

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Guardian Pipeline, L.L.C

Docket No. CP07-8-000

NOTICE OF AVAILABILITY OF THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE
GUARDIAN EXPANSION AND EXTENSION PROJECT

(April 13, 2007)

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared this draft Environmental Impact Statement (EIS) for the construction and operation of the natural gas pipeline facilities (referred to as the G-II Project or Project) as proposed by Guardian Pipeline, L.L.C. (Guardian) in the above-referenced docket.

The draft EIS was prepared to satisfy the requirements of the National Environmental Policy Act (NEPA). The FERC staff concludes that approval of the G-II Project, with appropriate mitigating measures as recommended, would have limited adverse environmental impact. The draft EIS evaluates alternatives to the proposal, including system alternatives and pipeline route alternatives.

The Bureau of Indian Affairs, the U.S. Army Corps of Engineers (COE) are federal cooperating agencies for the development of this EIS. The State of Wisconsin Department of Natural Resources is also a cooperating agency. Cooperating agencies have jurisdiction by law or have special expertise with respect to any environmental impact involved with the proposal and is involved in the NEPA analysis or similar type of environmental analysis.

The purpose of the G-II Project is to provide the facilities necessary to provide about 537,200 decatherms per day of additional natural gas capacity to Guardian's existing pipeline system. The proposed additional capacity would facilitate the transport of natural gas to customers within the state of Wisconsin and provide those customers with the necessary infrastructure to support growth and competition within the natural gas marketplace. Guardian proposes to have the project constructed and operational by November 2008.

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The draft EIS addresses the potential environmental effects of the construction and operation of the following natural gas pipeline facilities:

- 83.6 miles of 30-inch-diameter natural gas pipeline in Jefferson, Dodge, Fond du Lac, Calumet, Brown, and Outagamie Counties, Wisconsin;
- 25.9 miles of 20-inch-diameter natural gas pipeline in Brown and Outagamie Counties, Wisconsin;
- two new 39,000 horsepower (hp) electric motor driven compressor stations including the Sycamore Compressor Station located in the Sycamore Township in DeKalb County, Illinois and the Bluff Creek Compressor Station located in the Town of La Grange in Walworth County, Wisconsin;
- modifications to the existing Ixonia Meter Station in Jefferson County, Wisconsin and the construction of seven new meter stations in the Counties of Dodge, Fond du Lac, Calumet, Brown, and Outagamie Counties, Wisconsin;
- two new pig launcher facilities including a 30-inch launcher within Guardian's existing Ixonia Meter Station in Jefferson County, Wisconsin; a 30-inch-diameter receiver and 20-inch-diameter launcher within the proposed Fox Valley Meter Station in Brown County, Wisconsin; and a 20-inch-diameter receiver within the proposed West Green Bay Meter Station in Outagamie County Wisconsin; and
- six new mainline valves (MLV), four of which would occur along the 30-inch-diameter pipeline in the counties of Dodge, Fond du Lac, and Calumet, Wisconsin and two which would occur along the 20-inch-diameter pipeline in Brown and Outagamie Counties, Wisconsin.

Project construction would be initiated in the spring of 2008 and would be completed for a proposed in-service date in November 2008.

Comment Procedures and Public Meetings

Any person wishing to comment on the draft EIS may do so. To ensure consideration prior to a Commission decision on the proposal, it is important that we receive your comments before the date specified below. **Please carefully follow these instructions to ensure that your comments are received and properly recorded:**

- Send **an original and two copies** of your comments to:

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Room 1A
Washington, D.C. 20426

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- Label one copy of the comments for the attention of the Gas Branch 1, DG2E; and Reference Docket No. CP07-8-000 on the original and both copies.
- Mail your comments so that they will be received in Washington, D.C. on or before **May 29, 2007**.

Please note that the Commission strongly encourages electronic filing (“eFiling”) of comments. Instructions on how to “eFile” can be found on the Commission’s web site at <http://www.ferc.gov> under the “Documents and Filings” link.

In addition to or in lieu of sending written comments, we invite you to attend the public comment meeting scheduled as follows:

May 15, 2007, 7:00 p.m.(CST)
Radisson Hotel and Conference Center of Green Bay
2040 Airport Drive
Green Bay, WI US
Telephone: (920) 405-6404

May 16, 2007, 7:00 p.m.(CST)
Bauer Ramada Plaza Hotel
1 North Main Street
Fond Du Lac, WI 54935
Telephone: (920) 923-3000

May 17, 2007, 7:00 p.m.(CST)
Olympia Conference Center
1350 Royale Mile Road
Oconomowoc, WI 53066
Telephone: (262) 369-4969

The public comment meetings will be posted on the FERC’s calendar located at www.ferc.gov/EventCalendar/EventsList.aspx. Interested parties and individuals are encouraged to attend and present oral comments on the draft EIS. Transcripts of the meetings will be prepared.

After these comments are reviewed, any significant new issues are investigated, and modifications are made to the draft EIS, a final EIS will be published and distributed by the FERC staff. The final EIS will contain the staff’s responses to timely comments received on the draft EIS.

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Comments will be considered by the Commission but will not serve to make the commentor a party to the proceeding. Any person seeking to become a party to the proceeding must file a motion to intervene pursuant to Rule 214 of the Commission's Rules of Practice and Procedures (18 CFR 385.214). Anyone may intervene in this proceeding based on this draft EIS. You must file your request to intervene as specified above.¹ **You do not need intervenor status to have your comments considered.**

The draft 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, D.C. 20426
(202) 502-8371

A limited number of hard copies and CD copies of the draft EIS are available from the Public Reference Room identified above. Copies of the draft EIS have been mailed to federal, state, and local agencies; public interest groups; individuals and affected landowners who requested a copy of the draft EIS or provided comments during scoping; libraries; newspapers; and parties to this proceeding.

Additional information about the project is available from the Commission's Office of External Affairs, at **1-866-208-FERC** or on the FERC Internet website (www.ferc.gov).

To access information via the FERC website click on the "eLibrary" link then click on "General Search" and enter the docket number excluding the last three digits in the Docket Number field. Be sure you have selected an appropriate date range. The "eLibrary" link provides access to the texts for formal documents issued by the Commission, such as orders, notices, and rulemakings. For assistance with "eLibrary", please contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll free at 1-866-208-3676, or for TTY, contact (202) 502-8659.

In addition, the Commission now 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

¹ Interventions may also be filed electronically via the Internet in lieu of paper. See the previous discussion on filing comments electronically.

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the documents. To learn more about “eSubscription” and to sign up for this service please go to www.ferc.gov/esubscribenow.htm.

Kimberly D. Bose,
Secretary

Appendix A

Draft EIS Distribution List

APPENDIX A

DRAFT EIS DISTRIBUTION LIST

Federal Government – Elected Officials

Assembly Speaker John Gard
 Representative Al Ott
 Representative Carol Owens
 Representative Daniel LeMahieu
 Representative Dave Ward
 Representative Frank Lasee
 Representative Jeff Fitzgerald
 Representative Joel Kleefisch, Wisconsin State Assembly
 Representative John Townsend
 Representative Phil Montgomery
 Representative Steve Kestell, Wisconsin State Assembly
 Representative Steve Nass
 Representative Terry McCormack
 Representative Tom Nelson
 Senate Majority Leader Dale Schultz
 Senator Alan Lasee
 Senator Carol Roessler
 Senator Glenn Gothman
 Senator Joe Leibham
 Senator Neal Kedzie
 Senator Rob Cowles
 Senator Scott Fitzgerald
 Speaker's Staff, Ellen Nowak
 Staff to Representative Jeff Fitzgerald, Brian Pleva
 Staff Senate Majority Leader, John Murray
 André Jacque, Office of the Mayor of Green Bay

Federal Agencies

Advisory Council on Historic Preservation, Director, Cultural Resources
 Advisory Council on Historic Preservation, Laura Henley Dean, Office of Federal Agency Programs
 Air Force Real Property Agency, Vincent Leduc
 American Gas Association, Dave Parker, President
 Assistant Chief of Staff for Installation Management, Attn: Mr. Paul E. Mason ACSIM
 Bureau of Indian Affairs, Scott Doig
 Bureau of Indian Affairs, WI, Robert Jaeger
 Center for Disease Control
 Council on Environmental Quality
 Council on Environmental Quality, Dina Bear, General Counsel
 Council on Environmental Quality, Horst Greczmiel, Associate Director for NEPA Oversight
 Department of Commerce, Director, Ecology and Conservation, NOAA
 Department of Energy, Harvey Harmon, Director for Import/Export Activities
 Department of Energy, Office of Environ. Compliance
 Department of Energy, Robert Corbin, Manager, Natural Gas Regulatory Activities

Department of Energy, Steve Lerner, Office of Intergov. Affairs
 Department of Housing & Urban Development, HUD-Director of Environment
 Department of Justice, Land and Natural Resources Division
 Department of Labor, Office of Regulatory Economics
 Department of State, Office of Environment/Health
 Department of the Air Force, Office of Deputy Secretary, Environment, Safety & Occupational Health
 Department of the Interior, Director, Office of Environmental Policy and Compliance
 Department of the Interior, Patricia E. Morrison, Deputy Assistant Secy. for Land and Minerals Management
 Department of the Interior, Walter Cruickshank, Deputy Director, Minerals Management Service
 Interstate Commerce Commission, Chief Energy and Environment
 Library of Congress, Exchange and Gift Division, Federal Documents Section
 National Park Service
 Office of Federal Activities, Director
 Office of Federal Agency Programs, Advisory Council on Historic Preservation, Don L. Klima, Director,
 Office of Habitat Protection, National Marine Fisheries Service, Karen Abrams, Marine Resource Habitat Specialist
 Office of the Assistant Secretary of the Army, Chip Smith, Assistant for Environment, Tribal and Regulatory Affairs
 Office of the Assistant Secretary of the Navy, Attn: Robert Uhrich
 Office of the Under Secretary of Defense, Attn: IRM
 Office of the Under Secretary of Defense, Sonny White
 Pipe Line Contractors Assoc., J. Patrick Tielborg
 Rocky Mountain P/L Construction Assoc., J.D. Lormand, Exec. Director
 The Wilderness Society, Pete Morton, Ph.D., Resource Economist
 U.S. Army Corps of Engineers, Office of the Chief of Army Engineers
 U.S. Army Corps of Engineers, WI, Rebecca Gruber
 U.S. Coast Guard, Capt. David Scott, Office of Operating and Environmental Standards
 U.S. Coast Guard, Department of Homeland Security, Admiral Thomas H. Collins, Commandant
 U.S. Department of Agriculture, National Environmental Coordinator, Natural Resources Conservation Service
 U.S. Department of Commerce, Sloan Rappoport, Senior Policy Advisor, Office of the Secretary
 U.S. Department of Transportation, Camille Mittelholtz, Environmental Policies Team Leader
 U.S. Department of Transportation, Kimbra Davis, Community Assistance/Technical Services, Office of Pipeline Safety

U.S. Department of Transportation, Mike Schwarzkopf,
Office of Pipeline Safety
U.S. Department of Transportation, Office of Pipeline
Safety Eastern Region, Alex Dankanich
U.S. Department of Transportation, Office of Pipeline
Safety, Harold Winnie
U.S. Department of Transportation, Office of Pipeline
Safety, Karen Butler
U.S. Department of Transportation, Office of Pipeline
Safety, Research and Special Programs Admin.
U.S. Department of Transportation, Office of Pipeline
Safety, Stacy Gerard, Associate Administrator,
Research and Special Programs Admin.
U.S. Department of Transportation, Office of Pipeline
Safety, Tom Fortner
U.S. Department of Transportation, Pipeline and
Hazardous Materials Safety Administration
U.S. Department of Transportation, Research and
Special Programs Admin., Office of Hazardous
Materials Enforcement
U.S. Department of Transportation/RSPA/OPS/E.
Region, William H. Gute, Director, E. Region
U.S. Environmental Protection Agency Region 5, IL,
Virginia Laszewski
U.S. Environmental Protection Agency Region 5, IL,
Ken Westlake, Chief, NEPA Implementation Section
U.S. Environmental Protection Agency, IL, Catherine
Garra
U.S. Fish & Wildlife Service, WI, Joel Trick
U.S. Senate Committee on Energy and Natural Gas
USDA Forest Service, Deputy Chief, National Forest
System
USDA Forest Service, Director of Lands
USDA Forest Service, Ecosystem Mgmt. Coordination
USDA Forest Service, Office of Finance and
Management

State Agencies and Elected Officials

Governor James Doyle, State of Wisconsin
Governor's Campaign Manager, Rich Judge
Governors Staff, Pat Henderson, State of Wisconsin
Public Service Commission of Wisconsin, Cathy Boies,
Exec. Assistant to Mark Meyer
Public Service Commission of Wisconsin, Dan Ebert,
Chairperson
Public Service Commission of Wisconsin, Dan Shooff,
Exec. Assistant to Dan Ebert
Public Service Commission of Wisconsin, David
Sapper, Exec. Assistant to Robert Garvin
Public Service Commission of Wisconsin, Eric Callisto,
Exec. Assistant to Dan Ebert
Public Service Commission of Wisconsin, Mark Meyer,
Commissioner
Public Service Commission of Wisconsin, Robert
Garvin, Commissioner
Wisconsin Department of Administration, Sean Dilweg,
Exec. Assistant to Steve Bablitch
Wisconsin Department of Administration, Steve
Bablitch, Secretary
Wisconsin Department of Agriculture, Trade &
Consumer Protection, Marty Henert, Exec. Assistant
to Rod Nilsestuen

Wisconsin Department of Agriculture, Trade &
Consumer Protection, Rod Nilsestuen, Secretary
Wisconsin Department of Agriculture, Trade &
Consumer Protection, Peter Nauth, Agricultural
Impact Analyst
Wisconsin Department of Natural Resources, Amy
Smith, Div. Admin. Enforcement & Science
Wisconsin Department of Natural Resources, David
Siebert, Director-Office of Energy
Wisconsin Department of Natural Resources, Mary
Schlaefer, Executive Assistant
Wisconsin Department of Natural Resources, Scott
Hassett, Secretary
Wisconsin Department of Natural Resources, Tribal
Lands

Local Governments

Brown County Board Adam Warpinski
Brown County Board Bill Clancy
Brown County Board Chair Norbert DeCleene
Brown County Board Christopher Zabel
Brown County Board Dave Kaster
Brown County Board Joe Backman
Brown County Board Joe Van Deurzen
Brown County Board Mike Fleck
Brown County Board Pat La Violette
Brown County Board Patty Hoeft
Brown County Board Paul Zeller
Brown County Board Thomas De Wane
Brown County Emergency Department, Cullen Peltier
Brown County Executive Carol Kelso
Brown County Planning Director Chuck Lamine
Buchanan Town Chair Jerry Wallenfang
Calumet County Administrator William Craig
Calumet County Board Alice Connors
Calumet County Board Chair Merlin Gentz
Calumet County Board Duaine Stillman
Calumet County Board James Lehrer
Calumet County Board Jerome Koenig
Calumet County Board Jerry Criter
Calumet County Board Marilyn Schuh
Calumet County Board Patrick Laughrin
Calumet County Emergency Management Director
Matthew Marmor
Calumet County Planning Director Ken Pabich
Calumet Economic Development Specialist Diana
Schultz
DeKalb County, Dennis Miller, Coordinator Emergency
Services
DeKalb County, Paul Miller, Planning Director
DeKalb County, Raymond Bockman, Administrator
DeKalb County, Roger Hopkins, Economic
Development
DeKalb County, Roger Steimel, County Board
DeKalb County, Ruth Anne Tobias, Chairperson
DeKalb County, Sharon Holmes, Clerk
DeKalb County, Stephen Slack, County Board
Dodge County, Allen Behl, Supervisor
Dodge County, David Carpenter, Planning Director
Dodge County, Gerald Adelmeyer, Supervisor
Dodge County, Edwin Qualmann, Supervisor
Dodge County, Harold Johnson, Supervisor

Dodge County, Howard Kriewald, Supervisor
 Dodge County, Karen Gibson, Clerk
 Dodge County, Larry Bischoff, Supervisor
 Dodge County, Russell Kottke, Board Chair
 Dodge County, Thomas Schaefer, Supervisor
 Fond du Lac County Planning Dept., Sam Tobias,
 Planning Director
 Fond du Lac County, Allen Buechel, County Executive
 Fond du Lac County, Brenda Schneider, Supervisor
 Fond du Lac County, Brenna Garrison-Bruden, Board
 Chair
 Fond du Lac County, Ellen C. Sorensen, Director
 Administration
 Fond du Lac County, Ernst Clarenbach, Code
 Enforcement Officer
 Fond du Lac County, James Costello, Supervisor
 Fond du Lac County, John Birschbach, Supervisor
 Fond du Lac County, John Muentner, Supervisor
 Fond du Lac County, Joyce Buechel, Clerk
 Fond du Lac County, Tony Zelhofer, Emergency Govt
 Director
 Fox Cities Chamber Bill Welch
 Freedom Town Chair Gary Van Hoof
 Green Bay Chamber Paul Jadin
 Heart of the Valley Chamber Bobbie Beckman
 Jefferson County, Barbara Frank, Clerk
 Jefferson County, Bruce Haukom, Director-Planning
 Jefferson County, Gary Petre, County Administrator
 Jefferson County, Howard Widenhoeft, Supervisor
 Jefferson County, Joseph Nehmer, Emergency Mgt.
 Jefferson County, Randy Mitchell, Supervisor
 Jefferson County, Sharon Schmeling, Board
 Chairperson
 Kaukauna Town Chair Marvin Fox
 Outagamie County Executive Toby Palzer
 Outagamie County Board Chair Clifford Sanderfoot
 Outagamie County Board Charles Kramer
 Outagamie County Board Diana Janssen
 Outagamie County Board Jim Steineke
 Outagamie County Board Ken J. Vanden Heuvel
 Outagamie County Board Mark McAndrews
 Outagamie County Board Mike Hopfensperger
 Outagamie County Board Norman Austin
 Outagamie County Board Stephen Ware
 Outagamie County Board Supervisor Richard Gosse
 Outagamie County Planning Director Michael Hendrick
 Town of Brothertown Clerk Leanne Karls
 Town of Brothertown Jeanold Puetz
 Town of Brothertown Planning Chair John Hau
 Town of Brothertown Supervisor Delmar Buechel
 Town of Buchanan Clerk John Derks
 Town of Buchanan Supervisor Brian Lynch
 Town of Buchanan Supervisor Greg Sprangers
 Town of Buchanan Supervisor Mike Krych
 Town of Buchanan Supervisor Tom Walsh
 Town of Byron, David Whitty, Supervisor
 Town of Byron, Francis Ferguson, Chair
 Town of Byron, Gloria Kelroy, Clerk
 Town of Byron, John A. St. Peter, Attorney
 Town of Byron, Lowell Boelk, Supervisor
 Town of Calumet, Allen Sattler, Chairman
 Town of Calumet, Dennis Lefeber, Supervisor
 Town of Calumet, Mary Casper, Clerk

Town of Calumet, Wilfred Anhalt, Supervisor
 Town of Chilton Board Chair John Schawrz
 Town of Chilton Clerk Doug Koffarnus
 Town of Chilton Planning Chair Mark Schneider
 Town of Chilton Supervisor Andrew Pethan
 Town of Chilton Supervisor Tim Lau
 Town of Eden, Brenda Gosein, Clerk
 Town of Eden, Lee Fowler, Supervisor
 Town of Eden, Paul Tibbetts, Supervisor
 Town of Eden, Richard Guell, Chairman
 Town of Empire, James Pierquet, Chairman
 Town of Empire, John Meyst, Supervisor
 Town of Empire, Michael Morgan, Clerk
 Town of Empire, Norbert Kolell, Supervisor
 Town of Freedom Clerk Barbara Seegers
 Town of Freedom Supervisor Charles Kramer
 Town of Freedom Supervisor Lennert Abrahamson
 Town of Freedom Supervisor LeRoy Brockman
 Town of Freedom Supervisor Robert Schuh
 Town of Herman, Elroy Mittelstadt, Chair
 Town of Herman, Joel Christ, Supervisor
 Town of Herman, Roger Schmitt, Supervisor
 Town of Herman, Stephanie Justmann, Clerk
 Town of Holland Board Chair Jerome Wall
 Town of Holland Clerk Bill Clancy
 Town of Holland Planning Chair Vitas Vande Wetering
 Town of Holland Supervisor Dan Brick
 Town of Holland Supervisor Michael Geiger
 Town of Hubbard, Chairman Kenneth Schulz
 Town of Hustisford, David Nehls, Chair
 Town of Hustisford, Gene Gerth, Supervisor
 Town of Hustisford, Heidi Sperr, Clerk
 Town of Hustisford, William Germer, Supervisor
 Town of Ixonia, Brian Derge, Supervisor
 Town of Ixonia, Carl Jaeger, Supervisor
 Town of Ixonia, Joseph Mallow, Supervisor
 Town of Ixonia, Mary Geszvain, Clerk
 Town of Ixonia, Perry Goetsch, Chairman
 Town of Ixonia, Peter Mark, Supervisor
 Town of Kaukauna Clerk Debra Vander Heiden
 Town of Kaukauna Supervisor Mike Van Asten
 Town of Kaukauna Supervisor Robert Vandelloo
 Town of LaGrange, Ann Lohrmann, Supervisor
 Town of LaGrange, Crystal Hoffmann, Clerk
 Town of LaGrange, Donald Sukala, Supervisor
 Town of LaGrange, Frank Taylor, Chairman
 Town of LaGrange, Jeff Schramm, Chairman
 Town of LaGrange, Richard Callaway, Supervisor
 Town of Lawrence Board Chair Thomas Perock
 Town of Lawrence Clerk Judy Benz
 Town of Lawrence Planning Chair John Klasen
 Town of Lawrence Supervisor Dale Warpinski
 Town of Lawrence Supervisor Kenneth Van de Hei
 Town of Lawrence Supervisor Randy Trembl
 Town of Lawrence Supervisor Randy Vandenack
 Town of Lebanon, Dorothy Kuehl, Clerk
 Town of Lebanon, Leroy Tietz, Supervisor
 Town of Lebanon, Lohny Fredrick, Chair
 Town of Lebanon, Todd Wilson, Supervisor
 Town of Lomira, Edward Emmer, Supervisor
 Town of Lomira, Jeffrey Faber, Supervisor
 Town of Lomira, John A. St. Peter, Attorney
 Town of Lomira, Leon Schraufnagel, Chair

Town of Lomira. Mark Young, Clerk
 Town of Marshfield, Connie Pickart, Clerk
 Town of Marshfield, Earl Steffen, Chairman
 Town of Marshfield, Kenneth Kraus, Supervisor
 Town of Marshfield, Ralph Kraus, Supervisor
 Town of Oneida Board Chair Norman Austin
 Town of Oneida Clerk Mary Olson
 Town of Oneida Supervisor Louis Dorn
 Town of Oneida Supervisor Randall Robertson
 Town of Rockland Board Chair Dennis Cashman
 Town of Rockland Clerk Toni Carter
 Town of Rockland Planning Chair Bob Coenen
 Town of Rockland Supervisor Alice Daul
 Town of Rockland Supervisor Vicky Van Vonderen
 Town of Rubicon, Gerald Priesgen, Supervisor
 Town of Rubicon, Jeff Neu, Supervisor
 Town of Rubicon, Krista Becker, Clerk
 Town of Rubicon, Thomas Schaefer, Chair
 Town of Taycheedah, Brenda Schneider, Clerk
 Town of Taycheedah, James Bertram, Supervisor
 Town of Taycheedah, Jerome Guelig, Chairman
 Town of Taycheedah, John Alder, Supervisor
 Town of Taycheedah, Mike Wirtz, Supervisor
 Town of Taycheedah, Tim Simon, Supervisor
 Town of Theresa, Diane Steger, Clerk
 Town of Theresa, Frank Kuczkowski, Supervisor
 Town of Theresa, Paul Christian, Chair
 Town of Woodville Board Chair Daniel Thiel
 Town of Woodville Planning Chair Virginia Laughrin
 Town of Woodville Supervisor Corey Schmidt
 Town of Woodville Supervisor David Genslak
 Town of Wrightstown Board Chair William Verbeten
 Town of Wrightstown Clerk Faye Wierschke
 Town of Wrightstown Planning Chair Linda Clemedtsen
 Town of Wrightstown Supervisor Donald Wegand
 Town of Wrightstown Supervisor Lyle Dequaine
 Village of Hobart Administrator Joe Helfenberger
 Village of Hobart Clerk Mary Smith
 Village of Hobart President & Planning Chair Rich
 Heidel
 Village of Hobart Trustee David Dillenburg
 Village of Hobart Trustee John Van Lanen
 Village of Hobart Trustee Phil Lehl
 Village of Hobart Trustee Tim Carpenter
 Village of Lomira, August Luedtke, President
 Village of Lomira, Brian Schluter, Trustee
 Village of Lomira, Cal Voight, Trustee
 Village of Lomira, Eugene Schroeder, Trustee
 Village of Lomira, Jay Rawlins, Trustee
 Village of Lomira, Jim Schneider, Trustee
 Village of Lomira, Michael Born, Trustee
 Village of Lomira, Sue Sterr, Clerk
 Walworth County, Ann Lohrmann, Chairperson
 Walworth County, David Bretl, Administrator
 Walworth County, Kimberly Bushey, Clerk
 Walworth County, Neal Fraunenfelder, Planning
 Wrightstown Village Administrator Ben Hughes
 Wrightstown Village Clerk Jean Brandt
 Wrightstown Village President Stephen Johnson
 Wrightstown Village Trustee Al Christensen
 Wrightstown Village Trustee Dawn Aerts
 Wrightstown Village Trustee Scott Hand
 Wrightstown Village Trustee Todd Gauthier

Agricultural Groups

Brown County Farm Bureau
 Calumet County Farm Bureau
 CouleeReg Organic Produce Pool
 Dodge County Farm Bureau
 Fond du Lac County Farm Bureau
 Midwest Organic & Sustainable Education Services
 Midwest Organic Services Association
 National Farmers Org-WI
 Outagamie County Farm Bureau
 WI Agribusiness Council
 WI Confederation of Cooperatives
 WI Corn Growers Association
 WI Dairy Products Association, Inc.
 WI Farm Bureau
 WI Farmers Union
 WI Land & Water Conservation Association
 WI Soybean Association
 WI Woodland Owners Association
 Wisconsin Farm Bureau Federation

Environmental Groups

Clean Water Action Council of NE WI Inc
 Clean Wisconsin
 Ducks Unlimited
 Fox Valley Sierra Group
 Izaak Walton League - A D Sutherland
 Izaak Walton League - So. Brown
 Izaak Walton League - Watertown
 Izaak Walton League - Brown County
 Izaak Walton League - Fox Valley
 Natural Resources Defense Council
 Renew Wisconsin
 The Nature Conservancy
 Wisconsin Resource Protection Council
 Wisconsin Trout Unlimited
 Wisconsin Trout Unlimited, North East Region
 Wisconsin Wetlands Association

Labor Unions

Allied Construction Employers Association, Ed Hayden
 Associated General Contractors of Greater Milwaukee
 & Milwaukee Builders Exchange, Michael Fabishak
 BA Operating Engineers Local 139, Shane Griesbach
 Big Step, Incorporated, Earl Buford
 Boilermakers Local # 107, James Garfield
 Boilermaker's Union, Local No. 107, Blane Tom
 Bricklayers & Allied Craftsmen Wisconsin Valley Local
 #6, Vern McGivern
 Bricklayers & Allied Craftsmen Wisconsin Locals #3, #9,
 & #11, Owen Jones
 Bricklayers & Allied Craftsmen Wisconsin Locals #3, #9,
 & #11, Wynn Jones
 Bricklayers & Allied Craftsmen Wisconsin Locals #3, #9,
 & #11, Randy Weytens
 Bricklayers and Allied Craftsmen Union, Local No. 8,
 Fred Hultquist
 Bricklayers and Allied Craftsmen Union, Local No. 8,
 Tim Ihlenfeld

Central Wisconsin River Valley Building & Construction Trades Council, Vern McGivern
 Chicago Regional Council of Carpenters - North Region, Mark Scott
 Chicago Regional Council of Carpenters - North Region Kenosha Office, Rodger Zacharias
 Construction Labor Management Council of Southeastern Wisconsin, John Topp
 Dodge County Labor Council, Jim Gied
 Dodge County Labor Council, Gary Schultz
 Eau Claire Building & Construction Trades Council, Erich Anderson
 Electrical Workers IBEW Local 2150, Dan Sherman
 Electrical Workers Union, Local No. 494, Paul Welnak
 Electrical Workers Union, Local No. 494 Kettle Moraine Office, Jerome Keifenheim
 Electricians Local # 577, Greg Breaker
 Electricians Local #158, Jack Heyer
 Electricians Local #388, Ken Curry
 Fond du Lac County Labor Council, Charles Meyer
 Fox Valley Area Labor Council, Mark Westphal
 Green Bay Labor Council, Tony Vanderbloeman
 Heat & Frost Insulators and Asbestos Workers Local # 127, Rick Van Roy
 Heat & Frost Insulators Union, Local No. 19, Frank Rodriguez
 International Union of Operating Engineers, Local 139, Dennis Luciani
 International Union Painters & Allied Trades District Council # 7, John T. Jorgensen
 Ironworkers Local # 383, Gene Rustic
 Ironworkers Local # 383, Don Schrader
 Ironworkers Local # 383, Larry Springer
 Ironworkers Local # 383, Sam Wilcox
 Ironworkers Local # 512, Martin Wickoren
 Ironworkers Local # 512, Charles Witt
 Ironworkers Local # 8, James Jorgensen
 Ironworkers Local #8, Dan Cole
 Jefferson County Labor Council, Roger Culver
 La Crosse Building & Construction Trades Council, Steve Severson
 Laborers District Council, Pat Ervin
 Laborers District Council, Mike Ryan
 Laborers International Union of North America, Local No. 113, Richard Pusa
 Laborers Local # 268, Ben Grunseth
 Laborers Local # 330, Miles Mertens
 Laborers Local #113, John Schmitt
 Lakes Regional Labor Council, Bob Lutze
 Milwaukee Building & Construction Trades Council, Lyle Balistreri
 Northeast Wisconsin Building & Construction Trades Council, Gary Ruhl
 Northern Wisconsin Building & Construction Trades Council, Greg Sayles
 Northwest Side Community Development Corporation, Howard Snyder
 Operating Engineers Local # 139, Rod Bessett
 Operating Engineers Local # 139, Terry McGowan
 Operating Engineers Local # 139, Pat Nelson
 Operative Plasterers & Cement Masons International Union, Local 599, Terry Ullsperger

Operative Plasterers & Cement Masons Local # 599, Tom Reiherzer
 Painter Union, Local No. 781. District Council No. 7, John Jorgensen
 Plumbers & Steamfitters Local # 400, Greg Choudoir
 Plumbers & Steamfitters Local # 400, Jeffrey Knaus
 Plumbers & Steamfitters Local # 434, John Duzy
 Plumbers & Steamfitters Local #400, Mark Buss
 Plumbers & Steamfitters Local #434, Terry Hayden
 Plumbers Union Local No. 75, Harry Kreuser
 Roofers Union Local No. 65, John Kubica
 Sheet Metal Workers Local # 18, Patrick Landgraf
 Sheet Metal Workers Local # 18, Nick Liesch
 Sheet Metal Workers Local # 18, Marc Norberg
 South Central Wisconsin Building & Construction Trades Council, Scott Vaughn
 Southeastern Wisconsin Building & Construction Trades Council, Tom Reiherzer
 Southern Wisconsin Building & Construction Trades Council, Tim Elliott
 Sprinkler Fitters Local Union # 669, Daniel Driebel
 Sprinkler Fitters Local Union # 669, Richard Hedtke
 Sprinkler Fitters Union, Local No. 183, Chris Schoenbeck
 Steamfitters Union, Local No. 601, Kevin LaMere
 Teamsters "General" Union Local No. 200, Darryl Connell
 Teamsters Local # 200 - Fond du Lac, Frank Ardellini
 Teamsters Local # 563 - Appleton, Reggie Konop
 Teamsters Local # 563 - Appleton, Robert Schlieve, Jr.
 Teamsters Local # 662 - Central Area, John Kaiser
 Teamsters Local # 75 - Green Bay, Steve Richards
 Teamsters Local # 75 - Green Bay, Mike Thoms

Libraries

Chilton Public Library
 Fond du Lac City Library
 Irvin Young Library
 Juneau Public Library
 Oneida Community Library
 Watertown Public Library
 Wrightstown Library

Media

Around Town (Darboy Sherwood Shopper)
 Associated Press
 Business News, The
 Capitol News Service
 Chilton Times Journal
 De Pere Journal; The
 Energy Solutions
 Fond du Lac Reporter
 Gas Daily
 Green Bay Press-Gazette; The
 Kalihwisaks
 Lakeshore Chronicle
 Manitowoc Herald-Times-Reporter
 Marketplace
 Mayville News
 Milwaukee Business Journal
 Milwaukee Journal Sentinel

Natural Gas Intelligence
 Oshkosh Northwestern
 Post-Crescent
 Press, The
 Times-Press
 Times-Villager
 Watertown Daily Times
 WBAY-TV Channel 2
 WCUB AM - 980
 WDUZ, WQLH
 WEMI - EMI OF WISCONSIN
 WFRV-TV Channel 5
 WGBA-TV Channel 26
 WHBY, WAPL, WECB, WKSZ, WZOR, WSCO
 Wheeler News Service
 Wisconsin Public Radio, WHID, WPNE
 Wisconsin State Farmer
 Wisconsin State Journal
 Wispolitics
 WJOK AM - 1050
 WLUK-TV Channel 11
 WNCY, WIXX, WTAQ, WNFL, WLYD, WOZZ, WROE
 WOMT AM - 1240
 Wrightstown Post-Gazette
 WTMJ
 WTMJ-TV Channel 4

Oneida Nation Elected Officials and Management Committee

Oneida Nation Chairman, Gerald Danforth
 Oneida Nation Communications Director, Bobbi Webster
 Oneida Nation Councilman, Edward Degado
 Oneida Nation Councilman, Paul Ninham
 Oneida Nation Councilman, Trish King
 Oneida Nation Councilman, Vince Dela Rosa
 Oneida Nation Councilwoman, Melinda Danforth
 Oneida Nation Cultural Resources, Corina Williams
 Oneida Nation Development Administration, Joyce LaCount
 Oneida Nation Division Director,
 Development/Engineering, Butch Rentmeester
 Oneida Nation DPW Director, Bruce Danforth
 Oneida Nation Eco-Services Director, Michael W. Finney
 Oneida Nation Land Management, Eleanora Smith
 Oneida Nation of Wisconsin, Bill Gollnick
 Oneida Nation Planning Director, John Breuninger
 Oneida Nation Project Manager, Oneida Engineering Dept., Wayne Metoxen
 Oneida Nation Property Manager, DOLM Process Easements, Diane Wilson
 Oneida Nation Secretary, Patricia Ninham-Hoeft
 Oneida Nation Staff Attorney, Land Management, Rebecca M. Webster
 Oneida Nation Treasurer, Marcie Danforth
 Oneida Nation Utilities Manager, Scott Cottrell
 Oneida Nation Vice Chair, Kathy Hughes
 Oneida Nation Water Resources, Jim Snitgen
 Oneida Nation Zoning Department, Mike Casey
 Oneida Nation Zoning Department, Richard Le May
 Oneida Tribe of Indians of Wisconsin, c/o Pat Pelky

Businesses

American Transmission Company (ATC)
 ANR Pipeline Company
 Blue Sky Wind Farm LLC & Green Field Wind
 DH Tarn LLC
 Eden Stone Company, Inc
 God Green Acres Ltd.
 Dan & Ken Goffard Bros Farm
 Goodfellows Rd & Gun Club, c/o Mike Morgan
 Guardian Pipeline, LLC
 GVD Enterprises
 Hass Grain Farms Inc.
 Hechimovich Theresa Acres LLC
 Holland Veal Inc., c/o Bernard Fassbender
 Hollandtown Investments, c/o Gregory H. Schuh
 Holsum, Inc c/o Ken Buelow
 J Dodge & M Lands, LLC
 Jafaco Holdings of Canada, Bob Wynum
 JDT LLC
 JJ Rubicon Rentals LLC
 Korth Farms Ltd.
 K-View Farm, Lyle Hundertmark
 Lakeside Foods Inc
 Leonard & Vi Landwehr Landwehr Veal Farms Inc.
 Lichtenberg Bros.
 Claude Lisowe Farms Inc. c/o Allan Lisowe
 Meadowlark Dairy LLC
 Gilbert Moldenhauer & Sons
 New Horizons Dairy LLC
 Peebles Farms LLC
 Phoenix III LLC, Darryl Juason
 Prairie Rock Farms Inc.
 R M Transport Inc
 Rocky Road, LLC
 Rubicon Inc.
 Stellar Abodes LLC
 T & R Ottery, LLC
 Mike Tasch Farms
 Tessmann Farms Inc.
 Tinedale Farms
 Virgil Vande Hey, Meadowlark Dairy LLC
 Viola T Family LLC
 WE Energies, Jim Raabe
 Western Lime Corporation, Fred Nast

Landowners and Other Interested Parties

Edward C Abbey
 Steve Acheson
 Ron Adelmeyer
 Alba Flat Trust
 Robert & Mellisa Ambrosius
 Robert J. Ambrosius
 L. Mickey Ambrosius Family LP
 Keith W & Judith M Atkinson
 Steven & Nancy Auchtung
 Eric M & Wendy J August
 Guy E. & Judith A. Baeten
 Kevin L & Mcllynda R W Batterman
 John E Batterman
 Dean A & Lori A Bauer

John T Baumhardt
Ron Baus
Jason & Diana Baus
Ronald & Mary Baus Living Trust
James & Joan Beck
Stuart Becker
Joan C & Daniel Becker
David Becker
Curtis & Christine Belanger
Anthony F Bertram
Edna L Bethke Trust, c/o William E & Deana B Bethke
Russell P & Kathleen M Biel
Jeffery R. Biese
Robert & Nora Biese
Marvin & Patricia Biese
Clarence Bigelow Jr Life Estate
Michael J Birschbach
Lawrence & Eileen Birschbach, Hillside Acres
Jonathon G & Michelle K Birschbach
Randolph A Bodinger
Judy A Boeck
Ralph W & Rozanne L Bohrtz
Boncher Doris Revocable Trust
Gary R. & Eileen Bornemann
Roger Bowers
James & Mary Lou Bowker
Rodney & Christine Breselow
Susan J Brickham
David W Bridgham & Jacqueline Ottson
Mark R & Gretchen A Brumm
Howard A & Shirley V Budewitz
Jeffrey & Rick Budewitz & Thomas Schoenike
Gerald E & Virginia M Buechel
James R & Rebecca M Buege
Buelow Farms Trust
Jeffrey & Jodi Burg / Olig
James M & Bonnie J Casper
James G & Kimmy M Casserly
Mark J Ceranski
Wilmer A. Christian
Theodore J / Wilmer A /Arlene K Christian
William M & Romaine Conner
Bill and Rose Cooper
Salvatore A & Karen A Corrao
Jerraine A & Rose Criter
Terry J. Dabb
Arnold & Janette Dais
Lee Daun
Lee Daun Limited Partnership
Daun John & Carol Rev Living Trust
Lee Daun Revocable Trust
Jon C & Kimberly L Dees
Betty A (Le) & Bruce K Degner
Sharon A Del Ponte
Ken Van Dettay
Raymond L & Debra Diederich
William R & Julie A Diederichs
Paul D & Nancy C Diederichs
Carol Dieterich
Carol Ke & William H Dieterich Living Trust
Ernest & Esther Ditter, Life Estate
Raymond F & Ethel B Ditter
Ronald & Jodi Ditter

Dennis J & Janie M Dooley
Thomas L Duley
Phyllis Dunham Revocable Trust
Gerald F & Evelyn Dunisch
Glenice A & Rev Trust Edminster
Greg Egtvedt
David Ehrhardt
Dick Eiting
Jeff & Brenda Elsinger
Lynn/Ian Erkander / Fulbright
Edwin Faber
Mark A Fagg
Michael Farrell
Steven Farrell
Paul G & Judith Faust
Edward H Feucht
Norbert A & Louise E Feucht
James J & Judith A Feyen
Gordon Fhlug
Otto E Fiedler
Ervin & Janice Fiedler
Wilfred S, Tasha M, Malcolm M, Susan M. Fink
Roger D & Carol Fink
Kenneth B. et ux Fisch
Robert Fisch
Shirley A Fischer
Lisa J Fleischer
Brian & Lana Frank
Michael E & Jenny L Fredrich
Lynn & Ian Fulbright
Christopher L Gagnon
Peter Gambsky
James E Gantner
Harold III & Julie C Garrison
Steve A & Janice L Georgson
Eugene J & Sharon L Gerlach
Leo J. & Lillian C. Gerrits
Robert Gerrits
Donald & Donna Giese
Loretta H/Larry C/Lloyd A/Loren E/ Karen L Giese &
Linda L Semrau
Stephen L, Kathleen A, and Leo A. Goebel
James D & Mary Ann Goebel
Troy R & Melissa L Gough
Donna Mae Griesbach
Dr. Daniel W & Dr. Marthina L Griffiths & Greer
James Gruber
Paul Gruber
Philip Gruber
Gruber Mark Et al
Richard F & Terri L Grulke
Fredrick R & Sandra L Grulke
Mathew J Grulke
George H & Geralyn Gsell
Oscar A. & Francis G Guelig
Francis Gueling
Stephen R Gundrum
Mark R & Kim M Gutschenritter
Carl A Haese
Darin Hagemeyer & Emma Rasmussen
David J Halbach
Robert R & Mary E Halbach
Karen Halbach Thomas

Raymond B & Rae Nell Halbur
 Keith & Patricia Haldiman
 Joseph J & Diana Hanke, Jr.
 Eugene & Margaret Hansen
 Merlin M Hare
 Hass Grain Farms Inc.
 Henry W & Irene Hayes
 Robert & Diane Hechimovich
 Elroy G & Julitta Hegewald
 Roger G Hegewald
 Arno C & Jeanne / Jeffrey Heiling
 Harvey Heller
 Nancy E & David Henze
 Calvin C & Lucindia B Herrmann
 Steven D & Valerie J Heth
 Thomas C Hillebrand
 Terry Hock
 Richard & Germaine Hock
 Robert J Hoehnen
 Joseph N. Hoelzel
 Daniel E. and Sandy Hoelzel
 Lawrence C. & Nancy A. Holschuh
 Dean Holschuh
 Christopher / Arthur & Erna Hookstead Kleemann
 Paul C & LuAnn M Hudson
 Franklen C & Carol A Huebnertrust
 Kenneth L & John L Hundertmark
 Dennis Hundertmark
 Virgil W & Philrene Hundt
 Gary L & Katherine M Huss
 Charles H Huth
 Rodney C & Patricia J Huth
 Adam M Huth
 Lloyd F & Grace M Huth
 Thomas & Gaela Jackson
 Leon G & Donna J Jaeger
 Omar G & Georgianne Jaeger
 John E & Eileen H Jaeger
 Charles R & Jaime A Jaeger & Otto
 Martin F & Jeraldine V Jaeger
 Richard C & Bonita K Jaeger
 Jeffrey & Jodi Jaeger
 Harold Jaeke
 Steve J & Kim E Jansen
 Estate of Floyd Janssen, c/o Glen Smits
 Neale Jensen
 James R & Elsie Lou Jensen
 Robert C & Meredith L Jorgensen
 George L & Elizabeth Jost
 Connie Julka
 Roger N & Carol Just
 Rodney A Justman
 Bernice Kaiser
 Kenneth & Judy Karls
 Kevin J & Brian Kazmierzak
 Dean M & Marty M Kehl
 Anthony C. & Terri R. Kempen
 Phyllis Kempen
 KenJo Farms
 Anthony C. & Nicholas H. Kesler
 Robert A & Janel R King
 Harold L, Lynn C, Brett King
 Robert L Klatt

Frank R & Celeste M Klaus
 Duwayne Klessig
 Roger P & Bernice E Klink
 Dean D & Jean M Kloehn
 Rita Knueppel
 Diane Koch
 Richard G Koehler
 Gregory G & Phyllis I Koerner
 Steven G & Kay E Kohlman
 Kenneth A & Nancy S Kolbe
 Daniel & Ann Konen
 Marie Kraus
 John N. Kraus
 Andrew J Kraus
 Joseph M & Eileen M Kraus Rev. Living Trust
 Robert J Krause
 Richard E Krueger
 Gerald Kuborn
 Percy W & Edna L Kuehl
 Jeffrey L & Christine M Kuehl
 Kuhn Romilda A Family Trust
 Thomas L Kulke
 James H / Barbara L / Nordien / Lorina Kulkee
 Eleanor Kwasny
 Ronald J & Barbara A Laabs
 Lamers Lyle J Revocable Trust
 David Landwehr
 Christopher Landwehr
 Gary J. Lau
 Dennis A & Janet C Lauersdorf
 Matthew R & Trudi E Lavey
 Larry L & Mary J Leemon
 Dennis R. LeFeber
 Mary Lefeber
 Kenneth R & Laurie A Lehmann
 Jesse R & Jennifer A. / Ruth Leitzke / Nehls
 Oliver C & Ethel A Leitzke Trust
 Dale & Sandra Lichtenberg
 Mark Lifke
 Roger Lindstrom
 Merlin C Lisowe
 Duane & Joan Lisowe
 Marvin Lisowe
 Clarence G & Delores M Listle
 J. Greg Little, Utility Manager, Town of Lawrence
 Morgan Long
 Walter J & Elaine V Lueder Jr
 Jon Lundgren
 Leonard C & Susan E Luterbach
 Jon H & Barbara A Lutgen
 Janella Mader
 James A II Mader
 Phillip S & Gail J Majerus
 Leonard A & Debra A Mallas
 David J & Terry A Mallette
 Edward Mathes, Mathes Dairy
 Mark R & Sherryl A Matusiewicz
 Myra Mauer
 Gregory E & Colleen V Maxey
 David H & Carol M May
 Thomas & Mary B Meicher
 Robert C. Meier
 Robert Meier

John F & Ruth Meier
John C & Betty L Meier
Daniel K & Laurie J Meilahn
Ophelia I Meinert
Jerry Menne
David Menozzi, East River Subdivision
Keith Merten and Deb Steffen
Lance M & Nancy L Mertens
Brian Johnson, Michels Corp.
Thomas L. Micke
Dan Micke
Janine and Joe Micke
Norbert J. Micke
Robert J & Laura L Miller
Allan J & Lynn M Miller
Thomas & Rita Mirsberger
Larry Mirsberger
Allen & Suzanne Moldenhauer
Justin Monette
Larry N & Constance L Mose
Marvin H & Joanne L Muche
Joann L Muchie
John N Mueller
Dean Mueller
Mark J & Christina Mueller
Ryan L Mueller
Gordon H & Susan M Mueller
David J & Cheryl A Mulder
Tom Murphy
Edward Mutz
Ruth Nehls
David L. & Dorothy A. Nett
Eugene L. Neuburg, Neuburg Living Trust
Eldine L Neumann
Joe and Donna Nikodem
Lorina A Nordien
David F O'Brien
Anthony S & Hope R O'Brien
James Thomas & Babara A. O'Brien
Sean & Candi O'Brien
Ryan Oehlhof
James E & Mary A Olson
Claire R & Mary E O'Neill
Robert J. Ottery, T & R Ottery, LLC
Gary Pahl
Darrell E & Jane F Pahl
Brian D & Judy A Parker
Kenneth & Eleanor Pastorius
Harold W & Virginia K Pemble
William G. Penterman
Christopher T & Kristine L Peirick
Persha Equipment Sales Inc.
Sharon Petersen
Carl and Ila Petersen
Marylee Petersen & Ruth, Curtis & Dean Mueller
Andrew R & Valeria E Pethan
John D & Irene C Petrie
Jeffery J & Tammy J Krug Pickart
Kerry & Kathleen/MelvinW/Margaret A Pieper
John L & Shirley R Pikart
Kenneth W & Elizabeth J Pitzen
Mark George Piwoni
Frederick & Rosemary Popp

Ludwig Porzky
Roger W & Virginia G Pribnow
Christine Rademacher
Donald Rademacher
Denis Rahn
Dale Ravanelli
Michael J Rechek & Kim L Repp
Redtail Ridge Dairy
Steven Reilly
Wille Reinhard
Joseph A & Heidi Retzer III
Daniel A & Dawn R Reyburn
Chuck & Mary Rhein
Jack Richeson
Paul D Riegleman
Constance Riesterer
Elaine M Rietz
Rivers of Life Ministries Inc
Randall / Jean Liv Trust Robertson
Jon M & Sarah E Robertson
David & Mary Ann Roecker
Jason L Roehrig
Douglas & Kathy Roffers
Fred I Rohrer
Mike Roznowski
Joanne Ruebl
Thomas A & Coy D Sabel
Johnnie D & Dawn M Sabel
Charles A & Jeannette A Sabel
John D & Dawn M Sable
Greg G Salaja
Eunice E Sampson
Robert F & Darlene R Sarauer
James D Et ux Schaefer
Jacqueline Schaefer Living Trust
June H. Schaeuble
Gregg & Jackie Schampers
Steven J & Dawn M Scharf
Greg Schaumberg
John Schevers
Barbara J Schevers
Cory Schmecht
Troy D & Melissa J Schmidt
Chad R & Holly J Schmidt
Gene W & Jean L Schmidt
Brian Schmitz
Wilfred Schmitz
Adrian Schmitz
David M Schmitz & Mary K Rowe
Bryan E & Barbara J Schobat
Michael, Jon & Richard Schoenike
Armond W & Evelyn A Schreiber
John Schreurs
Aaron Schuette
Beverly J Schuh
Gerald & Agnes Schultz
Allan and Joyce Schumacher
Brian M & Laura E Schussman
Glen R. Schwalbach
Neil Schwefel
Gary W & Donald W Schwefel
Nancy Schwefel
Ronald & Christine Schwenck

Milton George Scott Family Land Trust
Melvin See
Thomas A. Seiler
Anna M Shirtz
Wilmer A Jr. Siegwarth
Robert H & Kathleen Simon Rev. Lv. Tr.
Larry W Simons
Gail M Simpson
Cecil J & Christine Skenandore
Al Slatter
William F & Shirley A Smith
William Smith
Gary L & Judith L Smits
Sohrweide Rich & Karen Rv Living Trust
Ralph R & Enola Jane Staeven
Richard & Darlene Stedl
Alfred Steffes
Diana E Steffes Revocable Trust
Richard J & Diane M Steger
Ronald W & Marlene H Steinbach
Arthur A. Steinbach
Ronald Steinhorst
Joseph E & Nicole R Strachan
Strong, Lois & USA Trust
Larry Stubbs
Anthony Tagliapietra
David L Tennesen
Nancy Tessmann & Kim Ignarski
Dwayne R & Gail M Tetting
Gary Tetzlaff
Duane L & Lynda L Tetzlaff
John L Tetzlaff Family Ltd Partnership
Audrey Tetzlaff Greenslade
Elaine Tetzlaff Krueger
Lyle Thome
Joseph L & Diane F Thome
Barry E & Joann L Thompson
Betty J Thomson
Thomas E & Pamela A Timmel
Gregory A & Betty J Tyczkowski
Edward J & Carol J Ulatowski
John D & Patrica R Unser Trust
USA In Trust for Oneida Tribe c/o Pat Pelky
USA In Trust For Strong Louis
David G Uttech
Floyd & Frances Uttech
Robert J & Paula A Van Daalwyk
Dan E Van De Hey
Gerald & Lynette Van Den Heuvel
Kurt R & Colleen L Van Der Elsen
Christopher D Van Dyke
Marguerite et.al. Van Hulst
Van Lanen Family Trust
Robert & Janice Van Rossum
Neil J Vanboxtel
Hilary H Vande Hey
Wm & Dawn Vande Voort
Raymond N & Shirley A Vanden Elzen
Larry Vanden Heuvel
Harold & Arleen Vanden Huevel Rev Lvg Trust
David L Vanderheiden
Vera B Lawton Trust
Beverly Verch, Star Canning Company

Benedict & Edna A Verhoven
Grace E Vissers
James R Vollmer
Kristen Waas
Marianne Wagner
Lawrence R & Christine A Wagner
Timothy & Laurie Wagner
Dana J & Cara L Wagner / Burlingham Et al
Raymond S & Mary Ellen Wagner Jr.
Norman & Kathleen Waldschmidt
Mark Weber
David A & Diane R Weber
Chris & Dawn Weiland
Steven S & Jean C Weinschel
Daniel Welhouse
David R & Kathijo Weninger
Joseph M & Bonnie S Weninger
Robert J Weninger
David A & Jaelene R Wentland
Raymond P & Yvonne Werth Jr.
Steven K Wessing
Christopher A & Kendra J West
West Green Bay Meter Station, c/o Pat Pelky
Herbert Westphal
Shawn Westphal
Randall J & Victoria A Wieland
Stephen D & Janet Wierschke
Kenneth E. & Marilyn J Wierschke
Donald C & Geraldine Wierschke
State of Wisconsin Dept of Natural Res/RR
Wisconsin Dept. of Administration
Wisconsin Public Service Corp.
Robert M Wissell
Gerald L & Jean A Wockenfuss
Rachel L Wolter & Anthony R Alvarez
Daryl & Sue Ann Wuenne
Kevin Wulff
Brian M Youngbeck
Leslie J Zielicke
Elton A & Phyliss M Zuelke
Thomas R & Lisa J Zurn

Non-Internet Public

DRAFT ENVIRONMENTAL IMPACT STATEMENT
FOR THE GUARDIAN EXPANSION
AND EXTENSION PROJECT
Docket No. CP07-8-000

Appendix B
Facility Location Maps

Public access for this Non-Internet Public information is available only through the Public Reference Room, or by e-mail at public.referenceroom@ferc.gov.

