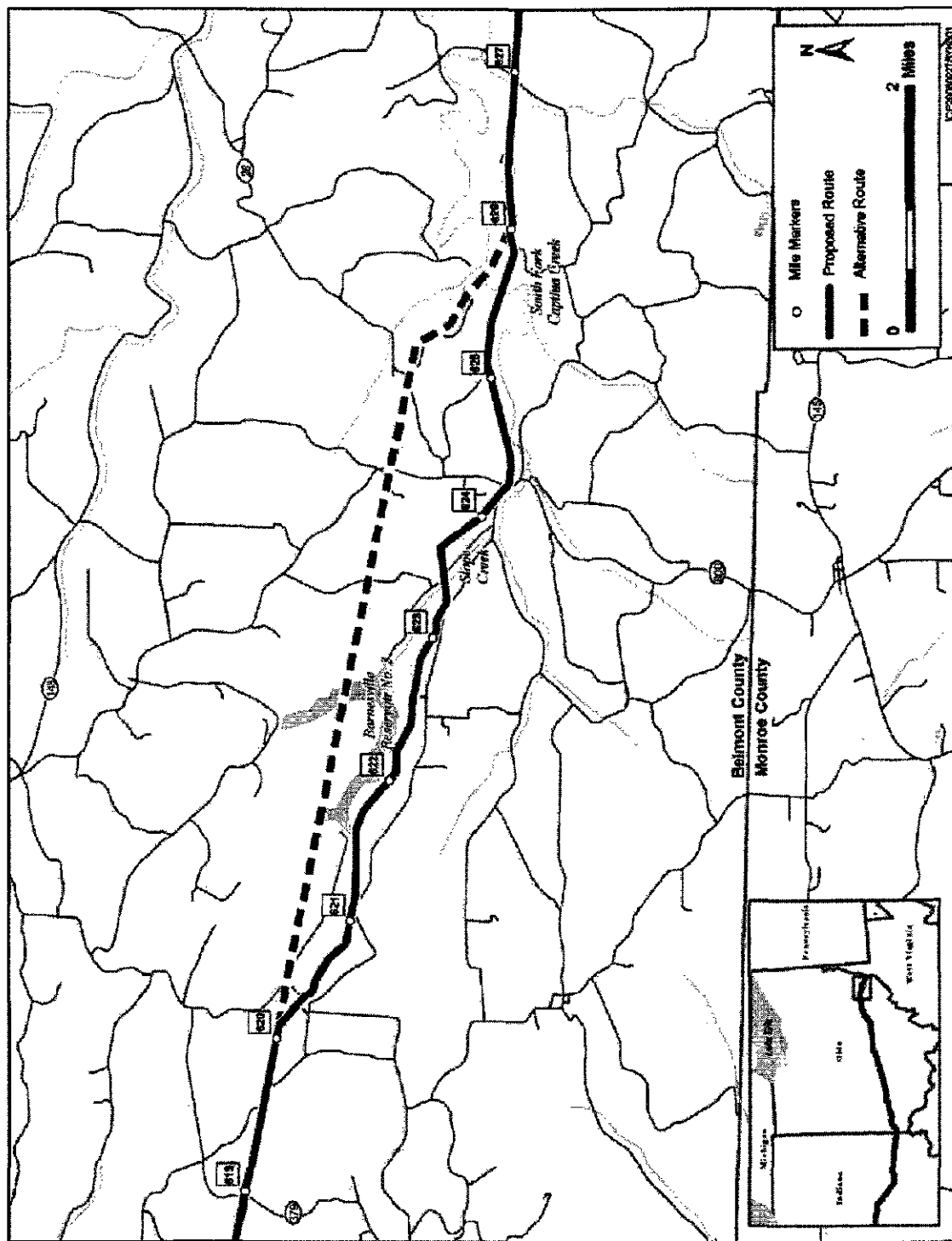


Figure 3.4.10-1
Barnesville Reservoir Alternative

Table 3.4.10-1 Comparison of the Project Route to the Corresponding Segment of the Barnesville Reservoir Alternative (MP 619.8 to MP 625.4)				
Environmental Factor	Unit	Project Route	Barnesville Reservoir Alternative	Source
Total Length	miles	6.0	5.6	Digital Route
Length Adjacent to Existing Right-of-Way (percent)	miles	0.0 (0)	4.5 (80)	Digital Route, Alignment Sheets, USGS
Wetlands Crossed	miles	0	2	Field delineations, National Wetland Inventory Data
Waterbody Crossings	no.	3	21	ESRI 2005c, Alignment Sheets, USGS
Cultivated Lands Crossed	miles	3.8	3.7	Alignment Sheets, USGS LULC Data
Forest Land Crossed	miles	2.2	1.9	Alignment Sheets, USGS LULC Data
Commercial Land Crossed	miles	0.0	0.0	Alignment Sheets, USGS LULC Data
Residences Within 50 Feet of Construction Work Area	no.	0	0	Rockies Express

3.5 ROUTE VARIATIONS

Route variations are short deviations less than 5 miles long from the Project route that would potentially avoid or reduce Project impacts on specific localized resources, such as individual residences or site-specific environmental conditions. Since Rockies Express filed its application on April 30, 2007, three categories of potential route variations have been considered during our review of the Project:

- (1) route variations that Rockies Express has already incorporated into the Project route evaluated in section 4 of this EIS;
- (2) route variations that have been requested by landowners, but a reasonable and feasible variation could not be identified for evaluation; and
- (3) route variations that have been requested by landowners where reasonable and feasible variations could be identified for evaluation.

After filing its application, Rockies Express filed five supplements making a total of 145 minor changes to the Project route alignment in response to comments from resource agencies and landowners, and in response to more detailed engineering studies. The route changes made prior to the draft EIS include 57 route variations in a supplement filed on July 9, 2007 and 78 route variations in a supplement filed on July 23, 2007. The 78 route variations addressed in the July 23 filing are summarized in appendix E, table E-2. After the draft EIS, Rockies Express developed 11 additional route variations. These included a route variation associated with a change in the Hamilton CS filed in a supplement on January 4, 2008, a route variation associated with a new construction method over the Sny Levee filed on January 14, 2008, and 9 additional route variations filed on January 14, 2008. The 9 route variations in the January 14 filing are summarized in appendix E, table E-3. These 145 variations were made to achieve better construction conditions, address site-specific constraints, or minimize impacts to a specific environmental feature or residence. All 145 of these variations have been incorporated into the Project route evaluated in this EIS and are generally not described individually beyond the information provided in table E-2 unless a landowner asked us to review it. These are addressed in the sections below.

In some cases, feasible route variations to avoid a resource of concern stated by a landowner are not necessary to protect the resource of concern. For example, we have observed on previous pipeline projects that impacts to endangered species habitat such as the Indiana bat, cultural resources, and field drainage tiles can be effectively mitigated. We address these landowner concerns by including recommendations that require Rockies Express to complete all necessary threatened and endangered species and cultural resource surveys and consultations, and to evaluate appropriate route variations or other measures to avoid impacts to those species or features, prior to construction (see sections 4.7 and 4.10). We include another recommendation for pipeline construction in the event karst terrain is discovered (see section 4.1.3). We do not believe additional alternatives analyses or recommendations are needed to address landowner concerns about field drainage tiles, because we conclude that Rockies Express' AIMP would be adequate to protect, conserve, and restore agricultural lands that may be affected by construction and operation of the Project pipeline (see section 4.8.2 and appendix I).

In other cases, a feasible route variation could not be identified that would avoid or minimize impacts to the resource of concern. Table 3.5-1 summarizes comments received for which no feasible variation could be identified. The resource issues raised in these comments are addressed in section 4 by conditions and mitigation measures that will minimize or protect the resource of concern.

Table 3.5-1 Summary of the FERC Review of Landowner Comments for Which No Feasible or Environmentally Preferable Route Variation Was Identified			
Landowner Last Name	Approximate Milepost	Summary of Comments	Summary of the FERC Review
Maguire	66	The pipeline location has maximized the potential impact on her home and surrounding land. Ms. Maguire is generally opposed to the pipeline going through her property.	The Project route closely parallels an existing pipeline right-of-way across the Maguire property. Moving the Project route away from this existing right-of-way would result in additional environmental impacts. Further, Rockies Express has agreed to reduce the construction area at this location to address the landowner's concerns.
Oster	78	The Oster property is a small family farm in Scott Co, IL. Ms. Oster is generally opposed to the pipeline going through her property.	The Project route closely parallels an existing pipeline right-of-way across the Oster property. Moving the Project route away from this existing right-of-way would result in additional environmental impacts.
Burtie	116	Mr. Burtie cites concerns about drainage tiles and pipeline depth of cover. There are two existing pipeline rights-of-way on his property and he states that a third pipeline would shut down his farming operations.	The Project route would be located on the north side of the existing pipeline right-of-way through Mr. Burtie's property. Construction of the pipeline would result only in temporary impacts to his farming operations and a reroute would not result in any environmental advantages to the Project route.
Bearden	164	Mr. Bearden did not identify any specific environmental concerns in his comment; however, he notes that his property has had 159 years of continuous farming on 80 acres.	Because no specific environmental concerns were identified in the comment and the Project route would cross agricultural lands which would only be temporarily impacted, no reroute was considered.
Parks	243	Mr. Parks is concerned about impacts to topsoil, crop production, and drainage tiles from the pipeline crossing his farm.	The mitigation measures to address Mr. Parks' concerns are discussed in section 4.8.2. Since these measures would ensure restoration of agricultural productivity, we did not consider a route variation.

Table 3.5-1 (continued)

Summary of the FERC Review of Landowner Comments for Which No Feasible or Environmentally Preferable Route Variation Was Identified

Landowner Last Name	Approximate Milepost	Summary of Comments	Summary of the FERC Review
Anderson	305	The Andersons expressed concerns that the Project route would disrupt a possible historical gravesite. They also cited flooding, erosion, and siltation impacts associated with the proposed crossing of McCracken Creek.	Rockies Express has been unable to verify that the gravestone is <i>in situ</i> . Additional fieldwork and consultation with the IN SHPO is being conducted. See section 4.10 for our mitigation measures related to cultural resources.
Jacobs	312	Ms. Jacobs objects to the Project route cutting across her property. She cites soil disruption, drainage issues, a natural spring, wildlife, and future development as potential issues, and suggests rerouting the pipeline along Pennington Rd.	Moving the pipeline route so that it would parallel Pennington road would impact other property owners. The mitigation measures described in 4.8.2 would address soil disruption and drainage issues. As the pipeline crosses through predominantly agricultural land, there would not be any environmental advantage to rerouting the pipeline. The spring could not be located on available maps. Section 4.3.1 recommends Rockies Express identify all springs within 150 feet and describes the mitigation measures that would protect springs or seeps.
Marley	321	Mr. Marley is generally opposed to the pipeline on his property and cites concerns about impacts on the property's abundant wildlife and other environmental features such as tree stands, creeks, and cliffs.	The pipeline is routed through the southern portion of the Marley property. The pipeline, as currently routed, minimizes the potential impacts, though it does pass through a small stand of trees.
Ballard	331	The Ballards object to the pipeline crossing through Indiana Classified Forest on their property.	We could not identify a route variation that would reduce forested impacts. We have made a recommendation in section 4.4 to reduce the right-of-way width to 75 feet.
Shobe	362	The Shobes state that 25 acres of their land are enrolled in a government Conservation Reserve Program (CRP).	The Project route crosses agricultural and forested areas on the Shobe's property. Impacts to CRP and active agricultural land would be mitigated as described in sections 4.4 and 4.8.2. A minor pipeline route variation would not avoid these forested areas on or near this property; therefore a reroute was not considered.
Hudnall	377	The Hudnalls object to the pipeline through their property and cite numerous environmental resources (e.g., water supply, archeological sites, etc.) that would be impacted by the pipeline.	The portion of Indiana where the Hudnall's property is located is dominated by hilly topography and intermittent areas of forest and agriculture. The current route through their property would only pass through a small portion of forested area and wouldn't adversely impact the water supply. A reroute to avoid these resources on the Hudnall's property wouldn't result in any environmental benefits.
Davis	388	The Davises expressed concerns about the Project's impacts on aesthetics, future development, and forested areas on their property.	Due to houses and other development, the route can not be shifted north. A shift to the south would increase forest impacts.

Table 3.5-1 (continued)

Summary of the FERC Review of Landowner Comments for Which No Feasible or Environmentally Preferable Route Variation Was Identified

Landowner Last Name	Approximate Milepost	Summary of Comments	Summary of the FERC Review
Isaacs	389	The Isaacs expressed concern that the pipeline route would be located within 50 feet of their residence and suggested a possible reroute to the south of their property along with 3 other route variations.	Rockies Express adopted the landowner's suggestion to shift the route south so that the house is not within 50 feet and the driveway is not affected. We considered but did not evaluate the other variations proposed by the Isaacs because they would affect more forested land and be closer to nearby residences.
Orschell	394	Mr. Orschell cites impacts to features such as wetlands, water wells, wildlife, historical cemeteries, Indian artifacts, and Princeton windblown sand areas. He recommends a pipeline reroute to collocate the pipeline with the existing TETCO pipeline corridor near Indianapolis.	The proposed pipeline route cuts across an agricultural field and does not appear to directly impact the resources identified in the comment. Consequently, a route variation was not evaluated. The Indy North 2 Route Alternative discussed in section 3.4.4 follows the TETCO pipeline corridor.
Beckman and Benoit	408	At the public comment meeting on the draft EIS in Trenton, OH, Mr. Benoit expressed concerns related to safety and property damage. He proposed an alternative route that would cross the undeveloped property for sale and parallel the existing TETCO right-of-way.	The landowner's concerns could not be substantiated. We confirmed that the Project route follows the TETCO right-of-way in this area.
Knau	419	William and Mary Lou Knau expressed concern about the creation of a new pipeline easement on their property and requested that the pipeline easement stay within the nearby existing Duke Energy easement.	The Duke Energy easement is bordered on the south by a stream which would prevent a reroute. Along Gardner Road, which runs perpendicular to the Project route, numerous houses are found close together that would prevent the pipeline from being rerouted to the north or south away from the Duke Energy easement. Rockies Express has agreed to increase the bore length for crossing Gardiner Road to avoid damage to large trees. They would also use the Duke Energy power line corridor for temporary workspace and reduce the permanent easement to 35 feet.
Sanders Financial Property	419	Mr. Sanders owns 90 acres of land. He is concerned that the pipeline going through his property will limit his ability to build on residential lots.	The pipeline crosses the Sanders property along the southern edge of a forested area. Although no construction is allowed along the 50-foot permanent easement, a considerable amount of land remains for construction on residential plots.
Stegemiller	441	Mr. Stegemiller is generally opposed to the current pipeline alignment in a field south of his house. He would prefer collocation with an existing right-of-way north of his property boundary.	The Project route deviates from paralleling the existing TETO right-of-way in this area due to the proximity of residences. Following the easement would affect new landowners and increase impacts to residential property.

Table 3.5-1 (continued)

Summary of the FERC Review of Landowner Comments for Which No Feasible or Environmentally Preferable Route Variation Was Identified

Landowner Last Name	Approximate Milepost	Summary of Comments	Summary of the FERC Review
Thorman	447	Mr. Thorman is a developer and expressed concerns about proximity of the pipeline to a proposed housing development.	Mr. Thorman's property is divided into northern and southern parcels by two existing pipeline rights-of-way. The Project route would be collocated with one of these pipeline routes and therefore would minimize additional impacts.
Vonderhaar	447	The Vonderhaars are concerned about future development and desirability of their lot.	The Project route cannot be adjusted to the north or south due to existing residential development. Consequently, a preferable route variation could not be identified.
Burton	450	Mr. Burton asked for the Project to be routed to follow the existing right-of-way south of his property.	The Project route deviates from the existing right-of-way due to encroachment of buildings on either side of the right-of-way where it crosses Highway 42 south of this property and to set up an appropriate location for the HDD of the Little Miami River. We believe that the impacts to his property would be mitigated by the measures described in section 4.8.2.
Stout	451	The Stouts note that their property is highly desirable as a future scenic residential property. The Project route will diminish the value of the land; therefore, Rockies Express should utilize the existing TETCO pipeline easement or build along the south side of the easement.	The only possible route variation which could be considered was to extend the HDD crossing under the Little Miami River to beyond the Stout's property. However, this variation was deemed unfeasible due to hilly terrain on the property. The Mowrey Alternative would avoid this property. See section 3.4.7 for the evaluation of the Mowrey Alternative.
Hartman	456	Mr. Hartman states the Project would affect numerous drainage tiles, his water, and electric lines, and would be close to his home. He would like the pipeline routed to the far side of the drainage near the bike trail.	The route variation suggested by Mr. Hartman is not preferable because it would add additional length to the Project, since the reroute would go in the opposite direction (northwest) than the general trend of the Project in this area (northeast). Damage to drainage tiles, water and electric lines would be repaired per our recommended mitigation measures in sections 4.8.2 and 2.3.
Miller	495	Mr. Miller states his land is enrolled in farm protection programs and is concerned about impact to fields, wildlife habitat, and aquifers.	The AIMP should minimize impacts to fields and agricultural production. The Project route is located entirely on agricultural land. A route variation would not avoid the resources of concern. Additionally, the Project route is located along the property edge.
Billings	524	The Project route crosses the entire length of Mr. Billings' farm. He is concerned the Project may harm his horse breeding business and affect the future development of his land. He asks that the Project follow the existing pipeline easement north of his property.	Construction of the Project would temporarily affect Mr. Billings' farm and horses. We have made a recommendation in section 4.8.2 to specifically address the impacts to horse farms. We believe this and other mitigation measures for agricultural land address Mr. Billings' concerns.

Table 3.5-1 (continued)

Summary of the FERC Review of Landowner Comments for Which No Feasible or Environmentally Preferable Route Variation Was Identified

Landowner Last Name	Approximate Milepost	Summary of Comments	Summary of the FERC Review
Messery	542	The Messerlys are concerned about a historic barn and the future value of their property. In comments on the draft EIS, they submitted a map requesting that the pipeline cross to the south side of the existing TETCO pipelines near Darfus Road rather than 800 feet from the road on their property.	The barn would not be affected by the Project route. The Project route is located near the edge of the property boundary and should not limit future development. The landowner's variation would remove a line of trees and a structure. We do not find this to be environmentally preferable and therefore do not recommend the variation to be incorporated into the route.
Hartley	574	Mr. Hartley is concerned that the proposed pipeline route cuts through his property at an angle. He is generally opposed to the pipeline crossing through his property.	The pipeline route follows an existing right-of-way through a small portion of Mr. Hartley's wooded property. Because it is following an existing right-of-way, the impacts are minimized; therefore, a reroute is not environmentally preferable.
Tysinger	577	The Tysingers are concerned about impacts to a water well, crops, and five operating oil wells.	Construction of the pipeline would only temporarily impact their farming operation. Water or oil wells were not identified in field surveys.
Khune	578	Lawrence and Shirley Khune object to the pipeline traversing their property. The proposed route would impact woods and wildlife on their property. The owners cite concerns involving proximity to residences and suggest a reroute through Blue Rock State Park.	There is no clear environmental advantage in shifting the route through the Blue Rock State Park; the whole area is forested with scattered residential development. Therefore, this route variation was not considered. Please refer to section 4.4 and section 4.5 for a complete discussion of mitigation measures for these resources.
Smith	578	The Project route passes 75 yards from Mr. Smith's residence. He cites concerns about safety and a decrease in property value, and suggests a reroute through Blue Rock State Park.	There is no clear environmental advantage in shifting the route through the Blue Rock State Park; the whole area is forested with scattered residential development. Therefore, a reroute was not considered.
Costello	597	The Costellos object to the pipeline crossing through their property and cite proximity to their residence and intersection with power lines. They suggest a more southerly route through the abandoned strip mines owned by Ohio Power.	The Project route would pass through the northern portion of the Costello property and would be a sufficient distance (600 feet) from their residence. The pipeline would not intersect the powerline on their property. Moving the right-of-way to the south would impact forested areas and adjacent property owners who are not already affected. Therefore, a reroute is not environmentally preferable.
Stillion	600	The Stillions cite concerns about diminishing value of their land, the potential for future development, impacts to cattle, and impacts to water supply.	The Project route follows an existing pipeline right-of-way through their property. Any reroute to the north or south would result in a greater impact to adjacent landowners and additional impacts to forested areas. Therefore, a reroute is not environmentally preferable.

Table 3.5-1 (continued)			
Summary of the FERC Review of Landowner Comments for Which No Feasible or Environmentally Preferable Route Variation Was Identified			
Landowner Last Name	Approximate Milepost	Summary of Comments	Summary of the FERC Review
Paulsen	602	Mr. Paulsen states that the Project route crosses 41 feet from his home and 27 feet from his water well.	The Project route follows an existing easement and is approximately 40 feet from his home. A reroute in this area would cause forest fragmentation and affect more forested land. Therefore, a reroute is not environmentally preferable. Measures to mitigate impacts to residential properties are discussed in section 4.8.3 and to wells in section 4.3.1.
Potts	607	Landowners own and operate White Oak Exotic Hunting Preserve on their property. They are concerned about the pipeline's impact on premier deer hunting sites and want the pipeline moved to the north side of existing transmission lines.	The Potts property is addressed in detail in the section 4.8.5 under the special land use and recreation section. The FERC has recommended that Rockies Express to coordinate with the Potts to determine the best time for construction on their property in order to lessen effects on business and revenue at White Oak Exotic Hunting Preserve.
Fuller	618	Mr. Fuller expresses concerns about how the pipeline will hinder access to veins of coal and stripping rights on his property.	The Project route appears to be following an exiting right-of-way across the southern portion of property. A minor route variation would impact more forested areas and is not environmentally preferable. Coal mining is addressed in section 4.1.2.
Kemp	620	Mr. Kemp requests that the proposed route be shifted on his property to avoid impacts to a hay field and future building sites.	Mr. Kemp's route variation would cross more forested land and is not environmentally preferable.
Forni	638	Mr. Forni is opposed to the pipeline on his property and its affects on water, timber, drainage, cropland, and pastures. He believes the proximity to high tension power lines and long wall mining in the area might pose safety concerns.	Mr. Forni's environmental concerns are addressed by the AIMP for OH; refer to section 4.8.4 for discussion of specific mitigation procedures. We believe crossing areas of long wall mining and collocating with power lines may be constructed safely. These concerns are discussed in sections 4.1.2 and 4.12 respectively.

The following route variations were evaluated in more detail after conducting a preliminary review of their environmental impacts and technical feasibility. In total, we received 27 landowner comments for which we could identify a potentially feasible route variation. Each of these variations is discussed in separate sections below and shown in the maps in appendix J. Some of the route variations have been recommended as changes to the Project route.

3.5.1 McCarroll Route Variation (MP 290.5 to MP 291.3)

Landowner David McCarroll in Hendricks County, Indiana wrote to us with concerns about the effect pipeline construction would have to the forested area on his farm that contains wetlands, a stream, and the endangered Indiana bat. Mr. McCarroll has denied Rockies Express survey access, but hired Keramida Environmental, Inc. to conduct a bat survey. Mist nets were monitored for five hours on two nights in June 2007. Ten bats were netted including six lactating female Indiana bats.

We reviewed the alignment to determine if an alternative route could be developed to avoid the forested area. The Project route would approach the forested area on Mr. McCarroll's property from the northwest and cross 0.12 mile of the forest at a narrow edge of the forested area. The forest extends to the east and north widening to nearly 0.25 mile. The west side of the forested area is cleared for residential development within 0.10 mile of the Project route. Upon reviewing the area in the field and on aerial photography, an alternative route that would avoid the forested area was not found. A shift to the northeast would increase the length of forest crossed and a shift to the southwest would encroach upon houses (see figure J-1 in appendix J). Mr. McCarroll suggested a route variation that would follow the edge of his property. This route would not minimize forested impacts and would affect new landowners. Mr. McCarroll's route variation would deviate from the project route at MP 290.5 and head due east crossing two forested areas of approximately 0.2 mile in length. It would circle around his property adding 0.7 mile to the Project length on adjoining landowner properties before rejoining the Project route at MP 291.3. McCarroll's route variation is not environmentally preferable because it has greater forested impacts and it increases total acreage of land disturbed.

In section 4.7.1, we have recommended that Rockies Express consult with FWS on tree clearing where bats are observed in order to minimize impacts on Indiana bats and their habitat. Because the Indiana bat was found on Mr. McCarroll's property, the mitigation measures described in section 4.7.1 to avoid adverse effects would be implemented. In addition, surveys have not been completed to confirm that the Project route would cross a stream or wetlands on the McCarroll property. Should these features be encountered, Rockies Express would follow its Procedures to minimize impacts to waterbodies and wetland areas.

While reviewing the property in the field, however, we identified a route variation to minimize land use impacts to the farmed area located southeast of the forested parcel. The FERC variation, which we evaluated in the draft EIS, is approximately 0.9 mile long, slightly longer than the 0.8 mile corresponding segment of the Project route (see table 3.5.1-1). Instead of crossing the field diagonally to the southeast, the variation would follow the forest/field edge for 0.19 mile, turn south along the line between two crop fields, and return to the REX East Project route to cross the road. Both the FERC variation and Project route would cross agricultural land.

Table 3.5.1-1					
Comparison of McCarroll Variations, MP 290.5 to MP 291.3					
Environmental Factor	Unit	Project Route	FERC Variation	McCarroll's Variation	Source
Pipeline Length	mile	0.8	0.9	1.1	Digital Route
Wetlands Crossed	no.	1	1	unknown	NWI Data
Waterbody Crossings	no.	1	1	1	USGS Topographic Maps
Forested Land Crossed	mile	0.1	0.1	0.2	Aerial Photography
Agricultural Lands Crossed	mile	0.7	0.8	0.9	Aerial Photography

In their comments on the draft EIS, Rockies Express stated that the incorporation of the FERC variation on McCarroll's property would require manual welding of pipe fittings, which could add two to six days to their construction schedule. However, a letter from Mr. McCarroll's representatives on February 21, 2008 compared the loss of two days on Rockies Express' construction schedule with the permanent loss of an endangered species, and suggested that the FERC, at a minimum, require the route variation proposed in the draft EIS.

The FERC variation is preferred because it would cross along the edges of fields that would minimize disruption to agricultural activities. Therefore, we recommend that:

- Prior to the start of construction from MP 291.0 to MP 291.3, Rockies Express incorporate into the Project route the FERC Variation for the McCarroll property as depicted in appendix J, figure J-1 in this EIS. Rockies Express should file with the Secretary updated alignment sheets.

3.5.2 Rogers Route Variation (MP 300.5 to MP 301.0)

During the scoping period, Century 21 Realty Group submitted written comments on behalf of landowners Otis and Louise Rogers of Hendricks County, Indiana, stating the property was actively for sale for residential development. They were concerned that the REX East Project would have a negative effect on the value of the property and ability to develop the property. South State Road 39 forms the eastern boundary of the property. The Project route would cross diagonally through the property from the northwest to southeast. Currently, the Project route would affect agricultural land. Rockies Express filed correspondence indicating that the Rogers sold the property to Mr. John Hall, who plans to develop a golf course community on the property. Mr. Hall proposed a route variation to Rockies Express that would avoid the property. According to Rockies Express, this route variation would have affected new landowners.

We identified a route variation to minimize the diagonal bisection of the property and allow a larger continuous parcel for residential development. The route variation we identified would remain on Mr. Hall's property. The variation would deviate from the Project route at MP 300.5 and head south along the western boundary of the property for 0.1 mile. It would then turn to the southeast and then east to avoid forested areas to the south and reconnect with the Project route at MP 301.0 before crossing South State Road 39. The variation is less than 0.1 mile longer than the half mile segment along the Project route. The route variation appears to avoid one of the two small wetland areas crossed by the Project, although fieldwork has not been completed to confirm this. The variation also crosses entirely through an agricultural field. The variation would add 22 acres to the portion of property to the north of the Project route for residential development. The variation also addresses Mr. Hall's planned use of the property.

Rockies Express stated that Mr. Hall is developing the property for recreational and not residential purposes, and thus the variation is not needed. They also note that they believe the variation would be difficult to construct and require more additional temporary workspace. In the correspondence notes between Rockies Express and the landowner, it is noted that Mr. Hall is planning to build the "Jack Nicholson Golf Community Subdivision" which indicates the use would be mixed residential and recreational. Along the route variation, the temporary workspaces would impact what is currently agricultural land and would be fully restored. We believe the route variation addresses the concerns of the landowner and therefore, we recommend that:

- Prior to the start of construction from MP 300.5 to MP 301.0, Rockies Express incorporate into the Project route the route variation for the Rogers property as depicted in appendix J, figure J-2 in this EIS. Rockies Express should file with the Secretary updated alignment sheets.

3.5.3 Gladden Route Variation (MP 302.5 to MP 305.2)

During the public comment period on the draft EIS, Mr. Morey Gladden expressed concerns about the Project crossing the McCracken Creek and the "Miracle springs" area. The Project route

crosses several small tributaries to McCracken Creek between MP 301.4 and MP 304.0, crosses McCracken Creek at MP 304.4, and then several more tributaries between MP 304.6 and MP 305.6. Mr. Gladden asked the FERC to consider a variation that avoids McCracken Creek and the Miracle springs.

We identified a potential route variation (Appendix J, figure J-3) that would diverge from the Project route at MP 302.5, travel primarily to the south and slightly east through 0.5 mile of agricultural land and 0.1 mile of forest and then follow the boundary of a cultivated field for 0.2 mile. The route variation would continue traveling to the east for 0.4 mile to cross Interstate 70 and then run along mostly agricultural land for approximately 1 mile, towards the east. It would then cross through 0.2 mile of forest and rejoin the Project route at MP 305.2. According to table G-2 in appendix G, the Project route crosses 12 waterbodies, including McCracken Creek, between MP 302.5 and MP 305.2. Through interpretation of available aerial photography, it appears that the route variation would cross the same number of waterbodies and would not avoid McCracken Creek. The "Miracle springs" area referred to in Mr. Gladden's letter could not be located.

The route variation is 0.4 mile longer than the Project route. Both alignments primarily cross agricultural and forested land, and the same number of waterbodies. The route variation would affect several landowners who are not currently on the right-of-way. Since the route variation does not present a clear environmental advantage in reducing the impacts of concern, is slightly longer and would affect several new landowners, we find the Project route preferable to the variation. Section 4.3.3 and 4.3.4 discuss the impacts to and mitigation measures for waterbody crossings.

3.5.4 Parker Route Variations (MP 317.8 to MP 318.5)

During scoping, landowner Dan Parker submitted written comments expressing concern that the REX East Project route would cross at an angle through his farm and cut it in half. The Project route would cross six of Mr. Parker's parcels in Morgan County, Indiana at an angle for a total of 0.75 mile. In the draft EIS, we recommended an alternative route that would alleviate potential impacts to Mr. Parker's farming operation by following property lines. In January 2008, the FERC visited Mr. Parker's property in response to written comments submitted during the draft comment period, which discussed his dissatisfaction with both the Project route and FERC's route variation. While in the field, Mr. Parker identified a reroute he believed would best address his concerns.

As shown in appendix J, figure J-4, the route variation we evaluated and presented in the draft EIS would follow the tree line towards a barn on the property that is off Big Bend Road. It would then turn directly south passing on the property line between parcels IN-MN-19.001 and IN-MN-20.001. It would continue south crossing Big Bend Road and between two crop fields not owned by Mr. Parker. Approximately 0.21 mile from the road crossing, the route variation would turn east to follow on the inside of a tree line on the adjacent property. The variation would rejoin the Project route before crossing County Road 950 East.

Mr. Parker's route variation would diverge from the Project route at MP 317.8 and travel east for 0.5 mile along his northern property boundary. The variation would make a 90 degree turn to the south to follow Mr. Parker's property boundary across Big Bend Rd. for 0.75 mile, then head east for 0.2 mile on the inside of a tree line before rejoining the Project route at MP 318.5.

Table 3.5.4-1 compares the two variations and the Project route. Each of the variations would cross a waterbody. The Parker Variation crosses a wetland and forested area that the other routes do not. The Parker variation would pass within 100 feet of a residence and two barns. The FERC Variation would pass within 100 feet of Mr. Parker's residence. The Chastains own the home closest to the Parker

Table 3.5.4-1 Comparison of the Parker Alternatives, MP 317.8 to MP 318.5					
Environmental Factor	Unit	Project Route	FERC Variation	Parker's Variation	Source
Total Length	miles	1.1	1.2	1.4	Digital Route
Wetlands Crossed	feet	0	0	130	FWS, 2007f
Waterbody Crossings	no.	1	1	1	USGS Topographic Maps
Cultivated Land Crossed	mile	0.8	0.9	0.8	Aerial Photography
Forest Land Crossed	mile	0	0	0.3	Aerial Photography
Open/Herbaceous Land Crossed	mile	0.3	0.3	0.3	Aerial Photography
Structures Within 100 Feet of the Centerline	no.	0	1	3	Rockies Express, Aerial Photography

Variation. They wrote to express concerns that the Parker Variation would affect their home, a drainage area, and a pond. The Parker Variation would affect additional forested, wetland, and residences, and is not environmentally preferable.

Rockies Express believes our route variation offers no environmental advantage and would be difficult to construct. We believe our variation is environmentally comparable to the Project route and would minimize land use issues when compared to the Project route. Therefore, **we recommend that:**

- **Prior to the start of construction from MP 318.1 to MP 318.5, Rockies Express incorporate into the Project route the FERC's Parker Variation for the Parker property as depicted in appendix J, figure J-4 in this EIS. Rockies Express should file with the Secretary updated alignment sheets.**

3.5.5 Alverson Route Variation (MP 370.0 to MP 370.6)

Decatur County, Indiana landowner Bernice Alverson submitted a written comment expressing concern that the pipeline would disturb Native American relics, a wooded area, and field drainage tiles. Ms. Alverson suggests the pipeline be re-routed to follow existing rights-of-way. We first reviewed the Project route to see if existing rights-of-way could be utilized, but none were identified within a mile of the property. Our analysis of major route alternatives to use existing rights-of-way north of Indianapolis to avoid Decatur County is presented above in section 3.4.3. The Project route crosses the Alverson's properties from MP 370.0 to MP 371.0. Approximately 0.15 mile of the route is forested while the remainder is agricultural. We identified a route variation that would avoid the forested area.

The route variation avoids the forested area by diverting south from the Project route near MP 370.0 and continuing along the southern boundary of the property before heading north to avoid structures and rejoin the Project route at MP 370.6. It is approximately 0.1 mile longer than the Project route. Cultural resource surveys have not been completed on this property at this time. Impacts to field drainage tiles and other concerns related to agricultural productivity are addressed in section 4.8.2.

Rockies Express filed comments demonstrating that the landowner's trustee supports the proposed route over the route variation. Rockies Express' analysis of the route variation concludes that the variation could result in additional forest clearing. However, we believe that the route variation can be constructed adjacent to the forested parcel along the southern boundary with minimal clearing of trees. The Project route would cut through a forested patch causing forest fragmentation and unavoidable

permanent loss of trees. Because the route variation would avoid the wooded area of the Alverson's property; we recommend that:

- Prior to the start of construction from MP 370.0 to MP 370.6, Rockies Express incorporate into the Project route the route variation for the Alverson properties as depicted in appendix J, figure J-5, specifically avoiding to the maximum extent practicable, the removal of trees located adjacent to the southern boundary of the Alverson property. Rockies Express should file with the Secretary updated alignment sheets.

3.5.6 Brattain Route Variation (MP 376.3 to MP 376.8)

During the public comment meetings on the draft EIS in Greensburg, IN, Jimmy Brattain expressed concerns about the proximity of the pipeline to his residence and that of his neighbors, the impact to the value of his land, as well as where it crosses an area of rough terrain and streams. The Project route crosses a heavily wooded area and passes within 160 feet of at least two residences. Mr. Brattain proposed a variation that would shift the alignment slightly to the north to distance it from the residences in the area.

We developed a route variation, shown in appendix J, figure J-6, that would address Mr. Brattain's concerns. The route variation would shift the alignment approximately 100 feet to the north of the Project route starting at MP 376.7. The variation would parallel the proposed route for 0.5 mile before rejoining it at MP 376.8. The Project route and the Brattain route variation would have similar forested impacts and would both cross the area of rough terrain and streams. However, our route variation would distance the pipeline from two residences in the area by approximately 100 feet to address Mr. Brattain's concerns. Because our route variation does not result in any additional environmental impacts, we recommend that:

- Prior to the start of construction from MP 376.3 to MP 376.8, Rockies Express incorporate into the Project route the route variation for the Brattain property as depicted in appendix J, figure J-6 in this EIS. Rockies Express should file with the Secretary updated alignment sheets.

3.5.7 Yane Route Variation (MP 380.4 to MP 380.6)

Monica and Gary Yane, of Franklin County, Indiana, provided written comments against the route of the pipeline on their property. They suggested that the pipeline be routed along an existing right-of-way. In section 3.4.3, we evaluate major route alternatives that would avoid Franklin County by following existing pipeline rights-of-way north of Indianapolis. These alternatives are not environmentally preferable. Therefore, we identified a route variation that would minimize the impacts on the Yane property.

In written comments submitted on the draft EIS, Monica Yane expressed concern that the Project route would affect their pond, which is supplied by a 5-acre wooded watershed. Mrs. Yane stated that this pond is their potable water source. They treat the water for bacteria, but do not have to worry about siltation or chemical pollutants. Mrs. Yane states that the Project route would cross 150 feet of the watershed that supplies their pond. Upon review of aerial photography, it appears that the Project would likely cross the pond's watershed.

Figure J-7 in appendix J shows that the route alternative would start at MP 380.4 to continue in a southeast direction and rejoin the Project route at MP 380.6. The Project route makes a wide-angle turn

in the cleared area of the Yane property. Both the Project route and route variation would cross 0.1 mile of forested property. The route alternative, however, would eliminate the turn in the center of the property and is slightly shorter than the Project route.

During the public meeting in Greensburg, Indiana, Mrs. Yane stated that she preferred the route variation to the route proposed by Rockies Express. Rockies Express filed comments stating that the route variation would not eliminate the wide-angle turn, but would instead shift it to the forested area. We acknowledge this, and note that the turn would clear the edge of the forest close to the cleared area and adjacent to the power line right-of-way. Based on the landowner's concerns and our comparison of the two routes, we believe that our route variation is environmentally preferable. Therefore, we recommend that:

- Prior to the start of construction from MP 380.4 to MP 380.6, Rockies Express incorporate into the Project route the route variation for the Yane property, as depicted in appendix J, figure J-7 in this EIS. Rockies Express should file with the Secretary updated alignment sheets and site-specific erosion and spill control measures to protect the Yane's pond from contamination and siltation.

3.5.8 Reynolds Route Variation (MP 381.5 to MP 382.7)

In response to comments received from landowner Daron Reynolds that the Project route would cross karst features and would impact the Indiana bat on his property, we evaluated two possible route variations to mitigate these potential impacts. Both route variations would depart from the Project route at approximately MP 381.5. They would both roughly parallel the Project route for approximately 0.3 mile until approaching Salt Creek, where they would split. The southern route variation would parallel Bullfork Road east across the creek and would then turn slightly to the northeast before rejoining the Project route near MP 382.7. The northern route variation would cross Salt Creek approximately 0.2 mile north of Bullfork Road and would run east along an existing telephone line right-of-way and then northeast before rejoining the Project route near MP 382.7.

To evaluate the engineering feasibility and environmental impacts of these route variations, we examined each of the Reynolds Route Variations in the field. Based on these field observations, it was determined that the Project route through the Reynolds property would be preferable to the Reynolds Route Variations. Both the southern and northern route variations would require constructing the pipeline across steep banks of the Salt Creek floodplain and along the bank of a stream that feeds into Salt Creek. Although the Project route would also cross Salt Creek, it would cross in a location characterized by shallower grade banks. Additionally, it would not require construction along the stream that feeds into Salt Creek. Neither of the route variations would offer an environmental advantage over the Project route. All three would pass through the same approximate amount of forested and agricultural land.

Consequently, we are not recommending a route variation on the Reynold's property. In response to landowner concerns about karst features, we recommend in section 4.1 that in the event karst features are discovered during construction, Rockies Express stop work to develop route variations or mitigation measures to avoid potential damage to the pipeline.

3.5.9 Morgan Route Variation (MP 383.1 to MP 384.0)

Landowner Carolyn Morgan of Franklin County, Indiana expressed concern over the project impacts to soil, water, and Indiana bat habitat on her property. The Project route crosses forested and agricultural fields on her property. We identified a route variation that would follow an existing power line right-of-way to minimize further fragmentation of forested land.

As shown in appendix J, figure J-8, the route variation would deviate from the Project route at MP 383.1 on the Freas' property to continue following a powerline right-of-way to the northeast. It would follow the powerline for 0.8 mile to the eastern edge of the Morgan's property. It would then turn southeast to cross State Road 229 and rejoin the Project route at MP 384.0 as it continues in a southeasterly direction. The route variation and Project route would both cross the same four waterbodies and associated riparian forested areas. The route variation would minimize impacts to the forested areas by collocating the pipeline with the existing right-of-way to reduce fragmentation. This is particularly important on the Morgan's property where the Project route would separate a 2-acre parcel between the two rights-of-way.

Rockies Express stated that they don't believe our route variation offers a clear environmental advantage, although they agree that the route would reduce forest impacts and be collocated with an existing right-of-way for 90 percent of the route. During the public meeting at Greensburg, IN, Ms. Morgan stated she preferred the route variation because it increased the distance of the pipeline from her home. We also believe that it reduces environmental impacts by collocating with an existing easement. Therefore, we recommend that:

- **Prior to the start of construction from MP 383.1 to MP 384.0, Rockies Express incorporate into the Project route the route variation for the Morgan property as depicted in appendix J, figure J-8 in this EIS. Rockies Express should file with the Secretary updated alignment sheets.**

3.5.10 Bane and Lecher Variation (MP 385.5 to MP 387.2)

Bob Bane and Betty and Robert Lecher are neighboring landowners in Franklin County, Indiana who wrote several comment letters asking that the pipeline be rerouted north to avoid Walnut Fork Creek. Their primary concern was the proposed crossing of the creek in a highly erodible and flood-prone area. In a letter dated November 7, 2007 the Lechers indicated that the area between MP 386 and MP 387 on their property is designated as a FEMA floodway. During a site visit in January 2008 after heavy rains, we observed Walnut Fork Creek had flooded the roadway and adjacent areas.

Mr. Bane proposed a route variation that would avoid crossing Walnut Fork Creek, alleviating concerns of additional flooding, erosion, and creek bed scour. As shown in appendix J, figure J-9, route variation deviates from the Project route at MP 385.5 to go north of a pond and continue east along forested land for 1.1 miles before crossing Pipe Creek and Pipe Creek Road. The route variation then travels southeast for 0.6 mile to rejoin the Project route at MP 387.2. The variation is less than 0.1 mile longer than the Project route and affects roughly the same amount of forested land. The route variation would result in one fewer wetland and waterbody crossing. The route variation would pass within 100 feet of a structure and affect new landowners.

Rockies Express previously proposed mainline valve number 20 at MP 386.6, which is within the floodplain. In their February 11, 2008 filing, they revised the location to an upland area at MP 388.9 near St. Mary's Road. In the Response to Environmental Information Request dated February 08, 2008, Rockies Express expressed its intent to bore under Walnut Fork Creek and the adjacent Pipe Creek Road. A bore would avoid direct impacts to the waterbody and its banks. We believe that a bore construction method, following the Project route, would address the concerns of the Banes and Lechers, without affecting new landowners. Although Rockies Express stated this intent on February 8, 2008, the revised table of waterbodies crossed by the Project (appendix G, table G-2) filed on February 29, 2008 does not reflect this intent. Therefore, we recommend that:

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval a site-specific construction plan for an extended bore to cross Walnut Fork Creek and Pipe Creek Road.**

3.5.11 White Route Variation (MP 395.1 to MP 395.8)

Laura White of Franklin County, Indiana wrote in opposition to the REX East Project crossing her property. The REX East Project would cross agricultural fields, two waterbodies, and a driveway on her property, as shown in appendix J, figure J-10. It also makes two turns on her property that increase the total impacted area. We found a variation that would minimize the crossing length by 0.1 mile. The route variation would cross agricultural fields, one waterbody, and a driveway on her property.

In its comments on the draft EIS, Rockies Express stated they were considering a modification to the Project route on the White property in order to avoid cultural resource sites. Rockies Express surveyed north of the Project route and found that the cultural resource sites continued in this area. They did not survey the route variation. Because surveys have not been completed that indicate any specific resource impacts associated with our route variation from MP 395.1 to MP 395.8 we are maintaining our recommended variation, because it is environmentally preferable. Therefore, **we recommend that:**

- **Prior to the start of construction from MP 383.1 to MP 384.0, Rockies Express incorporate into the Project route the route variation for the White property as depicted in appendix J, figure J-10 in this EIS. Rockies Express should file with the Secretary updated alignment sheets.**

3.5.12 Schulte, Oetzel, and Stirn Route Variation (MP 401.5 to MP 402.4)

David Oetzel and Harry and Barbara Shulte are neighbors in Franklin County, Indiana and wrote to ask that the pipeline be moved to the southern edge of their property. They expressed concerns for the aesthetics and future use of their land, as well as their neighbor, Mr. and Mrs. Caruso. We identified a route variation that would follow the southern edge of the property boundaries and increase the distance of the Project to residences.

The Project route would bisect 6 parcels of land between MP 401.5 and MP 402.0, and the centerline would encroach within approximately 31 feet of the residence at MP 401.7 (see table 4.8.3-1). The Project route would cross agricultural areas and maintained grass yards. The route variation would turn south from MP 401.5 along the edge of an agricultural field on Mr. Losekamp's property for 0.1 mile and then turn east along the south boundary of the field. It would dip farther south to cross across a residential driveway, and then parallel it to then cross Johnson Fork Road. The route variation would continue east along the southern edge of the properties owned by the Carusos, Mr. Oetzel, and the Schultes. It would rejoin the Project route near MP 402.0 approximately 250 feet from Sharptown Road on the Schulte property. The route variation would stay at least 100 feet from all residences in the area.

In its comments on the draft EIS, Rockies Express stated that easement agreements were already signed with some of the landowners affected by the variation. They further noted that the route variation may require more additional temporary workspace. In a letter dated March 1, 2008, David and Jocelyn Oetzel wrote that they prefer the route be towards the south end of their property as depicted by our variation to minimize impacts to drainage tiles. Ms. Schulte wrote in a letter dated March 2, 2008 stating that she also preferred the route variation despite the signed easement with Rockies Express.

A neighboring property owner, Mr. Stirn, expressed concerns about the Project route affecting a nearby forested parcel from which he has observed bats. In response to this comment, we extended the

route variation described above so that it would minimize clearing of trees in the forested area by aligning the route along the edge of the forest. From MP 402.0 the modified route variation would follow the proposed route for 400 feet and then diverge to orient the pipeline towards the southern edge of the forested parcel at MP 402.2. The variation would then continue east between two forested parcels until it rejoined the project route at MP 402.4 on the east side of the forest. The full Schulte, Oetzel, and Stirn route variation is shown in appendix J, figure J-11.

Mr. Stirn further requested that we consider a route variation that would traverse the empty field north of Sharptown Road. He expressed concern about the Project effect to current and planned residences, and to the well located on his property. Mr. Stirn's variation would affect new landowners who have not had the opportunity to comment. It would also add additional length and acres of disturbed land to relocate the pipeline to the north when the overall alignment travels in a southerly direction in this area. We believe the recommended route variation, shown in figure J-11, adequately addresses the concerns of the Project's impact to residential development. Section 4.3.1 discusses the mitigation measures that would ensure that potable water supplies are not permanently damaged.

The Schulte, Oetzel, and Stirn Route Variation reduces impacts to landuse and forested areas, and is preferred by the affected landowners. However, this route variation affects one new landowner who may not have been notified of the route variation. Therefore, we **recommend that:**

- **Prior to the start of construction from MP 401.5 to MP 402.4, Rockies Express file:**
 - a. **Documentation of consultations with the newly affected landowner(s) regarding an easement agreement for the route variation from MP 401.5 to MP 402.4, as depicted in appendix J, figure J-11 of this EIS; OR**
 - b. **Documentation of consultation with Schulte, Oetzel, and Stirn to identify an alternative route variation on their property which would address their concerns.**

Rockies Express should file with the Secretary for review and written approval by the Director of OEP revised alignment sheets, and a summary of the resources (e.g., forests, wetlands, sensitive species, and cultural resources) affected by the revised route.

3.5.13 Minges and Schoenharl Route Variation (MP 405.1 to MP 405.9)

Landowners Leo Minges and Paul and Muriel Schoenharl of Butler County, Ohio provided written comments on the Project route and the potential impacts to forested areas, waterbodies, and wildlife habitat on their property. We reviewed the Project route and found that it would fragment two forested areas greater than 20 acres connected to other large forested patches nearby. FWS has expressed concern about forest fragmentation and impacts to migratory birds near these MPs (see section 4.5). We found a route variation that would avoid fragmenting these forests and follow the existing TETCO pipeline.

The route variation would deviate from the Project route at MP 405.1 by heading due south and then east along the edge of a forested area for 0.3 mile. It would then head southeast across an agricultural field to join the TETCO pipeline. The route variation would then cross briefly into James and Lisa Diersing's property before crossing into Mark and Jody Stenger's property to follow this existing right-of-way for 0.16 mile through the second forested patch. The route variation would then cross another field before rejoining the Project route across California Road at MP 405.9. The route variation would cross one waterbody and no wetlands while the Project route would cross five waterbodies and one

wetland. The route variation is about 0.15 mile longer than the Project route, but avoids environmentally sensitive areas.

In comments on the draft EIS, Rockies Express stated that Mr. Schoenharl and Mr. Minges had signed easement agreements and prefer the Project route. Rockies Express noted that the route variation would reduce impacts to forested areas and increase collocation with existing easements. However, they believe that the mitigation measures described in their Plan and Procedures would appropriately mitigate these concerns. We spoke with Mr. Minges in February 2008. He said he was not aware of the route variation in the draft EIS until he had already signed the easement agreement.

Also in support of the variation, FWS has identified the forests in this area as an area of concern for forest fragmentation. Because our route variation reduces forest fragmentation by following existing easements, we believe the route variation is environmentally preferable and **we recommend that:**

- **Prior to the start of construction from MP 405.1 to MP 405.9, Rockies Express incorporate into the Project route the route variation for the Minges and Schoenharl properties as depicted in appendix J, figure J-12 in this EIS. Rockies Express should file with the Secretary updated alignment sheets.**

3.5.14 Maus Route Variation (MP 406.2 to MP 406.5)

Edgar and Sarajane Maus are landowners in Butler County, Ohio who wrote in with concerns that the pipeline would cross through their front yard, within 20 feet of their residence. A review of the residential mitigation plans in appendix D shows the pipeline would be within 50 feet of their home. They proposed that the pipeline be placed on the south side of the existing TETCO Pipeline before it enters their property.

As shown in appendix J, figure J-13 the route variation would cross to the south side of the TETCO pipelines in the open field owned by the Lilies near MP 406.2. The route variation would parallel the existing easement to the south until reaching the open field owned by the Schumates to the east of the Maus' home near MP 406.5. The environmental effects would be similar for either route and the length would be the same. Crossing the existing pipelines would temporarily affect more land, but the land is open fields. The route variation would increase the distance from the Project centerline to the Maus' house and increase the distance from the construction work area for their neighbor at MP 406.35. Therefore, **we recommend that:**

- **Prior to the start of construction from MP 406.2 to MP 406.5, Rockies Express incorporate into the Project route the route variation for the Maus property as depicted in appendix J, figure J-13 in this EIS. Rockies Express should file with the Secretary updated alignment sheets.**

3.5.15 Walther Route Variation (MP 413.7 to MP 414.8)

Landowner Hilda Walther submitted comments stating that the Project route would cause undue impact to her farming operations and was rerouted onto her property instead of following the existing TETCO pipeline right-of-way, we evaluated two possible route variations in response to these concerns. Both Walther route variations would depart from the Project route at approximately MP 413.7 and would parallel the Project route for approximately 0.25 mile. After crossing U.S. Route 27, both route variations would head east for approximately 0.25 mile before turning to the north. Walther Route Variation A would head to the north for 0.50 mile and cross Minton Road before rejoining the Project route at approximately MP 414.7. Walther Route Variation B would head to the north for 0.15 mile and would

then turn to the northwest and parallel an existing power line right-of-way for 0.20 mile. Variation B would then turn to the north and follow the existing power line right-of-way across Minton Road before rejoining the Project route near MP 414.8.

Our review indicates that the Walther Route Variations would not result in an environmental advantage relative to the Project route. Both route variations would require constructing the pipeline through forested areas, whereas the Project route would be constructed primarily through agricultural land. Walther Route Variation B also would require constructing the pipeline near an existing cemetery. Additionally, based on a field review of the TETCO pipeline right-of-way, it was determined that the original reroute onto the Walther property was unavoidable because there would not be sufficient space along the TETCO pipeline right-of-way to construct the pipeline. In the years following installation of the TETCO pipeline, a small neighborhood was constructed along the right-of-way making it infeasible to construct an additional pipeline within the right-of-way.

Based on our review and field observations, we find the Project route preferable to the route variations identified near the Walther property.

3.5.16 Storck-Stump and Hesford Route Variation (MP 417.8 to MP 418.4)

Landowner Charlene Storck-Stump wrote to us with concerns that the REX East Project will bisect her rectangular property in Butler County, Ohio. She stated that the Project route would cross under an existing powerline easement on her property and create a strip of land between the pipeline and powerline easements that would be useless for future development. Ms. Storck-Stump is not opposed to the Project crossing her property and proposes a variation that would be parallel to the powerline easement until it reached the northeastern boundary of her property. Her neighbors, John and Linda Hesford, also wrote asking that the pipeline be routed along the existing power line easement. They point out that the Project route deviates from the power line to avoid a large pond near MP 418.4, but as a result cuts through a forested parcel.

As shown in appendix J, figure J-14, the Storck-Stump and Hasford route variation would deviate from the Project route near MP 417.8 where the pipeline would cross to the north of the existing power line. The variation would continue to parallel the north side of the power line easement for 0.3 mile east-northeast, parallel and adjacent to the power line easement in the Storck-Stump property and continue for another 0.1 mile adjacent to the power line easement in a neighboring property. The route variation would rejoin the Project route and avoid the large pond, by turning sharply to the north to follow the Storck-Stump forested lot until reaching the Project route near MP 418.4. When heading north to rejoin the Project route, the route variation would be in the field so as to avoid the removal of trees.

The Storck-Stump and Hesford route variation would measure approximately 250 feet longer than the proposed route. The Project route would fragment the forested parcel by crossing through 0.2 mile of forest. The route variation would maximize the use of existing easements and reduce additional forest fragmentation. For these reasons, we believe the route variation would be environmentally preferable and address these landowner's concerns. However, this route variation affects one new landowner who may not have been notified of the route variation. Therefore, we recommend that:

- **Prior to the start of construction from MP 417.8 to MP 418.4, Rockies Express file:**
 - a. **Documentation of consultations with the newly affected landowner regarding an easement agreement for the route variation from MP 417.8 to MP 418.4, as depicted in appendix J, figure J-14 of this EIS; OR**

- b. **Documentation of consultation with Stork-Stump and Hesford to identify an alternative route variation on their property which would address their concerns.**

Rockies Express should file with the Secretary for review and written approval by the Director of OEP revised alignment sheets, and a summary of the resources (e.g., forests, wetlands, sensitive species, and cultural resources) affected by the revised route.

3.5.17 Chase Route Variation (MP 426.1 to MP 426.3)

We received comments from Ms. Becky Chase with concerns about the removal of trees she believes may be Indiana bat habitat or important wildlife habitat near MP 426. There is a forested patch of property located between Gephart Road, Hawkins Road, and Trenton Road, as indicated by Ms. Chase, although she is not identified as a landowner. In this area, the Project route follows along an existing power line until it reaches the forested area. The route deviates from the power line right-of-way to avoid residences at the corner of Hawkins Road and Gephart Road by turning east and bisecting the small forested plot. We have identified a small route variation that would avoid the forested area.

As shown in appendix J, figure J-15, the Chase route variation would deviate from the route at MP 426.1 by turning to the northeast to cross in an agricultural field far enough away from the forested patch as to not require tree removal. It would then cross Gephart Road and run south in another agricultural field to rejoin the Project route at MP 426.3. The Project route would cross 0.1 mile of forested land and less than 0.1 mile of agricultural land. The route variation would be nearly 0.2 mile long, cross only agricultural land, and avoid this forested patch. Therefore, **we recommend that:**

- **Prior to the start of construction from MP 426.1 to MP 426.3, Rockies Express incorporate into the Project route the Chase route variation, as depicted in appendix J, figure J-15 in this EIS. Rockies Express should file with the Secretary updated alignment sheets.**

3.5.18 Forman Route Variation (MP 441.3 to MP 442.5)

John Forman, the owner of the Hunt-Forman Farm in Franklin County, Ohio wrote in with concerns about impacts to his farm which is listed on the National Register of Historical Places (NRHP). The Hunt-Forman Farm has both agricultural and architectural significance. It is associated with the development of breeding techniques for the Poland China breed of swine and is a prime example of 19th century architecture. Mr. Forman expressed concerns that the proposed route would bisect his farm, interfering with the contributing landscape and jeopardizing the farm's overall historic character.

Mr. Forman proposed a route variation which avoids his historic property. As shown in appendix J, figure J-16, the variation would diverge from the Project route at MP 441.3 to travel east and slightly north for approximately 1 mile, crossing mostly agricultural land and a 0.1 mile patch of forest before heading north along property owned by the Warren County Park District and rejoining the Project route at MP 442.52. This variation is identified as "Forman's Variation" in figure J-16.

We identified a revision of Mr. Forman's proposed variation to reduce land use impacts while maintaining a southerly route to avoid the farm. Our revised Forman variation also diverges from the Project route at MP 441.3 and travels to the northeast for 0.5 mile, north of Forman's Route Variation, to cross State Road 741. It then travels for 0.4 mile along the dividing line between two cultivated fields and traverses 0.1 mile of forested land. Our modification turns sharply to the north to parallel the outside of Forman's eastern property boundary before rejoining the Project route at MP 442.5. This variation is

identified as "Revised Forman Variation A" in figure J-16. As shown in Table 3.5.17-1, Variation A is

Table 3.5.17-1 Comparison of Forman Route Variations, MP 441.3 to MP 442.5						
Environmental Factor	Unit	Project Route	Forman's Variation	Revised Forman Variation A	Revised Forman Variation B	Source
Total Length ^{a/}	miles	1.2	1.4	1.3	1.4	Digital Route
Length Adjacent to Existing Right-of-Way (percent)	mile	0.8 (0.7)	0.0 (0.0)	0.0 (0.0)	0.4 (0.3)	Digital Route
Length on Historic Property	mile	0.5	0.0	0.0	0.7	Alignment Sheets
Cultivated Land Crossed	miles	0.8	1.0	1.0	1.2	Aerial Imagery
Forest Land Crossed	mile	0.2	0.2	0.2	0.2	Aerial Imagery
Residences Within 50 Feet of Construction Work Area	no.	0	0	0	0	Aerial Imagery

^{a/} All route variations have the same start and end MP along the Project route for comparison of impacts. This may mean that the route variation includes portions of the route in common with the Project route.

0.1 mile longer than the Project route and crosses slightly more cultivated land with no additional forested impacts. The revised variation reduces impacts to neighboring landowners by keeping the right-of-way closer to property boundaries. Although both routes cross the same amount of forested land, the Project route would remove edge forest that is adjacent to the existing easement and Forman's Variations would affect an unfragmented forested parcel.

Because both of these variations affected new landowners who have not yet had the opportunity to comment on the Project, we identified another route variation within the Hunt-Forman Farm. This variation is labeled "Revised Forman Variation B" in figure J-16. This variation would traverse the farm parallel to the southern boundary hedge row, cross the eastern boundary hedge row to the adjacent field, and then turn to the northeast to rejoin the Project route. This variation would cross 0.2 miles more of the historic property than the Project route, but would only cross one hedgerow rather than three hedgerows as the Project does. This route variation would minimize the long-term visual effect of the Project to the historic properties.

At this time, a determination of effect on this property has not been completed. We recommend in section 4.10.1 that Rockies Express file the assessment of effects and develop a treatment plan, if necessary. Because these variations are environmentally comparable, we do not recommend Rockies Express adopt one at this time. If a treatment plan is necessary that avoids or minimizes impacts, we would likely recommend one of these variations for incorporation into the Project route.

3.5.19 Frye Route Variation (MP 452.7 to MP 453.8)

We received a comment letter from an attorney for landowners Don and Richard Frye in Warren County, Ohio. The Fries are concerned about the Project's impact to the water quality and quantity of ground and surface water that service their homes and farms. Rockies Express did not identify a well or spring along the Project route in this area. However, the Project crosses three waterbodies and the Wellhead Protection Area (WPA) for the Village of Waynesville, Ohio at MP 453.5. We identified a route variation that would avoid crossing these waterbodies.

The Project route would cross through agricultural fields and would impact four waterbodies. The Project route is collocated with the TETCO pipelines. As shown in appendix J, figure J-17, the route variation would turn south from the Project route at MP 452.7 to join a power line right-of-way. It follows the power line right-of-way for 1.0 mile until it joins the Project route at MP 453.8. Based on a review of aerial photography, the route variation does not appear to cross any waterbodies. The route variation reduces impacts to water on the property, but may increase impacts to the WPA. However, the potential impacts and risk of spills into the WPA would be minimized by adhering to Rockies Express' Plan and Procedures and SPCC Plan, as described in section 4.3. Section 4.3.1 recommends that Rockies Express file consultations with applicable agencies regarding construction within WPAs.

Rockies Express filed comments stating that the Waynesville WPA is not crossed between MPs 452.7 and 453.8, although table 4.3.1-2, which Rockies Express stated is correct and requires no revisions (filing dated February 25, 2008) states that the Waynesville WPA is crossed for 0.1 mile at MP 453.5. Rockies Express believes that the route variation does not offer a clear environmental advantage. However, we believe that collocation with the power line right-of-way would be environmentally preferable, and therefore, we recommend that:

- **Prior to the start of construction from MP 452.7 to MP 453.8, Rockies Express incorporate into the Project route the Frye route variation as depicted in appendix J, figure J-17 in this EIS. Rockies Express should file with the Secretary updated alignment sheets. This information should also be provided concurrently to the Village of Waynesville, Ohio Waste and Water Division of the Utilities Department, and other applicable agencies regarding construction in the WPA.**

3.5.20 Jones and Mowrey Route Variation (MP 458.1 to MP 458.9)

Landowners Daniel Jones and Dean and Nancy Mowrey of Warren County, Ohio submitted comments expressing concerns about the construction of the pipeline through their properties. The Mowreys, whose property is immediately to the southwest of the Jones property, expressed concerns about the impacts to riparian and forested areas (section 3.4.7 evaluates a major route alternative suggested by the Mowreys). Mr. Jones expressed concerns about Indiana bat habitat and the impacts to a maple trees tapped by Wilson Friendly Maple Farm for syrup production. To minimize these impacts, we identified an evaluated a route variation in the draft EIS that would follow the Jones and Mowrey property boundaries.

As shown in appendix J, figure J-18, the route variation would deviate from the Project route at MP 458.1 (labeled "FERC's Mowrey and Jones Variation" in figure J-18). It would follow the northwestern boundary of the Mowrey property through a forested area for 0.13 mile and then turn to the east and continue through the forested area for another 0.12 mile. It would then depart the forested area and continue to the southeast through an agricultural area along the boundary with the Jones property for 0.5 mile. At Compton Road it would turn sharply to the northeast and parallel the road through an agricultural area for 0.30 mile before rejoining the Project route at MP 458.9.

Both the Project route and the route variation would be constructed primarily through agricultural and forested areas (see table 3.5.20-1). The Project route would be constructed through 0.2 mile of forested area and the route variation would be constructed through 0.25 mile of forested area. Although these differences are relatively minor, the route variation would avoid the forested area on the Jones property, but not forested impacts in general. In Rockies Express' response to the draft EIS, it states that the route variation avoids maple trees on the Mowrey's property, but removes a greater amount of trees on Mr. Jones' property. Rockies Express committed to reducing the construction right-of-way width along the proposed route to 110-foot wide which would avoid 20 productive maples trees.