Appendix C

Additional Temporary Work Spaces

Guardian Pipeline Expansion and Extension Project Additional Temporary Work Spaces				
Milepost	Reason for Workspace	No. of Work-spaces	Dimensions (ft.) Length x Width	Land Affected During Construction
20-inch-pipeline				
Jefferson County				
0.4	Gopher Hill Road	2	100x175	0.8
0.6	Unnamed Stream	2	50x250	0.6
2.1	County Highway CW	1	100x175	0.4
		5		1.8
Dodge County				
2.1	County Highway CW	1	100x175	0.4
2.4	Wetland	1	50x200	0.2
3.1	Morningside Road	2	100x175	0.8
4.1	County Highway O	1	100x275	0.6
4.1	County Highway O	1	100x175	0.4
5.1	Thrush Road	2	100x175	0.8
5.4	Trib to Bake Creek	1	50x250	0.3
5.4	Trib to Bake Creek	1	50x150	0.2
5.5	Bluebird Road	2	100x175	0.8
6.2	Smith Road & Union Pacific Railroad	2	100x175	0.8
6.2	Equipment Turnaround Area	1	100x200	0.5
6.6	Cty Hwy MM & Trib to Baker Cr	2	100x175	0.8
6.9	Trib to Baker Cr	2	50x250	0.6
7.6	Baker Creek	2	50x250	0.6
7.9	Davidson Road	2	100x175	0.8
8.5	Poplar Grove Road	2	100x175	0.8
8.6	Poplar Grove Road & Unnamed Stream	1	100x175	0.4
8.6	Poplar Grove Road & Unnamed Stream	1	100x200	0.5
9.2	Riverview & Pieper Roads	2	100x175	0.8
9.7	Fox River HDD Exit	1	25x300	0.2
9.7	Fox River HDD Exit	1	65x300	0.4
10.2	Fox River HDD Entry	1	130x250	0.7
10.6	Pike Road	2	100x175	0.8
11.0	Trib to Rubicon River	2	50x250	0.6
11.2	Pike Road	1	100x300	0.7
11.3	Pike Road/Cty HWY EE	1	100x300	0.7
11.3	Cty Hwy EE	1	100x175	0.4
11.6	Wetland	1	50x200	0.2
12.2	Wetland	1	50x200	0.2
12.3	Rubicon River	1	50x250	0.3
12.3	Rubicon River	1	100x250	0.6
12.3	Rubicon River	1	50x125	0.1
12.3	Rubicon River	1	125x160	0.5
12.4	State Hwy 60	1	100x175	0.4
12.4	State Hwy 60	1	50x200	0.2
12.7	Lehman Road	2	100x175	0.8
13.3	Oaklawn Road	2	100x175	0.8
13.6	Unnamed Ditch	2	50x200	0.5
14.5	Garfield Road	1	80x175	0.3
14.5	Garfield Road	1	100x175	0.4
15.2	Unnamed Stream	2	50x250	0.6
15.5	State Hwy 67	2	100x175	0.8
16.1	Woodland Creek	2	50x250	0.6
16.2	Triple lift soil handling	1	25x422	0.2

Guardian Pipeline Expansion and Extension Project Additional Temporary Work Spaces				
16.3	Triple lift soil handling	1	25x475	0.3
16.9	W & S Railroad & Cty Hwy WS	1	50x200	0.3
16.9	W & S Railroad & Cty Hwy WS	2	100x175	0.8
17.4	Wetland	2	50x200	0.5
17.7	Wetland	2	50x200	0.5
17.9	Westfalls Creek & Cty Hwy AY	2	100x175	0.8
18.1	Wildcat Creek	2	50x250	0.6
18.8	Lentz Creek	2	50x250	0.6
19.0	W Iowa Road	2	100x175	0.8
19.2	Trib to Lentz Creek	2	50x250	0.6
20.0	Rock Road	2	100x175	0.8
21.0	State Hwy 33	2	100x175	0.8
22.0	Cty Hwy AY	2	100x175	0.8
22.2	Unnamed Stream	2	50x250	0.6
22.7	Unnamed Ditch	2	50x250	0.6
23.3	Zion Church Road	2	100x175	0.8
23.6	Trib to East Branch Rock River	2	50x250	0.6
23.8	Wetland	1	50x200	0.2
23.8	Racoon Road	2	100x175	0.8
24.4	Allen Road	2	100x175	0.8
25.3	Mc Arthur Road	1	100x175	0.4
25.4	East Branch Rock River	1	50x335	0.4
25.4	East Branch Rock River	1	50x300	0.3
25.4	East Branch Rock River	1	100x250	0.6
25.4	East Branch Rock River	1	100x300	0.7
26.2	Trib to East Branch Rock River	1	50x250	0.3
26.3	Cty Hwy AY	2	100x175	0.8
26.4	State Hwy 28 & 67	2	100x175	0.8
27.5	Unnamed Stream	2	50x250	0.6
27.9	Cty Hwy TW	2	100x175	0.8
28.3	N Bluemound Road	2	100x175	0.8
28.4	Elm Drive	2	100x175	0.8
29.4	N Bluemound Road	2	100x175	0.8
30.0	Cty Hwy AY	2	100x175	0.8
31.4	Cty Hwy H	2	100x175	0.8
32.3	Kummel Creek	2	50x250	0.6
32.3	Kummel Creek	1	100x250	0.6
32.6	Cty Hwy HH	2	100x175	0.8
33.1	Center Drive	2	100x175	0.8
33.9	State Hwy 49	2	100x175	0.8
34.7	Center Drive	2	100x175	0.8
		134		49.8
Fond du Lac County				
35.6	State Hwy 175	2	100x175	0.8
35.9	Cty Hwy Y & Wisconsin Central LTD Railroad	2	100x175	0.8
35.9	Cty Hwy Y & Wisconsin Central LTD Railroad	2	50x250	0.6
36.1	Equipment Turnaround Area	1	100x200	0.5
36.2	US Hwy 41	2	100x175	0.8
37.3	Kelly Road	2	100x175	0.8
37.8	West Branch Milwaukee River	1	50x155	0.2
37.8	West Branch Milwaukee River	1	50x300	0.3
37.8	West Branch Milwaukee River	1	100x300	0.7
38.8	Cty Hwy F	2	100x175	0.8
39.0	Cty Hwy K	2	100x175	0.8

Guardian Pipeline Expansion and Extension Project Additional Temporary Work Spaces				
40.3	Unnamed Ditch	1	50x250	0.3
40.3	Unnamed Ditch	1	50x350	0.4
40.4	Unnamed Ditch	1	50x350	0.4
40.4	Wetland	1	50x200	0.2
41.2	Cty Hwy B	2	100x175	0.8
41.5	Unnamed Ditch	2	50x550	0.6
41.7	Cty Hwy V	1	100x175	0.4
41.7	Cty Hwy V	1	100x300	0.7
41.8	Wetland	1	50x200	0.2
41.9	Equipment Turnaround Area	1	100x200	0.5
42.0	FVW Railroad	2	100x175	0.8
42.1	Equipment Turnaround Area	1	100x200	0.5
42.2	Triple Lift Soil Handling	1	25x580	0.3
42.2	Triple Lift Soil Handling	1	25x475	0.3
42.3	Cty Hwy UU	2	100x175	0.8
42.4	Unnamed Stream	1	50x140	0.2
42.4	Unnamed Stream	1	50x250	0.3
42.6	Unnamed Stream	2	50x250	0.6
42.6	Triple Lift Soil Handling	1	25x370	0.2
42.7	US Hwy 45	2	100x175	0.8
43.4	Birch Road	2	100x175	0.8
44.4	Cty Hwy H	2	100x175	0.8
44.7	Cty Hwy UU	2	100x175	0.8
45.8	Cty Hwy T	2	100x175	0.8
46.2	Wetland	1	50x425	0.5
46.2	Wetland	1	50x200	0.2
46.7	Taycheedah Creek	2	50x250	0.6
47.1	Artesian Road	2	100x175	0.8
47.2	Taycheedah Creek	2	50x250	0.6
48.1	State Hwy 23	2	100x175	0.8
48.6	Golf Course Drive	2	100x175	0.8
49.5	Wetland	2	50x200	0.5
49.8	Cody Road	2	100x175	0.8
50.7	Ledge Road	2	100x175	0.8
50.7	Ledge Road	1	50x250	0.3
50.7	Ledge/Tower Road	1	50x310	0.4
50.7	Tower Road	1	100x175	0.4
50.7	Tower Road	1	50x250	0.3
51.4	Sheboygan River	2	50x250	0.6
51.8	State Hwy 149	2	100x175	0.8
52.8	Unnamed Ditch	2	50x250	0.6
52.9	Konen Road	2	100x175	0.8
53.5	Silica Road	2	100x175	0.8
54.6	Cty Hwy W	2	100x175	0.8
55.3	Cty Hwy Q	2	100x175	0.8
55.9	Cypress Road(Gravel)	2	100x175	0.8
56.4	Triple Lift Soil Handling	1	25x475	0.3
56.4	Calmar Road & Manitowoc River	2	100x175	0.8
56.4	Calmar Road & Manitowoc River	1	50x90	0.1
56.4	Calmar Road & Manitowoc River	1	50x250	0.3
56.9	Unnamed Stream	2	50x250	0.6
57.4	Kiel Road	2	100x175	0.8
57.5	Trib to Pipe Creek	2	50x250	0.6
57.7	Pipe Creek	2	50x250	0.6

Guardian Pipeline Expansion and Extension Project Additional Temporary Work Spaces				
58.4	Cty Hwy HH	2	100x175	0.8
58.5	Unnamed Ditch	2	50x250	0.6
58.7	Unnamed Ditch	1	50x250	0.3
58.7	Unnamed Ditches	1	50x400	0.5
58.8	Unnamed Ditch	1	50x250	0.3
59.0	Unnamed Ditch	2	50x250	0.6
59.4	County Hwy HHH	1	100x175	0.4
		113		41.0
Calumet County				
59.6	Unnamed Ditch	1	50x250	0.3
59.7	Unnamed Ditch	2	50x250	0.6
60.2	Banner Road	2	100x175	0.8
60.3	Pond	1	50x190	0.2
60.3	Pond	1	50x250	0.3
60.5	Wetland/Trees	1	50x200	0.2
60.7	Unnamed Ditch	2	50x250	0.6
60.9	Dick Road	2	100x175	0.8
61.1	Cty Hwy C	2	100x175	0.8
62.1	Wetland	2	50x250	0.6
62.4	Cty Hwy H	2	100x175	0.8
63.3	Stone Road	2	100x175	0.8
63.9	W Jefferson Road	2	100x175	0.8
64.5	N Townhall Road	2	100x175	0.8
64.7	Wetland	2	50x200	0.5
64.9	US Hwy 151	2	100x175	0.8
65.0	Unnamed Ditch	1	50x250	0.3
65.4	Stony Brook Road	2	100x175	0.8
66.4	Quinney Road	2	100x175	0.8
66.8	Stony Brook Spring Creek	2	50x250	0.6
66.8	Wetland	2	50x200	0.5
67.0	Court Road	2	100x175	0.8
67.5	Cty Hwy F	2	100x175	0.8
68.0	Wetland	2	50x200	0.5
68.4	Wetland	2	50x200	0.5
69.1	Hickory Hills Road	2	100x175	0.8
69.4	Wetland	2	50x200	0.5
69.8	Wetland	2	50x200	0.5
70.1	Cty Hwy E	2	100x175	0.8
71.0	Killsnake River	1	50x250	0.3
71.0	Killsnake River	1	50x140	0.2
71.1	Killsnake Road	2	100x175	0.8
72.0	Barn	1	50x250	0.3
72.1	Unnamed Ditch	1	50x250	0.3
72.1	Custer Road	1	90x150	0.3
72.1	Custer Road	1	100x175	0.4
73.4	Fargo Springs Road	2	100x175	0.8
73.8	Wetland	2	50x200	0.5
74.7	Unnamed Ditch & State Hwy 114	2	100x175	0.8
75.4	Unnamed Ditch	2	50x250	0.6
75.7	Crosstown Road	2	100x175	0.8
76.1	Unnamed Ditch	2	50x250	0.6
76.7	Cty Hwy B	1	100x175	0.4
76.7	Cty Hwy B	1	100x260	0.6
76.8	Wetland	1	50x100	0.1

Guardian Pipeline Expansion and Extension Project Additional Temporary Work Spaces				
76.8	Wisconsin Central LTD Railroad	1	100x175	0.4
76.8	Wetland	1	50x200	0.2
76.9	Equipment Turnaround Area	1	100x200	0.5
77.2	Wetland	2	50x200	0.5
77.6	North Branch Manitowoc River	2	50x250	0.6
77.9	Trib to North Branch Manitowoc Rive	2	50x250	0.6
78.6	Wetland	2	50x200	0.5
78.9	Cty Hwy BB	2	100x175	0.8
79.8	Unnamed Ditch	2	50x250	0.6
80.1	ANR Pipeline Crossing	2	50x200	0.6
80.1	US Hwy 10	2	100x175	0.8
80.4	Wetland	2	50x200	0.5
80.7	Wetland	2	50x200	0.5
81.1	Schmidt Road	2	100x175	0.8
81.6	Dundas Road	2	100x175	0.8
81.8	Wetland	2	50x200	0.5
82.1	Cty Hwy KK	1	100x175	0.4
		106		35.3
Outagamie County				
82.1	Cty Hwy KK	1	100x175	0.4
82.4	Induction Bend	1	25x400	0.2
		2		0.6
20-inch-pipeline				
Brown County				
82.7	Induction Bend	1	25x400	0.2
82.9	Cty Hwy CE	2	100x175	0.8
83.1	Unnamed Ditch	2	50x250	0.6
84.0	Induction Bend	1	25x400	0.2
84.2	Crestview Road	2	100x175	0.8
84.8	Cty Hwy D & Cty Hwy Z	2	100x175	0.8
85.1	Unnamed Ditch	2	50x250	0.6
85.4	Plumb Creek	2	75x100	0.3
86.1	Lamers Clancy Road	2	100x175	0.8
86.4	Shanty Road	2	100x175	0.8
87.2	Mill Road	2	100x175	0.8
87.4	Unnamed Ditch	2	50x250	0.6
88.3	State Hwy 96	2	100x175	0.8
88.5	Unnamed Ditch	2	50x250	0.6
88.8	Fair Road	2	100x175	0.8
89.6	Elmro Road	2	100x175	0.8
90.0	Mallard Road	2	100x175	0.8
90.3	Unnamed Ditch	2	50x250	0.6
90.6	Meadowlark Road	2	100x175	0.8
91.1	Partridge Road	2	100x175	0.8
91.6	Wrightstown Road	2	100x175	0.8
92.3	ANR Pipeline Crossing	2	50x100	0.2
92.6	Cty Hwy ZZ	2	100x175	0.8
92.9	Fox River HDD String Corridor	1	50x400	0.5
93.0	Fox River HDD Exit	1	50x300	0.3
93.0	Fox River HDD Exit	1	70x300	0.5
93.3	Fox River HDD Entry	1	30x145	0.1
93.3	Fox River HDD Entry	1	100x145	0.3
93.3	Fox River HDD Entry	1	200x155	0.7
93.5	Cty Hwy D	1	30x160	0.1

Guardian Pipeline Expansion and Extension Project				
Additional Temporary Work Spaces				
93.5	Cty Hwy D	1	50x75	0.1
93.5	Cty Hwy D	1	100x175	0.4
93.8	S Whistling Wind Drive	1	100x175	0.4
93.9	FRVR Railroad	1	100x125	0.3
93.9	FRVR Railroad	1	100x175	0.4
94.1	Unnamed Ditch	2	50x250	0.6
94.5	Lawrence Drive	2	100x175	0.8
94.6	Ashwaubenon Creek	1	50x100	0.1
94.6	Ashwaubenon Creek	1	50x250	0.3
95.2	French Road - US Hwy 41 & Mid Valley Drive	2	100x175	0.8
95.9	Cty Hwy F(Williams Grant Drive)	2	100x175	0.8
96.3	Trib to Ashwaubenon Creek	2	50x250	0.6
96.5	Equipment Turnaround Area	1	100x200	0.6
97.1	Hemlock Creek	2	50x250	0.6
97.9	Nathan Road	2	100x175	0.8
98.4	Trib to Dutchman Creek	2	50x250	0.6
98.6	Dutchman Creek	2	50x250	0.6
98.9	Cty Hwy EE (Orlando Drive)	2	100x175	0.8
99.2	S Overland Road	1	100x250	0.6
99.2	S Overland Road	1	100x175	0.4
99.4	Induction Bend	1	25x400	0.2
99.7	Unnamed Ditch	2	50x250	0.6
100.0	Unnamed Ditch	2	50x250	0.6
100.5	Fernando Drive	2	50x175	0.4
100.5	Fernando Drive	1	100x175	0.4
101.1	Wetland	1	50x200	0.2
101.4	Unnamed Ditch	2	50x250	0.6
101.6	Cty Hwy U	1	100x175	0.4
		93		31.6
Outagamie County, Wisconsin				
101.6	Cty Hwy U	1	100x175	0.4
101.7	Unnamed Stream	2	50x250	0.6
101.9	Unnamed Stream	2	50x250	0.6
102.3	Cty Hwy E	2	100x175	0.8
102.6	Duck Creek	2	50x250	0.6
102.7	Wetland	1	50x200	0.2
103.0	Oneida Warehouse Building	1	50x150	0.2
103.1	Seminary Road	2	100x175	0.8
103.2	Unnamed Stream	1	50x250	0.3
103.3	Equipment Turnaround Area	1	100x200	0.5
103.4	Wetland	1	50x200	0.2
103.5	Wetland	1	50x200	0.2
103.8	Unnamed Ditch	2	50x250	0.6
103.9	Old Seymour Road	2	100x175	0.8
104.4	State Hwy 54	1	100x175	0.4
104.4	Equipment Turnaround Area	1	100x200	0.5
104.7	Equipment Turnaround Area	1	100x200	0.5
104.9	Red Willow Parkway	1	100x100	0.2
104.9	Red Willow Parkway	1	100x175	0.4
104.3	Wetland/Barn	2	50x200	0.5
105.6	Unnamed Ditch	2	50x250	0.6
105.7	Olson Road & Pearl Street	2	100x175	0.8
105.9	Induction Bend	1	25x400	0.2
105.9	ANR Crossing	1	50x200	0.2

Guardian Pipeline Expansion and Extension Project Additional Temporary Work Spaces				
106.3	Unnamed Ditch	1	50x90	0.1
106.3	Unnamed Ditch	1	50x160	0.2
106.3	Unnamed Ditch	1	50x250	0.3
107.3	ANR Crossing	1	50x200	0.2
107.6	Olson & Cooper Roads	2	100x175	0.8
107.8	Unnamed Stream	2	50x250	0.6
108.3	Unnamed Stream	2	50x250	0.6
109.1	Olson & Reformatory Roads	2	100x175	0.8
109.5	South Branch Potter Creek	1	50x250	0.3
109.5	South Branch Potter Creek	1	50x100	0.1
109.5	South Branch Potter Creek	1	50x200	0.2
109.8	Induction Bend - WPS Pipeline Crossing	1	50x200	0.2
109.9	Olson Road	1	100x125	0.3
109.9	Olson Road	1	100x175	0.4
		52		16.2
Total		505		176.3
Note: Some numbers may seem incorrect due to rounding.				

Appendix D

Upland, Erosion Control, Revegetation, and Maintenance Plan

**UPLAND EROSION CONTROL, REVEGETATION, AND
MAINTENANCE PLAN**

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**UPLAND EROSION CONTROL, REVEGETATION,
AND MAINTENANCE PLAN (PLAN)**

I. APPLICABILITY

- A. The intent of this Plan is to assist applicants by identifying baseline mitigation measures for minimizing erosion and enhancing revegetation. The project sponsors should specify in their applications for a FERC Certificate (Certificate) any individual measures in this Plan they consider unnecessary, technically infeasible, or unsuitable due to local conditions and to fully describe any alternative measures they would use. Applicants should also explain how those alternative measures would achieve a comparable level of mitigation.

Once a project is certificated, further changes can be approved. Any such changes from the measures in this Plan (or the applicant's approved plan) will be approved by the Director of the Office of Energy Projects (Director), upon the applicant's written request, if the Director agrees that an alternative measure:

1. provides equal or better environmental protection;
2. is necessary because a portion of this Plan is infeasible or unworkable based on project-specific conditions; or
3. is specifically required in writing by another Federal, state, or Native American land management agency for the portion of the project on its land or under its jurisdiction.

Any requirements in this Plan to file material with the Secretary of the FERC (Secretary) do not apply to projects undertaken under the provisions of the blanket certificate program. This exemption does not apply to a request for alternative measures.

Project-related impacts on wetland and waterbody systems are addressed in the staff's Wetland and Waterbody Construction and Mitigation Procedures (Procedures).

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II. SUPERVISION AND INSPECTION

A. ENVIRONMENTAL INSPECTION

1. At least one Environmental Inspector is required for each construction spread during construction and restoration (as defined by section V). The number and experience of Environmental Inspectors assigned to each construction spread should be appropriate for the length of the construction spread and the number/significance of resources affected.
2. Environmental Inspectors shall have peer status with all other activity inspectors.
3. Environmental Inspectors shall have the authority to stop activities that violate the environmental conditions of the Certificate, state and Federal environmental permit conditions, or landowner requirements; and to order appropriate corrective action.

B. RESPONSIBILITIES OF ENVIRONMENTAL INSPECTORS

At a minimum, the Environmental Inspector(s) shall be responsible for:

1. Ensuring compliance with the requirements of this Plan, the Procedures, the environmental conditions of the Certificate authorization, the mitigation measures proposed by the applicant (as approved and/or modified by the Certificate), other environmental permits and approvals, and environmental requirements in landowner easement agreements;
2. Identifying, documenting, and overseeing corrective actions, as necessary to bring an activity back into compliance;
3. Verifying that the limits of authorized construction work areas and locations of access roads are properly marked before clearing;
4. Verifying the location of signs and highly visible flagging marking the boundaries of sensitive resource areas, waterbodies, wetlands, or areas with special requirements along the construction work area;

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5. Identifying erosion/sediment control and soil stabilization needs in all areas;
6. Ensuring that the location of dewatering structures and slope breakers will not direct water into known cultural resources sites or locations of sensitive species;
7. Verifying that trench dewatering activities do not result in the deposition of sand, silt, and/or sediment near the point of discharge into a wetland or waterbody. If such deposition is occurring, the dewatering activity shall be stopped and the design of the discharge shall be changed to prevent reoccurrence;
8. Ensuring that subsoil and topsoil are tested in agricultural and residential areas to measure compaction and determine the need for corrective action;
9. Advising the Chief Construction Inspector when conditions (such as wet weather) make it advisable to restrict construction activities to avoid excessive rutting;
10. Ensuring restoration of contours and topsoil;
11. Verifying that the soils imported for agricultural or residential use have been certified as free of noxious weeds and soil pests, unless otherwise approved by the landowner;
12. Determining the need for and ensuring that erosion controls are properly installed, as necessary to prevent sediment flow into wetlands, waterbodies, sensitive areas, and onto roads;
13. Inspecting and ensuring the maintenance of temporary erosion control measures at least:
 - a. on a daily basis in areas of active construction or equipment operation;
 - b. on a weekly basis in areas with no construction or equipment operation; and
 - c. within 24 hours of each 0.5 inch of rainfall;

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14. Ensuring the repair of all ineffective temporary erosion control measures within 24 hours of identification;
15. Keeping records of compliance with the environmental conditions of the FERC certificate, and the mitigation measures proposed by the project sponsor in the application submitted to the FERC, and other Federal or state environmental permits during active construction and restoration; and
16. Identifying areas that should be given special attention to ensure stabilization and restoration after the construction phase.

III. PRECONSTRUCTION PLANNING

The project sponsor shall do the following before construction:

A. CONSTRUCTION WORK AREAS

1. Identify all construction work areas (e.g., construction right-of-way, extra work space areas, pipe storage and contractor yards, borrow and disposal areas, access roads, etc.) that would be needed for safe construction. The project sponsor must ensure that appropriate cultural resources and biological surveys have been conducted.
2. Project sponsors are encouraged to consider expanding any required cultural resources and endangered species surveys in anticipation of the need for activities outside of certificated work areas.

B. DRAIN TILE AND IRRIGATION SYSTEMS

1. Attempt to locate existing drain tiles and irrigation systems.
2. Contact landowners and local soil conservation authorities to determine the locations of future drain tiles that are likely to be installed within 3 years of the authorized construction.
3. Develop procedures for constructing through drain-tiled areas, maintaining irrigation systems during construction, and repairing drain tiles and irrigation systems after construction.

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4. Engage qualified drain tile specialists, as needed to conduct or monitor repairs to drain tile systems affected by construction. Use drain tile specialists from the project area, if available.

C. GRAZING DEFERMENT

Develop grazing deferment plans with willing landowners, grazing permittees, and land management agencies to minimize grazing disturbance of revegetation efforts.

D. ROAD CROSSINGS AND ACCESS POINTS

Plan for safe and accessible conditions at all roadway crossings and access points during construction and restoration.

E. DISPOSAL PLANNING

Determine methods and locations for the disposal of construction debris (e.g., timber, slash, mats, garbage, drilling fluids, excess rock, etc). Off-site disposal in other than commercially operated disposal locations is subject to compliance with all applicable survey, landowner permission, and mitigation requirements.

F. AGENCY COORDINATION

The project sponsor must coordinate with the appropriate local, state, and Federal agencies as outlined in this Plan and in the Certificate.

1. Obtain written recommendations from the local soil conservation authorities or land management agencies regarding permanent erosion control and revegetation specifications.
2. Develop specific procedures in coordination with the appropriate agency to prevent the introduction or spread of noxious weeds and soil pests resulting from construction and restoration activities.

G. STORMWATER POLLUTION PREVENTION PLAN

Make available on each construction spread the Stormwater Pollution Prevention Plan prepared for compliance with the U.S. Environmental Protection Agency's National Stormwater Program General Permit requirements.

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IV. INSTALLATION

A. APPROVED AREAS OF DISTURBANCE

1. Project-related ground disturbance shall be limited to the construction right-of-way, extra work space areas, pipe storage yards, borrow and disposal areas, access roads, and other areas approved in the Certificate. Any project-related ground disturbing activities outside these Certificated areas, except those needed to comply with the Plan and Procedures (e.g., slope breakers, energy-dissipating devices, dewatering structures, drain tile system repairs) will require prior Director approval. All construction or restoration activities outside of the Certificated areas are subject to all applicable survey and mitigation requirements.
2. The construction right-of-way width for a project shall not exceed 75 feet or that described in the FERC application unless otherwise modified by a Certificate condition. However, in limited, non-wetland areas, this construction right-of-way width may be expanded by up to 25 feet without Director approval to accommodate full construction right-of-way topsoil segregation and to ensure safe construction where topographic conditions (such as side-slopes) or soil limitations require it. Twenty-five feet of extra construction right-of-way width may also be used in limited, non-wetland or non-forested areas for truck turn-arounds where no reasonable alternative access exists.

Project use of these additional limited areas is subject to landowner approval and compliance with all applicable survey and mitigation requirements. When such additional areas are used, each one should be identified and the need explained in the weekly or biweekly construction reports to the FERC, if required. The following material should be included in the reports:

- a. the location of each additional area by station number and reference to a previously filed alignment sheet, or updated alignment sheets showing the additional areas;
- b. identification of where the Commission's records contain evidence that the additional areas were previously surveyed; and

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- c. a statement that landowner approval has been obtained and is available in project files.

Prior written approval of the Director is required when the Certificated construction right-of-way width would be expanded by more than 25 feet.

B. TOPSOIL SEGREGATION

1. Unless the landowner or land management agency specifically approves otherwise, prevent the mixing of topsoil with subsoil by stripping topsoil from either the full work area or from the trench and subsoil storage area (ditch plus spoil side method) in:
 - a. actively cultivated or rotated croplands and pastures;
 - b. residential areas;
 - c. hayfields; and
 - d. other areas at the landowner's or land managing agency's request.
2. In residential areas importation of topsoil is an acceptable alternative to topsoil segregation.
3. In deep soils (more than 12 inches of topsoil), segregate at least 12 inches of topsoil. In soils with less than 12 inches of topsoil make every effort to segregate the entire topsoil layer.
4. Where topsoil segregation is required, maintain separation of salvaged topsoil and subsoil throughout all construction activities.
5. Segregated topsoil may not be used for padding the pipe.

C. DRAIN TILES

1. Mark locations of drain tiles damaged during construction.
2. Probe all drainage tile systems within the area of disturbance to check for damage.

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3. Repair damaged drain tiles to their original or better condition. Do not use filter-covered drain tiles unless the local soil conservation authorities and the landowner agree. Use qualified specialists for testing and repairs.
4. For new pipelines in areas where drain tiles exist or are planned, ensure that the depth of cover over the pipeline is sufficient to avoid interference with drain tile systems. For adjacent pipeline loops in agricultural areas, install the new pipeline with at least the same depth of cover as the existing pipeline(s).

D. IRRIGATION

Maintain water flow in crop irrigation systems, unless shutoff is coordinated with affected parties.

E. ROAD CROSSINGS AND ACCESS POINTS

1. Maintain safe and accessible conditions at all road crossings and access points during construction.
2. If crushed stone access pads are used in residential or active agricultural areas, place the stone on synthetic fabric to facilitate removal.

F. TEMPORARY EROSION CONTROL

Install temporary erosion controls immediately after initial disturbance of the soil. Temporary erosion controls must be properly maintained throughout construction (on a daily basis) and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration is complete.

1. Temporary Slope Breakers
 - a. Temporary slope breakers are intended to reduce runoff velocity and divert water off the construction right-of-way. Temporary slope breakers may be constructed of materials such as soil, silt fence, staked hay or straw bales, or sand bags.

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- b. Install temporary slope breakers on all disturbed areas, as necessary to avoid excessive erosion. Temporary slope breakers must be installed on slopes greater than 5 percent where the base of the slope is less than 50 feet from waterbody, wetland, and road crossings at the following spacing (closer spacing should be used if necessary):

<u>Slope (%)</u>	<u>Spacing (feet)</u>
5 - 15	300
>15 - 30	200
>30	100

- c. Direct the outfall of each temporary slope breaker to a stable, well vegetated area or construct an energy-dissipating device at the end of the slope breaker and off the construction right-of-way.
- d. Position the outfall of each temporary slope breaker to prevent sediment discharge into wetlands, waterbodies, or other sensitive resources.

2. Sediment Barriers

- a. Sediment barriers are intended to stop the flow of sediments and to prevent the deposition of sediments into sensitive resources. They may be constructed of materials such as silt fence, staked hay or straw bales, compacted earth (e.g., driveable berms across travelways), sand bags, or other appropriate materials.
- b. At a minimum, install and maintain temporary sediment barriers across the entire construction right-of-way at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody, wetland, or road crossing until revegetation is successful as defined in this Plan. Leave adequate room between the base of the slope and the sediment barrier to accommodate ponding of water and sediment deposition.

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- c. Where wetlands or waterbodies are adjacent to and downslope of construction work areas, install sediment barriers along the edge of these areas, as necessary to prevent sediment flow into the wetland or waterbody.

3. Mulch

- a. Apply mulch on all slopes (except in actively cultivated cropland) concurrent with or immediately after seeding, where necessary to stabilize the soil surface and to reduce wind and water erosion. Spread mulch uniformly over the area to cover at least 75 percent of the ground surface at a rate of 2 tons/acre of straw or its equivalent, unless the local soil conservation authority, landowner, or land managing agency approves otherwise in writing.
- b. Mulch can consist of weed-free straw or hay, wood fiber hydromulch, erosion control fabric, or some functional equivalent.
- c. Mulch before seeding if:
 - (1) final grading and installation of permanent erosion control measures will not be completed in an area within 20 days after the trench in that area is backfilled (10 days in residential areas), as required in section V.A.1; or
 - (2) construction or restoration activity is interrupted for extended periods, such as when seeding cannot be completed due to seeding period restrictions.
- d. If mulching before seeding, increase mulch application on all slopes within 100 feet of waterbodies and wetlands to a rate of 3 tons/acre of straw or equivalent.
- e. If wood chips are used as mulch, do not use more than 1 ton/acre and add the equivalent of 11 lbs/acre available nitrogen (at least 50 percent of which is slow release).

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- f. Ensure that mulch is adequately anchored to minimize loss due to wind and water.
- g. When anchoring with liquid mulch binders, use rates recommended by the manufacturer. Do not use liquid mulch binders within 100 feet of wetlands or waterbodies.
- h. Install erosion control fabric on waterbody banks at the time of final bank recontouring. Anchor the erosion control fabric with staples or other appropriate devices.

V. RESTORATION

A. CLEANUP

1. Commence cleanup operations immediately following backfill operations. Complete final grading, topsoil replacement, and installation of permanent erosion control structures within 20 days after backfilling the trench (10 days in residential areas). If seasonal or other weather conditions prevent compliance with these time frames, maintain temporary erosion controls (temporary slope breakers and sediment barriers) until conditions allow completion of cleanup.

The project sponsor should file with the Secretary for the review and written approval of the Director, a winterization plan if construction will continue into the winter season when conditions could delay successful decompaction, topsoil replacement, or seeding until the following spring.

2. A travel lane may be left open temporarily to allow access by construction traffic if the temporary erosion control structures are installed (as specified in section IV.F.) and inspected and maintained (as specified in sections II.B.12 through 14). When access is no longer required, the travel lane must be removed and the right-of-way restored.
3. Rock excavated from the trench may be used to backfill the trench only to the top of the existing bedrock profile. Rock that is not returned to the trench should be considered construction debris, unless approved for use as mulch or for some other use on the construction work areas by the landowner or land managing agency.

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4. Remove excess rock from at least the top 12 inches of soil in all actively cultivated or rotated cropland and pastures, hayfields, and residential areas, as well as other areas at the landowner's request. The size, density, and distribution of rock on the construction work area should be similar to adjacent areas not disturbed by construction. The landowner may approve other provisions in writing.
5. Grade the construction right-of-way to restore pre-construction contours and leave the soil in the proper condition for planting.
6. Remove construction debris from all construction work areas unless the landowner or land managing agency approves otherwise.
7. Remove temporary sediment barriers when replaced by permanent erosion control measures or when revegetation is successful.

B. PERMANENT EROSION CONTROL DEVICES

1. Trench Breakers
 - a. Trench breakers are intended to slow the flow of subsurface water along the trench. Trench breakers may be constructed of materials such as sand bags or polyurethane foam. Do not use topsoil in trench breakers.
 - b. An engineer or similarly qualified professional shall determine the need for and spacing of trench breakers. Otherwise, trench breakers shall be installed at the same spacing as and upslope of permanent slope breakers.
 - c. In agricultural fields and residential areas where slope breakers are not typically required, install trench breakers at the same spacing as if permanent slope breakers were required.
 - d. At a minimum, install a trench breaker at the base of slopes greater than 5 percent where the base of the slope is less than 50 feet from a waterbody or wetland and where needed to avoid draining a waterbody or wetland.

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2. Permanent Slope Breakers

- a. Permanent slope breakers are intended to reduce runoff velocity, divert water off the construction right-of-way, and prevent sediment deposition into sensitive resources. Permanent slope breakers may be constructed of materials such as soil, sand bags, or some functional equivalent.
- b. Construct and maintain permanent slope breakers in all areas, except cultivated areas and lawns, using spacing recommendations obtained from the local soil conservation authority or land managing agency.

In the absence of written recommendations, use the following spacing unless closer spacing is necessary to avoid excessive erosion on the construction right-of-way:

<u>Slope (%)</u>	<u>Spacing (feet)</u>
5 - 15	300
>15 - 30	200
>30	100

- c. Construct slope breakers to divert surface flow to a stable area without causing water to pool or erode behind the breaker. In the absence of a stable area, construct appropriate energy-dissipating devices at the end of the breaker.
- d. Slope breakers may extend slightly (about 4 feet) beyond the edge of the construction right-of-way to effectively drain water off the disturbed area. Where slope breakers extend beyond the edge of the construction right-of-way, they are subject to compliance with all applicable survey requirements.

C. SOIL COMPACTION MITIGATION

1. Test topsoil and subsoil for compaction at regular intervals in agricultural and residential areas disturbed by construction activities. Conduct tests on the same soil type under similar moisture conditions in undisturbed areas to approximate preconstruction conditions. Use penetrometers or other appropriate devices to conduct tests.

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2. Plow severely compacted agricultural areas with a paraplow or other deep tillage implement. In areas where topsoil has been segregated, plow the subsoil before replacing the segregated topsoil.

Alternatively, make arrangements with the landowner to plant and plow under a "green manure" crop, such as alfalfa, to decrease soil bulk density and improve soil structure. If subsequent construction and cleanup activities result in further compaction, conduct additional tilling.

3. Perform appropriate soil compaction mitigation in severely compacted residential areas.

D. REVEGETATION

1. General

- a. The project sponsor is responsible for ensuring successful revegetation of soils disturbed by project-related activities, except as noted in section V.D.1.b.
- b. Restore all turf, ornamental shrubs, and specialized landscaping in accordance with the landowner's request, or compensate the landowner. Restoration work must be performed by personnel familiar with local horticultural and turf establishment practices.

2. Soil Additives

Fertilize and add soil pH modifiers in accordance with written recommendations obtained from the local soil conservation authority, land management agencies, or landowner. Incorporate recommended soil pH modifier and fertilizer into the top 2 inches of soil as soon as possible after application.

3. Seeding Requirements

- a. Prepare a seedbed in disturbed areas to a depth of 3 to 4 inches using appropriate equipment to provide a firm seedbed. When hydroseeding, scarify the seedbed to facilitate lodging and germination of seed.

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- b. Seed disturbed areas in accordance with written recommendations for seed mixes, rates, and dates obtained from the local soil conservation authority or as requested by the landowner or land management agency. Seeding is not required in actively cultivated croplands unless requested by the landowner.
- c. Perform seeding of permanent vegetation within the recommended seeding dates. If seeding cannot be done within those dates, use appropriate temporary erosion control measures discussed in section IV.F. and perform seeding of permanent vegetation at the beginning of the next recommended seeding season. Lawns may be seeded on a schedule established with the landowner.
- d. In the absence of written recommendations from the local soil conservation authorities, seed all disturbed soils within 6 working days of final grading, weather and soil conditions permitting, subject to the specifications in section V.D.3.a-c.
- e. Base seeding rates on Pure Live Seed. Use seed within 12 months of seed testing.
- f. Treat legume seed with an inoculant specific to the species using the manufacturer's recommended rate of inoculant appropriate for the seeding method (broadcast, drill, or hydro).
- g. In the absence of written recommendations from the local soil conservation authorities, landowner, or land managing agency to the contrary, a seed drill equipped with a cultipacker is preferred for seed application.

Broadcast or hydroseeding can be used in lieu of drilling at double the recommended seeding rates. Where seed is broadcast, firm the seedbed with a cultipacker or impriner after seeding. In rocky soils or where site conditions may limit the effectiveness of this equipment, other alternatives may be appropriate (e.g., use of a chain drag) to lightly cover seed after application, as approved by the Environmental Inspector.

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VI. OFF-ROAD VEHICLE CONTROL

To each owner or manager of forested lands offer to install and maintain measures to control unauthorized vehicle access to the right-of-way. These measures may include:

- A. Signs;
- B. Fences with locking gates;
- C. Slash and timber barriers, pipe barriers, or a line of boulders across the right-of-way; and
- D. Conifers or other appropriate trees or shrubs across the right-of-way.

VII. POST-CONSTRUCTION ACTIVITIES

A. MONITORING AND MAINTENANCE

- 1. Conduct follow-up inspections of all disturbed areas after the first and second growing seasons to determine the success of revegetation.
- 2. Revegetation in non-agricultural areas shall be considered successful if upon visual survey the density and cover of non-nuisance vegetation are similar in density and cover to adjacent undisturbed lands. In agricultural areas, revegetation shall be considered successful if crop yields are similar to adjacent undisturbed portions of the same field.

Continue revegetation efforts until revegetation is successful.
- 3. Monitor and correct problems with drainage and irrigation systems resulting from pipeline construction in active agricultural areas until restoration is successful.
- 4. Restoration shall be considered successful if the right-of-way surface condition is similar to adjacent undisturbed lands, construction debris is removed (unless requested otherwise by the land owner or land managing agency), revegetation is successful, and proper drainage has been restored.

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5. Routine vegetation maintenance clearing shall not be done more frequently than every 3 years. However, to facilitate periodic corrosion and leak surveys, a corridor not exceeding 10 feet in width centered on the pipeline may be maintained annually in a herbaceous state. In no case shall routine vegetation maintenance clearing occur between April 15 and August 1 of any year.
6. Efforts to control unauthorized off-road vehicle use, in cooperation with the landowner, shall continue throughout the life of the project. Maintain signs, gates, and vehicle trails as necessary.

B. REPORTING

1. The project sponsor shall maintain records that identify by milepost:
 - a. method of application, application rate, and type of fertilizer, pH modifying agent, seed, and mulch used;
 - b. acreage treated;
 - c. dates of backfilling and seeding;
 - d. names of landowners requesting special seeding treatment and a description of the follow-up actions; and
 - e. any problem areas and how they were addressed.
2. The project sponsor shall file with the Secretary quarterly activity reports documenting problems, including those identified by the landowner, and corrective actions taken for at least 2 years following construction.

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Appendix E

Wetland and Waterbody Construction and Mitigation Procedures

**WETLAND AND WATERBODY CONSTRUCTION AND
MITIGATION PROCEDURES**

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**WETLAND AND WATERBODY CONSTRUCTION AND MITIGATION PROCEDURES
(PROCEDURES)**

I. APPLICABILITY

- A. The intent of these Procedures is to assist applicants by identifying baseline mitigation measures for minimizing the extent and duration of project-related disturbance on wetlands and waterbodies. The project sponsors should specify in their applications for a FERC Certificate (Certificate) any individual measures in these Procedures they consider unnecessary, technically infeasible, or unsuitable due to local conditions and to fully describe any alternative measures they would use. Applicants should also explain how those alternative measures would achieve a comparable level of mitigation.

Once a project is certificated, further changes can be approved. Any such changes from the measures in these Procedures (or the applicant's approved procedures) will be approved by the Director of the Office of Energy Projects (Director), upon the applicant's written request, if the Director agrees that an alternative measure:

1. provides equal or better environmental protection;
2. is necessary because a portion of these Procedures is infeasible or unworkable based on project-specific conditions; or
3. is specifically required in writing by another Federal, state, or Native American land management agency for the portion of the project on its land or under its jurisdiction.

Any requirements in these Procedures to file material with the Secretary of the FERC (Secretary) do not apply to projects undertaken under the provisions of the blanket certificate program. This exemption does not apply to a request for alternative measures.

Project-related impacts on non-wetland areas are addressed in the staff's Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).

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B. DEFINITIONS

1. "Waterbody" includes any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes:
 - a. "minor waterbody" includes all waterbodies less than or equal to 10 feet wide at the water's edge at the time of crossing;
 - b. "intermediate waterbody" includes all waterbodies greater than 10 feet wide but less than or equal to 100 feet wide at the water's edge at the time of crossing; and
 - c. "major waterbody" includes all waterbodies greater than 100 feet wide at the water's edge at the time of crossing.
2. "Wetland" includes any area that is not in actively cultivated or rotated cropland and that satisfies the requirements of the current Federal methodology for identifying and delineating wetlands.

II. PRECONSTRUCTION FILING

- A. The following information shall be filed with the Secretary prior to the beginning of construction:
 1. the hydrostatic testing information specified in section VII.B.3. and a wetland delineation report as described in section VI.A.1., if applicable; and
 2. a schedule identifying when trenching or blasting would occur within each waterbody greater than 10 feet wide, or within any designated coldwater fishery. The project sponsor shall revise the schedule as necessary to provide FERC staff at least 14 days advance notice. Changes within this last 14-day period must provide for at least 48 hours advance notice.
- B. The following site-specific construction plans required by these Procedures must be filed with the Secretary for the review and written approval by the Director:
 1. plans for extra work areas that would be closer than 50 feet from a waterbody or wetland;

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2. plans for major waterbody crossings;
3. plans for the use of a construction right-of-way greater than 75 feet wide in wetlands; and
4. plans for horizontal directional drill (HDD) "crossings" of wetlands or waterbodies.

III. ENVIRONMENTAL INSPECTORS

- A. At least one Environmental Inspector having knowledge of the wetland and waterbody conditions in the project area is required for each construction spread. The number and experience of Environmental Inspectors assigned to each construction spread should be appropriate for the length of the construction spread and the number/significance of resources affected.
- B. The Environmental Inspector's responsibilities are outlined in the Upland Erosion Control, Revegetation, and Maintenance Plan (Plan).

IV. PRECONSTRUCTION PLANNING

- A. A copy of the Stormwater Pollution Prevention Plan (SWPPP) prepared for compliance with the U.S. Environmental Protection Agency's (EPA) National Stormwater Program General Permit requirements must be available in the field on each construction spread. The SWPPP shall contain Spill Prevention and Response Procedures that meet the requirements of state and Federal agencies.
 1. It shall be the responsibility of the project sponsor and its contractors to structure their operations in a manner that reduces the risk of spills or the accidental exposure of fuels or hazardous materials to waterbodies or wetlands. The project sponsor and its contractors must, at a minimum, ensure that:
 - a. all employees handling fuels and other hazardous materials are properly trained;
 - b. all equipment is in good operating order and inspected on a regular basis;

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- c. fuel trucks transporting fuel to on-site equipment travel only on approved access roads;
 - d. all equipment is parked overnight and/or fueled at least 100 feet from a waterbody or in an upland area at least 100 feet from a wetland boundary. These activities can occur closer only if the Environmental Inspector finds, in advance, no reasonable alternative and the project sponsor and its contractors have taken appropriate steps (including secondary containment structures) to prevent spills and provide for prompt cleanup in the event of a spill;
 - e. hazardous materials, including chemicals, fuels, and lubricating oils, are not stored within 100 feet of a wetland, waterbody, or designated municipal watershed area, unless the location is designated for such use by an appropriate governmental authority. This applies to storage of these materials and does not apply to normal operation or use of equipment in these areas; and
 - f. concrete coating activities are not performed within 100 feet of a wetland or waterbody boundary, unless the location is an existing industrial site designated for such use.
2. The project sponsor and its contractors must structure their operations in a manner that provides for the prompt and effective cleanup of spills of fuel and other hazardous materials. At a minimum, the project sponsor and its contractors must:
- a. ensure that each construction crew (including cleanup crews) has on hand sufficient supplies of absorbent and barrier materials to allow the rapid containment and recovery of spilled materials and knows the procedure for reporting spills;
 - b. ensure that each construction crew has on hand sufficient tools and material to stop leaks;

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- c. know the contact names and telephone numbers for all local, state, and Federal agencies (including, if necessary, the U. S. Coast Guard and the National Response Center) that must be notified of a spill; and
- d. follow the requirements of those agencies in cleaning up the spill, in excavating and disposing of soils or other materials contaminated by a spill, and in collecting and disposing of waste generated during spill cleanup.

B. AGENCY COORDINATION

The project sponsor must coordinate with the appropriate local, state, and Federal agencies as outlined in these Procedures and in the Certificate.

V. WATERBODY CROSSINGS

A. NOTIFICATION PROCEDURES AND PERMITS

- 1. Apply to the U.S. Army Corps of Engineers (COE), or its delegated agency, for the appropriate wetland and waterbody crossing permits.
- 2. Provide written notification to authorities responsible for potable surface water supply intakes located within 3 miles downstream of the crossing at least 1 week before beginning work in the waterbody, or as otherwise specified by that authority.
- 3. Apply for state-issued waterbody crossing permits and obtain individual or generic section 401 water quality certification or waiver.
- 4. Notify appropriate state authorities at least 48 hours before beginning trenching or blasting within the waterbody, or as specified in state permits.

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B. INSTALLATION

1. Time Window for Construction

Unless expressly permitted or further restricted by the appropriate state agency in writing on a site-specific basis, instream work, except that required to install or remove equipment bridges, must occur during the following time windows:

- a. coldwater fisheries - June 1 through September 30; and
- b. coolwater and warmwater fisheries - June 1 through November 30.

2. Extra Work Areas

- a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from water's edge, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land.
- b. The project sponsor shall file with the Secretary for review and written approval by the Director, a site-specific construction plan for each extra work area with a less than 50-foot setback from the water's edge, (except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land) and a site-specific explanation of the conditions that will not permit a 50-foot setback.
- c. Limit clearing of vegetation between extra work areas and the edge of the waterbody to the certificated construction right-of-way.
- d. Limit the size of extra work areas to the minimum needed to construct the waterbody crossing.

3. General Crossing Procedures

- a. Comply with the COE, or its delegated agency, permit terms and conditions.

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- b. Construct crossings as close to perpendicular to the axis of the waterbody channel as engineering and routing conditions permit.
 - c. If the pipeline parallels a waterbody, attempt to maintain at least 15 feet of undisturbed vegetation between the waterbody (and any adjacent wetland) and the construction right-of-way.
 - d. Where waterbodies meander or have multiple channels, route the pipeline to minimize the number of waterbody crossings.
 - e. Maintain adequate flow rates to protect aquatic life, and prevent the interruption of existing downstream uses.
 - f. Waterbody buffers (extra work area setbacks, refueling restrictions, etc.) must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.
4. Spoil Pile Placement and Control
- a. All spoil from minor and intermediate waterbody crossings, and upland spoil from major waterbody crossings, must be placed in the construction right-of-way at least 10 feet from the water's edge or in additional extra work areas as described in section V.B.2.
 - b. Use sediment barriers to prevent the flow of spoil or heavily silt-laden water into any waterbody.
5. Equipment Bridges
- a. Only clearing equipment and equipment necessary for installation of equipment bridges may cross waterbodies prior to bridge installation. Limit the number of such crossings of each waterbody to one per piece of clearing equipment.

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- b. Construct equipment bridges to maintain unrestricted flow and to prevent soil from entering the waterbody. Examples of such bridges include:
 - (1) equipment pads and culvert(s);
 - (2) equipment pads or railroad car bridges without culverts;
 - (3) clean rock fill and culvert(s); and
 - (4) flexi-float or portable bridges.

Additional options for equipment bridges may be utilized that achieve the performance objectives noted above. Do not use soil to construct or stabilize equipment bridges.

- c. Design and maintain each equipment bridge to withstand and pass the highest flow expected to occur while the bridge is in place. Align culverts to prevent bank erosion or streambed scour. If necessary, install energy dissipating devices downstream of the culverts.
- d. Design and maintain equipment bridges to prevent soil from entering the waterbody.
- e. Remove equipment bridges as soon as possible after permanent seeding unless the COE, or its delegated agency, authorizes it as a permanent bridge.
- f. If there will be more than 1 month between final cleanup and the beginning of permanent seeding and reasonable alternative access to the right-of-way is available, remove equipment bridges as soon as possible after final cleanup.

6. Dry-Ditch Crossing Methods

- a. Unless approved otherwise by the appropriate state agency, install the pipeline using one of the dry-ditch methods outlined below for crossings of waterbodies up to 30 feet wide (at the water's edge at the time of construction) that are state-designated as either coldwater or significant coolwater or warmwater fisheries.

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b. Dam and Pump

- (1) The dam-and-pump method may be used without prior approval for crossings of waterbodies where pumps can adequately transfer streamflow volumes around the work area, and there are no concerns about sensitive species passage.
- (2) Implementation of the dam-and-pump crossing method must meet the following performance criteria:
 - (i) use sufficient pumps, including on-site backup pumps, to maintain downstream flows;
 - (ii) construct dams with materials that prevent sediment and other pollutants from entering the waterbody (e.g., sandbags or clean gravel with plastic liner);
 - (iii) screen pump intakes;
 - (iv) prevent streambed scour at pump discharge; and
 - (v) monitor the dam and pumps to ensure proper operation throughout the waterbody crossing.

c. Flume Crossing

The flume crossing method requires implementation of the following steps:

- (1) install flume pipe after blasting (if necessary), but before any trenching;
- (2) use sand bag or sand bag and plastic sheeting diversion structure or equivalent to develop an effective seal and to divert stream flow through the flume pipe (some modifications to the stream bottom may be required in to achieve an effective seal);
- (3) properly align flume pipe(s) to prevent bank erosion and streambed scour;
- (4) do not remove flume pipe during trenching, pipelaying, or backfilling activities, or initial streambed restoration efforts; and

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- (5) remove all flume pipes and dams that are not also part of the equipment bridge as soon as final cleanup of the stream bed and bank is complete.

d. Horizontal Directional Drill (HDD)

To the extent they were not provided as part of the pre-certification process, for each waterbody or wetland that would be crossed using the HDD method, provide a plan that includes:

- (1) site-specific construction diagrams that show the location of mud pits, pipe assembly areas, and all areas to be disturbed or cleared for construction;
- (2) a description of how an inadvertent release of drilling mud would be contained and cleaned up; and
- (3) a contingency plan for crossing the waterbody or wetland in the event the directional drill is unsuccessful and how the abandoned drill hole would be sealed, if necessary.

7. Crossings of Minor Waterbodies

Where a dry-ditch crossing is not required, minor waterbodies may be crossed using the open-cut crossing method, with the following restrictions:

- a. except for blasting and other rock breaking measures, complete instream construction activities (including trenching, pipe installation, backfill, and restoration of the streambed contours) within 24 hours. Streambanks and unconsolidated streambeds may require additional restoration after this period;
- b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and

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- c. equipment bridges are not required at minor waterbodies that do not have a state-designated fishery classification (e.g., agricultural or intermittent drainage ditches). However, if an equipment bridge is used it must be constructed as described in section V.B.5.

8. Crossings of Intermediate Waterbodies

Where a dry-ditch crossing is not required, intermediate waterbodies may be crossed using the open-cut crossing method, with the following restrictions:

- a. complete instream construction activities (not including blasting and other rock breaking measures) within 48 hours, unless site-specific conditions make completion within 48 hours infeasible;
- b. limit use of equipment operating in the waterbody to that needed to construct the crossing; and
- c. all other construction equipment must cross on an equipment bridge as specified in section V.B.5.

9. Crossings of Major Waterbodies

Before construction, the project sponsor shall file with the Secretary for the review and written approval by the Director a detailed, site-specific construction plan and scaled drawings identifying all areas to be disturbed by construction for each major waterbody crossing (the scaled drawings are not required for any offshore portions of pipeline projects). This plan should be developed in consultation with the appropriate state and Federal agencies and should include extra work areas, spoil storage areas, sediment control structures, etc., as well as mitigation for navigational issues.

The Environmental Inspector may adjust the final placement of the erosion and sediment control structures in the field to maximize effectiveness.

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10. Temporary Erosion and Sediment Control

Install sediment barriers (as defined in section IV.F.2.a. of the Plan) immediately after initial disturbance of the waterbody or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench) until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan; however, the following specific measures must be implemented at stream crossings:

- a. install sediment barriers across the entire construction right-of-way at all waterbody crossings, where necessary to prevent the flow of sediments into the waterbody. In the travel lane, these may consist of removable sediment barriers or driveable berms. Removable sediment barriers can be removed during the construction day, but must be re-installed after construction has stopped for the day and/or when heavy precipitation is imminent;
- b. where waterbodies are adjacent to the construction right-of-way, install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way; and
- c. use trench plugs at all waterbody crossings, as necessary, to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody.

11. Trench Dewatering

Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in heavily silt-laden water flowing into any waterbody. Remove the dewatering structures as soon as possible after the completion of dewatering activities.

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C. RESTORATION

1. Use clean gravel or native cobbles for the upper 1 foot of trench backfill in all waterbodies that contain coldwater fisheries.
2. For open-cut crossings, stabilize waterbody banks and install temporary sediment barriers within 24 hours of completing instream construction activities. For dry-ditch crossings, complete streambed and bank stabilization before returning flow to the waterbody channel.
3. Return all waterbody banks to preconstruction contours or to a stable angle of repose as approved by the Environmental Inspector.
4. Application of riprap for bank stabilization must comply with COE, or its delegated agency, permit terms and conditions.
5. Unless otherwise specified by state permit, limit the use of riprap to areas where flow conditions preclude effective vegetative stabilization techniques such as seeding and erosion control fabric.
6. Revegetate disturbed riparian areas with conservation grasses and legumes or native plant species, preferably woody species.
7. Install a permanent slope breaker across the construction right-of-way at the base of slopes greater than 5 percent that are less than 50 feet from the waterbody, or as needed to prevent sediment transport into the waterbody. In addition, install sediment barriers as outlined in the Plan. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the waterbody.
8. Sections V.C.3. through V.C.6. above also apply to those perennial or intermittent streams not flowing at the time of construction.

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D. POST-CONSTRUCTION MAINTENANCE

1. Limit vegetation maintenance adjacent to waterbodies to allow a riparian strip at least 25 feet wide, as measured from the waterbody's mean high water mark, to permanently revegetate with native plant species across the entire construction right-of-way. However, to facilitate periodic pipeline corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be maintained in a herbaceous state. In addition, trees that are located within 15 feet of the pipeline that are greater than 15 feet in height may be cut and removed from the permanent right-of-way.
2. Do not use herbicides or pesticides in or within 100 feet of a waterbody except as allowed by the appropriate land management or state agency.

VI. WETLAND CROSSINGS

A. GENERAL

1. The project sponsor shall conduct a wetland delineation using the current Federal methodology and file a wetland delineation report with the Secretary before construction. This report shall identify:
 - a. by milepost all wetlands that would be affected;
 - b. the National Wetlands Inventory (NWI) classification for each wetland;
 - c. the crossing length of each wetland in feet; and
 - d. the area of permanent and temporary disturbance that would occur in each wetland by NWI classification type.

The requirements outlined in this section do not apply to wetlands in actively cultivated or rotated cropland. Standard upland protective measures, including workspace and topsoiling requirements, apply to these agricultural wetlands.

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2. Route the pipeline to avoid wetland areas to the maximum extent possible. If a wetland cannot be avoided or crossed by following an existing right-of-way, route the new pipeline in a manner that minimizes disturbance to wetlands. Where looping an existing pipeline, overlap the existing pipeline right-of-way with the new construction right-of-way. In addition, locate the loop line no more than 25 feet away from the existing pipeline unless site-specific constraints would adversely affect the stability of the existing pipeline.
3. Limit the width of the construction right-of-way to 75 feet or less. Prior written approval of the Director is required where topographic conditions or soil limitations require that the construction right-of-way width within the boundaries of a federally delineated wetland be expanded beyond 75 feet. Early in the planning process the project sponsor is encouraged to identify site-specific areas where existing soils lack adequate unconfined compressive strength that would result in excessively wide ditches and/or difficult to contain spoil piles.
4. Wetland boundaries and buffers must be clearly marked in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete.
5. Implement the measures of sections V. and VI. in the event a waterbody crossing is located within or adjacent to a wetland crossing. If all measures of sections V. and VI. cannot be met, the project sponsor must file with the Secretary a site-specific crossing plan for review and written approval by the Director before construction. This crossing plan shall address at a minimum:
 - a. spoil control;
 - b. equipment bridges;
 - c. restoration of waterbody banks and wetland hydrology;
 - d. timing of the waterbody crossing;

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- e. method of crossing; and
 - f. size and location of all extra work areas.
6. Do not locate aboveground facilities in any wetland, except where the location of such facilities outside of wetlands would prohibit compliance with U.S. Department of Transportation regulations.

B. INSTALLATION

1. Extra Work Areas and Access Roads

- a. Locate all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from wetland boundaries, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land.
- b. The project sponsor shall file with the Secretary for review and written approval by the Director, a site-specific construction plan for each extra work area with a less than 50-foot setback from wetland boundaries (except where adjacent upland consists of actively cultivated or rotated cropland or other disturbed land) and a site-specific explanation of the conditions that will not permit a 50-foot setback.
- c. Limit clearing of vegetation between extra work areas and the edge of the wetland to the certificated construction right-of-way.
- d. The construction right-of-way may be used for access when the wetland soil is firm enough to avoid rutting or the construction right-of-way has been appropriately stabilized to avoid rutting (e.g., with timber riprap, prefabricated equipment mats, or terra mats).

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In wetlands that cannot be appropriately stabilized, all construction equipment other than that needed to install the wetland crossing shall use access roads located in upland areas. Where access roads in upland areas do not provide reasonable access, limit all other construction equipment to one pass through the wetland using the construction right-of-way.

- e. The only access roads, other than the construction right-of-way, that can be used in wetlands without Director approval, are those existing roads that can be used with no modification and no impact on the wetland.

2. Crossing Procedures

- a. Comply with COE, or its delegated agency, permit terms and conditions
- b. Assemble the pipeline in an upland area unless the wetland is dry enough to adequately support skids and pipe.
- c. Use "push-pull" or "float" techniques to place the pipe in the trench where water and other site conditions allow.
- d. Minimize the length of time that topsoil is segregated and the trench is open.
- e. Limit construction equipment operating in wetland areas to that needed to clear the construction right-of-way, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the construction right-of-way.
- f. Cut vegetation just aboveground level, leaving existing root systems in place, and remove it from the wetland for disposal.

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- g. Limit pulling of tree stumps and grading activities to directly over the trenchline. Do not grade or remove stumps or root systems from the rest of the construction right-of-way in wetlands unless the Chief Inspector and Environmental Inspector determine that safety-related construction constraints require grading or the removal of tree stumps from under the working side of the construction right-of-way.
- h. Segregate the top 1 foot of topsoil from the area disturbed by trenching, except in areas where standing water is present or soils are saturated or frozen. Immediately after backfilling is complete, restore the segregated topsoil to its original location.
- i. Do not use rock, soil imported from outside the wetland, tree stumps, or brush riprap to support equipment on the construction right-of-way.
- j. If standing water or saturated soils are present, or if construction equipment causes ruts or mixing of the topsoil and subsoil in wetlands, use low-ground-weight construction equipment, or operate normal equipment on timber riprap, prefabricated equipment mats, or terra mats.
- k. Do not cut trees outside of the approved construction work area to obtain timber for riprap or equipment mats.
- l. Attempt to use no more than two layers of timber riprap to support equipment on the construction right-of-way.
- m. Remove all project-related material used to support equipment on the construction right-of-way upon completion of construction.

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3. Temporary Sediment Control

Install sediment barriers (as defined in section IV.F.2.a. of the Plan) immediately after initial disturbance of the wetland or adjacent upland. Sediment barriers must be properly maintained throughout construction and reinstalled as necessary (such as after backfilling of the trench). Except as noted below in section VI.B.3.c., maintain sediment barriers until replaced by permanent erosion controls or restoration of adjacent upland areas is complete. Temporary erosion and sediment control measures are addressed in more detail in the Plan.

- a. Install sediment barriers across the entire construction right-of-way at all wetland crossings where necessary to prevent sediment flow into the wetland. In the travel lane, these may consist of removable sediment barriers or driveable berms. Removable sediment barriers can be removed during the construction day, but must be re-installed after construction has stopped for the day and/or when heavy precipitation is imminent
- b. Where wetlands are adjacent to the construction right-of-way and the right-of-way slopes toward the wetland, install sediment barriers along the edge of the construction right-of-way as necessary to prevent sediment flow into the wetland.
- c. Install sediment barriers along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way through wetlands. Remove these sediment barriers during right-of-way cleanup.

4. Trench Dewatering

Dewater the trench (either on or off the construction right-of-way) in a manner that does not cause erosion and does not result in heavily silt-laden water flowing into any wetland. Remove the dewatering structures as soon as possible after the completion of dewatering activities.

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C. RESTORATION

1. Where the pipeline trench may drain a wetland, construct trench breakers and/or seal the trench bottom as necessary to maintain the original wetland hydrology.
2. For each wetland crossed, install a trench breaker at the base of slopes near the boundary between the wetland and adjacent upland areas. Install a permanent slope breaker across the construction right-of-way at the base of a slopes greater than 5 percent where the base of the slope is less than 50 feet from the wetland, or as needed to prevent sediment transport into the wetland. In addition, install sediment barriers as outlined in the Plan. In some areas, with the approval of the Environmental Inspector, an earthen berm may be suitable as a sediment barrier adjacent to the wetland.
3. Do not use fertilizer, lime, or mulch unless required in writing by the appropriate land management or state agency.
4. Consult with the appropriate land management or state agency to develop a project-specific wetland restoration plan. The restoration plan should include measures for re-establishing herbaceous and/or woody species, controlling the invasion and spread of undesirable exotic species (e.g., purple loosestrife and phragmites), and monitoring the success of the revegetation and weed control efforts. Provide this plan to the FERC staff upon request.
5. Until a project-specific wetland restoration plan is developed and/or implemented, temporarily revegetate the construction right-of-way with annual ryegrass at a rate of 40 pounds/acre (unless standing water is present).
6. Ensure that all disturbed areas successfully revegetate with wetland herbaceous and/or woody plant species.

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7. Remove temporary sediment barriers located at the boundary between wetland and adjacent upland areas after upland revegetation and stabilization of adjacent upland areas are judged to be successful as specified in section VII.A.5. of the Plan.

D. POST-CONSTRUCTION MAINTENANCE

1. Do not conduct vegetation maintenance over the full width of the permanent right-of-way in wetlands. However, to facilitate periodic pipeline corrosion/leak surveys, a corridor centered on the pipeline and up to 10 feet wide may be maintained in a 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.
2. Do not use herbicides or pesticides in or within 100 feet of a wetland, except as allowed by the appropriate land management agency or state agency.
3. Monitor and record the success of wetland revegetation annually for the first 3 years after construction or until wetland revegetation is successful. At the end of 3 years after construction, file a report with the Secretary identifying the status of the wetland revegetation efforts. Include the percent cover achieved and problem areas (weed invasion issues, poor revegetation, etc.). Continue to file a report annually until wetland revegetation is successful.
4. Wetland revegetation shall be considered successful if the cover of herbaceous and/or woody species is at least 80 percent of the type, density, and distribution of the vegetation in adjacent wetland areas that were not disturbed by construction. If revegetation is not successful at the end of 3 years, develop and implement (in consultation with a professional wetland ecologist) a remedial revegetation plan to actively revegetate the wetland. Continue revegetation efforts until wetland revegetation is successful.

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VII. HYDROSTATIC TESTING

A. NOTIFICATION PROCEDURES AND PERMITS

1. Apply for state-issued water withdrawal permits, as required.
2. Apply for National Pollutant Discharge Elimination System (NPDES) or state-issued discharge permits, as required.
3. Notify appropriate state agencies of intent to use specific sources at least 48 hours before testing activities unless they waive this requirement in writing.

B. GENERAL

1. Perform non-destructive testing of all pipeline section welds or hydrotest the pipeline sections, before installation under waterbodies or wetlands.
2. If pumps used for hydrostatic testing are within 100 feet of any waterbody or wetland, address the operation and refueling of these pumps in the project's Spill Prevention and Response Procedures.
3. The project sponsor shall file with the Secretary before construction a list identifying the location of all waterbodies proposed for use as a hydrostatic test water source or discharge location.

C. INTAKE SOURCE AND RATE

1. Screen the intake hose to prevent entrainment of fish.
2. Do not use state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate Federal, state, and/or local permitting agencies grant written permission.
3. Maintain adequate flow rates to protect aquatic life, provide for all waterbody uses, and provide for downstream withdrawals of water by existing users.

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4. Locate hydrostatic test manifolds outside wetlands and riparian areas to the maximum extent practicable.

D. DISCHARGE LOCATION, METHOD, AND RATE

1. Regulate discharge rate, use energy dissipation device(s), and install sediment barriers, as necessary, to prevent erosion, streambed scour, suspension of sediments, or excessive streamflow.
2. Do not discharge into state-designated exceptional value waters, waterbodies which provide habitat for federally listed threatened or endangered species, or waterbodies designated as public water supplies, unless appropriate Federal, state, and local permitting agencies grant written permission.

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Appendix F

Guardian's Spill Prevention, Containment, and Countermeasures Plan

GUARDIAN PIPELINE EXPANSION AND EXTENSION PROJECT

Spill Prevention, Containment, and Countermeasures Plan

October 2006

Guardian Pipeline Expansion and Extension Project
Spill Prevention, Containment, and Countermeasures Plan

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ATTACHMENTS

- Attachment 1 Response Team Contacts
- Attachment 2 Spill Report Form

Guardian Pipeline Expansion and Extension Project Spill Prevention, Containment, and Countermeasures Plan

1.0 INTRODUCTION

The Guardian Pipeline Expansion and Extension (Guardian or G-II) Project has prepared this Spill Prevention, Containment, and Countermeasure (SPCC) Plan (SPCC Plan) to be implemented during construction of the G-II Project in accordance with Section IV.A of Guardian's *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures) dated December August 20, 2006. This SPCC Plan outlines specific preventative measures and practices to reduce the likelihood of an accidental release of a hazardous or regulated liquid and, in the event such a release occurs, to expedite the response to and remediation of the release.

This SPCC Plan restricts the location of fuel storage, fueling activities, and construction equipment maintenance along the construction right-of-way and provides procedures for these activities. Training and lines of communication to facilitate the prevention, response, containment, and cleanup of spills during construction activities are also described.

All contractor and subcontractor personnel working on the Guardian pipeline right-of-way are responsible for implementation of the measures and procedures defined in this SPCC Plan. This Plan will be included in both the bid and the contract documents as contractual requirements and instructions to the contractor.

2.0 PREVENTATIVE MEASURES

Guardian will require that contractors minimize, to the extent practicable, the potential for and consequences of a spill during construction of the project facilities. Guardian will require contractors to comply with applicable environmental and safety laws and regulations, including compliance by all its subcontractors. The contractors will be required to maintain a copy of this Plan available onsite to all personnel and provide a copy to all subcontractors.

2.1 Training

Guardian will require that all contractor employees involved with transporting or handling fueling equipment or maintaining construction equipment be required to complete spill training before they commence work on the right-of-way. Guardian will audit contractor compliance with

this requirement. Spill training will also be required for contractor supervisory personnel prior to commencement of work on the right-of-way for each spread. These training sessions will be conducted by the construction contractor and a representative of Guardian and will provide information concerning pollution control laws; inform personnel concerning the proper operation and maintenance of fueling equipment; and inform personnel of spill prevention and response requirements. Measures, responsibilities, and provisions of this SPCC Plan and identification of response team individuals (attachment 1) will be incorporated into the training.

Training of other workers will be provided through ongoing weekly safety meetings. Topics will include spill handling and personal responsibility for initiating and adhering to appropriate procedures. These weekly sessions will be held by the contractor as crew "tail gate" meetings. Guardian will audit the contractor compliance with this requirement and instruct the contractor to replace, after the first warning, foremen who do not hold such meetings.

2.2 Release Response Equipment

The contractor shall supply each construction crew with a quantity of absorbent and barrier materials sufficient to contain and recover spills that could potentially occur from the equipment with the largest on-board volume of fuel and lubricant. These materials may include, but are not limited to, drip pans, buckets, absorbent pads, containment booms, straw bales, absorbent clay, sawdust, floor-drying agents, spill containment barriers, plastic sheeting, skimmer pumps, covered holding tanks, and fire extinguishers.