In response, we modified our route variation that was depicted in the draft EIS to start at the boundary between Mowrey and Jones and run southeast in an agricultural field and then parallel Compton Rd ("Revised Draft EIS Variation" in table 3.5.20-1 and "FERC's Revised Mowrey and Jones Variation" in figure J-18). This revised route variation would reduce land use impacts and eliminate 0.1 mile of forested crossing on Jone's property. The impacts on the Mowrey property from the revised route

Table 3.5.20-1
Comparison of the Jones and Mowrey Route Variations, MP 458.1 to MP 458.9

Environmental Factor	Unit	Project Route	Draft EIS Variation	Revised Route Variation	Source
Total Length	miles	0.8	1.1	1.0	Digital Route
Cultivated Land Crossed	miles	0.5	0.85	0.8	Aerial Photography
Forest Land Crossed	miles	0.2	0.25	0.2	Aerial Photography

a/ All route variations have the same start and end MP along the Project route for comparison of impacts. This may mean that the route variation includes portions of the route in common with the Project route.

variation would be the same as those from the Project route, but the route variation would be located along the property boundary rather than cutting across it.

We recommend in section 4.8.2 that Rockies Express reduce the construction right-of-way width to 75 feet to protect the maple trees. The revised route variation would further reduce the removal of trees, therefore, we recommend that:

- **Prior to the start of construction from MP 458.1 to MP 458.9, Rockies Express incorporate into the Project route the revised route variation for the Mowrey and Jones properties as depicted in appendix J, figure J-18 in this EIS. Rockies Express should file with the Secretary updated alignment sheets.**

3.5.21 Rowe Variation (MP 459.8 to MP 460.0)

Catherine and John Rowe submitted several comment letters to the FERC regarding a reroute that was adopted by Rockies Express after the draft EIS was published. They are concerned about the Project route's impact to their horse farm operations and a firehouse located across the street from their house. At the time the draft EIS was published, the Project route cut diagonally across one end of their property for 0.2 mile and then continued to the east across Mound Road through residential and agricultural lands. On January 14, 2008, Rockies Express filed 9 route variations including one from MP 460.9 to MP 462.6. The justification for this reroute was to address concerns of Ohio farmers. This change aligned the Project route along the property boundaries of farms from MP 460.7 to MP 461.6. However, the Project route now crosses 0.3 mile through the Rowe's property by making a turn and traveling the full length of their horse farm. This change would affect all three of the Rowe's horse pastures. The Project route then crosses Mound Road through the parking lot of the Chester Township Fire Department station. We have identified a route variation which would follow part of the route as it was described in the draft EIS.

As shown in appendix J, figure J-19, Rowe route variation would deviate from the Project route at MP 459.8 to continue in a northeast direction across an agricultural field for 0.16 mile. The route variation would then head east to cross State Road 380 and continue southeast across agricultural fields for 0.1 mile to rejoin the Project route at MP 460.0. The Rowe route variation is 0.30 mile long and

would pass through nearly 61 feet of a forest patch. The Project route is also 0.30 mile long. We find the Rowe route variation to be environmentally preferable, because it reduces impact to the Rowe's horse farm operations and avoids construction on the Chester Township Fire Department's property. Therefore, we recommend that:

- **Prior to the start of construction from MP 459.8 to MP 460.0, Rockies Express incorporate into the Project route the Rowe route variation as depicted in appendix J, figure J-19 in this EIS. Rockies Express should file with the Secretary updated alignment sheets.**

3.5.22 Kile Variation (MP 477.1 to MP 477.5)

In comments submitted during the scoping period, landowners David and Ronald Kile expressed concern about the siting of the Project route in the immediate vicinity of their homestead. Specifically, the Project would be constructed within an area that currently supports barns and bins used in their farming operations. The Project route is collocated with multiple TETCO pipelines and is located between their home and a metering station for the TETCO pipeline. In response to their comment, we developed a route variation that would remain on the Kile property, but would avoid the areas of concern.

As shown in appendix J, figure J-20, the route variation is 0.44 mile long, only 0.04 mile longer than the corresponding Project route. The variation would deviate from the TETCO easement approximately 0.2 mile from County Road 14 and turn to the north to parallel the road for 0.20 mile. The variation then turns southeast for 0.2 mile to cross County Road 14 and rejoin the Project route. The Project route crosses agricultural and residential land, while the variation is located completely on agricultural land.

In its comments on the draft EIS, Rockies Express stated that they reached an easement agreement with the landowners. They noted that the variation did not offer significant environmental benefits over the Project route. However, on January 6, 2008 we received a letter from the Kile's indicating they were under the assumption that there was no possibility for a reroute along their property and expressed their support for the variation. Our review indicates that the Kile Route Variation would not result in additional impacts to environmentally sensitive areas or other landowners. Because both routes have similar impacts and the landowner has indicated a preference for the route variation we are maintaining the recommendation and we recommend that:

- **Prior to the start of construction from MP 477.1 to MP 477.5, Rockies Express incorporate into the Project route the route variation for the Kile property as depicted in appendix J, figure J-20 in this EIS. Rockies Express should file with the Secretary updated alignment sheets.**

3.5.23 Scothorn and Petty Route Variation (MP 521.9 to MP 523.3)

Tom and Linda Scothorn and Richard and Sandy Petty are neighboring landowners in Pickaway County, Ohio. During the draft EIS comment period, the Scothorns noted concerns about the Project alignment requiring the clearing of a heavily wooded area and impacting springs and streams on their property. Both neighbors state that the current alignment would have a negative effect on their property value and ability to develop in the future. The Project route would cross in close proximity to residences and structures on both properties. The Pettys and Scothorns suggest that the pipeline be rerouted to follow an existing right-of-way north of their land. Although it is the FERC's preference to follow existing rights-of-way, in this case, a number of houses are located near the existing easement making it difficult to site a new pipeline in an adjacent corridor.

A second variation identified by the Scothorns would deviate from the Project route at MP 521.9 and cross to the south of the existing pipeline easements on the property of Linda and Ann Hay. This variation is shown as the "Scothorn and Petty Variation" in appendix J, figure J-21. The reroute would travel east across an agricultural field along the Hay's northern property boundary for 0.4 mile before entering the Scothorn's property where it would cross approximately 256 feet of forest edge and continue east across a second crop field. Approximately 0.1 mile after crossing Ringgold Northern Road, the pipeline would turn southeast cutting through the narrowest point of a forested area and waterbody. Then the variation would make a bend around the forested area and travel another 0.2 mile across a field to rejoin the Project route at MP 523.3.

The Scothorn and Petty route variation is 0.1 mile longer than the Project route. Both routes would affect forest and cross a waterbody. However, the route variation avoids crossing a 0.1 mile stretch of heavily wooded area on the east side of the Scothorn's property. Although the proposed route variation is slightly longer and affects a new land owner, it reduces forested impacts and is considered environmentally preferable. However, this route variation affects two new landowners who may not have been notified of the route variation. Therefore, we recommend that:

- **Prior to the start of construction from MP 521.9 to MP 523.3, Rockies Express file:**
 - a. **Documentation of consultations with the newly affected landowner(s) regarding an easement agreement for the route variation from MP 521.9 to MP 523.3, as depicted in appendix J, figure J-21 of this EIS; OR**
 - b. **Documentation of consultation with Scothorn and Petty to identify an alternative route variation on their properties which would address their concerns.**

Rockies Express should file with the Secretary for review and written approval by the Director of OEP revised alignment sheets, and a summary of the resources (e.g., forests, wetlands, sensitive species, and cultural resources) affected by the revised route.

3.5.24 Noll Route Variation (MP 555.4 to MP 557.3)

In comments submitted during the scoping period, landowner David Noll expressed concerns about the routing of the Project across his property. As shown in figure J-22 in appendix J, the Project route between Ohio Route 383 and Buckeye Valley Road would primarily follow the existing TETCO pipeline right-of-way. This right-of-way, while on Mr. Noll's and several nearby landowners' property, crosses through several forested areas that contain steep slopes, wetland areas, and sites where surveys found artifacts used by Native Americans. Mr. Noll expressed concerns that construction along the alignment proposed in the draft EIS would adversely affect these areas as well as impact the septic system and leach field that serves his house. Mr. Noll also expressed concerns that the Project route would temporarily disrupt his cattle-farming operation during construction by impeding livestock access to food and water. We evaluated two possible route variations in response to these concerns.

Along with his comments, Mr. Noll provided a route variation to minimize the impact to these resources. This route variation, called Noll Route Variation A, as shown in figure J-22 in appendix J, was evaluated in the draft EIS along with a second variation, Noll Route Variation B, that we developed to avoid the septic system and leach field but remain on Mr. Noll's property. In the draft EIS, we concluded that Noll Route Variation A would be environmentally preferable because it would cross 0.3 fewer acres of forested lands, would cross two fewer waterbodies, and would cross 0.04 fewer mile of wetlands than the corresponding segment of the Project route. The draft EIS therefore recommended that Rockies

Express adopt Noll Route Variation A into the Project route. On February 19, 2008, Rockies Express identified a route variation very similar to Noll Route Variation A to avoid the cultural resources that surveys identified on Mr. Noll's property. In their February 29, 2008 filing, Rockies Express stated they would adopt this variation into the Project route. This variation would address many of the environmental concerns stated by Mr. Noll, although surveys indicate it would still cross eligible cultural resource sites. Rockies Express is committed to mitigating adverse effects to all unavoidable eligible sites (see section 4.10.5). Table 3.5.24-1 provides a comparison of the environmental data for all four route variations – the alignment proposed in the draft EIS, Noll Route Variation A, Noll Route Variation B, and the Project route with adopted variation. We agree that the route variation adopted by Rockies Express is environmentally preferable and addresses Mr. Noll's concerns. However, Rockies Express did not submit revised alignment sheets adopting this route variation. Therefore, we recommend that:

- **Prior to the start of construction from MP 555.4 to MP 557.3, Rockies Express file with the Secretary revised alignment sheets to incorporate into the Project route the Rockies Express Noll Route Variation (i.e., the proposed route) as depicted in appendix J, figure J-22 in this EIS.**

Table 3.5.24-1 Comparison of the Noll Route Variations, MP 555.4 to MP 557.3						
Environmental Factor	Unit	Alignment Proposed in the draft EIS	Noll Route Variation A	Noll Route Variation B	Project Route (with adopted variation)	Source
Total Length	miles	1.9	2.0	1.9	2.2	Digital Route
Length Adjacent to Existing Right-of-Way (percent)		1.5 (82.0)	0.00 (0.0)	0.64 (33.5)	0.0 (0.0)	Digital Route
Wetlands Crossed	miles	0.04	0.00	0.00	0.00	FWS, 2007f
Waterbody Crossings	no.	4	2	4	1	ESRI, 2005a,c
Cultivated Land Crossed	miles	1.5	1.9	1.7	2.2	USGS, 2001
Forest Land Crossed	miles	0.4	0.1	0.2	0	USGS, 2001
Residences Within 50 Feet of Construction Work Area	no.	0	0	0	0	Aerial Imagery
a/ Noll Route Variation B includes portions that are in common with the Project route to allow for comparison with Noll Route Variation A.						

3.5.25 Shaffer (Steele) Route Variations (MP 623.3 to MP 624.4)

Landowner Donna Shaffer (Steele) of Belmont County, Ohio expressed concern about the impact of pipeline construction on forested areas within her property and the safety of pipeline construction. Her property is situated in an area defined by rolling topography that she indicates is susceptible to landslides. She is concerned that pipeline construction through her property would increase the likelihood of landslides due to vegetation removal on the hills. To avoid these impacts, we identified a route variation that would be south of the Project route and would avoid the forested and hilly areas of concern.

As shown in appendix J, figure J-23, the "FERC's Shaffer Variation" would deviate from the Project route at MP 623.3. It would head to the south across Johnson-Ridge Road and then turn to the southeast through an agricultural field approximately 0.05 mile south of Johnson-Ridge Road. It would continue through this agricultural field for approximately 0.4 mile while paralleling the edge of a forested

area and crossing into Richard Miller's property. It would then turn to the east and cross through a small forested area and head across Rock River Road. It would continue to the east into David and Emma Yoder's property while paralleling Johnson-Ridge Road through a partially forested area for 0.4 mile before crossing Somerton Highway and rejoining the Project route at MP 624.4.

In comments received on the draft EIS, we discovered that our route variation would be within 50 feet of a schoolhouse located on Rock River Road and would pass through a wetland area. Rockies Express noted that the route variation would parallel and require clearing trees along Captina Creek. Rockies Express stated that the mitigation measures included in its Plan would address many of the landowner concerns.

We visited this site in January 2008 and also reviewed a route variation proposed by Ms. Shaffer that is north of the Project route called the "Northern Variation." The northern variation would continue to follow the Project Route for 0.3 mile until MP 623.6 and then head east for 0.2 mile across the back of the Shaffer's property. Upon reaching the tree line it would turn south for 0.2 mile then cut across a sparsely forested area for 0.4 mile until rejoining the Project route on the east side of Somerton Highway.

The revised FERC route variation would be slightly longer but would have 0.3 mile less forested impacts (appendix J, figure J-23). The northern variation would be the same length as the Project route, but would have more forest impacts than our revised variation. As shown in table 3.5.25-1, the Project route and each of the variations would be constructed primarily through agricultural and forested areas.

Table 3.5.25-1 Comparison of Shaffer Route Variations, MPs 623.3 to 624.4						
Environmental Factor	Unit	Project Route	FERC Variation	Northern Variation	Revised FERC Variation	Source
Pipeline Length	miles	1.1	1.1	1.1	1.2	Digital Route
Total number of Wetlands	no.	0	0	1	1	NWI Data, Alignment Sheets
Waterbody Crossings	no.	2	3	2	2	Alignment Sheets
Forested Land Crossed	mile	0.5	0.2	0.4	0.2	Aerial Photography
Agricultural Lands Crossed	mile	0.6	0.9	0.7	1.0	Aerial Photography
Landowners Affected	no.	4	11	5	5	Alignment Sheets

The Project route would require construction through 0.5 mile of forested area; the revised route variation would require construction through 0.2 mile of forested area. Additionally, the revised route variation would avoid the hilly topography mentioned in Ms. Shaffer's letter. Because the revised route variation would impact less forested area and avoid the steep topography on Ms. Shaffer's land, we believe the route variation would be environmentally preferable and address these landowner's concerns. However, this route variation affects one new landowner who may not have been notified of the route variation. Therefore, we recommend that:

- **Prior to the start of construction from MP 623.3 to MP 624.4, Rockies Express file:**
 - a. **Documentation of consultations with the newly affected landowner(s) regarding an easement agreement for the route variation from MP 623.3 to MP 624.4, as depicted in appendix J, figure J-23 of this EIS; OR**

- b. Documentation of consultation with Shaffer to identify an alternative route variation on their property which would address their concerns.**

Rockies Express should file with the Secretary for review and written approval by the Director of OEP revised alignment sheets, and a summary of the resources (e.g., forests, wetlands, sensitive species, and cultural resources) affected by the revised route.

3.5.26 Residences at MP 384.3 and 384.4

The REX East Project route would pass in very close proximity to two residences at MP 384.3 and MP 384.4. Near MP 384, the Project route would cross Stacey Road and travel in a straight line through two houses and small forested patches. In the draft EIS a variation was proposed to distance pipeline construction from the residences at these mileposts. The variation, labeled the "FERC's MP 384 Variation" in figure J-24 in appendix J shifted the route to the south side of Stacey Road onto cultivated fields without additional environmental impacts. This route variation is 0.2 mile long.

In the response to the FERC's environmental information request dated February 8, 2008, Rockies Express identified a route variation, similar to our route variation located along the south side of Stacey Road, but with fewer pipe turns. Rockies Express' route variation (labeled "REX's Revised MP 384 Variation" in appendix J, figure J-24) would diverge from the Project route at MP 383.9, cross State Road 229, and travel southeast for 0.3 mile across agricultural land on Myra and Robert Ripperger's property. The variation would then travel east for 0.4 mile to cross Marshall Road and rejoin the Project route at MP 384.4. The variation and corresponding segment of the Project route are both 0.7 mile long. The Rockies Express route variation would cross 284 feet less of forested land, affect two fewer landowners, and avoid residences within 50 feet of the right-of-way. Rockies Express' proposed variation is preferable to FERC's route variation because it has fewer pipe turns which require additional temporary workspaces. Rockies Express committed to adopting this route variation, but has not filed new alignment sheets. Also, the route variation would need to be revised to start where the recommended Morgan variation ends near MP 384.0. This change would avoid a crossing of a small forested area. Therefore, we recommend that:

- **Prior to the start of construction from MP 384.0 to MP 384.4, Rockies Express incorporate into the Project route the REX's Revised MP 384 Variation for residences at MP 384.3 and MP 384.4 as depicted in appendix J, figure J-24 in this EIS. This route variation should be similar to that shown in the February 19, 2008 filing, but start at MP 384.0. Rockies Express should file with the Secretary updated alignment sheets.**

3.5.27 McCarty Route Variations or House at MP 446.8 (MP 446.5 to MP 447.4)

Jeff and Maureen McCarty of Warren County, Ohio wrote in to express concerns about the proximity of the pipeline to their residence and their general opposition to construction on their property. In the draft EIS, we identified two possible route variations to shift the pipeline either north or south to distance the pipeline construction from the McCarty home by over 100 feet. These are shown as the "FERC's Northern Variation" and the "FERC's Southern Variation" in appendix J, figure J-25.

In the Rockies Express filing dated February 19, 2008 Rockies Express, in consultation with affected landowners, identified a route variation that would collocate with an existing right-of-way. This variation would deviate from the Project route at MP 446.4 just before Weisenberger Road and head southeast for 0.4 mile crossing a small forested area and then turn northeast following an existing pipeline right-of-way for another 0.6 mile to rejoin the Project route at MP 447.4. We modified this variation to further minimize environmental impacts. Our variation of the Rockies Express route variation shown as

the "FERC's Revised McCarty Variation in figure J-25, would diverge from the Project route at MP 446.5 on Anna M. Vonderhaar's property and cross Weisenberger Road to travel southeast across the McCarty's agricultural field for 0.18 mile. The variation would differ from Rockies Express' route variation by paralleling the southern property boundary along the inside of a tree line that separates two farmed fields for approximately 295 feet before following the existing right-of-way to the northeast through agricultural land on Mr. John Sulfsted's property for 0.6 mile. The variation would rejoin the Project route at MP 447.4.

Both the route variation and the Project route are approximately 1.0 mile in length and would follow existing rights-of-way (table 3.5.27-1). Rockies Express' route variation would cross 734 feet of forest whereas our revised variation would cross 156 feet of forested land. In comparison, the Project route would cross 2,334 feet of forest. Both variations would place the pipeline approximately 400 feet from the McCarty residence.

Table 3.5.27-1
Comparison of McCarty Variations, MPs 446.5 to 447.4

Environmental Factor	Unit	Project Route	Draft EIS Northern Variation	Draft EIS Southern Variation	Rockies Express Reroute	FERC Variation of Rockies Express Reroute	Source
Pipeline Length	miles	0.87	0.95	0.99	1.0	0.94	Digital route
Total number of Wetlands	no.	1	0	1	1	1	NM Data, Alignment Sheets
Waterbody Crossings	no.	2	2	2	2	2	Alignment Sheets
Forest Land Crossed	feet	2,334	1,505	1,482	734	156	Aerial Photography
Agricultural Land Crossed	feet	2,731	2,282	3,003	4,286	4,250	Aerial Photography
Landowners Affected	no.	5	5	5	5	5	Alignment Sheets

In the February 19, 2008 filing, Rockies Express stated they would adopt their route variation, but it is not included in the revised alignment sheet. Further, our revised route variation would further reduce environmental impacts. Therefore, we recommend that:

- Prior to the start of construction from MP 446.5 to MP 447.4, Rockies Express incorporate into the Project route the FERC's Revised McCarty Variation for the McCarty's property as depicted in Appendix J, figure J-25 in this EIS. Rockies Express should file with the Secretary updated alignment sheets And provide a landowner notification package to the newly affected landowner(s).

3.6 ABOVEGROUND FACILITY SITE ALTERNATIVES

We considered alternative aboveground site locations for compressor and meter stations to avoid or minimize impacts to forested land, wetlands, and waterbodies, and to locate the facility as far as practicable from noise-sensitive areas (NSAs). The location of aboveground facilities should also consider the presence of suitable access roads and the location of ancillary facilities, such as electric distribution lines. For most of the compressor and meter stations, the Project compressor and meter

station sites are on agricultural land, far from NSAs and residential developments, and would not adversely affect sensitive environmental resources as discussed in section 4.

In filings dated September 17, 2007 and September 28, 2007, Rockies Express changed the locations of the following aboveground facilities: (1) the Bainbridge Compressor Station near MP 279.8 in Putnam County, Indiana; (2) the Hamilton Compressor Station near MP 435.6 in Butler County, Ohio; (3) the Chandlersville Compressor Station near MP 575.0 in Muskingham County, Ohio; and (4) the Clarington Meter Station at MP 640.1 in Monroe County, Ohio. Each of these changes involved minor relocations of the aboveground facility locations, along with corresponding minor changes to the pipeline routes. None of the changes were made for environmental reasons. All of the changes have been incorporated into the proposed action evaluated in this EIS.

Of the seven compressor stations proposed for the Project, we received landowner comments on two locations: the Hamilton and Bainbridge Compressor Stations. For the other five sites, we did not receive any landowner comments or identify any significant issues which would require further evaluation of alternative locations. The change made to the Hamilton Compressor Station location both before and after the draft EIS was published, is evaluated further below in order to address landowner comments that we received on the original proposed location. The change to Bainbridge Compressor Station site is also discussed below, as are two alternative locations for the site added in response to landowner concerns about potential noise impacts from operation of the station.

3.6.1 Hamilton Compressor Station Site Alternatives

We conducted further evaluation of the Hamilton Compressor Station based on several concerns by landowners near Hamilton. In their April 2007 application, Rockies Express proposed to locate the Hamilton Compressor Station near MP 443 (MP 443 Site). In a subsequent filing prior to the publication of the draft EIS in September 2007, Rockies Express proposed a revised location at the AK Steel property (AK Steel Site). Rockies Express revised the location again on January 4, 2008 due to a Consent Decree issued by the EPA for the AK Steel property. Rockies Express relocated the Hamilton Compressor station to its proposed site near MP 447 called the New Bern Site.

As shown in figure 3.6.1-1, the New Bern Site is approximately 1.5 miles to the east of the AK Steel Site, and approximately 2.0 miles east from the MP 443 Site and is adjacent to Interstate 75. The nearest residence would be 0.4 mile away. In contrast, the nearest residence to the AK Steel Site would be 0.5 mile away. The MP 443 Site would have been in a residential area located 0.25 mile from the nearest residence. Many landowners, including Mary Detcher, submitted comments expressing concern about the proximity of the MP 443 Site to residential areas.

As discussed further in section 4.11.2, operation of the proposed Hamilton Compressor Station at New Bern would comply with the FERC's 55 dBA L_{dn} noise limit at the nearest NSA and so would not result in a significant noise impact. Operation of the compressor station at the AK Steel Site location would increase existing noise levels at NSAs by less than 1 dBA. This increase would not result in a significant noise impact.

Table 3.6.1-1 shows the environmental considerations of each site. The New Bern Site would encompass approximately 19.3 acres, of which approximately 16.3 acres are agricultural land, 1.8 acres are forested land, and 1.2 acres are commercial land. In contrast, the AK Steel Site would encompass approximately 11.9 acres, of which approximately 11.8 acres are agricultural and 0.1 acres are forested. The Alternative Hamilton Compressor Station at MP 443 Site would have encompassed approximately 15.2 acres of agricultural, forested, and developed land.

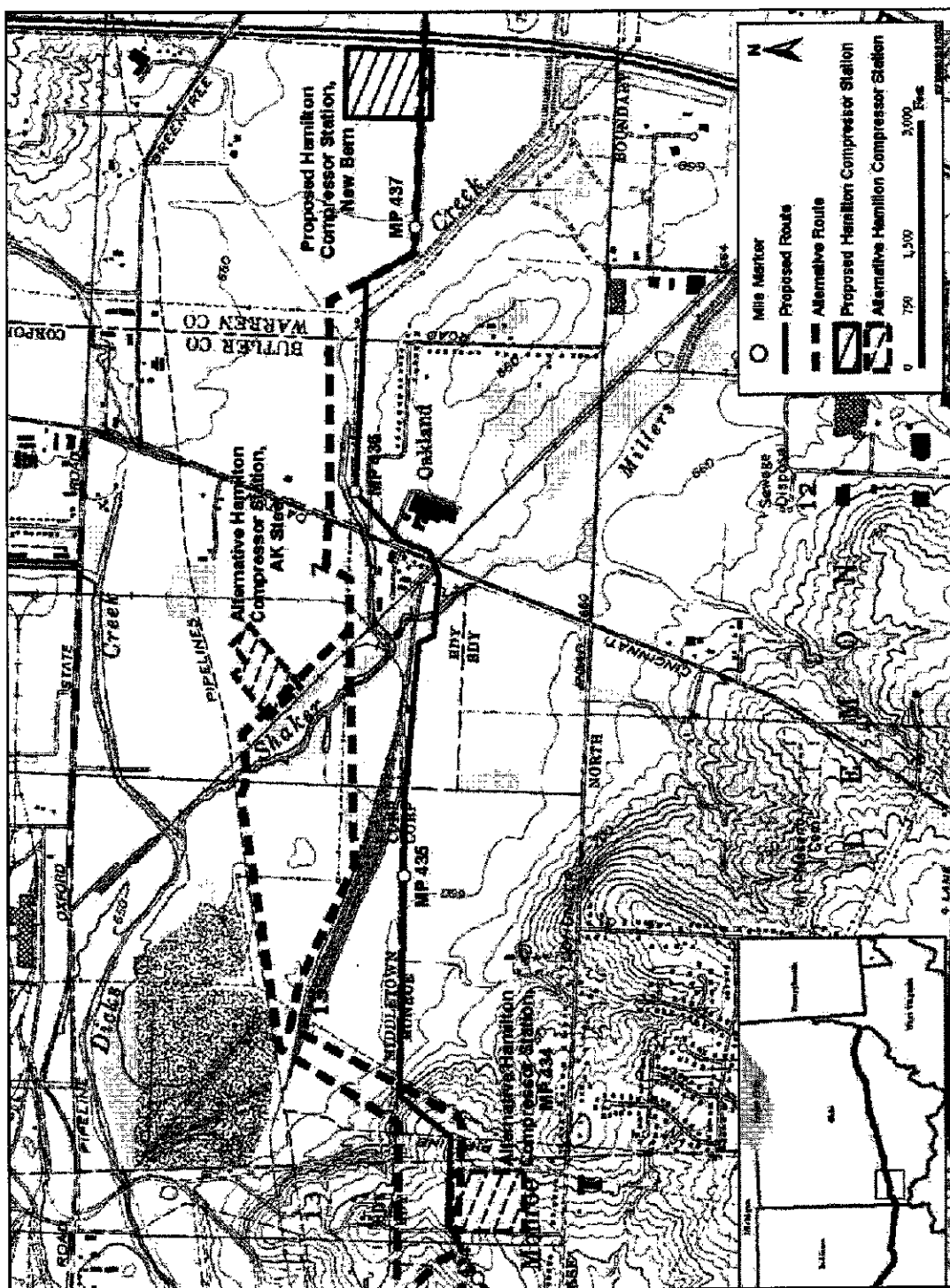


Figure 3.6.1-1
Hamilton Compressor Station Alternatives

Table 3.6.1-1 REX-East Project Comparison of the Hamilton Compressor Station Alternatives					
Environmental Factor	Unit	Proposed Site (New Bern)	MP 443 Site	AK Steel Site	Source
Footprint Size	acres	19.3	14.0	11.9	Digital data
Total number of NWI Mapped Wetlands	no.	1	0	0	NWI Data
Wetland Area On Site	acres	2.5	0	0	NWI Data
Waterbodies Affected	no.	1	0	0	ESRI, 2005a, b; Alignment Sheets
Agricultural Lands Affected	acres	16.3	13.7	11.8	LULC Data, Alignment Sheets
Forest Land Affected	acres	1.8	0.3	0.1	LULC Data, Alignment Sheets
Commercial Land Affected	acres	1.2	0	0	LULC Data, Alignment Sheets
Landowners Affected	no.	1	1	1	Alignment Sheets

The proposed Hamilton Compressor Station at New Bern contains a wetland (2.5 acres in size) and a waterbody, but is in an area of flat topography that would require few changes to land contours to accommodate construction. In contrast, the AK Steel Site does not have any known sensitive areas within 0.5 mile, and, based on field observations, is sufficiently set back from the nearest road and would be shielded by an existing stand of trees, and is in an area of flat topography. The Alternative Hamilton Compressor Station at MP 343 Site would have been located in a hilly area that would have required more substantial grading and topographic changes to accommodate the station and related access than the other sites.

Although there is some environmental advantage to the AK Steel Site, the Consent Decree represents an unknown environmental risk. Thus, we agree with the proposed New Bern Site location because it addresses resident concerns and is located away from residential areas.

3.6.2 Bainbridge Compressor Station Site Alternatives

We conducted additional analysis of the Bainbridge Compressor Station sites based on landowner concerns about the proximity of the proposed locations to NSAs (which include houses). We analyzed the original location proposed by Rockies Express near MP 279.8 and the new location proposed by Rockies Express near MP 277.3. Based on comments received on the newly proposed location, we analyzed two alternative locations: one approximately 1.3 miles northwest of the new proposed location near MP 276 and a second approximately 3 miles east of the original proposed location near MP 282.6. Of the four locations, only the original location would not be located along the current Project route. It would be located less than 0.10 mile south of the current Project route. The other three locations would not require any reroute of the pipeline in order to construct the compressor station.

As shown in figure 3.6.2-1, the original proposed location near MP 279.8 would have been located in a relatively flat, predominantly agricultural area that would have been partially shielded from the surrounding community by a forested area to the south and east of the proposed site. The new proposed location near MP 277.3 would also be located within a relatively flat, agricultural area, but would not be shielded by any nearby forested areas. The alternative location near MP 276 would be located in a setting similar to the new proposed location. It would be located in a relatively flat, agricultural area that would be largely unshielded from the surrounding community. Although both this alternative location and the new proposed location would have the potential to affect the local viewshed, the implementation of mitigation measures, such as planting trees for visual and noise screening would

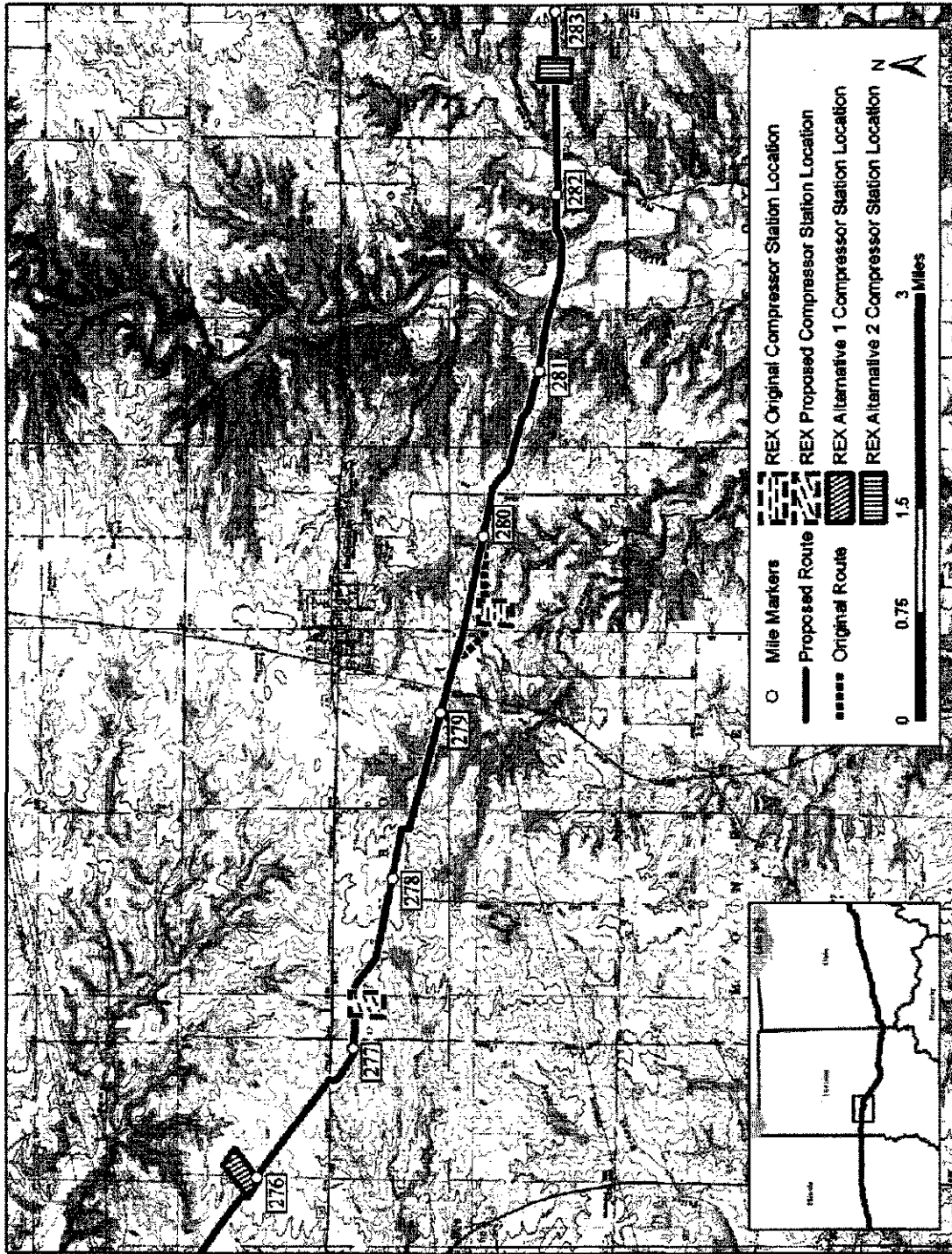


Figure 3.6.2-1
Bainbridge Compressor Station Alternatives

minimize the impacts. The alternative location near MP 282.6 would be located in an agricultural and forested area that would be shielded partially in most directions by an existing forested area. This alternative location is the only site that may require clearing of forested area; approximately 2.6 acres would be located within the project site boundary.

The major distinction between the four sites would be their proximity to NSAs. The original proposed location would have been located approximately 1,100 feet from one NSA and 1,700-1,800 feet from an additional four NSAs. The new proposed location would be within 900 to 1,300 feet of four NSAs and within 2,200 to 2,800 feet of an additional six NSAs. The alternative location near MP 276 would be within 1,460 feet of two NSAs; 1,980 feet of a third NSA; and 3,220 feet of a fourth NSA. The alternative location near MP 282.6 would be approximately 1,000 feet from one NSA; 1,300 to 1,600 feet from four NSAs; and 1,900 to 2,100 feet from six NSAs. However, we would expect that the impacts to these NSAs would be lessened by the forested area that lies in between the proposed site and all of the NSAs. As discussed in more detail in section 4.11.2, operations of the Bainbridge Compressor Station at the proposed new location are expected to comply with the FERC noise limit at each of these NSAs.

The four locations would differ in their required access road lengths and locations. All four access roads would be constructed through agricultural areas. The original location would require a 0.04 mile permanent access road from the compressor station to North Washington Street. The new proposed location would require that a 0.1 mile permanent road be built from the compressor station to North County Road 25W. The alternative location near MP 276 would require that a new permanent road approximately 0.5 mile in length be built from the compressor station to U.S. Highway 36. The alternative location near MP 282.6 would require a 0.5 mile permanent access road to County Road 600 East. Although the access roads for each location would vary in length, the impacts associated with traffic increases would be negligible. Therefore, we do not believe this difference in access roads significantly favors one location over the other.

In the draft EIS, we asked Rockies Express to provide updated resource analyses for the alternative compressor station sites at MP 276 and MP 282. Rockies Express also filed information on February 19, 2008 stating that these locations were not feasible because the increased distance between either the alternative and other compressor stations could not be supported. Due to engineering constraints, these alternatives are not recommended. The Project incorporates the new location proposed by Rockies Express near MP 277.3.

3.7 CONCLUSIONS

Table 3.7-1 summarizes all of the route variations that were recommended to be incorporated into the Project route. We identified 27 route alternatives or variations to consider in detail. Of those, we recommend 22 to be incorporated into the Project route, three of which Rockies Express has agreed to adopt in previous filings. These route variations were recommended to further avoid or minimize impacts to important environmental resources or minimize impacts to landowners. Together the route variations would add less than 1.4 mile to the Project length but would reduce forest impacts by approximately 0.9 mile crossed. A full discussion of each variation and alternative can be found above in sections 3.5.

Table 3.7-1 Summary of Route Variations Recommended for Incorporation into the Project Route				
Route Variation/ Alternative	Milepost	County, State	Summary	Change in Length (miles)
McCarroll Route Variation; section 3.5.1, appendix J, figure J-1	290.5 to 291.3	Hendricks, Indiana	We determined that no route variation could avoid the forested area; however, a route variation to minimize the impacts to farmed lands was analyzed. This route variation would follow the edge of the farmed area rather than crossing it diagonally.	+0.1
Rogers Route Variation; section 3.5.2, appendix J, figure J-2	300.5 to 301.0	Hendricks, Indiana	We identified a route variation that would avoid bisecting the property diagonally and allow for a larger continuous parcel for residential development.	+ < 0.1
Parker Route Variation; section 3.5.4, appendix J, figure J-4	318.1 to 318.5	Morgan, Indiana	We identified a route variation that would predominantly follow the boundaries of Mr. Parker's fields and is environmentally preferable to Mr. Parker's Variation.	+ < 0.1
Alverson Route Variation; section 3.5.5, appendix J, figure J-5	370.0 to 370.6	Decatur, Indiana	We identified a route variation that should minimize the risk of encountering artifacts by constructing the pipeline within routinely disturbed agricultural areas and avoiding the relatively undisturbed forested areas.	+ 0.1
Brattain Route Variation; section 3.5.6, appendix J, figure J-6	376.3 to 376.8	Decatur, Indiana	We identified a route variation that would parallel the proposed route but increase the distance to two residences. The variation has the same environmental impacts as the Project route, and is preferred by the landowner.	+ < 0.1
Yane Route Variation; section 3.5.7, appendix J, figure J-7	380.4 to 380.6	Franklin, Indiana	We evaluated a route variation that would cross slightly less land on their property than the Project route.	- < 0.1
Morgan Route Variation; section 3.5.9, appendix J, figure J-8	383.1 to 384.0	Franklin, Indiana	We evaluated a route variation that would follow an existing powerline right-of-way and minimize further fragmentation of forested land on the property.	+ < 0.1
White Route Variation; section 3.5.11, appendix J, figure J-10	395.1 to 395.8	Franklin, Indiana	We evaluated a route variation that would shorten the distance across her property by 0.1 mile and avoid crossing one waterbody.	- 0.1
Schulte, Oetzel, and Stim Route Variation; section 3.5.12, appendix J, figure J-11	401.5 to 402.0	Franklin, Indiana	We developed a route variation that would follow the southern edge of their properties and increase the distance of the Project to residences.	+ 0.1
Minges and Schoenhart Route Variation; section 3.5.13, appendix J, figure J-12	405.1 to 405.9	Butler, Ohio	We analyzed a route variation that would avoid forest fragmentation by following the existing TETCO pipeline easement.	+ 0.2
Maus Route Variation; section 3.5.14, appendix J, figure J-13	406.2 to 406.5	Butler, Ohio	We evaluated a route variation on the property that would distance the pipeline further from the Maus' residence and lessen the burden on their neighbors.	0

Table 3.7-1 (continued)				
Summary of Route Variations Recommended for Incorporation into the Project Route				
Route Variation/ Alternative	Milepost	County, State	Summary	Change in Length (miles)
Storck-Stump and Hasford Route Variation; section 3.5.16, appendix J, figure J-14	417.8 to 418.4	Butler, Ohio	We evaluated a route variation on this property that would reduce forest fragmentation and maximize collocation; therefore, it is considered environmentally preferable.	+ < 0.1
Chase Route Variation; section 3.5.17, appendix J, figure J-15	426.1 to 426.3	Butler, Ohio	We evaluated a route variation in this area that would avoid forested areas with potential Indiana bat or important wildlife habitat.	+ < 0.1
Frye Route Variation; section 3.5.19; appendix J, figure J-17	452.7 to 453.8	Warren, Ohio	The route variation would minimize the concerns on the Frye property, but crosses a Wellhead Protection Area (WPA).	+ 0.3
Jones and Mowrey Route Variation; section 3.5.20, appendix J, figure J-18	458.1 to 458.9	Warren, Ohio	In the draft EIS we evaluated a route variation that would follow the Jones and Mowrey property boundaries. The route variation would avoid all forested areas on the Jones property and minimize impacts on the Mowrey property by following the property boundary. A revised route variation was identified that would reduce land use impacts and forested land crossed.	+ 0.2
Rowe Route Variation; section 3.5.21, appendix J, figure J-19	460.9 to 461.2	Clinton, Ohio	We evaluated a route variation for this property that is considered environmentally preferable because it reduces impacts to the Rowe's horse farm operations and avoids construction on the Chester Township Fire Department's property.	0
Kile Route Variation; section 3.5.22, appendix J, figure J-20	477.1 to 477.5	Fayette, Ohio	We developed a route variation that would avoid an area of concern without adding additional impacts to sensitive environmental areas or other landowners.	+ < 0.1
Scothorn and Petty Route Variation; section 3.4.23, appendix J, figure J-21	521.9 to 523.3	Pickaway, Ohio	We evaluated a route variation that would minimize forested impacts and is therefore considered environmentally preferable.	+ 0.1
Noll Route Variation; section 3.5.24, appendix J, figure J-22	555.4 to 557.3	Perry, Ohio	Rockies Express stated that it would adopt this variation into the Project route. It addresses all environmental concerns identified by the landowner and was developed to avoid cultural resources; however, more surveys are pending.	+ 0.1
Shaffer (Steele) Route Variation; section 3.5.25, appendix J, figure J-23	623.3 to 624.4	Belmont, Ohio	We evaluated a revised route variation to distance the pipeline from a schoolhouse while still avoiding the forested and hilly areas of concern.	+ < 0.1
MP 384 Route Variation; section 3.5.26, appendix J, figure J-24	383.9 to 384.5	Franklin, Indiana	Rockies Express committed to adopting a route variation, similar to our original variation in the draft, EIS which would require less temporary work space and minimize forested land crossed.	0

Table 3.7-1 (continued)				
Summary of Route Variations Recommended for Incorporation into the Project Route				
Route Variation/ Alternative	Milepost	County, State	Summary	Change in Length (miles)
McCarty Route Variation; section 3.5.27; appendix J, figure J-25	446.5 to 447.4	Warren, Ohio	In the draft EIS we identified two route variations that would distance the pipeline from the McCarty residence. A third variation, identified by Rockies and modified by FERC, would maximize collocation and reduce environmental impacts.	+ < 0.1

4.0 ENVIRONMENTAL ANALYSIS

The environmental consequences of constructing and operating the Project would vary in duration and significance. Four levels of impact duration were considered: temporary, short-term, long-term, and permanent. Temporary impacts generally occur during construction with the resource returning to pre-construction conditions almost immediately afterward. Short-term impacts would continue for up to 3 years following construction. Impacts were considered long-term if resources would require more than 3 years to recover. Permanent impacts would occur as a result of activities that modify resources to the extent that they would *not return to pre-construction conditions during the life of the Project*, such as impact to vegetation as a result of the construction and operations of an aboveground facility. We considered an impact to be significant if it would result in a substantial adverse change in the physical environment.

In this section, we discuss the affected environment, general construction and operational impacts, and proposed mitigation for each resource. Rockies Express, as part of its proposal, agreed to implement certain measures to reduce impacts, and we evaluated the proposed mitigation measures and in some cases identified additional mitigation measures, which we believe would further reduce impacts. The additional mitigation measures that we have identified appear as bulleted, boldface paragraphs in the text. We recommend these measures be included as specific conditions to any Certificate that the Commission may issue to Rockies Express for the Project.

Conclusions in this EIS are based on our analysis of the environmental impact and the following assumptions:

- Rockies Express would comply with all applicable laws and regulations;
- The facilities would be constructed as described in section 2.1 of this EIS; and
- Rockies Express would implement the mitigation measures identified in its application and supplemental filings to the FERC.

This section of the EIS is organized by environmental resource. The scope of our analysis includes the construction and operation of the Project facilities. This EIS also includes a discussion of natural gas pipeline reliability and safety (see section 4.12) and the cumulative impacts of the Project with other projects in the area (see section 4.13).

4.1 GEOLOGY

4.1.1 Geologic Setting

The REX East Project would be located within five main physiographic regions:

- Central Lowlands (Dissected Till Plains): Missouri
- Central Lowlands (Till Plains): Illinois, Indiana, and western Ohio
- Appalachian Plateau (Glaciated and Unglaciated Allegheny Plateau): eastern Ohio
- Wyoming Basin: Wyoming
- Great Plains (High Plains): Nebraska

Much of the Project would be located in areas where the land has been shaped by multiple glacial events. Elevations along the proposed pipeline route would range from 424 feet above mean sea level in Illinois to 1,332 feet above mean sea level in Ohio. Most of the pipeline route would be relatively flat in

Missouri, Illinois, and Indiana. Generally, steeper slopes would occur in Ohio, especially in the eastern portion of the state. Geologic conditions along the REX East pipeline route are summarized in table 4.1.1-1.

Table 4.1.1-1 Summary of Geologic Conditions Along Proposed Route <u>a/</u>	
Milepost Range	Description of Bedrock Formations Crossed
0 to 339	Pennsylvanian and Mississippian limestone, shale, siltstone, and sandstone
339 to 377	Silurian and Devonian limestone and dolomite
377 to 462	Ordovician limestone and dolomite
462 to 547	Mississippian and Silurian limestone, shale, and dolomite
547 to 639	Pennsylvanian and Permian limestone, shale, sandstone, including coal-bearing formations

a/ National Atlas of the United States, 2007.

In most areas bedrock is buried so deeply by glacial deposits and/or soils that it would not be encountered during construction. Approximately 14 percent of the proposed pipeline route would cross areas where bedrock may be encountered during trenching. Table 4.1.1-2 identifies general locations

Table 4.1.1-2 Shallow Bedrock Areas that Require Blasting Along Proposed Pipeline Route <u>a/</u>			
State/County	Areas requiring blasting (miles)	Areas which may require blasting (miles)	Total (miles)
MISSOURI			
Pike	0.1	0.1	0.2
ILLINOIS			
Pike	0.1	0.0	0.1
INDIANA			
Vermillion	0.0	0.1	0.1
Morgan	0.0	<0.1	<0.1
Decatur	0.4	0.0	0.4
Franklin	0.0	4.2	4.2
OHIO			
Butler	0.0	9.8	9.8
Warren	0.1	2.3	2.4
Clinton	0.1	0.0	0.1
Fairfield	1.0	0.1	1.1
Perry	5.8	2.9	8.7
Muskingum	9.8	12.1	21.9
Guernsey	3.8	10.3	14.1
Noble	1.1	2.9	4.0
Belmont	14.9	1.2	16.1
Monroe	4.1	1.4	5.5
Project Total	41.3	47.4	88.7

a/ U.S. Department of Agriculture, 2003.

where shallow bedrock may be encountered. Depending upon the type of rock, Rockies Express would use either rippers or blasting to break up bedrock encountered during construction. If blasting is required, Rockies Express would implement its Blasting Plan (CD Document C). The Blasting Plan outlines the procedures and safety measures that Rockies Express would adhere to while implementing blasting activities along the pipeline right-of-way during construction. Blasting would be used only where other methods of trenching are not feasible. Site-specific blasting plans would be prepared for each area where blasting would occur. These site-specific plans would outline the procedures to be used for notification of nearby property owners; safety precautions; methods for storing, handling, transporting, loading and detonating explosives; and monitoring the effects of explosions. No blasting would be necessary in constructing the aboveground facilities.

Based on the overall geologic conditions present in the Project area, we conclude that construction of the REX East Project would not significantly alter the geologic and physiographic conditions.

4.1.2 Mineral Resources

The construction and operation of REX East facilities near or over mineral resources could impact the present and future extraction of those resources. The types of potentially exploitable mineral resources identified in the REX East Project area are oil and gas, coal, crushed stone, cement, lead, lime, salt, soda ash, clay, and Grade-A helium.

Table 4.1.2-1 identifies the known mineral resource production areas within 1,500 feet of the proposed pipeline route. No mining or mineral resource production areas were identified within 1,500 feet of any of the proposed aboveground facilities. No production of cement, lead, lime, salt, soda ash, clay, or Grade-A helium is known to occur within 1,500 feet of the Project.

Table 4.1.2-1 Summary of Known Mineral Resource Production Areas Within 1,500 Feet of Proposed Project			
State/County	Milepost	Area Where Resource Is Found	Distance (in feet) and Direction from Centerline
ILLINOIS			
Pike	59.9	Quarry	1,300 – Southeast
	70.6	Gravel Pit	1,250 – South
Douglas	199.9	Quarry	500 – North
INDIANA			
Morgan	310.0	Sand/Gravel Pit	575 – West
	315.2	Sand/Gravel Pit	900 – Northeast
	315.4	Sand/Gravel Pit	500 – West
OHIO			
Butler	424.9	Gravel Pit	450 – Southwest
	430.6	Sand/Gravel Pit	1,000 – North
	RR 2031- MP434.1+1.6	Sand/Gravel Pit	1,500 – North
	473.0	Sand/Gravel Pit	1,500 – North

Sand, gravel, and crushed stone

No active sand and gravel pits or quarries would be crossed by the Project. The construction of the Project would not prevent the operation of the existing pits/quarries in the area. Construction of the Project may limit future exploitation of these resources, but only in the immediate vicinity of the Project. We note that in areas where the REX East pipeline would parallel existing rights-of-way, those rights-of-way already prohibit or limit the exploitation of these mineral resources.

A landowner in Waldron, Indiana expressed concern that blasting at a nearby quarry could damage the pipeline. The nearest quarry to the proposed pipeline in this area appears to be about 3,500 feet away. As discussed in section 4.1.3, the pipeline is designed to withstand some amount of earth movement. We do not believe that blasting at a quarry more than 0.5 mile from the pipeline would affect the integrity of the pipeline.

Oil and gas

The pipeline route is within 500 feet of 101 active oil and gas wells. These wells were identified in Christian County, Illinois (5); Parke (2), Shelby (2), and Decatur (9) Counties, Indiana; and Fairfield (3), Perry (20), Muskingum (40), Guernsey (13), Noble (2), Belmont (3), and Monroe (2) Counties, Ohio.

Seven of these wells appear to be within the pipeline construction right-of-way (at MPs 555.0, 573.8, 599.0, 606.6, 627.1, and 2 at 635.4). Grading and trenching activities could damage wellheads or gathering lines, creating a potential safety hazard to workers and interrupting oil and gas production until appropriate repairs are made. Blasting operations could also damage nearby oil and gas wells. Rockies Express has indicated that it would contact the owners of the wells within the construction work area prior to construction, would modify its workspace to attempt to avoid these wells, and would require equipment to remain 10 feet from aboveground well equipment. Although these actions would partially mitigate impacts to the wells, Rockies Express has not provided a plan for monitoring these wells during construction or protecting the integrity of the well and casing. Therefore, we recommend that:

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP, a site-specific plan for oil or gas wells within the construction work area, both active and abandoned. The plan should include details on how the wells would be protected and monitored during construction and discuss how it would determine if any damage attributable to construction activities occurred to the aboveground equipment, casing, or plug (for abandoned wells). The plan should also discuss how any damage would be mitigated.**

By avoiding and/or protecting existing oil and gas production facilities, we believe the Project would not interfere with current oil and gas production in the Project area. Additionally, because oil and gas are generally produced from depths of more than 1,000 feet, construction of the pipeline is not expected to affect future oil or gas production in the area because the proposed pipeline would only be at maximum depths of 10 feet from the ground surface except for HDD crossings, where it would be deeper for short distances.

Coal

Coal deposits are located in the vicinity of the REX East Project. The pipeline and facilities would be located in three coal-producing regions—the Interior, Appalachian, and Western regions. Coal is produced in the Project area through surface strip mining and underground operations; however, no active coal mines or coalbed methane production areas were identified in the locations crossed by the

REX East Project facilities. The pipeline route would cross abandoned underground coal mines in Illinois, Indiana, and Ohio (see table 4.1.2-2). The main concern with crossing abandoned underground coal mines is the potential for subsidence, which could affect the integrity of the pipeline. Subsidence associated with coal mining is discussed in section 4.1.3.

Table 4.1.2-2 Abandoned Underground Mines Crossed by the Proposed Pipeline Route <u>a/</u>				
State/County	Begin Milepost	End Milepost	Length (miles)	Type of Mining
ILLINOIS				
Sangamon	117.5	119.0	1.4	Room and Pillar
	119.0	119.0	<0.1	Room and Pillar
Douglas	208.2	208.3	0.1	Room and Pillar
	208.7	211.9	3.2	Room and Pillar
INDIANA				
Warren	246.4	246.7	0.3	Room and Pillar
OHIO				
Perry	561.2	561.2	<0.1	Room and Pillar
	561.4	561.4	<0.1	Room and Pillar
	561.5	561.6	0.1	Room and Pillar
	561.6	561.7	0.1	Room and Pillar
	562.5	562.6	0.1	Room and Pillar
	563.7	563.8	0.1	Room and Pillar
	563.9	564.0	0.1	Room and Pillar
	564.1	564.3	0.2	Room and Pillar
	564.3	564.6	0.3	Room and Pillar
	564.7	565.1	0.4	Room and Pillar
	567.0	567.1	0.1	Room and Pillar
	567.1	567.1	<0.1	Room and Pillar
	567.2	567.4	0.2	Room and Pillar
	567.4	567.5	0.1	Room and Pillar
Muskingum	567.6	568.2	0.6	Room and Pillar
	570.8	571.1	0.3	Room and Pillar
	571.5	571.6	0.1	Room and Pillar
	571.6	571.7	0.1	Room and Pillar
	595.3	596.0	0.7	Room and Pillar
	596.0	596.2	0.2	Room and Pillar
	596.2	596.3	0.1	Room and Pillar
	596.3	596.5	0.2	Room and Pillar
	596.5	596.5	<0.1	Room and Pillar
	597.6	597.7	0.1	Room and Pillar
Guernsey	597.9	598.0	0.1	Room and Pillar
	598.8	599.2	0.4	Room and Pillar
	600.4	600.8	0.4	Room and Pillar
	600.8	600.8	<0.1	Room and Pillar
	601.0	601.1	0.1	Room and Pillar
	601.1	601.1	<0.1	Room and Pillar
	601.1	601.9	0.8	Room and Pillar
	601.9	602.4	0.5	Room and Pillar
	602.4	602.7	0.3	Room and Pillar

Table 4.1.2-2 (continued)				
Abandoned Underground Mines Crossed by the Proposed Pipeline Route ^{a/}				
State/County	Begin Milepost	End Milepost	Length (miles)	Type of Mining
Belmont	602.7	603.6	0.9	Room and Pillar
	603.9	604.4	0.5	Room and Pillar
	605.9	606.1	0.2	Room and Pillar
	606.2	606.2	<0.1	Room and Pillar
	RR 2010- MP619.8+4.3	RR 2010- MP619.8+4.3	<0.1	Room and Pillar
	629.6	629.8	0.2	Room and Pillar, Longwall
Monroe	629.8	631.1	1.3	Room and Pillar, Longwall
	633.8	633.9	0.1	Room and Pillar
	634.3	639.1	4.8	Room and Pillar

^{a/} Stiff, 1997; Crowell, et al., 2006.

We have received comments from coal companies indicating that the REX East Project would cross areas for which they have future mining rights. REX East would need to reach an agreement with these companies as to whether it would compensate the companies for the lost revenue, if pipeline placement were to preclude mining activities. Alternatively, Rockies Express may need to move the pipeline in the future to avoid damage to the pipeline from the mining activities.

All surface mining sites within 1,500 feet of the proposed pipeline and aboveground facilities are rock quarries or sand and gravel pits. These are important non-fuel mineral resources in the Project states, but are also fairly common, and the REX East Project facilities are not located near any critical deposits. Construction of the Project could prohibit or limit the mineral resource deposits located under or near the proposed pipeline or aboveground facilities from being recovered by surface mining. However, in many areas the proposed pipeline follows existing rights-of-way, which would already limit the extraction of these resources.

4.1.3 Geologic Hazards

Potential geologic hazards identified in the REX East Project area are seismicity (earthquakes and faults), landslides, subsidence, and flooding/scour. Each of these hazards is discussed below.

Seismicity

Seismic hazards include earthquakes, ground faulting, and secondary effects such as liquefaction and related slope failures. Liquefaction is a phenomenon where saturated, non-cohesive soils typically having uniform grain size temporarily lose their strength when subjected to intense ground shaking, often resulting in sloughing or landslides.

The REX East Project route crosses an area of relatively low seismic risk. No active faults were identified in the vicinity of the REX East Project, although features indicative of Quaternary faulting are present in southeastern Illinois and southwestern Indiana where the Project is proposed.

Most seismic activity in the region is generally linked to the New Madrid fault zone located to the south of the pipeline route. Between December 1811 and February 1812, three of the most powerful

earthquakes in U.S. history originated in this area, reaching a Modified Mercalli intensity of up to XII. Since that time numerous intensity V or greater earthquakes have been reported in Missouri, Illinois, Indiana, and Ohio. The Project would not cross the seismically active portion of the New Madrid fault zone. The area in which the probability of a seismic event is highest is located well to the south of the Project area, along the adjoining boundaries of Missouri, Arkansas, and Tennessee. Based on the Seismic Source Zones Map provided in Algermissen et al. (1982), the majority of the Project area (including Nebraska) could experience about three to six Modified Mercalli intensity V earthquakes every 100 years (maximum Richter magnitude of 6.1). Portions of the Project area in Indiana and western Ohio could experience between 11 and 15 Modified Mercalli intensity V earthquakes every 100 years.

The Wabash Valley Seismic Zone is located in southeastern Illinois and southwestern Indiana. This zone is capable of producing seismic activity. On June 18, 2002, a 5.0 magnitude earthquake occurred near Evansville, Indiana in an area that is part of the Wabash Valley Seismic Zone. The Project is located to the north of this seismic zone, but the pipeline route would cross an area in the Wabash Valley region identified as containing liquefaction features. However, no historical earthquakes in this area have been strong enough to cause liquefaction. These features are likely the result of prehistoric events in the Holocene and late Pleistocene epochs (Obermeir and Crone, 1994).

Although the intensity, frequency, and duration of impacts resulting from the potential hazard of minor earthquakes are difficult to quantify, all REX East Project facilities would be designed and constructed in accordance with 49 CFR Parts 192 and 193. These specifications ensure that pipeline facilities are designed and constructed in a manner that provides adequate protection from washouts, floods, unstable soils, landslides, or other hazards that may cause the pipeline facilities to move or sustain abnormal loads. Pipeline installation techniques, especially padding and use of rock-free backfill, effectively protect the pipeline from minor earth movements. Furthermore, the ductility of modern pipelines gives further assurance that minor earth movements would have little impact on the REX East Project pipeline.

The REX East Project would be constructed using arc-welding techniques. O'Rourke and Palmer (1996) evaluated the seismic performance of gas transmission pipelines in southern California using arc-welding as a construction method. Based on their findings, electric arc-welded pipelines constructed after World War II, and properly maintained, have never experienced a break or leak as a result of a southern California earthquake. O'Rourke and Palmer also concluded that electric arc-welded pipelines in good repair are the most resistant type of piping and are generally highly resistant to traveling ground-wave effects and moderate amounts of permanent deformation. Therefore, we do not expect seismic hazards to pose a significant risk to the proposed pipeline facilities.

Landslides

A landslide is defined as the movement of a mass of rock, debris, or earth down a slope. Several factors contribute to slope failures and subsequent landslides, including the degree of slope or tilt of geologic materials, the composition of the materials, the amount of manmade disturbance of the materials, proximity to seismic activity, and the amount of rainfall exposure. Generally, flat areas were selected for the location of the proposed compressor and meter sites; therefore, slope failure is not expected at aboveground facility locations. However, slope failures and subsequent landslides represent a potential hazard along portions of the Project route that would traverse areas of side slopes and rolling terrain. Factors that would increase the potential for slope failures along slopes and rolling terrain include cutting along slopes, the weight of construction equipment, and unusually high precipitation.

The portions of the Project area located in Audrain, Ralls, and Pike Counties, Missouri and Hendricks and Morgan Counties, Indiana have recorded areas of moderate susceptibility/low incidence of

previous landslides. Portions of the pipeline route would encounter recorded areas of high susceptibility/low incidence in Pike County, Missouri; Pike County, Illinois; Franklin County, Indiana; and Perry, Muskingum, and Guernsey Counties, Ohio. Portions of the route would encounter recorded areas of high susceptibility/moderate incidence in Guernsey, Noble, and Belmont Counties, Ohio. Lastly, isolated areas of the pipeline route would encounter recorded areas of high susceptibility/high incidence in Belmont and Monroe Counties, Ohio. Approximately 29 percent of the total proposed REX East pipeline route (based on length) would be located in areas of moderate to high landslide susceptibility. Table 4.1.3-1 identifies areas along the right-of-way that are susceptible to landslides.

Table 4.1.3-1					
Areas Crossed by the Proposed Pipeline Route with Moderate or High Susceptibility to Landslides ^{a/}					
State/County	Begin Milepost	End Milepost	Length (miles)	Susceptibility	Incidence
Missouri					
Audrain	7.8	15.8	8.0	Moderate	Low
Ralls	15.8	19.8	4.0	Moderate	Low
Pike	19.8	36.4	16.6	Moderate	Low
	36.4	43.0	6.6	High	Low
Illinois					
Pike	43.0	69.7	26.7	High	Low
Indiana					
Hendricks	291.0	301.1	10.1	Moderate	Low
	301.1	304.3	3.2	Moderate	Low
Morgan	304.3	306.6	2.3	Moderate	Low
Franklin	379.6	396.8	17.2	High	Low
Ohio					
Perry	557.9	566.3	8.4	High	Low
Muskingum	566.3	577.4	11.1	High	Low
	577.4	591.7	14.3	High	Low
	591.7	591.8	0.1	High	Low
Guernsey	591.8	594.7	2.9	High	Moderate
	594.7	602.8	8.1	High	Low
	602.8	611.3	8.5	High	Moderate
	611.3	618.0	6.7	High	Moderate
Noble	611.3	618.0	6.7	High	Moderate
Belmont	618.0	618.1	0.1	High	Moderate
	618.1	RR 2010- MP619.8+6.0	15.7	High	High
Monroe	625.5	633.8	8.3	High	High
	633.8	639.1	5.3	High	High

^{a/} Godt, 1997.

Construction of the pipeline would be accomplished in accordance with Rockies Express' Plan and Procedures (CD Documents A, B), which include measures to control runoff and erosion that would minimize the potential for slope failures. If feasible, Rockies Express would bury the pipeline below potential landslide depth to reduce landslide susceptibility. Additionally, Rockies Express would implement drainage controls including slope and ditch breakers to reduce the potential for slope failures.

Pipeline construction on steep slopes could initiate localized slope movement. However, we believe that modern construction techniques along with the implementation of Rockies Express' Plan and

Procedures would reduce the potential for construction-related activities to trigger landslides or other slope instability.

Along with the design measures to mitigate for minor earth movements (as set forth by 49 CFR Part 192), the orientation of the pipeline along the long axis of a slope face would minimize the overall energy to which a segment of pipe would be exposed during a landslide event. Should a landslide occur, sections of the pipe could become exposed and thus would require subsequent reburial. None of the aboveground facilities would be located in an area with recorded landslides or on steep slopes.

Subsidence

Subsidence can range from small localized areas of collapse to broad, regional lowering of the ground surface. It can be associated with areas of karst terrain, past underground mining, earthquake-induced liquefaction, and withdrawal of fluids such as groundwater and petroleum. Subsidence related to withdrawal of groundwater or petroleum is generally not a concern in the REX East Project area.