The contractor shall make known to all construction personnel the yard and warehouse locations of spill response equipment and materials and have them readily accessible during construction.

2.3 Equipment Inspection

Prior to moving equipment onto the construction right-of-way, the contractor shall visually inspect each piece of equipment for cracks, excessive corrosion, or other flaws that may compromise the integrity of its fuel, hydraulic, or cooling systems. The contractor shall repair or replace leaking equipment immediately after a leak is detected.

3.0 REGULATED MATERIALS STORAGE AND HANDLING

3.1 Contractor Yards

Contractors shall store fuel, petroleum products, and hazardous materials at the yards in a manner designed to protect the environment. Storage shall be provided with secondary containment structures lined with an impervious material that provides a minimum containment volume equal to 150 percent of the volume of the largest storage vessel located in the yard. The contractor shall construct these containment structures such that in the event of a leak or spill, the liquid will be contained within the structures. If earthen containment dikes are used, they shall be constructed with slopes no steeper than 3:1 (horizontal to vertical) to limit erosion and provide structural stability. Containment areas shall not have drains.

Bulk storage tanks shall not be placed in areas subject to periodic flooding or erosion. Accumulated rainwater may be removed if authorized by a Guardian Environmental Inspector (EI). If visual inspection indicates that no spillage has occurred in the containment structure and if approved by a Guardian EI, accumulated water may be drawn off and sprayed on the surrounding upland areas. If spillage has occurred in the structure, accumulated waste water shall be drawn off and pumped into a storage vessel for disposal.

The contractor shall visually inspect aboveground bulk tanks frequently and whenever the tank is refilled. Drain valves on temporary storage tanks shall be locked to prevent accidental or unauthorized discharges from the tank. The contractor shall correct visible leaks in tanks as soon as possible.

All fuel nozzles shall be equipped with functional automatic shut-off valves. Prior to departure of any fuel tank truck, all outlets on the vehicle shall be examined by the driver for leakage and tightened, adjusted, or replaced to prevent liquid leaking while in transit.

Routine equipment maintenance of wheel-mounted vehicles, such as oil changes, shall be accomplished at the contractor yards or staging areas to the greatest extent practical. Routine maintenance of track-mounted equipment shall be conducted in a manner to gather oil and other discharges and remove them from the right-of-way to a suitable recycling or disposal site.

Storage containers shall display labels that identify the contents of the container and whether the contents are hazardous. Copies of Material Safety Data Sheets (MSDS) for all

potentially hazardous materials will be provided and maintained by the contractor and be accessible to all contractor personnel.

Table 1 summarizes typical vehicle and equipment fuels, lubricants, and hazardous materials stored or used during construction, and briefly describes the location, typical quantities, and usual methods of storage. Storage methods and quantities vary with length of construction spread, time of year, and type of terrain. The contractor shall provide, maintain, and make available the appropriate MSDS documents for each of these materials and those for any other hazardous or controlled materials utilized on the right-of-way or in the contractor yards at a location accessible to all contractor and Guardian employees.

TABLE 1				
Typical Fuel, Lubricants, and Hazardous Materials				
Fluid Uses	Fluids	Typical Quantity Per Location	Method of Storage	Storage Location
Fuels	Diesel	5,000 – 10,000 Gallons	Tanks or Tankers	Contractor Yard Warehouse/fuel vehicle parking areas
	Gasoline	5,000 – 10,000 Gallons	Tanks or Tankers, 10-Gallon containers, Pick-up Tanks	Contractor Yard Warehouse/fuel vehicle parking areas
Lubricants	Engine Oil	<100 Gallons	Bulk Storage or Retail Packaging	Contractor Yard Warehouse
	Transmission/ Drive Train Oil	<50 Gallons	Retail Packaging on Service Trucks	Contractor Yard Warehouse, Service Trucks
	Hydraulic Oil	<100 Gallons	Bulk Storage or Retail Packaging	Contractor Yard Warehouse, Service Trucks
	Gear Oil	<50 Gallons	Retail Packaging on Service Trucks	Contractor Yard Warehouse, Service Trucks
	Lubricating Grease	<25 Gallons	Tubes stored in Paper Cases	Contractor Yard Warehouse, Service Trucks
Miscellaneous/ Coolants, Hydraulic fluids	Ethylene Glycol	<100 Gallons	Bulk Storage or Retail Packaging	Contractor Yard Warehouse, Service Trucks
	Propylene Glycol	<100 Gallons	Bulk Storage or Retail Packaging	Contractor Yard Warehouse, Service Trucks
	Power Steering Fluid	<50 Gallons	Retail Packaging on Service Trucks	Contractor Yard Warehouse, Service Trucks
	Brake Fluid	< 50 Gallons	Retail Packaging on Service Trucks	Contractor Yard Warehouse, Service Trucks
	Propane	25-100 Gallons	Pressurized Tanks	Contractor Yard Warehouse, Welding Trucks

3.2 Activities on the Construction Right-of-Way

The contractor shall undertake preventative measures to avoid environmental impacts from refueling and lubrication activities on the construction right-of-way.

Refuelling and lubricating of construction equipment shall be restricted to upland areas at least 100 feet from the edge of any streams, wetlands, ditches, and other waterbodies; 200 feet from private water supply wells; and 400 feet from public water supply wells, wherever possible. If refuelling cannot be avoided in these areas, refer to section 3.3 of this SPCC Plan. Wheeled and tracked construction equipment shall be moved to an upland area more than 100 feet from streams, wetlands, ditches, and other waterbodies for refueling and at the end of each work day. Fuel and service truck drivers shall be responsible for spill prevention during fueling and service activities.

Fuels and lubricants shall be stored in designated areas and in appropriate service vehicles. Storage sites for fuels, other petroleum products, chemicals, and hazardous materials including wastes shall be located in upland areas. To prevent these materials and other potential contaminants from reaching waterways, no hazardous substances shall be stored within 100 feet of streams and/or within 200 feet of private wells (400 feet for public wells). If fuel must be stored in these areas, refer to section 3.3 of this SPCC Plan. The contractor shall confirm with a Guardian EI the locations of areas where these activities are prohibited prior to construction crews entering that area with equipment.

The contractor shall maintain a minimum of 20 pounds of suitable commercial absorbent and barrier materials at each contractor yard and on fuel and service trucks to allow rapid containment and recovery of a spill. Absorbent and barrier materials shall also be utilized to contain runoff from spill areas. Fuel trucks shall also be equipped with shovels and an assortment of hand tools to aid in the containment of a spill.

Equipment shall not be washed in streams, wetlands, ditches, or other waterbodies. Equipment operators shall be responsible for prompt reporting and mitigation of any fuel or lubricant spills from equipment.

3.3 Restricted Refueling Areas

Restricted refuelling areas include areas where the buffer zone (100 feet from a wetland or waterbody, 200 and 400 feet from private and public water wells, respectively) cannot be

maintained. Potential situations where plans may be approved by the EI to allow refuelling in restricted areas include extensive wetland crossings with limited right-of-way access, continuous construction at stream/river crossings, and the required placement and operation of stationary equipment such as dewatering pumps, generators, and boring/drilling equipment. The requirement for any refuelling and equipment service within restricted areas shall be verified and approved by a Guardian EI prior to initiating such activity. Within these areas, the previously described fuel handling and refuelling procedures and the following procedures shall also apply.

Tracked Equipment

In wetlands where no upland site is available for refueling, auxiliary fuel tanks may be mounted to equipment to minimize the need for refueling.

Only a fuel truck with a maximum of 300 gallons of fuel may enter restricted areas to refuel construction equipment. Two trained personnel shall be present during refuelling to reduce the potential for spills or accidents.

Stationary Equipment

Equipment such as non-portable, stationary pumps may be fitted with auxiliary tanks as appropriate. Such auxiliary tanks shall be placed within a secondary containment structure. Refuelling of dewatering pumps, generators, and other small, portable equipment shall be performed using approved containers with a maximum volume of 10 gallons. Fuel containers shall be stored in an upland area at least 100 feet from wetlands and waterbodies.

3.4 Vehicle and Equipment Maintenance

All routine vehicle and equipment maintenance on the right-of-way, involving fluid replacement, shall be conducted outside the boundary restrictions for wetlands, waterbodies, and water wells. Before lubricants are drained from the construction equipment, a suitable containment vessel and plastic sheeting shall be placed under the equipment to collect any spilled material. The contractor shall take necessary precautions to ensure that material that might accumulate on the liner does not spill on the ground surface. Vehicle maintenance wastes, including used oils and other fluids, shall be handled and managed by personnel trained in the procedures outlined in this plan. Vehicle maintenance wastes shall be stored and disposed of in accordance with applicable federal, state and local regulations. Non routine

repairs can be conducted within the buffer zone only on approval from a Guardian EI and only with adequate containment.

4.0 SPILL RESPONSE

In the event of a spill, the release shall be contained and remediated as soon as possible. The order of priorities after discovering a spill are to protect the safety of personnel and the public, minimize damage to the environment, and control costs associated with cleanup and remediation.

4.1 Spill Coordinator

The contractor for each spread shall appoint a Spill Coordinator who shall be responsible for the reporting of spills, coordinating contractor personnel for spill cleanup, subsequent site investigations, and associated incident reports. The Spill Coordinator shall report to the Guardian EI and may be removed from that role by Guardian at Guardian's discretion. The Spill Coordinator along with the EI shall be responsible for determining the extent of the isolation area, referred to in Section 4.0 of this Plan.

4.2 Immediate Response

ALL SPILLS, REGARDLESS OF SIZE, MUST BE REPORTED TO THE SPILL COORDINATOR AND/OR THE GUARDIAN ENVIRONMENTAL INSPECTOR

The person observing the incident shall take the following actions:

1. Assess the safety of the situation (including the risk to the surrounding public).
2. If safe to do so, make every effort to remove potential ignition sources and stop the source of the spill.
3. Promptly notify the Spill Coordinator and/or the Guardian EI. Report your name, the spill location, and the extent of the incident.

Upon learning of the spill, the Spill Coordinator shall implement the following measures:

4. For an upland spill, if necessary, berms shall be constructed with available equipment to physically contain the spill.

5. Sorbent materials shall be applied to the spill area. Contaminated soils and vegetation shall be excavated and temporarily placed on and covered by plastic sheeting in a containment area a minimum of 100 feet away from any wetland or waterbody, until proper disposal is arranged.
6. If a spill is beyond the scope of on-site equipment and personnel, an Emergency Response Contractor shall be secured to further contain and clean up the spill.

4.3 Wetland or Waterbody Response

Regardless of size, the following conditions apply if a spill occurs near or into a stream, wetland, or other waterbody:

1. For spills in standing water, floating booms, skimmer pumps, and holding tanks shall be used as appropriate by the contractor to recover and contain released materials on the surface of the water.
2. For a spill threatening a waterbody, berms and/or trenches shall be constructed to contain the spill before it reaches the waterbody. Deployment of booms, sorbent materials, and skimmers may be necessary if the spill reaches the water. The spilled product shall be collected and the affected area cleaned up in accordance with appropriate state or federal regulations.
3. Contaminated soils in wetlands must be excavated, and placed on and covered by plastic sheeting in approved containment areas a minimum of 100 feet away from the wetland or waterbody. Contaminated soil shall be disposed of as soon as possible in accordance with appropriate state or federal regulations.

5.0 REPORTING

With assistance from a Guardian EI, the Spill Coordinator is responsible for the completion of the G-II Project Spill Report Form (attachment 2). Completion of this form will assist in the assessment of the spill and provide information necessary for agency notification. The form shall be completed and submitted to a Guardian representative within 24 hours of the occurrence. A Guardian representative will notify the appropriate agencies (see section 6.0).

6.0 NOTIFICATIONS

<p>IN THE EVENT OF A RELEASE OF A REPORTABLE QUANTITY GUARDIAN OR ITS REPRESENTATIVE WILL NOTIFY THE APPROPRIATE FEDERAL, STATE, AND LOCAL AGENCIES</p>
--

6.1 Federal and State Agencies

National Response Center (Washington, D.C.)
Phone: (800) 424-8802 (24 hours)

Illinois Emergency Response Agency
Phone: (800) 782-7860 (in state)
Phone: (217) 782-7860 (out of state)

Wisconsin Department of Natural Resources
Spill Response and Support
Phone: (800) 943-0003

GUARDIAN PIPELINE EXPANSION AND EXTENSION PROJECT

ATTACHMENT 1

Response Team Contacts

Guardian Pipeline Project Response Team Contacts (To Be Completed Prior to Construction)^{1/}	
Title/Position	Phone/Pager Number(s)
CONSTRUCTION CONTRACTOR SPILL COORDINATOR	
ENVIRONMENTAL INSPECTOR	
AUTHORIZED ALTERNATE (Contact only if you are unable to reach the EI)	
CONSTRUCTION CONTRACTOR SUPERINTENDENT	
CHIEF INSPECTOR	
OTHER GUARDIAN PIPELINE REPRESENTATIVES	
1	

¹ Guardian will provide an updated SPCC Plan complete with Response Team Contacts prior to Construction in 2007.

GUARDIAN PIPELINE EXPANSION AND EXTENSION PROJECT

ATTACHMENT 2

Spill Report Form

**Guardian Pipeline Project
Spill Report Form
Page 1 of 2**

Date/time of spill: _____

Date/time of spill discovery:

Name and title of discoverer:

Milepost/Legal Description:

Material spilled/Estimated volume:

Unique qualifier, if relevant, such as manufacturer:

Media in which the release exists: (circle: sand, silt, clay, upland, wetland, surface water, other):

Topography and surface conditions of spill site:

Proximity to wetlands and surface waters (including ditches):

Proximity to private or public water supply wells:

Directions from nearest community:

Weather conditions at the time of release:

Describe the causes and circumstances resulting in the spill:

Describe the extent of observed contamination, both horizontal and vertical (i.e., spill-stained soil in a 5-foot radius to a depth of 1 inch):

**Guardian Pipeline Project
Spill Report Form
Page 2 of 2**

Describe immediate spill control and/or cleanup methods used and implementation schedule:

Location of any excavated/stockpiled contaminated soil:

Describe the extent of spill-related injuries and remaining risk to human health and environment:

Name, company, and telephone number of party causing spill (e.g., contractor):

Current status of cleanup actions:

Name and company for the following:

Construction Superintendent:

Spill Coordinator:

Environmental Inspector:

Chief Inspector (Guardian):

Landowner notified (if appropriate): _____

Date: _____

Form completed by:

Date:

Government agency notified (to be completed by Guardian or Guardian's Representative): _____

Date: _____

Spill Coordinator must complete this form for any spill, regardless of size, and submit the form to the Guardian Representative and Environmental Inspector within 24 hrs of the occurrence.

Appendix G

Road and Railroad Crossings

Guardian Pipeline Expansion and Extension Project Road and Railroad Crossings		
Pipeline Milepost ^{al}	Road/Railroad	Comments
<u>30-Inch Pipeline</u>		
Jefferson County		
0.4	Gopher Hill Road	
2.1	County Highway CW	
Dodge County		
2.1	County Highway CW	
3.1	Morningside Road	
4.1	County Highway O	
5.1	Thrush Road	
5.5	Bluebird Road	
6.2	Smith Road	
6.2	Union Pacific Rail Road	
6.6	County Highway MM	
7.9	Davidson Road	
8.5	Poplar Grove Road	
9.2	Riverview & Pieper Roads	
10.0	Elmwood Road	
10.6	Pike Road	
11.2	Pike Road	
11.3	County Highway EE	
12.4	State Highway 60	
12.7	Lehman Road	
13.3	Oaklawn Road	
14.5	North Garfield Road	
15.5	State Highway 67	
16.9	Wisconsin & Southern Railroad	
16.9	County Highway WS	
17.9	County Highway AY	
19.0	West Iowa Road	
20.0	Rock Road	
21.0	State Highway 33	
22.0	County Highway AY	
23.3	Zion Church Road	
23.8	Racoon Road	
24.4	Allen Road	
25.3	Mc Arthur Road	
26.3	County Highway AY	
26.4	State Highway 28 and 67	
27.9	County Highway TW	
28.3	North Bluemound Road	
28.4	Elm Road	
29.4	North Bluemound Road	
30.0	County Highway AY	
31.5	County Highway H	
32.6	County Highway HH	
33.1	Center Drive	

Guardian Pipeline Expansion and Extension Project Road and Railroad Crossings		
Pipeline Milepost ^{al}	Road/Railroad	Comments
33.9	State Highway 49	
34.8	Center Drive	
Fond du Lac County		
35.6	State Highway 175	
35.9	County Highway Y	
35.9	Canadian National Railway	
36.2	U.S. Highway 41	
37.4	Kelly Road	
38.8	County Highway F	
39.0	County Highway K	
41.2	County Highway B	
41.7	County Highway V	
42.1	Canadian National Railway	
42.3	County Highway UU/Lime Road	
42.7	U.S Highway 45	
43.4	Birch Road	
44.4	County Highway H	
44.7	County Highway UU	
45.8	County Highway T	
47.1	Artesian Road	
48.1	State Highway 23	
48.6	Golf Course Drive	
49.8	Cody Road	
50.7	Ledge Road	
50.7	Tower Road	
51.8	State Highway 149	
52.9	Konen Road	
53.5	Silica Road	
54.6	County Highway W	
55.3	County Highway Q	
55.9	Cypress Road	This is a gravel road
56.4	Calmar Road	
57.4	Kiel Road	
58.4	County Highway HH	
59.4	County Highway HHH	
Calumet County		
60.2	Banner Road	
60.9	Dick Road	
61.1	County Highway C	
62.4	County Highway H	
63.3	Stone Road	
63.9	West Jefferson Road	
64.5	North Townhall Road	
64.9	U.S. Highway 151	
65.4	Stony Brook Road	
66.4	Quinney Road	

Guardian Pipeline Expansion and Extension Project Road and Railroad Crossings		
Pipeline Milepost ^{al}	Road/Railroad	Comments
67.0	Court Road	
67.5	County Highway F	
69.1	Hickory Hills Road	
70.1	County Highway E	
71.1	Killsnake Road	
72.1	Custer Road	
73.4	Faro Springs Road	
74.7	State Highway 114	
75.7	Crosstown Road	
76.7	County Highway B	
76.8	Canadian National Railway	
78.9	County Highway BB	
80.1	U.S. Highway 10	
81.1	Schmidt Road	
81.6	Dundas Road	
82.1	County Highway KK	
Outagamie County		
82.1	County Highway KK	
Brown County		
82.9	County Highway CE	
<u>20-inch Pipeline</u>		
Brown County		
84.2	Crestview Drive	
84.8	County Highway Z & D	
86.2	Lamers Clancy Road	
86.4	Shanty Road	
87.2	Mill Road	
88.3	State Highway 96	
88.8	Fair Road	
89.6	Elmro Road	
90.0	Mallard Road	
90.6	Meadowlark Road	
91.1	Partridge Road	
91.6	Wrightstown Road	
92.6	County Highway ZZ	
93.5	County Highway D	
93.8	South Whistling Drive	
93.9	Canadian National Railway	
94.5	Lawrence Drive	
95.2	French Road & U.S. 41	
95.2	U.S. 41 & Mid Valley Drive	
95.9	County Highway F	
97.9	Nathan Road	
98.9	County Highway EE	
99.2	South Overland Road	
100.9	Fernando Drive	

Guardian Pipeline Expansion and Extension Project Road and Railroad Crossings		
Pipeline Milepost ^{a/}	Road/Railroad	Comments
Outagamie County	101.6	County Highway U
	101.6	County Highway U
	102.3	County Highway E
	103.1	Seminary Road
	103.9	Old Seymour Road
	104.4	State Highway 54
	104.9	Red Willow Parkway
	105.7	Pearl Street and Olson Road
	107.6	Olson and Cooper Roads
	109.1	Olson and Reformatory Roads
	109.9	Olson Road
<hr/>		
^{a/} Pipeline Milepost is listed as the location of the Road/Railroad crossing rounded to the nearest one tenth of a mile.		

Appendix H

Guardian's Plan for the Unanticipated Discovery of Hazardous Wastes or Contaminated Sites

Guardian Pipeline Expansion and Extension Project

Plan for the Unanticipated Discovery of Hazardous Wastes or Contaminated Sites

If hazardous wastes or contamination at any area is encountered during construction, Guardian will immediately suspend work in the area of the suspected contamination and implement the following plan for determining the extent, nature, and disposition of suspected contamination:

- Cease work in the vicinity of suspected contamination.
- Cordon off or otherwise restrict access to the suspected area.
- Notify the Guardian Environmental Inspector.
- Notify the Guardian Environmental Manager and Construction Manager.
- Notify the landowner(s) of the subjected parcel(s).
- Contact a qualified consultant and/or testing laboratory to assist with the determination of the nature and extent of the contamination.
- Devise a plan for additional site-specific investigations as necessary.
- Conduct the necessary level of site-specific testing and/or laboratory analysis to determine extent and nature of contamination.
- Notify all of the applicable environmental authorities as required by law including:

Wisconsin Department of Natural Resources

Division of Emergency Management

Phone: (800) 943-0003 (24 hours)

- Devise a site-specific plan depending on the nature and extent of contamination encountered for supporting continuation of construction. This step may involve evaluating avoidance options, exposure minimization options or clean up options as necessary to support the construction of the proposed facilities.

- Devise a strategy or plan for handling wastes in an appropriate manner including waste characterization, hauling, manifesting, and disposal necessary to support pipeline construction.
- Devise a plan for site stabilization and backfilling.
- Complete all required and necessary agency follow-ups and reporting.

Appendix I

Waterbodies Crossed by the Proposed Pipeline

Guardian Pipeline Expansion and Extension Project Waterbodies Crossed by the Pipeline ^{a/}						
Approx. Milepost	Feature ID	Waterbody Name ^{b/}	Water Quality Classification ^{c/}	Flow Regime ^{d/}	Approx. Water Width (ft) ^{e/}	Crossing Method
0.6	000S1	Unnamed tributary to Rock River	Fish & Aquatic Life	IT	< 10	Open Cut
2.9	002S1	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
5.4	004S1	Unnamed tributary to Baker Creek	Fish & Aquatic Life	IT	< 10	Open Cut
6.9	006S2	Unnamed tributary to Baker Creek	Fish & Aquatic Life	IT	< 10	Open Cut
7.6	007S1	Baker Creek	Fish & Aquatic Life	PN	< 10	Open Cut
7.8	007S2	Unnamed tributary to Baker Creek	Fish & Aquatic Life	IT	< 10	Open Cut
7.9	008S1	Unnamed tributary to Baker Creek	Fish & Aquatic Life	IT	< 10	Open Cut
8.6	009S1	Unnamed tributary to Rock River	Fish & Aquatic Life	IT	< 10	Open Cut
9.2	009S2	Unnamed tributary to Rock River	Fish & Aquatic Life	IT	< 10	Open Cut
9.8	009S3	Rock River	Fish & Aquatic Life	PN	120	HDD
11.0	011S1	Unnamed tributary to Rock River	Fish & Aquatic Life	IT	< 10	Open Cut
12.3	012S1	Rubicon River	Fish & Aquatic Life	PN	40	Open Cut
13.6	013S1	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
15.0	015S4	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
15.1	015S3	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
15.1	015S2	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
15.2	015S1	Unnamed tributary to Wildcat Creek	Fish & Aquatic Life	IT	< 10	Open Cut
16.1	016S1	Woodland Creek	Fish & Aquatic Life	PN	< 10	Open Cut
17.7	017S1	Unnamed tributary to Wildcat Creek	Limited Aquatic Life	IT	< 10	Open Cut
17.9	017S2	Unnamed tributary to Wildcat Creek	Limited Aquatic Life	PN	< 10	Open Cut
18.2	018S1	Wildcat Creek	Limited Aquatic Life	PN	< 10	Open Cut
18.8	018S2	Lentz Creek	Fish & Aquatic Life ^{f/}	PN	< 10	Open Cut
19.2	019S1	Unnamed tributary to Lentz Creek	Fish & Aquatic Life	IT	< 10	Open Cut
21.4	021S1	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut ^{g/}
22.2	022S1	Unnamed tributary to E. Branch Rock River	Fish & Aquatic Life	PN	< 10	Open Cut
22.7	022S3	Unnamed tributary to E. Branch Rock River	Fish & Aquatic Life	IT	< 10	Open Cut
22.8	022S2	Unnamed tributary to E. Branch Rock River	Fish & Aquatic Life	IT	< 10	Open Cut
23.5	023S1	Unnamed tributary to E. Branch Rock River	Fish & Aquatic Life	PN	< 10	Open Cut
25.4	025S1	E. Branch Rock River	Fish & Aquatic Life	PN	100	Open Cut
26.2	026S1	Unnamed tributary to E. Branch Rock River	Fish & Aquatic Life	IT	< 10	Open Cut
30.8	030S1	Unnamed tributary to	Fish & Aquatic Life	IT	< 10	Open Cut

Guardian Pipeline Expansion and Extension Project Waterbodies Crossed by the Pipeline ^{a/}						
Approx. Milepost	Feature ID	Waterbody Name ^{b/}	Water Quality Classification ^{c/}	Flow Regime ^{d/}	Approx. Water Width (ft) ^{e/}	Crossing Method
32.3	032S1	Kummel Creek	Fish & Aquatic Life	PN	25	Open Cut
37.8	037S1	W. Branch Milwaukee River	Fish & Aquatic Life	PN	30	Open Cut
37.9	037S2	Unnamed tributary to W. Branch Milwaukee River	Fish & Aquatic Life	IT	< 10	Open Cut
39.1	039S1	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
39.1	039S1	Unnamed Stream	Fish & Aquatic Life	IT		Open Cut
40.3	040S1	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
40.4	040S1	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
41.4	041S1	Unnamed Stream	Limited Forage Fish	IT	< 10	Open Cut
41.8	041S2	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
42.4	042S1	Unnamed tributary to De Neveu Creek	Limited Forage Fish	PN	< 10	Open Cut
42.6	042S2	Unnamed tributary to De Neveu Creek	Limited Forage Fish	IT	< 10	Open Cut
42.8	042S3	Unnamed tributary to De Neveu Creek	Limited Forage Fish	PN	< 10	Open Cut
44.6	044S1	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
46.0	046S1	Unnamed tributary to Taycheedah Creek	Fish & Aquatic Life	PN	< 10	Open Cut
46.7	046S2	Unnamed tributary to Taycheedah Creek	Fish & Aquatic Life	FX	< 10	Open Cut
47.2	047S1	Taycheedah Creek	Fish & Aquatic Life	PN	< 10	Open Cut
49.2	049S1	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
49.3	049S2	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
49.4	049S3	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
49.4	049S4	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
51.4	051S1	Sheboygan River	Limited Forage Fish	PN	< 10	Open Cut
52.8	052S1	Unnamed Stream	Limited Forage Fish	IT	< 10	Open Cut
56.4	056S1	S. Branch Manitowoc River	Fish & Aquatic Life	PN	20	Open Cut
57.7	057S2	Pipe Creek	Fish & Aquatic Life	PN	< 10	Open Cut
60.3	060P1	Unnamed Pond	N/A	N/A	75	Open Cut
60.6	060S1	Unnamed tributary to S. Branch Manitowoc River	Fish & Aquatic Life	PN	< 10	Open Cut
65.0	065S1	Unnamed tributary to S. Branch Manitowoc River	Fish & Aquatic Life	IT	< 10	Open Cut
66.2	066S1	Unnamed tributary to Stony Brook	Fish and Aquatic Life	IT	< 10	Open Cut
66.8	066S2	Stony Brook	Fish and Aquatic Life	PN	20	Open Cut
71.0	071S1	Killsnake River	Fish & Aquatic Life	PN	20	Open Cut
72.1	072S1	Unnamed tributary to Killsnake River	Fish & Aquatic Life	IT	< 10	Open Cut
72.8	072S1	Unnamed tributary to Killsnake River	Fish & Aquatic Life	IT	< 10	Open Cut
73.1	073S1	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
73.4	073S2	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
73.9	073S3	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut

Guardian Pipeline Expansion and Extension Project Waterbodies Crossed by the Pipeline ^{a/}						
Approx. Milepost	Feature ID	Waterbody Name ^{b/}	Water Quality Classification ^{c/}	Flow Regime ^{d/}	Approx. Water Width (ft) ^{e/}	Crossing Method
74.3	074S1	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
74.7	074S2	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
74.8	074S3	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
75.4	075S1	Unnamed tributary to N. Branch Manitowoc River	Fish & Aquatic Life	IT	< 10	Open Cut
76.2	075S1	Unnamed tributary to N. Branch Manitowoc River	Limited Forage Fish	IT	< 10	Open Cut
76.8	076S2	Unnamed tributary to N. Branch Manitowoc River	Limited Forage Fish	IT	< 10	Open Cut
77.6	077S1	Unnamed tributary to N. Branch Manitowoc River	Limited Forage Fish	IT	< 10	Open Cut
77.9	077S2	Unnamed tributary to N. Branch Manitowoc River	Limited Forage Fish	IT	< 10	Open Cut
78.9	078S1	Unnamed tributary to N. Branch Manitowoc River	Limited Forage Fish	IT	< 10	Open Cut
78.9	078S2	Unnamed tributary to N. Branch Manitowoc River	Limited Forage Fish	IT	< 10	Open Cut
79.8	079S1	Kankapot Creek	Fish & Aquatic Life	PN	< 10	Open Cut
80.6	080S3	Unnamed tributary to Plum Creek	Fish & Aquatic Life	IT	< 10	Open Cut
80.9	080S1	Unnamed tributary to Plum Creek	Fish & Aquatic Life	IT	< 10	Open Cut
83.8	083S2	Unnamed tributary to Plum Creek	Fish & Aquatic Life	IT	< 10	Open Cut
85.1	085S1	Unnamed tributary to Plum Creek	Fish & Aquatic Life	IT	< 10	Open Cut
85.4	085S2	Plum Creek	Fish & Aquatic Life	PN	< 10	Open Cut
87.3	087S1	Unnamed tributary to East River	Fish & Aquatic Life	IT	< 10	Open Cut
87.4	087S2	Unnamed tributary to East River	Fish & Aquatic Life	IT	< 10	Open Cut
88.5	088S1	Unnamed tributary to East River	Fish & Aquatic Life	IT	< 10	Open Cut
90.3	090S1	Unnamed tributary to East River	Fish & Aquatic Life	IT	< 10	Open Cut
93.0	093S1	Fox River	Fish & Aquatic Life	PN	1100	HDD
93.5	093S4	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
93.7	093S2	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
94.1	094S1	Unnamed tributary to Ashwaubenon Creek	Fish & Aquatic Life	IT	< 10	Open Cut
94.6	094S2	Ashwaubenon Creek	Fish & Aquatic Life	PN	< 10	Open Cut
96.3	096S2	Unnamed tributary to Ashwaubenon Creek	Fish & Aquatic Life	IT	< 10	Open Cut
97.1	097S1	Hemlock Creek	Fish & Aquatic Life	PN	< 10	Open Cut
98.4	098S1	Unnamed tributary to Dutchman Creek	Fish & Aquatic Life	IT	< 10	Open Cut
98.6	098S2	Dutchman Creek	Fish & Aquatic Life	PN	< 10	Open Cut
99.7	099S1	Unnamed tributary to Dutchman Creek	Fish & Aquatic Life	IT	< 10	Open Cut
100.0	100S1	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut

Guardian Pipeline Expansion and Extension Project Waterbodies Crossed by the Pipeline ^{a/}						
Approx. Milepost	Feature ID	Waterbody Name ^{b/}	Water Quality Classification ^{c/}	Flow Regime ^{d/}	Approx. Water Width (ft) ^{e/}	Crossing Method
101.4	101S1	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
101.7	101S2	Unnamed tributary to Duck Creek	Fish & Aquatic Life	IT	< 10	Open Cut
101.9	101S3	Unnamed tributary to Duck Creek	Fish & Aquatic Life	IT	< 10	Open Cut
102.6	102S1	Duck Creek	Fish & Aquatic Life	PN	35	TBD ^{h/}
102.8	102S2	Unnamed tributary to Duck Creek	Fish & Aquatic Life	IT	< 10	Open Cut
103.2	103S1	Unnamed tributary to Duck Creek	Fish & Aquatic Life	IT	< 10	Open Cut
103.8	103S2	Unnamed tributary to Duck Creek	Fish & Aquatic Life	IT	< 10	Open Cut
105.6	105S1	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
106.3	106S2	Unnamed Stream	Fish & Aquatic Life	IT		Open Cut
106.9	106S1	Unnamed Stream	Fish & Aquatic Life	IT	< 10	Open Cut
107.8	108S1	Trout Creek	Fish & Aquatic Life	IT	< 10	Open Cut
108.3	108S2	Unnamed tributary to Trout Creek	Fish & Aquatic Life	IT	< 10	Open Cut
109.5	109S1	S. Branch Suamico River	Fish & Aquatic Life	IT	< 10	Open Cut
109.8	109S2	Unnamed tributary to S. Branch Suamico River	Fish & Aquatic Life	IT	< 10	Open Cut

^{a/} Based on USGS Mapping, the Wisconsin DNR 24k Hydrography layer (<http://maps.dnr.state.wi.us>), and Guardian's field surveys to date. Italicized rows indicate areas where field investigations have not been completed due to a lack of access.

^{b/} Waterbody names are based on Wisconsin DNR 24k Hydrography layer naming conventions.

^{c/} **Fish & Aquatic Life** – The Default use designation that applies to surface waters when the WDNR has not completed a formal site visit of a stream segment. The default use designation is used to make decisions for issuing discharge permits unless an alternate use designation is specified in either Ch. NR 102 or Ch. NR 104 of the Wisconsin Administrative Code. The default use designation is equivalent to a Warm Water Sport Fish Community classification.

Warm Water Sport Fish Community – Surface waters assigned this use designation support a diverse community of game fish, forage fish, and other aquatic life that are not tolerant to organic pollution. Wastewater discharges to these waterways may not lower the dissolved oxygen content in the water to less than 5 mg/L.

Limited Forage Fish Community – Surface waters assigned this use designation support a community of forage fish and other non-fish aquatic life that are moderately tolerant to organic pollution. Wastewater discharges to these waterways may not lower the dissolved oxygen content in the water to less than 3 mg/L.

Limited Aquatic Life Community – Surface waters assigned this use designation support a community of a small number of forage fish species and other non-fish aquatic life species that are very tolerant to organic pollution. Wastewater discharges to these waterways may not lower the dissolved oxygen content in the water to less than 1 mg/L.

^{d/} Based on Wisconsin DNR 24k Hydrography layer designations and aerial photography interpretation and/or site visit for unmapped streams:

IT = Intermittent
PN = Perennial
FX = Fluctuating

^{e/} Estimated from 2005 and 2006 aerial photography.

^{f/} Proposed as Limited Aquatic Life.

^{g/} Blasting is likely necessary to install this crossing.

^{h/} Guardian is continuing to consult with the Oneida Tribe regarding the crossing method for Duck Creek.

Appendix J

Horizontal Direction Drill Contingency Plan for Inadvertent Release of Drilling Fluid

Guardian Pipeline Expansion and Extension Project

Resource Report 2 - Appendix 2D Contingency Plan for Inadvertent Release of Drilling Fluid During Horizontal Directional Drilled Waterbody Crossings

1.0 INTRODUCTION

This directional drill contingency plan provides specific procedures and steps to contain inadvertent releases of drilling mud for various waterbodies crossed using horizontal directional drilling techniques. While waterway crossings vary substantially in installation depth, current profile data indicates minimum depths of cover of over 30 feet. Pipe used for the crossing of the Rock River will be 30-inch O.D. x 0.500-inch wall, grade X-70. Pipe used for the crossing of the Fox River will be 20-inch O.D. x 0.375 inch wall, grade X-60.

Elements of this plan include:

- Monitoring and Sampling Procedures;
- Notification Procedures;
- Corrective Action and Cleanup; and
- Abandonment.

2.0 MONITORING AND SAMPLING PROCEDURES

The Environmental Inspector(s) and construction personnel will continuously monitor operations during drilling activities. Monitoring will include:

- Inspection along the drill path, including monitoring the waterbody for evidence of a release.
- Continuous examination of drilling fluid pressures and returns flows.
- The drilling operator will provide information regarding drilling conditions to the Environmental Inspector(s) during the course of drilling activities.

- In the case of an in-stream release, monitoring may include an inspection by boat to determine plume movement within the waterbody.
- If an in-stream release occurs, the Environmental Inspector(s) will collect drilling fluid returns at the borehole entry location for future analysis, as required.
- Monitoring will be documented by the Environmental Inspector(s). Guardian will keep photographs of release events on record.

3.0 NOTIFICATION PROCEDURES

If in the course of an inspection an inadvertent release is discovered, steps will be taken by construction personnel to contain the release as described below in the Corrective Action and Cleanup section (Section 4.0). Notification procedures of Guardian construction management personnel and regulatory agencies are detailed in this section.

If monitoring indicates an in-stream release is occurring, the Environmental Inspector(s) will immediately notify Guardian's construction management personnel.

Guardian will notify the Federal Energy Regulatory Commission (FERC) as soon as possible by telephone and facsimile of an in-stream release event, detailing the nature of the release and corrective actions being taken. FERC will determine whether additional measures need to be implemented. If it is determined that the release can not be remedied without causing additional environmental impact, Guardian will request FERC to allow the drilling operations to continue.

If a release occurs that may migrate downstream and affect water quality, downstream water users will be contacted by Guardian. The contacts and telephone numbers of downstream users will be assimilated prior to commencement of construction, and maintained on-site.

4.0 CORRECTIVE ACTION AND CLEANUP

By monitoring drilling operations continuously, Guardian intends to correct problems before they occur. However, if a release does occur, the following measures will be implemented to stop or minimize the release and to clean it up:

- The drilling contractor will decide what modifications to make to the drilling technique or composition of drilling fluid (*i.e.*, thickening of fluid by increasing bentonite content) to reduce or stop minor losses of drilling fluid.
- If a minor bore path void is encountered during drilling, making a slight change in the direction of the bore path may avoid loss of circulation.
- If the borehead becomes lodged resulting in loss of drilling pressure, the borehole may be sized by moving the borehead back and forth to dislodge the stuck materials.
- If a release occurs within the waterbody, FERC will be contacted as soon as possible by Guardian. Guardian will inform FERC about any threat to public health and safety and explain whether or not the release can be corrected without incurring additional environmental impact. If necessary, drilling operations will be reduced or suspended to assess the extent of the release and to implement corrective actions.
- If public health and safety are threatened, drilling fluid circulation pumps will be turned off. This measure will be taken as a last resort because of the potential for drill hole collapse resulting from loss of down-hole pressure.
- If monitoring indicates that the intake water quality at downstream user locations is impacted to the extent that it is no longer suitable for treatment, alternative water sources (*i.e.*, trucked or bottled water) will be provided to impacted users.

Land Release:

- If a land release is detected, the drilling crew will take immediate corrective action to contain the release and to prevent migration off-site.
- The contractor will construct pits and berms around the release area to contain inadvertent releases. .
- Any drilling mud released will be pumped by contractor personnel into a mud-processing unit for recycling of drilling fluid and separation of cuttings.

- Additional berms will be constructed around the release areas as directed by the Environmental Inspector(s) to prevent release materials from flowing into the waterbody or wetlands.
- Containment equipment including earth moving equipment, portable pumps, hand tools, sand, hay bales, silt fencing, and lumber will be readily available and stored at the drilling site.
- If the amount of an on-land release does not allow practical collection, the affected area will be diluted with fresh water and allowed to dry. Steps will be taken (such as berm, silt fence and/or hay bale installation) to prevent silt-laden water from flowing into the waterbody.
- If hand tools cannot contain a small on-land release, small collection sumps (less than 5 cubic yards) may be constructed to pump the release material into the mud processing system.

5.0 ABANDONMENT

If corrective actions do not prevent or control releases from occurring into the waterbody, Guardian may opt to re-drill the hole along a different alignment or suspend the project altogether. In either case, the following procedures will be implemented to abandon the drill hole.

- The method for sealing the abandoned drill hole is to pump thickened drilling fluid into the hole as the drill assembly is extracted, and using cement grout to make a cap.
- Closer to the surface (within approximately 10 feet of the surface), a soil cap will be installed by filling with soil extracted during construction of the pit and berms.
- The borehole entry location will be graded and seeded by the contractor to its original grade and condition after the drill hole has been abandoned.

Appendix K

Wetlands Crossed by the Proposed Pipeline

Guardian Pipeline Expansion and Extension Project Wetlands Crossed by the Pipeline ^{a/}							
Approx. Milepost	Wetland I.D.	WWI Classification ^{b/}	NWI Classification ^{c/}	Survey Type ^{d/}	Approximate Crossing Length (ft) ^{e/}	Acreage Affected During Construction ^{f/}	Acreage Affected During Operation ^{g/}
2.5	002W2	E4Kf	PEM2Af	FD	22	0.10	0.00
3.1	003W1	E1Kf	PEM1Yf	FD	906	2.62	0.00
5.4	005W1	E1K	PEM1Y	FD	91	0.15	0.00
6.3	006W1	E4Kf	PEM2Af	FD	0	1.00	0.00
6.6	006W2	E1K	PEM1Y	FD	65	0.11	0.00
9.8	009W1	T3Kw/E1K	PFO1C/PEM1C	FD	1330	2.50 ^{h/}	0.00 ^{h/}
10.5	010W1	E4Kf	PEM2Af	FD	392	1.08	0.00
10.8	010W2	E1K	PEM1Y	FD	0	0.07	0.00
10.9	010W3	E1Kf	PEM1Af	FD	792	2.45	0.00
11.5	011W2	E1Kf	PEM1Yf	FD	134	0.38	0.00
11.7	011W3	E1Kw	PEM1C	FD	540	1.51	0.00
12.4	OS_W01	E1K	PEM1E	OS	33	0.38	0.00
13.0	013W1	E1Kf	PEM1Yf	FD	125	0.19	0.00
15.1	015W1	E4Kf	PEM2Af	FD	0	0.02	0.00
15.2	015W2	E1K	PEM1Y	FD	95	0.29	0.00
15.4	015W3	E4Kf	PEM2Af	FD	33	0.09	0.00
15.6	015W4	E4Kf	PEM2Af	FD	0	0.08	0.00
16.0	016W1	E1K	PEM1Y	FD	64	0.15	0.00
17.7	017W1	T3K/S3K	PFO1Y/PSS1Y	FD	424	0.66	0.30
18.8	018W1	E1Kf	PEM1Yf	FD	201	0.36	0.00
21.9	021W1	E4Kf	PEM2Af	FD	150	0.38	0.00
22.2	022W1	E4K	PEM2C	FD	53	0.12	0.00
23.5	023W1	E1Kf	PEM1Yf	FD	167	0.31	0.00
23.9	023W3	E4Kf	PEM2Af	FD	136	0.23	0.00
25.4	025W1	E4Kf	PEM2Af	FD	50	0.09	0.00
27.9	027W2	E4Kf	PEM2Af	FD	68	0.09	0.00
31.1	OS_W02	E1Kf	PEM1Ef	FD	1200	2.20	0.00
32.3	032W1	E1K	PEM1C	FD	256	0.51	0.00
37.8	037W1	E1K/T3K	PEM1C/PFO1C	FD	319	0.81	0.12
38.5	OS_W19	E1Kg	PEM1E	OS	100	0.18	0.00
38.9	OS_W03	E1Kf	PEM1Ef	OS	500	0.86	0.00
39.0	OS_W04	E1Kf	PEM1Ef	OS	300	0.52	0.00
40.2	040W1	E1Kf	PEM1Yf	FD	1609	3.83	0.00
41.7	041W1	E1K	PEM1Y	FD	67	0.12	0.00
41.8	041W2	T1K/E1k	PFO1Y/PEM1Y	FD	453	0.71	0.20
42.0	042W1	T3K	PFO1Y	FD	293	0.53	0.20
42.5	042W2	E1K	PEM1C	FD	90	0.15	0.00
45.9	045W1	E1K	PEM1Y	FD	366	0.61	0.00
46.1	046W1	E1K/T3K	PEM1C/PFO1C	FD	98	0.17	0.00

Guardian Pipeline Expansion and Extension Project Wetlands Crossed by the Pipeline ^{a/}							
Approx. Milepost	Wetland I.D.	WWI Classification ^{b/}	NWI Classification ^{c/}	Survey Type ^{d/}	Approximate Crossing Length (ft) ^{e/}	Acreage Affected During Construction ^{f/}	Acreage Affected During Operation ^{g/}
46.2	046W2	E1K	PEM1Y	FD	151	0.26	0.00
46.6	046W3	E1K/S3K	PEM1C/PSS1C	FD	166	0.28	0.03
49.4	049W1	E1K	PEM1Y	FD	1124	1.92	0.00
51.4	051W1	E1K	PEM1C	FD	281	0.49	0.00
56.9	056W1	E1Kf	PEM1Cf	FD	58	0.10	0.00
57.6	057W1	E1K	PEM1Y	FD	76	0.11	0.00
57.7	057W2	E1K	PEM1C	FD	130	0.17	0.00
60.2	060W1	E1Kx	PEM1Cx	FD	166	0.28	0.00
60.6	OS_W05	E1Kf	PEM1Ef	OS	122	0.40	0.00
64.5	OS_W06	E2Kf	PEM1Ef	OS	272	0.88	0.00
64.9	064W1	T1K/E1K	PFO1E/PEM1E/	FD	594	1.36	0.00
66.7	OS_W07	T3/S3K	PFO1E/PSS1E	OS	501	1.03	0.28
69.3	069W1	E1K	PEM1Y	FD	0	0.07	0.00
69.7	069W2	E1K	PEM1Y	FD	1962	4.63	0.00
70.1	070W1	E1Kf	PEM1Af	FD	308	1.13	0.00
70.9	070W2	E1K	PEM2C	FD	231	0.40	0.00
71.2	071W1	E4Kf	PEM2Af	FD	0	0.04	0.00
71.3	071W2	E4Kf	PEM2Af	FD	39	0.07	0.00
71.4	071W3	E4Kf	PEM2Af	FD	0	0.08	0.00
71.7	OS_W08	E1K/S3K	PEM1E/PSS1E	OS	474	0.63	0.03
72.0	072W1	E1K	PEM1C	FD	107	0.22	0.00
72.3	072W2	E4Kf	PEM2Af	FD	136	0.13	0.00
72.4	072W3	E4Kf	PEM2Af	FD	138	0.30	0.00
72.5	072W5	E4Kf	PEM2Af	FD	65	0.19	0.00
72.7	072W6	E4Kf	PEM2Af	FD	0	0.02	0.00
73.3	073W1	E1Kf	PEM1Cf	FD	47	0.08	0.00
73.4	073W2	E1Kf	PEM1Ef	FD	471	0.62	0.00
73.6	073W3	T3K	PFO1C	FD	160	0.28	0.10
73.7	073W4	T3K	PFO1C	FD	245	0.43	0.16
73.9	073W5	T3K	PFO1C	FD	185	0.28	0.12
74.5	074W1	E4Kf	PEM2Af	FD	0	0.02	0.00
74.7	074W2	E1Kf	PEM1Y	FD	11	0.03	0.00
76.7	076W2	E1Kf	PEM1Yf	FD	226	0.79	0.00
76.8	076W3	E1Kf	PEM1Yf	FD	58	0.10	0.00
77.1	077W1	E1Kf	PEM1Yf	FD	0	0.12	0.00
77.5	OS_W20	E1K	PEM1B	OS	350	0.60	0.00
77.9	077W3	E1K	PEM1C	FD	288	0.69	0.00
78.6	078W1	E1Kf/S3K	PEM1Cf/PSS1C	FD	1687	4.30	0.10
78.9	078W2	E1K	PEM1Y	FD	347	0.57	0.00

Guardian Pipeline Expansion and Extension Project Wetlands Crossed by the Pipeline ^{a/}							
Approx. Milepost	Wetland I.D.	WWI Classification ^{b/}	NWI Classification ^{c/}	Survey Type ^{d/}	Approximate Crossing Length (ft) ^{e/}	Acreage Affected During Construction ^{f/}	Acreage Affected During Operation ^{g/}
79.7	OS_W09	E1Kf	PEM1Ef	OS	245	0.84	0.00
80.3	080W1	T3K/E1K	PFO1C/PEM1C	FD	145	0.28	0.10
80.4	080W2	T3K/E1K	PFO1C/PEM1C	FD	0	0.04	0.01
80.6	080W4	T3K/E1K	PFO1C/PEM1C	FD	0	0.01	0.00
80.6	080W5	T3K/E1K	PFO1CPEM1C	FD	24	0.01	0.01
80.7	080W6	T3K/E1K	PFO1C/PEM1C	FD	0	0.01	0.00
81.2	OS_W10	E1Kf	PEM1Ef	OS	261	0.59	0.00
81.8	081W1	T3K/E2K	PFO1C/PSS1C	FD	166	0.21	0.05
82.3	082W1	E4Kf	PEM2Cf	FD	30	0.06	0.00
82.9	082W2	E4Kf	PEM2Af	FD	48	0.33	0.00
83.8	OS_W11	E1Kf	PEM1Ef	OS	194	0.33	0.00
83.9	OS_W12	S3K	PSS1E	OS	16	0.06	0.00
85.4	085W1	E1K/T3K	PEM1Y/PFO1Y	FD	102	0.18	0.03
85.5	085W2	E1K	PEM1Y	FD	139	0.21	0.00
90.3	OS_W13	E1K	PEM1E	OS	33	0.06	0.00
90.7	090W2	E1Kf	PEM1Yf	FD	21	0.04	0.00
90.7	090W3	E4Kf	PEM2Cf	FD	0	0.07	0.00
93.3	093W1	E4K	PEM2C	FD	25	0.10	0.00
94.5	094W1	E1K	PEM1C	FD	144	0.31	0.00
96.3	096W1	E1K	PEM1C	FD	59	0.10	0.00
97.1	OS_W14	E1Kf	PEM1Ef	OS	30	0.07	0.00
98.6	OS_W17	E1K	PEM1Ef	OS	55	0.09	0.00
100.0	OS_W18	E1Kf	PEM1Bf	OS	176	0.41	0.00
100.8	100W1	E1K	PEM1Y	FD	79	0.12	0.00
101.1	101W1	E1Ka	PEM1Y	FD	179	0.25	0.00
101.3	101W2	E4Kf	PEM2Af	FD	0	0.02	0.00
101.7	101W3	T3Kw/S3Kw	PFO1C/PSS1C	FD	148	0.29	0.07
101.9	101W4	T3K/S3K	PFO1C/PSS1C	FD	188	0.32	0.08
102.5	102W1	T3Kw/S3Kw	PFO1C/PSS1C	FD	472	0.70	0.28
102.6	102W2	S1K/E1K	PSS1C/PEM1C	FD	240	0.35	0.09
103.2	OS_W21	E1K/S3K	PEM1C/PSS1C	OS	260	0.35	0.05
104.6	104W1	E1Kx	PEM1Ax	FD	0	0.11	0.00
104.7	104W2	E1Kx	PEM1Yx	FD	92	0.12	0.00
104.9	104W3	T3K	PFO1C	FD	56	0.06	0.04
105.2	105W1	E1Kx	PEM1Yx	FD	250	0.35	0.00
106.3	106W1	E4Kf	PEM2Af	FD	29	0.08	0.00
106.6	106W3	E4Kf	PEM2Af	FD	25	0.05	0.00
106.7	106W4	E4Kf	PEM1Af	FD	99	0.13	0.00
106.8	106W5	E4Kf	PEM2Af	FD	0	0.05	0.00

Guardian Pipeline Expansion and Extension Project Wetlands Crossed by the Pipeline ^{a/}							
Approx. Milepost	Wetland I.D.	WWI Classification ^{b/}	NWI Classification ^{c/}	Survey Type ^{d/}	Approximate Crossing Length (ft) ^{e/}	Acreage Affected During Construction ^{f/}	Acreage Affected During Operation ^{g/}
107.0	106W6	E4Kf	PEM2Af	FD	0	0.01	0.00
107.1	107W3	E4Kf	PEM2Af	FD	24	0.03	0.00
107.2	107W5	E4Kf	PEM2Af	FD	0	0.03	0.00
108.1	108W2	E4Kf	PEM2Af	FD	0	0.08	0.00
108.1	108W3	E4Kf	PEM2Af	FD	0	0.05	0.00
108.2	108W4	E4Kf	PEM2Af	FD	0	0.08	0.00
109.4	109W1	S3K/E1K	PSS1Y/PEM1Y	FD	1054	1.58	0.07
Pipeline Total					28,447	59.98	2.52
<p>^{a/} Italicized rows indicate parcels where no access has been granted by landowners and field investigations have not yet been completed. Listed features in italicized rows (and designated with an "OS" ID) are inferences based on off-site analysis.</p> <p>^{b/} Types listed are those occurring within the 200-foot-wide field survey corridor based on the Wisconsin Wetland Inventory codes. For wetlands with multiple types, impacts may not occur to all types listed.</p> <p>E1K – Emergent/Wet Meadow, Persistent, Palustrine. E1Kf – Emergent/Wet Meadow, Persistent, Palustrine, Farmed. E1Kx – Emergent/Wet Meadow, Persistent, Palustrine, Excavated. E2K – Emergent/Wet Meadow, Narrow-Leaved Persistent, Palustrine. E4Kf – Emergent/Wet Meadow, Non-Persistent, Palustrine, Farmed. S3K – Scrub/Shrub, Broad-Leaved Deciduous, Palustrine. S3K – Scrub/Shrub, Broad-Leaved Deciduous, Palustrine, Floodplain. T3K – Forested, Broad-Leaved Deciduous, Palustrine. T3K – Forested, Broad-Leaved Deciduous, Palustrine, Floodplain.</p> <p>^{c/} Types listed are those occurring within the 200-foot-wide field survey corridor based on the National Wetland Inventory codes. For wetlands with multiple types, impacts may not occur to all types listed.</p> <p>PEM1B – Palustrine, Emergent, Persistent, Saturated. PEM1Bf – Palustrine, Emergent, Persistent, Saturated, Farmed. PEM1C – Palustrine, Emergent, Persistent, Seasonally Flooded. PEM1Cx – Palustrine, Emergent, Persistent, Seasonally Flooded, Excavated. PEM1E – Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated. PEM1Ef – Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated, Farmed. PEM1Ex – Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated, Excavated. PEM1H – Palustrine, Emergent, Persistent, Permanently Flooded. PEM1Y – Palustrine, Emergent, Persistent, Saturated Semi-Permanent - Seasonal. PEM2Af – Palustrine, Emergent, Nonpersistent, Temporarily Flooded, Farmed. PEM2Ef – Palustrine, Emergent, Nonpersistent, Seasonally Flooded/Saturated, Farmed. PSS1B – Palustrine, Shrub-Scrub, Broad-Leaved, Saturated. PSS1C – Palustrine, Shrub-Scrub, Broad-Leaved, Seasonally Flooded. PSS1E – Palustrine, Shrub-Scrub, Broad-Leaved, Seasonally Flooded/Saturated. PFO1C – Palustrine Forested, Broad-Leaved Deciduous, Seasonally Flooded. PFO1E – Palustrine Forested, Broad-Leaved Deciduous, Seasonally Flooded/Saturated.</p> <p>^{d/} FD = Field Delineated, OS = Off Site Delineation.</p> <p>^{e/} Length of centerline crossing calculated from Guardian's field surveys completed on parcels where access was granted and estimated from off-site analysis elsewhere, rounded to the nearest foot. Zeroes indicate wetlands not crossed by the project centerline.</p> <p>^{f/} Based on a 75-foot construction corridor through wetlands and standard construction widths in uplands and agricultural lands.</p> <p>^{g/} Based on existing community type(s) within 15 feet of the project centerline. In wetlands, Guardian will maintain a ten-foot strip over the pipeline in an herbaceous condition. Trees greater than 15 feet in height within 15 feet on either side of the pipeline centerline may also be cut in accordance with Guardian's right-of-way maintenance Procedures. Values rounded to nearest hundredth of an acre.</p> <p>^{h/} Impacts on the forested portion of the wetland associated with the Rock River will be avoided by using the horizontal directional drill (HDD) technique. Impacts on a portion of the emergent component of this wetland will result from work space associated with the HDD.</p>							

Appendix L

Cultural Resource Consultations

TABLE L-1 Guardian Pipeline Expansion and Extension Project Summary of Consultations with the BIA-Midwest Regional Office	
Date	Summary
6/8/2006	Telephone call initiating consultation for the project and requesting ARPA application
8/14/2006	Telephone call from Guardian to the BIA requesting review of ARPA application
8/14/2006	Letter from Guardian to BIA introducing the project and requesting review of the ARPA application
8/15/2006	Telephone call from Guardian to BIA concerning the status of ARPA application review process
8/16/2006	Fax from BIA to Guardian transmitting a copy of the ARPA permit
8/24/2006	Telephone call from Guardian to BIA concerning the possible amendment of the ARPA permit
8/29/2006	Letter from Guardian to BIA requesting an amendment to the ARPA permit
8/30/2006	Fax from BIA to Guardian transmitting a copy of the amended ARPA permit
9/14/2006	Telephone call from Guardian to BIA requesting clarification on reporting process under the ARPA permit
10/9/2006	Letter from Guardian to the BIA transmitting a copy of its survey report for the pipeline facilities
1/30/2007	Telephone conversation from Bureau of Indian Affairs (Mr. James Myster) with Guardian's contractor (NRG) about the reporting process under ARPA. NRG discussed the deadlines for reports under the ARPA permit and explained that the schedule would not work given the direction by the Oneida THPO to include Phase II investigation results within the same report as the revised Phase I report. BIA indicated that while unusual, this would be acceptable. Guardian's contractor committed to sending two copies of the revised Phase I report (along with the Phase II information if that phase of work is performed) as soon as possible.