Karst terrain refers to areas characterized by dissolution of rocks such as limestone, dolomite, gypsum, and salt, resulting in sinkholes (closed depressions), pinnacled bedrock, caves/caverns, and underground drainage systems. The tendency for and rate of solubility of rock formations is variable and is believed to be affected by rock mineralogy as well as local structural features, such as jointing, bedding characteristics, and differences in groundwater chemistry.

Approximately 24 percent of the pipeline route crossed by the Project has the potential for karst features from 10 to 200 feet below the ground surface. Table 4.1.3-2 identifies areas of the proposed

State/County	Begin Milepost	End Milepost	Length (miles)
Missouri			
Pike	25.4	42.7	17.3
Missouri Subtotal			17.3
Illinois			
Pike	54.5	71.2	16.7
Scott	71.2	83.5	12.3
Illinois Subtotal			29.0
Indiana			
Putnam	268.1	281.6	13.5
Shelby	343.3	358.7	15.4
Decatur	358.7	376.9	18.2
Franklin	376.9	397.9	21.0
Indiana Subtotal			68.1
Ohio			
Clinton	464.3	473.7	9.4
Greene	473.7	476.5	2.8
Fayette	476.5	499.8	23.3
Pickaway	499.8	500.7	0.9
Ohio Subtotal			36.4
Project Total			150.8

^{a/} National Atlas of the United States, 2007.

pipeline route that would cross potential karst terrain. These sections may be susceptible to subsidence caused by dissolution and sinkhole activity that can occur in karst terrain. But, as most pipeline construction would not occur at depths greater than 10 feet from the surface, and Rockies Express identified no karst-related features during its survey of the proposed right-of-way, no impacts attributable to surficial karst features are expected. However, not all areas of the right-of-way have been surveyed for karst features, and one landowner has expressed concern that karst features may be present on the pipeline route. Therefore, we recommend that:

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP, a plan developed in consultation with the appropriate state agencies for the identification of karst features and mitigation for crossing any such features identified during construction. This plan should also indicate how areas with these features would be monitored during the life of the Project and what steps would be taken if the area were to destabilize in the future.**

It is possible, but unlikely, that an HDD operation may intercept a solution void in a karst area; depending on the size of the void, this could result in the loss of drilling mud and/or the failure of the drill. Rockies Express has not indicated what it would do if a solution void were intercepted during an HDD; therefore, we recommend that:

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP, a contingency plan developed in consultation with state and federal natural resource agencies for HDDs in the karst areas identified in table 4.1.3-2. This plan should include pre-construction identification of the potential for subsurface karst features and identify what Rockies Express would do if a solution void is intercepted to limit the amount of mud lost and successfully complete the drill.**

Subsidence can also occur due to the collapse of underground mines. The two forms of subsidence associated with underground mining are pit and sag. Subsidence due to pits can range from 6- to 8-feet deep with a diameter from 2 to 40 feet. Subsidence due to sags may be several feet deep and cover several acres. The locations of abandoned underground mines along the Project route are listed in table 4.1.2-2. Analysis of the effects of coal mine subsidence on the REX East Project pipeline indicates that for areas in relatively gentle terrain, the pipeline should be capable of accommodating vertical and horizontal ground displacements associated with coal mine subsidence. In areas susceptible to coal mine subsidence with steeper terrain, bends in the pipeline, or elevated pipeline operating temperature, the chances of damage to the pipeline are greater.

Subsidence associated with longwall mining is usually immediate. Unless there is active longwall mining in the area, the subsidence resulting from longwall mining should have occurred prior to construction. With regard to future mining activities, mining applicants must provide notice to surface owners prior to the beginning of new mining operations. Additionally, Ohio DNR – Division of Mineral Resources Management (DMRM) requires that underground mine applicants prepare a subsidence prevention or control plan. For those mine applicants proposing longwall or pillar mining, the mining company must provide an inventory of land features and structures above the coal to be mined, including utility transmission lines. DMRM will determine if sufficient mine stability is designed to prevent subsidence (room and pillar mining) or that planned subsidence mining (longwall or pillar removal mining) is designed to occur in a predictable and controlled manner. To ensure that subsidence from past and potential future mining activities does not affect the pipeline, we recommend that:

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP, a Mining Subsidence Plan that at a minimum addresses the following:**
 - a. **The plan should indicate how areas where the pipeline would cross underground mines would be monitored during the life of the Project and what steps would be taken if the area were to destabilize in the future; and**
 - b. **Communications with mining companies planning to use longwall or room and pillar mining techniques in areas of the pipeline. The plan should outline the monitoring protocol and mitigation measures that may be implemented to prevent subsidence impacts from these specific types of mining to the pipeline.**

None of the aboveground facilities are located in areas considered to be affected by subsidence due to either karst features or past underground mining, with the exception of the Dominion Transmission, Dominion East, and TETCO meter stations, which are located on an abandoned underground mine area at MP 639.1. However, there is no indication of ongoing subsidence in this area.

Flooding/Scour

Seasonal and flash flooding hazards are a potential concern where the proposed pipeline route crosses major streams and small watersheds. Although flooding itself does not present a risk to buried pipelines, bank erosion and/or scour could expose or cause sections of pipe to become unsupported.

In flood or scour-prone areas, the REX East Project pipeline would be buried at greater depths (greater than 5 feet) to minimize scour potential. Rockies Express identified three areas with the potential for severe scour, all within Indiana (see table 4.1.3-3). Aboveground facilities are located in upland areas and would not be susceptible to severe scouring. Rockies Express identified scour-prone waterbodies based on aerial interpretation. We have received comments from individuals, which suggest there may be other waterbodies of concern in Indiana and Ohio. Therefore, we recommend that:

- **Prior to the start of construction, Rockies Express consult with INDNR and ODNR to discuss the scour susceptibility of waterbodies crossed by the Project. Rockies Express should file the results of its consultations and a revised list of scour-prone areas with the Secretary.**

Table 4.1.3-3		
Waterbodies Crossed with Potential for Severe Scour		
County/State	Milepost	Waterbody
Parke, IN	250.7	Leatherwood Creek
Putnam, IN	269.9	Big Raccoon Creek
Johnson, IN	337.9	Sugar Creek

Flooding may be an issue during the construction of the Mississippi River crossing. The pipeline would be installed under the Mississippi River by the HDD method. The drilling operation would involve two separate HDDs, one for the Salt River and one for the Mississippi River. These two drills would take several months to complete. The drilling equipment would be set up on Blackburn Island, which is prone to flooding. The only access to the drilling site would be by boat. Flooding during the drill operation could result in hazardous material (such as diesel and hydraulic fluid) spilling into the river and

equipment used for the drilling operation (such as barges, tanks, and drilling equipment) could float away in the flood waters. Rockies Express has indicated that it does not plan to construct this crossing during the time of year that flooding is most likely (April 1 to July 15). Rockies Express has also indicated that it would monitor river levels during construction. If a flood is predicted, the drilling operations would be halted and to the extent possible equipment would be removed from the island with priority given to diesel fuel storage tanks and diesel powered equipment. We believe that Rockies Express has not provided sufficient information on how it would deal with flooding during construction of the Mississippi River crossing. Other issues that have not been addressed include: how equipment/materials left on the island would be secured, whether the temporary dock (barge) would be left in place, how equipment/materials left behind would be protected from floating debris, and whether timber cut on the island (potential floating debris) would be left there. Because Rockies Express has not provided sufficient detail, we recommend that:

- **Prior to the start of construction, Rockies Express file with the Secretary for review and written approval by the Director of OEP a High Water Contingency Plan for the construction of the Mississippi River crossing. This plan should be developed in consultation with COE.**

4.1.4 Paleontological Resources

Many geologic formations have the potential to contain paleontological resources; however, those containing vertebrate fossils are generally considered to be most scientifically significant because vertebrate fossils are rarer than invertebrate or plant fossils. Potential impacts in fossil localities during construction could include direct impacts (such as damage to or destruction of fossils resulting from excavation activities) and indirect impacts (such as erosion of fossil beds resulting from slope regrading, clearing of vegetation, and unauthorized collection of significant fossils by construction personnel or the public).

Rockies Express consulted with MODNR, Division of Geology and Land Survey; the Illinois State Geological Survey; the Illinois State Museum; the Indiana Geological Survey; and the ODNR, Division of Geological Survey staff to identify areas along the pipeline route with potentially sensitive paleontological resources. Only the Illinois State Museum identified potential paleontological resources of concern along the Project route. In a letter dated February 13, 2007 to Rockies Express, the Illinois State Museum identified areas in Illinois where the Project route crosses potential fossil assemblages (see table 4.1.4-1) (Illinois State Museum, 2007). The Illinois State Museum identified members of the Glasford formation that have previously been found to contain isolated fossiliferous material and the Wedron and Equality Formations that have previously been found to contain significant fossiliferous material, including large mammals. However, the Illinois State Museum did not provide recommendations for any specific actions to be taken regarding potential fossils in these units. Additionally, the ODNR in a letter dated March 6, 2007, identified the Waynesville and Liberty Formations in the interval between MPs 446.6 and 462.5 as having the potential to contain Ohio's official fossil, the *Isotelus* trilobite (ODNR, 2007g). However, the ODNR stated no precautions are necessary with regard to excavating a specimen.

Rockies Express has filed with the FERC Unanticipated Discovery Plans for paleontological resources for each state that would be crossed by the pipeline. Contractors and staff would be instructed to be aware of the possibility of encountering paleontological material during pipeline or aboveground facility construction in the abovementioned areas. If any significant paleontological material is encountered, the EI would contact the appropriate agency and request further investigation. Construction would halt until a site determination is made.

Table 4.1.4-1 Potential Fossiliferous Formations Crossed by the Project Route in Illinois				
County	Begin Milepost	End Milepost	Length (miles)	Formation – Member
Pike	65.3	70.4	5.1	Glasford – Kellerville
Scott	75.0	86.3	11.3	Glasford – Vandalia
Morgan	86.3	94.7	8.4	Glasford – Vandalia
	95.1	105.1	10.0	Glasford – Vandalia
	105.1	106.0	0.9	Glasford – Hagarstown
	106.0	106.4	0.4	Glasford – Vandalia
Sangamon	106.4	120.4	14.0	Glasford – Vandalia
	121.3	125.6	4.3	Glasford – Vandalia
	126.3	131.7	5.4	Glasford – Vandalia
Christian	132.2	132.6	0.4	Glasford – Vandalia
	133.2	134.8	1.6	Glasford – Vandalia
Sangamon	134.8	135.4	0.6	Glasford – Vandalia
Christian	135.4	141.9	6.5	Glasford – Vandalia
	141.9	151.1	9.2	Glasford – Radnor
Macon	151.1	154.0	2.9	Glasford – Radnor
	154.6	160.3	5.7	Wedron – Piatt
	160.3	164.6	4.3	Wedron – Piatt
	164.6	165.0	0.4	Wedron – Fairgrange
	165.0	169.4	4.4	Wedron – Piatt
	169.4	172.1	2.7	Wedron – Piatt
Moultrie	172.1	172.9	0.8	Wedron – Piatt
	172.9	187.5	14.6	Wedron – Piatt
Douglas	187.5	188.0	0.5	Wedron – Piatt
	188.4	192.6	4.2	Wedron – Piatt
	193.2	195.2	2.0	Wedron – Batesown
	195.2	201.1	5.9	Wedron – Batesown
	201.1	202.4	1.3	Equality – Dolton
	202.4	202.5	0.1	Wedron – Batesown
	203.1	204.7	1.6	Equality – Dolton
	204.7	205.3	0.6	Wedron – Batesown
	205.3	212.4	7.1	Equality – Carmi
	212.4	213.4	1.0	Equality – Carmi
	213.4	214.7	1.3	Wedron – Batesown
Edgar	214.7	228.0	13.3	Wedron – Batesown
	229.1	232.6	3.5	Wedron – Batesown
	233.8	234.9	1.1	Wedron – Batesown
	235.4	236.3	0.9	Wedron – Batesown
	237.1	238.1	1.0	Wedron – Batesown

Because of this stop-work contingency, and because pipeline construction would disturb a relatively small area of relatively low-fossil-density formations, construction impacts to paleontological resources are considered minimal.

Normal operation of the pipeline and aboveground facilities would not disturb paleontological resources. Although maintenance activities would result in surface disturbance, such disturbance would typically occur in areas previously disturbed by construction. Therefore, operational impacts to paleontological resources are considered negligible.

4.2 SOILS

Information regarding the soil types present in the Project area and their characteristics was obtained using NRCS in the State Soil Geographic (STATSGO) database. STATSGO is an electronic database maintained by the U.S. Department of Agriculture (USDA), NRCS. The soil characteristics/limitations that are evaluated are the potential for erosion by wind and water, shallow bedrock, prime farmland designation, compaction, and the percentage of stones/rocks, droughty soil, and hydric soil present.

Pipeline construction activities such as clearing, grading, trench excavation, backfilling, heavy equipment traffic, and restoration along the construction right-of-way may result in adverse impacts on soil resources. Clearing removes protective vegetative cover and exposes soil to the effects of wind, sun, and precipitation, which could potentially increase soil erosion and the transport of sediment to sensitive areas. Grading and equipment traffic can compact soil, reducing porosity and percolation rates, which could result in increased runoff potential. In addition, grading can result in the mixing of topsoil with subsoil, which could result in long-term reduction of agricultural productivity and introduce subsurface rocks to the soil surface. Trench excavation and backfilling could also lead to the mixing of topsoil and subsoil, introduction of excavated rocks from the fracturing of bedrock, and introduction of rock and/or gravel into the soil surface. This could result in future increases in operation labor, decreases in agricultural productivity, and potential damage to agricultural field equipment. Soil contamination from equipment spills and/or leakage of fuels, lubricants, and coolants could also impact soils. Rockies Express has developed three plans, the Upland Construction Plan (CD Document A), the Wetland and Waterbody Construction and Mitigation Procedures (CD Document B), and the AIMP (appendix I contains the AIMP for Illinois as an example) to identify baseline mitigation procedures for minimizing impacts on soils and enhancing revegetation. Further discussion of the AIMPs and their proposed mitigation measures for agricultural areas can be found in section 4.8.2 of this EIS.

4.2.1 Soil Limitations

Table 4.2.1-1 summarizes the soil limitations that could be encountered by the proposed pipeline route and table 4.2.1-2 summarizes the soil limitations associated with the proposed aboveground facilities¹. Impacts associated with construction and operation of aboveground facilities would be similar to those described above for pipeline limitations; however, impacts at aboveground facilities would be permanent. Because land used for construction of the aboveground facilities would be permanently converted to industrial use, mitigation measures implemented at the aboveground facilities are limited to erosion and sediment control measures.

Erosion Potential

Erosion is a natural process by which surface soils are worn away, typically by wind or water. Factors that influence the erosion potential of soil include gradation (distribution of soil particles), vegetative cover, length and percentage of slope, rainfall, and wind intensity. Soils on steep, long slopes are much more susceptible to water erosion than soils on shallow, short slopes because the steeper slopes accelerate the flow of surface runoff.

¹ Specific soil characteristics and limitations along the Project length by milepost can be found on the accompanying CD (CD Document K).

Table 4.2.1-1
Summary of Soil Limitations at Pipeline Facilities (by miles crossed) ^{a/}

County	Highly Water Erodible ^{b/}	Highly Wind Erodible ^{c/}	Prime Farmland ^{d/}	Hydric ^{e/}	Compaction Prone ^{f/}	Stony Rocky ^{g/}	Shallow Bedrock ^{h/}	Droughty ^{i/}
MISSOURI								
Audrain	0.7	0.0	13.5	8.9	6.2	0.0	0.0	0.0
Ralls	0.0	0.0	3.9	1.9	1.7	0.0	0.0	0.0
Pike	9.3	0.0	8.3	3.8	3.4	5.1	4.5	0.0
ILLINOIS								
Pike	5.2	0.0	16.7	6.1	1.7	0.0	0.0	0.0
Scott	3.6	0.0	9.0	2.1	0.7	0.0	0.0	0.0
Morgan	3.5	0.0	14.5	3.8	2.6	0.0	0.0	0.0
Sangamon	1.9	0.0	22.8	7.8	8.9	0.0	0.0	0.0
Christian	1.0	0.0	16.7	5.1	0.7	0.0	0.0	0.0
Macon	1.0	0.0	16.2	4.5	4.3	0.0	0.0	0.0
Moultrie	0.0	0.0	14.9	5.2	5.2	0.0	0.0	0.0
Douglas	0.1	0.0	26.2	10.6	7.1	0.0	0.0	0.0
Edgar	0.6	0.0	22.7	8.0	7.4	0.0	0.0	0.0
INDIANA								
Vermillion	2.2	0.0	5.6	1.1	0.3	0.0	0.2	0.0
Parke	5.4	0.1	14.2	2.7	0.7	0.0	0.0	0.2
Putnam	5.6	0.0	11.8	1.3	1.0	0.0	0.7	0.1
Hendricks	2.8	0.1	14.3	2.5	0.4	0.0	0.2	0.1
Morgan	1.1	0.2	11.4	3.8	1.8	0.0	0.0	0.3
Johnson	2.1	0.1	16.9	4.8	1.1	0.0	0.0	0.1
Shelby	2.0	0.3	16.7	5.8	0.4	0.0	0.2	0.2
Decatur	3.8	0.0	13.7	2.9	1.0	0.0	0.6	0.0
Franklin	15.8	0.1	10.6	1.2	0.7	5.3	7.5	0.1
OHIO								
Butler	8.4	0.0	22.0	4.0	2.9	0.0	1.2	0.1
Warren	5.9	0.0	16.3	2.3	1.6	0.0	0.9	0.0
Clinton	2.7	0.0	11.4	1.8	0.2	0.0	0.4	0.0
Greene	0.1	0.0	2.7	1.5	1.5	0.0	0.0	0.0
Fayette	2.2	0.0	20.9	8.2	6.8	0.0	0.0	0.0
Pickaway	4.8	0.2	18.9	5.6	4.7	0.1	0.0	0.0
Fairfield	7.8	0.0	16.4	2.4	0.9	1.4	1.4	0.0
Perry	14.7	0.0	2.3	0.8	0.0	3.8	7.1	0.0
Muskingum	20.7	0.0	1.8	1.5	0.5	5.5	14.2	0.0
Guernsey	16.0	0.0	1.4	1.3	0.4	2.4	14.3	0.0
Noble	6.4	0.0	0.0	0.0	0.0	4.2	5.5	0.0
Belmont	14.6	0.0	1.4	0.0	0.0	0.8	15.7	0.0
Monroe	5.2	0.0	0.0	0.0	0.0	0.0	5.0	0.0
Total	177.1	1.1	417.1	120.9	76.8	28.6	79.6	1.2
Percent of Total ^{j/}	27.7	0.2	65.3	18.9	12.0	4.6	12.5	0.2

^{a/} Values may be overestimated due to rounding as all values <0.1 were counted as 0.1.

^{b/} Includes map unit having average slope class of 9 percent or more and designated as land capability subclasses 4E through 8E by NRCS.

^{c/} Includes map unit designated as wind erodibility group 1 or 2 by NRCS.

^{d/} Includes map unit designated as prime farmland by NRCS.

^{e/} Includes map unit designated as hydric by NRCS.

^{f/} Includes map unit having sandy clay loam texture or finer in drainage classes categorized as somewhat poor, poor, or very poor.

^{g/} Includes map unit meeting criteria for stony-rocky soils.

^{h/} Includes map unit having bedrock within 60 inches of soil surface.

^{i/} Includes map unit meeting criteria for droughty soils.

^{j/} Percentages sum to greater than 100 because some areas are characterized by more than one soil limitation.

Table 4.2.1-2 Summary of Soil Limitations at Aboveground Facilities					
Facility (County)	Total Acres	Highly Erodible <u>a/</u>	Prime Farmland <u>b/</u>	Hydric <u>c/</u>	
MISSOURI					
Mexico Compressor Station (Audrain)	12.8	No	Yes	No	
ILLINOIS					
Blue Mound Compressor Station (Christian)	12.9	Yes	Yes	No	
NGPL Meter Station (Moultrie)	5.6	No	Yes	Yes	
Ameren Power Company (Moultrie)	1.2	No	Yes	No	
Trunkline Meter Station (Douglas)	2.6	No	Yes	Yes	
MGT Meter Station (Edgar)	1.2	Yes	Yes	No	
INDIANA					
PEPL Meter Station (Putnam)	1.2	Yes	Yes	No	
Bainbridge Compressor Station (Putnam)	21.3	No	Yes	Yes	
Citizen Gas Meter Station (Morgan)	1.2	No	Yes	Yes	
IGC Meter Station (Morgan)	2.0	No	Yes	No	
ANR Meter Station (Shelby)	2.2	Yes	Yes	No	
OHIO					
Hamilton Compressor Station (Warren)	15.2	No	Yes	Yes	
Dominion/TETCO/TG/Vectren/CGE Meter Station (Warren)	6.8	Yes	Yes	No	
CGTC Meter Station (Fairfield)	2.2	No	Yes	No	
Chandlersville Compressor Station (Muskingum)	19.9	Yes	Yes	No	
TG Meter Station (Guemsey)	2.2	Yes	No	No	
DT/DEG/TETCO Meter Station (Monroe)	6.1	Yes	No	No	
WYOMING					
Arlington Compressor Station (Carbon)	15.0	Yes	No	No	
NEBRASKA					
Bertrand Compressor Station (Phelps)	17.7	No	Yes	Yes	
<u>a/</u> Includes map unit designated by NRCS as highly erodible land.					
<u>b/</u> Includes map unit designated by NRCS as prime farmland.					
<u>c/</u> Includes map unit designated by NRCS as hydric.					

As presented in table 4.2.1-1, approximately 28 percent of the soils that would be crossed by the REX East pipeline route are highly susceptible to water erosion and 0.2 percent of the soils are most susceptible to wind erosion. Clearing, grading, and equipment movement could accelerate the erosion process. Without adequate protection, this could result in topsoil loss, reduced soil fertility, and discharge of sediment into sensitive areas. The sloping banks of ravines, waterbodies, and soil storage piles would be most susceptible to water erosion.

The Plan would be used during construction in upland areas. The Procedures would be followed in wetland areas and waterbody crossings and includes measures to protect soils in those areas. The Plan and Procedures are designed to control erosion and sedimentation during construction. These include use of temporary and permanent breakers on slopes. Temporary sediment barriers or slope breakers, such as

straw bales or silt fences would be installed at the base of slopes adjacent to waterbodies, in wetlands, on roadways, and along the edge of the right-of-way. This would prevent sediment from flowing off the right-of-way. Permanent trench breakers, such as sacks of soil or sand, polyurethane foam, or bentonite clay, would be installed around the pipe in the trench prior to filling to mitigate subsurface channeling of water where applicable. The measures implemented would be monitored by Rockies Express' EIs to ensure control of erosion. Temporary sediment barriers would be evaluated daily and maintained (reinstalled as necessary) until areas disturbed by construction are stabilized and successful revegetation is accomplished. Active revegetation using seed mixtures recommended by NRCS and landowners would be used as necessary to further stabilize soils to prevent erosion. Rockies Express would also temporarily employ the use of water trucks, as needed, to reduce wind erosion and road dust associated with construction activities.

Rockies Express would also implement waterbody crossing methods as outlined in its Plan and Procedures to minimize potential impacts of soil erosion from water and sedimentation near waterbodies. For example, spoil from waterbody crossings would be maintained in the construction right-of-way at least 10 feet from the water's edge or in an additional workspace. Sediment barriers would be installed and properly maintained to prevent flow of sediment into the waterbody and to contain spoil and sediment within the construction right-of-way. In addition, trench plugs would be used as necessary to prevent diversion of water into upland portions of the pipeline trench, and all waterbody banks would be returned to a stable condition. Where trench dewatering is required, Rockies Express would pump water from the trench into vegetated upland areas to prevent soil erosion in areas disturbed by construction. Filtering and discharge dissipation devices would be used as appropriate to ensure that trench dewatering activities do not cause erosion or result in heavily silt-laden discharge water.

During the restoration in nonagricultural areas, Rockies Express would condition the right-of-way by preparing a seedbed and applying soil amendments at rates previously agreed upon by the landowner, land management agency, or soil conservation authority.

Rockies Express has detailed several ways it would construct and monitor its pipeline to ensure proper depth of cover and right-of-way stability. In addition to the procedures discussed above, landowners would have the option of negotiating with Rockies Express for the use of additional mitigation measures as long as those measures would not impact other landowners (without their permission) or impact other sensitive resources (e.g., waterbodies, wetlands, protected species, cultural sites, or residential areas). Upon commissioning the pipeline, Rockies Express would implement a surveillance plan that includes monthly aerial pipeline patrolling to inspect for excavation activities, ground movement, wash-outs, leakage, or other changes along the right-of-way. Within one year of cathodic protection system installation, Rockies Express would conduct a close internal survey along the pipeline route on foot. In addition, Rockies Express would use an outreach program for landowner and tenant communication to discuss pipeline location, operation, maintenance, and emergency reporting. We believe these measures would ensure right-of-way stability and minimize the potential for operational disturbances, including increased erosion.

We have received comments concerning the potential for erosion in Franklin County, Indiana due to the sandy soils. The erosion control measures described above can control erosion even in areas with sandy soils. Properly installing and maintaining the erosion control devices (such as haybales, berms, and silt fences) until the area is restored and revegetated is critical to successfully controlling erosion. Inspection by Rockies Express' EI and the FERC's monitors would ensure that these devices are properly installed and maintained.

Prime Farmland

Prime farmland soils consist of soils classified as those best suited for the production of food, feed, forage, fiber, and oilseed crops. These soils generate the highest yields with the least amount of expenditure. Soils currently occupying pastures and fields or otherwise undeveloped forest and open land also can be classified as prime farmland soils; lands occupied by surface water or residential, commercial, or industrial uses cannot receive this designation. Prime farmland soils generally meet the following criteria: they have an adequate water supply from either precipitation or irrigation; contain little or no rock; are permeable to water and air; are not excessively erodible or saturated for long periods; and do not flood frequently or are protected from flooding. Approximately 65 percent (417.1 miles) of the REX East Project route would cross prime farmland soils as designated under these criteria.

Potential impacts on agricultural uses and prime farmland soils from pipeline construction include eroding soil; interference with and damage to surface drainage, drain tiles, and irrigation systems; mixing of topsoil and subsoil; potential loss of fertile topsoil; and compaction of topsoil. The AIMP was developed to minimize the impacts of the pipeline to agricultural soils. Discussion of the AIMP and additional analysis of agriculture-related issues is presented in section 4.8.2 of this EIS. We recommend in this section the pipeline be buried at a minimum depth of 5 feet where it would cross agricultural fields.

Construction of the aboveground facilities, compressor stations, and meter stations would permanently affect approximately 126.0 acres of prime farmland soils. Additional acres of prime farmland soils would be temporarily affected during the construction of the mainline and laterals; however, this land would revert to its original use after construction and the acreage affected would not significantly reduce agricultural production in the REX East Project area.

Compaction Potential

Soil compaction occurs when soil particles are compressed. Compaction modifies soil structure and can reduce the porosity and moisture-holding capacity of the soil, thus restricting rooting depth. Compaction also decreases infiltration and thereby increases runoff and the potential for water erosion. The risk for compaction is greatest when soils are wet. Fine-grained soils having poor drainage characteristics have the greatest propensity for compaction. Construction equipment traveling over wet or saturated soils could disrupt soil structure, reduce pore space, increase runoff potential, and cause topsoil/subsoil rutting and mixing. Approximately 12 percent of the soils crossed by the REX East route are susceptible to compaction.

Operating heavy equipment can cause soil compaction in residential and agricultural areas. Construction vehicles and heavy equipment could leave ruts and cause excessive soil compaction. Rockies Express would mitigate rutting and compaction in agricultural and non-agricultural soils by implementing the procedures in its Plan, such as conducting compaction tests across the right-of-way using a cone penetrometer or another similar instrument and using a paraplow or other deep-tilling equipment in severely compacted agricultural areas. In areas where topsoil has been segregated, the subsoil would be plowed before replacing the segregated topsoil. In addition, Rockies Express would consult with landowners, NRCS, and additional agencies and perform decompaction as required by the affected party. To further minimize the potential for soil impacts in residential and agricultural areas, Rockies Express indicated that it would modify its construction practices by stopping construction activities that would cause irreparable rutting and mixing of the topsoil and subsoil. However, Rockies Express has also indicated that it believes the use of full right-of-way topsoil segregation would allow the continuation of construction during wet weather. We disagree; the concerns with compaction are not limited to topsoil and removing the topsoil would not negate the compaction concern. We believe that

additional mitigation measures should be implemented to minimize these potential impacts. To further mitigate for compaction in agricultural areas during wet weather, we recommend that:

- **Rockies Express prepare an Agricultural Wet Weather Contingency Plan to address construction practices in agricultural areas during wet weather (i.e., active precipitation and/or saturated ground or as otherwise determined by the EI). This plan should include, at a minimum:**
 - a. **A determination of the allowable depth of rutting, and allowable working conditions, prior to suspension of construction activities based on the type of soil, topsoil, and subsoil thickness and/or using the Atterberg Field Test Procedure;**
 - b. **Designation of authority for the onsite AI to have “stop-work” authority in the event that wet weather conditions place topsoil and subsoil at risk; and**
 - c. **Identification of alternate construction procedures to enable activities to continue without risking the loss and/or mixing of topsoil and subsoil and severe compaction in the event of an unseasonably wet construction season.**

This plan should be filed with the Secretary for review and written approval by the Director of OEP prior to the start of construction.

IDOA also strongly supports the development and implementation of an Agricultural Wet Weather Contingency Plan.

Stony-Rocky or Droughty Soils

Stony soils are identified as soils having more than 5 percent by weight of particles larger than 3 inches. Stony-rocky soils could interfere with agricultural practices and inhibit revegetation efforts.

Droughty soils have a surface texture of sandy loam or coarser material and are moderately well or excessively drained. As a result, droughty soils may not be able to sustain adequate moisture levels in the root zone, making revegetation difficult.

Approximately 4.5 percent of the soils crossed by the REX East facilities are stony-rocky and less than 1 percent of the soils crossed by the REX East facilities are droughty. Construction through stony-rocky soil could bring rock to the surface, which could interfere with agricultural practices and also hinder revegetation of the right-of-way.

In the event that blasting is required, Rockies Express' Plan and Procedures allow blast rock to be used to backfill the trench up to the level of the preexisting bedrock profile, but require the removal of excess blast/excavated rock, which would be considered construction debris. The Plan and Procedures also require the removal of excess stones and rock in areas where soils off the right-of-way do not contain similar materials. In nonagricultural areas, mulch application could be used to conserve soil moisture in droughty soils, in addition to providing stability of the soil surface and reducing erosion. Based on these procedures, we conclude that Rockies Express' use of its Plan and Procedures would effectively minimize impacts from construction through these types of soils.

Hydric Soils

Hydric soils are defined as soils that are formed under conditions of saturation, flooding, or ponding that has taken place long enough during the growing season to develop anaerobic conditions in the upper horizon. Hydric soils include those developed under sufficiently wet conditions to support the growth and regeneration of hydrophytic vegetation, and soils that are sufficiently wet because of artificial measures. Locations where hydric soils are encountered may also contain artificial drainage systems.

Approximately 19 percent of the soils crossed by the REX East route are designated as hydric soils. Construction through hydric soils and wetlands is discussed in sections 2.3.2 and 4.3.7 of this EIS. Implementation of the measures contained in Rockies Express' Plan and Procedures would also minimize impacts on hydric soils.

Shallow Bedrock

Soils indicated as consisting of shallow bedrock have the potential for bedrock to occur within 60 inches of the soil surface. In these areas, specialized mechanical equipment or blasting may be required for trench excavation.

Approximately 14 percent of the soils that would be crossed by REX East facilities have the potential for shallow bedrock, mainly on the eastern end of the Project. Approximately 47 percent of the shallow bedrock crossed would require blasting. The remaining areas of shallow bedrock may require blasting, but may also be soft enough to be ripped with backhoes or bulldozers equipped with rippers. Implementation of Rockies Express' Blasting Plan would minimize the effects of blasting (CD Document C). Shallow bedrock impacts are discussed in section 4.1.1 of this EIS.

4.2.2 Spill/Contamination Prevention

Soil contamination along the pipeline route could result from at least two sources: material spills during construction and trench excavation of existing contaminated areas. Contamination from spills or leaks of fuels, lubricants, coolants, and solvents from construction equipment could impact soils. Through its review of national and state regulatory databases, Rockies Express has not identified the presence of any existing contaminated sites in the immediate Project vicinity.

Rockies Express' Spill Prevention, Control, and Countermeasure (SPCC) Plan includes clean-up procedures designed to minimize contamination from accidental spills or leaks of fluids from construction-related equipment or materials (CD Document E). If an unanticipated area of suspected contamination is encountered during construction, Rockies Express would implement the procedures set forth in the SPCC Plan to minimize the spread of contamination and to ensure the health and safety of construction workers and the general public.

4.2.3 Topsoil Segregation

In addition to erosion and compaction, construction activities such as grading, trenching, and backfilling can cause mixing of soil horizons. Mixing of topsoil with subsoil, particularly in agricultural lands, leaves less productive soil in the root zone, which lowers soil fertility and the ability of disturbed areas to revegetate successfully.

According to section IV.B.1 of its Plan, Rockies Express would use the full work area or ditch-plus-spoil-side method in (1) actively cultivated or rotated croplands and pastures, (2) residential areas, (3) hayfields, and (4) other areas at the request of landowners or land-managing agencies.

Rockies Express' Plan includes measures to prevent or minimize the mixing of topsoil with subsoil. In addition, for agricultural areas, the AIMP includes directives for topsoil segregation.

Regarding the depth of topsoil, Rockies Express proposes to strip a maximum of 16 inches in actively cultivated or rotated croplands and other areas as requested by landowners or land-managing agencies. In areas where the topsoil is less than 16 inches, Rockies Express would attempt to segregate the entire topsoil depth. Rockies Express would protect the topsoil piles from loss or mixing with subsoil, being used as trench backfill or pipe padding, and from wind and water erosion. Procedures for soil segregation and depth of cover in agricultural areas are discussed in the AIMP.

During scoping we received several comments regarding topsoil segregation in areas of no-till farming. Erosion and sedimentation controls described in the AIMP would be implemented to minimize impacts in no-till farming areas, in addition to conventional farming areas. By implementing the topsoil segregation procedures described in the Plan and Procedures, as well as the AIMP, impacts to soils in no-till farming areas would be minimized and would not significantly impact soil quality in the Project area.

4.3 WATER RESOURCES

4.3.1 Groundwater Resources

Along the REX East Project route, groundwater is a significant source of drinking water in selected areas and is used for agricultural irrigation and industry. Groundwater flow generally reflects surface topography. Although depth to groundwater is variable along the proposed pipeline route, groundwater is often found near the ground surface, and the Project is likely to encounter groundwater during construction activities.

Major aquifers along the Project route include the Glacial Till, Dissected Till and Residuum, Pre-Wisconsin Drift, New Castle Till, New Castle Till Subsystem, Lower Tertiary, and Upper Cretaceous. These aquifers underlying the proposed pipeline and aboveground facilities are generally found in geological units composed of glacially derived till, alluvium, sand, and gravel. Additional information on the aquifers that occur along the Project route, including sole-source aquifers, WPAs, wells, springs, and contaminated groundwater is presented below.

Aquifer Systems

The Glacial Till Aquifer underlies the pipeline route in Audrain, Ralls, and Pike Counties, Missouri. This aquifer is a glacial drift aquifer consisting of sand and gravel. Depths to this aquifer range from 0 to below 200 feet and yields range widely, from less than 1 gallon per minute (gpm) to more than 2,000 gpm (MODNR, 2007a; Miller and Vandike, 1997). Some individual households use the Glacial Till aquifer for drinking water, but it is inadequate for municipal drinking supplies.

Aquifers underlying the pipeline route in Pike, Scott, and Morgan Counties, Illinois are typically composed of glacial alluvium. These aquifers are found in unconsolidated deposits of glacial sand and gravel varying in thickness and depth. These aquifers range in thickness from about 50 feet to as much as 150 feet and are capable of yielding 200 to 1,000 gpm for municipal, industrial, and irrigation uses.

In Sangamon, Christian, Macon, Moultrie, Douglas, and Edgar Counties, Illinois, glacial alluvium aquifers are minor. However, in this area of east-central Illinois, small areas of sand and gravel incised in Pennsylvanian shales are significant sources of groundwater for small communities and domestic wells. These wells have varying yields ranging from less than 1 gpm to 100 gpm at depths of less than 25 feet (Wehrmann and Sinclair, 2003).

Aquifers underlying the pipeline route from Vermillion County through Franklin County, Indiana include a combination of glacial alluvium aquifers, Pennsylvanian-age rock unit aquifers, and unconsolidated aquifers. In the glacial alluvium aquifer zones, the depth to water and the quantity and quality of groundwater are extremely variable. Depth to groundwater ranges from 50 to more than 550 feet in the Pennsylvanian-age rock unit aquifers. In Decatur and Franklin Counties, Indiana the pipeline route would cross four unconsolidated aquifer systems: Dissected Till and Residuum, Pre-Wisconsin Drift, New Castle Till, and New Castle Till Subsystem. Water depths range from 10 to 100 feet. The thicknesses of the unconsolidated deposits throughout these counties is variable, and often depends on the underlying bedrock topography (INDNR, 2005).

Aquifer systems underlying the pipeline route from Butler County, Ohio to the pipeline terminus in Monroe County, Ohio include a combination of glacial alluvium, limestone bedrock, Silurian carbonate, Niagaran limestone, sedimentary bedrock, abandoned coal mine, and shaley sandstone or limestone aquifers. Glacial alluvium aquifers vary in depth to groundwater and tend to be shallower

(approximately 200 feet) than bedrock aquifers. In general, glacial alluvium aquifers can be high-yielding, with ranges greater than 1,000 gpm.

The pipeline's route in Noble, Belmont, and Monroe Counties, Ohio features unglaciated upland areas. The two types of aquifers in these areas are from either shaley sandstone or thin limestone, both of varying depths with low yields of less than 1 gpm (Ohio State University Extension, 2007a,b).

The Lower Tertiary and the Upper Cretaceous aquifers are located beneath the Arlington Compressor Station site, in Carbon County, Wyoming. The Lower Tertiary aquifer includes a combination of shale, mudstone, siltstone, lignite, and coal. The depth to groundwater ranges from 300 to 900 feet below the surface (USGS, 1996). Wyoming wells have yields ranging from less than 1 gpm to 50 gpm, with maximum yields exceeding 1,000 gpm.

The proposed Bertrand Compressor Station site in Phelps County, Nebraska is underlain by Quaternary sand and gravel deposited by glacial and river-related processes, and the Tertiary Ogallala Group consisting of lime-cemented sand and gravel, loess-like silt, and unconsolidated sand and gravel. Depth to groundwater (with the Quaternary overlying the Tertiary) ranges from less than 50 feet to greater than 200 feet below the surface. Well yields can range from 1 to 1,000 gpm or more. Generally, the water quality is good, and dissolved concentrations of mineral constituents typically range from 200 to 500 milligrams per liter (Conservation and Survey Division, 1996).

Sole-Source Aquifers

EPA defines a sole- or principal-source aquifer as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. EPA guidelines stipulate that such areas can have no alternative drinking water source(s) that could physically, legally, and economically supply all those who depend upon the aquifer for drinking water (EPA, 2006). No sole-source aquifers have been designated by EPA in Illinois, Missouri, or Nebraska. In Wyoming, EPA has designated two sole-source aquifers: the Eastern Snake River Plain Aquifer Stream Flow Source Area and the Elk Mountain Aquifer. These aquifers would not be impacted by the compressor station in Carbon County. One sole-source aquifer has been designated by EPA in Indiana; however, it is located in the northern part of the state and would not be near the REX East Project facilities. In Ohio, EPA has designated five sole-source aquifers. The Pleasant City Sole-Source Aquifer is located 1.3 miles south of the pipeline route and would not be crossed by the Project. The Miami Valley Buried Sole-Source Aquifer would be crossed by the pipeline. It is located in the southwestern part of Ohio and underlies the pipeline route in Butler and Warren Counties. Depth to groundwater in most parts of the Miami Valley Buried Aquifer is less than 20 feet (GMBA, 2007). If properly constructed, wells may yield more than 1,000 gpm. The pipeline route would cross approximately 7.0 miles of land underlain by this sole-source aquifer. The three remaining sole-source aquifers in Ohio are located more than 10 miles from the Project and would not be impacted.

Water Supply Wells and Springs

Based on agency consultations, surveys, and an analysis of public and private water supply wells and springs, 67 wells and 6 springs have been identified within the vicinity of the pipeline. No public water supply wells were identified within 150 feet of Project facilities. The pipeline would be located within 150 feet of 7 private water wells in Illinois, 20 private water wells in Indiana, and 40 private water wells in Ohio (see appendix G). While no springs were identified in the vicinity of the route in Missouri, the pipeline would be located within 150 feet of two springs in Illinois, one spring in Indiana, and one spring in Ohio (see table 4.3.1-1). Rockies Express is currently in the process of field verifying the occurrence and locations of active wells and springs within 150 feet of the pipeline right-of-

Table 4.3.1-1 Springs Located Within 150 Feet of the REX East Proposed Pipeline Route ^{a/}		
State/County	Approximate Milepost	Approximate Distance from Centerline (feet)
MISSOURI	None Identified	N/A
ILLINOIS		
Edgar	228.5	55
Edgar	233.9	125
INDIANA		
Morgan	317.2	100
OHIO		
Monroe	638.2	32
^{a/} Spring information is based on civil survey information.		

way. Rockies Express has not been granted survey access for the entire route to document all active wells and springs within 150 feet of the Project; thus, the data that have been filed with the Commission are incomplete. Therefore, we recommend that:

- **Prior to the start of construction, Rockies Express file with the Secretary the locations by milepost of all springs, seeps, and wells identified within 150 feet of construction work areas.**

Wellhead Protection Areas

WPAs are generally defined as surface and subsurface areas surrounding a water well or wellfield supplying a public water system through which contaminants are reasonably likely to move toward and reach such water well or wellfield. As such, WPAs are regulated to protect the water supply that is drawn by that particular well. Twelve WPAs have been identified along the pipeline route and are listed in table 4.3.1-2.

Impacts and Mitigation

Standard pipeline construction procedures, such as clearing and grading, trench excavation and dewatering, fuel handling, and blasting could affect groundwater resources including aquifers, water supply wells, springs, and WPAs. Clearing and grading removes vegetation, which could affect overland water flow and infiltration rates. Trenching and soil stockpiling activities temporarily alter overland flow and groundwater recharge and could result in minor fluctuations in groundwater levels and/or increased turbidity. In addition, heavy equipment used for construction could compact soil resources along the right-of-way, reducing its ability to absorb water and thus slowing the rate of groundwater recharge and increasing surface runoff and the potential for ponding.

Rockies Express would minimize or avoid groundwater impacts during construction by implementing measures outlined in its Plan and Procedures. Construction of the pipeline would require trenching and backfilling to a depth of approximately 7 to 8 feet below the ground surface. In areas where the water table is near the ground surface, trench excavation could intersect the water table, requiring trench dewatering. Trench dewatering may result in localized, minor changes in the water table, as well as changes in springs and wetland areas. Because pipeline construction at a given location would

Table 4.3.1-2 Wellhead Protection Areas Crossed by the Construction Work Area			
State/County	Milepost	Wellhead Protection Area	Crossing Length (miles)
MISSOURI ^{a/}			
Audrain	0 – 15.8	Area 1	15.8
Ralls	15.8 – 19.8	Area 4	4.0
Pike	19.8 – 43.1	Area 4	23.3
ILLINOIS			
Douglas	188.0	Arthur Community Water Supply Well	0.3
INDIANA			
Vermillion	247.0	Hillsdale Water Corporation	1.2
Morgan	308.3	Indiana American Water-Mooresville	0.3
Morgan	310.3	Hill Water Corporation-Wells	1.0
Franklin	393.7	North Dearborn Water Corporation	0.4
Franklin	393.7	Hoosier Hills Regional Water District	0.2
OHIO			
Butler	425.3	Southwest Regional District South Plant	0.9
Warren	453.5	Village of Waynesville	0.1
Fairfield	531.9	Airport Gun Club Public Water Supply	0.1
^{a/} Entire state is a Wellhead Protection Area.			

be completed within a short period of time, potential impacts from dewatering would be temporary and water table elevations would be expected to quickly re-establish. Further, dewatering of the trench would occur in an adjacent upland through a sediment filter and energy displacement device. This discharge method would likely recharge the impacted aquifer, spring, or wetland area.

Rockies Express' Procedures details measures to mitigate potential impacts on shallow groundwater from dewatering, excavation, excessive soil compaction, and removal of vegetation from Project construction and restoration. Although surface drainage patterns could be changed during construction, Rockies Express' commitment to return the construction area to its previous contours (as practicable) would minimize or eliminate these impacts.

Potential impacts on wells and springs located within 150 feet of construction work areas could include localized decreases in groundwater recharge rates, changes in overland water flow, contamination due to hazardous material spills, decreased well yields, decreased water quality, interference with well mechanics, or complete disruption of a well's or spring's function. These impacts could result from trenching, equipment traffic, or blasting activities.

If springs or seeps are identified that construction activity could impact, Rockies Express would treat the spring or seep as a waterbody and avoid or minimize impacts by following its Procedures, which includes such measures as installation of erosion control devices (e.g., silt fences, hay bales), seep collars (e.g., trench plugs), and equipment bridges and culverts, as appropriate.

Construction of the pipeline necessitates the use of heavy equipment and associated fuels, lubricants, and other potentially hazardous substances that, if spilled, could affect shallow groundwater

and/or unconsolidated aquifers. Potential contamination due to accidental spills or leaks of hazardous materials associated with vehicle and equipment fueling and maintenance, and storage of construction materials presents the greatest potential threat to groundwater resources. If not properly responded to, soils contaminated by such spills or leaks would continue to leach and add pollutants to groundwater long after a spill has occurred.

Rockies Express developed an SPCC Plan to address preventative and mitigative measures that would be used to avoid or minimize the potential impacts of hazardous material spills during construction. The SPCC Plan specifies preventative measures such as spill training for construction personnel, regular inspection of construction equipment for leaks, replacement of deteriorating containers, and construction of containment systems around equipment storing hazardous liquids. Rockies Express' SPCC Plan also restricts refueling or other liquid transfer areas to be more than 100 feet from wetlands and waterbodies, prohibits refueling within 200 feet of any private water supply well and within 400 feet of any municipal water supply wells, and provides additional precautions when specified setbacks cannot be maintained. However, the specific distances for setbacks in these areas are not consistent in sections 3.2 and 3.3 of the Rockies Express SPCC Plan. Therefore, we recommend that:

- **Prior to the start of construction Rockies Express file with the Secretary a revised SPCC Plan that states it would restrict refueling or other liquid transfer within 100 feet of wetlands and waterbodies, 200 feet of any private water supply wells, and 400 feet of any municipal water supply wells.**

The SPCC Plan identifies emergency response procedures, equipment, and clean-up measures in the event of a spill, and requires the contractor to complete an inventory of all construction fuels, lubricants, and other hazardous materials that may be used, stored, or transferred in designated Project areas, and the amount and type of containers that would be used to store these materials. In the event soil or groundwater is contaminated during construction, Rockies Express would notify the affected landowner and coordinate restoration procedures with the appropriate federal and state agencies as required by its SPCC notification requirements. We have reviewed Rockies Express' SPCC Plan and find that it adequately addresses the storage and transfer of hazardous materials and the response to be taken in the event of a spill. We believe that the potential for the REX East Project to contaminate local aquifers would be minimal.

Construction through WPAs must protect against the potential for impaired water quality, decreased yield, or other disruptions of service. Potential impacts on WPAs would be avoided or minimized by the measures described above to prevent impacts on groundwater resources. Rockies Express would comply with state and local regulations and its SPCC Plan when working in WPAs to protect against the potential for impaired quality, decreased yield, or other disruptions of service.

Hoosier Hills Water Management District (Hoosier Hills) provides water for over 35,000 people in Indiana and raised many concerns during the comment period on the draft EIS. The proposed pipeline would cross about 0.2 miles of this shallow WPA (10 to 30 feet below the ground's surface to the top of the aquifer) starting at MP 393.7. One concern was the possibility of agricultural contaminants from the surface (e.g., pesticides and herbicides) entering the groundwater as a result of construction. Most contaminants would be confined to the topsoil, which would be segregated from the subsoil. Rockies Express' commitment to return soils to their original horizons would minimize the likelihood of such contaminants entering the groundwater at a rate greater than is currently experienced along the proposed pipeline route. Concern was also raised regarding fecal coliforms entering the groundwater from potential septic system damages caused during construction of the Project. No septic systems have been identified, to date, within or adjacent to Hoosier Hills WPA; however, we recommend in section 4.8.3 that Rockies Express identify all septic systems and provide a Septic System Contingency Plan to each

property owner prior to construction. We believe implementation of our recommendations would minimize the likelihood of septic system damages from construction of the Project, and thus fecal coliforms entering the groundwater in the Project area.

Construction of the Project would be more than 350 feet from Hoosier Hills' current wells; therefore, no impacts on their mechanics or function would be anticipated as a result of construction of the Project. Concern was raised regarding an increase in turbidity as a result of Project construction. Construction of the trench typically would be less than 10 feet below the ground's surface. This could contact the uppermost reaches of the WPA (typically 10 to 30 feet below the ground's surface). We would expect any turbidity-related impacts to quickly dissipate and not impact the water at the withdrawal locations.

An HDD crossing of the Whitewater River, located between approximately MPs 392.9 and 393.4, could reach depths of 50 feet below the ground's surface. The HDD exit point would be at least 1,200 feet west of the 5-year time of travel area for Hoosier Hills wells; therefore, we believe any impacts associated with HDD activities on the Hoosier Hills WPA would be minimized. A frac-out could result in increased turbidity of the Whitewater River; however, we believe any impacts on Hoosier Hills as a result of a frac-out would be negligible. Furthermore, because construction of the HDD would be outside of the 5-year time-of-travel area for the WPA, we believe any clay in the groundwater would have settled out (or have been naturally filtered) by the time the water would be withdrawn at the Hoosier Hills' well locations.

However, due to the shallow depth of the Hoosier Hills WPA (10 to 30 feet below the ground's surface) we believe an inadvertent spill of hazardous materials could cause contamination within the WPA. Therefore, we recommend that:

- **Rockies Express develop a site-specific specialized spill plan that would further reduce the likelihood of spills/leaks from construction-related equipment impacting the Hoosier Hills WPA. This plan should be in addition to Rockies Express' SPCC Plan and should contain a list of all fluids that would be used during construction in the area. Rockies Express should file this plan with the Secretary for review and written approval of the Director of OEP prior to the start of construction between MPs 393 and 394.**

We believe these mitigation measures would reduce the likelihood of any contamination entering the Hoosier Hills or North Dearborn Water Corporation WPA. However, to ensure that no impacts have occurred as a result of construction, we recommend that:

- **Rockies Express develop a water quality testing plan for Hoosier Hills Regional Water District's existing wells in consultation with Hoosier Hills Regional Water District. This plan should include water quality testing prior to, during, and for 2 years post construction to document any construction-related impacts on the Hoosier Hills WPA. Rockies Express should file a finalized plan with the Secretary prior to the start of construction. Copies of the water quality test results should be provided to Hoosier Hills.**

For Hoosier Hills to better understand Rockies Express' proposed construction techniques and have an opportunity to observe pipeline construction, we recommend that:

- **Rockies Express notify Hoosier Hills at least 48 hours prior to the start of construction between MPs 393 and 394.**

Construction of aboveground facilities would not require subsurface work. The development of the impervious surfaces and structures associated with the aboveground facilities would result in very minor alteration of infiltration/recharge rates, thus resulting in very minor effects on groundwater resources. No aboveground facilities would be located within 0.25 mile of a WPA in Illinois or Indiana. Rockies Express confirmed that MDNR has not expressed any concerns regarding the construction of the Project within Missouri WPAs. However, consultation with state and local authorities regarding WPAs has not been completed, nor have mitigation measures been agreed to for each WPA; therefore, we recommend that:

- **Prior to the start of construction, Rockies Express file with the Secretary documentation of consultations with applicable local and state agencies regarding construction in areas with WPAs or other groundwater management areas crossed by the pipeline.**

Rockies Express also has committed to documenting the condition (i.e., water quality and flow evaluations) of potable water wells within 150 feet of the construction right-of-way prior to the start of construction and after construction is completed. In the event that a potable water well is damaged by construction activities, Rockies Express has agreed to provide a temporary source of water and would restore the well to its original capacity or would provide other mutually agreeable remedies. Adequate protection of water supply wells/systems needs to be ensured. Therefore, we recommend that:

- **Within 30 days of placing the pipeline facilities in service, Rockies Express file a report with the Secretary identifying all water supply wells/systems damaged by construction and how they were repaired. The report should include a discussion of any complaints concerning the well yield or quality and how each problem was resolved.**

Blasting may be necessary along segments of the pipeline route where bedrock is located at or near the ground surface. If consolidated rock is encountered during construction that requires blasting to attain required trench depths, Rockies Express would use controlled blasting techniques in compliance with all federal and state regulations governing the use of explosives. To ensure that blasting would not have a significant impact on other environmental resources in the Project area (including water wells), Rockies Express has developed a Blasting Plan (CD Document C). Potential impacts from blasting to groundwater and bedrock-based water well systems include temporary changes in water level and turbidity. These impacts would be limited to those systems located in close proximity to the pipeline construction right-of-way. In accordance with its Blasting Plan, Rockies Express would notify nearby landowners at least 48 hours prior to the initiation of blasting activities. Mitigation of impacts would include the use of controlled blasting techniques limiting rock fracture to the immediate vicinity of detonation, and pre- and post-construction well testing along with any necessary repairs and restoration to any well located within 200 feet of a particular blasting location.

Upon completion of construction, Rockies Express would restore the ground surface as closely as practicable to pre-construction contours and revegetate the right-of-way. These measures would ensure restoration of overland flow of water and aquifer recharge patterns. Effects, if any, from construction of the pipeline on groundwater would likely be localized and temporary.

No long-term groundwater impacts would be anticipated as a result of constructing and operating the Project because disturbances would be temporary, erosion controls would be implemented, and ground contours would be restored. The measures that Rockies Express would implement to avoid or minimize the potential impacts of construction on groundwater are contained in its Plan and Procedures. For the few areas with shallow groundwater that would be crossed by the pipeline route with a depth less

than 10 feet below the ground surface, temporary, minor impacts could result from construction. The greatest threat posed to groundwater resources is that of a hazardous material spill or leak into groundwater supplies. However, Rockies Express' SPCC Plan adequately addresses strategies and methods to prevent such contamination and would provide effective responses should a spill occur.

Comments received on the draft EIS expressed concern regarding the possibility of the pipeline coating impacting water supplies, especially given the heat from the pipeline. Rockies Express would use a non-toxic epoxy material manufactured by 3M for the coating of the proposed pipeline. Because this material is considered non-toxic, no contaminant-associated impacts on drinking water supply areas or other waterbodies would be expected. Further, the Rate Schedule for the proposed Project, as regulated by the Commission, would limit gas temperatures to 120 degrees Fahrenheit, which is identical to other interstate natural gas pipelines. These temperatures would not exceed the melting point of the pipeline coating.

Commenters also expressed concern regarding contaminants from inside the pipeline leaching into the groundwater. The pipeline would be routinely cleaned internally by pigs to eliminate any liquids from gathering in the pipeline. During pigging operations, the pig receivers, typically collocated with other aboveground facilities (i.e., compressor stations and meter stations), would be equipped to contain any liquids gathered by the cleaning process.

4.3.2 Surface Water Resources

The REX East Project would cross two major watersheds: the Upper Mississippi Regional Watershed and the Ohio Regional Watershed. Table 4.3.2-1 provides the approximate location by milepost and descriptions of each river basin and watershed crossed by the pipeline and aboveground facilities.

The REX East Project would cross 1,485 surface waters. Specifically, the Project would cross: 326 perennial, 447 intermittent, 689 ephemeral, and 1 ephemeral/intermittent waterbodies; and 22 open water areas (e.g., ponds), as follows:

- Missouri: 13 perennial, 34 intermittent, 0 ephemeral, 0 open water;
- Missouri/Illinois: 1 perennial, 0 intermittent, 0 ephemeral, 0 open water;
- Illinois: 58 perennial, 82 intermittent, 23 ephemeral, 5 open water;
- Indiana: 101 perennial, 124 intermittent, 272 ephemeral, 5 open water; 1 ephemeral/intermittent; and
- Ohio: 153 perennial, 207 intermittent, 394 ephemeral, and 12 open water.

A complete list of the waterbodies that would be crossed by the Project is provided in appendix G and includes the location, width, state water classification, and crossing method. No surface waters are within or immediately adjacent to the boundaries of the aboveground facility sites.

By reviewing USGS topographic maps and various databases and consulting with relevant agencies, Rockies Express identified the major (i.e., waterbodies greater than 100 feet wide) and/or sensitive waterbodies that would be crossed by the pipeline route (as described in table G-5 in appendix G).

Table 4.3.2-1 Major River Basins and Watersheds Crossed by the REX East Project ^{a/}		
River Basin or Watershed	Approx. MP Range	Description
Upper Mississippi Regional Watershed	0.0 – 172.2	The Upper Mississippi Regional Watershed encompasses 189,000 square miles within 8 states: Illinois, Iowa, Minnesota, Missouri, Wisconsin, and small portions of Indiana, Michigan, and South Dakota. ^{b/}
Ohio Regional Watershed	171.9 – 639.1	The Ohio Regional Watershed covers approximately 203,940 square miles of land within 10 states: Illinois, Indiana, Kentucky, Maryland, New York, North Carolina, Ohio, Tennessee, Virginia, and West Virginia. ^{c/}
North Platte River Basin	Arlington Compressor Station	Beginning at snowmelt, the North Platte River flows northward from north-central Colorado into central Wyoming where it gradually curls southeast before joining the South Platte River. From its source at about 11,000 feet above sea level to its confluence with the South Platte, the North Platte River traverses approximately 665 miles and drains an area of 34,900 square miles. ^{d/}
Middle Republican Regional Watershed	Bertrand Compressor Station	The Middle Republican Regional Watershed is located in south-central Nebraska and north-central Kansas. It covers Franklin, Harlan, Kearney, Nuckolls, Phelps, and Webster Counties in Nebraska and Jewell, Phillips, Smith, and Republic Counties in Kansas. The surface of the entire watershed totals 1,399,835 acres with 961,514 acres in Nebraska and 435,321 acres in Kansas. ^{e/}
^{a/} U.S. Geological Survey (USGS), 1994. ^{b/} UMRSHNC, 2006. ^{c/} StormCenter, 2002. ^{d/} USGS, 2006. ^{e/} U.S. Department of Agriculture, 2007.		

Surface waters are generally classified according to a beneficial use classification system as developed by each state crossed by the Project. Surface waters are also classified based on size: major waterbodies being greater than 100 feet wide, intermediate waterbodies being between 10 and 100 feet wide, and minor waterbodies being less than 10 feet wide.

No waterbodies crossed by the Project are known to have or are suspected of having sediments or waters with contaminants in concentrations that pose an unacceptable risk to human health or the environment. Furthermore, no waterbodies crossed by the Project are known to be or suspected of being contaminated with persistent chemicals.

Missouri

The state of Missouri categorizes surface waters according to 15 beneficial use classifications: irrigation; livestock and wildlife watering; cold-water fishery; cool-water fishery; protection of aquatic life—general warm-water fishery; protection of aquatic life—limited warm-water fishery; human health protection; whole-body contact recreation; secondary contact recreation; drinking water supply; industrial process and cooling water; storm- and flood-water storage and attenuation; habitat for resident and

migratory wildlife species; recreational, cultural, educational, scientific, and natural aesthetic values and uses; and hydrologic cycle maintenance.

Of the waterbodies that would be crossed in Missouri, two are classified as major crossings: the Salt River (MP 42.5) and the Mississippi River (MP 43.2). The Mississippi River is categorized as sensitive due to the presence of special status species, as discussed in section 4.7. Water quality impairments (fecal coliform and polychlorinated biphenyls [PCBs]) have also been identified at the Mississippi River crossing, while impairments from mercury and manganese have been identified at the Salt River Crossing.

A potable water intake source has been identified 1.6 miles downstream of the tributary to the proposed Lake Vandalia (MP 22.4) crossing. Because of the beneficial uses of this tributary, this intake source would be crossed by the dam-and-pump construction method to reduce sedimentation and turbidity downstream of the Project area. Any potential impacts on this intake source would be minimized by Rockies Express adhering to its Plans and Procedures.

Illinois

The state of Illinois categorizes surface waters into four classifications: general use-protection of indigenous aquatic life, primary and secondary contact recreation, agricultural and industrial uses; public and food processing water supply; Lake Michigan; and secondary contact and indigenous aquatic life use.

Of the waterbodies that would be crossed in Illinois, three are classified as major crossings: the Mississippi River (MP 43.2), Illinois River (MP 71.2), and South Fork Sangamon River (MP 132.1).

Potable water intake sources have been identified 1.4 and 1.5 miles downstream of the proposed Mississippi River (MP 43.2) crossing. The Mississippi River would be crossed by the HDD method, thereby minimizing any potential impacts on the downstream water intakes.

Indiana

The state of Indiana categorizes surface waters according to four beneficial use classifications: aquatic life use, primary contact recreation, fish consumption, and drinking water.

Of the waterbodies that would be crossed in Indiana, four are classified as major crossings: Wabash River (RR 2032 - MP 242.9 + 4.0), White River (MP 315.8), Big Blue River (MP 340.8), and Whitewater Canal (MP 394.0).

The pipeline would cross 74 waterbodies in Indiana that require a floodway crossing license from the INDNR Division of Water. Of those 74 waterbodies, 31 qualify for the Utility Line Crossing General License, and thus individual licenses would not be required. The remaining 43 of 74 waterbodies would require individual licenses because they are classified as "outstanding waters" or because they do not qualify for the general license. Those waterbodies that require a crossing license are identified in table G-5 in appendix G.

Potable water intake sources have been identified 1.6 miles downstream of the pipeline crossing at Flatrock River (MP 362.7) and 0.2 mile downstream of the Righthand Fork Salt Creek (MP 375.6) crossing. Both waterbodies would be crossed by open-cut construction methods.

Ohio

The state of Ohio categorizes surface waters according to beneficial use classifications within a three-pronged, broad classification scheme: aquatic life habitat (warm-water, limited warm-water, exceptional warm-water, modified warm-water, seasonal salmonid, coldwater, and limited resource water); water supply (public, agricultural, and industrial); and recreational (bathing waters, primary contact, and secondary contact).

Of the waterbodies that would be crossed in Ohio, seven are classified as major crossings: Four Mile Creek (MP 421.6), Great Miami (MP 430.7), Caesar Creek (MP 459.6), Deer Creek (MP 499.6), Big Darby Creek (MP 509.2), Scioto River (MP 514.6), and Muskingum River (MP 577.2).

Potable water intake sources have been identified 2.5 miles downstream of the pipeline crossing at Caesar Creek (MP 459.6) and 0.2 mile downstream at the tributary to Somerset Creek (MP 553.2). Caesar Creek would be crossed by HDD construction methods and Somerset Creek would be crossed by open-cut construction methods.

Consultations with the organizations or individuals who withdraw potable water within 3 miles of the proposed open-cut crossings of Flatrock River in Indiana and Somerset Creek in Ohio have not been completed. The City of Louisiana in Missouri also expressed concern regarding water withdrawal along the proposed pipeline route. Therefore, we recommend that:

- **Prior to the start of construction, Rockies Express file with the Secretary documentation of finalized consultation with the organizations or individuals who withdraw potable water within 3 miles of the open-cut crossings of Flatrock River (MP 362.7) in Indiana and Somerset Creek (MP 553.2) in Ohio, along with documentation of finalized consultations with the City of Louisiana in Missouri.**

4.3.3 Impacts on Surface Water Resources

Pipeline construction could affect surface waters in several ways. Clearing and grading of stream banks, instream trenching, trench dewatering, and backfilling could result in modification of aquatic habitat, increased sedimentation, turbidity, decreased dissolved oxygen concentrations, releases of chemical and nutrient pollutants from sediments, and introduction of chemical contaminants such as fuel and lubricants. The crossing of irrigation canals could interrupt the flow of irrigation water, which could damage crops and reduce crop yields. Further agricultural discussion is provided in section 4.8.2 of this EIS.