TABLE L-2 Guardian Pipeline Expansion and Extension Project Summary of Consultations with the Oneida Nation	
Date	Summary
3/11/2006	Meeting between Guardian and representatives of the Oneida Tribe to introduce the G-II Project
3/22/2006	Letter from Guardian to the THPO inviting the THPO to participate in FERC's Pre-Filing Process and the Section 106 process
4/4/2006	Meeting Between Guardian and the Oneida Facilities Management Committee to introduce the G-II Project
4/13/2006	Letter from Guardian to the THPO providing FERC's pre-filing docket number for the G-II Project and information on accessing project documents on FERC's website.
4/17/2006	Meeting between Guardian and representatives of the Oneida Land Management Commission to discuss the G-II Project
4/24/2006	Telephone call from the THPO to Guardian regarding the status of a site file search for reservation lands and the Oneida Tribe's Cultural Properties Survey Request Form
4/24/2006	E-mail from the THPO to Guardian transmitting a copy of the Cultural Properties Survey Request Form
4/24/2006	Open House for landowners on the Oneida Reservation to discuss the project with Guardian
5/12/2006	E-mail from Guardian to the THPO transmitting the completed Cultural Properties Survey Request Form
5/18/2006	Meeting between Guardian and the Oneida Staff to discuss the G-II Project
5/30/2006	E-mail from Guardian to the THPO to request a project meeting
5/31/2006	E-mail from Guardian to the THPO revising the previous request for a project meeting
7/6/2006	E-mail from Guardian to the THPO requesting a review of latest pipeline route on the Oneida Reservation; a set of topographic quadrangles with the propose route was provided
7/10/2006	Telephone message from the THPO to Guardian indicating that a review of identified cultural resources along the route was being completed and agreeing to a meeting to discuss the results
7/10/2006	Telephone message from Guardian to THPO suggesting a meeting date for review of cultural resources within reservation.
7/10/2006	Transmittal of a copy of the Revokable Limited Use Permit signed by the tribe which allows for survey of tribal lands by Guardian representatives.
7/12/2006	Telephone call from the THPO to Guardian regarding the status of a site file search and suggesting dates for a meeting
7/18/2006	E-mail from Guardian to tribe inviting the tribe to participate in meeting to review the project
7/25/2006	E-mail from Guardian to tribe inviting the tribe to participate in meeting to review the project
7/26/2006	Telephone call from tribe to Guardian agreeing to host the meeting to review the project
7/27/2006	Meeting with Oneida and Stockbridge-Munsee THPOs to discuss sensitivity of cultural properties and the ARPA application
7/28/2006	E-mail from Guardian to tribe transmitting a list of tribes consulted for the project
7/31/2006	E-mail from Guardian to tribe transmitting updated topographic quadrangles of project
8/7/2006	E-mail from Guardian to tribe transmitting the draft ARPA application with a request for information on curation requirements
8/10/2006	Telephone call from tribe to Guardian updating the progress of the ARPA application
8/11/2006	Telephone call from tribe to Guardian updating information on curation requirements
8/14/2006	Telephone call from tribe to Guardian identifying the University of Illinois as temporary curation facility and the Oneida Nation Museum as permanent curation facility for recovered artifacts
8/14/2006	Fax from tribe to Guardian providing approval for the ARPA application
8/21/2006	E-mail from Guardian to the THPO transmitting a copy of the approved ARPA permit
8/24/2006	Meeting between Guardian and THPO to review the survey areas and cultural resources in the vicinity
8/25/2006	Meeting between Guardian and tribe to review identified cultural resources along the route on Oneida lands
8/25/2006	E-mail from Guardian to THPO requesting an amendment to the ARPA permit

<p>TABLE L-2</p> <p>Guardian Pipeline Expansion and Extension Project</p> <p>Summary of Consultations with the Oneida Nation</p>	
Date	Summary
8/28/2006	E-mail from THPO agreeing to amend the ARPA permit
8/28/2006	Telephone call from Guardian to the THPO to discuss reporting requirements for Oneida lands
9/8/2006	Telephone call from Guardian to the THPO inviting the THPO to monitor fieldwork
9/12/2006	E-mail from Guardian to THPO defining reporting procedures for Oneida lands
9/12/2006	E-mail from Guardian to THPO providing artifact inventory of recovered materials from Oneida lands
9/14/2006	E-mail from Guardian to the THPO transmitting a copy of the revised ARPA permit
10/9/2006	Letter from Guardian to the THPO transmitting a copy of its survey reports for the pipeline facilities
1/2/2007	E-mail from THPO to Guardian's contractor (NRG) transmitting recommendations on final survey report for the Oneida Reservation
1/2/2007	E-mail from Guardian's contractor (NRG) to the THPO requesting clarification on recommendations made on final survey report for the Oneida Reservation
1/3/2007	E-mail from THPO to Guardian's contractor (NRG) providing clarifications on recommendations made on final survey report for the Oneida Reservation
1/11/2007	E-mail from Guardian's contractor (NRG) to THPO requesting guidance on preparation of artifacts for curation at Oneida Nation Museum
1/15/2007	E-mail from THPO to Guardian's contractor (NRG) indicating that guidance on preparation of artifacts for curation at Oneida Nation Museum will be provided when it becomes available.
1/25/2007	Letter from Guardian's contractor (NRG) to THPO transmitting Unanticipated Discoveries Plan for the Guardian II Project

<p style="text-align: center;">TABLE L-3 Guardian Pipeline Expansion and Extension Project Summary of Consultations with Indian Tribes</p>		
Tribe	Date	Request(s)
Kickapoo of Kansas Tribal Council	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	5/31/2006	Follow-up telephone call from Guardian to the tribe; voicemail message
	6/12/2006	Follow-up telephone call from Guardian to the tribe; voicemail message
Kickapoo of Oklahoma Business Committee	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	5/31/2006	Follow-up telephone call from Guardian to the tribe; message with receptionist
	6/12/2006	Follow-up telephone call from Guardian to the tribe; message with receptionist
Kickapoo Traditional Tribe of Texas	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	5/31/2006	Follow-up telephone call from Guardian to the tribe; message with receptionist
	5/31/2006	Telephone call from the tribe to Guardian requesting a fax copy of Guardian's 3/23/06 consultation letter
	5/31/2006	Fax from Guardian to the tribe transmitting a second copy of the 3/23/06 consultation letter
	6/14/2006	Phone call from the tribe to Guardian requesting that another copy of the initial letter be faxed and e-mailed.
	6/14/2006	E-mail and Fax from Guardian to the tribe transmitting a third copy of the 3/23/06 consultation letter
	7/25/2006	Fax from tribe to Guardian indicating they do not wish to participate in the consultation process
Sac & Fox Nation of Mississippi in Iowa	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	4/5/2006	Letter from the tribe to Guardian requesting notification if human remains are discovered
	6/1/2006	Telephone call from Guardian to the tribe confirming that Guardian will notify the tribe if human remains are discovered
Sac & Fox Nation of Missouri in Kansas and Nebraska	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	4/3/2006	Letter from the tribe to Guardian requesting notification if human remains are discovered
	5/31/2006	Telephone call from Guardian to the tribe confirming that Guardian will notify the tribe if human remains are discovered
Sac & Fox Nation of Oklahoma	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	5/24/2006	Follow-up e-mail from Guardian to the tribe
	5/24/2006	E-mail from the tribe to Guardian deferring comment on the G-II Project to the Ho-Chunk Nation
Prairie Band Potawatomi Nation	3/22/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	5/24/2006	Follow-up e-mail from Guardian to the tribe
	7/14/2006	Follow-up telephone call from Guardian to the tribe: Chairperson requested a copy be faxed to her for review
	7/14/2006	Fax from Guardian to the tribe providing a copy of the initial consultation letter
	7/18/2006	Letter from the tribe to Guardian requesting notification if human remains are discovered

<p style="text-align: center;">TABLE L-3 Guardian Pipeline Expansion and Extension Project Summary of Consultations with Indian Tribes</p>		
Tribe	Date	Request(s)
Forest County Potawatomi	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process.
	5/24/2006	Follow-up e-mail from Guardian to the tribe
	7/14/2006	Follow-up telephone call from Guardian to the tribe. Director of museum requested a copy be sent to him for review.
	7/14/2006	E-mail from Guardian to the tribe providing a copy of the initial consultation letter
	7/14/2006	E-mail from the tribe to Guardian requesting notification if inadvertent discoveries are made.
Bad River Band of Lake Superior Chippewa Indians of Wisconsin	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	5/24/2006	Follow-up e-mail from Guardian to the tribe
	7/14/2006	Follow-up telephone call from Guardian to the tribe. THPO indicated that they are interested in consulting on the project
	10/9/2006	Letter from Guardian to the THPO transmitting a copy of its survey reports for the pipeline facilities
Iowa Tribe of Oklahoma	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process.
	5/31/2006	Follow-up telephone call from Guardian to the tribe; voice-mail message
	7/14/2006	Follow-up telephone call from Guardian to the tribe; voice-mail message
Lac du Flambeau Band of Lake Superior Chippewa Indians	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	3/29/2006	Letter from the tribe to Guardian requesting a copy of Guardian's survey report
	4/13/2006	Letter from Guardian to the tribe providing information on FERC's NEPA Pre-Filing Process
	5/11/2006	Letter from the tribe to Guardian requesting additional information on the APE for the pipeline
	5/16/2006	Telephone call from Guardian to the tribe providing additional information on the pipeline route and APE
	5/16/2006	E-mail from Guardian to the tribe requesting additional information on the pipeline route and APE
	5/24/2006	E-mail from Guardian to the tribe to verify the tribe's continuing interest in the project
	10/9/2006	Letter from Guardian to the THPO transmitting a copy of its survey reports for the pipeline facilities
Lac Courte Oreilles Band of Lake Superior Chippewa Indians	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	5/31/2006	Follow-up telephone call from Guardian to the tribe; voicemail message
	5/31/2006	Follow-up e-mail from Guardian to the tribe
	7/18/2006	Follow-up telephone call from Guardian to the tribe; voicemail message
Red Cliff Band of Lake Superior Chippewa Indians	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	5/24/2006	Follow-up e-mail from Guardian to the tribe
	7/14/2006	Follow-up telephone call from Guardian to the tribe; voicemail message

TABLE L-3 Guardian Pipeline Expansion and Extension Project Summary of Consultations with Indian Tribes		
Tribe	Date	Request(s)
Sokoagon Chippewa Community (Mole Lake)	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	5/24/2006	Follow-up e-mail from Guardian to the tribe
	7/18/2006	Follow-up telephone call from Guardian to the tribe; voicemail message
St. Croix Band of Lake Superior Chippewa Indians	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process.
	5/31/2006	Follow-up telephone call from Guardian to the tribe; voicemail message
	7/18/2006	Follow-up telephone call from Guardian to the tribe; voicemail message
Ho-Chunk Nation	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	5/24/2006	Follow-up e-mail from Guardian to the tribe
	5/24/2006	E-mail from the tribe to Guardian requesting a copy of Guardian's survey report
	6/8/2006	E-mail from Guardian to the tribe confirming that Guardian will send the tribe a copy of the survey report
	10/9/2006	Letter from Guardian to the THPO transmitting a copy of its survey reports for the pipeline facilities
Menominee Indian Tribe of Wisconsin	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process.
	5/24/2006	Follow-up e-mail from Guardian to the tribe
	5/24/2006	E-mail from the tribe to Guardian requesting a copy of Guardian's survey report
	6/1/2006	E-mail from Guardian to the tribe confirming that Guardian will send the tribe a copy of the survey report
	7/14/2006	Letter from Guardian to tribe updating the tribe on the pipeline route and inviting the tribe to attend a meeting with the Oneida and Stockbridge-Munsee
	7/18/2006	E-mail from Guardian to tribe inviting the tribe to participate in meeting to review the project
	7/18/2006	E-mail from tribe to Guardian agreeing to meeting for review of project
	7/25/2006	E-mail from Guardian to tribe inviting the tribe to participate in meeting to review the project
	7/25/2006	E-mail from tribe to Guardian indicating they were unable to attend a meeting to review the project, but wished to remain a consulting party
	10/9/2006	Letter from Guardian to the THPO transmitting a copy of its survey reports for the pipeline facilities
Stockbridge-Munsee Band of Mohican Indians	3/23/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	3/29/2006	Telephone call from the tribe to Guardian requesting additional information on the project
	3/31/2006	Letter from Guardian to the tribe providing additional information on the project
	5/24/2006	Follow-up e-mail from Guardian to the tribe to verify the tribe's continuing interest in the project
	5/24/2006	E-mail from the tribe to Guardian reiterating its interest in the project and requesting a teleconference to discuss the project
	6/9/2006	Follow-up e-mail from Guardian to the tribe requesting a teleconference to discuss the project.
	6/12/2006	E-mail from the tribe to Guardian requesting a meeting rather than a teleconference to discuss the project.

TABLE L-3 Guardian Pipeline Expansion and Extension Project Summary of Consultations with Indian Tribes		
Tribe	Date	Request(s)
	6/26/2006	Telephone call from the tribe to Guardian requesting additional information on the project and offering to schedule a meeting with the Menominee and Oneida to review the project.
	6/26/2006	Follow-up e-mail from Guardian explaining the differences between the survey, construction, and permanent easement corridor widths
	7/6/2006	E-mail from Guardian to the tribe requesting a review of latest pipeline route in Calumet and Outagamie Counties
	7/14/2006	Telephone call from Guardian to tribe about scheduling a meeting with the Menominee and Oneida to review the project
	7/14/2006	Copy of E-mail from Guardian to the tribe requesting a review of latest pipeline route in Calumet and Outagamie Counties; a set of topographic quadrangles showing the proposed route was also sent
	7/18/2006	E-mail from Guardian to tribe inviting the tribe to participate in meeting to review the project
	7/25/2006	E-mail from Guardian to tribe inviting the tribe to participate in meeting to review the project
	7/25/2006	E-mail from tribe to Guardian agreeing to attend a meeting to review the project
	7/27/2006	Meeting with Oneida and Stockbridge-Munsee THPO to discuss sensitivity of cultural properties and the ARPA application
	7/28/2006	E-mail from Guardian to tribe transmitting a list of tribes consulted for the project
	7/31/2006	E-mail from Guardian to tribe transmitting updated topographic quadrangles of project
	8/8/2006	Call from Guardian to tribe inviting the tribe to participate in cultural resources survey in area of concern for the tribe.
	10/9/2006	Letter from Guardian to the THPO transmitting a copy of its survey reports for the pipeline facilities
Winnebago Tribe of Nebraska	4/7/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	5/1/2006	Letter from the tribe to Guardian expressing an interest in the project and requesting notification if human remains are discovered
	5/31/2006	E-mail from Guardian to the tribe confirming that Guardian will notify the tribe if human remains are discovered
Hannahville Indian Community of Wisconsin Potawatomi Indians of Michigan	6/21/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	7/26/2006	Follow-up e-mail from Guardian to the tribe
Citizen Potawatomi Nation	6/21/2006	Letter from Guardian to the tribe inviting the tribe to participate in FERC's NEPA Pre-Filing Process and the Section 106 process
	7/26/2006	Follow-up e-mail from Guardian to the tribe
	8/15/2006	E-mail from Tribe to Guardian requesting to be notified if human remains or other items falling under NAGPRA are identified during construction
	8/15/2006	E-mail from Guardian to the tribe confirming that Guardian will notify the tribe if human remains are discovered

Appendix M

References and Contacts

APPENDIX M

REFERENCES AND CONTACTS

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Appendix N

List of Preparers

APPENDIX N**LIST OF PREPARERS**

Federal Energy Regulatory Commission**Kopka, Robert J. – Project Manager, Geology, Soils, Vegetation, Water Resources,
Wetlands, Land Use, Alternatives, Cumulative Impacts**

M.S., Soil Science, 1990, Cornell University

B.S., Agronomy, 1987, Delaware Valley College of Science and Agriculture

Hanobic, David – Special Status Species

B.S., Biology, 2003, Lock Haven University of Pennsylvania

Friedman, Paul – Cultural Resources

M.A. History, 1980, University of California at Santa Barbara

B.A., Anthropology and History, 1976, University of California at Santa Barbara

Tomasi, Eric – Air Quality and Noise, Reliability and Safety

B.S., Aerospace Engineering, 1994, Boston University

Tetra Tech EC, Inc.**Ghiloni, Jennifer – Tetra Tech EC Project Manager – Executive Summary, Introduction,
Description of Proposed Action, Water Resources, Aquatic Resources, Conclusions
and Recommendations**

MBA, Specialization in Environmental Management, 2006, University of Massachusetts

B.S., Marine Fisheries Science, 1999, University of Rhode Island

Magrane, April – Tetra Tech EC – Soils and Sediments

B.A., Biology, 1995, Russell Sage College

Graduate Studies in Ecology and Conservation, 1997, State University of New York

Graduate Studies in Aquatic and Forest Resources, 2000-2004, University of Washington

Scott, John G. – Tetra Tech EC – Cumulative Impacts

M.S., Wildlife and Fisheries Science, 1995, Pennsylvania State University

B.S., Natural Resources Management, 1983, Cornell University

Allen, Boyd – Geologic Resources

MS, Earth Sciences, 1983, University of New Hampshire

BA, Geology, 1975, Colby College

Hannon, Keith – Wetlands, Wildlife

M.A., Energy and Environmental Analysis, 2005, Boston University

B.S., Environmental Geosciences, 2000, Boston College

Micucci, Stephanie – Vegetation, Threatened and Endangered Species

M.S., Evolution, Ecology and Organismal Biology, 2000, The Ohio State University

B.S., Zoology, 1995, The Ohio State University

Brooks, Shaun – Land Use, Recreation, Visual Resources, Socioeconomics, Transportation

MEP, Environmental Planning, 2004, Arizona State University

B.S., Forest Recreation Resources, 2001, Oregon State University

Marshall, Sydne – Cultural Resources

Ph.D., Anthropology, 1981, Columbia University

M.Phil. (Master of Philosophy), 1975, Anthropology, Columbia University

M.A., Anthropology, 1974, Columbia University

B.A., Anthropology, 1972, The American University

Guertin, Ted – Air Quality

M.S., Atmospheric Science, 1989, University of New York at Albany

B.S., Atmospheric Science, 1986, University of New York at Albany

Adams, Tom – Noise

M.S., Physics, 1973, Valdosta State University

B.S., Physics, 1971, Valdosta State University

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:

OEP/DG2E/Gas Branch 1

Guardian Pipeline, L.L.C.

Docket No. CP07-8-000

TO THE PARTY ADDRESSED:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared this draft Environmental Impact Statement (EIS) for the construction and operation of the natural gas pipeline facilities (referred to as the G-II Project or Project) as proposed by Guardian Pipeline, L.L.C. (Guardian) in the above-referenced docket.

The draft EIS was prepared to satisfy the requirements of the National Environmental Policy Act (NEPA). The staff concludes that approval of the G-II Project, with appropriate mitigating measures as recommended, would have limited adverse environmental impact. The draft EIS evaluates alternatives to the proposal, including system alternatives and pipeline route alternatives.

The Bureau of Indian Affairs, the U.S. Army Corps of Engineers (COE) are federal cooperating agencies for the development of this EIS. The State of Wisconsin Department of Natural Resources is also a cooperating agency. Cooperating agencies have jurisdiction by law or have special expertise with respect to any environmental impact involved with the proposal and is involved in the NEPA analysis.

The purpose of the G-II Project is to provide the facilities necessary to provide about 537,200 decatherms per day of additional natural gas capacity to Guardian's existing pipeline system. The proposed additional capacity would facilitate the transport of natural gas to customers within the state of Wisconsin and provide those customers with the necessary infrastructure to support growth and competition within the natural gas marketplace. Guardian proposes to have the project constructed and operational by November 2008.

The draft EIS addresses the potential environmental effects of the construction and operation of the following natural gas pipeline facilities:

- 83.6 miles of 30-inch-diameter natural gas pipeline in Jefferson, Dodge, Fond du Lac, Calumet, Brown, and Outagamie Counties, Wisconsin;
- 25.9 miles of 20-inch-diameter natural gas pipeline in Brown and Outagamie Counties, Wisconsin;
- two new 39,000 horsepower (hp) electric motor driven compressor stations including the Sycamore Compressor Station located in the Sycamore Township in DeKalb County, Illinois and the Bluff Creek Compressor Station located in the Town of La Grange in Walworth County, Wisconsin;

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- modifications to the existing Ixonia Meter Station in Jefferson County, Wisconsin and the construction of seven new meter stations in the Counties of Dodge, Fond du Lac, Calumet, Brown, and Outagamie Counties, Wisconsin;
- two new pig launcher facilities including a 30-inch launcher within Guardian's existing Ixonia Meter Station in Jefferson County, Wisconsin; a 30-inch receiver and 20-inch-diameter launcher within the proposed Fox Valley Meter Station in Brown County, Wisconsin; and a 20-inch-diameter receiver within the proposed West Green Bay Meter Station in Outagamie County Wisconsin; and
- six new mainline valves (MLV), four of which would occur along the 30-inch-diameter pipeline in the counties of Dodge, Fond du Lac, and Calumet, Wisconsin and two which would occur along the 20-inch-diameter pipeline in Brown and Outagamie Counties, Wisconsin.

Project construction would be initiated in the spring of 2008 and would be completed for a proposed in-service date in November 2008.

Comment Procedures and Public Meetings

Any person wishing to comment on the draft EIS may do so. To ensure consideration prior to a Commission decision on the proposal, it is important that we receive your comments before the date specified below. **Please carefully follow these instructions to ensure that your comments are received and properly recorded:**

- Send **an original and two copies** of your comments to:

Philis J. Posey, Acting Secretary
Federal Energy Regulatory Commission
888 First Street, N.E., Room 1A
Washington, D.C. 20426

- Label one copy of the comments for the attention of the Gas Branch 1, DG2E; and Reference Docket No. CP07-8-000 on the original and both copies.
- Mail your comments so that they will be received in Washington, D.C. on or before **May 29, 2007**.

Please note that the Commission strongly encourages electronic filing ("eFiling") of comments. Instructions on how to "eFile" can be found on the Commission's web site at <http://www.ferc.gov> under the "Documents and Filings" link.

In addition to or in lieu of sending written comments, we invite you to attend the public comment meeting scheduled as follows:

May 15, 2007, 7:00 p.m.(CST)
Radisson Hotel and Conference Center of Green Bay
2040 Airport Drive
Green Bay, WI US
Telephone: (920) 405-6404

- 3 -

May 16, 2007, 7:00 p.m.(CST)

Bauer Ramada Plaza Hotel
1 North Main Street
Fond Du Lac, WI 54935
Telephone: (920) 923-3000

May 17, 2007, 7:00 p.m.(CST)

Olympia Conference Center
1350 Royale Mile Road
Oconomowoc, WI 53066
Telephone: (262) 369-4969

The public comment meetings will be posted on the FERC's calendar located at www.ferc.gov/EventCalendar/EventsList.aspx. Interested parties and individuals are encouraged to attend and present oral comments on the draft EIS. Transcripts of the meetings will be prepared.

After these comments are reviewed, any significant new issues are investigated, and modifications are made to the draft EIS, a final EIS will be published and distributed by the FERC staff. The final EIS will contain the staff's responses to timely comments received on the draft EIS.

Comments will be considered by the Commission but will not serve to make the commentor a party to the proceeding. Any person seeking to become a party to the proceeding must file a motion to intervene pursuant to Rule 214 of the Commission's Rules of Practice and Procedures (18 CFR 385.214). Anyone may intervene in this proceeding based on this draft EIS. You must file your request to intervene as specified above.¹ **You do not need intervenor status to have your comments considered.**

The draft 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, D.C. 20426
(202) 502-8371

A limited number of hard copies and CD copies of the draft EIS are available from the Public Reference Room identified above. Copies of the draft EIS have been mailed to federal, state, and local agencies; public interest groups; individuals and affected landowners who requested a copy of the draft EIS or provided comments during scoping; libraries; newspapers; and parties to this proceeding.

¹ Interventions may also be filed electronically via the Internet in lieu of paper. See the previous discussion on filing comments electronically.

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Additional information about the project is available from the Commission's Office of External Affairs, at **1-866-208-FERC** or on the FERC Internet website (www.ferc.gov).

To access information via the FERC website click on the “eLibrary” link then click on “General Search” and enter the docket number excluding the last three digits in the Docket Number field. Be sure you have selected an appropriate date range. The “eLibrary” link provides access to the texts for formal documents issued by the Commission, such as orders, notices, and rulemakings. For assistance with “eLibrary”, please contact FERC Online Support at FERCOnlineSupport@ferc.gov or toll free at 1-866-208-3676, or for TTY, contact (202) 502-8659.

In addition, the Commission now 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 learn more about “eSubscription” and to sign up for this service please go to www.ferc.gov/esubscribenow.htm.

Phillis J. Posey,
Acting Secretary

EXECUTIVE SUMMARY

INTRODUCTION

This draft Environmental Impact Statement (EIS) has been prepared by the staff of the Federal Energy Regulatory Commission (FERC or Commission) to fulfill the Commission's requirements as outlined in the National Environmental Policy Act of 1969 (NEPA).

The purpose of this document is to make public our assessment of the environmental impacts that would likely occur as a result of the construction and operation of the proposed Guardian Expansion and Extension Project (G-II Project or Project) and to request comments on our assessment.

This document has been prepared in coordination with numerous federal and state agencies including the U.S. Army Corps of Engineers (COE), the Bureau of Indian Affairs (BIA), and the Wisconsin Department of Natural Resources (WDNR).

PROJECT BACKGROUND

On April 7, 2006, we¹ approved the Guardian Pipeline, L.L.C.'s (Guardian) request to use the Commission's Pre-Filing Review Process for the proposed G-II Project. The purpose of our pre-filing review is to work in partnership with the project sponsor, other federal and state agencies, as well as concerned citizens and non-governmental organizations, to identify and address project-related issues prior to the filing of an application with the Commission for a Certificate of Public Convenience and Necessity (Certificate).

On October 13, 2006 Guardian filed an application with the Commission pursuant to Section 7(c) of the Natural Gas Act and Part 157 of the Commission's regulations for a Certificate to construct, operate, and maintain an interstate natural gas pipeline and associated ancillary and aboveground facilities, collectively known as the G-II Project. We have prepared our analysis based on this application and subsequent filings by Guardian including responses to environmental information requests.

PROPOSED ACTION

In response to a request for proposal (RFP) developed by three Wisconsin local distribution companies (LDCs) including We Energies, Wisconsin Power and Light Company, and Wisconsin Public Service Corporation (WPS), Guardian proposes to establish infrastructure necessary to provide additional firm natural gas pipeline capacity that would allow for the delivery of natural gas to various points in Wisconsin by an in-service date of by November 1, 2008. The proposed Project would add additional compression along Guardian's existing pipeline system in the states of Illinois and Wisconsin and extend its existing pipeline facilities from its current terminus in the Town of Ixonia in Jefferson County, Wisconsin northward to a new terminus west of Green Bay in the Town of Oneida in Outagamie County, Wisconsin. The expansion of this system would provide approximately 537.2 million cubic feet per day (MMcfd) of natural gas transportation capacity to both eastern Wisconsin and northeastern Illinois. Of this amount, 100 MMcfd would be delivered to points along Guardian's

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

existing pipeline system with the remaining 437.2 MMcfd to be delivered to new delivery points along Guardian's proposed pipeline route to be owned and operated by WPS and We Energies. The proposed G-II Project would consist of:

- 83.6 miles of 30-inch-diameter natural gas pipeline in Jefferson, Dodge, Fond du Lac, Calumet, Brown, and Outagamie Counties, Wisconsin;
- 25.9 miles of 20-inch-diameter natural gas pipeline in Brown and Outagamie Counties, Wisconsin;
- two new 39,000 horsepower (hp) electric-motor-driven compressor stations including the Sycamore Compressor Station located in the Sycamore Township in DeKalb County, Illinois and the Bluff Creek Compressor Station located in the Town of La Grange in Walworth County, Wisconsin;
- modifications to the existing Ixonia Meter Station in Jefferson County, Wisconsin and the construction of seven new meter stations in the Counties of Dodge, Fond du Lac, Calumet, Brown, and Outagamie Counties, Wisconsin;
- new pig launcher/receiver facilities within Guardian's existing Ixonia Meter Station in Jefferson County, Wisconsin, within the proposed Fox Valley Meter Station in Brown County, Wisconsin, and West Green Bay Meter Station in Outagamie County, Wisconsin; and
- six new mainline valves (MLVs), four of which would occur along the 30-inch-diameter pipeline in the counties of Dodge, Fond du Lac, and Calumet, Wisconsin, and two which would occur along the 20-inch-diameter pipeline in Brown and Outagamie Counties, Wisconsin.

Guardian proposes to complete construction and begin operation of the proposed Project in October 2008.

PUBLIC OUTREACH AND COMMENTS

As described previously, Guardian used the Commission's Pre-Filing Review Process prior to filing an application with the Commission for a Certificate to construct and operate the proposed Project. As part of our pre-filing review we issued a *Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Guardian Expansion/Extension Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meetings* (NOI) on May 19, 2006.

In response to our notices and four public scoping meetings held along the proposed project route, we received numerous written and verbal comments from landowners, concerned citizens, public officials, and government agencies representing the public. These comments expressed concerns with impacts on land uses (e.g., farming and organic farming), wetlands and waterbodies; water quality; vegetation and wildlife; threatened and endangered species; air and noise quality; future development; property values; tribal lands and cultural resources; the overall project purpose and need; environmental justice; safety; and potential alternatives to the proposed route and planned facilities.

In addition to comments provided by the general public, we also consulted with several federal and state agencies. Consultations included several interagency meetings were held to discuss the

proposed action, the impacts of constructing and operating the proposed Project, and possible mitigation measures to minimize project-related impacts.

Comments filed with the Commission have been placed in the Commission's administrative record for the proposed Project and are available for review by the public.

ENVIRONMENTAL IMPACTS

Construction and operation of the proposed Project would result in several impacts on the environment. Soils, groundwater, surface water, wetlands, vegetation, wildlife, aquatic resources, threatened and endangered species, cultural resources, and air and noise quality would all be affected by construction and operation of the proposed Project; however, because the proposed construction activities are temporary in nature, most of the resulting impacts on these resources including vegetation removal, disturbed soils, increased erosion potential and associated turbidity in streams, habitat alteration, and wildlife impacts would also be temporary. Additionally, construction activities would result in long-term impacts on upland forests and forested wetlands. Operation of the proposed Project and maintenance of the permanent right-of-way would preclude certain uses of maintained lands for the life of the project.

The most significant impacts resulting from construction and operation of this proposed Project would be the temporary impacts on wetlands and the long-term impacts on forested wetlands and upland forests. Specifically, construction activities would result in temporary impacts on wetlands including the alteration of wetland soil, hydrology, and vegetation. Long-term impacts would occur on forested wetlands because several acres would be cleared during construction, converted to emergent and scrub-shrub wetlands, and maintained in those states on the permanent right-of-way during operation. Upland forests would also be cleared during construction, converted to non-forested uplands, and maintained in that state on the permanent right-of-way during operation.

Detailed descriptions of these impacts, our recommendations to further avoid, minimize, and mitigate these impacts, impacts on other resources, and a description of cumulative impacts are described in section 4.0.

MINIMIZATION AND MITIGATION MEASURES

In order to minimize and mitigate the environmental impacts of constructing and operating the proposed Project, Guardian would implement several measures and plans including, but not limited to the following:

- Our Upland Erosion Control, Revegetation and Maintenance Plan (Guardian's Plan);
- Our Wetland and Waterbody Construction and Mitigation Procedures (Guardian's Procedures);
- Spill Prevention, Control and Countermeasures (SPCC) Plan;
- Agricultural Impact Mitigation Plan;
- Plan for the Unanticipated Discovery of Hazardous Wastes or Contaminated Sediment;
- Plan for the Containment of Inadvertent Release of Drilling Mud During Horizontal Directional Drilled Wetland and Waterbody Crossings; and

- Plan for the Unanticipated Discovery of Historic Properties, Human Remains or Potential Paleontological Evidence during Construction.

In addition to the implementation of these measures and plans, we have recommended that Guardian implement certain measures to further reduce impacts on environmental resources. Guardian would also be required to obtain several federal, state, and local permits and authorizations that could further reduce environmental impacts resulting from construction and operation of the proposed Project. Specifically, Guardian would comply with the requirements of the COE, U.S. Fish and Wildlife Service (FWS), U.S. Environmental Protection Agency (EPA), and WDNR.

A detailed description of Guardian's proposed minimization and mitigation measures, as well as our recommendations for additional mitigation are included in section 4.0.

ALTERNATIVES CONSIDERED

We have evaluated the no action alternative, the postponed action alternative, alternative energy sources, the potential effects of energy conservation, system alternatives, route alternatives, route variations, and aboveground facility site alternatives to determine whether they would be technically and economically feasible and environmentally preferable to the proposed action. In this analysis, we also considered the potential impacts on environmental resources and land uses and evaluated alternatives that would avoid or minimize impacts on environmental resources such as wetlands, waterbodies, and land use.

CONCLUSION

Based on our review of Guardian's proposal, we conclude that the construction and operation of the proposed Project would result in limited adverse environmental impacts. However, these impacts would be effectively avoided, minimized, and mitigated by Guardian's proposed construction, restoration, and mitigation measures as well as our recommendations. In support of this conclusion we offer the following:

- The proposed Project would be collocated with existing utility rights-of-way for approximately 33.5 miles, or about 30.6 percent of the proposed route;
- Guardian would implement site-specific wetland mitigation strategies as required by the COE and WDNR to minimize impacts on sensitive wetland habitats (including forested wetlands);
- Guardian would implement our Plan and Procedures, which would minimize and mitigate impacts on natural resources during construction and operation of the Project;
- Guardian would implement an environmental and agricultural inspection monitoring program that would ensure compliance with all recommended mitigation measures; and
- Guardian would develop and implement an Agricultural Impact Mitigation Plan (AMP), which would minimize impacts on agricultural lands and ensure implementation of the measures in the AMP. These measures were developed in consultation with the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) (e.g., minimum 4-foot depth of cover over the pipeline, 110-foot right-of-way for construction of a 30-inch-diameter pipeline and an 80-foot right-of-way for construction of a 20-inch-diameter pipeline in agricultural land, use of third-party agricultural monitors, etc.).

Draft Environmental Impact Statement

**GUARDIAN EXPANSION AND
EXTENSION PROJECT**

Guardian Pipeline, L.L.C.

Docket No. CP07-8-000

FERC/EIS – 0212D



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



Cooperating Agencies



U.S. Army Corps
of Engineers



April 2007



FERC/EIS-0212D

GUARDIAN EXPANSION AND EXTENSION PROJECT
Draft Environmental Impact Statement

Docket No.
CP07-8-000

**April
2007**

1.0 INTRODUCTION

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared this draft Environmental Impact Statement (EIS) for public review and comment to assess the potential environmental effects that may occur as a result of the construction and operation of the proposed natural gas transmission facilities that would both expand and extend the capacity of the existing Guardian pipeline system within the states of Illinois and Wisconsin (collectively referred to as the Guardian Expansion and Extension Project, G-II Project, or Project). Comments received in response to this draft EIS will be addressed in a final EIS, which will be used by the FERC in its decision-making process to determine whether or not to authorize the Project.

On October 13, 2006, Guardian Pipeline, L.L.C. (hereafter referred to as Guardian)¹ filed an application with the FERC, in Docket No. CP07-8, under Section 7(c) of the Natural Gas Act (NGA), as amended, and parts 157 and 284 of the Commission's regulations. The application was noticed in the *Federal Register* (FR) on October 30, 2006.

In Docket No. CP07-8, Guardian requests Commission authorization to add additional compression along Guardian's existing pipeline system in the states of Illinois and Wisconsin and to extend its existing pipeline facilities from its current terminus in the Town of Ixonia in Jefferson County, Wisconsin northward to a new terminus west of Green Bay in the Town of Oneida in Outagamie County, Wisconsin. The expansion of this system would provide approximately 537.2 million cubic feet per day (MMcfd) of natural gas transportation capacity to both eastern Wisconsin and northeastern Illinois. Of this amount, 100 MMcfd would be delivered to points along Guardian's existing pipeline system with the remaining 437.2 MMcfd to be delivered to new delivery points along Guardian's proposed pipeline route. The proposed G-II Project would consist of:

- 83.6 miles of 30-inch-diameter natural gas pipeline in Jefferson, Dodge, Fond du Lac, Calumet, Brown, and Outagamie Counties, Wisconsin;
- 25.9 miles of 20-inch-diameter natural gas pipeline in Brown and Outagamie Counties, Wisconsin;
- two new 39,000 horsepower (hp) electric-motor-driven compressor stations, including the Sycamore Compressor Station located in the Sycamore Township in DeKalb County, Illinois and the Bluff Creek Compressor Station located in the Town of La Grange in Walworth County, Wisconsin;
- modifications to the existing Ixonia Meter Station in Jefferson County, Wisconsin and the construction of seven new meter stations in Dodge, Fond du Lac, Calumet, Brown, and Outagamie Counties, Wisconsin;
- new pig launcher/receiver facilities within Guardian's existing Ixonia Meter Station in Jefferson County, Wisconsin; within the proposed Fox Valley Meter Station in Brown County, Wisconsin; and West Green Bay Meter Station in Outagamie County, Wisconsin; and

¹ Guardian Pipeline, L.L.C is owned by the limited partnership company, ONEOK Partners, L.P., based in Omaha, Nebraska and operated by the limited liability company, ONEOK Partners GP, L.L.C, headquartered in Tulsa, Oklahoma.

- six new mainline valves (MLVs), four of which would occur along the 30-inch-diameter pipeline in Dodge, Fond du Lac, and Calumet Counties, Wisconsin, and two which would occur along the 20-inch-diameter pipeline in Brown and Outagamie Counties, Wisconsin.

Figure 1-1 shows the general location of the proposed facilities.

1.1 PROJECT PURPOSE AND NEED

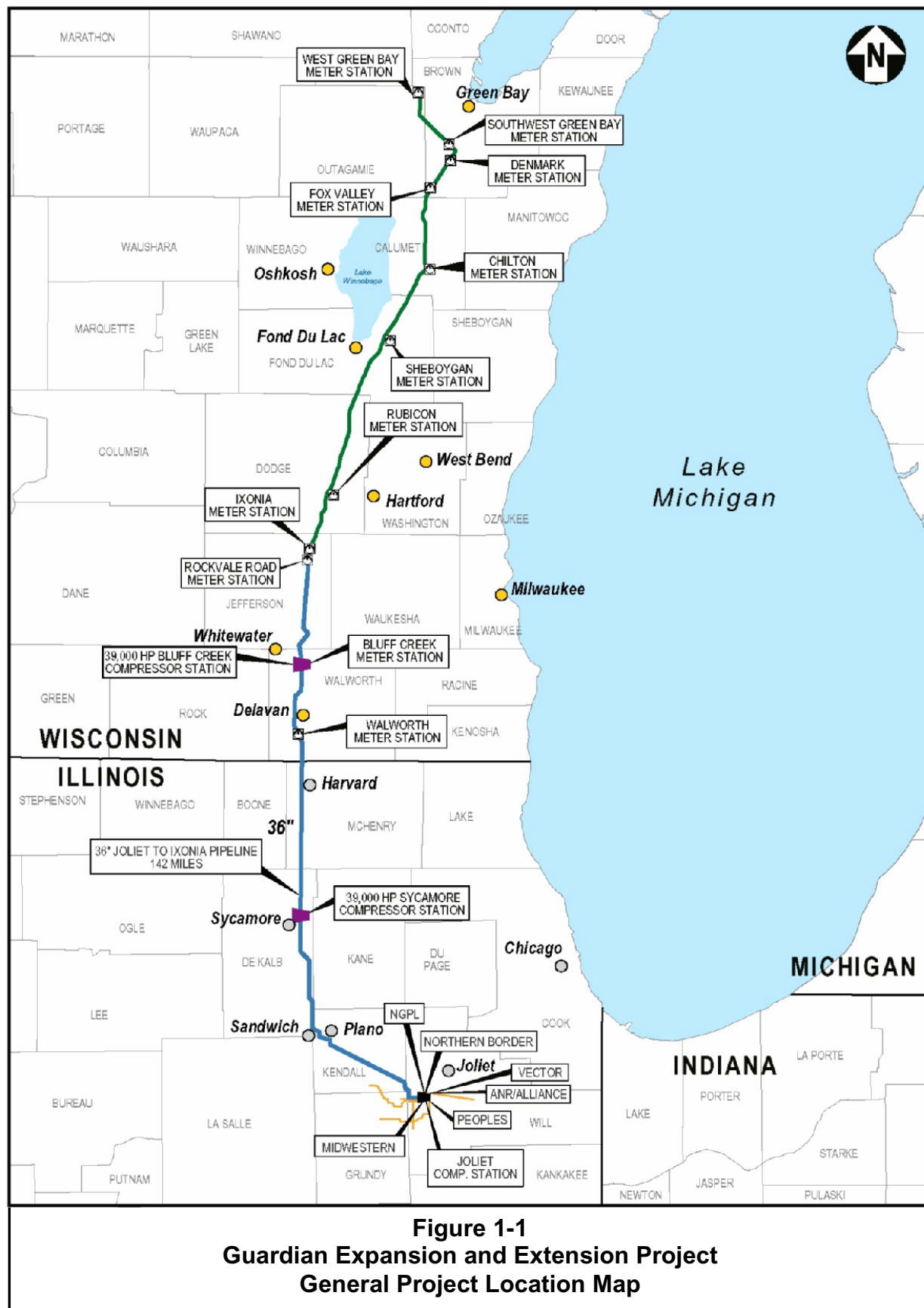
Guardian states that the G-II Project was conceived in response to a Request for Proposals (RFP) issued on November 17, 2004 by three Wisconsin local distribution companies (LDCs) including We Energies, Wisconsin Power and Light Company, and Wisconsin Public Service Corporation (WPS). The RFP was developed by the LDCs for the purpose of establishing the infrastructure necessary to provide additional firm natural gas pipeline capacity that would allow for the delivery of natural gas to various points in Wisconsin by an in-service date of November 1, 2008. On February 3, 2006, negotiations between Guardian and the LDCs resulted in the execution of a Precedent Agreement between Guardian, WPS, and two We Energies entities (Wisconsin Gas, L.L.C. and Wisconsin Electric Power Company), which led to the establishment of the G-II Project. Under this agreement, the specific purpose of the G-II Project is to:

- provide an increase of 537.2 MMcfd of physical pipeline capacity to better serve customers both within the eastern portion of Wisconsin and points along Guardian's existing pipeline route in northeastern Illinois and southeastern Wisconsin; and
- contribute to the diversification of the state of Wisconsin's natural gas providers by providing a competitive supply of natural gas to Wisconsin's LDCs and their utility customers.

The Project is approximately 93 percent subscribed by the three LDCs with a primary term of 15 years to meet the projected demands within their service territories.

1.1.1 Projected Domestic Demand for Natural Gas

Energy demand in the United States has been growing and continues to increase steadily. The Energy Information Administration (EIA) of the Department of Energy (DOE) Annual Energy Outlook 2006 Overview estimates that total energy consumption in the United States will increase from 99.7 quadrillion British thermal units (Btu) per year in 2004 to 127.0 quadrillion Btu per year in 2025, representing an annualized increase of 1.2 percent (EIA, 2006a). Although this energy will be obtained from a variety of sources (e.g., coal, petroleum, hydropower, and other renewable sources), natural gas usage is expected to represent about 22 percent of all energy consumption in the United States by 2025. To maintain pace with growing energy demands, the EIA anticipates that consumption of natural gas in the United States will grow from 22.4 trillion cubic feet (Tcf) per year in 2004 to 27.0 Tcf by 2025, an increase of more than 20 percent. The growth in natural gas demand is being driven primarily by increased use of natural gas for electricity generation and industrial applications, which together account for 62 percent of the projected demand growth from 2004 to 2025 (EIA, 2006a).



The United States natural gas supply currently comes from three main sources: domestic production, pipeline imports from Canada and Mexico, and imports of liquefied natural gas (LNG). Net pipeline imports of natural gas from Canada and Mexico are expected to decline in coming years, and although LNG represents an increasingly important source of natural gas, LNG imports are only expected to account for about 15 percent of total United States natural gas consumption by 2025. Domestic production of natural gas will continue to account for the majority of total United States consumption, with onshore production expected to account for the bulk of that supply, growing to 14.7 Tcf by 2025 (EIA, 2006a). Onshore production of natural gas from unconventional sources (e.g., shale, tight sands, and coal bed methane) is expected to be a major contributor to that growth. The EIA (2006a) projects that unconventional natural gas production in the lower 48 states will account for about 45 percent of total domestic production by 2030.

1.1.2 Projected Regional and Local Demand for Natural Gas

Within the East-North Central Region of the United States (including the states of Wisconsin, Illinois, Indiana, Ohio, and Michigan) the EIA estimates that energy consumption is on the rise. Total energy consumption in this region is estimated to increase from 16.268 quadrillion Btu in 2003 to about 20.238 quadrillion Btu in 2025 (EIA 2006b). During this same time period, the total consumption of natural gas in this region is also expected to rise from 3.730 quadrillion Btu in 2005 to 5.047 quadrillion Btu in 2025, representing a 1.4 percent per year increase over the next 22 years (EIA, 2006b).

Within the state of Wisconsin, 23 percent of the state's energy consumption is supported by natural gas, which is lower than the use of coal and petroleum at 30 and 29 percent, respectively (WDOE, 2006). Renewable energy is also being used throughout the state but accounts for only a small percentage of the energy consumed. In 2004, renewable energy (the majority coming from wood heating) only accounted for 7 percent of residential energy use (UW Extension, 2006).

Total residential energy use in the state of Wisconsin constitutes the single biggest energy cost for most Wisconsin homes, consisting of 42 percent of the total energy cost for the average home (UW Extension, 2006). Energy use by this sector is also on the rise, tracking closely with the state's increase in population. Between 1970 and 2004, both energy consumption and population increased by about 27 percent (UW Extension, 2006).

Natural gas is used in the state primarily for residential heating and cooking, commercial and industrial applications, and electricity generation. Over the last 15 years, the state-wide consumption of natural gas has increased by more than 25 percent and now totals nearly 400 billion cubic feet (Bcf) annually (WDOE, 2005; 2006). During this same time period, the number of residential and commercial/industrial gas customers in Wisconsin has grown by approximately 40 and 43 percent, respectively (WDOE, 2005). Currently, over two-thirds of all Wisconsin households use natural gas, as well as more than 151,000 businesses (WDOE, 2006). In 2005 alone, gas utilities in Wisconsin added about 28,746 new customers due to new construction and conversion to natural gas from other fuels such as oil and liquefied petroleum gas (LPG) (WDOE, 2006).

In the eastern portion of Wisconsin, the ability to meet the growing demand for natural gas is currently constrained due to the lack of existing pipeline capacity. In addition, the eastern Wisconsin market, north of Milwaukee, is currently served by a single interstate natural gas pipeline company. As a result, consumers have not been able to benefit from competition and expanded choices of supply. The Public Service Commission of Wisconsin (PSC) in their Draft 2005 Strategic Energy Assessment Report indicates that the lack of sufficient natural gas supplies in the state is one of the key factors contributing to the recent and significant increases in the price of natural gas within Wisconsin (PSC, 2006).

The Port Washington Generation Station, a 1,090-megawatt (MW) natural-gas-fueled power generator facility located in Milwaukee, Wisconsin, would replace a former coal-fueled station. The Port Washington Generator Station is located in the G-II Project area.

1.2 PURPOSE AND SCOPE OF ENVIRONMENTAL IMPACT STATEMENT

The FERC is the federal agency responsible for authorizing applications to construct and operate interstate natural gas transmission facilities. The FERC is also the lead federal agency responsible for the preparation of this EIS in compliance with the requirements of the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508), and the FERC's regulations for implementing NEPA (18 CFR 380). The FERC will use this EIS in its review of Guardian's application to determine whether to authorize the G-II Project. The Commission will consider the environmental issues, including our² recommended mitigation measures, as well as non-environmental issues. Final authorization will be granted only if the Commission finds that the proposed G-II Project is in the public interest. The environmental impacts and mitigation measures discussed in this EIS are important factors in this final determination.

The U.S. Army Corps of Engineers (COE), Bureau of Indian Affairs (BIA), and the Wisconsin Department of Natural Resources (WDNR) are the cooperating federal and state agencies for the development of this EIS. A cooperating federal or state agency has jurisdiction by law or special expertise with respect to environmental impacts involved with the proposal and is involved in the NEPA analysis.

This document is a draft EIS that has been prepared for public review and comment. A final EIS will be prepared subsequently to respond to comments received on this draft EIS. The distribution list for this draft EIS is provided in appendix A to this EIS. Our principal purposes in preparing this EIS are to:

- identify and assess potential impacts on the human environment that would result from the implementation of the proposed action;
- identify and assess reasonable alternatives to the proposed action that would avoid or minimize adverse effects on the human environment;
- identify and recommend specific mitigation measures to minimize environmental impacts; and

² "We," "us," and "our" refer to the environmental staff of the FERC's Office of Energy Projects.

- facilitate public involvement in identifying significant environmental impacts.

Our analysis in this EIS focuses on facilities that are under the FERC's jurisdiction (i.e., the 109.5 miles of pipeline and associated aboveground facilities proposed by Guardian). Nine nonjurisdictional facility projects would also be constructed in association with the G-II Project, which are discussed further in sections 1.5 and 2.9.

The topics addressed in this EIS include alternatives; geology; soils and sediments; water use and quality; wetlands; vegetation; wildlife and aquatic resources; threatened, endangered, and special status species; land use, recreation, and visual resources; socioeconomics; transportation and traffic; cultural resources; air quality and noise; reliability and safety; and cumulative impacts. This EIS describes the affected environment as it currently exists, discusses the environmental consequences of the proposed G-II Project, and compares the project's potential impacts to those of other alternatives. This EIS also presents our conclusions and recommended mitigation measures.

1.3 PERMITS, APPROVALS, AND REGULATORY REQUIREMENTS

As the lead federal agency for the G-II Project, the FERC is required to comply with Section 7 of the Endangered Species Act of 1973 and Section 106 of the National Historic Preservation Act of 1966. Each of these statutes has been taken into account in the preparation of this document.

Endangered Species Act (ESA)

Section 7 of the ESA, as amended, states that any project authorized, funded, or conducted by any federal agency (e.g., FERC) 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 United States Code Section 1536(a)(2)(1988)). The FERC, or Guardian as a non-federal party, is required to consult with the U.S. Fish and Wildlife Service (FWS) to determine whether any federally listed or proposed endangered or threatened species or their designated critical habitat occur in the vicinity of the proposed Project. If, upon review of existing data or data provided by the Applicant, the FERC determines that these species or habitats may be affected by the proposed Project, the FERC is required to prepare a biological assessment (BA) to identify the nature and extent of adverse impact, and to recommend measures that would avoid the habitat and/or species, or that would reduce potential impacts on acceptable levels. If, however, the FERC determines that no federally listed or proposed endangered or threatened species or their designated critical habitat would be affected by the proposed Project, no further action is necessary under the ESA. See section 4.6 of this EIS for the status of this review.

National Historic Preservation Act (NHPA)

Section 106 of the NHPA, as amended in 1992, requires the FERC to take into account the effects of its undertakings on properties listed in or eligible for listing in the National Register of Historic Places (NRHP), including prehistoric or historic sites, and districts, buildings, structures, objects, or properties of traditional religious or cultural importance. The NHPA also requires the FERC to afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment. In accordance with the ACHP's regulations for implementing Section 106, found at 36 CFR 800, the FERC is using the services of the applicant, Guardian, and its consultants to

prepare information, analyses, and recommendations to assist in meeting our obligations to comply with the NHPA. As the lead federal agency for this project, the FERC will address compliance with the NHPA jointly for all federal cooperating agencies in this EIS. See section 4.10 for the status of this review.

Other Permits, Approvals, and Consultations

At the federal level, required permits and approval authority outside of FERC's jurisdiction include compliance with the Clean Water Act (CWA), the Rivers and Harbor Act, and the Clean Air Act (CAA). Several Wisconsin and Illinois state agencies have delegated responsibilities under the CWA and the CAA.

Major permits, approvals, and consultations required for the G-II Project are identified in table 1.3-1. The FERC encourages cooperation between applicants and state and local authorities, but this does not mean that state and local agencies, through applications of state and 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 jurisdictional facilities must be consistent with the conditions of any authorization issued by the FERC.³

TABLE 1.3-1 Major Permits, Approvals, and Consultations for the G-II Project		
Agency	Permits/Approvals/Consultations	Anticipated Application Filing/Consultation Date
FEDERAL		
Federal Energy Regulatory Commission	Certificate of Public Convenience and Necessity	Guardian filed an application on October 13, 2006
U.S. Fish and Wildlife Service	Endangered Species section 7 Consultation	Consultations have been initiated and are ongoing
U.S. Army Corps of Engineers – St. Paul District (Wisconsin)	Section 404 Permit, Section 10 Permit	Anticipate filing application in the spring of 2007
Advisory Council on Historic Preservation	Section 106 NHPA	Pending—opportunity to comment if any historic property would be adversely affected
Wisconsin Coastal Management Program	Coastal Zone Consistency Review	Anticipated filing spring of 2007
U.S. Environmental Protection Agency	Section 401 Permit	Anticipated filing spring of 2007
STATE – ILLINOIS		
Illinois EPA, Division of Water Pollution Control	Storm Water Discharge – General NPDES Permit	Anticipate filing application in 4th quarter 2007 or 1st quarter 2008
	Hydrostatic Test Water Withdrawal – General	Anticipate filing application in 4th quarter 2007 or 1st quarter 2008
Illinois EPA, Division of Water Pollution Control	Hydrostatic Discharge – General NPDES Permit	Anticipate filing application in 4th quarter 2007 or 1st quarter 2008
Illinois DNR, Division of Natural Resources Review and Coordination	Natural Heritage Inventory	Consultations were completed in August 2006

³ See, e.g., *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).

TABLE 1.3-1 Major Permits, Approvals, and Consultations for the G-II Project		
Agency	Permits/Approvals/Consultations	Anticipated Application Filing/Consultation Date
Illinois Department of Natural Resources	State Endangered Species Consultation	Consultations were completed in August 2006
Illinois State Historic Preservation Office (SHPO)	Section 106 NHPA	Guardian initiated consultations with the Illinois SHPO on March 3, 2006. SHPO provided comments on September 5, 2006.
STATE – WISCONSIN		
Wisconsin Department of Natural Resources	Chapter 30 permit for grading near and dredging and placing structures in and across public waters; Joint application with COE 404 Permit	Anticipate filing application in spring of 2007
Wisconsin Department of Natural Resources	Section 401 Water Quality Certification – Joint Application with COE	Anticipate filing application in spring of 2007
Wisconsin Department of Natural Resources	Endangered Species Review	Consultations have been initiated and are ongoing
Wisconsin Department of Natural Resources	Construction site erosion control and stormwater runoff, trench dewatering, and hydrostatic discharge – General Permit to Discharge under Wisconsin Pollutant Discharge Elimination System (WPDES)	Anticipate filing application in 4th quarter 2007 or 1st quarter 2008
Wisconsin SHPO	Section 106 NHPA	Guardian provided first draft of a cultural resources survey report to the Wisconsin SHPO on October 9, 2006. SHPO commented on November 9, 2006.

1.4 PUBLIC REVIEW AND COMMENT

On May 19, 2006, the FERC issued a *Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Guardian Expansion/Extension Project, Request for Comments on Environmental Issues, and Notice of Public Scoping Meetings* (NOI). The NOI was sent to about 600 interested parties including federal, state, and local officials; agency representatives; conservation organizations; local libraries and newspapers; and property owners within 0.5 mile of the compressor stations, within 50 feet of the proposed construction rights-of-way or crossed by the proposed pipeline. Issuance of the NOI opened the public comment period and established a closing date of June 23, 2006, for receiving written comments. In total, 80 letters were received in response to the NOI.

On June 12, 13, and 14, 2006, the FERC and WDNR conducted a series of joint public scoping meetings in Green Bay, Fond du Lac, and Oconomowoc, Wisconsin, respectively, to provide an opportunity for the general public to learn more about the proposed G-II Project and to provide comments on environmental issues to be addressed in this EIS. A total of 27 people spoke at the meetings (including 18 at the Green Bay, 5 at the Fond du Lac, and 4 at the Oconomowoc meetings) and their comments were recorded both in support of and against the Project.

The transcripts of all scoping meetings, as well as all written comments received before and after the scoping meetings are part of the public record for the proposed Project and are available for viewing on the FERC Internet website (www.ferc.gov). During the pre-filing and scoping

periods for the proposed Project, we received a total of 124 comment letters from federal and state resource agencies and the general public, including members of local unions, businesses, colleges, and hospitals. Issues identified during scoping include impacts on land uses (e.g., farming and organic farming), wetlands, and waterbodies; water quality; vegetation and wildlife; threatened and endangered species; air and noise quality; future development; property values; tribal lands and cultural resources; the overall project purpose and need; environmental justice; safety; and potential alternatives to the proposed route and planned facilities. These issues and concerns identified by commentors during the public scoping process for the proposed Project are summarized in table 1.4-1, which also identifies the EIS section in which these issues are discussed.

In addition to the public notice and scoping process discussed above, the FERC staff conducted agency consultations and participated in interagency meetings to identify issues that should be addressed in this EIS. This included an interagency meeting in Madison, Wisconsin on June 13, 2006 to discuss the Project and the environmental review process with other key federal and state agencies. These agencies included the U.S. Environmental Protection Agency (EPA), WDNR, PSC, and the Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP).

1.5 NONJURISDICTIONAL FACILITIES

1.5.1 Background

Under Section 7 of the NGA, the FERC considers all relevant factors bearing on the public convenience and necessity as part of a decision to approve jurisdictional facilities. The jurisdictional facilities for the G-II Project include the proposed new natural gas pipeline and its associated aboveground facilities. Occasionally, proposed projects have associated facilities that do not come under the jurisdiction of the Commission. However, as part of FERC's decision to certificate jurisdictional facilities, all factors bearing on the public convenience and necessity must be considered. As such, the FERC may need to consider the environmental impact of related "nonjurisdictional" facilities that would be constructed for the purpose of delivering, receiving, or using the proposed gas volumes. Integrally related nonjurisdictional facilities could include major power facilities, such as cogeneration plants, as well as less significant facilities, such as lateral pipeline connections and electrical transmission lines to compressor stations and associated substations.

There are nonjurisdictional facility projects related to the proposed G-II Project, including six intrastate natural gas pipeline laterals (pipeline laterals) and associated facilities that would interconnect with the new G-II pipeline at various locations in Wisconsin, one new electric power tie-in transmission line, and two transformer/substations to supply power to Guardian's existing and new compressor stations in Sycamore, Illinois and LaGrange, Wisconsin (table 1.5-1). The pipeline laterals would be constructed and operated by the WPS and We Energies. The electrical power tie-in transmission line would be constructed, owned, and operated by the Commonwealth Edison Power Company (ComEd) and We Energies. These facilities are discussed in further detail in section 2.9.

TABLE 1.4-1	
Issues Identified and Comments Received During the Public Scoping Process for the Proposed G-II Project	
Issues/Specific Comments	EIS Section Addressing Comment
General	
Project purpose and need	1.1, 2.0,
Maintenance procedures to be implemented during operation, including vegetation management and inspections	2.6
Potential damage to existing utilities, including water lines and irrigation systems	2.3
Geology and Soils	
Impacts on soils, including compaction, drainage, possible contamination, soil layer mixing and erosion potential following construction, and associated mitigation such as topsoil segregation	4.1, 4.2
Impacts on prime farmland soils	4.1, 4.2
Water Resources	
Use of HDD at major water crossings	4.3
Impacts on waterbodies (rivers and streams), particularly those which are associated with crossings of major or state-designated scenic rivers; spills and contamination	4.3
Vegetation and Wetlands	
Impacts on native vegetation and forested habitats, including forest fragmentation, and rare plant communities	4.4
Avoidance and minimization of impacts on sensitive habitats, including wetlands, bottomland, hardwoods, riparian habitats, native prairies and rangelands during construction and maintenance activities; mitigation for Project-related effects	4.4
Wetland information including delineation, inventory, hydrological, ecological, soils, topographical and biological information	4.4
Impacts of invasive plant species	4.4
Fish and Wildlife Resources	
Impacts on fish and wildlife habitat, including water temperature due to loss of riparian shading and impacts on spawning habitat	4.3, 4.5, 4.6
Potential impacts on colonial, nesting waterbirds or migratory bird species	4.5, 4.6
Threatened, Endangered, and Special Status Species	
Potential impacts on state and federally protected species	4.6
Land Use, Recreation and Special Interest Areas and Visual Resources	
Impacts on affected property including agriculture (drainage tiles), silviculture activities, gardening, and property access	4.7, 5.1
Proximity of pipeline to occupied structures	4.7, 5.1
Reduced property access during construction activities	4.7, 5.1
Compatibility/potential conflicts with designated special use areas, including organic farming	4.7, 5.1
Impacts of aboveground facilities on visual resources	3.0, 4.7
Impacts of vegetation removal on visual resources	4.7, 5.1
Allowable uses/restrictions associated with future development along the permanent right-of-way	4.7, 5.1
Use of eminent domain	2.3
Air Quality and Noise	
Potential air emission impacts from compressor stations during operation	4.11
Potential noise impacts from compressor stations during operation	4.11
Cultural Resources	
Identification, evaluation, and protection of potentially affected cultural resources	4.1
Socioeconomics	
Loss of timber production values for affected silvicultural operations	4.8
Potential effect on property values	4.8
Employment and economics (local and regional)	4.8
Impacts on development potential of property, including plans in progress and intents to develop	4.8
General economic effects to agricultural operations and livestock	4.8
Reliability and Safety	
Public safety; risk of leak, explosion or catastrophic event	4.12
Cumulative Impacts	
Cumulative impacts of similar proposed project pipelines	4.13
Alternatives	
Analysis of alternative pipeline routes and aboveground facility locations, including alternative compressor station sites	3.0
Use of existing utility rights-of-way, section lines, property lines, existing roadways or abandoned railroad/recreation trails for the proposed pipeline route	3.0

TABLE 1.5-1

Summary of Nonjurisdictional Facility Projects for the G-II Project

Facility Projects	Description
We Energies – Hartford/West Bend Project	A 14-mile two-segment (Hartford Segment 1 and West Bend Segment 2) 12-inch-diameter pipeline lateral to be constructed and operated within the counties of Dodge and Washington, Wisconsin. The pipeline lateral would interconnect with the G-II pipeline at the proposed Rubicon Meter Station. Additional facilities would include the construction and operation of the Hartford/West Bend Gate Station, two 12-inch valves, and a new regulator station.
We Energies – Fox Valley Project	A 12.8-mile four-segment pipeline lateral comprised of 20-inch-diameter (Segment 1), 8-inch-diameter (Segment 2), 16-inch-diameter (Segment 3), and 12-inch-diameter (Segment 4) lateral to be constructed and operated within the counties of Brown and Outagamie, Wisconsin. The pipeline lateral would interconnect with the G-II pipeline at the proposed Fox Valley Meter Station. Additional facilities would include the construction and operation of the Fox Valley Gate Station, Kaukauna Regulator Station, Kimberly Regulator Station, WPPI Delivery Point Customer Metering Facility, Appleton Regulator/Metering Station, and the Kaukauna and Little Chute Valve Assembly.
WPS Sheboygan Project	A 31.0-mile 14- and 12-inch-diameter pipeline lateral to be constructed and operated within the counties of Fond du Lac and Sheboygan, Wisconsin. The pipeline lateral would interconnect with the G-II pipeline at the proposed Sheboygan Meter Station. A 2.07-mile 16-inch-diameter distribution pipeline would also be constructed and operated in Sheboygan, Wisconsin. Additional facilities would include the construction and operation of odorization and pigging facilities, the New West Sheboygan Regulator Station, and the New Plymouth Regulator Station. Modifications would also be made to the existing Sheboygan ANR Meter/WPS Regulator Station and the Plymouth ANR Meter/WPS Regulator Station.
WPS Chilton Project	A 1.75-mile 4-inch-diameter pipeline lateral to be constructed and operated in Calumet County, Wisconsin. The pipeline lateral would interconnect with the G-II pipeline at the proposed Chilton Meter Station. Additional facilities would include the construction and operation of odorization, pigging, and valve facilities and the New Chilton Regulator Station. Modifications would also be made to the existing Chilton ANR Meter/WPS Regulator Station and distribution system connection facilities.
WPS Denmark Project	A 14.25-mile 12-inch-diameter pipeline lateral to be constructed and operated in Brown County, Wisconsin. The pipeline lateral would interconnect with the G-II pipeline at the proposed Denmark Meter Station. Additional facilities would include the construction and operation of odorization and pigging facilities and modifications would be made to the existing Denmark ANR Meter/WPS Regulator Station.
WPS Southwest Green Bay Project	A 8.25-mile 12- and 20-inch-diameter pipeline lateral that would be constructed and operated in Brown County, Wisconsin. The pipeline lateral would interconnect with the G-II pipeline at the proposed Southwest Green Bay Meter Station. Additional facilities would include the construction and operation of odorization, pigging, and valve facilities and the Southwest Green Bay Regulator Station. Modification would also be made to the existing ANR Green Bay Meter/WPS Broadway Regulator Station.
WPS West Green Bay Project	Facilities and modifications would include the construction and operation of flow control and odorization facilities, and modifications to the existing ANR West Green Bay Meter Station.
ATC Project	Facilities would consist of the construction and operation of the Bluff Creek Transformer/Substation in Walworth County, Wisconsin. The transformer/substation would be constructed and operated wholly within the boundaries of the proposed Bluff Creek Compressor Station.
ComEd Project	Facilities would include the construction and operation of 2.5 miles of the new Sycamore Compressor Station Power Line and the Sycamore Transformer/Substation in DeKalb County, Illinois. The transformer/substation will be constructed and operated wholly within the boundaries of the proposed Sycamore Compressor Station.

The FERC has adopted a four-factor procedure to determine the appropriate scope of its environmental review when project-related nonjurisdictional facilities are involved. These factors are:

- whether the regulated activity comprises “merely a link” in a corridor type project (e.g., a transportation or utility transmission project);
- whether there are aspects of the nonjurisdictional facilities in the immediate vicinity of the regulated activity that affect the location and configuration of the regulated activity;
- the extent to which the entire project would be within FERC jurisdiction; and
- the extent of cumulative federal control and responsibility.

1.5.2 Conclusions

After applying the four-factor test, we conclude that:

- the FERC’s control and responsibility is not sufficient to extend its environmental review to include the associated nonjurisdictional pipeline laterals by We Energies and WPS;
- environmental review of the nonjurisdictional pipeline laterals are already being conducted by the Wisconsin PSC and WDNR and it would be duplicative to include an environmental review of those facilities in this EIS; and
- the powerlines that would be constructed by American Transmission Company, LLC (ATC) and ComEd to Guardian’s compressor stations are addressed in this EIS.

These conclusions notwithstanding, the environmental effects of the nonjurisdictional facilities associated with the proposed G-II Project are addressed in the cumulative impacts analysis section 4.13.2.

2.0 DESCRIPTION OF THE PROPOSED ACTION

The FERC is the federal agency responsible for authorizing applications to construct and operate interstate natural gas transmission facilities. The proposed action before the FERC is to consider issuing to Guardian a Section 7 Certificate of Public Convenience and Necessity (Certificate) to construct, own, operate, and maintain a new interstate natural gas pipeline and associated ancillary facilities.

2.1 PROPOSED FACILITIES

Guardian proposes to expand the delivery capacity of its existing pipeline by constructing two new compressor stations along its current pipeline facilities in Illinois and Wisconsin. In addition, Guardian proposes to extend its pipeline facilities by constructing 109.5 miles of new pipeline consisting of 30-inch and 20-inch-diameter pipeline from its current pipeline terminus in Ixonia, Wisconsin to a new terminus west of Green Bay in Oneida, Wisconsin. Additional facilities would include modification to one existing meter station, seven new meter stations, six MLVs, and two sets of launcher/receiver facilities in the counties of Walworth, Jefferson, Dodge, Fond du Lac, Calumet, Brown, and Outagamie, Wisconsin and De Kalb County, Illinois. A general location plan is shown on figure 1-1. Detailed pipeline route and facility maps are included in appendix B.

The following section describes the proposed pipeline facilities, land requirements, construction procedures and schedule, environmental compliance and inspection monitoring, operation and maintenance procedures, safety controls, and nonjurisdictional facilities.

2.1.1 Pipeline

The natural gas pipeline proposed by Guardian would consist of approximately 83.6 miles of 30-inch-diameter pipeline in Jefferson, Dodge, Fond du Lac, Calumet, Brown, and Outagamie Counties, Wisconsin and 25.9 miles of 20-inch-diameter pipeline in Brown and Outagamie Counties, Wisconsin. This pipeline would be capable of transporting about 537.2 MMcfd of natural gas. Of this amount, Guardian would transport 100 MMcfd of natural gas to points along its existing pipeline and 437.2 MMcfd of natural gas to Wisconsin intrastate markets, via seven new delivery points/interconnects (see table 2.1.1-1).

TABLE 2.1.1-1	
Proposed Delivery Points/Interconnects and Meter Station Locations	
Delivery Point/Interconnection	Pipeline Milepost <u>a/</u>
We Energies Hartford/West Bend	13.3
We Energies Fox Valley	83.7
WPS Sheboygan	43.9
WPS Chilton	66.4
WPS Denmark	91.6
WPS Southwest Green Bay	93.9
WPS West Green Bay	109.9 <u>b/</u>
<u>a/</u> Milepost location from which a lateral pipeline to the delivery point/interconnect would leave the G-II pipeline.	
<u>b/</u> The discrepancy between the length of the pipeline (109.5 miles) and the mileposting system is the result of route modifications that were adopted by Guardian after the mileposting system for the Project was established.	

2.1.2 Aboveground Facilities

2.1.2.1 Compressor Stations

The aboveground facilities proposed by Guardian include two new 39,000-hp electric-motor-driven, compressor stations—the Sycamore Compressor Station located within the Sycamore Township in DeKalb County, Illinois, and the Bluff Creek Compressor Station located within the Town of LaGrange in Walworth County, Wisconsin. Each compressor station facility would include:

- a compressor building (approximately 70 feet by 60 feet, housing one 39,000-hp compressor, variable speed hydraulic drive, and electric motor);
- gas coolers;
- an electrical substation;
- an auxiliary building (approximately 140 feet by 40 feet);
- an emergency generator;
- foundations, pipe supports, and landscaping that includes fencing and crushed stone ground cover;
- a permanent access road; and
- a 30-inch launcher/receiver setting and suction and discharge piping.

Suction and discharge piping would also be constructed in support of each new compressor station. This piping would be constructed entirely within the property that Guardian plans to acquire for each new compressor station and Guardian's existing pipeline right-of-way.

2.1.2.2 Meter Stations

Guardian would modify its existing Ixonia Meter Station in Jefferson County, Wisconsin and construct seven new meter stations at each of the delivery points/interconnects along the proposed pipeline route in Dodge, Fond du Lac, Calumet, Brown and Outagamie Counties, Wisconsin. Detailed maps of the pipeline route and meter station locations are provided in appendix B.

2.1.2.3 Launcher/Receiver Facilities

In addition to the 30-inch launcher/receiver setting and suction and discharge piping that would be constructed at the compressor stations, Guardian would also construct new 30-inch and 20-inch-diameter launcher/receiver facilities at three of the proposed meter station sites. The 30-inch-diameter launcher would be constructed within Guardian's existing Ixonia Meter Station in Jefferson County, Wisconsin. The new 30-inch-diameter receiver would be constructed within the proposed Fox Valley Meter Station in Brown County, Wisconsin. The Fox Valley Meter Station would also house the new 20-inch launcher facility. The new 20-inch receiver facility would be constructed within the proposed West Green Bay Meter Station in Outagamie County, Wisconsin at the northern terminus of the new pipeline.

2.1.2.4 Mainline Valves

Guardian would install six new MLVs. Four of these MLVs would be installed along the 30-inch-diameter pipeline at mileposts (MPs) 19.0, 38.8, 45.8, and 64.6 in Dodge, Fond du Lac, and Calumet Counties, Wisconsin, respectively. The two remaining MLVs would be installed

along the 20-inch-diameter pipeline at MPs 93.9 and 104.9 in Brown and Outagamie Counties, Wisconsin.

2.2 LAND REQUIREMENTS

Construction of Guardian's proposed pipeline and related facilities would disturb about 1,587.2 acres of land. Of this total, about 1,323.1 acres would be disturbed by the pipeline construction rights-of-way, 176.3 acres would be disturbed by additional temporary workspace, 12.2 acres would be disturbed by access roads, and 27.6 acres would be disturbed by contractor and pipe yards. Construction of the aboveground facilities would affect about 48.0 acres.

Operation of the new facilities would require about 702.8 acres of the 1,578.2 acres used for construction. Of this total, 664.2 acres would be for the permanent pipeline right-of-way and 38.6 acres would be for the operation of aboveground facilities and permanent access roads. The remaining 884.4 acres would be restored to its preconstruction condition or allowed to revert to its former use.

Table 2.2-1 summarizes the land requirements for the proposed facilities. Additional information regarding land requirements of the proposed project facilities is included below and in section 4.7.1.

TABLE 2.2-1 Summary of Land Requirements for Proposed Facilities		
Facility	Land Affected During Construction (acres)	Land Affected During Operation (acres)
Pipeline		
Pipeline Right-of-Way		
30-inch-diameter Pipeline	1,078.2 <u>a/</u>	507.7
20-Inch-diameter Pipeline	244.9	156.5
Additional Temporary Extra Workspaces	176.3	0.0
Contractor Pipe Yard	27.6	0.0 <u>b/</u>
Access Roads <u>b/</u>	12.2	0.0
Subtotal	1,539.2	664.2
Aboveground Facilities		
Sycamore Compressor Station	22.5	12.5
Bluff Creek Compressor Station	20.7	20.0
Rubicon Meter Station	0.7	0.5
Sheboygan Meter Station	0.7	1.1 <u>c/</u>
Chilton Meter Station	0.6	0.6
Fox Valley Meter Station	1.4	1.8 <u>c/</u>
Denmark Meter Station	0.7	0.5
Southwest Green Bay Meter Station	0.7	1.1 <u>c/</u>
West Green Bay Meter Station <u>c/</u>	0.7	0.5
Subtotal	48.0	38.6
Total	1,587.2	702.8
<u>a/</u> Includes nominal 110- and 80-foot-wide construction right-of-way for the main pipeline and laterals and a 75-foot-wide construction right-of-way in wetlands and forested lands, respectively. <u>b/</u> Guardian will permanently retain three of the access roads that are used for construction to operate the Sheboygan, Fox Valley, and Southwest Green Bay Meter Stations. The acreage permanently impacted by these roads is included as part of the land affected by the operation of these meter stations. <u>c/</u> Acreage affected by operation includes a permanent access road outside the fence line of these meter stations.		

2.2.1 Pipeline

Construction of the proposed pipeline would require acquisition of both temporary and permanent right-of-way easements. Guardian proposes to install the 30-inch-diameter pipeline using a 110-foot-wide construction right-of-way (consisting of 50 feet of permanent easement and 60 feet of temporary workspace). It proposes to install the proposed 20-inch-diameter pipeline using an 80-foot-wide construction right-of-way (consisting of 50 feet of permanent easement and 30 feet of temporary workspace). In wetlands and forested uplands, Guardian would reduce the width of the construction right-of-way for the 30-inch- and 20-inch-diameter pipelines to 75 feet (consisting of 50 feet of permanent easement and 25 feet of temporary workspace). Figures 2.2-1, 2.2-2, and 2.2-3 show typical right-of-way cross-sections for the proposed pipeline.

The FERC regulations (18 CFR, Section 380.15[d][1]) encourage the use, enlargement, or extension of existing rights-of-way over developing a new right-of-way in order to reduce potential impacts on potentially sensitive resources. In general, installation of new pipeline along existing, cleared rights-of-way (e.g., pipeline, powerline, road, or railroad) may be environmentally preferable to construction along new rights-of-way to reduce forest fragmentation and to at least partially overlap previously disturbed and currently maintained rights-of-way. Approximately 33.5 miles (30.6 percent) of Guardian's proposed construction right-of-way would be located adjacent to or within existing rights-of-way. A summary of the location of adjacent existing rights-of-way in relation to the proposed pipeline facilities is presented in table 2.2.1-1. Where the pipeline would be directly adjacent to an existing utility, the new pipeline would be offset about 35 to 50 feet from the existing utility. Figures 2.2-4, 2.2-5, 2.2-6, and 2.2-7 show typical right-of-way cross-sections for the proposed pipeline when located adjacent to an existing utility.

TABLE 2.2.1-1				
Locations Where the Proposed G-II Pipeline Would be Adjacent to Existing Rights-of-Way ^{a/}				
Facility/County	Mileposts	Length (mi.)	Existing Right-of-Way	Relationship of Proposed Pipeline to Existing Rights-of-Way
30-inch-diameter pipeline				
Dodge County	0.4 – 0.9	0.5	Fox Road	East
	5.1 – 5.5	0.4	Bluebird Road	East
Fond du Lac County	56.3 – 59.5	3.2	ATC	West
Calumet County	59.5 – 60.5	1.0	ATC	West
	61.6 – 62.9	1.3	ATC	North
	65.0 – 66.3	1.4	ATC	West
	66.5 – 67.4	0.9	ATC	East
	67.6 – 77.3	9.7	ATC	East
	78.9 – 79.1	0.3	ATC	North
	79.1 – 80.0	0.9	ANR Pipeline	West
	80.0 – 82.4	2.4	ANR Pipeline	East
20-inch-diameter pipeline				
Brown County	93.4 – 96.3	2.8	ATC	Southwest
	96.7 – 96.9	0.2	South Overland Road	East

TABLE 2.2.1-1				
Locations Where the Proposed G-II Pipeline Would be Adjacent to Existing Rights-of-Way ^{a/}				
Facility/County	Mileposts	Length (mi.)	Existing Right-of-Way	Relationship of Proposed Pipeline to Existing Rights-of-Way
Outagamie County	100.9 – 102.7	0.7	ATC	West
Outagamie County	102.0 – 104.4	1.7	ANR Pipeline	East
	104.4 – 104.7	0.3	State Highway 54	North
	105.0 – 105.7	0.7	Olson Road	North
	105.7 – 105.9	0.2	Pearl Street	North
	105.9 – 107.3	1.4	ANR Pipeline	West
	107.4 – 107.6	0.1	Cooper Road	South
	107.6 – 109.1	1.5	Olson Road	East
	109.1 – 109.9	0.8	Olson Road	West
Total		33.5	(30.6%)	
^{a/} At this time, Guardian does not know the width of parallel rights-of-way or the amount of overlap that may be available. Guardian does not expect this information will be available until after discussions with the owners of adjacent rights-of-way have taken place. Note: The length and total length may differ slightly from the measured distance between mileposts due to rounding.				

2.2.2 Aboveground Facilities

The land requirements for each of the proposed aboveground facilities are listed in table 2.2-1 and discussed in further detail below.

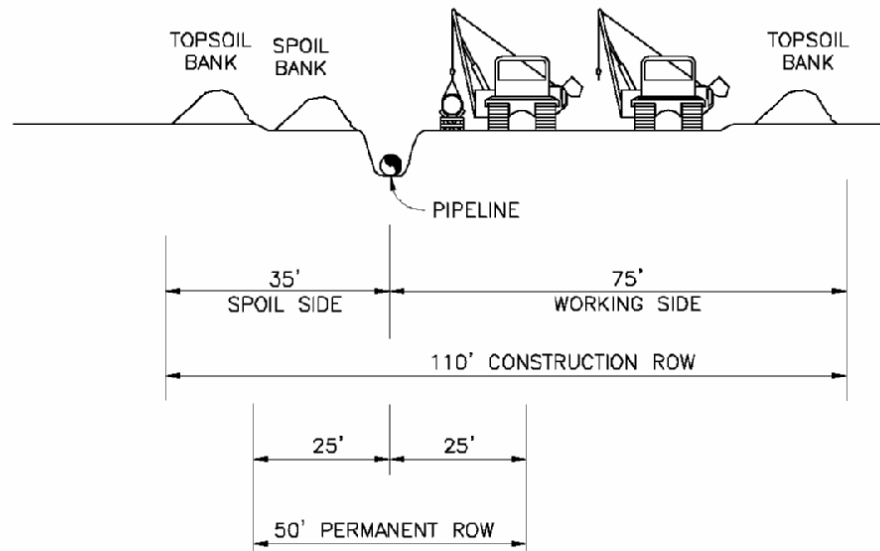
2.2.2.1 Compressor Stations

Construction of the Sycamore Compressor Station and associated permanent access road would disturb approximately 22.5 acres. Approximately 12.5 acres would be fenced, covered with gravel, and permanently retained to operate the facility.

Construction of the Bluff Creek Compressor Station and associated access road would disturb approximately 20 acres. All 20 acres of land would be fenced, covered with gravel, and permanently retained to operate the facility.

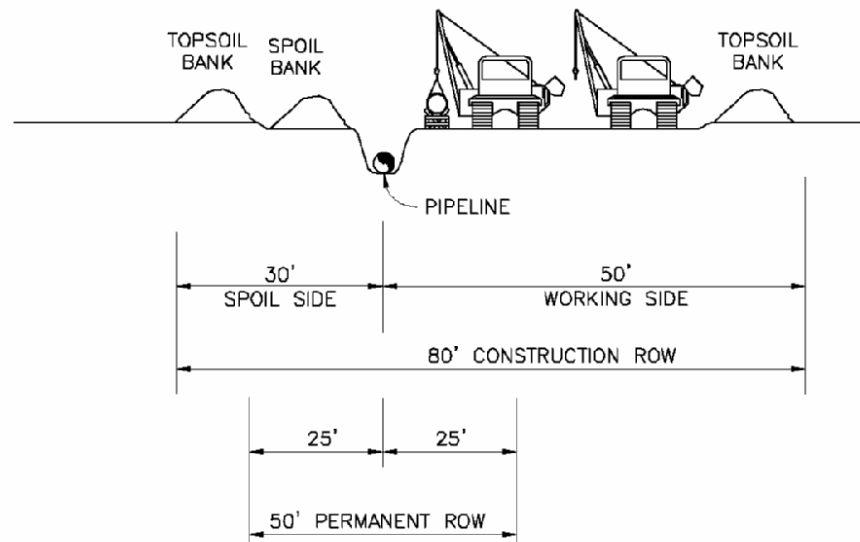
2.2.2.2 Meter Stations

The proposed modifications to the existing Ixonia Meter Station would be confined to the existing 3.0-acre meter station property. Construction of each of the new meter stations would disturb between 0.6 and 1.4 acres of land (see table 2.2-1). About 0.5 acre of land (130 feet by 170 feet) would be permanently retained to operate five of the seven new meter stations including the Rubicon, Sheboygan, Denmark, Southwest Green Bay, and West Green Bay Meter Stations. The Chilton Meter Station would permanently occupy about 0.6 acre of land (160 feet by 170 feet). The Fox Valley Meter Station would permanently occupy about 1.2 acres (225 feet by 225 feet) of land. Additional acreage for permanent access roads would be required at the Sheboygan (0.6 acre), Fox Valley (0.6 acre), and Southwest Green Bay Meter Stations (0.6 acre).

**NOTES**

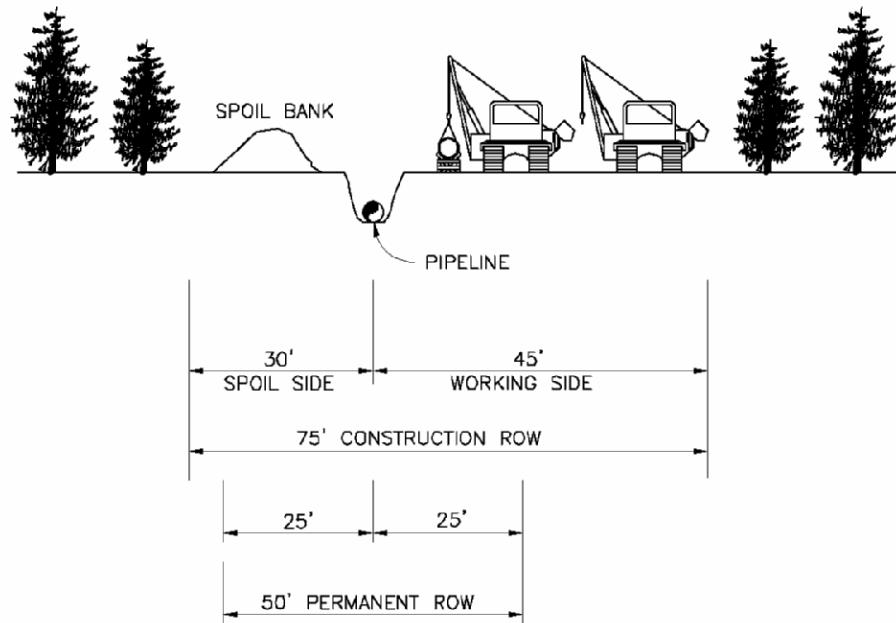
1. CONFIGURATION DOES NOT INCLUDE ADDITIONAL TEMPORARY WORKSPACE AT CROSSINGS.
2. 4 FEET COVER OVER TOP OF PIPE.
3. UP TO 12" TOPSOIL REMOVAL FROM WORKING SIDE AND SUBSOIL STORAGE AREAS.
4. TOPSOIL STORED ON SPOIL SIDE AND WORKING SIDE.

Figure 2.2-1
Guardian Expansion and Extension Project
Typical 110-foot Right-of-Way Cross Section (30-inch Pipeline)

NOTES

1. CONFIGURATION DOES NOT INCLUDE ADDITIONAL TEMPORARY WORKSPACE AT CROSSINGS.
2. 4 FEET COVER OVER TOP OF PIPE.
3. UP TO 12" TOPSOIL REMOVAL FROM WORKING SIDE AND SUBSOIL STORAGE AREAS.
4. TOPSOIL STORED ON SPOIL SIDE AND WORKING SIDE.

Figure 2.2-2
Guardian Expansion and Extension Project
Typical 80-foot Right-of-Way Cross Section (20-inch Pipeline)

**NOTES**

1. CONFIGURATION DOES NOT INCLUDE ADDITIONAL TEMPORARY WORKSPACE AT CROSSINGS.

Figure 2.2-3
Guardian Expansion and Extension Project
Typical Right-of-Way Cross Section in Forested Uplands and Wetland Areas

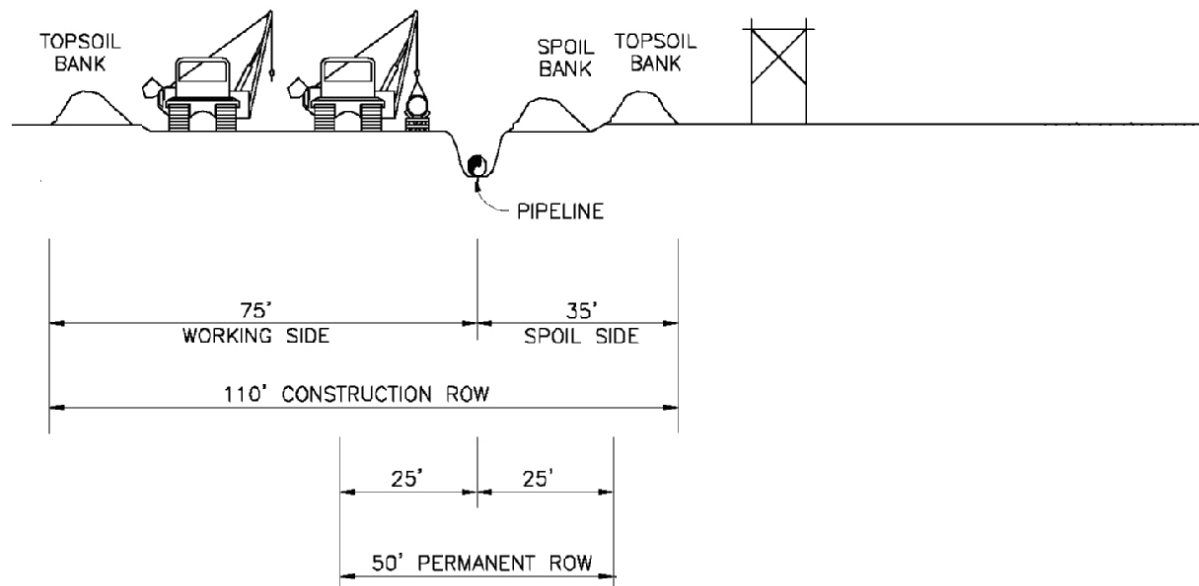


Figure 2.2-4
Guardian Expansion and Extension Project
Typical 110-foot Right-of-Way Cross Section
Adjacent to an Existing Power Line (30-inch Pipeline)

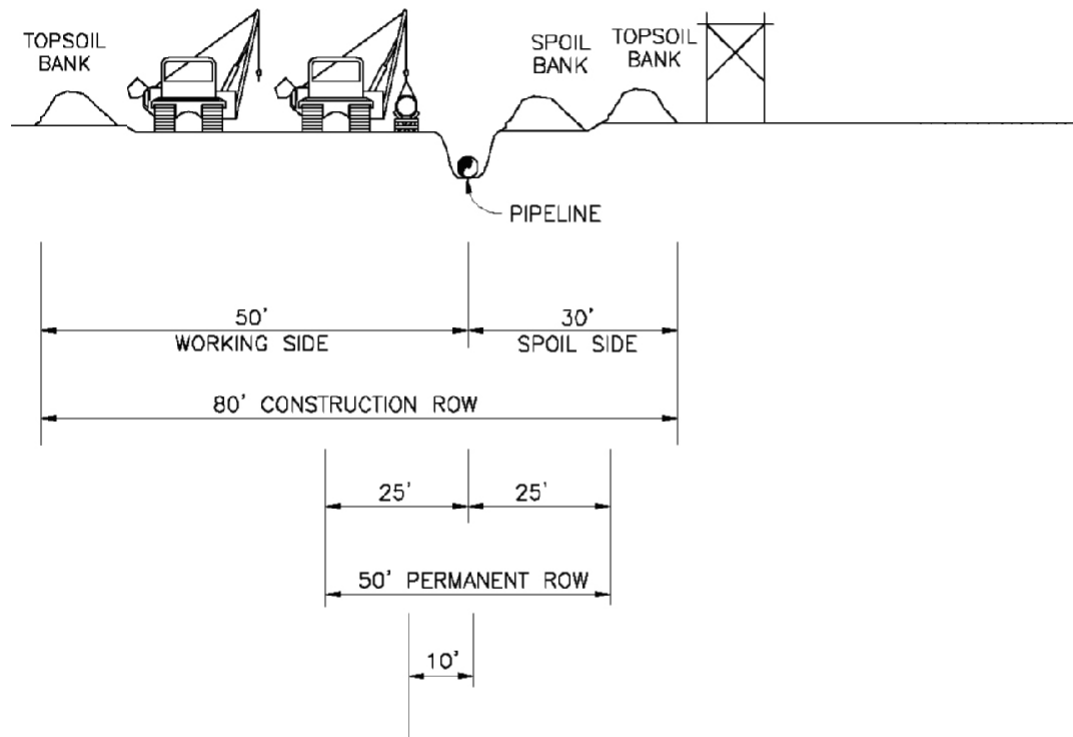
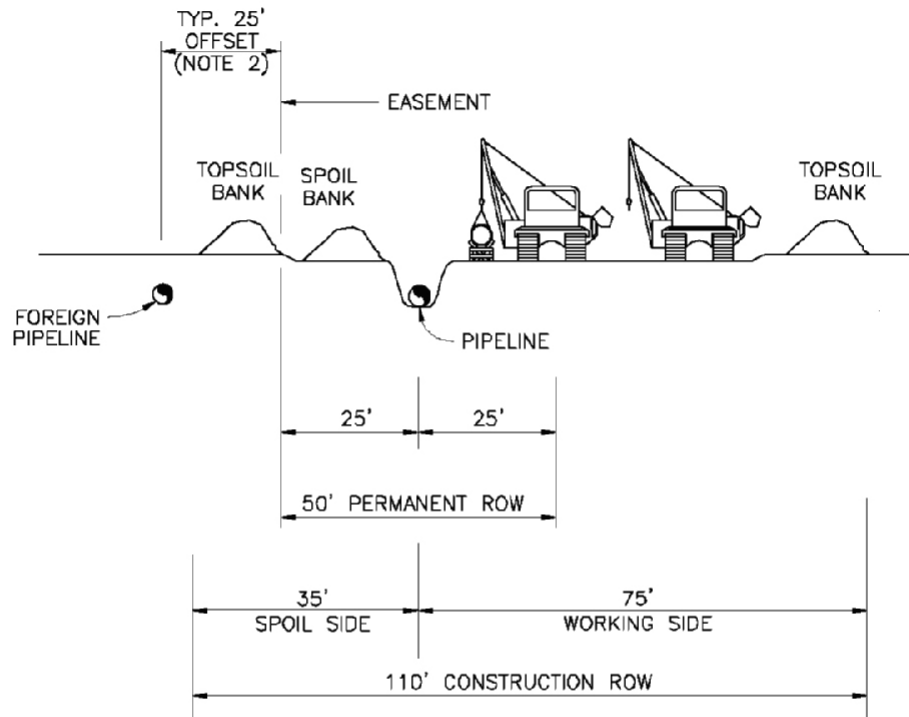


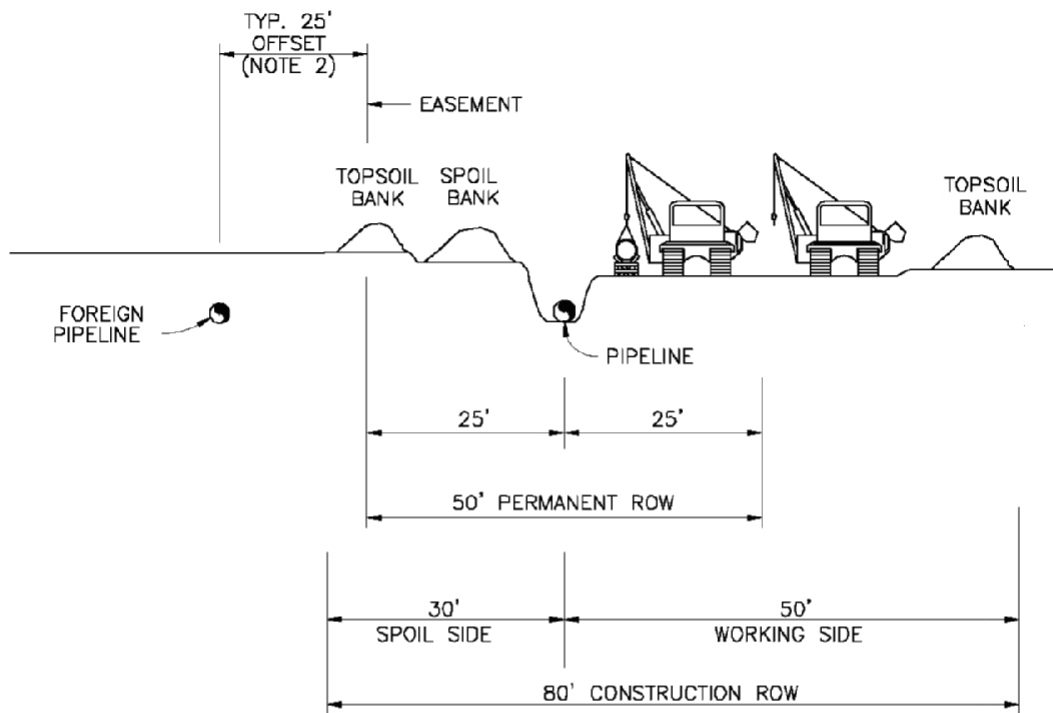
Figure 2.2-5
Guardian Expansion and Extension Project
Typical 80-foot Right-of-Way Cross Section
Adjacent to an Existing Power Line (20-inch Pipeline)



NOTES

1. WHERE PERMISSION TO STOCKPILE SPOIL ON EXISTING EASEMENT IS DENIED.
2. TYPICAL SEPARATION BETWEEN PROPOSED AND FOREIGN PIPELINE EASEMENTS WHEN THE SPOIL SIDE OF THE PROPOSED PIPELINE IS ADJACENT TO THE EXISTING CORRIDOR. THIS MAY NEED TO BE DECREASED OR INCREASED TO ALLOW FOR OBSTACLES OR TERRAIN AND FOREIGN PIPELINE ROW RESTRICTIONS.
3. ASSUMES FOREIGN PIPELINE EASEMENT LIMIT IS 25' FROM FOREIGN PIPELINE.
4. CONFIGURATION DOES NOT INCLUDE ADDITIONAL TEMPORARY WORKSPACE AT CROSSINGS.

Figure 2.2-6
Guardian Expansion and Extension Project
Typical 110-foot Right-of-Way Cross Section
Adjacent to an Existing Pipeline (30-inch Pipeline)



NOTES

1. WHERE PERMISSION TO STOCKPILE SPOIL ON EXISTING EASEMENT IS DENIED.
2. TYPICAL SEPARATION BETWEEN PROPOSED AND FOREIGN PIPELINE EASEMENTS WHEN THE SPOIL SIDE OF THE PROPOSED PIPELINE IS ADJACENT TO THE EXISTING CORRIDOR. THIS MAY NEED TO BE DECREASED OR INCREASED TO ALLOW FOR OBSTACLES OR TERRAIN AND FOREIGN PIPELINE ROW RESTRICTIONS.
3. ASSUMES FOREIGN PIPELINE EASEMENT LIMIT IS 25' FROM FOREIGN PIPELINE.
4. CONFIGURATION DOES NOT INCLUDE ADDITIONAL TEMPORARY WORKSPACE AT CROSSINGS.

Figure 2.2-7
Guardian Expansion and Extension Project
Typical 80-foot Right-of-Way Cross Section
Adjacent to an Existing Pipeline (20-inch Pipeline)

2.2.2.3 Launcher/Receiver Facilities

No additional land would be disturbed or permanently retained for the construction and operation of the new launchers or receiver facilities. Each launcher and/or receiver would be located within the existing meter station in Ixonia, Wisconsin and the proposed meter stations of Fox Valley and West Green Bay.

2.2.2.4 Mainline Valves

Construction of each MLV would disturb approximately 0.1 acre of extra temporary workspace outside of the proposed pipeline construction right-of-way.

No new permanent right-of-way outside of the permanent pipeline right-of-way would be required for the valves; however, an area of about 0.03 acre (50 feet by 30 feet) would be fenced and covered with gravel at each valve site within Guardian's new permanent easement at each of the six MLV locations.

2.2.3 Extra Work Areas

2.2.3.1 Additional Temporary Work Areas

In addition to the typical 110- and 80-foot-wide construction rights-of-way, additional temporary workspaces would be required to facilitate construction at road, railroad, wetland, and waterbody crossings; in areas with steep side slopes; in agricultural areas for three-lift soil handling; topsoil segregation; for installation of cathodic protection; for truck turnarounds; at valve sites; at hydrostatic test water withdrawal pump locations; at tie-ins; at points of intersection, and at foreign pipeline crossings. Additional temporary workspace would also be required whenever special construction techniques, such as horizontal borings, would be utilized. Except as otherwise requested, or where topographic or other factors impose setback constraints, temporary extra workspaces would be set back 50 feet from the edges of waterbodies and wetlands (see sections 4.3.2.2 and 4.4.1.3 for a list of requested deviations from the 50-foot setback requirement).

Additional temporary workspace of varying dimensions would be required at about 505 locations throughout the proposed pipeline route, primarily at crossings of existing utilities, roads, waterbodies, and wetlands (see appendix C).

2.2.3.2 Access Roads and Contractor Yard

Guardian has identified 24 access roads that it would use for construction and operation of its proposed pipeline and aboveground facilities. Of this amount, 16 are existing roads and 8 roads would be newly constructed and/or extensions of existing roads. Of the 8 newly constructed roads, only 3 would be retained for permanent access (see table 2.2.3.2-1).

Road improvements would take place within the existing road footprints and no wetland or waterbodies would be affected due to road improvements. A total of about 12.2 acres would be required for the access roads used during construction. Of this amount, 1.8 acres would be retained for permanent access.

TABLE 2.2.3.2-1				
Access Roads Associated with the G-II Project				
Milepost	Road Name/ Destination	New/ Existing	Permanent/ Temporary	Acres Affected
0.7	Private Drive	Existing	Temporary	0.0
9.7	G-II Access Road	New	Temporary	0.1
22.7	Private Drive	Existing	Temporary	0.1
16.6	G-II Access Road (Extension to Private Drive)	New	Temporary	0.2
16.6	Field Road	Existing	Temporary	0.2
21.0	Private Drive	Existing	Temporary	0.2
21.1	G-II Access Road (Extension to Private Drive)	Existing	Temporary	0.1
21.1	Private Drive	Existing	Temporary	0.6
25.5	G-II Access Road	New	Temporary	0.1
27.1	Private Drive	Existing	Temporary	0.3
30.5	Field Road	Existing	Temporary	0.8
36.3	Private Drive	Existing	Temporary	0.6
38.5	Private Drive	Existing	Temporary	0.4
40.0	Field Road	Existing	Temporary	1.7
43.8	G-II Access Road	New	Permanent	0.6
45.1	Field Road	Existing	Temporary	0.3
50.2	Field Road	Existing	Temporary	1.3
72.9	Private Drive	Existing	Temporary	0.7
77.7	Private Drive	Existing	Temporary	1.1
77.7	G-II Access Road (Extension to Private Drive)	New	Temporary	0.2
83.7	G-II Access Road to the Fox Valley Meter Station	New	Permanent	0.6
87.7	Private Drive	Existing	Temporary	0.8
93.9	G-II Access Road	New	Permanent	0.6
102.3	Field Road	Existing	Temporary	0.6
Total				12.2

Guardian has identified one potential contractor and pipe yard location for use during the Project. This yard will be located in Fond du Lac County, Wisconsin on land zoned for industrial use, but currently in use for agriculture (see figure 2.2-8). This yard is about 27.6 acres and would only be used temporarily during construction of the Project.

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FOR THE GUARDIAN EXPANSION
AND EXTENSION PROJECT
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Figure 2.2-8 Guardian Expansion and Extension Project
Fond du Lac Pipe/Contractor Yard

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available only through the Public Reference Room, or by e-mail
at public.referenceroom@ferc.gov.

2.3 CONSTRUCTION PROCEDURES

This section describes the general construction procedures proposed by Guardian for construction of the pipeline and aboveground facilities. Section 4.0 of this EIS contains more detailed discussions of proposed construction and restoration procedures, as well as additional measures that we are recommending to mitigate environmental impacts.

The proposed pipeline facilities would be designed, constructed, operated, and maintained in accordance with the U.S. Department of Transportation (DOT) regulations at 49 CFR 192, *Transportation of Natural or Other Gas by Pipeline: Minimum Federal Safety Standards*. Among other items, these regulations specify material selection, design criteria, corrosion protection, and qualification for welders and operation personnel. In addition, Guardian would comply with the Commission's regulations at 18 CFR 380.15, regarding the siting and maintenance of pipeline rights-of-way. The Project would also adhere to the federal standards that are intended to adequately protect the public by preventing or mitigating natural gas pipeline failures or accidents, and ensure safe operation of the facilities.

Guardian would construct the project facilities in accordance with our *Upland, Erosion Control, Revegetation and Maintenance Plan* (Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures). The Plan and Procedures are a set of construction and mitigation measures that were developed in collaboration with other federal and state agencies and the natural gas pipeline industry to minimize the potential environmental impact of the construction of pipeline projects in general. It is our position that the proper implementation of our Plan and Procedures would adequately minimize construction-related impacts on soil, waterbodies, and wetlands in general. Our Plan and Procedures have been included as appendices D and E.

Guardian has requested to use an 80- to a 110-foot-wide nominal construction right-of-way. The construction rights-of-way that have been proposed are the result of consultations between Guardian and the DATCP. The DATCP has specifically requested that Guardian achieve a minimum of 4 feet of cover over the pipeline in agricultural areas. This depth of burial is deeper than that required by the DOT; however, the DATCP believes, and we agree, that the additional cover would minimize interference to agricultural drainage tiles, and other agricultural operations. As a result of the greater depth of burial, pipeline trenching would result in additional spoil and would therefore require additional construction right-of-way space to facilitate spoil storage and minimize mixing of topsoil with subsoil during construction.

Guardian has agreed to use a 75-foot-wide construction right-of-way in the majority of wetlands crossed by the G-II pipeline; however, in farmed wetlands Guardian proposes to use an 80- to a 110-foot-wide construction right-of-way.

Guardian would also be required to develop a *Spill Prevention, Control and Countermeasures Plan* (SPCC Plan) to be implemented during construction of the facilities. The SPCC Plan must address potential spills of fuel, lubricants, and other hazardous materials and describe spill prevention practices, spill handling and emergency notification procedures, and training requirements. A general SPCC Plan has been provided as appendix F. This SPCC Plan will be updated with site-specific information and filed with the Secretary prior to construction.

2.3.1 Pipeline and Associated Aboveground Facilities

2.3.1.1 General Pipeline Construction Procedures

Prior to initiating construction-related activities, Guardian would secure right-of-way easements from private landowners and managers of public lands whose properties would be crossed by the pipeline route. All owners, tenants, and lessees of private land, and lessees and managers of public lands along the right-of-way would be notified in advance of construction activities that could affect their property, business, or operations. If the necessary land rights or easements could not be obtained through good faith negotiations with landowners, and the proposed Project has been certificated by the FERC, Guardian may use the right of eminent domain granted to it under Section 7(h) of the NGA to obtain a right-of-way. Guardian would still be required to compensate the landowners for the rights-of-way, as well as for any damages incurred during construction. However, the level of compensation would be determined by the court according to state laws that set forth the procedures for the use of eminent domain once the FERC issues a Certificate. Guardian must proceed through the appropriate state or federal court to condemn land for which it has received a Certificate from the FERC. The FERC does not take part in such proceedings.

Construction of the proposed pipeline facilities would incorporate conventional overland construction techniques for large diameter pipelines. The construction of the proposed pipeline would follow a set of sequential operations, unique to the pipeline industry, as shown on figure 2.3-1 and as further described below. In the typical pipeline construction scenario, the construction spread (crew) proceeds along the pipeline right-of-way in one continuous operation. As the spread moves along, construction at any single point along the pipeline, from initial surveying and clearing to backfilling and finish grading, is expected to last approximately 6 to 10 weeks. The entire process would be coordinated in such a manner as to minimize the total time a tract of land is disturbed and therefore exposed to erosion, and temporarily precluded from normal use.

Survey and Staking

Affected landowners would be notified prior to the commencement of preconstruction survey and staking activities. After these notifications, a crew would survey and stake the outside limits of the right-of-way and additional temporary workspaces, as well as the centerline of the pipeline, drainages, highway and railroad crossings, and access roads. The exterior boundary of these areas would be maintained throughout the construction period. Existing utility lines (e.g., cables, conduits, and pipelines) would be located and marked with flags, stakes, or other devices to prevent accidental damage during pipeline construction.

Erosion and Sediment Control

Temporary soil erosion and sedimentation control measures would be installed along the right-of-way, access roads, and additional temporary extra workspace in accordance with the standard requirements for pipeline construction and operation in our Plan.

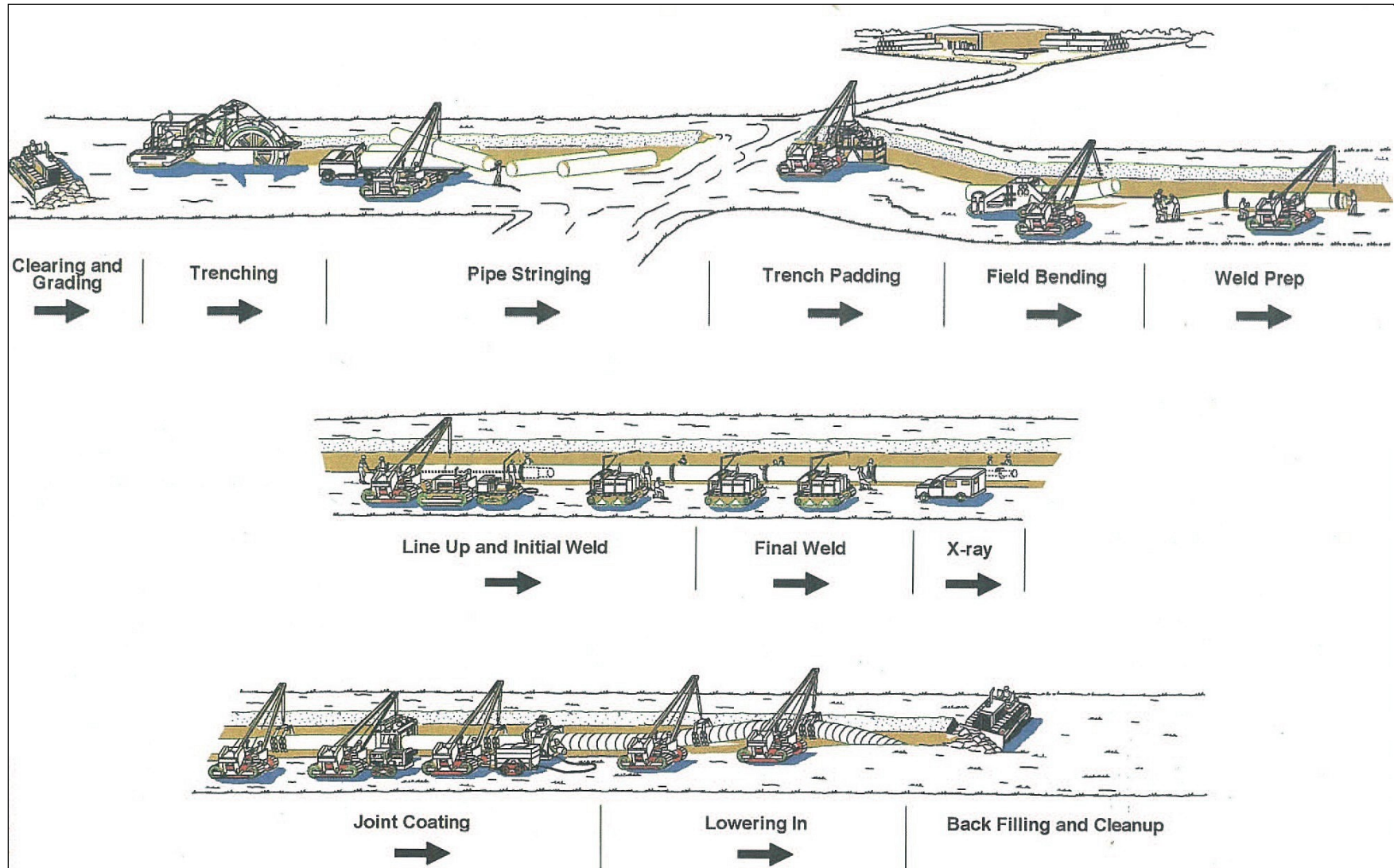


Figure 2.3-1
Guardian Expansion and Extension Project
Typical Pipeline Construction Sequence

Clearing and Grading

Following the installation of the erosion and sedimentation control measures, the construction right-of-way and additional temporary work spaces would be cleared and graded as necessary. Large obstacles, such as trees, rocks, brush, and logs, would be removed. Timber would be removed only when necessary for construction purposes. Timber and other vegetative debris may be chipped for use as erosion-control mulch or otherwise disposed of in accordance with applicable local regulations and landowner requirements. If permitted, burning would be conducted in such a manner as to minimize fire hazard and prevent heat damage to surrounding vegetation. Fences would be cut and braced along the right-of-way and temporary gates would be installed as necessary to control livestock and limit public access. The right-of-way would then be graded where necessary to create a reasonably level working surface to allow safe passage of equipment. Temporary bridges and culverts would be established for creek and drainage ditch crossings. In agricultural and residential areas, conserved topsoil would be stockpiled, usually along one side of the right-of-way, allowing the other side to be used for access, material transport, and pipe assembly.

Trenching

Trench excavation is necessary to bury the pipeline underground. The trench would be excavated with a rotary trenching machine, a track-mounted backhoe, or similar equipment. Blasting may be required to excavate the trench in some locations where rock substrates are encountered at depths that interfere with conventional excavation or rock-trenching methods (see section 4.4.1). In agricultural and residential areas, subsoil would be stockpiled separately from topsoil. Typically, the bottom of the trench would be excavated at least 12 inches wider than the diameter of the pipe (i.e., 42 inches for a 30-inch-diameter pipe). The sides of the trench may be sloped for safety. The width of the top of the trench would vary depending on the soils being crossed. At tie-in locations, the top of the trench is expected to be between about 12 to 15 feet across. The width of the trench in unstable soils could be even wider. The trench would be excavated to a sufficient depth to generally allow a minimum of 4 feet of soil cover between the top of the pipe and the final land surface after backfilling. Areas containing shallow bedrock may have less than 4 feet of cover. At least 4 feet of cover would typically be used at waterbody crossings. Excavated soils would be stockpiled along the right-of-way, typically on the side of the trench away from the construction traffic (the “spoil side”) and pipe assembly area.

Pipe Stringing

Steel pipe for the pipeline would be procured in nominal 40-foot, 60-foot, and 80-foot lengths or joints, protected with an epoxy coating applied at the factory (the beveled ends would be left uncoated for welding), and shipped to the contractor/pipe storage yards. The individual joints would be transported to the right-of-way by truck and placed along the excavated trench in a single, continuous line, easily accessible to the construction personnel on the working side of the trench, opposite the spoil side. This would allow the subsequent lineup and welding operations to proceed efficiently. At waterbody crossings, the amount of pipe that would be required to span the waterbody typically would be stockpiled in temporary work areas on one or both banks of the waterbody.

Pipe Bending

The pipe would be delivered to the project site in straight sections. Generally, some bending of the pipe would be required to allow the pipeline to follow natural grade changes and direction changes of the right-of-way. Selected joints would be field bent by track-mounted hydraulic bending machines as necessary prior to line-up and welding. For larger horizontal changes of direction, manufactured induction bends may be used.

Pipe Assembly and Welding

Following stringing and bending, the joints of pipe would be placed on temporary supports adjacent to the trench. The ends would be carefully aligned and welded together using multiple passes for a full penetration weld. Only qualified welders according to applicable American National Standards Institute, American Society of Mechanical Engineers, and American Petroleum Institute (API) Standards would be permitted to perform the welding.

X-Ray and Weld Repair

To ensure that the assembled pipe would meet the design strength requirements, the welds would be visually inspected and non-destructively tested using radiographic (x-ray) or another approved test method, in accordance with API Standards. Welds displaying inclusions (void spaces) or other defects would be repaired or cut out (removed) and a new weld would be installed and retested.

Coating Field Welds, Inspection, and Repair

Following welding, the previously uncoated ends of the pipe at the joints would be epoxy coated. Prior to lowering the pipe into the trench, the coating on the pipe section would be inspected. Any damaged areas that are identified would be repaired.

Pipe Lowering

The completed section of pipe would be lifted off the temporary supports and lowered into the trench by side-boom tractors or in some cases other equipment. Before lowering the pipe, the trench would be inspected to ensure that it is free of debris that could damage the pipe or the coating. In addition, the pipe and trench would be inspected to ensure that the pipe and trench configurations are compatible.

Padding and Backfilling

After the pipe is lowered into the trench, the trench would be backfilled. Previously excavated spoil would be pushed back into the trench using bladed equipment or backhoes. Where the trench spoil contains materials that could damage the pipe or coating, clean fill or protective materials would be placed around the pipe prior to backfilling. Following backfilling, a small crown of soil may be left to account for any future settling that might occur.

Hydrostatic Test and Final Tie-In

Following backfilling of the trench, the pipeline would be hydrostatically tested to ensure it is capable of operating at the design pressure. The new pipeline would be hydrostatically tested prior to being placed into service. The hydrostatic test water for the pipeline facilities would be pumped through screened intakes from waterbodies located along or near the pipeline route.

Hydrostatic test water for the compressor stations would be obtained from municipal sources or from wells Guardian proposes to install at each compressor station. The water in the pipe would be pressurized and held for a minimum of 8 hours. Any loss of pressure that cannot be attributed to other factors, such as temperature changes, would be investigated. Leaks that are detected would be repaired. Upon completion of the testing, the water would generally be discharged back to the source through an energy-dissipating device, or where that is not practical, water would be discharged to an upland area that is well vegetated, or other location using a filter bag or other energy dissipating device. If necessary, hydrostatic test water would be discharged through a filtration system to remove any sediment or other pollutants pursuant to applicable permit requirements. Hydrostatic test water obtained from municipal sources or from Guardian's own wells would be discharged to an upland area that is well vegetated, or other location using a filter bag or other energy dissipating device.

Hydrostatic test water would generally be in contact with new pipe. No chemicals would be added to the testing water. Once a segment of pipe has been successfully tested and dried, the test cap and manifold would be removed, and the pipe would be connected to the remainder of the pipeline. Hydrostatic testing is further addressed in section 4.3.2.4.

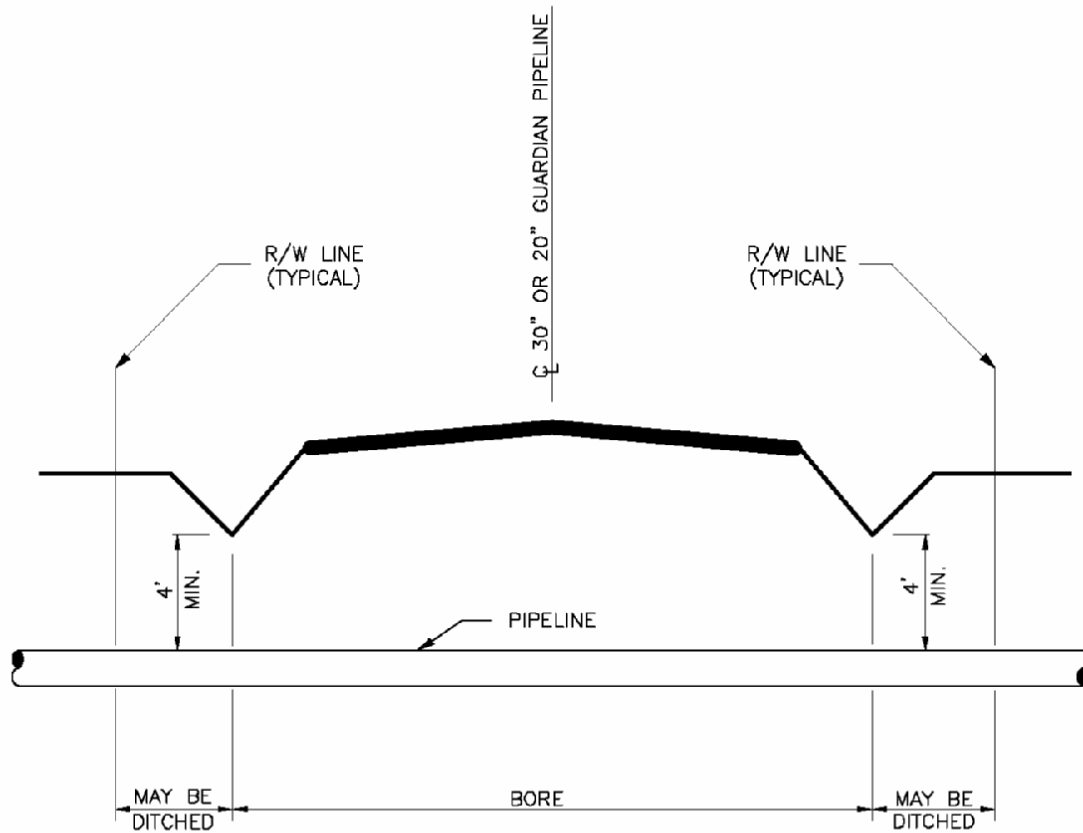
Cleanup and Restoration

After the pipeline has been installed and the trench has been backfilled, the areas disturbed by construction would be graded as necessary. Construction debris would be disposed of properly and land contours would be restored to conform to adjacent areas. In agricultural and residential areas, compacted subsoil would be decompact, and the segregated topsoil would be returned as nearly as possible to its original horizon. Permanent erosion and sediment control measures would be installed at this time. Private and public property, such as fences, gates, driveways, and roads, disturbed by pipeline construction would be restored in accordance with the standard requirements in our Plan and Guardian's project-specific Agricultural Impact Mitigation Plan (AMP). The AMP is being developed in consultation with the DATCP and will be included in the final EIS.

2.3.1.2 Special Pipeline Construction Techniques

Road and Railroad Crossings

Construction of the pipeline across major paved roadways and railways where traffic cannot be interrupted would be accomplished by conventional boring techniques. Roads and railroads that would be crossed using this methodology are listed in appendix G. Smaller, unpaved roads and drives would be crossed by open trenching. If an open-cut road requires extensive construction time, provisions would be made for detours, or other measures would be implemented to permit traffic flow during construction. The top of the pipeline would be installed to a depth of at least 4 feet below the bottom of the road ditches (see figure 2.3-2) and would be designed to withstand anticipated external loading. Casings would be installed where required by permitting authorities. Following installation of the pipeline, the trench would be backfilled and the road surface would be restored.



NOTE:

1. PIPE TO BE INSTALLED UNDER ROAD BY BORING.
2. ALL DIMENSIONS ARE SUBJECT TO INDIVIDUAL ROAD SPECIFICATIONS.

Figure 2.3-2
Guardian Expansion and Extension Project
Typical 20-inch and 30-inch Pipeline Road Bored Crossing

Wetland Crossings

Crossings of jurisdictional wetlands would be conducted in accordance with our Procedures. Our Procedures regarding the crossing of wetlands have been included as appendix E.

Waterbody Crossings

Crossings of waterbodies would be conducted in accordance with our Procedures.

Installation of the pipeline across waterbodies would be accomplished using either a “wet” or “dry” construction technique. A “wet” or open-cut crossing involves trenching and installing the pipeline without isolating the construction work area from stream flow. The objective of this method is to complete the crossing as quickly as practicable to minimize the duration of impacts on aquatic resources. A “dry” crossing involves isolating the construction zone from the stream flow by directing water flow through a flume pipe (flume crossing), by damming the flow and pumping the water around the construction area (dam and pump crossing), or by directionally drilling and installing the pipeline beneath the waterbody (horizontal directional drilling [HDD]). The primary objectives of these methods are to minimize siltation of the waterbody and allow for a more extended construction period.

Residential Areas

Where residences are located in proximity to the construction right-of-way, Guardian would reduce construction workspace, if necessary, to minimize inconvenience to property owners. If construction requires the removal of private property features, such as gates or fences, the landowner or tenant would be notified prior to the action. Following completion of major construction, the property would be restored as requested by the landowner in accordance with Guardian’s easement agreements, insofar as the landowner’s requirements are compatible with existing regulations and with Guardian’s standards regarding right-of-way restoration and maintenance.

Agricultural Areas

Guardian estimates that about 92 percent of the pipeline construction route is agricultural land. Guardian would cross these agricultural lands in accordance with the standard requirements for pipeline construction in our Plan and Guardian’s project-specific AMP currently under development. Guardian would conserve topsoil in all actively cultivated and rotated cropland, improved pasture, non-saturated wetlands, and residential areas. A maximum of 12 inches of topsoil would be segregated in these areas; in other areas topsoil would be segregated at the specific request of the landowner or land management agency. The topsoil and subsoil would be stored in separate windrows on the construction right-of-way and would not be allowed to mix. Where topsoil is less than 12 inches deep, the actual depth of the topsoil would be removed and segregated. The depth of the trench would be sufficiently deep to allow for at least 4 feet of cover on top of the pipe. Soil fertility and other characteristics are further discussed in section 4.2. Agricultural areas crossed by the project are identified in section 4.7 along with proposed mitigation measures.

Certified Organic Farms

The proposed pipeline would cross one certified organic farm and the pipeline centerline could come within 50 feet of a second certified organic farm. To minimize impacts on certified

organic farms, Guardian would implement site-specific construction techniques based on a best management practice (BMP) for organic agricultural land to be incorporated in Guardian's AMP.

Guardian's BMP for organic agricultural land would identify mitigation measures that apply specifically to farms that are Certified Organic or farms that are in active transition to become Certified Organic, and will address the unique management and certification requirements of these operations. Guardian recognizes that organic agricultural land is a unique feature of the landscape and will treat this land with the same level of care as other sensitive environmental features.

As part of their BMP, Guardian would request a copy of the Organic System Plan for the farm and will work with each producer (landowner or tenant) to develop a site-specific plan to cross the farm in a manner that would minimize the risk of losing certification. Standard protocols Guardian could implement in these areas include:

- segregating topsoil and subsoil;
- avoiding the application of any prohibited substances;
- restricting equipment refueling and maintenance activities;
- inspecting equipment for leaks before entering the property;
- restricting parking of equipment on the property;
- implementing other practices as indicated by the individual producer's Organic System Plan; and
- monitoring of construction and restoration procedures using appropriately trained monitors or inspectors.

Commercial and Industrial Areas

Impacts on commercial and industrial areas generally would be limited to the construction period. Guardian would maintain close coordination with business owners to maintain access, decrease construction duration, and generally attempt to minimize impacts. Commercial and industrial areas crossed by the pipeline, as well as proposed measures to mitigate impacts on those areas, are identified in section 4.7.

Blasting

Soil survey information indicates that shallow bedrock would be crossed by portions of the pipeline route (see section 4.1.1 for further details on blasting). Some of this shallow bedrock is hard and may require blasting. In these areas, care would be taken to prevent damage to above and underground structures (e.g., buildings, cables, conduits, and pipelines) or to springs, water wells, or other water sources. Blasting mats or soil cover would be used as necessary to prevent the scattering of loose rock. Blasting would be conducted during daylight hours and would not begin until occupants of nearby buildings, stores, residences, places of business, and farms have been notified. This is further discussed in geology or soils in sections 4.1 and 4.2.

2.3.1.3 Aboveground Facility Construction Procedures

Aboveground facilities that would be constructed as part of the Project include compressor stations, meter stations, MLVs, and launcher and receiver facilities. Construction activities and storage of construction materials and equipment would be confined to the approved construction area at the compressor station site or other approved work areas (e.g., contractor/pipe yards). Debris and wastes generated from construction would be disposed of appropriately. Disturbed surface areas would be restored in a timely manner.

Construction of the compressor and meter stations would involve clearing and grading, where necessary. Foundations would be poured; piping, valves, fittings, and flanges assembled on-site; equipment mounted on the foundations; and auxiliary buildings erected. Lastly, access roads and parking lots would be paved, a permanent perimeter fence would be installed surrounding the facilities, and landscaping would be completed.

Components in high-pressure natural gas service would be hydrostatically tested before being placed in service. Before being placed in service, controls and safety equipment and systems would be checked and tested. Hydrostatic testing would follow applicable federal, state, and local requirements.

2.4 CONSTRUCTION SCHEDULE

Guardian is under contract for a project in-service date of November 1, 2008. It should take a total of about 7 months to construct the entire Project. The first part of this process would be the construction of the compressor stations, which would begin in late March of 2008. Construction of the pipeline and other associated facilities would be scheduled to begin in May of 2008. Construction of the pipeline and compressor station facilities is expected to be completed in September of 2008. Construction of the meter stations is expected to be completed in October of 2008. Some preparatory construction and mitigation work may occur prior to and after these dates.

2.5 ENVIRONMENTAL COMPLIANCE AND MONITORING

Prior to construction, Guardian would develop and implement a project-specific environmental compliance program. This program would define the roles and responsibilities of various construction and inspection personnel and would identify the organization, reporting structure, and lines of communication related to environmental compliance. The environmental compliance and monitoring requirements would include the standard requirements for pipeline construction and operation in our Plan and Procedures, and would also incorporate compliance and monitoring requirements from the federal, state, and local permits obtained for the Project.

Guardian would also develop various project-specific environmental training modules. The most intensive training would be provided to Guardian's environmental inspectors before they begin their inspection duties. Appropriately tailored environmental training would also be provided to other onsite contractor and construction management personnel. Guardian would maintain training records to verify that each individual has received the required training before he or she engages in construction activities. It is anticipated that the focus of the environmental training would be on erosion and spill control, wetland and waterbody mitigation and restoration procedures, agricultural mitigation and restoration procedures, and our site-specific requirements

for other sensitive areas, our Plan and Procedures, Guardian's AMP, Certificate, or permit conditions.

Guardian would prepare environmental compliance handbooks and other documents, such as construction alignment sheets prior to construction, which will be provided to its environmental inspectors and other key individuals. The environmental compliance handbooks would include copies of permits and other relevant mitigation plans and measures committed to by Guardian or required by Guardian's permits. Anticipated mitigation documents in the handbook would include Guardian's AMP and BMPs, Unanticipated Finds Plans, a project-specific SPCC Plan, and our Plan and Procedures.

During construction, Guardian would employ full-time environmental inspectors, including an agricultural inspector, to monitor construction activities and document environmental compliance. The environmental inspectors would interact directly with the construction contractor's environmental staff and would prepare daily inspection reports that would be distributed to the contractor personnel and Guardian's construction management team at the end of each day. Guardian would also fund a third-party Agricultural Monitor (AM) for the Project. The activities of the AM will be directed by the DATCP. The AM will serve in an auditing role, working closely with Guardian's agricultural inspectors to verify that construction activities on agricultural land are in compliance with Guardian's AMP.