The greatest potential impact on surface waters would result from the temporary suspension of sediments during instream construction. The extent of the impact would depend on sediment loads, stream velocity, turbidity, bank composition, and sediment particle size. These factors would determine the density and downstream extent of sediment migration. Instream construction could cause the dislodging and transport of channel bed sediments and the alteration of stream contours. Changes in the bottom contours could alter stream dynamics and increase downstream erosion or deposition. Turbidity resulting from resuspension of sediments from instream construction or erosion of cleared right-of-way areas could reduce light penetration and photosynthetic oxygen production. Instream work could also introduce chemical and nutrient pollutants from sediments. Resuspension of deposited organic material and inorganic sediments could cause an increase in biological and chemical use of oxygen, resulting in a decrease of dissolved oxygen concentrations in the affected area. Lower dissolved oxygen concentrations could cause temporary displacement of motile organisms and may suffocate less- or non-motile organisms within the affected area.

Rockies Express may require blasting activities at 54 locations in or adjacent to perennial waterbodies along the Project right-of-way. Instream blasting could injure or kill aquatic organisms, displace organisms during blast-hole drilling operations, and temporarily increase stream turbidity. Rockies Express has agreed to prepare and implement a site-specific Blasting Plan before beginning any construction where blasting would be required within each waterbody greater than 10 feet wide.

The clearing and grading of streambanks would make soil vulnerable to erosion and reduce riparian vegetation along the cleared section of the waterbody. Riparian vegetation is discussed in more detail in section 4.4 of this EIS. The use of heavy equipment for construction could compact near-surface soils, resulting in increased runoff into surface waters. The increased runoff could transport additional sediment into the waterbodies, resulting in increased turbidity levels and sedimentation rates in the receiving waterbody.

The HDD method could impact surface waters if drilling fluids were released (frac-out) during drilling. Response to and mitigation for such a release is described in Rockies Express' HDD Contingency and Inadvertent Release Plan (CD Document D), which includes containment measures should an inadvertent release of drilling mud occur.

The drilling fluid would be primarily freshwater, with high-yield bentonite clay added to facilitate drill-hole stability. A temporary, localized increase in turbidity could occur from a release and the cleanup of a release. EPA does not list bentonite as a hazardous substance; therefore, an inadvertent release of drilling fluids would have no long-term adverse environmental impacts on water quality.

Rockies Express proposes to conduct 21 HDDs that would install the pipeline under 32 waterbodies (appendix G). Rockies Express was denied survey permission to complete site-specific geotechnical surveys for the proposed HDD crossings at the Embarras River (MP 202.9) and the Muskingum River (MP 577.2). Therefore, **we recommend that:**

- **Rockies Express file with the Secretary for review and written approval by the Director of OEP, the results of its HDD geotechnical feasibility investigations, revised site-specific construction diagrams, and contingency plans for the Embarras and Muskingum Rivers' HDD locations. If a planned HDD crossing is not feasible, then Rockies Express should develop a site-specific alternative crossing plan for each waterbody in consultation with all relevant agencies. Rockies Express' plans and documentation of consultations regarding the site-specific HDD plans should be filed with the Secretary prior to the start of construction.**

Refueling of vehicles and storage of fuel, oil, or other hazardous materials near surface waters could create contamination. If a spill were to occur, users immediately downstream could experience degradation in water quality. Acute and chronic toxic effects on aquatic organisms also could result from such a spill.

The measures Rockies Express would implement to avoid or minimize the potential impacts of construction on surface waters are contained in its Procedures and its SPCC Plan and are discussed below. No long-term impacts are anticipated as a result of the Project because the beneficial use classifications would not be permanently affected, the pipeline would be installed beneath the bed and banks of waterbodies, erosion controls would be implemented, and the streambanks and streambed contours would be restored.

For each state crossed by the Project, Rockies Express has developed conceptual mitigation and restoration plans identifying procedures that would be implemented to minimize impacts on riparian areas affected by the Project. These procedures describe site-specific conditions found at wetland and stream-bank crossings in the respective states along the proposed route, and describe methods for re-seeding, planting, and monitoring reclamation success. In response to the plan Rockies Express submitted for Missouri, the MDC has requested that crossings with alluvial substrate in the state be identified that would possibly require toe protection (i.e., rip rap), which would protect those crossings vulnerable to head-cutting of the banks. Rockies Express has committed to consult with appropriate agencies prior to installation of the pipeline to ensure adequate toe protection.

4.3.4 Waterbody Construction and Mitigation Procedures

Rockies Express proposes to use several methods to cross perennial waterbodies, including the HDD, dry-ditch (dam-and-pump or flume), open-cut, and/or microtunneling methods. Construction methods are described in sections 2.3.1 and 2.3.2. Rockies Express would minimize impacts on surface waters by implementing the construction and mitigation procedures contained in its Procedures, which include:

- limiting clearing of vegetation between extra work areas and the edge of the waterbody to preserve riparian vegetation;
- constructing crossings as close to perpendicular to the waterbody as site conditions allow;
- maintaining adequate flow rates throughout construction to protect aquatic life and prevent the interruption of existing downstream uses;
- locating areas for equipment staging, soil stockpiles, and refueling at appropriate setbacks from surface waters;
- requiring construction across waterbodies to be completed as quickly as possible and during the windows specified in its Procedures or required by applicable permits;
- developing and adhering to any required site-specific construction plan for each waterbody greater than 100 feet wide at the crossing location (major waterbody);
- requiring temporary erosion and sediment control measures to be installed across the entire width of the construction right-of-way after clearing and before ground disturbance;
- requiring maintenance of temporary erosion and sediment control measures throughout construction until streambanks and adjacent upland areas are stabilized;
- requiring bank stabilization and re-establishment of bed and bank contours and riparian vegetation after construction;
- limiting post-construction maintenance of vegetated riparian strips adjacent to streams;
- restoring, monitoring, and correcting any drainage or irrigation system problems that have resulted from pipeline construction in active agricultural areas;

- developing a Stormwater Pollution Prevention Plan to minimize impacts on surface waters associated with silt-laden runoff during construction; and
- implementing its SPCC Plan if contamination occurs during construction.

A major use of water during Project construction would be for mitigating air quality impacts from construction-related dust. Rockies Express would obtain water from municipal sources to use for dust control.

Rockies Express proposes to cross non-sensitive, dry intermittent waterbodies using conventional upland construction methods as outlined in the Rockies Express Plan. For some minor or smaller intermediate waterbody crossings with specific environmental sensitivities, Rockies Express proposes to use the dam-and-pump or flume method, which would isolate the construction work area from the water flow, thereby providing continuous flow and minimizing downstream sedimentation and turbidity. The use of conventional upland construction methods in dry intermittent waterbodies could require a wider construction right-of-way and have greater impacts on riparian areas, waterbody beds, and banks. Therefore, we recommend that:

- **Rockies Express shall cross all dry intermittent waterbodies using the open-cut method with application of the mitigation measures described in v(B)(2) through v(B)(4) of its Procedures.**

Vegetated riparian strips along streams are important for erosion prevention; therefore, no HDD entry and exit points would be located within riparian areas. Rockies Express also would not conduct normal maintenance (mowing) along the permanent right-of-way between the HDD entry and exit points. We further recommend in section 4.4.1 that onsite markers be used to identify “no-clearing” zones within vegetated riparian strips adjacent to waterbodies that are to be avoided during maintenance activities.

In addition to the measures described above, Rockies Express would need to obtain and comply with all conditions of its COE Section 404 permit, Section 10 of the Harbors Act, Section 401 state water quality certifications, and Section 7 (a) of the WSR.

4.3.5 Sensitive or Unique Waterbodies

Numerous waterbodies that are considered sensitive for several reasons, including, but not limited to size, the presence of coldwater fish species, special status species, high-quality recreational or visual resources, historic value, or the presence of impaired water or contaminated sediments would be crossed by the pipeline. In accordance with its Procedures, Rockies Express has committed to filing site-specific crossing plans for these waterbodies. However, because surveys and agency consultations are ongoing, these crossing plans have not been provided to the Commission. Therefore, we recommend that:

- **Prior to the start of construction, Rockies Express file with the Secretary revised site-specific crossing plans that identify specific restoration and mitigation measures applicable to each sensitive waterbody crossing listed in tables 4.3.5-1 and 4.6.2-1 in the EIS and any applicable state and federal agency consultations for review and written approval by the Director of OEP.**

Potential impacts associated with construction in wooded riparian areas, on fisheries, and on special status species are discussed in sections 4.4, 4.6, and 4.7, respectively.

The pipeline would cross 59 waterbodies that are considered sensitive because of significant fisheries resources: 1 on the border of Missouri and Illinois, 1 in Illinois, 7 in Indiana, and 49 in Ohio. Table 4.6.2-1 lists these crossings. All of these waterbodies are designated as significant fisheries resources based on outstandingly remarkable values, exceptional habitat, or the presence of special status species.

As shown in table 4.3.5-1 below, 51 of the waterbodies that would be crossed by the Project have been designated as impaired waters by EPA. Examples of impairments commonly found in these waterbodies include metals, pathogens, dissolved oxygen, pH, PCBs, total suspended solids (TSS), and sedimentation/siltation. None of the waterbodies that would be affected by the Project are known or suspected of having sediments or waters contaminated in concentrations that pose an unacceptable risk to human health or the environment.

Table 4.3.5-1 Impaired Waterbodies Crossed by the REX East Project				
State/County	Milepost	Waterbody Name	Proposed Crossing Method	Impairment Cause
MISSOURI				
Pike	42.5	Salt River	HDD	Mercury, Manganese
ILLINOIS				
Pike	43.2	Mississippi River	HDD	Fecal coliform, PCBs
Pike	61.0	Honey Creek	Open-cut	Dissolved oxygen, Sedimentation/Siltation
Pike	63.9	Bay Creek	Open-cut	303(d) Impairment – Dissolved oxygen, Phosphorus, Sedimentation, Siltation, TSS, Fecal coliform
Scott	71.2	Illinois River	HDD	PCBs, Mercury
Sangamon	117.1	Panther Creek	Open-cut	Sedimentation/siltation
Sangamon	121.2	Sugar Creek	Open-cut	Fecal coliform
Sangamon	125.2	Brush creek	Open-cut	Dissolved oxygen, Manganese
Sangamon	126	Horse Creek	Open-cut	Dissolved oxygen, Manganese
Sangamon	130.7	Tributary to South Fork Sangamon River	Open-cut	Iron, Nitrogen, pH, Dissolved oxygen, Manganese, Phosphorus, Sedimentation/Siltation, TSS, Chlordane
Sangamon	132.1	South Fork Sangamon River	Open-cut	Iron, Nitrogen, pH, Dissolved oxygen, Manganese, Phosphorus, Sedimentation/Siltation, TSS, Chlordane
Christian	140.7	Buckhart Creek	Open-cut	Dissolved oxygen
Macon	175.5	Tributary to West Okaw River	Open-cut	Nitrogen, Fecal coliform, Dissolved oxygen, pH, Phosphorus, TSS
Douglas	193.4	Kaskaskia River	Open-cut	Manganese, Fecal coliform, Dissolved oxygen, pH, Phosphorus, Sedimentation/Siltation, TSS
Edgar	198.7	Scattering Fork	Open-cut	Nitrogen, Phosphorus
Douglas	201.2	Hackett Branch	Open-cut	Dissolved oxygen, Phosphorus
Edgar	202.9	Embarras River	HDD	Nitrogen, Dissolved oxygen, pH, Phosphorus, Sedimentation/Siltation, TSS, Fecal coliform
Edgar	227.4	Brouillets Creek	Open-cut	Fecal coliform

Table 4.3.5-1 (continued)
Impaired Waterbodies Crossed by the REX East Project

State/ County	Milepost	Waterbody Name	Proposed Crossing Method	Impairment Cause
INDIANA				
Vermillion	RR 2302– MP 242.9 + 4.0	Wabash River	HDD	<i>E. coli</i> , PCBs, Mercury
Putnam	282.2	Plum Creek	Open-cut	Biotic community status
Hendricks	286.6	Clear Creek	Open-cut	Pathogens
Hendricks	288.7	Tributary to Miller Creek	Open-cut	Pathogens
Hendricks	289.7	Tributary to Crittenden Creek	Open-cut	Pathogens
Hendricks	291.8	Mill Creek	Open-cut	Pathogens
Hendricks	294.3	East Fork Mill Creek	Open-cut	Pathogens
Hendricks	299.4	Mud Creek	Open-cut	Pathogens
Morgan	311.0	White Lick Creek	Open-cut	<i>E. coli</i> , PCBs, Mercury
Morgan	311.1	Tributary to White Lick Creek	Open-cut	<i>E. coli</i> , PCBs, Mercury
Morgan	312.4	White Lick Creek	HDD	<i>E. coli</i> , PCBs, Mercury
Morgan	315.8	White River	Dam and Pump/Flume	PCBs, Pathogens, Mercury
Morgan	317.5	Crooked Creek	Open-cut	Pathogens
Morgan	318.1	Banta Creek	Open-cut	Pathogens
Johnson	323.4	Tributary to North Prong Stotts Creek	Open-cut	Pathogens
Johnson	331.3	Buckhart Creek	Open-cut	PCBs
Johnson	336.1	Youngs Creek	Open-cut	PCBs
Shelby	337.9	Sugar Creek	Open-cut	<i>E. coli</i> , PCBs, Mercury
Shelby	340.8	Big Blue River	HDD	<i>E. coli</i> , PCBs
Decatur	362.7	Flatrock River	Open-cut	Mercury, PCBs, Pathogens
Franklin	392.5	Blue Creek	Open-cut	<i>E. coli</i>
Franklin	392.8	Tributary to Blue Creek	Open-cut	<i>E. coli</i>
Franklin	397.5	Big Cedar Creek	Open-cut	<i>E. coli</i>
OHIO				
Butler	421.6	Four Mile Creek	HDD	PCBs
Butler	422.7	Seven Mile Creek	HDD	PCBs
Butler	430.7	Great Miami River	HDD	PCBs
Warren	447.3	Clear Creek	Open-cut	Nutrients, Organic enrichment
Fayette	480.4	Rattlesnake Creek	Open-cut	Nutrients, Organic enrichment
Fayette	486.4	Paint Creek	Dam and Pump/Flume	Nutrients, PCBs, Siltation, Organic enrichment
Pickaway	515.9	Walnut Creek	HDD	PCBs, Mercury, Organic enrichment, Cause unknown

Table 4.3.5-1 (continued)
Impaired Waterbodies Crossed by the REX East Project

State/ County	Milepost	Waterbody Name	Proposed Crossing Method	Impairment Cause
Fairfield	529.6 and 529.9	Hocking River	Open-cut	PCBs, Metals, Chlorides, pH
Muskingum	566.1	Moxahala Creek	Open-cut	pH, Siltation
Muskingum	577.2	Muskingum River	HDD	Pathogens, PCBs, Organic enrichment

Nationwide Rivers Inventory

The Project would cross eight sensitive perennial waterbodies that are listed on the Nationwide Rivers Inventory (NRI). In order to be listed on the NRI, a river must have at least one outstandingly remarkable value (ORV). An ORV is a natural, recreational, or cultural value that is judged to have more than local or regional significance. Four of the eight rivers listed on the NRI that would be crossed by the Project (Big Walnut Creek, Big Blue River, Wabash River, and White River) are located in Indiana. The remaining four rivers (Four Mile Creek, Great Miami River, Scioto River, and Paint Creek) are located in Ohio. The Big Blue River, Four Mile Creek, Great Miami River, Big Walnut Creek, Wabash River, and Scioto River are all proposed to be crossed by the HDD method. Rockies Express would cross Paint Creek and the White River by dry-ditch construction methods. In consultation with the NPS, Rockies Express has prepared and would implement a site-specific crossing plan for each of the NRI waterbodies crossed by the Project.

IDEM and FWS are concerned with the amount of tree clearing proposed in the wooded riparian habitat associated with Big Walnut Creek (Indiana wooded riparian corridors are further discussed in section 4.4). Tree clearing could impact the viewshed, wildlife, aquatic species, and recreational enjoyment. We recognize that the workspace for the HDD crossing of Big Walnut Creek would be within an upland forested area; however, utilizing this construction method would limit the overall impact on the waterbody and the siting of the proposed HDD entry location away from the waterbody would minimize impacts on riparian habitat.

IDEM and FWS have also expressed concerns about construction through a meander of the White River, as well as the removal of riparian trees along the river, which could speed the process of a natural adjustment by the river to straighten in this area. Additionally, with the changing hydrology, the potential exists for the pipeline to become exposed at this crossing. Rockies Express conducted geotechnical investigations and determined that an HDD crossing of the White River is not feasible because the subsurface is mostly sand and gravel, which would not support a successful HDD.

Rockies Express has agreed to cross the White River using a dry-ditch construction method if water flows permit. In addition to the dry-ditch crossing method, Rockies Express has agreed to several IDEM measures to limit impacts at this crossing. Rockies Express would install the pipeline with additional depth of cover within the river channel, and would extend this additional depth beyond the banks before the pipe is allowed to gradually ascend to normal depths of cover. The pipe would be weighted at the crossing, creating negative buoyancy in the event that the river should change direction and cause the pipe to become exposed. In accordance with Rockies Express' Procedures, the riverbanks would be restored to pre-construction contours and permanently stabilized immediately following construction. Dry-ditch crossings are proposed for Paint Creek and White River. If dry-ditch crossing methods at these locations are not feasible due to no water flow or extreme water flow conditions, we recommend that:

- **Rockies Express file with the Secretary consultations with all applicable state and federal agencies for review and written approval by the Director of OEP prior to initiating an alternative crossing method at Paint Creek or the White River.**

Wild and Scenic Rivers

Federal designation for wild and scenic rivers stems from the WSR of 1968, which protects the free-flowing natural condition; water quality; and outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, and cultural values of the designated rivers. Two Ohio waterbodies, the Little Miami River and Big Darby Creek, are designated as National Wild and Scenic Rivers. NPS is responsible for reviewing federally assisted water resources projects pursuant to Section 7(a) of the WSR, and the state of Ohio is responsible for fulfilling the remaining requirements of the Act. At the proposed points of crossing by the pipeline, the specific classifications for these rivers under this general designation are scenic river areas, which are regarded as being rivers free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped but accessible in places by roads.

ODNR administers a state Scenic Rivers Act, which (based on the waterbody's length, adjacent forest cover, biological characteristics, water quality, present use, and natural conditions) provides three categories for river classification: wild, scenic, and recreational. Scenic river designation is a cooperative venture among state and local government, citizen groups, and local communities within a watershed. The Ohio state-designated wild and scenic rivers crossed by the proposed pipeline route are also the Little Miami River and Big Darby Creek (ODNR, 2008b).

The Little Miami River is a perennial river that would be crossed at MP 451.3 in Warren County, Ohio. The approximately 3,100-foot-long crossing would be accomplished using the HDD method to minimize disturbance to vegetation, stream banks, and the streambed.

Big Darby Creek is a perennial river that would be crossed at MP 509.2 in Pickaway County, Ohio. Rockies Express would accomplish the approximately 1,850-foot-long crossing using the HDD method to minimize disturbance to vegetation, stream banks, and the streambed.

At both the Little Miami River and Big Darby Creek, Rockies Express has conducted geotechnical investigations and determined that conditions are suitable for the HDD method. However, there is always a risk that an HDD could be unsuccessful. The geotechnical investigation of the Big Darby Creek describes that cobbles and boulder-size materials may be encountered and may be problematic during drilling operations. However, an open-cut crossing could cause temporary and permanent impacts on the beds and banks of these waterbodies and would not be an acceptable crossing method to NPS; therefore, Rockies Express has identified microtunneling as the alternative construction method that would be used if the HDD installation were to fail. Rockies Express has committed to crossing both of these rivers using trenchless construction methods.

The draft EIS contained a condition that Rockies Express identify alternative routes to avoid the Little Miami River and Big Darby Creek, in the event that the HDD crossing would not be successful. The condition also prevented Rockies Express from constructing within the areas that would be avoided by a potential alternative, in the event the HDD crossing was not successful. Rockies Express believes that the two waterbodies could be crossed by one of the proposed construction methods (HDD or microtunneling). We believe that successful HDD or microtunnel crossings of the Little Miami River and

Big Darby Creek would eliminate impacts on these waterbodies. However, to minimize environmental impacts in the event a non-trenching method could not be successfully completed, **we recommend that:**

- **Rockies Express successfully complete the HDD or microtunneling crossing of the Little Miami River prior to the start of construction between MP 432.9 and MP 467.2.**

Further, we recommend that:

- **Rockies Express successfully complete the HDD or microtunneling crossing of Big Darby Creek prior to the start of construction between MP 494.1 and MP 533.9.**

To further limit impacts on the Little Miami River and Big Darby Creek, Rockies Express has agreed to cross all tributaries of the Little Miami River and Big Darby Creek using dry-ditch construction methods.

Rockies Express has agreed to not use the Little Miami River, Big Darby Creek, or any tributaries to these two waterbodies as sources or discharge locations of hydrostatic test water. However, Rockies Express did not identify the water source or discharge location for the hydrostatic testing of these HDDs. Therefore, **we recommend that:**

- **Prior to the start of construction, Rockies Express develop and file site-specific plans with the Secretary for review and written approval by the Director of OEP that identify the source and discharge locations of hydrostatic test water used for the HDD of Little Miami River and Big Darby Creek.**

Mississippi River

The Mississippi River is the principal feature in the Upper Mississippi Regional watershed that would be crossed by the Project (see table 4.3.2-1). The river has been designated as supporting irrigation, livestock and wildlife watering, protection of warmwater aquatic life and human health fish consumption, Class B whole-body contact recreation, secondary contact recreation, drinking water supply, and industrial process and cooling water. Impairments by fecal coliform and PCBs have been identified at the Mississippi River crossing.

The Mississippi River crossing would be part of a larger scale crossing, starting in Pike County, Missouri and ending in Pike County, Illinois where the Salt River and the Mississippi River would be crossed at their confluence (totaling about 4,700 feet). At MP 43.2, the Mississippi River's width is about 1,800 feet. Rockies Express proposes to cross these waterbodies using the HDD method in two stages. The Mississippi River portion of this crossing would begin from Blackburn Island on the west side of the Mississippi River and exit west of the Sny Levee, which is located on the east side of the Mississippi River. Further analysis of the Sny Levee crossing is located in section 4.8.5 of this EIS.

By utilizing the HDD method, Rockies Express would minimize the potential impacts on the Mississippi River by the Project. Hard limestone formations underlay the substrate of the proposed crossing. The design radius that has been chosen for the Project would avoid these formations while minimizing the stresses placed on the pipeline itself.

Crucial to the planned HDD crossing of the Mississippi River is the dredging operation required to achieve sufficient water depth on the east side of Blackburn Island to accommodate barges. These barges would be used to transport necessary equipment for the HDD operations that would take place on the island.

Because the HDD crossing of the Mississippi River would require dredging, there are potential impacts not only from the dredging itself, but also from the resultant dredge spoils. Potential impacts include, but are not limited to, increased turbidity, habitat destruction, noise and air (localized) pollution, thermal stratification disruption within the water column, entrainment of organisms, and release and spread of previously sequestered contaminants from the dredged spoils. The spreading of previously sequestered contaminants from the dredged spoils has been addressed through consultations with MDNR, IEPA, and USGS and is not considered a threat because no contaminated sediments were identified in the proposed dredging location. Furthermore, COE has indicated that chemical analysis of the sediments to be dredged is unnecessary. Rockies Express has prepared a Dredge Plan (CD Document H) that describes the dredging activities that would be carried out along with the dredging and disposal schedule. We believe this plan adequately addresses proper dredging disposal.

Hunter Lake Reservoir

The area near the proposed Hunter Lake Reservoir, south of Springfield, Illinois, is considered a unique area of the Project because it is licensed to be a reservoir. Rockies Express is maintaining ongoing consultations with representatives from the City of Springfield's Office of Public Utilities to ensure that the correct measures are taken regarding construction techniques. Through consultations with the City of Springfield's Office of Public Utilities, Rockies Express has agreed to construct through the area near the proposed reservoir similar to that of crossing a waterbody. To assure the right-of-way would not adversely impact the proposed reservoir, Rockies Express would provide 4 to 5 feet of cover over the pipeline, and would weight the pipeline similarly to a waterbody crossing to create negative buoyancy. Rockies Express would provide the City of Springfield an engineering plan to review and, if appropriate, would develop additional mitigation measures in coordination with the city.

4.3.6 Hydrostatic Testing

Rockies Express would verify the integrity of its pipeline before placing it into service by conducting a series of hydrostatic tests. These tests involve filling the pipeline with water, pressurizing it, and then checking for pressure losses due to pipeline leakage. Sources of hydrostatic test water are expected to be surface waterbodies in close proximity to the pipeline. Rockies Express would require approximately 246.3 million gallons (755.9 acre-feet) of water to hydrostatically test the entire proposed pipeline.

Rockies Express identified preliminary hydrostatic test water sources and approximate amounts of water required for construction Spreads 1 through 7 (see table 4.3.6-1). In accordance with its Procedures, Rockies Express has agreed to file with the Secretary a final list of hydrostatic test water sources and discharge locations for the review and approval of the Director of OEP prior to construction.

The withdrawal of large volumes of hydrostatic test water from surface water sources could temporarily affect the recreational and biological uses of the waterbody if the diversions comprise a large percentage of the source's total flow or volume. The diversion of large volumes of water from waterbodies could also result in temporary changes in habitat, changes in water temperature and dissolved oxygen levels, and entrainment or impingement of fish or other aquatic organisms.

Rockies Express would minimize the potential effects of hydrostatic testing on surface water resources by adhering to the measures in its Procedures. These measures include screening intake hoses to prevent the entrainment of fish and other aquatic organisms and regulating the rate of withdrawal of test water to avoid adverse impact on aquatic resources or downstream users. Rockies Express would not

<p align="center">Table 4.3.6-1 Project Water Requirements for Hydrostatic Testing</p>						
State/Spread	From MP	To MP	Spread Length (miles)	Approx. Volume (gallons) <u>a/</u>	Approx. Volume (acre-feet)	Potential Supply and Discharge Sources
Missouri/Illinois/1	0.0	107.2	107.2	41,100,000	126.1	Grassy Creek Salt River Mississippi River – east side Illinois River – west side Little Apple Creek (Seasonal) Left Fork of Little Apple Creek (Seasonal)
Illinois/2	107.2	230.3	123.1	47,500,000	145.7	Brush Creek South Fork of Sangamon River Mosquito Creek (Seasonal) Ditch #3 Ditch #4 Lake Fork Kaskaskia River Embarras River Brushy Fork
Illinois/Indiana/3	230.3	334.0	103.7	40,000,000	122.8	Crabapple Creek Wabash River Little Raccoon Creek Big Raccoon Creek Big Walnut Creek White Lick Creek White River-east side
Indiana/Ohio/4	334.0	424.0	90.0	34,700,000	82.6	Youngs Creek – west side Big Blue River – west side Flatrock River – west side Little Flatrock River – west side Salt Creek Whitewater River (IN) Big Cedar Creek Dry Fork Whitewater River (OH) Indian Creek Four Mile Creek Seven Mile Creek
Ohio/5	424.0	533.3	109.3	42,200,000	106.5	Great Miami River Caesar Creek feeding Caesar Creek Lake Scioto River
Ohio/6	533.0	587.0	53.7	20,700,000	63.5	Moxahala Creek Muskingum River
Ohio/7	587.0	639.1	52.1	20,100,000	61.7	Wills Creek Barnesville Reservoir
Total			639.1	246,300,000	755.9	
<u>a/</u> Rockies Express continues to review waterbodies for supply and discharge capacity.						

add chemicals to the water during testing. Rockies Express would acquire the necessary permits from state agencies before withdrawing or discharging hydrostatic test water, including specific approvals from applicable resource agencies.

Nine of Rockies Express' proposed hydrostatic test water sources (Mississippi River, Whitewater River, Seven Mile Creek, Scioto River, Muskingum River, Little Miami River, Big Cedar Creek, Young's Creek, and Flatrock River) are known to contain federally listed and state-listed endangered and threatened species. The impacts on federally listed and state-listed species, including potential depletion impacts, are discussed in section 4.7.

Rockies Express would discharge the test water in upland areas unless direct discharge into surface waters is determined to be acceptable and permitted by the appropriate state and federal agencies. Hydrostatic test water discharged into waterbodies has the potential to cause erosion of stream beds and banks, resulting in a temporary increase of sediment load and disturbance of habitat. These discharges could affect state-designated uses. If discharge into waterbodies is permitted, Rockies Express would minimize the potential for these effects through the use of energy dissipating devices that would disperse and slow the velocity of the discharge. Final test water discharge locations would be in accordance with Rockies Express' NPDES permit and any state-issued hydrostatic test water discharge permits. Water discharges over land would be conducted through containment structures, such as hay bale structures or filter bags. Rockies Express has estimated that the discharge rate of the hydrostatic test water would be regulated to be between 2,000 and 5,000 gpm using valves and energy dissipation devices.

Hoosier Hills Regional Water District expressed concern about the possible discharge of hydrostatic test water to the Whitewater River and the impacts it could have on the Hoosier Hills WPA; therefore, we recommend that:

- **Rockies Express provide Hoosier Hills Regional Water District a copy of hydrostatic test water analysis prior to discharge to the Whitewater River.**

4.3.7 Wetlands

Wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of wetland vegetation typically adapted for life in saturated soil conditions (Environmental Laboratory, 1987). Wetlands are found primarily in temporarily flooded sinks, along drainage ways, in shallow basins, and in association with riparian areas.

Section 404 of the CWA of 1972 established standards to minimize impacts to wetlands under the regulatory jurisdiction of COE. These standards require avoidance of wetlands where possible and minimization of disturbance where impacts are unavoidable to the degree practical. Rockies Express conducted field delineations during winter, spring, and summer 2007 in accordance with the methodology outlined in COE's 1987 Wetland Delineation Manual (Environmental Laboratory, 1987), which comprises at least 61 percent of the Project right-of-way. In addition, in areas where access was denied, Rockies Express used National Wetland Inventory (NWI) data to identify wetlands crossed by the proposed REX East pipeline right-of-way and aboveground facilities. This information would be included in Rockies Express' Section 404 permit application filed with COE.

Affected Wetlands

The REX East pipeline route would cross approximately 4.3 miles of wetlands. Construction of the Project would affect a total of about 37.8 acres including 7.1 acres of wetlands in Missouri, 6.8 acres in Illinois, 6.8 acres in Indiana, and 17.1 acres in Ohio. No wetlands would be affected by the proposed facilities in Nebraska and Wyoming. A description of wetland types crossed by the proposed pipeline route is presented in table 4.3.7-1. Wetlands vegetation is also discussed in section 4.4.