To ensure that restoration in agricultural lands is satisfactorily completed, **we recommend that:**

- **Guardian provide copies of the third-party monitoring reports to FERC staff.**

The environmental and agricultural inspection effort would be supported by a compliance management team led by an Environmental Compliance Manager (ECM). The ECM will be responsible for managing and coordinating the overall environmental and agricultural inspection efforts and would visit the construction site on a regular basis to maintain quality control and independently assess the level of compliance that is being achieved.

2.6 OPERATION AND MAINTENANCE

Guardian would operate and maintain the proposed pipeline and aboveground facilities in compliance with DOT regulations provided in 49 CFR 192, the Commission's guidance in 18 CFR 380.15, and maintenance provisions required by the FERC and identified in our Plan and Procedures. Operation and maintenance considerations for pipeline facilities are further described in the following section.

2.6.1 Pipeline

During operations, Guardian would conduct regular patrols of the pipeline right-of-way in accordance with the requirements of 49 CFR Part 192. The patrol program would include periodic aerial, vehicle, and/or foot patrols of the pipeline facilities. These patrols would be conducted to survey surface conditions on and adjacent to the pipeline right-of-way for evidence of leaks, unauthorized excavation activities, erosion and wash-out areas, areas of sparse vegetation, damage to permanent erosion control devices, exposed pipeline, and other conditions that might affect the safety or operation of the pipeline. Additional gas leak detection surveys would be performed using leak detection instruments in more densely populated areas and at

public road crossings. Routing inspection of the cathodic protection system would also be conducted along the pipeline to ensure that it is functioning properly and to identify and correct potential problems with the system.

In-line inspection of the pipeline would be performed periodically using “smart pigs,” which are computerized electro-mechanical devices that travel inside the pipe checking for deformities, pipe-wall metal loss caused by corrosion, or other factors that could impact the integrity of the pipeline. If potential problems are identified, repairs would be made to the affected pipe.

Guardian would keep detailed records of all inspections and supplement the corrosion protection system, as necessary, to meet the requirements of 49 CFR Part 192. Pipeline markers would be placed and maintained along the right-of-way at roadway crossings, railroad crossings, and other highly visible places to alert those contemplating working in the vicinity of the location of the buried pipeline. The markers would identify Guardian as the operator, include safety warnings, and display telephone numbers to call if any abnormal conditions are detected.

Guardian would also participate in the Diggers Hotline one-call system in Wisconsin and the Joint Utility Locating Information for Excavators (JULIE) one-call system in Illinois. These systems provide contractors, highway workers, farmers, and anyone digging along a pipeline right-of-way with the ability to call a telephone number to have underground facilities located prior to excavation activities. Guardian would review and respond appropriately to any requests to locate its pipeline that are issued from a one-call center. In the normal course of operations, Guardian would also devote time to educate the public that they must first notify the pipeline company before digging or operating heavy equipment along the pipeline route. Guardian would also send “call-before-you-dig” notices to property owners along the right-of-way.

Vegetation management procedures during operation would also be performed in accordance with our Plan and Procedures and would include regular mowing, cutting, and trimming along most of the 50-foot-wide permanent pipeline right-of-way outside of agricultural and residential areas. Routine vegetative maintenance clearing would not be performed more frequently than every 3 years, unless requested and/or approved by appropriate state and local agencies. However, a corridor not exceeding 10 feet in width centered on the pipeline could be maintained annually in an herbaceous state, as required to facilitate periodic corrosion and leak detection surveys. Guardian would not use herbicides or pesticides within 100 feet of a wetland or waterbody unless approved in appropriate permits. Vegetation management and wetland maintenance is discussed further in section 4.4.

2.6.2 Aboveground Facilities

Routine operation and maintenance would also be performed at all aboveground facilities by qualified Guardian personnel. Personnel would perform routine checks of the compressor station facilities, including calibration of equipment and instrumentation, inspection of critical components, and scheduled and routine maintenance of equipment and grounds. Corrective actions would be taken as necessary if problems are identified.

2.7 SAFETY CONTROLS

2.7.1 Corrosion Protection and Detection Systems

During construction of the proposed facilities, Guardian would install a cathodic protection system to prevent or minimize corrosion of the buried pipeline and aboveground facilities. The cathodic protection system impresses a low-voltage current on the pipeline to offset natural soil and groundwater corrosion potential. The condition of the pipe coating and the effectiveness of the cathodic protection system would be monitored during regularly scheduled cathodic protection surveys in accordance with federal standards and regulations. Cathodic protection surveys usually require walking the pipeline right-of-way with monitoring instruments. Repairs to the pipe, the pipe coating, or the cathodic protection system would be made as appropriate.

2.7.2 Emergency Response Procedures

The proposed pipeline and aboveground facilities must be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. Part 192 specifies material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion. Part 192 also prescribes the minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Under Section 192.615, each pipeline operator must also establish an emergency plan that includes procedures to minimize the hazards in a natural gas pipeline emergency. Key elements of the plan include procedures for:

- receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;
- making personnel, equipment, tools, and materials available at the scene of an emergency;
- protecting people first and then property, and making them safe from actual or potential hazards; and
- conducting emergency shutdown of system and safe restoration of service.

Part 192 also requires that each operator must establish and maintain a liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline emergency, and to coordinate mutual assistance. The operator must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials.

2.8 FUTURE PLANS AND ABANDONMENT

The G-II Project involves new construction and upgrades to existing facilities; as such, the Project will not require the abandonment of pipeline or aboveground facilities. Guardian has no

foreseeable plans for future expansion or abandonment of the project facilities described in this EIS, but if market conditions change such that an expansion or abandonment is justified, Guardian will seek the appropriate authorizations from the FERC and comply with all applicable requirements. At the end of the useful life of the pipeline and aboveground appurtenances, Guardian will obtain the necessary permission to abandon its facilities.

2.9 NONJURISDICTIONAL FACILITIES

There are nine nonjurisdictional facility projects related to this Project: (1) We Energies Hartford/West Bend Project; (2) We Energies Fox Valley Project; (3) WPS Sheboygan Project; (4) WPS Chilton Project; (5) WPS Denmark Project; (6) WPS Southwest Green Bay Project; (7) WPS Green Bay Project; (8) ComEd Sycamore Power Line, Transformer/Substation Project; and (9) ATC Bluff Creek Transformer/Substation Project. Figure 2.9-1 depicts the location of the nonjurisdictional facilities in relation to the proposed G-II mainline pipeline.

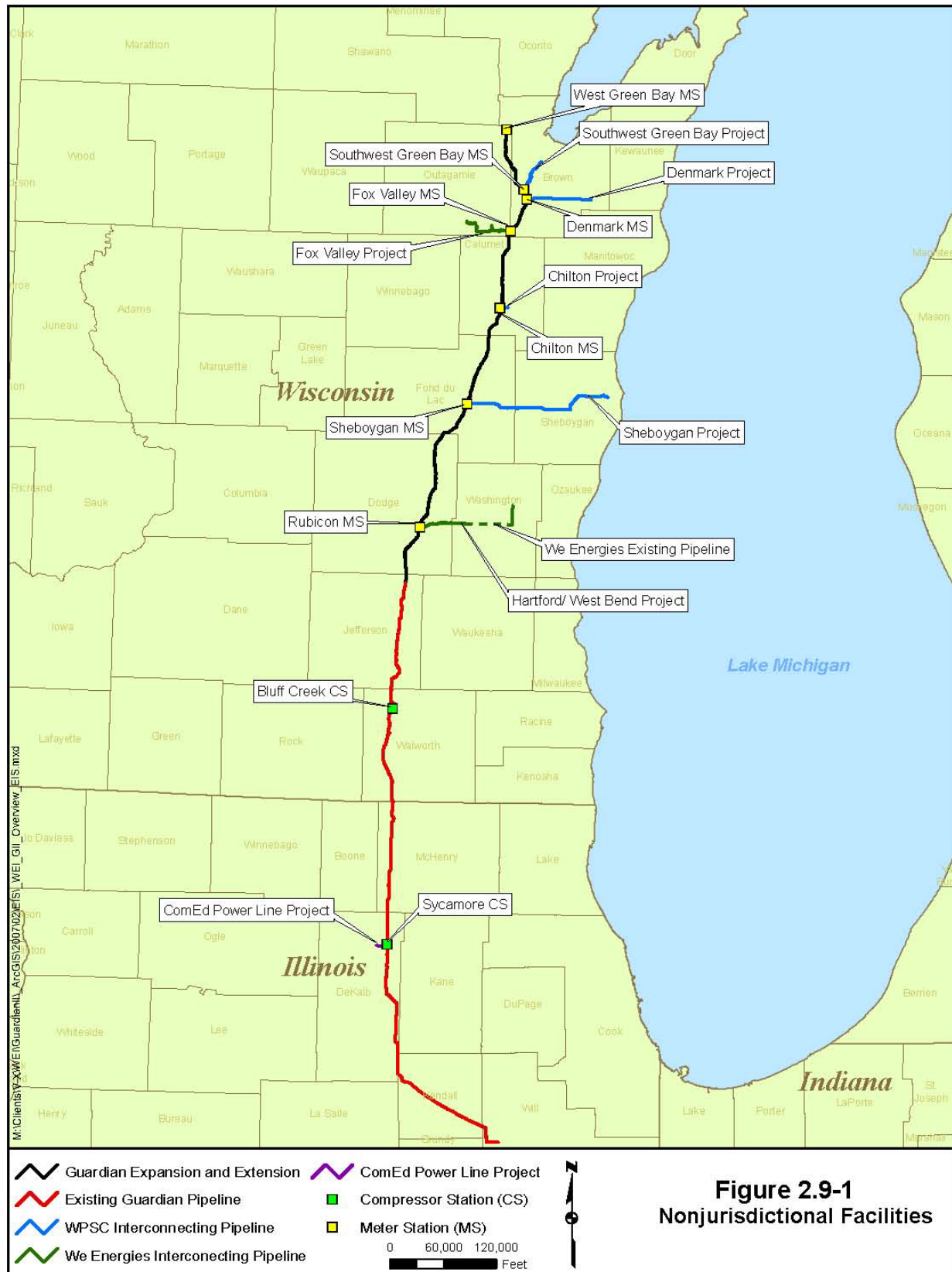
Permits and approvals for each of the projects would be obtained by We Energies, WPS, ComEd, and ATC as necessary. On March 9, 2007, the Wisconsin PSC issued an Environmental Assessment (EA) for the We Energies and WPS nonjurisdictional facilities. The COE will also be reviewing permit applications for certain nonjurisdictional facilities under the CWA. Information from the Wisconsin PSC EA, including information filed by Guardian for the nonjurisdictional facilities, are summarized below. The complete EA is available on the Wisconsin PSC website at <http://psc.wi.gov> under the following three docket numbers: 5-CG-103, 6650-CG-220, or 66-CG-160.

2.9.1 Description of the Proposed Nonjurisdictional Facilities

2.9.1.1 We Energies Hartford/West Bend Project

We Energies would construct and operate a 14-mile two-segment (Hartford and West Bend Segments) 12-inch-diameter pipeline lateral to interconnect with the G-II pipeline at the proposed Rubicon Meter Station in Dodge County, Wisconsin. Segment 1, the Hartford Segment of the proposed pipeline lateral, would be located within the Counties of Dodge and Washington, Wisconsin and consist of about 10.2 miles of pipe. Segment 2, the West Bend Segment of the proposed pipeline lateral would be located within Washington County, Wisconsin and consist of about 4.1 miles of pipe. One hundred percent of Segment 2 would be collocated within or adjacent to existing rights-of-way.

Within the footprint of the proposed Rubicon Meter Station, We Energies would also construct and operate a new gate station, the Hartford/West Bend Gate Station. Additional facilities would include two 12-inch-diameter valves in both Dodge and Washington County and a new regulator station in Washington County, Wisconsin.



2.9.1.2 We Energies Fox Valley Project

We Energies would construct and operate a 12.8-mile pipeline lateral within the Counties of Brown and Outagamie, Wisconsin to interconnect with the G-II pipeline at the proposed Fox Valley Meter Station in Brown County. The pipeline lateral would be comprised of the following four segments:

- 4.3 miles of 20-inch-diameter pipe within Brown and Outagamie County, Wisconsin of which 61 percent would be collocated within or adjacent to existing rights-of-way;
- 1.2 miles of 8-inch-diameter pipe within Outagamie County, Wisconsin of which 95 percent would be collocated within or adjacent to existing rights-of-way;
- 4.7 miles of 16-inch-diameter pipe within Outagamie County, Wisconsin of which 85 percent would be collocated within or adjacent to existing rights-of-way; and
- 2.6 miles of 12-inch-diameter pipe within Outagamie County, Wisconsin of which 53 percent would be collocated within or adjacent to existing rights-of-way.

Within the footprint of the proposed Fox Valley Meter Station, We Energies would also construct and operate a new gate station, the Fox Valley Gate Station. Additional facilities would include the construction and operation of two regulator stations (the Kaukauna and Kimberly Regulator Stations), the WPPI Delivery Point Customer Metering Facility, the Appleton Regulator/ Metering Station, and two valve assemblies (the Kaukauna and Little Chute Valve Assemblies) in Outagamie County, Wisconsin.

2.9.1.3 WPS Sheboygan Project

WPS would construct and operate a 31.0-mile 14-inch- and 12-inch-diameter pipeline lateral within the Counties of Fond du Lac and Sheboygan, Wisconsin to interconnect with the G-II pipeline at the proposed Sheboygan Meter Station in Fond du Lac County. Approximately 99 percent of the pipeline lateral would be collocated within or adjacent to existing rights-of-way. WPS would also construct a 2.07-mile 16-inch-diameter distribution pipeline in Sheboygan County, of which 100 percent would be collocated within or adjacent to existing rights-of-way.

The Sheboygan Project would also include the construction and operation of odorization and pigging facilities within the footprint of the proposed Sheboygan Meter Station. Additional facilities would include the construction and operation of the New West Sheboygan and New Plymouth Regulator Stations in Sheboygan County, Wisconsin. WPS would also make modifications to the existing Sheboygan ANR Meter/WPS Regulator Station and the Plymouth ANR Meter/WPS Regulator Station located in Sheboygan County.

2.9.1.4 WPS Chilton Project

WPS would construct and operate a 1.7-mile, 4-inch-diameter pipeline lateral within Calumet County, Wisconsin to interconnect with the G-II pipeline at the proposed Chilton Meter Station. One hundred percent of the pipeline lateral would be collocated within or adjacent to existing rights-of-way. Additional facilities would include the construction and operation of odorization, pigging, and valve facilities within the footprint of the proposed Chilton Meter Station, as well as a new regulator station in Calumet County, Wisconsin. WPS would also make modifications to

the existing Chilton ANR Meter/WPS Regulator Station, and distribution system connection facilities located in Calumet County.

2.9.1.5 WPS Denmark Project

WPS would construct and operate a 14.25-mile, 12-inch-diameter pipeline lateral within Brown County, Wisconsin to interconnect with the G-II pipeline at the proposed Denmark Meter Station in Brown County, Wisconsin. One hundred percent of the pipeline lateral would be collocated within or adjacent to existing rights-of-way.

Within the footprint of the proposed Denmark Meter Station, WPS would construct and operate new odorization and pigging facilities. WPS would also make modifications to the existing Denmark ANR Meter/WPS Regulator Station located in Brown County.

2.9.1.6 WPS Southwest Green Bay Project

WPS would construct and operate a 8.25-mile 12-inch- and 20-inch-diameter pipeline lateral within Brown County, Wisconsin to interconnect with the G-II pipeline at the proposed Southwest Green Bay Meter Station. Approximately 83.4 percent of the pipeline lateral would be collocated within or adjacent to existing rights-of-way. WPS would also construct a 6.57-mile 20-inch-diameter distribution pipeline in Brown County, of which 88.5 percent would be collocated within or adjacent to existing rights-of-way.

The Southwest Green Bay Project would also include the construction and operation of odorization, pigging, and valve facilities within the footprint of the proposed Southwest Green Bay Meter Station, as well as one new regulator station (the Southwest Green Bay Regulator Station) in Brown County. WPS would also make modifications to the existing ANR Green Bay Meter/WPS Broadway Regulator Station located in Brown County.

2.9.1.7 WPS West Green Bay Project

In Outagamie County, Wisconsin, WPS would construct and operate a new a flow control facility and odorization facility that would interconnect with the G-II pipeline at the proposed West Green Bay Meter Station in Outagamie County, Wisconsin. WPS would also make modifications to the existing West Green Bay Meter Station also located in Outagamie County, Wisconsin.

2.9.1.8 ATC Bluff Creek Transformer/Substation Project

Construction and operation of the Bluff Creek Compressor Station in Walworth County, Wisconsin would require electrical service to the site. Electrical service would be provided by an existing 138-kilovolt (kV) ATC overhead electrical transmission line that crosses the northeast corner of the proposed Bluff Creek Compressor Station site. No new transmission line structures would be required to interconnect with the ATC electrical line at this location. However, a new transformer/substation would be required to reduce the electrical voltage from 138 kV to a voltage suitable for the loads at the compressor station. The transformer/substation would be divided into two sections. One section would be owned and operated by ATC. This section will provide ATC the ability to isolate the transmission line upstream of the compressor station. The other section of the substation will be owned and operated by Guardian and will

contain the equipment necessary for reducing the voltage for distribution to the compressor station. The transformer/substation would be constructed and operated wholly within the boundaries of the proposed Bluff Creek Compressor Station.

2.9.1.9 ComEd Sycamore Power Line, Transformer/Substation

Construction and operation of the Sycamore Compressor Station in DeKalb County, Illinois would require electrical service to the site. Electrical service would be provided by a new 2.5-mile-long, overhead electrical transmission line that would interconnect with an existing 138-kV transmission system located about 2.5 miles west of the proposed compressor station property near Sycamore, Illinois. Construction of the new overhead electrical transmission system would require the use of a new power line easement and the installation of 30 new tower structures. Construction of the new power line would disturb approximately 45 acres. About 45 acres of new permanent easement would be required to operate the power line. A new transformer/substation would also be required to reduce the electrical voltage from 138 kV to a voltage suitable for the loads at the compressor station. The transformer/substation would be divided into two sections. One section would be owned and operated by ComEd. This section would provide ComEd the ability to isolate the transmission line upstream of the compressor station. The other section of the substation will be owned and operated by Guardian and would contain the equipment necessary for reducing the voltage for distribution to the compressor station. The transformer/substation would be constructed and operated wholly within the boundaries of the proposed Sycamore Compressor Station.

2.9.2 Summary of Environmental Impacts

The Wisconsin PSC, with input from the WDNR, developed an EA in accordance with Wis. Stat. § 1.11. The EA analyzed the environmental effects of the six nonjurisdictional pipelines laterals and associated facilities including the We Energies Hartford/West Bend Project; We Energies Fox Valley Project; WPS Sheboygan Project; WPS Chilton Project; WPS Denmark Project; WPS Southwest Green Bay Project; and WPS Green Bay Project. A summary of the environmental impacts and mitigation measures, as presented in the Wisconsin PSC EA, is included in the following sections. The complete EA is available on the Wisconsin PSC website at <http://psc.wi.gov> under the following three docket numbers: 5-CG-103, 6650-CG-220, or 66-CG-160. Environmental effects of the nonjurisdictional facilities are also discussed in section 4.13.2.

2.9.2.1 Water and Water Resources

A total of about 90 waterbodies would be crossed by the proposed pipeline lateral projects. The majority of these waterbodies are intermittent streams, with no flowing water during portions of the year. Sixteen of these waterbodies are named rivers including the East River, Mullet River, Onion River, Sheboygan River, and the Fox River.

During construction, the Wisconsin PSC had determined that intermittent waterways would only be crossed during times of no flow. In streams where flowing water is present, impacts would be limited to the period of construction and would be dependent on the time, duration, and method of pipeline installation. Construction methods such as boring, dam and pump or flume would likely result in only temporary and minor impacts on the waterbodies crossed.

Some in-stream and shoreline cover that provides cover for fish may be altered or removed at the proposed stream crossings. Some fish, including trout, have spawning runs in the spring, summer, or fall that could be interrupted due to construction activities that could block or discourage fish from passing through the construction area. Increased sedimentation and turbidity could reduce survival of eggs and emerging fry and degrade spawning habitats.

After the pipeline laterals are installed, stream beds and banks would be restored, as near as practicable, to preconstruction conditions. Disturbed soils adjacent to the waterways would be stabilized and reseeded with approved seed mixes.

2.9.2.2 Vegetation

Wetlands

The extent of impact to wetlands crossed by the proposed pipeline lateral projects would be dependent on the type of wetland affected, the existing quality of the wetland, the time of year, and the construction methods. Four general wetland types are found within the project areas associated with the pipeline laterals including wet meadows, shrub/scrub wetlands, forested wetlands, and emergent wetlands (shallow and deep marsh). While open-cut trenching is proposed to be used in many of the wetlands, boring methods may be used to install the pipelines beneath some emergent and wet meadow wetlands.

Pipeline construction and right-of-way maintenance activities would result in the temporary removal of wetland vegetation. In wet meadow/emergent wetlands, the impact of construction would be temporary, because herbaceous vegetation regenerates within one or two seasons. In forested and shrub-dominated wetlands, the impact would be longer due to the longer recovery period for these vegetation types. Ongoing vegetation management on the portion of the operational rights-of-way would permanently restrict regeneration of tree and shrub cover. Clearing of wetland vegetation would temporarily, or in some cases, permanently, remove or alter wetland habitat.

Pipeline trench excavation would be a major disturbance to wetland habitat; however, construction activities could also impact wetlands adjacent to the construction right-of-way. Impacts on wetlands would include compaction, and rutting of wetland soils could result from the temporary stockpiling of soil and the movement of heavy machinery; the temporary alteration of surface drainage patterns and hydrology; and the potential for the trench to act as a drainage channel. Increased siltation in adjacent wetland areas could also result from trenching activities. In addition, disturbances to the wetland could temporarily affect its capacity to control erosion and flooding. Reed canary grass, an aggressive invasive plant species, currently dominates some of the wetlands along the proposed rights-of-way; it is likely this plant species would retain its dominance when revegetation occurs after construction is complete.

To minimize both the temporary and permanent adverse effects of construction on the wetland habitats to be crossed by the proposed pipeline laterals WPS and We Energies would employ best management practices, schedule construction during the period when soils are frozen and vegetation is dormant, utilize ice roads or timber matting, and install appropriate erosion control measures such as trench breakers.

Several wetlands in the proposed project areas qualify as Areas of Special Natural Resource Interest, as defined by Wisconsin Administrative Code § NR 103.04, because of unique features they possess or their location in relation to a state or federal resource area. Most, if not all, of these wetland communities would be protected by boring the pipelines beneath them or constructing under stable soil conditions.

Forests

About 20 acres of forest would be affected by construction of the proposed pipeline lateral projects. Construction in these areas would result in the clearing of trees in the construction rights-of-way. The removal of the tree cover would substantially change the plant and animal communities in the areas cleared. The impacts associated with the clearing of forested land may include temporary increases in soil erosion and runoff, increased soil temperatures, soil mixing and soil compaction, and possible root damage and increased wind throw of trees adjacent to newly cleared areas. Clearing may allow early successional species to become established along the edge of the newly cleared construction and operational rights-of-way and the overall disturbance could enhance the spread of aggressive non-native species. Such effects, however, would vary in their severity, depending on the ecological conditions at the site.

A portion of the Sheboygan lateral would pass through the Kettle Moraine State Forest–Northern Unit; however, the proposed pipeline route through the State Forest would lie within an already cleared right-of-way of an existing 345-kV electric transmission line. As a result, additional tree clearing would not be necessary in this area. In addition, discussions with the staff of the Kettle Moraine State Forest indicated that the construction of the proposed Sheboygan pipeline lateral project would not result in any significant impacts on the use or management of the Forest. Construction activities would, however, cross the Ice Age Trail, as well as other recreational trails within the State forest and would likely result in the temporary closure of these trails during the construction period.

As proposed, the construction and operation of the pipeline laterals would not result in the clearing of extensive individual wooded areas. The amount of tree clearing needed in any specific wooded area is consistent with the highly fragmented and developed nature of the landscape in the pipeline lateral project areas.

2.9.2.3 Threatened and Endangered Species

The region of Wisconsin in which the proposed pipeline lateral projects would be constructed is dominated by agriculture and, therefore, does not support many threatened, endangered or rare species or communities. Many occurrences of these types of species or communities are associated with waterbodies or consist of species that do not have large area habitat requirements (e.g., insects and snails). Although unlikely, construction of the proposed pipeline lateral projects could affect rare fish, mussels, birds, turtles, and reptiles.

Rare fish and mussel species occurring in waterways crossed by the proposed pipelines would be protected by using boring methods to install the pipelines. Blanding's turtle and the wood turtle, which may be present at several locations, would be protected by performing construction outside of the turtles' active season or the use of exclusion fencing to keep turtles out of construction zones.

With respect to rare birds, such as the bald eagle, northern harrier, and dickcissel, additional surveys would be conducted to ensure that these birds are not nesting within the construction rights-of-way or within a critical distance of construction activities. If active nests are located in these areas, the timing of construction would be adjusted to avoid disturbance to nesting activities.

The Butler's garter snake may also be present at two locations along the proposed pipeline lateral rights-of-way. Because of the size and quality of the suitable habitat for the snake, no special conservation measures would be required and the sites would be covered under a broad Incidental Take Authorization.

2.9.2.4 Land Use

The Hartford/West Bend, Sheboygan, Chilton, and Denmark laterals are located in areas where the major land use is agriculture, with scattered low-density residential areas. A portion of the Sheboygan lateral would cross through lands of the Kettle Moraine State Forest. Otherwise, forested lands along these four pipeline laterals are few and scattered.

The Fox Valley and Southwest Green Bay laterals both extend from agricultural lands into actively expanding urban areas. Residential and commercial development are the dominant land uses as these routes enter urban areas. Only small, forest resources are present along these two project routes.

Construction of large pipelines in agricultural lands can damage or reduce the suitability of lands for agricultural uses. Substantial concerns included soil compaction, mixing of soil layers, disrupting drainage patterns, and increasing the density of rocks near the surface of the soil. These actions could result in reduced crop productivity or damage to farm equipment.

Improper construction activities could disrupt natural drainage or damage existing surface and subsurface drainage systems. Underground drainage tiles could be cut during trenching and shallow tiles outside of the trench area could be damaged or displaced by heavy equipment, particularly where soil grading or topsoil stripping has reduced the depth of soil between the drainage tiles and construction equipment. Inadequate compaction of trench backfill could cause subsidence of soil over the pipeline, altering field drainage, and causing water to pond, thereby delaying planting or killing crops. Disruption of surface and subsurface drainage systems could also cause temporary crop losses adjacent to the right-of-way.

Both We Energies and WPS have proposed practices to be used when constructing the proposed pipeline laterals through agricultural lands. These construction practices are based on experience with past pipeline projects and include practices to address all of the major concerns noted above. Implementing the proposed agricultural construction practices should greatly reduce or eliminate the major concerns associated with construction through farmlands.

In areas dominated by residential and/or commercial land uses, construction activities associated with the proposed pipelines lateral projects could result in locally increased dust and particulate emissions, noise and vibrations, and minor traffic disruptions. These adverse effects, however, would be temporary and relatively minor.

2.9.2.5 Cultural Resources

Site file searches of the Chilton, Denmark, and Southwest Green Bay pipeline lateral projects did not identify any cultural resources in the proposed project areas. However, literature reviews and site file searches resulted in the identification of several possible sites of cultural significance in the vicinity of the Hartford/West Bend, Fox Valley, and Sheboygan project sites including the following:

- two previously recorded archaeological sites and a Euro-American era historic cemetery in the vicinity of the proposed Hartford/West Bend facilities;
- two Native American village sites in the general vicinity of Segment 4 of the proposed Fox Valley Project, north of the Fox River; and
- a historic Euro-American era cemetery, the Empire Cemetery, adjacent to the proposed Sheboygan Lateral and a potential non-recorded archaeological site located in the vicinity of Mullet Lake.

We Energies has committed to having a professional cultural resource consultant conduct a Phase I survey of the Hartford/West Bend and Fox River Valley project areas to determine if these cultural resources would be affected by the proposed projects.

In the area of Mullet Lake, WPS has already conducted a Phase I archaeological survey, which has confirmed the potential for archaeological resources in this area. WPS has committed to conduct Phase II investigations in this area, and either avoid any significant archaeological sites, or develop a treatment plan for those sites that would be adversely affected by their project.

In regard to cultural resources, the COE would be responsible for ensuring compliance with section 106 of the NHPA, as part of its permitting process under section 404 of the CWA for these proposed pipeline laterals and project facilities.

2.9.3 Summary of Nonjurisdictional Facilities

Under the NEPA, the Commission has the responsibility to attempt to review infrastructure facilities that are associated with, and a necessary part of, a jurisdictional project. Our review of the nonjurisdictional facilities and Wisconsin PSC EA, as described above, indicates that construction would not have an adverse impact on the environment. As previously stated, the applicable federal and state permits would be obtained by We Energies, WPS, ComEd, Guardian, and ATC as necessary.

3.0 ALTERNATIVES

In considering Guardian's applications, the FERC will review both the environmental and non-environmental record in deciding whether it is in the public convenience and necessity to issue any authorization for the Project. The EIS addresses alternatives to the proposed actions before the FERC. The proposed action before the FERC is to consider issuing to Guardian a Section 7 Certificate for a new natural gas pipeline.

In accordance with NEPA and FERC policy, a number of alternatives to the G-II Project have been evaluated to determine if any are reasonable and environmentally preferable to the proposed actions. Alternatives described in the following sections include the no action alternative, system alternatives, and major and minor route alternatives, variations, and modifications.

The evaluation criteria for selecting potentially reasonable and environmentally preferable alternatives include whether they:

- are technically and economically feasible and practical;
- offer significant environmental advantage over the proposed Project or segments of it; and
- meet the project objectives of increasing the physical pipeline capacity serving Wisconsin and expand access to a competitive supply of natural gas for the benefit of the LDCs' utility customers in Wisconsin.

With respect to the first criteria, it is important to recognize that not all conceivable alternatives are technically and economically practical and feasible. Some alternatives may be impracticable because the sites are unavailable and/or incapable of being implemented after taking into consideration costs, existing technologies, constraints of existing system capacities, and logistics in light of the overall project objectives. In conducting a reasonable analysis, it is also important to consider the environmental advantages and disadvantages of the proposed action and to focus the analysis on those alternatives that may reduce impacts and/or offer a significant environmental advantage.

Through the application of evaluation criteria and subsequent environmental comparisons, each alternative was considered until it was clear that the alternative was not reasonable or would result in significantly greater environmental impacts that could not be readily mitigated. Those alternatives that appeared to be the most reasonable with less than or similar levels of environmental impact are reviewed below.

3.1 No Action or Postponed Action Alternative

The Commission has three courses of action in processing an application. It may: (1) deny the proposal; (2) postpone action pending further study; or (3) authorize the proposal with or without conditions.

If the Commission denies the proposal (effectively selecting the no action alternative), the short- and long-term environmental impacts identified in section 4.0 of this EIS would not occur. If the Commission postpones action on the application, the environmental impacts identified in

section 4.0 would be delayed, or if the applicant decided not to pursue the Project, the impacts would not occur.

If the Commission selects the no action alternative, the objectives of the proposed Project would not be met and Guardian would not be able to provide an expansion of pipeline capacity or a competitive supply of natural gas for the benefit of Wisconsin natural gas consumers.

To understand the potential effects of the no action or postponed action alternative, it is important to understand the source and use of natural gas in Wisconsin. Over the last 15 years, the state-wide consumption of natural gas has increased by more than 25 percent and now totals nearly 400 billion cubic feet annually (WDOE, 2005; WDOE, 2006). During this same period, the number of residential and commercial/industrial gas customers in Wisconsin has grown by approximately 40 and 43 percent, respectively (WDOE, 2005).

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 make other arrangements to obtain natural gas service (e.g., natural gas from another project), or make use of alternative fossil-fuel energy sources (e.g., fuel oil or coal), other traditional long-term fuel source alternatives (e.g., nuclear power or hydropower), and/or renewable energy sources, such as wind power, to compensate for the reduced availability of natural gas that would be supplied by the proposed Project. It is also possible that energy conservation practices would be used to offset the demand for natural gas in the markets that would be supplied by the proposed Project.

Denying or postponing a decision on the proposed Project would result in reduced natural gas availability in the targeted market regions. Such shortages would in turn lead to an increased reliance on fuel oil and other non-renewable fuel supply sources for power generating facilities. However, because petroleum product consumption is also projected to increase (EIA, 2006a), it is unlikely that fuel oil would provide a readily available or cost-effective alternative to natural gas. Further, natural gas is the cleanest burning of the fossil fuels. Relative to natural gas, reliance on coal or fuel oil to power electric generation would likely result in greatly increased emissions of pollutants, such as nitrogen oxide (NO_x), sulfur dioxide (SO₂), and carbon dioxide, and associated reductions in air quality. In addition, increased reliance on other fossil fuels would also result in secondary impacts associated with their production (e.g., coal mining and oil drilling), transportation (e.g., oil tankers, rail cars, and pipelines), and refinement. The use of fossil fuels like coal also results in higher emission of pollutants such as mercury into both the atmosphere and surrounding environment through deposition. In addition, unlike natural gas, other fuels result in spent fuel wastes (e.g., coal ash and nuclear waste) that require disposal and/or long-term management.

Other long-term fuel source alternatives to natural gas include nuclear power, hydropower, and the development of renewable energy sources. Although there has recently been renewed interest in nuclear power production, growth in nuclear generating capacity is expected to account for about 10 percent of total United States generating capacity by 2019, and is expected to remain at that level through 2030 (EIA, 2006a). Additionally, regulatory requirements, cost considerations, and public concerns make it unlikely that new nuclear power plants would be sited and developed to serve the markets targeted by the proposed Project within a timeframe that would meet the objectives of the proposed Project. The EIA (2006a) does not anticipate that any new nuclear power plants will begin operation before 2014.

Renewable energy projects and energy conservation measures would likely play an increasingly prominent role in meeting the United States' energy demands in the coming years. Though efficiency upgrades at existing hydropower facilities are expected to produce incremental additions of power production in the coming years, it is unlikely that new and/or significant sources of hydropower would be permitted and brought online as reliable, energy source alternatives to the proposed Project. Federal, state, and local initiatives would likely contribute to an increase in the availability and cost-effectiveness of non-hydropower renewable energy sources such as wind, solar, tidal, geothermal, and biomass. However, the percentage of electricity generated from non-hydropower renewable energy sources at the national level is only projected to increase to 3.2 percent by 2025 (EIA, 2006a), which would offset only a small part of the projected national energy demands.

In light of the preceding analysis, we do not recommend the no action or the postponed action alternative.

3.2 System Alternatives

System alternatives are alternatives to the proposed action that would make use of other existing, modified, or proposed pipeline systems to meet the stated objectives of the proposed Project. A system alternative would make it unnecessary to construct all or part of the proposed Project, although some modifications or additions to other existing pipeline systems may be required to increase their capacity. These modifications or additions would result in environmental impacts that may be less than, similar to, or greater than those associated with construction of the proposed Project. The purpose of identifying and evaluating system alternatives is to determine whether or not potential environmental impacts associated with construction and operation of the proposed facilities would be avoided or reduced by using another pipeline system while still meeting the objectives of the proposed Project.

The analysis below examines the existing and proposed natural gas systems that currently serve or would eventually serve the markets targeted by the proposed Project, and considers whether those systems would meet the proposed Project objectives while offering an environmental advantage over the proposed Project. Specifically, the system alternatives considered in our analysis include:

- expansion of existing overland natural gas pipeline systems (Existing Pipeline System Alternatives); and
- construction of other natural gas pipeline systems (New Pipeline System Alternatives).

3.2.1 Existing Pipeline System Alternatives

Five existing pipeline systems operated by the ANR Pipeline Company (ANR), Natural Gas Pipeline Company of America (NGPL), Viking Gas Transmission Company (VGTC), Northern Natural Gas Company (NNG), and Great Lakes Gas Transmission Company (GLGT) occur in the general geographic area of the proposed Project. Using these systems or a combination of these systems as an alternative to the G-II Project are discussed in further detail below. Figure 3.2-1 depicts the location of these alternative pipelines in relation to the proposed G-II pipeline route.

ANR Pipeline Company (ANR)

ANR currently operates a pipeline system within the state of Wisconsin, including pipelines near the proposed G-II Project. ANR could be capable of providing the same or similar transportation capacity as the proposed Project; however, as ANR has historically and currently dominates much of the natural gas transmission market in eastern Wisconsin, doing so would not fulfill one of the objectives of the proposed Project, that of providing access to a competitive supply of natural gas for the benefit of the Wisconsin local distribution companies' utility customers.

For the ANR system to meet the energy market demands it would more than likely require the addition of compressor and meter stations, pig launcher/receiver facilities and beyond that, possible looping of the existing system, with a similar or greater environmental impact than the proposed G-II Project.

Several stakeholders have suggested that collocating the proposed G-II pipeline with the existing ANR Pipeline Route in eastern Wisconsin would decrease environmental impacts. To the extent possible, Guardian has collocated the proposed pipeline within existing utility rights-of-way (see section 2.2.1); however, to collocate the G-II pipeline solely within the ANR right-of-way from its proposed starting point at Guardian's existing Ixonia Meter Station in Jefferson County, Wisconsin would require the construction of over 30 miles of additional pipeline eastward towards the ANR system. Collocating the G-II pipeline with the ANR system would likely result in greater impacts on waterbodies, wetlands, and forest lands (see figure 3.2-2). In addition, the G-II pipeline has been strategically placed outside of the ANR pipeline corridor within Outagamie County, Wisconsin to address the concerns of the Oneida Nation on Reservation lands.

For the reasons discussed above, both the expansion of the ANR Pipeline System and/or collocation adjacent to its existing right-of-way corridor in eastern Wisconsin are not considered to be an environmentally preferable alternative to the proposed G-II Project and, therefore, the alternative has been eliminated from further consideration.

Natural Gas Pipeline Company of America (NGPL)

The NGPL system extends across Iowa and northern Illinois into the Chicago area. A portion of the system also extends northward to the Illinois/Wisconsin state line. To transport the volumes proposed by Guardian to eastern Wisconsin, NGPL would likely need to construct over 240 miles of new pipeline. It is likely that NGPL would also need to expand its existing system through looping and/or new compression. The required extension and expansion would result in a much larger project than the G-II Project and, as such, NGPL's system is not a viable system alternative and has been eliminated from further consideration.

Viking Gas Transmission Company (VGTC)

The existing VGTC system extends southeast from the Canadian border near Noyes, Minnesota, through the northern regions of Minnesota and Wisconsin, to an interconnection with ANR near Marshfield, Wisconsin, over 100 miles west of Green Bay. VGTC receives western Canadian gas from TransCanada Pipeline at the United States-Canada International Border and does not have direct access to the eastern Wisconsin markets. VGTC also does not have direct access to the diversity of supply and upstream service providers at the Chicago Hub. Access to the





Chicago Hub is a major benefit of the G-II Project. Without such access, a pipeline company cannot provide the same diversity of supply and access to upstream service providers as the G-II Project. To access Guardian's customers and proposed delivery points in eastern Wisconsin would likely require VGTC to construct more than 200 miles of new pipeline. In order to provide direct access to the same diversity of supply as the G-II Project, this new pipeline would also have to extend another 140 miles or so to the Chicago Hub in Illinois. In total, this new pipeline would be over 300 miles long. It is likely that VGTC would also have to expand its existing system through significant looping and/or new compression. The required extension and expansion would result in a much larger project than the G-II Project and, as such, VGTC's system is not a viable system alternative and has been eliminated from further consideration.

Northern Natural Gas Company (NNG)

NNG's existing system extends from the supply basins of the southwestern United States to western Wisconsin. The closest large diameter NNG pipeline to the market to be served by the G-II Project terminates near Bluff Creek, Wisconsin. NNG does not have direct access to the eastern Wisconsin markets or the Chicago Hub. To access Guardian's customers and delivery points in eastern Wisconsin would likely require NNG to construct about 140 miles of new pipeline. Additionally, NNG would need to construct another 100 miles or so of new pipeline to connect NNG's existing system to the Chicago Hub. It is also likely that additional looping or compression would be required on NNG's existing pipeline system to transport the volumes proposed by Guardian. The required extension and expansion would result in a much larger project than the G-II Project and, as such, NNG's system is not a viable system alternative and has been eliminated from further consideration.

Great Lakes Gas Transmission Company (GLGT)

The GLGT system consists of several large diameter pipelines that extend across northern Wisconsin from Superior to Hurley. At its closest point, this system is over 100 miles north of Green Bay. To serve the eastern Wisconsin market area, GLGT would need to construct over 200 miles of new pipeline from northern Wisconsin across the eastern half of the state. In order to provide direct access to the same diversity of supply as the G-II Project, this new pipeline would also have to extend another 140 miles or so to the Chicago Hub in Illinois. In total, this new pipeline would be over 300 miles long. It is likely that additional looping or compression would also be required on GLGT's existing pipeline system to transport the volumes proposed by Guardian. The required extension and expansion would result in a much larger project than the G-II Project and, as such, the GLGT system is not a viable system alternative and has been eliminated from further consideration.

Existing System Combinations

While it would be possible to achieve the desired capacity that the proposed Project would deliver through looping and additional compression of existing lines, the third project criterion—expansion of access to competitive supplies and services for the benefit of Wisconsin's utility customers—would remain unmet.

The most obvious system combination would be an interconnect between the GLGT and ANR pipeline systems. It is likely that a combination of the GLGT and ANR pipeline systems could transport the volumes proposed by Guardian to eastern Wisconsin with additional looping and/or compression (via GLGTs' system to its interconnect with ANR's pipeline system near Crystal

Lake, Michigan, and then via ANR's system). However, the combination of these two systems would require no less construction and associated environmental impacts than the proposed Project.

Furthermore, the complexity of negotiations between joint project sponsors would inevitably delay a joint proposal, putting it on a slower timeline than the G-II Project, such that the new joint facilities would begin operations significantly after the time the marketplace desires the new capacity to be available. For these reasons, a combination of existing systems has been eliminated from further consideration.

3.3 Pipeline and Aboveground Facility Alternatives

3.3.1 Initial Siting

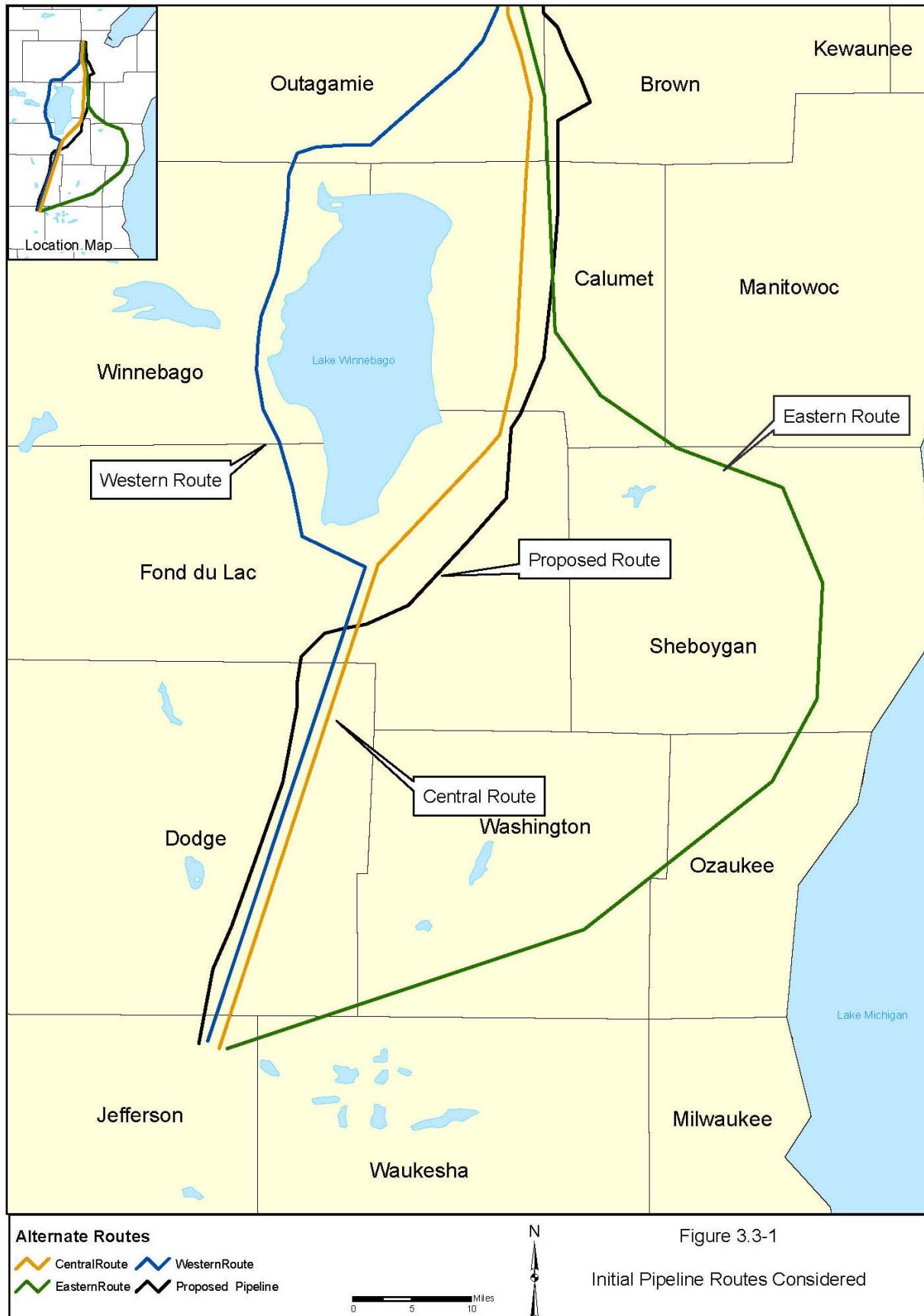
During its initial siting process Guardian evaluated three potential pipeline routes. The three routes considered include the Eastern Route, the Western Route, and the Central Route (see figure 3.3-1). These preliminary routes were evaluated with the intent to avoid or minimize potential impacts on environmentally sensitive resources and stakeholders. Table 3.3.1-1 contains a summary of the preliminary pipeline route options. Each is discussed in further detail below.

TABLE 3.3.1-1 Guardian Pipeline Expansion and Extension Project Summary of Preliminary Pipeline Routes				
Environmental Factor	Units	Eastern Route	Western Route	Central Route
Route Length	(mi.)	124.2	111.2	103.5
Total Wetlands Crossed	(mi.)	2.1	2.9	3.0
Forested Wetlands	(mi.)	1.8	2.0	2.1
Waterbody Crossings	(no.)	95	97	84
Perennial Waterbody Crossings	(no.)	29	23	24
Forest Land Crossed ^{a/}	(mi.)	11.4	9.9	8.3
Agricultural Land Crossed	(mi.)	110.9	90.2	94.0
Open Land Crossed	(mi.)	1.0 ^{b/}	4.4	1.0 ^{b/}
Commercial/Industrial Land Crossed	(mi.)	0.1 ^{c/}	3.2	0.1 ^{c/}
Residential Land Crossed	(mi.)	0.4	2.8	0.1
Open Water Crossed	(mi.)	0.2	0.5	0.1

^{a/} Forest Land Crossed includes all Forested Wetland Crossed.
^{b/} The Eastern Route crosses 19 feet more Open Land than the Central Route.
^{c/} The Eastern Route crosses 34 feet more Commercial/Industrial Land than the Central Route.

Western Route

The Western Route was identified by Guardian in its application as one of the initial routes to be studied. This alternative was identified because it crosses fewer perennial waterbodies than either the Central Route or the Eastern Route. A comparison of the relevant environmental characteristics of the Western Route Alternative with the Eastern and Central Route Alternatives is included in table 3.3.1-1.



The Western Route Alternative would be shorter than the Eastern Route by 13.0 miles (118.2 fewer acres of construction disturbance) but longer than the Central Route by 7.7 miles (70.0 more acres of construction disturbance). The disadvantages of this alternative include higher impacts on forested wetlands, waterbodies and open water, open lands, commercial or industrial lands, and residential lands. For these reasons, Guardian did not select the Western Route. We agree that the Western Route is not the better alternative due to the greater environmental impacts.

Eastern Route

The Eastern Route was identified by Guardian in its application as one of the initial routes studied. This alternative was identified because it crosses fewer forested wetlands and fewer total wetlands than either the Central or Western Route Alternatives. A comparison of the relevant environmental characteristics of the Eastern Route with the Western and Central Route is included in table 3.3.1-1.

The Eastern Route is the longest of the three initial routes considered at a total length of 124.2 miles, with 1,129.1 acres of land disturbance, 118.2 acres more than the second longest route alternative (Western Route). In addition to the general environmental impacts of constructing and maintaining a longer pipeline, the disadvantages of this initial route were numerous, including more impacts on perennial waterbodies, forested lands, and agricultural lands. For these reasons Guardian did not select the Eastern Route. We agree that the Eastern Route is not the better alternative due to the greater environmental impacts.

Central Route

The third major route considered by Guardian was called the Central Route. This route proceeded generally north, northeast from Ixonia toward Fond du Lac, Wisconsin. From the Fond du Lac area, the pipeline route continues in a northeasterly direction toward Chilton, Wisconsin. From Chilton, the route proceeds generally north to the terminus of the Project at the West Green Bay Meter Station. The Central Route is the shortest of the studied routes, at 103.5 miles overall, with an estimated construction disturbance area of 940.0 acres, 70.0 acres less than the Western Route.

When it was identified, the Central Route was the most direct route between Guardian's existing pipeline terminus in Ixonia, Wisconsin and the final proposed delivery point west of Green Bay, Wisconsin. Guardian's engineering and economic analysis of the Central Route indicated that it was the most economically feasible. In addition, because it was the most direct route between Ixonia and Green Bay, it minimized the amount of land that would be disturbed, and reduced the crossing of residential areas, waterbodies, forested lands, open lands, commercial/industrial lands, and open water. It also avoided sensitive areas such as the extensive wetland areas within the Rock River floodplain. For these reasons, Guardian selected the Central Route as the Preliminary Route and we agree that this route has the least potential for environmental impact.

3.3.2 Preliminary Route

After the initial selection of the Central Route as the Preliminary Route, Guardian began the iterative process of conducting environmental evaluations and stakeholder outreach. As a result, numerous modifications were made to the Preliminary Route. These initial modifications were in response to environmental, stakeholder, and engineering concerns including the following:

- avoidance of major wetland complexes including forested wetlands;
- minimization of impacts on residential areas, planned developments, and incompatible zoning;
- minimization of perennial waterbody crossings;
- avoidance of national parks, state parks, forest, and scenic areas, specifically the Ice Age National Scenic Trail and Kettle Moraine State Forest; and
- establishment of the most appropriate area for major waterbody crossing (greater than 100 feet), specifically the Fox, Rubicon, and Rock Rivers.

As a result of this initial siting process of the preliminary route, Guardian re-evaluated the proposed project area and established an alternative route (see figure 1-1 in section 1.0) as the Proposed Route, which was filed with the Commission on October 13, 2006.

3.3.3 Pipeline Route Alternatives

Route alternatives, within the context of the proposed Project, were identified to determine if impacts could be avoided or reduced on environmentally sensitive resources, such as population centers, scenic areas, and wildlife and natural habitat management areas that would be crossed by the proposed route. While the origin and delivery points of route alternatives are generally the same as for the corresponding segment of a proposed pipeline route, the alternatives could follow significantly different alignments.

FERC regulations (18 CFR 380.15[d][1]) give primary consideration to the use, enlargement, or extension of existing rights-of-way to reduce potential impacts on sensitive resources. Installation of new pipeline along existing, cleared rights-of-way (such as pipelines, powerlines, roads, and railroads) may be environmentally preferable to construction along new rights-of-way, and construction effects and cumulative impacts can normally be reduced by use of previously cleared and maintained rights-of-way. Long-term or permanent environmental impacts can be reduced by avoiding the creation of new rights-of-way through undisturbed areas.

We evaluated various route alternatives to determine if the alternatives would avoid or reduce impacts on environmentally sensitive resources that would be crossed by the proposed pipeline, as well as in response to suggestions by landowners and the public. Each of these major route alternatives is discussed further below.

Weber Alternatives A and B

Beginning at MP 1.2 and ending at MP 2.6, Guardian identified two potential routes, Weber Alternative A and Weber Alternative B.

As shown on figure 3.3-2, Weber Alternative A begins at approximately MP 1.2 and crosses County Highway CW slightly east of the entrance to the Summer Hill Subdivision. From there the variation continues northward, passing to the east of the Summer Hill Subdivision, until it returns to the proposed G-II Pipeline Route near MP 2.6. Weber Alternative B begins at approximately MP 1.2 and tracks generally north for approximately 1.1 miles close to a ridge-like hill just south of the Jefferson/Dodge County line, the route then turns northeast for an additional 0.2 mile and rejoins with the proposed G-II Pipeline Route at MP 2.6. A comparison of the relevant environmental characteristics of these two alternatives is included in table 3.3.3-1.

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Figure 3.3-2 Weber Alternatives A and B

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TABLE 3.3.3-1 Comparison of Weber Alternatives A and B		
Environmental Factor	Weber Alternative A (Proposed Route)	Weber Alternative B
Total Length (miles)	1.2	1.2
Length Adjacent to Existing Rights-of-way (miles)	0.0	0.0
Length of New Right-of-way (miles) <u>a/</u>	1.2	1.2
Construction Disturbance – Total (acres) <u>b/</u>	16.0	15.1
Major Waterbodies (>100 feet) Crossed (number)	0	0
Length of Wetland Crossed (miles)	0.0	0.2 <u>c/</u>
Construction Disturbance – Wetlands (acres) <u>b/</u>	0.0	1.8
Landowners Crossed (number)	4	5
<u>a/</u> For the purpose of this analysis new right-of-way is pipeline right-of-way that is not immediately adjacent to an existing utility or road easement or right-of-way. <u>b/</u> Based on construction right-of-way width of 75 feet in wetlands and 110 feet in uplands. <u>c/</u> Estimated from WWI mapping.		

As shown in table 3.3.3-1 the two Alternatives are virtually identical; however, Alternative A would avoid impacts on approximately 0.2 acre of wetland. In addition, Alternative A would satisfy a landowner's request to site the pipeline along the eastern side of his property to avoid an area he plans to use as a future home site. The only disadvantage of Weber Alternative A is that it would cross one more landowner than Alternative B.

After reviewing the potential environmental impacts associated with these two alternatives, we believe that the environmental benefits of Weber Alternative A, including less impacts to wetlands and the avoidance of one less landowner, outweigh its limited disadvantages as well as the minor advantages of Alternative B. Therefore, we prefer that Weber Alternative A be incorporated as part of the Proposed Route as filed by Guardian.

Neuburg Alternatives A and B

Beginning at MP 16.4 and ending at MP 17.7, Guardian identified two potential routes, Neuburg Alternative A and Neuburg Alternative B.

As shown on figure 3.3-3, the Neuburg Alternative A begins at approximately MP 16.4 and proceeds generally northeast for approximately 0.5 mile, crossing the W&S Railroad and County Highway WS. It then proceeds generally north for another 0.8 mile, crossing County Highway S and paralleling a Wisconsin Wetland Inventory (WWI) mapped emergent wetland for several thousand feet before returning to the Proposed Route at approximately MP 17.7. Neuburg Alternative B also begins at about MP 16.4 and tracks northeast for approximately 1.1 miles crossing the W&S Railroad and then reconnecting with the proposed G-II Pipeline Route at MP 17.7. A comparison of the relevant environmental characteristics of these two alternatives is included in table 3.3.3-2.

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Figure 3.3-3 Neuburg Alternatives A and B

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TABLE 3.3.3-2 Comparison of Neuburg Alternatives A and B		
Environmental Factor	Neuburg Alternative A (Proposed Route)	Neuburg Alternative B
Total Length (miles)	1.3	1.3
Length Adjacent to Existing Rights-of-way (miles)	0.0	0.0
Length of New Right-of-way (miles) <u>a/</u>	1.3	1.3
Construction Disturbance – Total (acres) <u>b/</u>	17.3	17.3
Major Waterbodies (>100 feet) Crossed (number)	0	0
Length of Wetland Crossed (feet)	0.0	0.0 <u>c/</u>
Construction Disturbance to Wetlands (acres) <u>b/</u>	0.0	0.0 <u>c/</u>
Roads Crossed (number)	1	2
Landowners Crossed (number)	3	4
<u>a/</u> For the purpose of this analysis, new right-of-way is pipeline right-of-way that is not immediately adjacent to an existing utility or road easement or right-of-way. <u>b/</u> Based on construction right-of-way width of 75 feet in wetlands and 110 feet in uplands. <u>c/</u> Estimated from WWI mapping.		

A comparison of Neuburg Alternative A and B reveals that the two routes are similar in many respects. Neither route crosses any mapped or delineated wetlands or forested lands. The primary differences between Neuburg Alternative A and B is that Alternative A addresses landowner concerns by reducing the potential impact on a future planned development and by avoiding two septic systems. Alternative A also crosses one less landowner and one less road.

After reviewing the potential environmental impacts associated with these two alternatives, we believe that the environmental benefits of Neuburg Alternative A, including the crossing of one less road and one less landowner, outweigh the advantages of Alternative B. Therefore, we prefer that Neuburg Alternative A be incorporated as part of the Proposed Route as filed by Guardian.

Byron Alternatives A and B

Beginning at MP 35.5 and ending at MP 37.8, Guardian identified two potential routes, Byron Alternative A and Byron Alternative B.

As shown on figure 3.3-4, Byron Alternative A begins on the west side of State Highway 175 at approximately MP 35.5 and proceeds east for approximately 0.8 mile, crossing the Wisconsin Central Railroad and U.S. Highway 41. Approximately 0.2 mile east of U.S. Highway 41, the route turns and proceeds generally northeast for 1.6 miles until it rejoins the Proposed Route at approximately MP 37.7. Byron Alternative B also begins at MP 35.5 and proceeds northeast for approximately 0.6 mile crossing the Wisconsin Central Railroad and then turning east over U.S. Highway 41 for an additional 0.3 mile. Alternative B then tracks northeast for another 1.3 mile before it once again returns to the Proposed Route at MP 37.7. A comparison of the relevant environmental characteristics of these two alternatives is included in table 3.3.3-3.

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Figure 3.3-4 Byron Alternatives A and B

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TABLE 3.3.3-3 Comparison of Byron Alternatives A and B		
Environmental Factor	Byron Alternative A (Proposed Route)	Byron Alternative B
Total Length (miles)	2.3	2.4
Length Adjacent to Existing Rights-of-way (miles)	0.0	0.0
Length of New Right-of-way (miles) <u>a/</u>	2.3	2.4
Construction Disturbance – Total (acres) <u>b/</u>	30.7	32.0
Major Waterbodies (>100 feet) Crossed (number)	0	0
Length of Forest Land Crossed (feet)	<0.1	<0.1
Length of Wetland Crossed (feet)	0.0	0.0 <u>c/</u>
Construction Disturbance – Wetlands (acres) <u>b/</u>	0.0	0.0 <u>c/</u>
Agricultural Land Crossed (miles)	2.2	2.3
Landowners Crossed (number)	7	6
<u>a/</u> For the purpose of this analysis, new right-of-way is pipeline right-of-way that is not immediately adjacent to an existing utility or road easement or right-of-way. <u>b/</u> Based on construction right-of-way width of 75 feet in wetlands and forest lands and 110 feet in uplands. <u>c/</u> Estimated from WWI mapping.		

As shown in table 3.3.3-3, environmental impacts associated with Byron Alternatives A and B are substantially the same, with Alternative A only crossing about 25 feet more forest land and affecting only one more landowner. However, discussions with stakeholders in the Town of Byron indicated that Byron Alternative B could potentially conflict with planned development in the Town of Byron at MPs 35.5 through 36.2, and a permitted future gravel pit located at approximately MPs 36.3 through 36.5. Byron Alternative A avoids these potential impacts by proceeding east from State Highway 175 and passing to the north of a wetland complex bordered by U.S. Highway 41 and the railroad.

After reviewing the potential environmental impacts associated with these two alternatives, we believe that the environmental benefits associated with Byron Alternative A, including its reduced area of construction disturbance and length of new right-of-way, as well as its ability to minimize impacts on the planned development area and avoid a permitted gravel pit outweigh its minor disadvantages and the advantages of Byron Alternative B. Therefore, we prefer that Byron Alternative A be incorporated as part of the Proposed Route as filed by Guardian.

Lomira Alternatives A, B, and C

Guardian evaluated three potential routes for the G-II pipeline to traverse northeastern Dodge County between MPs 21.8 and 38.8, including Lomira Alternatives A, B, and C.

As shown on figure 3.3-5, Lomira Alternative A would begin at MP 21.8 and track northeast for just under 1 mile then turn north for an additional 4.8 miles. The route would then turn northeast for another 5.7 miles where it would rejoin with the Proposed Route at MP 33.8. In general, Lomira Alternative A would pass about 2 miles to the west of the Village of Theresa and about 2.5 miles to the west of the Village of Lomira. Lomira Alternative B travels in a north-northeasterly route similar to Alternative A; however, Lomira Alternative B would pass about 1.5 miles to the west of Theresa, and less than 1 mile to the west of Lomira.

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Figure 3.3-5 Lomira Alternatives A, B, and C

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Lomira Alternative C would also follow a similar north-northeasterly path as Alternatives A and B; however, Alternative C would pass about 1 mile to the west of the Towns of Theresa and Lomira. A comparison of the relevant environmental characteristics of Lomira Alternatives A, B, and C is included in table 3.3.3-4.

TABLE 3.3.3-4 Comparison of Lomira Alternatives A, B, and C			
Environmental Factor a/	Lomira Alternative A (Proposed Route)	Lomira Alternative B	Lomira Alternative C
Total Length (miles)	16.1	15.2	15.5
Length Adjacent to Existing Rights-of-way (miles)	0.0	0.0	0.3
Length of New Right-of-way (miles) a/	16.1	15.2	15.5
Construction Disturbance – Total (acres) b/	214.2	199.6	201.2
Total Waterbodies Crossed (number)	8	9	14
Major Waterbodies (>100 feet) Crossed (number)	1	1	0
Length of Wetland Crossed (feet)	<0.1 c/	0.5 c/	0.7 c/
Construction Disturbance – Wetlands (acres) b/	<1 c/	4.5 c/	6.4 c/
Landowners Crossed (number)	52	58	59
a/ For the purpose of this analysis, new right-of-way is pipeline right-of-way that is not immediately adjacent to an existing utility or road easement or right-of-way.			
b/ Based on construction right-of-way width of 75 feet and 110 feet in uplands.			
c/ Estimated from WWI mapping.			

As indicated in table 3.3.3-4, the Lomira Alternative A is 0.9 mile longer and would require 14.6 acres of additional disturbance during construction than the shortest Lomira Alternative (Lomira Alternative B). However, Lomira Alternative A has numerous advantages over Alternatives B and C. Specifically, Lomira Alternative A crosses 2,625 feet less wetland and 650 feet less forest land than Alternative B, and 3,525 feet less wetland and 2,700 feet less forest land than Alternative C, thereby substantially reducing the amount of potential wetlands and forest lands crossed by the Proposed Pipeline. Lomira Alternative A would also cross the fewest number of streams and would provide a better location to cross both Kummel Creek and the West Branch of the Milwaukee River. Unlike Alternative C, this alternative would also avoid a second crossing of the West Branch of the Milwaukee River. Additionally, Alternative A would avoid a tree nursery that would be crossed by Alternative B.

Several stakeholders expressed concerns that the proposed pipeline would interfere with the properties that have been designated for high density residential, commercial, or industrial development within the Villages of Lomira and Brownsville, Wisconsin. Based on a review of the Dodge County Planning and Development maps, Lomira Alternative A would avoid the future planned residential development in the Village of Lomira and would not likely interfere with the future development within the Village of Brownsville, which appears to be planned primarily on the northwest side of town.

Stakeholders also expressed concern over the G-II Proposed Pipeline's potential impact on proposed wind farm projects. Two of the proposed Lomira Alternatives (Alternatives A and B) would cross the site of the Forward Wind Energy Center (Forward Energy) Project. However, as currently planned, all three alternatives would avoid locations of the proposed wind turbines.

Guardian has also indicated that through proper consultation and siting, the two facility structures would be able to collocate.

After reviewing the potential environmental impacts associated with these three alternatives, we believe that Lomira Alternative A is environmentally preferable to either Alternative B or C in terms of minimizing impacts to wetlands, waterbodies, forest lands and landowners. Therefore, we prefer that Lomira Alternative A be incorporated as part of the Proposed Route as filed by Guardian.

Fox River Trail Alternatives A, B, and C

Guardian evaluated three options for the G-II pipeline to utilize the existing Fox River State Recreational Trail (Fox River Trail) corridor, including Fox River Trail Alternatives A, B, and C. Fox River Trail Alternatives A and B would pass to the northwest of the Village of Forest Junction and then directly through the Village of Greenleaf. To clarify, Fox River Trail Alternatives A and B follow the same geographical path, but Alternative A runs adjacent to the existing Fox River Trail (except in a few locations where construction width requirements would require that the pipeline be placed within the trail itself), whereas Alternative B places the pipeline within the trail itself for a much longer distance, 1.5 miles and 10.4 miles, respectively. Because the two alternatives follow the same geographical route, they will be discussed here simultaneously.

Fox River Trail Alternatives A and B would begin at MP 78.5 where it would deviate from the Proposed Route and travel northeast for 1.1 miles to meet the Fox River Trail. Both alternatives would follow the Fox River Trail to the north-northeast for about 11.5 miles, at which point they would turn abruptly to the west and proceed for 2.1 miles to rejoin the Proposed Route at MP 84.0, just before crossing the Fox River (see figure 3.3-6). Fox River Trail Alternative C would run about 0.25 mile to the northwest of the Village of Holland, and then between the Villages of Wrightstown and Greenleaf, proceeding to the north-northeast until MP 84.0, ending at the southeast bank of the Fox River. A comparison of the relevant environmental characteristics of the Fox River Trail Alternatives is included in table 3.3.3-5.

TABLE 3.3.3-5 Comparison of Fox River Trail Alternatives A, B and C			
Environmental Factor <u>a/</u>	Fox River Trail Alternative A	Fox River Trail Alternative B	Fox River Trail Alternative C (Proposed Route)
Total Length (miles)	17.3	17.3	13.6
Length Adjacent to Existing Rights-of-way (miles)	15.2	15.2	0.0
Length of New Right-of-way (miles) <u>a/</u>	2.1	2.1	13.6
Construction Disturbance – Total (acres) <u>b/</u>	191.5	116.0	140.5
Major Waterbodies (>100 feet) Crossed (number)	0	0	0
Length of Wetland Crossed (feet)	0.2	0.2	0.0
Construction Disturbance – Wetlands (acres) <u>b/</u>	1.8	0.7	0.0
<u>a/</u> For the purpose of this analysis, new right-of-way is pipeline right-of-way that is not immediately adjacent to an existing utility or road easement or right-of-way. <u>b/</u> The acreage calculations are based on standard right-of-way widths (110 or 80 feet) for the portions of each alternative that is not within the Fox River Trail. For portions of each route that is within the trail, a 30-foot right-of-way was utilized (even during wetland and forestland crossings). Alternative A is only within the trail for 1.4 miles (through Greenleaf), and Alternative B is within the trail for 11.0 miles. Additionally, this variation spans the Fox Valley Meter Station, therefore, some portions of each route's standard construction is 110 feet and 80 feet in width, respectively. <u>c/</u> Estimated from WWI mapping.			

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Figure 3.3-6 Fox River Trail Alternatives A, B, and C

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Fox River Trail Alternatives A and B would be 3.7 miles longer than Fox River Trail Alternative C. Fox River Trail Alternative A would result in an additional 75 and 51.1 acres of disturbance than Alternatives B and C. The primary advantages of Fox River Alternatives A and B are that they would make significant use of an existing right-of-way, would affect fewer landowners, and would cross fewer properties in a diagonal pattern, which is opposed by local landowners. The primary disadvantage of these alternatives is the physical constraint of the trail (26 to 30 feet wide) for pipeline construction. Additional disadvantages are that more waterbodies, forest land, and open land would have to be crossed.

Given the physical constraints associated with the construction within the Fox River Trail as well as the additional environmental impacts on waterbodies, forest lands, and open lands associated with Fox River Trail Alternatives A and B, we believe that Alternative C is the environmentally preferable alternative. Therefore, we prefer that Fox River Trail Alternative C be incorporated as part of the Proposed Route as filed by Guardian.

3.3.3.1 Pipeline Route Variations

Route variations differ from system alternatives or route alternatives in that they reduce impact on specific localized resource issues, including individual residences or other structures, wetlands or infrastructure, such as roadways.

Commission regulations (18 CFR 380.15[d][1]) give primary consideration to the use, enlargement, or extension of existing rights-of-way to reduce potential impacts on sensitive resources. Installation of new pipeline along existing, cleared rights-of-way (such as pipelines, powerlines, roads, and railroads) may be environmentally preferable to construction along new rights-of-way, and construction effects and cumulative impacts can normally be reduced by use of previously cleared rights-of-way. Long-term or permanent environmental impacts can be reduced by avoiding the creation of new rights-of-way through undisturbed areas.

Rock River South Variations A and B

Between MPs 7.5 and 9.1 Guardian evaluated two potential route variations, Rock River South Variations A and B. Beginning at MP 7.5, Rock River South Variation A would travel in a relatively straight line towards the northeast for 1.6 miles, passing through the manmade wetland mitigation site and rejoining the Proposed Route at MP 9.1 (see figure 3.3-7). Rock River South Variation B would travel in a slightly more northeasterly direction for approximately 1.4 miles and then turn north for an additional 0.6 mile to rejoin with the Proposed Route. A comparison of the relevant environmental characteristics of Rock River South Variations A and B is included in table 3.3.3.1-1.

Rock River South Variations A and B would be about the same length overall, and would require a similar area of disturbance during construction. The advantage of Rock River South Variation A is that it would reduce impacts on the wetland mitigation area, which is composed of a manmade pond and emergent wetland fringe. In addition, an active quarry located near Rock River South Variation B would be avoided by utilizing Variation A. For these reasons, the environmental advantages of Rock River South Variation A outweigh the disadvantages; therefore, we believe that the Rock River South Variation A is the environmentally preferable variation and accept it as part of the Proposed Route as filed by Guardian.

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Figure 3.3-7 Rock River South Variation

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TABLE 3.3.3.1-1		
Comparison of Rock River South Variations A and B		
Environmental Factor	Rock River South Variation A (Proposed Route)	Rock River South Variation B
Total Length (miles)	1.7	1.6
Length Adjacent to Existing Rights-of-way (miles)	0	0
Length of New Right-of-way (miles) <u>a/</u>	1.7	1.6
Construction Disturbance – Total (acres) <u>b/</u>	22.7	21.3
Perennial Waterbodies Crossed (number)	1	1
Major Waterbodies (>100 feet) Crossed (number)	0	0
Length of Wetland Crossed (feet)	0	0
Construction Disturbance – Wetlands (acres) <u>b/</u>	0	0
Landowners Crossed (number)	9	7
<u>a/</u> For the purpose of this analysis, new right-of-way is pipeline right-of-way that is not immediately adjacent to an existing utility or road easement or right-of-way. <u>b/</u> Based on construction right-of-way width of 75 feet in wetlands and 110 feet in uplands. <u>c/</u> Estimated from WWI mapping.		

Woodland Creek Variations A and B

Guardian evaluated two potential routes between MP 12.4 and 16.7, including Woodland Creek Variations A and B. Beginning at MP 12.4, Woodland Creek Variation B would travel towards the northeast for about 1.6 miles, at which point it would turn sharply to the north and travel an additional 2.7 miles, rejoining the Proposed Route at MP 16.7 (see figure 3.3-8). Woodland Creek Variation A follows a slightly more direct path, heading generally northeast from MP 12.4 to 16.7. A comparison of the relevant environmental characteristics of the Woodland Creek Variations is included in table 3.3.3.1-2.

TABLE 3.3.3.1-2		
Comparison of the Woodland Creek Variations A and B		
Environmental Factor	Woodland Creek Variation A (Proposed Route)	Woodland Creek Variation B
Total Length (miles)	4.1	4.2
Length Adjacent to Existing Rights-of-way (miles)	0.0	0.0
Length of New Right-of-way (miles) <u>a/</u>	4.1	4.2
Construction Disturbance – Total (acres) <u>b/</u>	54.2	54.7
Major Waterbodies (>100 feet) Crossed (number)	0	0
Length of Wetland Crossed (feet)	0.1	0.3 <u>c/</u>
Construction Disturbance – Wetlands (acres) <u>b/</u>	0.9	2.7 <u>c/</u>
Agricultural Lands Crossed (miles)	4.1	3.9
Landowners Crossed (number)	11	17
<u>a/</u> For the purpose of this analysis, new right-of-way is pipeline right-of-way that is not immediately adjacent to an existing utility or road easement or right-of-way. <u>b/</u> Based on construction right-of-way width of 75 feet and 110 feet in uplands. <u>c/</u> Estimated from WWI mapping.		

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Figure 3.3-8 Woodland Creek Variations A and B

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As shown in table 3.3.3.1-2, the two route variations are similar in many respects. However, Woodland Creek Variation A is slightly shorter, avoids forested wetlands, and crosses two-thirds less total wetland and slightly less forest land than Variation B. The variation also reduces the number of affected landowners and avoids an archaeological site.

Another aspect of Woodland Creek Variations A and B is that they would also determine the location of the Rubicon Meter Station site (see figure 3.3-8). Because the meter station sites are situated along mutually exclusive routes (i.e., it is not possible to select the variation with the original meter station site), we have evaluated them in the context of the pipeline route comparison rather than in the analysis of aboveground facility alternatives in section 3.3.4. Table 3.3.3.1-3 compares the relevant environmental characteristics of Woodland Creek Variations A and B with respect to the potential locations of the Rubicon Meter Station.

TABLE 3.3.3.1-3 Comparison of the Two Rubicon Meter Station Alternatives Along Woodland Creek Variations A and B			
Factor	Unit	Rubicon Meter Station – Alternative A	Rubicon Meter Station – Alternative B
County	(n/a)	Dodge	Dodge
Permanent Area a/	(acres)	0.5	0.5
Elevation b/	(feet)	935	900-910
Topography c/	(n/a)	Flat	Moderately Sloped
Visibility	(n/a)	Residence and Oaklawn Road	Butler Road
Site Access	(n/a)	Oaklawn Road	Butler Road
Vegetation	(type)	Crop	Crop
Land Use	(type)	Agriculture	Agriculture
Streams	(no.)	0	0
Wetlands	(acres)	0.0	0.0
Nearest Residence	(feet)	100	700
Prime Farmland d/	(acres)	0.5	0.0
<u>a/</u> Permanent Area is defined as the total area permanently impacted by construction. <u>b/</u> Calculated from USGS topographic mapping. <u>c/</u> Topography: Flat 0 to 2 percent slope; Gently Sloping 2 to 5 percent slope; Moderately Sloping 5 to 10 percent slope; Steeply Sloping 10 percent or greater slope. <u>d/</u> Based on SSURGO data.			

Table 3.3.3.1-3 shows that the proposed Rubicon Meter Station locations along Woodland Creek Variations A and B are very similar regarding most environmental factors. However, Woodland Creek Variation A would provide a more suitable location for the Rubicon Meter Station based on the flatter slope and reduced impacts of a new access road, which would be required to access the meter station.

After reviewing the potential environmental impacts associated with the two pipeline variations and meter station locations, we believe that environmental benefits associated with Woodland Creek Variation A, including its reduced impacts to wetlands, forested wetlands, forested lands, and landowners, outweigh those of Variation B. Therefore, we prefer that Woodland Creek Variation A be incorporated as part of the Proposed Route as filed by Guardian.

Brothers 4 Variations A and B

Guardian evaluated two potential routes for the G-II pipeline to traverse the agricultural fields between MPs 45.0 and 46.1. Beginning at MP 45.0, Brothers 4 Variation B would travel straight in a north-northeasterly directions for about 1.1 miles, rejoining the Proposed Route at MP 46.1 (see figure 3.3-9). In contrast, Brothers 4 Variation A would travel north-northeast for approximately 0.6 mile, and then would turn north for approximately 0.3 mile before rejoining the Proposed Route at MP 46.1. A comparison of the relevant environmental characteristics of Brothers 4 Variations A and B is included in table 3.3.3.1-4.

TABLE 3.3.3.1-4		
Comparison of Brothers 4 Variations A and B		
Environmental Factor	Brothers 4 Variation A (Proposed Route)	Brothers 4 Variation B
Total Length (miles)	1.1	1.0
Length Adjacent to Existing Rights-of-way (miles)	0	0
Length of New Right-of-way (miles) <u>a/</u>	1.1	1.0
Construction Disturbance – Total (acres) <u>b/</u>	13.9	13.0
Perennial Waterbodies Crossed (number)	0	0
Major Waterbodies (>100 feet) Crossed (number)	0	0
Length of Wetland Crossed (feet)	900	400
Construction Disturbance – Wetlands (acres) <u>b/</u>	1.5	0.7
Landowners Crossed (number)	4	4
<u>a/</u> For the purpose of this analysis, new right-of-way is pipeline right-of-way that is not immediately adjacent to an existing utility or road easement or right-of-way. <u>b/</u> Based on construction right-of-way width of 75 feet in wetlands and 110 feet in uplands. <u>c/</u> Estimated from WWI mapping.		

As indicated in table 3.3.3.1-4, the Brothers 4 Variations A and B are similar in most respects (e.g., they cross the same type of land uses, affect the same number of landowners, etc.). The primary differences between the routes are that Variation A is approximately 0.1 mile longer and avoids crossing through the center of agricultural fields. The disadvantage to this route, however, is that Variation A would increase the crossing of mostly emergent wetlands by about 500 feet.

We believe the ability of Brothers 4 Variation A to avoid crossing through the center of agricultural fields, outweighs its minor impact to the emergent wetland. Therefore, we prefer that Brothers Variation A be incorporated as part of the Proposed Route as filed by Guardian.

Hass Variation

In order to avoid crossing a farmer's extensive drain tile system in a field to the south of County Highway Q, Guardian evaluated two potential routes for the G-II pipeline to traverse the agricultural fields between MPs 54.9 and 56.3. Beginning at MP 54.9, Hass Variation B would deviate from the Proposed Route and travel straight towards the north-northeast for about 1.4 miles, rejoining the Proposed Route at MP 56.3 (see figure 3.3-10). Hass Variation A would head northwards at MP 54.9 until it crossed County Highway Q, then it would turn to the north-northeast to rejoin the Proposed Route at MP 56.3. A comparison of the relevant environmental characteristics of the Hass Variations is included in table 3.3.3.1-5.

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Figure 3.3-9 Brothers 4 Variations A and B

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Figure 3.3-10 Hass Variations A and

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TABLE 3.3.3.1-5		
Comparison of Hass Variations A and B		
Environmental Factor	Hass Variation A (Proposed Route)	Hass Variation B
Total Length (miles)	1.4	1.4
Length Adjacent to Existing Rights-of-way (miles)	0	0
Length of New Right-of-way (miles) <u>a/</u>	0	0
Construction Disturbance – Total (acres) <u>b/</u>	18.7	18.7
Perennial Waterbodies Crossed (number)	0	0
Major Waterbodies (>100 feet) Crossed (number)	0	0
Length of Wetland Crossed (feet)	0	0
Construction Disturbance – Wetlands (acres) <u>b/</u>	0	0
Landowners Crossed (number)	5	5
<u>a/</u> For the purpose of this analysis, new right-of-way is pipeline right-of-way that is not immediately adjacent to an existing utility or road easement or right-of-way. <u>b/</u> Based on construction right-of-way width of 75 feet in wetlands and 110 feet in uplands. <u>c/</u> Estimated from WWI mapping.		

Overall, Hass Variation A would be about the same length as Variation B and would require a similar area of disturbance during construction. The advantage of Hass Variation A is that it avoids cutting diagonally across a drainage tiled field and would not complicate the siting of We Energies' proposed substation in this area. In addition, Hass Variation A avoids the proposed substation site for We Energies' Blue Sky Green Field Wind Farm Project. Hass Variation B has no substantial environmental benefits that could negate those of Hass Variation A.

Because the Hass Variation A avoids impacts to both a drainage tiled field and the siting of the We Energies proposed substation area, we believe that Variation A is the environmentally preferable variation and prefer the variation be incorporated as part of the Proposed Route as filed by Guardian.

Johnsburg Variations A and B

Prompted by public input, Guardian evaluated the potential for the G-II pipeline to utilize an existing power line and ANR corridors, resulting in two potential route variations between MPs 56.3 and 67.4. Beginning at MP 56.3, Johnsborg Variation B would travel towards the north-northeast for several miles and then turn towards the north after crossing Highway 151. Variation B would then trend to the north and rejoin the Proposed Route on the northeastern side of Stony Brook, at MP 67.4 (see figure 3.3-11). Johnsborg Variation A starts at MP 56.3 and travels north, then turns northeast for its duration, rejoining the Proposed Route at MP 67.4. A comparison of the relevant environmental characteristics of Johnsborg Variations A and B is included in table 3.3.3.1-6.

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Figure 3.3-11 Johnsbury Variations A and B

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TABLE 3.3.3.1-6 Comparison of the Johnsbury Variations A and B		
Environmental Factor	Johnsbury Variation A (Proposed Route)	Johnsbury Variation B
Total Length (miles)	11.1	10.5
Length Adjacent to Existing Rights-of-way (miles)	8.9	0.0
Length of New Right-of-way (miles) <u>a/</u>	2.2	10.5
Construction Disturbance – Total (acres) <u>b/</u>	144.2	138.3
Major Waterbodies (>100 feet) Crossed (number)	0	0
Length of Wetland Crossed (feet)	0.9	0.4 <u>c/</u>
Construction Disturbance – Wetlands (acres) <u>b/</u>	8.2	3.6 <u>c/</u>
Landowners Crossed (number)	39	32
<u>a/</u> For the purpose of this analysis, new right-of-way is pipeline right-of-way that is not immediately adjacent to an existing utility or road easement or right-of-way. <u>b/</u> Based on construction right-of-way width of 75 feet in wetlands and 110 feet in uplands. <u>c/</u> Estimated from WWI mapping.		

The Johnsbury Variation B would be about 0.6 mile shorter and would require about 5.9 fewer acres of disturbance during construction than Johnsbury Variation A. The advantage of Johnsbury Variation B is that it would cross fewer waterbodies and less wetlands, forest lands, and open lands. The primary disadvantage of this variation is that it would require the creation of all new rights-of-way, which is locally unpopular and would require more land disturbance.

Given the ability of Johnsbury Variation A to utilize an existing right-of-way and minimize the creation of new rights-of-way in response to local public concerns, we believe that Variation A is the environmentally preferred alternative and accept the variation as part of the Proposed Route as filed by Guardian.

ANR Corridor Variations A and B

Prompted by public input, Guardian evaluated the potential for the G-II Pipeline to utilize the existing nearby ANR corridor, resulting in two potential route variations for the Proposed Route between MPs 78.5 and 84.0. Beginning at MP 78.5, ANR Corridor Variation A would travel to the northeast for approximately 1.0 mile before turning to the north and traveling an additional 4.3 miles, including two right-angle jogs to the east. ANR Corridor Variation B would also begin at MP 78.5 and trend north-northeast for about 5.5 miles. Variation B would then rejoin the Proposed Route to the north of the Village of Holland, at MP 84.0 (see figure 3.3-12). A comparison of the relevant environmental characteristics of ANR Corridor Variations A and B is included in table 3.3.3.1-7.

As indicated in table 3.3.3.1-7, ANR Corridor Variation B would be 0.6 mile shorter and would require 12.8 fewer acres of additional disturbance during construction than ANR Corridor Variation A. The advantage of this ANR Variation A is that it would collocate the pipeline with an existing right-of-way, eliminating the need for a new greenfield corridor. Additionally, ANR Corridor Variation A would affect three fewer landowners. However, it would also cross more wetlands, forest lands, and agricultural lands.

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Figure 3.3-12 ANR Corridor Variations A and B

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TABLE 3.3.3.1-7		
Comparison of ANR Corridor Variations A and B		
Environmental Factor	ANR Corridor Variation A (Proposed Route)	ANR Corridor Variation B
Total Length (miles)	5.5	4.9
Length Adjacent to Existing Rights-of-way (miles)	3.9	0.0
Length of New Right-of-way (miles) <u>a/</u>	1.6	4.9
Construction Disturbance – Total (acres) <u>b/</u>	70.1	57.3
Major Waterbodies (>100 feet) Crossed (number)	0	0
Length of Wetland Crossed (feet)	0.4	<0.1 <u>c/</u>
Construction Disturbance – Wetlands (acres) <u>b/</u>	3.6	0.8 <u>c/</u>
Forestland Crossed (miles)	0.3	0.1
Agricultural Land Crossed (miles)	4.9	4.6
Landowners Crossed (number)	16	19
<u>a/</u> For the purpose of this analysis, new right-of-way is pipeline right-of-way that is not immediately adjacent to an existing utility or road easement or right-of-way. <u>b/</u> Based on construction right-of-way width of 75 feet in wetlands and forest lands and 110 feet in uplands south of the Fox Valley Meter Station at MP 83.65 and 80 feet north of the Fox Valley Meter Station. <u>c/</u> Estimated from WWI mapping.		

Another consequence of ANR Corridor Variation A is that it would relocate the Fox Valley Meter Station site about 0.6 mile to the northeast of the Town of Holland (see figure 3.3-12). ANR Corridor Variation B places the Fox Valley Meter Station just south of the community of Dundas, near MP 81.4. Because the meter station sites are situated along mutually exclusive routes (i.e., it is not possible to select the variation with the original meter station site), we have evaluated them in the context of the pipeline route comparison rather than in the analysis of aboveground facility alternatives in section 3.3.4. Table 3.3.3.1-8 compares the relevant environmental characteristics of the ANR Corridor Variation locations of the Fox Valley Meter Station.

TABLE 3.3.3.1-8			
Comparison of the Fox Valley Meter Station Sites Along ANR Corridor Variations A and B			
Factor	Unit	Fox Valley Meter Station – ANR Corridor Variation A (Proposed Route)	Fox Valley Meter Station – ANR Corridor Variation B
County	(n/a)	Brown	Calumet
Permanent Area <u>a/</u>	(acres)	1.2	1.2
Elevation <u>b/</u>	(feet)	780	825-830
Topography <u>c/</u>	(n/a)	Gently to Moderately Sloping	Gently Sloping
Visibility	(n/a)	Natural screening from nearest residence and Crestview Road (to the north), partially visible from Outagamie Road (to the west)	Visible from Dundas Road (to the north) and surrounding residences
Site Access	(n/a)	Outagamie Road	Dundas Road
Vegetation	(type)	Crop	Crop
Land Use	(type)	Agricultural	Agricultural
Streams	(no.)	0	0
Wetlands	(acres)	0.0	0.0
Nearest Residence	(ft.)	500	1,100

TABLE 3.3.3.1-8			
Comparison of the Fox Valley Meter Station Sites Along ANR Corridor Variations A and B			
Factor	Unit	Fox Valley Meter Station – ANR Corridor Variation A (Proposed Route)	Fox Valley Meter Station – ANR Corridor Variation B
Prime Farmland d/	(acres)	0.7 e/	1.2 f/
a/ Permanent Area is defined as the total area permanently impacted by construction. b/ Calculated from USGS topographic mapping. c/ Topography: Flat 0 to 2 percent slope; Gently Sloping 2 to 5 percent slope; Moderately Sloping 5 to 10 percent slope; Steeply Sloping 10 percent or greater slope. d/ Based on SSURGO data. e/ Prime only if drained. f/ 0.6 acre of the 1.2 acres is Prime only if drained.			

Table 3.3.3.1-8 shows that location of the Fox Valley Meter Station along ANR Corridor Variations A and B are very similar regarding most environmental factors. The main difference between the two is visibility. The ANR Corridor Variation A site would provide natural screening in the form of an upland forested area. The ANR Corridor Variation B site would be located in an area that is already visually impacted by an existing transmission line; however, this site would be over twice the distance from the nearest residence. Based on this analysis, the meter station location is not a significant factor in the overall pipeline route evaluation. For these reasons, paired with the benefit of a pipeline route that requires no greenfield disturbance, we believe that the ANR Corridor Variation A is the environmentally preferable alternative. Therefore, we accept ANR Corridor Variation A and the corresponding Fox Valley Meter Station as part of the Proposed Route as filed by Guardian.

Oneida Variations A and B

Prompted by meetings with the Oneida Nation, Guardian evaluated two potential routes for the G-II pipeline to pass through the Oneida Reservation between MPs 96.8 and 110.4 in order to reduce impacts on residences and properties. Oneida Variation B begins at MP 96.8 and would follow either a power line corridor or ANR's pipeline corridor. The only area where Variation A would not follow the existing utility rights-of-way is in the vicinity of Dutchman's Creek and Geneva Drive, where it would leave the power line corridor to avoid several houses and to minimize the crossing of a large forested wetland area south of County Highway U (see figure 3.3-13). Oneida Variation A was established in consultation with Oneida Nation representatives. This variation would generally follow the same route as Variation B; however, it would deviate in four locations (see figure 3.3-13). A comparison of the relevant environmental characteristics of Oneida Variations A and B is included in table 3.3.3.1-9.

As indicated in table 3.3.3.1-9, Oneida Variation A would be 2.1 miles shorter and would require 20.4 fewer acres of disturbance during construction than Oneida Variation B. Further advantages of Variation A is that it would require two fewer road crossings and require less crossing of agricultural and open lands. The primary disadvantage of Oneida Variation A is that it would require the creation of 0.6 mile of new right-of-way and would impact 11 additional landowners. Furthermore, it would use less favorable stream crossing locations.

Given the disadvantages associated with Oneida Variation A and the fact that Oneida Variation B, although longer, was developed with the direct input of the representatives of the Oneida Nation and generally achieves the primary objectives of the tribal representatives who worked with Guardian for this purpose, we concur and believe that the advantages of Oneida Variation B

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Figure 3.3-13 Oneida Variations A and B

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outweigh the disadvantages and is the environmentally preferable variation. Therefore, we prefer that Oneida Variation B be incorporated as part of the Proposed Route as filed by Guardian.

TABLE 3.3.3.1-9		
Comparison of Oneida Variations A and B		
Environmental Factor	Oneida Variation A	Oneida Variation B (Proposed Route)
Total Length (miles)	11.7	13.8
Length Adjacent to Existing Rights-of-way (miles)	10.0	9.4
Length of New Right-of-way (miles) <u>a/</u>	1.7	4.4
Construction Disturbance – Total (acres) <u>b/</u>	112.4	132.8
Roads Crossed (number)	12	14
Major Waterbodies (>100 feet) Crossed (number)	0	0
Length of Wetland Crossed (feet)	1.3	1.1 <u>c/</u>
Construction Disturbance – Wetlands (acres) <u>b/</u>	11.8	10.0 <u>c/</u>
Forest Land Crossed (miles)	1.4	1.0
Agricultural Land Crossed (miles)	7.4	8.0
Open Land Crossed (miles)	2.9	4.8
Landowners crossed (number)	35	24
<u>a/</u> For the purpose of this analysis, new right-of-way is pipeline right-of-way that is not immediately adjacent to an existing utility or road easement or right-of-way. <u>b/</u> Based on construction right-of-way width of 75 feet in wetlands and forest lands and 80 feet in uplands. <u>c/</u> Estimated from WWI mapping.		

Beginning at MP 102.7 and ending at MP 104.2, Guardian has identified two pipeline route options in order to utilize an existing right-of-way and move MLV 6 away from existing residences and structures. Beginning at MP 102.7 Vissers Variation A would collocate the proposed G-II pipeline with an existing pipeline right-of-way for approximately 1.3 miles, rejoining the Proposed Route at MP 104.2 (see figure 3.3-14). Vissers Variation B would follow a transmission line northwest starting at MP 102.7 for approximately 0.75 mile and then turn directly north for an additional 0.9 mile before rejoining the Proposed Route at MP 104.2. A comparison of the relevant environmental characteristics of Vissers Variations A and B is included in table 3.3.3.1-10.

TABLE 3.3.3.1-10		
Comparison of Vissers Variations A and B		
Environmental Factor	Vissers Variation A (Proposed Route)	Vissers Variation B
Total Length (miles)	1.4	1.5
Length Adjacent to Existing Rights-of-way (miles)	1.4	0.8
Length of New Right-of-way (miles) <u>a/</u>	0.0	0.7
Construction Disturbance – Total (acres) <u>b/</u>	13.6	14.5
Major Waterbodies (>100 feet) Crossed (number)	0	0
Length of Wetland Crossed (feet)	<0.1	0.1 <u>c/</u>
Construction Disturbance – Wetlands (acres) <u>b/</u>	<1	<1 <u>c/</u>
Landowners Crossed (number)	5	6
<u>a/</u> For the purpose of this analysis, new right-of-way is pipeline right-of-way that is not immediately adjacent to an existing utility or road easement or right-of-way. <u>b/</u> Based on construction right-of-way width of 75 feet in wetlands and 80 feet in uplands. <u>c/</u> Estimated from WWI mapping.		

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Figure 3.3-14 Vissers Variations A and B

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As indicated in table 3.3.3.1-10, Vissers Variation A decreases the length of the pipeline by approximately 0.1 mile and increases the length of the route that is adjacent to existing right-of-way by about 0.6 mile. It also reduces wetland crossings by approximately 380 feet by reducing the crossing length of wetlands associated with Oneida Creek, and would also avoid two isolated farmed wetlands. In addition, the variation avoids one less landowner. For these reasons, we believe that Vissers Variation A is the environmentally preferable route. Therefore, we prefer that Vissers Variation A be incorporated as part of the Proposed Route as filed by Guardian.

Minor Variations

Following the submittal of Guardian's application, Guardian evaluated and adopted a number of other minor variations. Except as noted below, these minor variations do not affect any new landowners and do not increase the impact on any known sensitive resources such as waterbodies or wetlands. Table 3.3.3.1-11 lists the locations and reasons why each of these minor variations was adopted.

TABLE 3.3.3.1-11				
Minor Variations Incorporated by Guardian into the Proposed Route				
Variation	County	Mileposts	Approximate Length (mi)	Reason for Variation
MV-Y	Dodge	10.7-11.0	0.3	This minor variation moves the alignment up to 140 feet northwest of the Proposed Route to avoid crossing approximately 180 feet of mapped emergent wetland. The variation adds approximately 40 feet to the overall length of the route and further refines MV-E.
MV-Z	Dodge	14.2-15.2	1.0	This minor variation shifts the alignment up to 250 feet west of the Proposed Route to avoid impacts on a drain tile system. The variation adds approximately 51 feet to the overall length of the route.
MV-AA	Dodge	18.9-19.3	0.4	This minor variation proceeds north from approximately MP 18.9 for approximately 1,475 feet, crossing the unnamed tributary to Lentz Creek approximately 360 feet west of the Proposed Route. The variation then proceeds northeast for approximately 800 feet before returning to the Proposed Route. The variation avoids crossing 42 feet of mapped wetland and avoids the clearing of woody vegetation associated with the wetland. The variation adds approximately 50 feet to the overall length of the route and further refines MV-J.
MV-AB	Fond du Lac	38.3-38.8	0.5	This minor variation was initiated at the request of a landowner to avoid impacts on two large oak trees on his property. The variation shifts the alignment approximately 250 feet to the east, adds approximately 65 feet to the overall length of the route, but decreases the crossing length of a wooded area by approximately 100 feet and avoids the two trees of concern.
MV-AC	Calumet	76.0-76.3	0.3	This minor variation moves the alignment of the pipeline approximately 100 feet to the east, and avoids approximately 140 feet of scrub / shrub wetland. The minor variation adds approximately 35 feet to the total length and further refines MV-S.
MV-AD	Calumet	77.3-77.8	0.5	This minor variation collocates the route with an ATC power line (up to 425 feet west of the Proposed Route) for an additional 1,200 feet and decreases wetland crossing by approximately 75 feet. The variation adds approximately 130 feet to the overall length of the route.
MV-AE	Outagamie	82.2-82.4	0.2	This minor variation continues north adjacent to the ANR pipeline for an additional 1,000 feet before turning east and rejoining the Proposed Route near MP 82.4. The variation adds approximately 110 feet to the overall length of the route.
MV-AF	Brown	90.6-93.0	2.4	This minor variation minimizes impacts on a proposed subdivision by aligning the route within the proposed roads of the subdivision. The variation does not increase the overall length of the route and is within 150 feet east or west of the Proposed Route.

3.3.3.2 Landowner Modifications

Baus Modification

A landowner between MP 49.0 and 50.0 of the Proposed Route raised a number of agricultural concerns, especially erosion, stones in agricultural soils, and drain tiles. Other concerns included impacts on fences, forest land, wetlands, and the economic impact of the pipeline on their land and farming operation. The property encompasses approximately 45 acres south of Cody Road. The Proposed Route would cross about 1,200 feet of the property between MPs 49.6 and 49.9.

Construction of the G-II Pipeline as proposed would temporarily impact about 3.0 acres of agricultural land. There are no residences or structures, wetlands, or known drain tiles in this area. The only trees that would be cut on the property are located in a narrow hedge row that borders the southern property line. A little less than half of the soils that would be affected on the property are listed as stony or highly erodible. The permanent easement would encompass about 1.4 acres, but would not preclude future farming operations. In addition, Guardian has proposed an AMP that would help mitigate potential impacts.

To address potential landowner concerns that might avoid the property, as well as measures that would minimize potential impacts, a route modification to the west was developed (see Baus Modification A on Figure 3.3-15). Baus Modification A would depart from the Proposed Route at MP 49.0 and travel in a north-northwesterly direction for approximately 0.57 mile. The modification would follow an existing tree line and property boundary quarter-section section line to Cody Road. The Proposed Route modification would then turn southeast along Cody Road whereby the pipeline would reconnect with the Proposed Route at about MP 49.85 (see Figure 3.3-15).

Potential disadvantages associated with the proposed Baus Modification is that the route would increase the pipeline length by approximately 0.1 mile, affect more acres of agricultural land, and have the potential to impact existing agricultural drainage tiles, although the modification would be located mostly along the edges of agricultural fields. This modification would also be about 200 feet from a residence near where the pipeline would intersect Cody Road.

Despite these disadvantages, more information and further analysis is necessary to determine whether Baus Modification A is environmentally preferable to the Proposed Route. We will finalize our review upon completion of a field investigation and further study of the modification. We will present our findings in the final EIS.

Tetzlaff Modification

Landowners between MPs 91.3 and 92.8 have expressed concern about the effect of the pipeline location on property value and future development. Following Guardian's filing on October 13, 2006, the Applicant evaluated and incorporated a minor route variation to address the concerns of the landowners along this portion of the proposed pipeline route (see table 3.3.3.1-11 and figure 3.3-16). This route variation was filed with the FERC in a supplemental filing on December 14, 2006. Upon our request, Guardian evaluated an additional route modification between MPs 90.8 and MP 92.8 (Tetzlaff Modification). This modification would begin at about MP 90.7 and proceed northward along property lines to the intersection of Meadowlark Road and Tetzlaff Road. The variation crosses through the intersection and proceeds north adjacent to Tetzlaff Road for approximately 1.5 miles, crossing County Highway ZZ. Directly north of

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Figure 3.3-15 Baus Modification A

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Figure 3.3-16 Tetzlaff Modification

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County Highway ZZ, the variation turns east following County Highway ZZ until it returns to the proposed route at approximately MP 92.6 (see figure 3.3-16).

As proposed, the Tetzlaff Modification is environmentally similar to the proposed route in most respects (e.g., both routes cross the same types of land uses and neither route crosses any identified wetlands or waterbodies). The primary advantage of the modification is it increases the length of the route adjacent to existing rights-of-way by approximately 1.7 miles. However, while the Tetzlaff Modification would increase collocation with existing rights-of-way, it poses a number of disadvantages. The modification would cross three new landowners, two more than the proposed route. The modification would also increase the overall length of the pipeline by approximately 600 feet, thus increasing overall impacts and costs. In addition, the modification is located within 100 feet of three existing structures (two of which are residences, including one of the Tetzlaff family residences), and within 150 feet of an additional three structures. Further, the proposed Tetzlaff Modification would impact more potential home lots than the proposed route, because it is not collocated with as many proposed subdivision roads as the proposed route. Lastly, the modification would necessitate relocating the Denmark Meter Station and would increase the length of WPS's interconnecting pipeline by about 800 feet.

Based upon the above analysis, the Tetzlaff Modification does not offer any significant environmental advantages over the proposed route and it has several disadvantages, including additional environmental impacts. Therefore, we believe the proposed modification is not a viable alternative to the proposed route and has been eliminated from further consideration.

VanRossum Modification

Landowners between MPs 89.0 and 91.5 have expressed a desire for Guardian to site its pipeline along existing rights-of-way and property boundaries. In response to landowner concerns, Guardian evaluated a potential route modification (VanRossum Modification) between MPs 89.0 and MP 91.5.

Beginning at about MP 89.1, the VanRossum Modification would proceed north following property boundary quarter-section lines for approximately 1.2 miles. At Meadowlark Road, the modification would turn and proceed east paralleling Meadowlark Road for approximately 0.7 mile, returning to the proposed route near MP 90.5 (see figure 3.3-17).

The primary advantage of the VanRossum Modification is that it would collocate the pipeline with an existing right-of-way for about 0.68 mile. The modification would also avoid a small farmed wetland (OS-W10) associated with the tributary to the East River near MP 90.3 of the proposed route. However, while the VanRossum Modification is similar with respect to some environmental factors (both routes cross the same types of land uses; both routes require a crossing of an unnamed tributary to the East River—albeit at different locations), the variation has a number of disadvantages relative to Guardian's proposed route. The variation adds approximately 2,360 feet to the overall length of the pipeline, which would result in greater overall impacts and cost. The modification would also affect three new landowners; one more landowner than the corresponding segment of the proposed route. Additionally, the modification would affect a significant area of drain tile located north and south of Mallard Road (see figure 3.3-17). The modification would also place the pipeline within 100 feet of an existing structure and within 150 feet of five additional structures (including one residence).

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Figure 3.3-17 Van Rossum Modification

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Based upon the above analysis, the advantages of the VanRossum Modification do not outweigh the disadvantages. Therefore, we believe the proposed modification is not a viable alternative to the proposed route and has been eliminated from further consideration.

3.3.4 Aboveground Facility Site Alternatives

Guardian proposes to construct two new compressor stations, seven new meter stations, six MLVs, and two sets of launcher/receiver stations as part of the proposed Project. We have evaluated the proposed locations of the aboveground facilities to determine whether environmental impacts would be reduced or mitigated by use of alternative facility sites. All of the proposed aboveground facilities are necessary to meet the purpose and need of the G-II Project.

The search for alternatives focused on sites that would require a minimum of environmental impact, choosing agricultural lands over woodlands or streams and wetlands. Whenever possible, Guardian selected meter station sites that collocated with existing or proposed We Energies and WPS facilities. The locations of meter and compressor stations would be linked to the location of the proposed Project (with the exception of the Sycamore Compressor Station, which would be situated along Guardian's existing pipeline in northeastern Illinois).

Meter Stations

As explained previously, the Rubicon and Fox Valley Meter Stations are discussed with their associated alternative or variation routes, because the two features must be collocated. The remaining proposed meter stations and their alternatives are discussed here.

Sheboygan Meter Station

The original meter station site is located at MP 45.3; the alternative meter station site is at MP 43.9 (see figure 3.3-18). The proposed and alternative sites are both located on 0.5 acre of private, prime farmland of different owners, at average elevations of about 1,105 feet and 1,155 feet, respectively, with gently sloping topography. No wetland, biological, or cultural resources would be affected on either site. Both sites would require access roads of comparable lengths and neither site would require any significant length of new transmission line to be constructed.

The differences between the two sites are minor. The nearest residence is 700 feet from the original site and 750 feet from the alternative site; therefore, noise impacts would be similar. Both sites would be visible from homes on County Highway UU and the alternative site would be visible from Grandview Road 0.25 mile to the east.

Because the original Sheboygan Meter Station site offers no clear environmental advantages, and because the alternative site would be collocated with another proposed facility, we recommend use of the Proposed Sheboygan Meter Station at MP 43.8.

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Figure 3.3-18 Sheboygan Meter Station Alternative

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Chilton Meter Station

The original Chilton Meter Station site is located on the north side of Quinney Road at MP 66.5, and the alternative Chilton Meter Station site is located on the south side of Quinney Road at MP 66.4 (see figure 3.3-19). The proposed and alternative sites are both located on 0.6 acre of private, prime farmland of different owners, each at an elevation of about 980 feet, with gently sloping topography. No wetland, biological, or cultural resources would be affected on either site. Both sites are visible only from Quinney Road, which could also provide a permanent access road to either site. Neither site would require any significant length of new transmission line to be constructed.

The differences between the two sites are minor. The nearest residence is 1,000 feet from the original site and 900 feet from the alternative site, creating similar noise impacts.

Because the original and alternative Chilton Meter Station sites are nearly identical in environmental respects, and because the alternative site would be WPS's preferred transmission tie-in location, we recommend use of the Proposed Chilton Meter Station at MP 66.4.

Denmark Meter Station

Both Denmark Meter Station sites are located at MP 91.6; the original site is on the north side of Wrightstown Road while the alternative location is directly across the street on the south side of Wrightstown Road (see figure 3.3-20). The original and alternative sites are both located on 0.5 acre of private, prime farmland, but the alternative site would collocate the meter station with WPS's proposed pipeline lateral interconnection. No wetland, biological, or cultural resources would be affected on either site. Both sites are visible from a residence off Wrightstown and Tetzlaff Roads, and no new access roads or significant length of transmission line would be required for either site.

The differences between the two sites are minor. The nearest residence is 100 feet from the original site and 150 feet from the alternative site, creating similar noise and visual impacts.

Because the original and alternative Denmark Meter Station sites are nearly identical in environmental respects, and because the alternative site would collocate the meter station with WPS's proposed interconnecting pipeline, we recommend use of the Denmark Meter Station on the south side of Wrightstown Road as proposed.

Southwest Green Bay Meter Station

Guardian collocated the Southwest Green Bay Meter Station with a proposed WPS interconnecting pipeline tie-in with minimal environmental impact, and therefore did not explore an alternative site. We were not able to identify an environmentally preferable alternative for this location.

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Figure 3.3-19 Chilton Meter Station Alternative

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Figure 3.3-20 Denmark Meter Station Alternative

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West Green Bay Meter Station

The original West Green Bay Meter Station site is located at MP 109.8, and the alternative meter station site is at MP 109.9 (see figure 3.3-21). The proposed and alternative sites are both located on 0.5 acre of agricultural land, each at about 760 feet in elevation, ranging from flat to gently sloping to moderately sloping topography. No wetland, biological or cultural resources would be affected on either site and no new access roads or significant length of transmission line would be required for either site.

Neither site would require new access roads. The primary difference between the two sites is the extent of visual screening. The nearest residence is 600 feet from the original site and 1,000 feet from the alternative site, and both sites would be visible from County Highway VV and Olson Road. While situated adjacent to an existing aboveground facility, the proposed site is highly visible from the highway, unlike the alternative site, which is situated near a forested area that provides some visual screening.

In addition, the proposed site would require an additional 0.5 mile to be added to the total pipeline length as well as any associated environmental impacts. Because the original West Green Bay Meter Station site offers no environmental advantages over the alternative site and in fact would create a greater environmental impact due to the additional pipeline length, we recommend use of the West Green Bay Meter Station as proposed.

Compressor Stations

Sycamore Compressor Station

As part of the proposed Project, Guardian would need to add two compressor stations to the already existing Guardian pipeline system in order to maintain pipeline pressure. The southern station would be the Sycamore Compressor Station. Guardian identified two sites for the proposed Sycamore Compressor Station (see figure 3.3-22). Given their adjacent proximity to each other, both sites are similar in most respects. Both sites are located on 12.5 acres of private land at an elevation of about 900 feet with mostly flat topography. No wetland, biological or cultural resources would be affected on either site. The land is regarded as prime farmland due to the soil type and drainage, and is planted with standard row crops of corn and soybeans in most years. Both sites would occupy more than 5 acres of prime farmland; however, because all of the soils in the project area constitute prime farmland soils, we were unable to identify entirely non-prime farmland alternative locations. Because of design requirements, the compressor station needs to be in this general location. The nearest residence is approximately 825 feet west of the proposed compressor station location, creating low stationary visibility impacts, but both sites are plainly visible from Story Road.

The differences between the two sites are minor. While the proposed site is 1,320 feet from the nearest sensitive noise receptor, the alternative site is 1,050 feet from the same receptor. The proposed site contains one intermittent stream, while the alternative site has no streams, but slightly more variation in topography. And finally, the length of the new power line required to link the compressor station with the existing 138 kV transmission line at Lloyd Road to the west varies by 0.1 mile, 2.6 miles for the proposed site and 2.7 miles for the alternative site.

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Figure 3.3-21 West Green Bay Meter Station Alternative

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Figure 3.3-22 Sycamore Compressor Station Alternative

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Both sites are very similar in most respects, but the slightly shorter length of the transmission line and the greater distance from the receptor make the location of the Sycamore Compressor Station the preferable location.

Bluff Creek Compressor Station

As part of the proposed Project, Guardian would need to add a compressor station to the existing Guardian pipeline system in order to maintain pipeline pressure. The northern station would be the Bluff Creek Compressor Station. Guardian identified one alternative site for the proposed Bluff Creek Compressor Station (see figure 3.3-23). Both sites considered for the Bluff Creek Compressor Station are located on 20.0-acre parcels of land, the proposed site is held by a farming operation, and the alternative site is owned by Guardian. No streams or other wetland, biological, or cultural resources would be affected on either site. The Kettle Moraine State Forest would suffer no impacts from the Bluff Creek Compressor Station.

There are several differences between the two sites. The proposed site has only three residences within 2,000 feet of it and is 1,160 feet from the nearest sensitive noise receptor, whereas the alternative site is 840 feet from its nearest sensitive noise receptor and has 19 residences within 2,000 feet of it. The proposed site would require no new transmission line to power the compressor station, as an existing transmission line, whereas the alternative site would require the construction of a new transmission line to access the nearest existing power line, which is located 0.8 mile to the southwest of the site. Both sites contain prime agriculture land due to the soil type and drainage; however, the proposed site contains 20 acres and the alternative site has 12 acres. Both sites would occupy more than 5 acres of prime farmland; however, because all of the soils in the project area constitute prime farmland soils, we were unable to identify entirely non-prime farmland alternative locations. Because of design requirements, the compressor station needs to be in this general location. While visibility from residences is expected to be low, both sites are visible by people in transit via Kettle Moraine Drive, McCabe Road, and County Highway O for the proposed site, and from Highway 12, as well as the Ice Age National Scenic Trail for the alternative site.

Possibly the biggest difference between the two sites occurs from topography and the environmental impacts that would stem from the preparation of the land for the compressor station (i.e., grading). The proposed site is flat (0 to 2 percent slope) whereas the alternative site has some steeply sloping area (greater than 10 percent slope). The soils on this steeper land would be more prone to erosion if disturbed, which could lead to additional cumulative environmental impacts after project completion.

Because of the disadvantages of the alternative site, we recommend the original site for the location of the Bluff Creek Compressor Station as proposed.

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Figure 3.3-23 Bluff Creek Compressor Station Alternative

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4.0 ENVIRONMENTAL ANALYSIS

The environmental consequences of constructing and operating the proposed G-II Project would vary in duration and significance. Four levels of impact duration were considered: temporary, short-term, long-term, and permanent. Temporary impact generally occurs during construction with the resource returning to preconstruction condition almost immediately afterward. Short-term impact could continue for up to 3 years following construction. Impact was considered long-term if the resource would require more than 3 years to recover. A permanent impact could occur as a result of any activity that modifies a resource to the extent that it would not return to preconstruction conditions during the life of the project, such as the construction of the aboveground facilities. 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 impact, and proposed mitigation for each resource. Guardian, as part of its proposal, agreed to implement certain measures to reduce impact. We evaluated Guardian's proposed mitigation to determine whether additional measures are necessary to reduce impact. These additional measures appear as bold-type paragraphs in the text. We will recommend that these measures be included as specific conditions to authorizations that the Commission may issue to Guardian.

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

- Guardian would comply with all applicable laws and regulations;
- the proposed facilities would be constructed as described in section 2.0; and
- Guardian would implement the mitigation measures included in the application and supplemental filings to the FERC.

4.1 GEOLOGIC RESOURCES

4.1.1 Geological Setting

The G-II Project would cross the Great Lakes section of the Central Lowland physiographic province. Topographic relief is typically low with gentle rolling hills and low-gradient drainage. Glacial features, such as drumlins (elongated hills oriented in the direction of glacial movement), moraines (ridge-like deposits) and kettle holes with lakes and ponds cover the majority of the pipeline route. Surficial deposits along the pipeline route consist primarily of products of the Wisconsinian Glaciation, including clayey, loamy, and sandy till; glacial lake deposits; outwash sand and gravel; and windblown soil and sand deposits. Table 4.1.1-1 provides a summary of the surficial geology along the proposed pipeline route. Elevations along the proposed pipeline route range from 590 to 1,159 feet above mean sea level (msl). Topography in the project area range from flat to steep, but approximately 88 percent of the proposed pipeline route crosses soils with slopes of 5 percent or less.

TABLE 4.1.1-1			
Surficial Geology Along the Proposed Pipeline Route			
Milepost		Length (Miles)	Description
Beginning	Ending		
0.0	1.2	1.2	Loamy till–Ground-moraine deposits
1.2	7.1	5.9	Sand and gravel–Outwash deposits
7.1	20.9	13.8	Loamy till–Ground-moraine deposits
20.9	22.1	1.2	Loamy till–End-moraine deposits
22.1	56.4	34.3	Loamy till–Ground-moraine deposits
56.4	56.9	0.5	Clayey till–End-moraine deposits
56.9	59.1	2.2	Clayey till–Ground-moraine deposits
59.1	61.4	2.3	Clayey till–End-moraine deposits
61.4	67.5	6.2	Loamy till–Ground-moraine deposits
67.5	68.5	1.0	Loamy till–End-moraine deposits
68.5	70.0	1.5	Loamy till–Ground-moraine deposits
70.0	70.8	0.9	Loamy till–End-moraine deposits
70.8	75.7	4.8	Clayey till–Ground-moraine deposits
75.7	78.9	3.2	Sand and gravel–Outwash deposits
78.9	81.4	2.5	Clayey till–Ground-moraine deposits
81.4	105.1	23.7	Clay and silt–Lacustrine deposits
105.1	109.9	4.8	Loamy till–Ground-moraine deposits
Source: Fullerton et al., 2004.			

The bedrock underlying Guardian's proposed route consists of Silurian and Ordovician age limestone and dolomite, shale, and sandstone formations (Mudrey et al., 1982). Table 4.1.1-2 provides a summary of the bedrock geology along the proposed pipeline route. Depth to bedrock is generally greater than 10 feet, and the overlying glacial deposits typically range from 0 to 200 feet thick. There are several areas where depth to bedrock would be within 10 feet of the ground surface.

Ordovician-aged bedrock includes the Maquoketa Formation (which consists of shale, dolomitic shale, and dolomite) and the Sinnipee Group (which includes the Galena, Decorah, and Platteville Formations and consists of dolomite with some limestone and shale). The Silurian unit includes the Cayugan, Niagaran, and Alexandrian series and consists of dolomite (Mudrey et al., 1982). The edge of the Silurian rocks is characterized by the Niagara Escarpment, the sloping face of a 650-mile-long sickle-shaped bedrock ridge curving westward from south of Rochester, New York, across southeast Canada, and then southward around the western side of Lake Michigan to southeastern Wisconsin (Anderson et al., 2002).

The escarpment is typically covered by up to several hundred feet of unconsolidated glacial sediment along its length with isolated vertical and horizontal bedrock outcrops (Anderson et al., 2002). The escarpment underlies four of the counties crossed by the pipeline route including Brown, Dodge, Calumet, and Fond du Lac Counties, Wisconsin. However, the pipeline does not cross any vertical or horizontal exposures of bedrock associated with the escarpment.

TABLE 4.1.1-2				
Bedrock Geology Along the Proposed Pipeline Route				
Milepost		Length (Miles)	Map Unit Name	Period
Beginning	Ending			
0.0	1.3	1.3	Maquoketa Formation	Ordovician
1.3	12.7	11.4	Sinnipee Group	Ordovician
12.7	19.2	6.5	Maquoketa Formation	Ordovician
19.2	21.5	2.3	Silurian, undivided	Silurian
21.5	27.0	5.5	Maquoketa Formation	Ordovician
27.0	41.4	14.4	Silurian, undivided	Silurian
41.4	43.1	1.7	Maquoketa Formation	Ordovician
43.1	56.4	13.3	Silurian, undivided	Silurian
56.4	60.5	4.1	Maquoketa Formation	Ordovician
60.5	75.9	15.4	Silurian, undivided	Silurian
75.9	83.6	7.6	Maquoketa Formation	Ordovician
83.6	83.6	0.0	Sinnipee Group	Ordovician
83.6	86.9	3.3	Maquoketa Formation	Ordovician
86.9	109.9	23.0	Sinnipee Group	Ordovician
Source: Mudrey et al., 1982.				

In addition to the pipeline, Guardian proposes to construct and operate two compressor stations, the Bluff Creek Compressor Station in Walworth County, Wisconsin, and the Sycamore Compressor Station in DeKalb County, Illinois. Surficial geology at the proposed compressor station sites consists of loamy till-end moraine deposits (Fullerton et al., 2004) and varies between 100 to 200 feet thick in these locations (WGNHS, 1983; Piskin, 1975). Bedrock geology at the Bluff Creek Compressor Station consists of the Sinnipee Group (Mudrey et al., 1982) and bedrock at the Sycamore Compressor Station consists of the Maquoketa Formation (Willman, et al., 1967). All other aboveground facilities associated with the proposed pipeline would be located immediately adjacent to the pipeline and would be underlain by the same geologic resources described above for the pipeline facilities.

The U.S. Department of Agriculture (USDA), National Resources Conservation Service (NRCS) defines shallow bedrock as bedrock occurring in the upper 60 inches of the soil profile (USDA, 2003). The presence of shallow bedrock indicates areas where blasting may be required during construction of the proposed Project. Less than 2 percent (1.9 miles) of the proposed pipeline route crosses areas that meet this definition based on a review of county soils data (USDA, 2003). The majority of this bedrock is considered hard and may require blasting or other special construction techniques during installation of the proposed pipeline. The location of shallow bedrock by MP is listed in table 4.1.1-3.

TABLE 4.1.1-3					
Shallow Bedrock Along the Proposed Pipeline Route <u>a/</u>					
Pipeline Segment/County	Milepost		Crossing Length (feet)	Depth to Bedrock (inches)	Bedrock Type <u>b/</u>
	Beginning	Ending			
30-inch-diameter pipeline					
Dodge	21.2	21.4	1,220	24	Hard
	29.2	29.3	909	30	Hard
	29.4	29.6	908	30	Hard
	29.7	29.8	429	30	Hard
	29.8	29.8	304	24	Hard
	29.8	30.2	1,824	30	Hard
	30.2	30.2	202	30	Hard
	30.2	30.3	384	30	Hard
	30.3	30.4	180	30	Hard
	30.4	30.4	181	30	Hard
	31.9	32.2	1,354	30	Hard
Fond du Lac	35.3	35.5	405	30	Hard
	35.5	35.5	105	30	Hard
	41.5	41.6	256	30	Hard
	41.6	41.7	634	30	Hard
	41.7	41.8	111	30	Hard
20-inch-diameter pipeline					
Brown	84.5	84.5	315	15	Hard
	93.1	93.1	84	30	Hard
Total			9,805		
<u>a/</u> Based on soil mapping units that contain bedrock within 60 inches of the soil surface as identified by the USDA-Natural Resources Conservation Service (NRCS).					
<u>b/</u> Hard = Potentially requires blasting; Soft = Rippable with standard construction equipment, would not likely require blasting.					

When consolidated rock is encountered during construction, Guardian's preferred procedure would be to fracture and excavate the bedrock using standard construction equipment. However, if crystalline bedrock is encountered that is not easily removed by conventional excavation methods, blasting techniques would be utilized in compliance with state and federal regulations governing the use of explosives. Only the minimum explosive charge necessary to fracture bedrock and keep shot-rock from leaving the construction right-of-way would be utilized. The contractor would conduct pre-blasting evaluations of the rock, as needed, to develop specific blasting operations and monitoring plans to limit stresses on existing pipelines, nearby domestic structures, water supply wells, or electrical transmission tower footings that are located near the project area. Blasting would be conducted during daylight hours and would not begin until occupants of nearby buildings, stores, residences, places of business, and farms have been notified. To ensure safety and minimize the potential impacts from blasting, **we recommend:**

- **Guardian shall file with the Secretary for review and approval by the Director of the OEP prior to construction a blasting plan detailing the procedures to be used during blasting to prevent the introduction of blast rock into agricultural lands.**

Disposal of rock and rock debris from blasting would be in areas approved by the individual landowners or land management agency in accordance with regulatory requirements (see our Plan in appendix D). Should Guardian have to dispose of excess rock outside of the right-of-

way, an approved landfill or alternative upland area would be utilized and the appropriate permits and clearances obtained.

Review of the proposed pipeline route indicates that an unnamed, intermittent stream located at MP 21.4 is underlain by shallow bedrock and would likely require blasting during installation of the crossing. A concern was also raised by the Oneida Nation about potential blasting in the vicinity of Duck Creek (MP 102.6). Guardian performed initial field surveys and does not anticipate encountering shallow bedrock within trench depth in this area. Additional geotechnical investigations at Duck Creek are to be conducted by Guardian in the spring of 2007 to assist in the design of the creek crossing.

The primary effect of pipeline construction on geology would consist of disturbances to the existing topography along the construction right-of-way. All areas disturbed during pipeline construction would be finish-graded and restored as closely as possible to preconstruction contours during cleanup and restoration. As indicated above, a limited amount of blasting is anticipated along the pipeline, but geologic conditions at the proposed compressor stations and remaining aboveground facility sites are not expected to require blasting, special equipment, or techniques. For these reasons, construction and operation of the proposed Project would be unlikely to result in significant alterations of the topography or geological resources of the proposed project area.

4.1.2 Mineral Resources

Mineral resources in Wisconsin include clay, sand, gravel, crushed and dimension stone, limestone, dolomite, copper, zinc, and peat. Sand and gravel and dimensioned stone such as dolomite are the primary exploitable mineral resources and are widely distributed in the vicinity of the Project. Metallic minerals that are mined or have economic potential in the vicinity of the Project include copper, gold, silver, lead, and zinc. Underground mining does not occur in the project area. WDNR noted that iron deposits associated with the Niagara dolomite were mined, at Neda in Dodge County, Wisconsin approximately 1 mile west of MP 19.0. However, the referenced mine has been abandoned for nearly 70 years and no impacts on this mine are anticipated from construction or operation of the proposed pipeline.

Table 4.1.2-1 indicates the mineral resources identified by Guardian within 2,000 feet of the proposed pipeline right-of-way including five quarries and one sand and gravel pit. No mines, quarries, or sand/gravel pits would be crossed directly by the pipeline. There is one inactive sand and/or gravel pit adjacent to the right-of-way near MP 52.9. The Hanke Quarry (MP 21.0) is the closest active quarry operation. Guardian has continued to consult with the operator, but has not received any detailed information regarding current or future operations. Guardian's review of recent aerial photography suggests that further expansion east towards the pipeline route is not possible relative to existing property boundaries.

The eastern boundary of the Eden Stone Company is crossed near MP 41.8. While this part of the property is not actively mined, ongoing operations, including blasting, occur about 500 feet west of the proposed pipeline route. The quarry typically uses low-yield charges to fracture and remove rock. In consultations with the mine owner, Guardian learned that the eastern edge of the property will be used for long-term storage of mine spoil. The landowner has indicated the spoil pile could be as thick as 25 feet above land surface, but would be graded such that the thinnest part of the pile would be located over the proposed pipeline. Guardian is continuing to

TABLE 4.1.2-1 Mineral Resources within 2,000 feet of the Proposed Pipeline Route			
Pipeline Segment/County	Milepost	Operation	Distance and Direction from Right-of-Way
30-inch-diameter pipeline			
Dodge	8.2	Quarry	2,000 feet Northwest
Dodge	21.0	Quarry	400 feet West
Dodge	29.5	Quarry	1,800 feet West
Fond du Lac	41.8	Quarry	500 feet North
20-inch-diameter pipeline			
Brown	98.6	Quarry	1,500 feet West
Outagamie	101.3	Sand/Gravel Pit	1,200 feet West

consult with the mine operator. Placement of the quarry spoil over the pipeline in this area would affect maintenance and visual inspection activities but in-line tools (pigs), similar to those used on HDD crossings, could be used to monitor the condition of the pipe.