Table 4.3.7-1 Descriptions of Wetland Types Crossed by the Project ^{a/}		
Wetland Type	NWI Code	Description
Palustrine Emergent	PEM	These are wetlands that are characterized by erect, rooted herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years and is usually dominated by perennial plants. All water regimes are included except subtidal and irregularly flooded. Emergent wetlands are known by many names, including marsh, meadow, fen, prairie pothole, and slough. In areas with relatively stable climatic conditions, emergent wetlands maintain the same appearance year after year. However, in other areas, such as the prairies of the central United States, severe climatic fluctuations cause them to revert to an open-water phase in some years. Dominant hydrophytic species may include <i>Phalaris arundinacea</i> , <i>Polygoum pensylvanicum</i> , <i>Polygonum hydropiper</i> , or <i>Polygonum lapathifolium</i> .
Palustrine Scrub-Shrub	PSS	These are wetlands that include areas dominated by woody vegetation less than 20 feet tall. Vegetation forms found in this wetland include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. All water regimes are included except subtidal. Scrub-shrub wetlands may represent a successional stage leading to a forested wetland or they may be relatively stable communities. Dominant species may include <i>Cornus spp.</i> , <i>Salix</i> , <i>Lindera</i> , and immature tree species, such as <i>Acer spp.</i> , <i>Fraxinum spp.</i> , and <i>Ulmus spp.</i>
Palustrine Forested	PFO	These are wetlands that are characterized by woody vegetation that is 20 feet tall. All water regimes are included except subtidal. Forested wetlands are most common in the eastern United States and in those sections of the West where moisture is relatively abundant, particularly along rivers and in the mountains. Forested wetlands normally have an overstory of trees, an understory of young trees or shrubs, and an herbaceous layer. Dominant species may include <i>Acer spp.</i> , <i>Fraxinus spp.</i> , <i>Platanus spp.</i> , <i>Ulmus spp.</i> , or <i>Populus spp.</i>
^{a/} Cowardin, et al., 1979. NWI = National Wetlands Inventory Wetland Types: PEM = Palustrine Emergent PSS = Palustrine Scrub-shrub PFO = Palustrine Forested		

The Project would affect about 16.5 acres of forested wetlands, 19.1 acres of emergent wetlands, and 2.2 acres of scrub-shrub wetlands during construction. The primary impact of pipeline construction and right-of-way maintenance activities on wetlands would be the temporary and permanent alteration of wetland vegetation. These effects would be greatest during and immediately following construction.

Generally, palustrine emergent and palustrine scrub-shrub wetland vegetation would be temporarily impacted by the construction of the Project and would transition back into a community functionally similar to pre-construction wetlands. Emergent and scrub-shrub wetlands vegetation would regenerate within 1 to 3 years (2 to 3 growing seasons). Forested wetlands could take more than 50 years to regenerate into a forest community, which would be a long-term impact; however, woody species would regenerate over time outside of the maintained permanent right-of-way. The majority of forested wetland impacts would be from the conversion of woody vegetation to scrub-shrub and herbaceous vegetation. Therefore, impacts on forested wetlands would be long-term with limited permanent conversion of vegetation types (see table 4.3.7-2).

**Table 4.3.7-2
Wetlands Affected by the REX East Project**

State	Wetland Classification <u>a/</u>	Length of Wetland Crossed (miles)	Wetland Area Affected During Construction (acres) <u>b/</u>	Wetland Area Affected by Operations (permanent acres) <u>c/</u>
Missouri	PEM	0.1	1.5	0.0
	PFO	0.7	5.5	0.7
	PSS	0.0	0.1	0.0
	MO subtotal:	0.8	7.1	0.7
Illinois	PEM	0.2	1.8	0.0
	PFO	0.9	4.6	1.9
	PSS	<0.1	0.4	0.2
	IL subtotal:	1.1	6.8	2.1
Indiana	PEM	0.4	4.3	0.0
	PFO	0.2	2.2	0.9
	PSS	<0.1	0.3	0.0
	IN subtotal:	0.6	6.8	0.9
Ohio	PEM	1.1	11.5	0.0
	PFO	0.6	4.2	1.8
	PSS	0.1	1.4	0.1
	OH subtotal:	1.8	17.1	1.9
Totals	PEM	1.8	19.1	0.0
	PFO	2.4	16.5	5.3
	PSS	0.1	2.2	0.3
	Total	4.3	37.8	5.6

a/ Wetland Types:

PEM = Palustrine Emergent
PFO = Palustrine Forested
PSS = Palustrine Scrub-shrub

b/ Area affected during construction (temporary impact) is based upon a 100-foot-wide construction right-of-way to reflect the maximum potential impact to the wetlands.

c/ Acreage reflects a maintained permanent right-of-way width of 30 feet within the 50-foot-wide permanent easement in forested wetlands and a maintained permanent right-of-way width of 10 feet within the 50-foot-wide permanent easement in scrub-shrub wetlands. The remaining area would be restored. Emergent wetlands would not be permanently affected during operation of the pipeline, as they would be allowed to revegetate to pre-construction condition.

Given the tree species that typically dominate forested wetlands in the Project area (red maple, American elm, ash, black gum, tupelo gum, and swamp white oak), regeneration may take 50 years or more. As previously stated, a corridor centered on the pipeline and up to 10 feet may be maintained in an herbaceous state and trees taller than 15 feet and within 15 feet on either side of the pipeline may be selectively cut and removed. By limiting revegetation of a portion of forested wetlands, some of the wetland functions would be altered. During operations, 5.3 of the 16.5 acres of palustrine forested wetlands would be permanently altered. Additionally, 0.3 acre of scrub-shrub wetlands would be converted to emergent wetlands during operations from maintenance activities. Clearing activities and disturbance of wetland vegetation would temporarily affect the wetland's capacity to buffer flood flows

and/or control erosion. Removal of wetland vegetation could also deprive wildlife of valuable habitat and encourage the recruitment of less desirable invasive species.

Other types of impacts associated with construction of the pipeline could include temporary changes in wetland hydrology and water quality. During construction, failure to segregate topsoil over the trenchline in non-saturated wetlands could result in the mixing of topsoil with subsoil. This disturbance could result in altered biological activities and chemical conditions in wetland soils and could affect the reestablishment and natural recruitment of native wetland vegetation after restoration. In addition, inadvertent compaction and rutting of soils during construction could result from the movement of heavy machinery and the transport of pipe sections. The resulting alteration of the natural hydrologic patterns of the wetlands could inhibit seed germination or increase the potential for siltation.

No wetlands would be permanently filled or drained as a result of the Project. The proposed aboveground facilities and access roads for the REX East Project would not be located within wetlands.

Wetlands within Shallow Bedrock

Shallow bedrock exists in 48 of the 309 unique wetland areas identified along the proposed pipeline route. Rockies Express may perform blasting in some of these wetland areas. If blasting is performed during construction in wetlands areas, Rockies Express would implement the measures in its Blasting Plan to avoid or minimize impacts to wetlands, as they could be habitat for wildlife species. Areas with shallow bedrock with the potential for blasting are discussed in section 4.1.1. Wildlife species potentially occurring in these areas are discussed in section 4.5.2. The presence of shallow bedrock could be a primary hydrological factor for a wetland's existence; therefore, **we recommend that:**

- **Rockies Express prepare site-specific blasting plans for each wetland with shallow bedrock prior to blasting. Rockies Express should also evaluate and incorporate appropriate methods to seal fractures in the bedrock following blasting to help prevent possible drainage of the wetlands. Rockies Express should file this plan with the Secretary for review and written approval by the Director of OEP.**

Additional Temporary Workspace

There are 42 proposed additional temporary workspaces located less than 50 feet from a wetland. We have recommended in section 2.3.1 that Rockies Express file site-specific justifications for each extra workspace within 50 feet of a wetland prior to construction.

Wetlands of Special Concern or Value

The Wetland Reserve Program (WRP) is a voluntary program offering landowners the opportunity to sell conservation easements and/or enter into cost-share agreements with NRCS on eligible wetlands. NRCS provides technical and financial assistance to eligible landowners to protect, restore, and enhance the original hydrology, native vegetation, and natural topography. The goal of the program is to restore and protect the functions and values of wetlands in the agricultural landscape. The emphasis of the program is to attain habitat for migratory birds and wetland-dependent wildlife, including threatened and endangered species, protect and improve water quality, attenuate water flows, recharge groundwater, and protect native flora and fauna. NRCS-held easements identified along the Project route have been avoided, and, therefore, no WRP lands would be crossed by the Project.

Wetlands can be categorized as sensitive and significant because of their ecological quality and high level of functionality. This quality and functionality is based on wildlife habitat and hydrologic and

recreational functions. Two wetlands in Missouri are categorized as sensitive and significant because they are both located in the Upper Mississippi COA. Five wetlands in Indiana and eleven wetlands in Ohio are categorized as sensitive and significant because of their high-functional value. Additional information on the high-functioning wetlands (wooded riparian corridors) in Indiana, which are also significant habitat features, is discussed in section 4.4.2. No sensitive and significant wetlands have been identified along the Project route in Illinois. Table 4.3.7-3 lists each sensitive and significant wetland that would be affected by the proposed pipeline route.

Two sensitive wetlands (WL-MO-43A and WL-MO-43B) in Missouri are located between the Salt River and Mississippi River and are part of Blackburn Island, which is included within the Upper Mississippi COA. Blackburn Island is located between the Salt and Mississippi Rivers, which includes these two sensitive wetlands that are part of a larger significant, forested wetland system. Rockies Express would locate one HDD entry workspace on Blackburn Island for both the westward HDD crossing of the Salt River and the eastward HDD crossing of the Mississippi River. Impacts to Blackburn Island would be minimized by use of the HDD method, including wetland WL-MO-43A; however, 5.5 acres of wetland WL-MO-43B would be impacted by the drill entry and additional temporary workspaces. The resulting impact would be a 0.7-acre permanent conversion of forested wetland to herbaceous emergent wetland. Rockies Express would also use the HDD method to minimize impacts to the sensitive wetland WL-OH-505-AA in Pickaway County, Ohio (see table 4.3.7-3).

Five of the eighteen significant wetlands identified in table 4.3.7-3 are palustrine emergent and thirteen are palustrine forested. The impact to palustrine emergent wetlands would be short-term, whereas the palustrine forested wetland impacts would be long-term and limited to permanent conversion of wetland vegetation. Four of the thirteen palustrine forested wetlands (WL-MO-43-A, WL-OH-497-AAA, WL-OH-497-CCC, and WL-OH-505-AA) would be crossed using the HDD method. Therefore, impacts would be avoided. The remaining nine palustrine forested wetlands would be allowed to revegetate naturally according to Rockies Express' Procedures.

Table 4.3.7-3 Sensitive and Significant Wetlands Affected by the REX East Project					
State/County	Wetland Identification	Wetland Type <u>a/</u>	Description	Temporary Impact (acres) <u>b/</u>	Permanent Impact (acres) <u>c/</u>
Missouri					
Pike <u>d/</u>	WL-MO-43-A	PFO	Upper Mississippi Conservation Opportunity Area	0.0	0.0
Pike	WL-MO-43-B	PFO	Upper Mississippi Conservation Opportunity Area	5.5	0.7
Indiana					
Putnam	WL-IN-265-A	PFO	High-Functioning Wetland	<0.1	<0.1
Putnam	WL-IN-272-AAA	PFO	High-Functioning Wetland	0.1	0.1
Hendricks	WL-IN-290-AAAA	PEM	High-Functioning Wetland	0.1	0.0
Morgan	WL-IN-315-AAAA	PFO	High-Functioning Wetland	0.4	0.2
Morgan	WL-IN-315-BBBB	PFO	High-Functioning Wetland	0.2	0.1

Table 4.3.7-3 (continued)					
Sensitive and Significant Wetlands Affected by the REX East Project					
State/County	Wetland Identification	Wetland Type <u>a/</u>	Description	Temporary Impact (acres) <u>b/</u>	Permanent Impact (acres) <u>c/</u>
Ohio					
Fayette	WL-OH-481-A	PEM	High-Functioning Wetland	<0.1	0.0
Fayette d/	WL-OH-497-AAA	PFO	High-Functioning Wetland	0.0	0.0
Fayette d/	WL-OH-497-CCC	PFO	High-Functioning Wetland	0.0	0.0
Fayette d/	WL-OH-497-BBBB	PEM	High-Functioning Wetland	0.0	0.0
Pickaway <u>d/</u>	WL-OH-505-AA	PFO	High-Functioning Wetland	0.0	0.0
Perry	WL-OH-560-BBB	PFO	High-Functioning Wetland	<0.1	0.0
Muskingum	WL-OH-568-AAA	PFO	High-Functioning Wetland	<0.1	<0.1
Muskingum	WL-OH-575-B	PEM	High-Functioning Wetland	0.1	0.0
Guernsey	WL-OH-596-AAA	PEM	High-Functioning Wetland	0.1	0.0
Guernsey	WL-OH-608-DDD	PFO	High-Functioning Wetland	0.1	<0.1
Noble	WL-OH-610-AAA	PFO	High-Functioning Wetland	<0.1	0.0
Total	—	—	—	<7.1	<1.4
<u>a/</u> Wetland Types: PEM = Palustrine Emergent PFO = Palustrine Forested PSS = Palustrine Scrub-shrub					
<u>b/</u> Area affected during construction (temporary impact) is based upon a 100-foot-wide construction right-of-way to reflect the maximum potential impact to the wetlands.					
<u>c/</u> Acreage reflects a maintained permanent right-of-way width of 30 feet within the 50-foot-wide permanent easement in forested wetlands and a maintained permanent right-of-way width of 10 feet within the 50-foot-wide permanent easement in scrub-shrub wetlands. The remaining area would be restored. Emergent wetlands would not be permanently affected during operation of the pipeline, as they would be allowed to revegetate to pre-construction condition.					
<u>d/</u> Would be crossed using the HDD method; therefore there is no impact.					

In its comments on the draft EIS, FWS expressed concern about forested wetland impacts. Specifically, FWS stated that the wetland impacts on Blackburn Island would occur on property owned by COE and managed by MDC for fish and wildlife. FWS recommended that these wetlands be replaced near or adjacent to the Ted Shanks State Conservation Area in order to support ongoing conservation and restoration efforts. COE also suggested that MDC be contacted for information on sites that may be suitable for this purpose. Therefore, we recommend that:

- Prior to the start of construction, Rockies Express develop a site-specific wetland restoration plan for Blackburn Island in consultation with COE, FWS, and MODNR. Rockies Express should file this plan with the Secretary for review and written approval by the Director of OEP.

Wetland Construction Procedures

Rockies Express' Procedures contain wetland mitigation measures that are designed to minimize the overall area of wetland disturbance, minimize the duration of wetland disturbance, reduce the amount of wetland soil disturbance, and enhance wetland restoration following construction. Examples of some of the wetland impact minimization measures specified in its Procedures are:

- using existing rights-of-way to overlap previously disturbed corridors;
- limiting the operation of construction equipment within wetlands to operating only that equipment essential for clearing, excavation, pipe installation, backfilling, and restoration;
- limiting grading in wetlands to areas directly over the trenchline, except where necessary to ensure safety;
- minimizing the length of time that topsoil is segregated and the trench is open;
- installing trench breakers at the boundaries of wetlands as needed to prevent draining of a wetland and to maintain original wetland hydrology;
- prohibiting storage of hazardous materials, chemicals, fuels, and lubricating oils within a wetland or within 200 feet of a wetland boundary;
- limiting post-construction maintenance of vegetation within herbaceous wetlands to a 10-foot-wide strip of vegetation centered over the pipeline; and
- limiting post-construction maintenance in forested and scrub-shrub areas to vegetation/tree removal in those areas that have plant growth taller than 15 feet and within 15 feet of either side of the pipeline centerline.

Rockies Express has attempted to avoid and minimize impacts on wetlands to the extent practicable by collocating the proposed pipeline route within existing corridors. As discussed previously, Rockies Express would also avoid permanent impacts on several wetlands by using the HDD construction method. Rockies Express would further minimize wetland impacts by adhering to the measures specified in its Procedures, which are in accord with our Procedures.

Rockies Express would restore wetlands to pre-construction contours and elevations. Within the construction right-of-way, Rockies Express would leave existing root systems intact where possible. This would encourage regrowth and revegetation of those areas. In areas to be excavated, Rockies Express would salvage topsoil removed and replace that material as a source of native seeds and propagules after construction. These methods would constitute a passive approach to wetland revegetation in the trench and traffic areas. In comments provided to us, federal and state agencies recommended that measures be implemented to control the growth of noxious weeds and other invasive species in wetlands during construction (see section 4.4.4 for a discussion of noxious weeds and invasive species).

In addition, Rockies Express' Procedures (CD Document B) include the commitment to ensure that all disturbed areas successfully revegetate with wetland herbaceous and/or woody plant species. If revegetation is not successful at the end of 3 years, Rockies Express would develop and implement (in consultation with a professional wetland scientist) a remedial plan to actively revegetate the wetlands. The remedial program would be implemented and would continue until wetland revegetation is

considered successful by the federal and state regulatory agencies. In the following paragraphs we are requiring Rockies Express to include reforestation of forested temporary work areas (additional temporary work spaces, contractor yards, pipe yards, etc.) as part of its wetland mitigation plan.

The REX East Project would affect a total of about 3,095.8 acres of forested lands during construction, and of this, about 16.5 acres would be forested wetlands and 3,079.3 acres would be upland forest land. About 10.2 acres of the forested wetland would be collocated with other facilities. In its comments on the draft EIS, FWS expressed concern about mitigation for impacts to upland/bottomland forest areas and non-jurisdictional wetlands. FWS stated that "in order to minimize overall impacts on fish and wildlife it is appropriate to mitigate for impacts to all forested habitats and nonjurisdictional wetlands." Impacts to upland forests are discussed in section 4.4 of this EIS. Impacts to forested wetlands (jurisdictional and non-jurisdictional) are discussed below.

Our Procedures require that gas pipeline be built such that wetlands are not permanently lost. However, forested vegetation would be converted to herbaceous and scrub-shrub type wetlands. With proper planting and restoration practices, this impact can be minimized. Due to safety concerns, the entire disturbed right-of-way cannot be replanted with trees. As a result, we do not require vegetation maintenance over the full width of the permanent right-of-way (50 feet centered over the pipeline). However, to facilitate periodic pipeline and corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be maintained in an herbaceous state. In addition, trees within 15 feet of the pipeline that are greater than 15 feet in height may be selectively cut and removed from the permanent right-of-way.

Alternative Measure to Our Procedures

Rockies Express has agreed to use a 75-foot-wide construction right-of-way in forested and saturated wetlands. However, Rockies Express has requested to use a 100-foot-wide construction right-of-way in non-saturated herbaceous and scrub-shrub wetlands. This alternative measure is requested because of the size of the pipeline (42 inches in diameter), the depth of the trench, and the size of equipment required to install a 42-inch pipeline. We have recommended in section 2.3.2 that Rockies Express revise its Procedures to use a 75-foot-wide right-of-way for all wetlands. A 75-foot-wide right-of-way is recommended to reduce impacts on wetlands. It is our experience that a 42-inch-diameter pipeline can be constructed in a 75-foot-wide construction right-of-way.

Wetland Mitigation

Impacts to Blackburn Island would be minimized by use of the HDD method, including for wetland WL-MO-43A; however, 5.5 acres of wetland WL-MO-43B would be impacted by the drill entry and additional temporary workspaces. The resulting impact would be a 0.7-acre permanent conversion of forested wetland to herbaceous emergent wetland.

We concur with FWS and believe it is reasonable to require off-site compensatory mitigation for the permanent loss of forested vegetation in wetlands that would occur along the permanent right-of-way due to maintenance activities. We believe that the off-site mitigation option represents the preferable compensation system because it: allows for improvement of existing degraded wetlands; can be implemented on a large scale; can be designed to utilize public land; and has the potential to avoid or lessen land ownership, long-term protection, and long-term maintenance problems. Therefore we believe off-site compensatory wetland mitigation be incorporated into the Project-specific wetland mitigation plan for unavoidable forested vegetation in wetlands lost due to permanent maintenance activities.

Natural gas pipeline projects convert forested wetland vegetation to herbaceous and scrub-shrub vegetation, both temporarily and permanently. We believe that onsite restoration should be pursued along the temporarily cleared portions of the right-of-way to mitigate long-term impacts to forested wetlands. Also, COE (St. Louis District) stated that "all forested areas should be replanted, monitored, and managed for reforestation. The monitoring and management of these areas should continue for five years." COE added that onsite areas conducive to tree planting could be replanted with native tree species to compensate for temporal loss of replanting and for the spatial loss of non-forested areas over the pipeline. Hence we are requiring Rockies Express to actively plant native trees to revegetate the right-of-way, excluding the 30-foot-wide permanently maintained strip centered over the pipeline, to restore preconstruction forested wetlands affected by the REX East Project. Therefore, we recommend that:

- **Prior to the start of construction, Rockies Express consult with COE, FWS, and other appropriate state and federal agencies regarding replanting, monitoring, and managing reforestation, including compensatory mitigation for wetland impacts for all temporary and permanent rights-of-way, additional temporary workspaces, and contractor yards/pipe yards located within forested wetlands. Rockies Express should include this information in its Wetland Mitigation Plan.**

Based on the results of the consultations completed to date, Rockies Express has proposed to compensate other permanent wetland impacts through purchase of wetland mitigation bank credits. A wetland mitigation bank is a wetland area set aside for restoration, establishment, or enhancement for the purpose of providing compensation for an unavoidable impact to a wetland impacted by a project. Mitigation banks are a form of "third-party" compensatory mitigation, in which the responsibility for compensatory mitigation implementation and success is assumed by a party other than the permittee (EPA, 1995). Mitigation banking is an approved alternative to onsite mitigation and often provides for greater likelihood of success in replacement of wetland function and long-term management of restored wetland areas. Rockies Express is already considering the option of wetland mitigation banking as compensatory mitigation for wetland impacts. However, FWS has indicated that it does not support the use of wetland mitigation banks to mitigate for wetland impacts until more details have been determined. FWS further stated that any mitigation through wetland mitigation banks would need to be overseen by the appropriate state and federal resource agencies, and added that wetlands should be replaced within the same state and watershed in which the impacts would occur, typically in like kind. Therefore, we recommend that:

- **Prior to the start of construction, Rockies Express finalize consultations with COE, FWS, and appropriate state and federal agencies to develop its Wetland Mitigation Plan; and file with the Secretary a final Wetland Mitigation Plan and the results of its consultations with these agencies.**

4.4 VEGETATION

The REX East Project would extend across several ecoregions of the United States (EPA, 2007c). All ecoregions that would be crossed by the pipeline and aboveground facilities are described below in table 4.4-1 with their respective subecoregions and locations. In addition to the pipeline, two compressor stations—one constructed in Phelps County, Nebraska and the other in Carbon County, Wyoming—would be located in separate ecoregions.

4.4.1 General Vegetation Resources

Construction of the Project pipeline would affect the following three main vegetative communities: agricultural, herbaceous, and forested vegetation as presented in table 4.4.1-1. During construction, the pipeline route would cross 490.6 miles of agricultural and herbaceous open areas and 143.5 miles of forested areas. The major vegetation categories are further subdivided into vegetative types (table 4.4.1-1). In this section, forested wetlands are included with forested vegetation and emergent wetlands are included with herbaceous vegetation. Wetlands (emergent, scrub-shrub, and forested) are further discussed in section 4.3.7. Agriculture and direct impacts associated with croplands are further discussed in section 4.8.2. Project-related acreage impacts for vegetative communities are presented in table 4.4.1-2.

Project Facilities

The Project would affect 14,227.1 acres of vegetated land during construction and 4,020.1 acres of vegetated land during operation. Of the acres that would be affected by construction, 3,095.8 acres are forested areas, 438.7 acres are herbaceous (nonforested) areas, and 10,692.6 are agricultural land. Of the total acres that would be affected during operation, about 885.7 acres are forested land, 180.7 are herbaceous land, and 2,953.9 are agricultural land. See more details in table 4.4.1-2 for breakdown of these acres by facility. Acres reported in table 4.4.1-2 reflect numbers for both upland and wetland areas.

The primary impacts on vegetation from construction of the REX East Project would be the cutting, clearing, or removal of existing vegetation within the construction work area. The severity of impact would depend on the specific type and amount of vegetation affected, and the rate at which vegetation would regenerate after the completion of construction activities. The majority of construction-related impacts would be temporary, and cleared vegetation would be allowed to return to natural conditions after construction. Operation of the pipeline would include a permanent loss of vegetation along forested areas within the 50-foot-wide permanent pipeline right-of-way and where aboveground facilities would be located. Construction impacts outside of the 50-foot-permanent right-of-way to forested areas would be long-term, as it could take 50 years or more for forested vegetation to return to pre-construction conditions.

The 50-foot-wide permanent right-of-way in upland areas would be kept free of large trees and shrubs through selective cutting, and would be maintained not more than once every 3 years, except where otherwise specified. In wetland areas and FWS-identified forested areas of fragmentation concern, trees greater than 15 feet tall would be selectively removed every 3 years along a 30-foot-wide permanent right-of-way (15 feet on either side of the pipeline). A 10-foot-wide corridor directly above the pipeline would be annually maintained in an herbaceous state throughout the life of the project. The loss of forested vegetation along the pipeline route would result in forest fragmentation and subsequent loss of wildlife habitat. Other impacts resulting from the widening of the existing corridor or the removal of vegetation include increased erosion, sediment runoff, altered soil chemistry, modified infiltration and groundwater recharge rates, and an increased susceptibility to invasive or exotic species.

Table 4.4-1
EPA Ecoregions Crossed by the Project

Ecoregion	Location of Occurrence in Project Area (State, Count[ies])	Description
Central Irregular Plains <u>Subecoregion</u> Claypan Prairie	Missouri Ralls, Audrain	This ecoregion is less irregular and less forest-covered than the ecoregions to the south and east. The potential natural vegetation of this region is a grassland/forest mosaic with wider forested strips along the streams compared to the north. Tallgrass prairies (big bluestem and Indian grass) dominate the scattered white oak dry woodland. Currently, the region is mostly used for agriculture and pastureland for cattle grazing.
Interior River Valley and Hills <u>Subecoregion</u> River Hills Upper Mississippi Alluvial Plain Western Dissected Illinoisan Till Plain	Missouri Pike Illinois Pike, Scott, Morgan	This ecoregion comprises old till plains, hills, forested river bluffs, major rivers, and valleys containing levees, oxbow lakes, islands, and scattered sand sheets and dunes. The region is a transitional area between the more forested Ozark Highlands, and the flatter, much less forested Central Corn Belt Plains. The potential natural vegetation of well-drained upland areas is a mosaic of oak-hickory forests and bluestem prairies, while other regions in the area often have bottomland hardwood forests, floodplain forests, and marshes. Agriculture dominates most of the prairie habitat.
Central Corn Belt Plains <u>Subecoregion</u> Illinois/Indiana Prairies	Illinois Morgan, Sangamon, Christian, Macon, Moultrie, Douglas, Edgar Indiana Vermillion	This ecoregion comprises vast glaciated plains that were once dominated by bluestem prairies and oak-hickory forests. At present, this region has mostly been converted for crops such as corn, wheat, and soybeans. Sycamores, cottonwood, and maple are native to floodplain regions. Bulrush sedges and reeds are common to prairie potholes and marshes.
Interior River Lowland <u>Subecoregion</u> Glaciated Wabash Lowlands	Indiana Putnam, Parke, Vermillion	This broad, undulating lowland was formed in non-resistant, non-calcareous sedimentary rock. Many wide, flat-bottomed, terraced valleys are present and are filled with alluvium, outwash, aeolian, and lacustrine deposits. Much of this ecoregion is covered by till or windblown silt and sand that is pre-Wisconsinan in age. The vegetation in the region has scattered woodlands (predominantly beech forest and oak-hickory forest) mixed with prairies. This region also supports agriculture, livestock, and surface coal-mining activities.
Eastern Corn Belt Plains <u>Subecoregion</u> Loamy High Lime Till Plains Darby Plains	Indiana Putnam, Hendricks, Morgan, Johnson, Shelby, Decatur, Franklin Ohio Butler, Warren, Clinton, Pickaway, Fairfield, Fayette, Clinton, Pickaway	This ecoregion is primarily a rolling plain with local end moraines; it has more natural tree cover and lighter colored soils than the Central Corn Belt Plains. Glacial deposits of Wisconsinan age are extensive. Indiana and Ohio counties have beech forests, oak-sugar maple forests, and elm-ash swamp forests. Ohio counties additionally have a mixture of oak forests, wet-prairie, and tall-grass prairie habitats. Currently, the region is dominated by extensive farming, some urban-industrial activity, and livestock areas.

Table 4.4-1 (continued)
EPA Ecoregions Crossed by the Project

Ecoregion	Location of Occurrence In Project Area (State, Count[ies])	Description
Interior Plateau <u>Subecoregion</u> Northern Bluegrass	Indiana Franklin	This ecoregion has rolling to deeply dissected, rugged terrain. Land use/land cover is a transition between agriculture, livestock, and woodlands of mesophytic and oak-hickory origin.
Erie/Ontario Drift and Lake Plain <u>Subecoregion</u> Low-Lime Drift Plain	Ohio Perry	Low-lime drift and lacustrine deposits blanket the rolling to level terrain of this ecoregion. Lakes, wetlands, and swampy streams occur where stream networks are deranged or where the land is flat and clayey. This region has a mixture of forests (mesophytic forest, mixed oak forest, beech forest, oak-sugar maple forest, and elm-ash swamp forests), dairy farming, agriculture, gas wells, and coal mining.
Western Allegheny Plateau <u>Subecoregion</u> Permian Hills Monongahela Transition Zone Unglaciated Upper Muskingum Basin Ohio/Kentucky Carboniferous Plateau	Ohio Perry, Muskingum, Morgan, Guernsey, Noble, Belmont, Monroe	This extensive, rugged, wooded terrain has mixed mesophytic forests, mixed oak forests, oak-sugar maple forests, beech wood forests, hemlock hardwoods in ravines, and red maple seepage swamps. At present, most of the hilly rugged areas remain as forest, while agriculture, dairy, livestock, and residential areas lie in lower regions. Gas wells, coal mining, and reclaimed land are extensive in this region and are associated with the degradation of several streams.
Wyoming Basin <u>Subecoregion</u> Rolling Sagebrush Steppe	Wyoming Carbon	This ecoregion is broad, arid, intermontane basin, interrupted by hills, low mountains, and dominated by grasslands and shrublands. The region also has rolling plains with hills, cuestas, mesas, terraces, while near the mountains are footslopes, ridges, alluvial fans, and outwash fans. Potential natural vegetation is mostly sagebrush steppe, with the eastern edge of the region having more mixed-grass prairie. Wyoming big sagebrush is the most common shrub with silver and black sagebrush occurring in the lowlands and mountain big sagebrush in the higher elevations. Frequent fires have affected the sagebrush steppe and some areas are dominated by European annual grasses. Most of the land is in rangeland, cattle and sheep ranches, or wildlife habitat; however, there are also major gas and oil production areas.
Central Great Plains <u>Subecoregion</u> Rainwater Basin Plains	Nebraska Phelps	The Central Great Plains is slightly lower, receives more precipitation, and is more irregular than the Western High Plains. This region has tall-grass and mixed-grass prairies dominated by bluestems with scattered low trees and shrubs. Currently, much of this ecoregion is now in cropland and is the major winter wheat growing area of the United States. Although this region has natural wetlands in the North American Central Flyway for waterfowl migration, most of the wetlands have been drained for cultivation and relatively few areas remain.

Table 4.4.1-1
Vegetative Communities Occurring along the Project Route ^{a/}

Classification	Representative Species	Location by State (County)
Agriculture Land		
Cropland/Pasture	Corn, alfalfa, soybean, wheat, hay, grasses, clover	Ohio, Indiana, Illinois, Missouri, Nebraska (Phelps County)
Herbaceous		
Tall-grass prairie	Big bluestem, little bluestem, Indian grass, blue grama, prairie dock, sideoats grama, golden rod	Ohio, Indiana, Illinois, Missouri
Mixed-grass prairie	Blue grama, western wheatgrass, June grass, Sandberg blue grass, buffalo grass, needle-and-thread, bluestem, fringed sage, rabbitbrush	Wyoming (Carbon County)
Sagebrush steppe	Wyoming big sagebrush, sagebrush steppe, silver and black sage brush, mixed grass prairie species	Wyoming (Carbon County)
Emergent wetlands	Bulrush sedge, reed, cord grass, cattail	Ohio, Indiana, Illinois, Missouri
Forest		
Riparian forests	Sycamore, cottonwood, maple, ash, elm, willow, green ash, American elm	Ohio, Indiana, Illinois, Missouri
Deciduous/Mixed forests	White oak, black oak, sugar oak, hickory, beech, maples, silver oak, eastern hemlock, chestnut, black cherry, poplar, pine, basswood, bur oak, hackberry, mesophytic species	Ohio, Indiana, Illinois, Missouri
Forested wetlands	Ash, red maple, black gum, tupelo gum, American elm, white oak	Ohio, Indiana, Illinois, Missouri
Previously Developed Land	Areas with ornamental and manicured vegetation from developed or previously developed property; mixture of native and non-native species	Ohio, Indiana, Illinois, Missouri

^{a/} Cowardin et al., 1979
EPA, 2007c
OSU, 2007
Wyoming Game and Fish Department, 2007