The Michels Construction Company operates the Western Lime Quarry, located adjacent to the Eden Stone Quarry. Rock from this area is used as construction aggregate. Current activities are greater than 2,000 feet from the proposed route; however, approximately 60,000 tons of rock are removed from the quarry per month and future operations are expected to expand close to the proposed pipeline route. The proposed Project would not interfere with future quarry operations because setback requirements (property line and residential land use) prohibit mining operations from approaching the proposed pipeline routing. The mine operator also stated that all required blasting is done by a subcontractor and that they understood that Guardian has established conditions and restrictions for blasting in the vicinity of the pipeline.

As part of the right-of-way procurement process, Guardian would negotiate with the affected landowners/operators to obtain an easement agreement that governs mining activities in the immediate vicinity of the permanent pipeline right-of-way and/or establishes an adequate buffer zone between active mining areas and the proposed pipeline. Compensation for any losses or limitations on mining operations (current or future expansion) would be addressed during those easement negotiations.

4.1.3 Paleontological Resources

Paleontological resources are the fossilized remains of prehistoric plants and animals, as well as the impressions left in rock or other materials as indirect evidence of the forms and activities of such organisms. No sensitive paleontological sites were identified along the proposed route. Pleistocene-age vertebrate fossils such as mastodon and mammoth have been discovered in the general area of the proposed route in Wisconsin; however, these finds are very rare. Any vertebrate fossils in the project area would most likely be found in peat deposits.

The Wisconsin Geological and Natural History Survey (WGNHS) did not identify any specific significant paleontological resources within 3 miles of the proposed pipeline route that need protection. Specifically, there are no designated or protected paleontological resources along the pipeline route. In addition, any bedrock that may be trenched through is sufficiently duplicated

in areas adjacent to the right-of-way that no significant impacts on paleontological resources would result from the loss of bedrock in the trench (Peters, 2006).

4.1.4 Geologic Hazards

Geologic hazards are defined by the American Geological Institute (Bates and Jackson, 1984) as “geologic conditions or phenomena that present a risk or are a potential danger to life and property, either naturally occurring or man-made.” Geologic hazards potentially occurring in the vicinity of the proposed project area include seismicity and faulting, soil liquefaction, slope failures/landslides, and ground subsidence. Hazards such as volcanism are not relevant to the proposed project area and are excluded from consideration here.

4.1.4.1 Seismicity and Faulting

Hazards associated with seismicity and faulting include ground shaking, surface rupture of faults, and offset along normal, reverse, or strike-slip faults. These are especially hazardous to linear, rigid structures, such as pipelines, in which the ground is not moving the same distance or direction.

In the project area, the potential for geologic hazards associated with seismicity, including active faulting, ground shaking and soil liquefaction, is considered very low. The pipeline route lies within areas with low seismic risk. In this zone, the horizontal acceleration in rock would be no greater than 6 percent gravity acceleration, with a 90 percent probability of not being exceeded in 50 years (Algermissen et al., 1982). The expected range of earthquake intensity corresponds to intensities V and VI on the Modified Mercalli Intensity Scale (MMIS). Earthquakes with intensities of V and VI on the MMIS are felt by all, move furniture and other large objects, and can result in minimal to moderate structural damage (Western Michigan University, 1981; Bricker, 1977; and Stover et al., 1979). Based on the Seismic Source Zones Map provided in Algermissen et al. (1982), the majority of the project area would likely experience about six intensity V earthquakes every 100 years (maximum Richter magnitude of 6.1). No faults active in the last 10,000 years have been documented across any section of the project area (Howard et al., 1978; National Atlas of the United States, 2006; USGS, 2006b). In summary, historically recorded seismicity in the area traversed by the proposed Project has not been significant.

Consequently, the potential for seismicity and faulting does not represent a significant risk to the proposed Project. While minor earthquake intensity, frequency, and duration of impacts cannot be quantified, maintained pipelines using modern arc-welding techniques have performed well in seismically active areas of the United States, including California (O’Rourke and Palmer, 1996). Only large, abrupt ground displacements have caused serious impacts on pipeline facilities. Because of the very limited potential for large, seismically induced ground movements in the project area (Algermissen et al., 1982), there is very little risk of earthquake-related impacts on the pipeline and other project facilities.

4.1.4.2 Soil Liquefaction

Soil liquefaction from severe ground shaking causes cohesionless soil to lose strength. Soil liquefaction can result in surface settlement where the ground surface is flat, or in soil flow/slope instability (lateral movement) where the ground surface is sloped. Although water-saturated soils subject to liquefaction may exist in isolated areas along the pipeline route, the potential for liquefaction is small because high intensity earthquakes are unlikely in the project area and the

FERC-defined seismic threshold, based on USGS Open File Report 82-1033 (Algermissen et al., 1982), is not met anywhere in the project area. Further, the linear extent and ductile nature of pipelines generally make them less susceptible than other structures to the effects of soil liquefaction. Existing building codes and standards applicable to the proposed project facilities should adequately address the low potential for soil liquefaction. The same seismic information also applies to the planned compressor stations. Furthermore, neither of the proposed compressor station sites are in areas underlain by Holocene deposits. Therefore, soil liquefaction is not a significant hazard in the vicinity of the proposed Project.

4.1.4.3 Subsidence

Ground subsidence is a lowering of the land-surface elevation that results from changes that take place underground. Common causes of land subsidence include dissolution of limestone in areas of karst terrain; collapse of underground mines; and pumping of water, oil, and gas from underground reservoirs. There is no active underground mining or pumping of oil and gas from underground reserves along the pipeline route. Consequently, subsidence due to underground mining or resource extraction is not likely to impact the proposed pipeline. Karst terrain is discussed separately in section 4.1.4.4 below.

4.1.4.4 Karst Terrain

Karst terrain develops in areas that are underlain by carbonate rocks and evaporites. Weathering and erosion produce a high degree of rock solubility in karst topography. Characteristic landforms such as sinkholes and caves are formed from the dissolution of the rock. The potential for karst is greatest where surficial deposits are less than 30 feet thick and the underlying carbonate rocks occur at depths at or just above the water table. In some areas, karst features are known to exist at depths as great as 100 feet below ground surface. A large portion of the proposed pipeline route is located in an area that is considered to have the potential for karst features (Davies et al., 1984; National Atlas of the United States, 2006). Guardian contacted WGNHS to inquire about the development/presence of karst features in the vicinity of the pipeline route. WGNHS staff stated that there is a potential for karst features along the proposed route in areas with shallow carbonate bedrock (portions of Brown, Calumet, and Outagamie Counties). The staff did not identify any karst features along the proposed route and stated that sinkholes and collapse features were rare in the vicinity of the project area (Bradbury, 2006). Based on the above, karst features are assumed to be minimal along the pipeline route and beneath the compressor stations.

Even though the Project would not be considered susceptible to karst features and underground subsidence impacts (as discussed previously in section 4.1.4.3), the proposed project facilities would be designed and constructed to meet or exceed the federal safety standards set forth in 49 CFR Part 192. This would ensure integrity of the project facilities and minimize the potential for any pipe failures due to ground subsidence. Additionally, Guardian would conduct regular patrols of the pipeline right-of-way during operations to identify conditions, including any areas of ground subsidence that might affect the safety or operation of the pipeline. Adherence to these standards and procedures would minimize the potential for any risk to the proposed Project posed by ground subsidence.

4.1.4.5 Landslides

Other ground failures can include landslides, debris flows, and rock falls. Slides, flows, and falls are not anticipated to be of concern to the proposed Project because these phenomena are mainly associated with steep slopes. Topography along the proposed Project is characterized as flat to gently sloping and rolling hills and much of the proposed project area is in a low landslide incidence area (Godt, 1997). There are several portions of the proposed pipeline route in Calumet and Fond du Lac Counties located in a moderate incidence area (Godt, 1997). Portions of the low incidence areas crossed, mostly in Outagamie and Brown Counties, Wisconsin, are considered to be moderately susceptible to landslides. Guardian analyzed the SSURGO digital soil survey data and found that the majority (96 percent) of the soils crossed in Brown and Outagamie Counties, Wisconsin have slopes less than or equal to 5 percent and are therefore less susceptible to landslides. Overall, 88 percent of the pipeline route crosses soils with slopes of 5 percent or less (USDA, 2003). In general, landslide potential would be limited to small isolated slumps, earthflows, and soil creep in areas of steeper slopes and stream and river banks.

The proposed compressor and meter station sites are in generally flat areas where slope failure is not expected. Slope failures and landslides would represent a potential hazard along portions of the proposed project route that would traverse areas of side slopes and rolling terrain. Cutting along slopes, the weight of construction equipment, and unusually high precipitation would increase the potential for slope failures along these areas. However, construction of the pipeline would be accomplished in accordance with the requirement in our Plan, which includes measures to control runoff and erosion that would minimize the potential for slope failures.

4.2 SOILS AND SEDIMENTS

4.2.1 Soil Composition

Soil characteristics along the pipeline route and at aboveground facilities were identified and assessed using the Soil Survey Geographic Database (SSURGO; USDA, 2003a) and the Soil Surveys of Brown County (USDA, 1974), Calumet and Manitowoc Counties (USDA, 1980a), Dodge County (USDA, 1980b), Fond du Lac County (USDA, 1973), Jefferson County (USDA, 1979), Outagamie County (USDA, 1978b), and Walworth County (USDA, 1971), Wisconsin and DeKalb County (USDA, 2003b), Illinois. Additional information about the soils was obtained from Official Soil Series Descriptions (Soil Survey Staff, 2004). The mapping scales in the project area range from 1:15,840 to 1:20,000, with a minimum delineation size of 2.5 to 4.0 acres (USDA, 1995).

The proposed project facilities would be located in two Major Land Resource Areas (MLRAs): the Northeastern Wisconsin Drift Plain and Southern Wisconsin and Northern Illinois Drift Plain (MLRAs 95A and 95B, respectively). MLRAs are primarily used as farmland for hay and feed-grain production, dairy cattle and other livestock, canning crops, fruit crops, and other specialty crops (USDA, 1978a).

The Northeastern Wisconsin Drift Plain is characterized by nearly level to rolling till plains, nearly level outwash plains and lacustrine basins, low hills, and ridges. Elevations throughout this MLRA range from 650 to 1,300 feet above msl. Soils are moderately deep to deep, medium to fine textured, with mixed mineralogy. Till plains are generally comprised of well drained and moderately well drained, nearly level to sloping soils of the Kewaunee, Hortonville, Theresa, and

Hocheim series. Also found on the till plains are soils of the Manawa and Symco series, which are characterized as somewhat poorly drained on nearly level to sloping terrain. In the north, moderately deep to deep, medium textured and moderately coarse textured soils, with a frigid temperature regime and mixed mineralogy are dominant. Well drained and moderately well drained, gently undulating to sloping soils are present, as well as somewhat poorly drained, gently undulating to sloping soils on till plains. Clayey and silty drift occupy wet areas at lower elevations. Soils that formed as the result of organic residue from plants are in the deeper depressions (USDA, 1978a).

The Southern Wisconsin and Northern Illinois Drift Plain is characterized by a glaciated plain with belts of morainic hills and ridges, nearly level outwash terraces, and drumlins. Elevations throughout this MLRA range from 650 to 1,000 feet above msl. The dominant soils are moderately deep to deep, medium textured, with mixed mineralogy. Moderately well drained and well drained soils are present on nearly level to sloping relief as well as moderately deep, medium-textured soils. Medium-textured material is found in the lowlands, and silty sediments are found on floodplains (USDA, 1978a).

4.2.2 Soil Limitations

Several soil characteristics have the potential to affect or be affected by construction and operation of the proposed Project. Soil limitations to be considered include erosion potential, prime farmland, hydric soils, revegetation potential, compaction potential, stony soils, and contaminated soils. Soil limitations throughout the proposed project area are summarized in table 4.2.2-1 and discussed below.

4.2.2.1 Prime Farmland

The USDA defines prime farmland as “land that is best suited to food, feed, fiber, and oilseed crops” (Soil Survey Division Staff, 1993). This designation includes cultivated land, pasture, woodland, or other lands that are either used for food or fiber crops or are available for these uses. Urbanized land and open water are excluded from prime farmland. Prime farmland typically contains few or no rocks, is permeable to water and air, is not excessively erodible or saturated with water for long periods, and is not subject to frequent, prolonged flooding during the growing season. Soils that do not meet the above criteria may be considered prime farmland if the limiting factor is mitigated (e.g., artificial drainage).

Project construction would disturb a total of 1,212.3 acres of prime or potentially prime farmland, including 1,151 acres of pipeline right-of-way, 1.4 acres of access road, 27.3 acres for the pipe storage/contractor yard, and 32.5 acres for the compressor stations. Of the 1,212.3 acres, 33.9 acres of prime or potentially prime farmland (compressor station and access road) would be permanently disturbed and 1,178.4 acres would be temporarily disturbed. Potential adverse effects include interference with agricultural drainage, loss of soil through erosion, mixing of topsoil and subsoil (thus reducing soil fertility), and compaction. These effects would result primarily from trench excavation and backfilling, and vehicular traffic along the construction right-of-way.

Guardian would minimize and mitigate potential effects to prime farmlands by implementing the standard requirements for pipeline construction in our Plan, as well as Guardian’s AMP and

TABLE 4.2.2-1									
Acreage of Soil Characteristics Affected by the Proposed Pipeline Route <u>a/</u>									
Pipeline Segment/County	Total Acres in County	Prime Farmland <u>b/</u>	Hydric Soils <u>b/</u>	Compact. Prone <u>c/</u>	Highly Erodible		Reveg. Concerns <u>f/</u>	Stony/ Rocky <u>g/</u>	Shallow to Bedrock <u>h/</u>
					Water <u>d/</u>	Wind <u>e/</u>			
30-inch-diameter pipeline									
Jefferson	28.0	18.4	9.5	16.6	0.0	0.0	0.0	0.0	0.0
Dodge	439.2	333.3	114.6	173.7	44.1	0.1	4.8	13.6	19.9
Fond du Lac	329.0	263.0	67.3	96.5	13.6	0.0	0.0	14.9	3.8
Calumet	300.7	282.6	42.4	122.4	0.5	0.0	0.0	41.4	0.0
Outagamie	3.9	3.9	0.0	1.2	0.0	0.0	0.0	0.0	0.0
Brown	16.0	16.0	0.0	5.8	0.0	0.0	0.0	0.0	0.0
20-inch-diameter pipeline									
Brown	168.5	160.9	9.3	32.0	5.0	0.3	1.9	0.0	0.7
Outagamie	79.5	73.4	20.9	46.8	1.4	0.1	2.9	34.3	0.0
Pipeline Total	1364.8	1151.5	264.0	495.0	64.6	0.5	9.7	104.2	24.5
<u>a/</u> Acreage is based on a 110-foot-wide construction right-of-way for the 30-inch-diameter pipe and a 80-foot-wide construction right-of-way for the 20-inch-diameter pipe. The area affected does not include access roads, additional temporary workspace, or open water, and does not account for reductions in the width of the right-of-way that Guardian would implement in wetlands and upland forest areas. Values within a row do not add up to the total listed in the total column because soils may occur in more than one characteristic class or may not occur in any class listed in the table.									
<u>b/</u> As designated by the NRCS prime farmland includes those soils that are considered prime if a limiting factor is mitigated (e.g., artificial drainage).									
<u>c/</u> Includes soils in somewhat poor to very poor drainage classes with surface textures of sandy clay loam and finer.									
<u>d/</u> Includes soils designated as highly erodible land (HEL) by the NRCS.									
<u>e/</u> Soil with a wind erodibility group (WEG) classification of two or less that are considered HEL or potentially highly erodible land (PHEL). No soils with a WEG classification of 1 are crossed by the pipeline route. None of the soils with a WEG classification of 2 were considered HEL and only three map units were considered PHEL.									
<u>f/</u> Soils with a surface texture of sandy loam or coarser and are moderately well to excessively drained.									
<u>g/</u> Soils with a cobbly, stony, bouldery, shaly, very gravelly, or extremely gravelly modifier to the textural class of the surface layer and/or have a surface layer that contains greater than 5 percent by weight stones larger than 3 inches.									
<u>h/</u> Soils identified as containing bedrock at a depth of 5 feet or less from the surface.									

associated BMPs. These practices have been developed in consultation with the Wisconsin DATCP.

Interference with agricultural drainage, both surface and subsurface, would be minimized or avoided by grading contours to pre-existing conditions during restoration. Additionally, any damage to drain tiles would be repaired under consultation with landowners and local drain tile specialists, as needed. Guardian has not identified any irrigation systems along the proposed pipeline route. However, should any irrigation systems be affected during construction, Guardian will restore/repair all damaged irrigation systems in accordance with the standard requirements in our Plan. Construction and restoration procedures that would minimize or mitigate the effects of compaction and erosion are discussed in sections 4.2.2.2 and 4.2.2.3, respectively. To prevent mixing of the soil horizons or incorporation of additional rock into the topsoil, Guardian would perform full right-of-way topsoil stripping in agricultural lands. The topsoil would be segregated from subsoil and would be replaced in the proper order during backfilling and final grading. Implementation of proper topsoil segregation would help ensure post-construction revegetation success, thereby minimizing loss of crop productivity and the potential for long-term erosion problems.

Along some portions of the proposed pipeline route (i.e., Dodge and Fond du Lac Counties), Guardian expects to encounter soils with medium to fine-textured surface layers underlain by gravelly and cobbly coarse-textured outwash. Trench excavation through these soils could result in additional impacts on crop productivity following construction. To maintain the water holding capacity of the crop-rooting zone over the trench area, Guardian would use three-lift soil handling procedures. Guardian is in consultation with DATCP to develop a BMP that addresses three-lift soil handling. Details of this BMP are included in Guardian's AMP (currently under development).

Guardian conducted a preliminary assessment of soil map units along the proposed pipeline route using the SSURGO database to determine the presence and extent of potential three-lift soils. Table 4.2.2.1-1 lists by mile post the areas at risk for potential mixing of fine-textured upper subsoil layers with underlying gravelly or cobbly lower subsoil during excavation of the trench. Based on Guardian's analysis, less than 1 percent (0.5 mile) of the proposed route would potentially require three-lift soil handling. The majority of these soils (79 percent) is considered prime farmland, or prime farmland if artificially drained. Guardian would obtain sufficient work space in these areas for placement of the upper subsoil layer pile and the lower, coarser textured materials. To facilitate three-lift soil handling, Guardian would be required to increase the right-of-way by 25 feet in site-specific locations (see table 4.2.2.1-1). The 25-foot increase in right-of-way width in these areas would result in an additional 1.6 acres of temporary impact.

TABLE 4.2.2.1-1 Potential Three-Lift Soil Areas Along the Proposed Pipeline Route			
County	Beginning	Milepost Ending	Crossing Length (feet)
Dodge	16.1	16.2	439
	16.2	16.3	475
Fond du Lac	42.1	42.2	581
	42.2	42.3	475
	42.6	42.6	369
	56.4	56.4	114
	56.4	56.4	266
	56.5	56.5	121

Two organic farms are located in the vicinity of the Project. The first is located between MPs 73.1 and 73.4 and would be crossed by the proposed pipeline. The second organic farm is located approximately 50 feet from the proposed pipeline centerline between MPs 22.8 and MP 23.3. Potential impacts on organic farms include soil contamination and loss of fertility. Soil National Organic Program standards require that farms that are certified organic (or in the certification process) not be exposed to chemicals found in pesticides, fertilizers, or petroleum products. Pipeline construction could potentially expose these farms to these prohibited substances by way of water runoff from adjacent property, soil erosion from adjacent property, construction vehicles transporting soil from other properties, or leaks/spills from construction vehicles. Soil fertility on organic farms relies upon a healthy soil structure that develops naturally over time. Restoration of a healthy organic soil profile can take several years to achieve preconstruction conditions.

Guardian recognizes that organic agricultural land is a unique feature of the landscape and will treat this land with the same level of care as other sensitive environmental features. To minimize adverse effects on certified organic farm soils, Guardian would implement site-specific construction techniques based on a BMP for organic agricultural land to be incorporated in Guardian's AMP. Guardian's BMP for organic agricultural land will identify mitigation measures that apply specifically to farms that are Certified Organic or farms that are in active transition to become Certified Organic, and will address the unique management and certification requirements of these operations. As part of this BMP, Guardian will request a copy of the Organic System Plan for the farms and will work with each producer to develop a site-specific plan to cross the farm in a manner that would minimize the risk of losing certification.

4.2.2.2 Hydric Soils

Hydric soils are defined as "soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (*Federal Register*, July 13, 1994). Soils that are artificially drained or protected from flooding (e.g., by levees) are still considered hydric if the soil in its undisturbed state would meet the definition of a hydric soil. Generally, hydric soils are those soils that are poorly and very poorly drained.

Project construction would disturb a total of 272.0 acres of hydric soils, including 263.7 acres of pipeline right-of-way, 1.6 acres of access road, 1.7 acres for the contractor yard, and 5.0 acres for the compressor stations. Of the 272.0 acres of hydric soils, the 5.0 acres of disturbance associated with the Sycamore Compression Station would be permanent.

Because of the extended periods of saturation, hydric soils can be prone to compaction and rutting as discussed below. In addition, high groundwater levels associated with hydric soils could create a buoyancy hazard for the pipeline. Guardian would minimize rutting of hydric soils by using construction mats where hydric soils cannot support equipment and/or by employing low-ground-weight equipment according to our Procedures. Special construction methods such as concrete coating of pipe and other weighting methods would be used to overcome buoyancy hazards during operation of the pipeline.

Approximately 29.8 acres (2 percent) of the proposed pipeline route consists of organic mucks, also known as Histosols (see table 4.2.2.2-1). These soils, commonly found in wetlands, formed from water-logged decomposing plant remains and may be saturated for several months out of the year. The majority (72 percent) of the organic soils crossed by the proposed route are located in active cropland and pasture land. Organic soils pose additional problems during construction and operation due to their poor bearing capacity and low specific gravity. Special crossing techniques, detailed in our Procedures, would be implemented to minimize impacts on these soils. Buoyancy problems resulting from the low specific gravity and high water tables would be mitigated using the same techniques discussed above.

4.2.2.3 Compaction Potential

Soil compaction potential is determined by particle texture and moisture content. Fine-textured soils with poor internal drainage that are moist or saturated during construction are the most susceptible to compaction and rutting. Compaction-prone soils were identified by querying the

TABLE 4.2.2.2-1			
Organic Soils Along the Proposed Pipeline Route			
County	Milepost		Acres
	Beginning	Ending	
Dodge	6.5	7.0	6.5
	10.8	10.8	0.5
	11.0	11.1	1.8
	11.8	11.9	0.5
	14.9	15.1	2.3
	15.2	15.2	0.6
Fond du Lac	38.3	38.3	0.3
	38.9	38.9	0.8
	39.0	39.1	1.9
	40.3	40.4	1.7
	40.4	40.6	2.3
	49.3	49.6	4.7
	51.5	51.5	0.6
	52.3	52.4	0.8
	52.9	52.9	0.4
	56.7	56.7	0.4
	56.9	57.0	0.5
Calumet	70.0	70.1	1.4
	70.1	70.2	0.4
	73.4	73.4	0.7
	78.6	78.7	0.7
Project Total			29.8

SSURGO database for component soil series that have both: 1) a surface texture of sandy clay loam or finer; and 2) a drainage class of somewhat poorly drained through very poorly drained.

Project construction would disturb a total of 519.0 acres of compaction-prone soils, including 495.0 acres of pipeline right-of-way, 3.2 acres of access road, 9.7 acres for the pipe storage/contractor yard, and 11.1 acres at the Sycamore Compressor Station. Of the 519.0 acres of compaction-prone soils, 11.1 acres of disturbance associated with the Sycamore Compressor Station would be permanent.

Soil compaction modifies the structure and reduces the porosity and moisture-holding capacity of soils. Construction equipment traveling over wet soils could disrupt the soil structure, reduce pore space, increase runoff potential, and cause rutting. As a result, soil productivity and plant growth rates may be reduced, soils may be made more susceptible to erosion, and natural drainage may be altered.

As described in our Plan and Procedures, and Guardian's AMP, measures such as restricting vehicular traffic, reducing loads, employing lower ground-pressure equipment, and rescheduling certain activities may be used when soil moisture is high to avoid and minimize compaction and rutting. In agricultural, residential, and wetland areas, topsoil would be segregated from other materials excavated from the trench and placed in piles that would generally be opposite the working side of the trench. Therefore, heavy equipment would not travel on the piles, and compaction of excavated topsoils would be minimized.

Because of construction-related activities, some topsoil and subsoil located along the working side of the construction right-of-way would be compacted. Additionally, construction activities may be restricted as recommended by the on-site environmental inspector during unfavorable conditions (e.g., wet weather) to further reduce compaction and rutting. Compaction would also be mitigated through the use of deep tilling during restoration activities using a paraplow or similar implement. In areas where topsoil segregation occurs, plowing to alleviate subsoil compaction would be conducted before replacement of the topsoil.

These measures would ensure that any soil compaction resulting from construction along the right-of-way, temporary access roads, and at the contractor yards would be only temporary, and thus significant or long-term impacts on soil resources associated with compaction are not anticipated.

4.2.2.4 Erosion Potential

Soil susceptibility to erosion, by wind or by water, is a function of variables such as soil type, topography, vegetation, and climate. Soil erodibility was determined using NRCS classifications. The NRCS identified areas of highly erodible land (HEL) and potentially highly erodible land (PHEL). PHEL consists of soils that may be highly erodible based on the slope class of the mapping unit, but cannot be identified as highly erodible without field determinations of the length of the slope class that is crossed. For example, a soil map unit may have a slope class of 2 to 5 percent; if most of the map unit crossed actually has a slope of 2 percent, the soils would most likely not be highly erodible. However, if most of the map unit being crossed had actual slopes of 5 percent, the soils would most likely be considered highly erodible.

Though the majority of soils that would be crossed by the proposed pipeline have only slight erosion potential, some areas of highly erodible soils do occur along the proposed project route. Approximately 0.5 acre of the soils that would be crossed by the proposed pipeline are considered HEL or PHEL by wind. Approximately 64.6 acres (5 percent) of the soils along the proposed pipeline route are designated as HEL by water, as well as 1 acre of soils along the proposed access roads. An additional 681.0 acres (50 percent) of the soils along the proposed route are considered PHEL by water.

Because of the importance of slope in assessing erosion hazards, a separate query was developed to evaluate the slope of soils along the right-of-way (see table 4.2.2.4-1). Based on review of SSURGO data, approximately 88 percent of the soils crossed by the proposed pipeline have a slope of less than or equal to 5 percent; therefore, severe erosion is not anticipated across most of the proposed project route due to the relatively flat topography.

Several phases of pipeline construction, including vegetation and pavement clearing/removing, grading, topsoil segregation, open trenching and backfilling, destabilize the soil material and make it susceptible to water and wind erosion. Soils are most susceptible to erosion after vegetation is removed, and before re-establishment of a vegetative cover after the pipeline is installed. Soil erosion would also result from off-road vehicle traffic on the right-of-way following construction.

To minimize or avoid potential impacts due to soil erosion and sedimentation, Guardian would utilize several techniques and devices such as slope breakers, sediment barriers, trench breakers,

construction timing, revegetation, and mulching at locations identified in our Plan and the BMPs associated with Guardian's AMP. Temporary erosion controls, including interceptor diversions and sediment filter devices (e.g., hay bales and silt fences), would be installed following initial ground disturbance. As required, temporary trench breakers would be installed following ditch excavation. Temporary erosion control devices would be inspected on a daily basis in areas of active construction; on a weekly basis in areas with no construction; and within 24 hours of each rainfall event of 0.5 inch or greater to ensure proper functioning.

TABLE 4.2.2.4-1										
Topsoil Depths and Slope Classes Along the Proposed Pipeline Route <u>a/</u>										
Pipeline Segment/ County	Total Acres in County	Topsoil Depth <u>b/</u> (inches)				Slope Class <u>c/</u> (%)				
		0-6	>6-12	>12-18	>18	0-5	>5-8	>8-15	>15-30	>30
Acres										
30-inch-diameter Pipeline										
Jefferson	28.0	0.0	17.3	1.2	9.5	18.4	0.0	9.7	0.0	0.0
Dodge	439.2	111.2	208.5	95.9	23.5	354.4	0.0	79.7	4.9	0.0
Fond du Lac	329.0	51.2	271.4	6.4	0.0	278.8	0.0	43.9	6.3	0.0
Calumet	300.7	221.7	59.1	20.0	0.0	288.4	0.0	11.8	0.5	0.0
Outagamie	3.9	2.7	1.2	0.0	0.0	3.9	0.0	0.0	0.0	0.0
Brown	16.0	16.0	0.0	0.0	0.0	16.0	0.0	0.0	0.0	0.0
20-inch-diameter Pipeline										
Brown	168.5	156.6	9.2	0.6	2.1	161.0	0.0	2.5	5.0	0.0
Outagamie	79.5	51.1	28.3	0.0	0.0	76.4	0.0	1.5	1.6	0.0
Pipeline Total	1364.8	610.5	594.9	124.1	35.2	1197.3	0.0	149.1	18.3	0.0
<u>a/</u> Acreage is based on a 110-foot-wide construction right-of-way for the 30-inch-diameter pipeline and a 80-foot-wide construction right-of-way for the 20-inch-diameter pipeline and does not include access roads, temporary extra workspace, or areas of open water, and does not account for reduced right-of-way widths at wetlands and forested areas.										
<u>b/</u> Topsoil includes all surface horizons with 2 percent or more organic matter content.										
<u>c/</u> Slopes are grouped by the averages of high and low slope ranges provided in the SSURGO database for each component soil series. For example, a component soil with 6 to 12 percent slopes has an average slope of 9 percent and would be placed in the >8 to 15 percent slope category.										

4.2.2.5 Revegetation Potential

Revegetation potential is a rating of the ability of a soil to support revegetation efforts following construction-related disturbance. Some soils crossed by the proposed project were identified as having a poor revegetation potential based on the surface texture and drainage class. The drainage class of a soil is the range of its relative wetness under natural conditions. Six classes of drainage, ranging from poorly drained to excessively drained, are used to describe the relative wetness of a soil (NRCS, 1994). Droughty soils which have a coarse surface texture and are moderately well to excessively drained may prove to be difficult to revegetate. Droughty soils along the proposed route were identified by querying the SSURGO database for component soil series that have: (1) a surface texture of sandy loam or coarser, and (2) are moderately well to excessively drained. The drier soils have less water to aid in the germination and eventual establishment of new vegetation. The coarser textured soils also have a lower water holding capacity following precipitation, which could result in moisture deficiencies in the root zone and create unfavorable conditions for many plants.

Project construction would temporarily disturb a total of 10.0 acres of soils that have poor revegetation potential, including 9.7 acres (less than 1 percent) of pipeline right-of-way and 0.3 acre along the access roads.

Revegetation potential may be inhibited by soil erosion, loss of soil productivity through soil compaction, damage to soil structure, loss of soil fertility, damage to drainage systems, and unsuitable seed selection, methods, or planting conditions. To avoid or minimize these conditions, Guardian would return the construction right-of-way and extra work areas to preconstruction contours to the extent feasible; control erosion by implementing the standard requirements in our Plan; segregate and de-compact soils and spread topsoil on the right-of-way during final cleanup; repair any damaged drainage systems; place soil nutrients and lime in upland areas; and seed all disturbed areas. Guardian has consulted with the NRCS and area soil conservation districts to obtain recommendations for seed mixtures to be used during right-of-way restoration.

Guardian would be responsible for successful revegetation of all disturbed areas, and would follow the standard requirements for restoration, as included in our Plan, to ensure all mitigation is sufficient. In accordance with FERC requirements, revegetation would be considered successful if the density and cover of non-nuisance vegetation were similar in density and cover to adjacent undisturbed lands. If vegetation cover and density were not similar or there were excessive noxious weeds after two full growing seasons, a professional agronomist would determine the need for additional restoration measurements. In agricultural areas, Guardian would monitor crop yields to ensure that those yields in areas affected by construction were similar to adjacent, undisturbed areas.

Heavy equipment traffic and trenching along the construction right-of-way could damage existing drainage systems or affect existing drainage patterns, thereby affecting revegetation potential. Effects on drainage and irrigation systems are discussed in section 4.2.2.1.

4.2.2.6 Depth to Bedrock and Stony/Rocky Soils

The presence of shallow bedrock is often used as an indicator of the potential for introductions of rock to surface layers of soils. Locations where shallow bedrock was identified are discussed in section 4.1. Soils with significant quantities of stones in the surface were identified by querying the SSURGO database for component soil series that have either: (1) a cobbly, stony, bouldery, shaly, very gravelly, or extremely gravelly modifier to the textural class of the surface layer; or (2) have a surface layer that contains greater than 5 percent (weight basis) stones larger than 3 inches.

Project construction would temporarily disturb a total of 104.7 acres of stony or rocky soils, including 104.4 acres (approximately 8 percent) of pipeline right-of-way and 0.3 acre along the access roads.

Introducing stones or rocks to surface soil layers may reduce soil moisture-holding capacity, resulting in a reduction of soil productivity. Additionally, some agricultural equipment may be damaged by contact with large rocks and stones. Rock fragments and stones may be introduced to the surface layer during grading, trenching, and backfilling.

The introduction of subsoil rocks/stones into agricultural topsoil would be minimized by segregating topsoil from trench spoil and replacing topsoil in agricultural areas after cleanup.

This practice would prevent subsoil rocks from being brought to the surface and incorporated with topsoil. To the extent possible, Guardian would remove excess rock/stone greater than 4 inches in size from the top 12 inches of disturbed soils in cultivated and rotated croplands, hayfields, pastures, residential areas, and at the landowner's request in other areas. Guardian would also remove excess rock/stone from surface soils disturbed by construction such that the size, density, and distribution of rock on the construction right-of-way would be similar to adjacent non-right-of-way areas. Guardian would not necessarily remove rocks from backfilled areas if the rocks/stones in the backfill are consistent with pre-construction conditions. If bedrock is encountered, Guardian would take necessary precautions to minimize the mixing of excavated bedrock with backfill and would replace rock in the trench to a level that is not higher than the original bedrock profile (blasting is discussed in section 4.1). Thus, no significant impacts are anticipated as a result of pipeline construction through areas of shallow bedrock.

4.2.2.7 Topsoil Depth

Topsoil is the uppermost layer of soil and contains organic matter, microorganisms, moisture, nutrients, and a seed bank essential to support plant growth. Topsoil depths along the proposed pipeline route were quantified by examining the organic matter content of the surface horizons. Near-surface soils with 2 percent or more organic matter were considered topsoil. Topsoil thicknesses were then assigned to one of four classes: 0 to 6 inches, greater than (>) 6 to 12 inches, >12 to 18 inches, >18 inches. As shown in table 4.2.2.4-1, about 45 percent of the soils that would be crossed have 6 inches of topsoil or less. Another 43 percent of the soils crossed have between 6 and 12 inches of topsoil. Only about 12 percent of the soils crossed have greater than 12 inches of topsoil. Guardian would avoid impacts on topsoil by implementing the standard requirements for topsoil segregation in our Plan.

4.2.2.8 Contaminated Soils

Contamination from spills or leaks of fuels, lubricants, and coolant from construction equipment could adversely affect soils. Several databases were reviewed for information regarding potential soil and groundwater contamination within or near the project area (see section 4.3.1). The proposed pipeline route would cross one site on the EPA's National Priorities List (NPL), the Fox River. Guardian proposes to cross the Fox River using the HDD technique (see section 4.3.2.4 for more information about this crossing). Use of this crossing method should prevent interaction with any contaminated sediments within the river. Another eight sites within 0.5 mile of the pipeline were identified from information maintained by the WDNR. Most of these sites have been remediated and closed. One site with petroleum-contaminated soils is still undergoing remediation. This site is located about 0.4 mile southeast of the pipeline route, and would not likely present a problem for construction.

Review of the NPL indicates there are no contaminated sites located within 0.5 mile of the pipe storage/contractor yard. However, a review of the WDNR's Remediation and Redevelopment Program identified two Environmental Repair Program (ERP) sites on an adjacent property to the north of the pipe storage/contractor yard (Charter Steel). These sites have been closed since 2003 and Guardian's use of the pipe/contractor yard would not be affected by this adjacent property. No contaminated sites were identified within 0.5 mile of the proposed compressor stations, access roads, or other aboveground facilities.

Other potential impacts during construction would include accidental spills or leaks of fuels, lubricants, and coolant from construction equipment; accidental release of petroleum hydrocarbons or other hazardous materials; and/or the discovery of contaminated soils during trench excavation and grading activities. Contamination from spills or leaks of fuels, lubricants, and coolant from construction equipment could adversely affect soils. The effects of contamination are typically minor because of the low frequency and volumes of spills and leaks. Guardian's SPCC Plan specifies cleanup procedures in the event of soil contamination from spills or leaks of fuel, lubricants, coolants, or solvents. Guardian and its contractors would use the SPCC Plan to prevent and contain, if necessary, accidental spills of any material that may contaminate soils, and to ensure that inadvertent spills of fuels, lubricants, or solvents are contained, cleaned up, and disposed of in an appropriate manner. We believe the use of the SPCC Plan would minimize spills and the impact if a spill were to occur.

To mitigate for the discovery of contaminated soils during construction activities, Guardian has developed an Unanticipated Discovery of Hazardous Wastes or Contaminated Soils (see appendix H).

4.3 WATER RESOURCES

4.3.1 Groundwater

4.3.1.1 Existing Groundwater Conditions

Groundwater basins tend to follow the outlines of surface water drainage in most areas. The proposed G-II pipeline would begin in the Mississippi River drainage and enter the Lake Michigan drainage near the Dodge County-Fond du Lac County line. The portion of the route within the Mississippi River drainage lies in the Upper Rock Watershed Management Unit (WMU). Within the Lake Michigan drainage, the route would cross portions of the Upper Fox, Sheboygan, Manitowoc, and Lower Fox WMUs, before terminating just inside the Green Bay WMU at the northeast corner of Outagamie County (WDNR, 2006a).

Except for the Green Bay urban area, the areas that would be crossed by the G-II Project use groundwater for all purposes. In rural areas, which include most of the G-II route, private groundwater wells supply all of the drinking water (USGS, 1986, 1988). Groundwater resources along the G-II route come from three aquifers: the surficial (sand and gravel) aquifer, the Silurian-Devonian bedrock aquifer, and the Cambrian-Ordovician bedrock aquifer (Iowa DNR, 1989).

Additional information on the aquifer systems that occur along the proposed project route, as well as sole-source aquifers, wellhead protection areas, public and private supply wells and springs, and contaminated groundwater is presented below.

Surficial Aquifer System

The surficial aquifer system is the uppermost and most widespread aquifer in the project area. It is derived from material deposited during multiple advances of continental glaciers from the north, which picked up soil and rock material during advances and redistributed these materials on the eroded land surface as water- and/or ice-laid deposits during retreats (Olcott, 1992). Though most important regionally, the surficial aquifer system is the least used of the three aquifer systems within the project area, because most of the route crosses deposits of glacial-lake

sediments and ground-moraine deposits of unsorted and unstratified till that are far less permeable than glaciofluvial (meltwater stream) deposits. The G-II route only crosses substantial surficial deposits of permeable sand and gravel in small areas of northern Jefferson County and Dodge County, Wisconsin and just northwest of the Fox River (Olcott, 1992). Where they occur, the more productive surficial aquifers range from 50 to 300 feet in thickness and can produce 200 to 300 gallons per minute (gpm) on average.

Silurian-Devonian Bedrock Aquifer

The Silurian-Devonian¹ aquifer consists mostly of dolomite and limestone in which fracture permeability has been increased by solution and extensive karst development. The aquifer follows the bedrock surface throughout most of the counties of eastern Wisconsin and runs from Door County to the Wisconsin-Illinois border. It consists of Niagara dolomite underlain by Maquoketa shale, a less permeable layer that partly isolates this system from deeper layers. The average thickness of the carbonate rocks that compose most of the Silurian-Devonian aquifer is 300 to 400 feet (Olcott, 1992).

In Wisconsin, the Silurian-Devonian aquifer is recharged by water percolating through the variable thickness of the overlying surficial aquifer system and commonly yields from 100 to about 500 gpm to wells, depending on the thickness of the aquifer and the number of fractures the well intercepts. In such areas, permeability has been enhanced by solution openings, and water circulates readily through the aquifer. The water in these areas has a variety of dissolved ions, and contains dissolved solids in concentrations of less than 500 milligrams per liter (Olcott, 1992). Along the Niagara Escarpment from Door County until Dodge County, much of the Niagara formation is exposed, forming a generally distinct bluff line. Numerous springs occur at the base of the bluff.

The Maquoketa shale layer beneath the Silurian-Devonian aquifer is composed of clay and stone that does not transmit water easily (an aquaclude). Therefore, it is not a major water source, but rather a division between the eastern dolomite aquifer and the sandstone and dolomite layers that form the uppermost bedrock aquifer to the west (Iowa DNR, 1989).

Cambrian-Ordovician Bedrock Aquifer

The Cambrian-Ordovician aquifer system is a 300- to 400-foot-thick multi-aquifer system consisting of an upper sandstone unit of Ordovician age (St. Peter Sandstone), a middle dolomite unit of Ordovician age (Prairie du Chien Group), and a lower sandstone unit of Cambrian age (Jordan Formation). These units are separated by leaky confining layers and capped by the Maquoketa shale formation (where it exists). In the project area, the Cambrian-Ordovician aquifer system lies below the Silurian-Devonian aquifer east of a line winding from western Waukesha County north to Fond du Lac then northeast to De Pere. West of this line, the Silurian-Devonian formation is largely absent (except for a few outliers far to the west, such as Blue Mounds), and the Cambrian-Ordovician formation is found under the surficial glacial deposits (Olcott, 1992).

Sole Source Aquifers and Wellhead Protection Areas

The EPA defines sole or principal source aquifers as those that supply at least 50 percent of the drinking water consumed in the area overlying the aquifer. These areas can have no alternative

¹ The Devonian-age rocks do not occur under the pipeline corridor.

drinking water source(s), which could physically, legally, and/or economically be supplied to those who depend upon the aquifer for drinking water. There are no sole source aquifers located within or adjacent to the G-II Project area (EPA, 2006).

The EPA defines wellhead protection areas as those surface or subsurface areas surrounding a water well or well field that supplies a public water system (EPA, 1987). Guardian contacted the WDNR Groundwater Section to identify any municipal wells or wellhead protection areas designated pursuant to NR 811.16(5) of the Wisconsin Administrative Code that may exist in the vicinity of the pipeline or associated facilities. The WDNR indicated that there are no municipal wells or wellhead protection areas within 250 feet of the pipeline or associated facilities.

Public and Private Supply Wells and Springs

Guardian consulted the WDNR to identify the location of known public water supply wells and springs within 150 feet of the proposed construction work space. The WDNR found that no public water supply wells occurred within 150 feet of the proposed construction work space.

To identify private water supply wells and springs located within 150 feet of the construction area, Guardian interviewed landowners during its right-of-way activities. Three private wells and three springs are located within 150 feet of the proposed construction work spaces (see table 4.3.1.1-1).

TABLE 4.3.1.1-1				
List of Private Wells and Springs Located Within 150 Feet of the Construction Right-of-Way				
Approximate Pipeline MP	County, State	Approximate Distance (ft)	Direction	Type
39.9	Fond du Lac, Wisconsin	100	West	Well
41.7	Fond du Lac, Wisconsin	0	NA	Spring
51.1	Fond du Lac, Wisconsin	100	West	Spring
66.2	Calumet, Wisconsin	150	East	Spring
67.5	Calumet, Wisconsin	120	West	Well
93.8	Outagamie, Wisconsin	70	West	Well

In the unlikely event that construction activities adversely affect a water supply, Guardian would make the necessary repairs and/or replacements to restore the water supply system to its pre-construction capacity by re-working the existing well or installing a comparable replacement. In the interim, Guardian would provide a temporary source of water, such as contracting with a local water supply firm to deliver potable water.

Contaminated Groundwater

Guardian evaluated the documented occurrence of, and potential for, contaminated groundwater along the proposed pipeline route (e.g., Leaking Underground Storage Tank [LUST] sites, and closed or open ERP sites) by examining information available from the WDNR Remediation and Redevelopment Internet site (WDNR, 2006c). Eight contaminated sites were identified within 0.5 mile of the pipeline route (table 4.3.1.1-2).

Based on consultations with the State of Wisconsin Department of Commerce, the open ERP site, located 0.36 mile to the southeast of the proposed pipeline route at MP 41.8, once contained

aboveground petroleum storage tanks and now exhibits low-level soil contamination but no groundwater contamination.

TABLE 4.3.1.1-2 List of Contaminated Sites Located Within 0.5 Mile of the Construction Right-of-Way				
Approximate Pipeline MP	County, State	Approximate Distance (miles)	Direction	Type
41.7	Fond du Lac, Wisconsin	0.21	Southeast	Remediated ERP Sites
41.7	Fond du Lac, Wisconsin	0.46	Southeast	Remediated ERP Sites
41.8	Fond du Lac, Wisconsin	0.23	Southeast	Remediated LUST Site
41.8	Fond du Lac, Wisconsin	0.36	Southeast	ERP Sites
46.0	Fond du Lac, Wisconsin	0.37	West	Remediated LUST
54.0	Fond du Lac, Wisconsin	0.48	Southeast	Remediated LUST
95.3	Outagamie, Wisconsin	0.17	Southwest	Remediated LUST
101.7	Outagamie, Wisconsin	0.41	Northeast	Remediated LUST

4.3.1.2 General Groundwater Impacts and Mitigation

Project-related construction and operational activities could affect groundwater resources; however, most potential impacts are avoided or minimized by the use of both standard and specialized construction techniques. Impacts and mitigation measures are discussed in further detail in the following sections.

Construction

Shallow and perched aquifers could sustain minor impacts from changes in overland water flow and recharge due to clearing and grading of the project rights-of-way. In forested areas, water infiltration, which is normally enhanced by vegetation, would be reduced until vegetation is re-established. The permanent cleared area would have less vegetation layers to reduce the energy of falling water, and retain it to allow it to percolate. In addition, permanent effects would also occur to groundwater recharge as a result of the development of impervious surfaces and structures at the proposed aboveground facility sites and/or near-surface soil compaction caused by heavy construction vehicles, which could reduce the soil's ability to absorb water. These impacts would be minor and temporary, and because they affect a very small portion of each aquifer's total recharge area, they would not significantly affect groundwater resources.

The pipeline trench could also alter the quantity of groundwater that flows to specific points of discharge, such as a well or spring, by altering shallow groundwater flow paths. A disturbed linear corridor may have higher transmissivity (ease of groundwater movement) than the intact soil layers. Altered flow paths can result in changes to the quality of groundwater at specific locations by exposing the groundwater to different soil constituents or contaminants. These impacts would most likely occur in shallow and perched aquifers. The proposed pipeline would not, however, change the regional flow paths because these are determined by larger-scale geologic features that form the hydrogeologic setting. Also, deeper aquifers that are hydrologically connected to the surficial aquifer would not be directly affected by trenching and construction activities because of their depth below the pipeline trench. Based upon these factors, the proposed Project is not expected to affect regional groundwater discharge conditions or quality.

Construction of the pipeline generally requires excavating a 6- to 8-foot-deep trench. Dewatering may be necessary where the trench encounters shallow groundwater within the excavation zone. Localized lowering of groundwater due to dewatering is likely, and would affect a small area along the route, and be of short duration. The water pumped from the excavation would be discharged in accordance with FERC-approved Procedures, and subject to applicable discharge regulations. The potential impact of dewatering would be minimized by discharging the pumped water to well-vegetated upland areas, or into hay bale structures or filter bags if vegetation is insufficient, or where water is discharged to wetland areas to promote infiltration and minimize or eliminate runoff. Dewatering could temporarily depress groundwater levels right along the trench. However, because trenching typically proceeds at a relatively rapid rate, the depressed water table around the trench would be expected to recover rapidly once dewatering ends, and the trench is backfilled. Therefore, this activity is most likely to only temporarily affect flow patterns in nearby springs and shallow wells.

Occasionally, secondary changes in the physical condition of the aquifer due to pumping and “rerouting” may cause longer-lasting disruptions. These cannot be predicted because they are so site-specific. Guardian’s plans to re-supply well users would apply to the extent that those impacts occur; however, impacts on natural systems such as springs may require other responses.

Material placed to backfill the pipeline trench is generally more permeable than the surrounding soil and rock units, and the trench would provide an easier pathway for groundwater flow in areas where it intersects the water table. Thus, the pipeline trench would potentially alter the existing groundwater flow patterns within shallow saturated zones. In general, however, most wells located along the pipeline take water from deeper formations whose flow paths would not be affected by the trench. Additionally, Guardian would install trench breakers at specified intervals, as specified in our Plan and Procedures, to reduce the potential for the trench to act as an easier groundwater flow path, and no long-term impacts on the water table or groundwater movement patterns would be anticipated as a result of the proposed Project. Conversely, if construction and operation of heavy machinery compact soils along the proposed project route, water infiltration and recharge of aquifers along the trench or right-of-way would be reduced. However, Guardian would implement the measures identified in our Plan, which includes testing, and as applicable, mitigation for compacted soils (see section 4.2.2.3).

Blasting could cause temporary changes in water levels and turbidity may affect groundwater quality; however, the use of controlled blasting techniques should mitigate impacts of blasting. Guardian’s analysis of county soils data determined that about 2 percent (1.9 miles) of the pipeline route would cross areas with bedrock at depths of less than 60 inches that may require blasting to construct portions of the pipeline facilities. These areas are reported to be located in northeastern Dodge, central Fond du Lac, and isolated parts of Brown Counties, Wisconsin.

Eight contaminated sites have been identified within 0.5 mile of the proposed pipeline route including five LUST sites and three ERP sites (see table 4.3.1.1-2). Of these areas, all but one (an ERP site) have been remediated and closed by the WDNR. None of these sites involved contaminated groundwater and, therefore, do not pose a risk to groundwater resources. Thus, excavating near these areas should not result in adverse impacts on groundwater quality in the project area. The active ERP site is located about 0.36 mile southeast of the proposed pipeline route and separated from the route by a low area containing two streams. Given the distance from the proposed route, the absence of groundwater contamination, and the site’s assumed hydraulic separation from the route, it is reasonable to conclude that this site would not be

disturbed during construction activities and therefore poses no risk to groundwater resources in the area.

It is possible that unknown contaminated sites could be encountered along the pipeline route during construction. If contaminated soils or water are discovered, Guardian would notify the landowner(s) and, if required, the appropriate regulatory agencies. Guardian would also follow the procedures outlined in its plan for the Unanticipated Discovery of Hazardous Wastes or Contaminated Soils (see appendix H to this EIS).

The greatest potential for impacts on groundwater would be an accidental release of a hazardous substance, such as fuel, lubricant, or coolant, during construction or operation. Spills or leaks of hazardous liquids could contaminate groundwater, making it unsafe to use, and adversely affect the health of its users. These impacts can be avoided or minimized by confining refueling and storage facilities to locations less likely to allow spills to spread, and by requiring their immediate cleanup. Guardian has agreed to prohibit refueling or the storage of fuel or other hazardous liquids within 200 feet of private drinking-water wells or springs, and within 400 feet of public or community drinking-water wells or springs. Guardian will also have to implement Spill Prevention and Response Procedures that meet state and federal requirements. Guardian will also develop an SPCC Plan to implement during construction of the facilities. This SPCC Plan would address potential spills of fuel, lubricants, and other hazardous materials and outline spill prevention practices, spill handling and emergency notification procedures, and training requirements. It also prescribes mitigation measures, including containment and cleanup, to minimize potential impacts should a spill occur. These measures should minimize or eliminate the potential for adverse impacts on groundwater resources.

Operation

Operation of the G-II Project would not be expected to result in impacts on groundwater, unless maintenance activities involving pipe excavation and repair are required. For maintenance activities, Guardian would employ protective measures substantially the same as those used during construction. As a result, any impacts from maintenance would be short-term in nature and similar to those discussed above for the initial pipeline construction.

4.3.1.3 Site-Specific Groundwater Impacts and Mitigation

Construction

Sole source aquifers and wellhead protection areas do not occur in the vicinity of the proposed Project and would therefore not be affected by the proposed construction and operation activities. During construction, Environmental Inspectors would monitor the construction work areas for any previously unidentified wells, springs, and seeps. If any such features are encountered during construction, Guardian would treat them as waterbodies and avoid or minimize effects by implementing the measures identified in our Plan and Procedures.

As indicated previously, blasting is not likely to occur along most of the route. However, if any blasting is required, it could adversely affect wells located within 150 feet of the proposed construction right-of-way. Effects could include decreased yields and/or water quality (i.e., increased turbidity or odor), interference with well operation, or disruption of well function. Guardian has consulted with the WDNR, and has not identified public water supply wells within 150 feet of the construction right-of-way. Private water supply wells have been identified within

150 feet of the construction right-of-way, but none are located in areas of shallow bedrock. Therefore, no impacts on public or private drinking water wells due to blasting are anticipated. However, if any blasting is required within 150 feet of a water well, Guardian would use controlled blasting techniques to minimize the potential for impacts on water supply wells. Additionally, Guardian would conduct pre- and post-construction well testing to ensure there would be no loss of productivity and quality. Guardian would also conduct all blasting in accordance with all applicable federal, state, and local laws, permits, and authorizations.

Operation

There are no known sole source aquifers and wellhead protection areas in the vicinity of the project area; therefore, operation of the G-II Project would not result in impacts on these features.

4.3.2 Surface Water

4.3.2.1 Existing Surface Water Resources

Guardian identified water bodies crossed by the proposed Project, including rivers, streams, and ponds using USGS topographic maps, WDNR hydrographic geographic information system (GIS) data layers, aerial photography, and through field surveys of about 90 percent of the proposed project route, where survey permission was granted. The proposed Project would cross 111 surface waterbodies, including 29 perennial streams, 80 intermittent streams, 1 fluctuating stream, and 1 constructed pond. A list of the waterbodies crossed by the route is included as appendix I and shows the location by waterbody name, MP, type, crossing width, water quality classification, flow regime, and proposed crossing method.

Guardian completed field surveys at all of the proposed aboveground facility sites, which showed that no waterbodies occur at these locations. Consistent with our Procedures, Guardian has proposed that all extra workspace areas would be located at least 50 feet away from waterbodies except in three locations (Baker Creek [MP 7.6], west branch of the Milwaukee River [MP 37.9], and an unnamed tributary to the south branch of the Manitowoc River [MP 65.0]), where Guardian would require additional temporary workspace within 50 feet of the waterbody (see section 4.3.2.2 for further details).

Sensitive Waterbodies

Sensitive waterbodies include those that are designated as National Wild and Scenic Rivers; are state-designated high quality or outstanding natural resource waters; provide habitat for threatened and/or endangered species or critical habitat; have potable surface water intakes located within 3.0 miles downstream of the pipeline crossing; and/or do not currently support designated uses.

None of the waterbodies crossed are designated as National Wild and Scenic Rivers (NPS, 2005). Based on review of WDNR surface water data (WDNR, 2006a) and consultations with WDNR water resources staff (Schmidt, 2006), Guardian concluded that none of the streams that would be crossed by the proposed pipeline are designated as either high quality or outstanding natural resource waters.

Guardian searched for surface water intake areas within 3 miles downstream of the proposed Project using records provided by the WDNR. This showed that no surface water intakes for

public water supply systems occur within 3 miles downstream of any of the proposed surface water crossings.

Seven water body segments that would be crossed by the pipeline are included on the list of impaired waterbodies under Section 303(d) of the CWA, or have concerns resulting from contaminated sediments. Section 303(d) of the CWA requires states to identify waters that are not attaining their designated use(s) and develop total maximum daily loads (TMDLs), which represent the maximum amount of a given pollutant that a waterbody can assimilate and still meet its designated use(s). The seven waterbodies include the Rock River, Kummel Creek, Kankapot Creek, Plum Creek, Fox River, Duck Creek, and Trout Creek. The two listed pollutants common to all seven streams are mercury (from atmospheric deposition) and sediments (elevated suspended solids concentrations from non-point sources such as agricultural runoff). Duck Creek and Trout Creek are also listed as containing excessive levels of total phosphorus (also likely to be from agricultural sources). The Fox River is listed as containing polychlorinated biphenyl (PCB)-contaminated sediments in addition to mercury and elevated suspended sediments.

Watershed Protection Areas

The proposed pipeline would cross one WDNR-owned conservation easement located at MP 57.7 along Pipe Creek. This non-point source easement is intended to provide a vegetative buffer to prevent agricultural runoff from entering a priority watershed. A portion of the easement consists of upland buffer covered with herbaceous vegetation and a few scattered shrubs. The remainder coincides with the emergent wetland located adjacent to Pipe Creek. About 0.61 acre of the easement would be temporarily impacted by construction of the G-II Project.

Flood Plains

Based upon a review of Federal Emergency Management Agency (FEMA) flood hazard designation maps conducted by Guardian, none of the aboveground facilities were found to be located within 1,000 feet of a designated flood plain.

4.3.2.2 General Surface Water Impacts and Mitigation

Guardian's proposed methods for pipeline installation across each identified waterbody are listed in appendix I. Waterbody crossings would be installed using open cut-wet trench methods, dry crossing methods, or HDD methods, as described below. With the exception of the crossing of the East Branch of the Rock River (MP 25.4), which is proposed using the open cut method, Guardian has proposed to cross waterbodies that contain perceptible flow at the time of crossing using a dry crossing method such as a flume or dam and pump. Crossings of waterbodies with low flow or no flow would use the open cut method. Based on field surveys conducted by Guardian, Guardian anticipates that most of the waterbodies would be crossed during a low-flow period using the open cut method. Two crossings would be implemented using HDD. The stream crossing method for one stream, Duck Creek, has yet to be determined.

General impacts on waterbodies, including sensitive waterbodies and watershed protection areas, that could result from pipeline construction, accidental spills, and construction of aboveground facilities, as well as operational impacts, are discussed in more detail below.

Construction

Construction of the G-II pipeline could impact surface waters in a variety of ways. Clearing and grading of stream banks, in-water trenching, trench dewatering, and backfilling could alter aquatic habitat, increase sedimentation and turbidity, decrease dissolved oxygen levels, increase stream warming, release chemical and nutrient pollutants from sediments, and accidentally release chemical contaminants such as fuels and lubricants.

The primary impacts at the waterbody crossings would result from suspension of sediments during an open cut crossing of a flowing waterbody. The extent of the impact would depend on sediment loads, stream velocity, and sediment particle size distribution at the time of construction. These factors would determine the density, downstream extent, and persistence of the sediment plume. The presence of more fine materials, such as sand and silt, increases the likelihood of elevated turbidity and suspended sediments. Coarser materials such as pebble, gravel, and cobble do not contribute to this impact. In general, impacts on the in-stream aquatic life (biota) and the habitat value of the waterbody would be temporary and short-term during construction. After the completion of in-stream work, backfilling, restoration, and recruitment of aquatic biota from upstream sources would allow these resources to return to preconstruction conditions within a few years.

Increased turbidity can reduce light penetration into the water, which reduces photosynthetic activity and levels of dissolved oxygen in the water column. This is generally more of a problem in standing waters than flowing waters. Organic materials suspended in the water can further reduce dissolved oxygen by increasing the biochemical oxygen demand (BOD). Resuspension of sediments can also introduce contaminants, metals, and nutrients bound to the sediments into the water column. Contaminated soils could also be encountered during construction activities along the proposed construction right-of-way or extra work areas. If this happened during construction, Guardian would implement procedures to identify and properly manage the contamination.

Removing vegetation from riparian areas would increase surface runoff and erosion from the pipeline corridor. Guardian would use temporary and permanent sediment controls (e.g., silt fence and slope breakers), as outlined in our Procedures, to minimize this impact by directing surface runoff to well-vegetated areas along the sides of the construction right-of-way. Removal of riparian vegetation at water body crossings, and loss of associated shading, would increase water temperatures; however, this impact is not expected to be significant in most cases because of the limited amount of streambank canopy that would be cleared relative to the existing riparian vegetation. Following construction, trees and shrubs would also be allowed to re-establish themselves on waterbody banks except for a 10-foot-wide corridor centered over the pipeline.

To minimize impacts during construction, Guardian has adopted our Procedures for construction related to waterbody crossings. The Procedures are designed to minimize impacts associated with waterbody crossings. These measures include, but are not limited to:

- obtaining all necessary permits from the COE and state agencies prior to construction and notifying applicable state agencies at least 48 hours before commencing instream trenching;
- using environmental inspectors during construction;

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- routing the proposed pipeline as close to perpendicular to the waterbody as practicable and minimizing the number of individual crossings where water bodies meander or have multiple channels;
 - limiting the use of equipment within the water body to that necessary to construct the crossing, and utilizing equipment bridges for other construction equipment;
 - placing spoil at least 10 feet away from the water's edge with installation of sediment barriers to prevent the flow of spoil or silt-laden water to the water body;
 - locating all extra work areas (such as staging areas and additional spoil storage areas) at least 50 feet away from the water's edge, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land;
 - completing all instream construction activity, including stabilization and re-contouring of banks, within 24 hours for minor waterbody crossings and 48 hours for intermediate waterbody crossings;
 - using temporary erosion and sediment control measures such as sediment barriers and trench plugs; and
 - implementing restoration activities including preconstruction bank contours, installation of slope breakers, and revegetation of disturbed riparian areas.

Guardian has identified three of its proposed additional temporary workspaces (ATWS) that it believes must be located within 50 feet of the water's edge in site-specific locations. These sites are near MP 7.6, where the pipeline is proposed to cross Baker's Creek; near MP 37.9, where the pipeline is proposed to cross the West Branch of the Milwaukee River; and at MP 65.0 where the pipeline would cross an unnamed tributary to the south branch of the Manitowoc River. We have reviewed these locations and have determined that the requests are acceptable due to the constraints of the surrounding habitats (i.e., forest, wetland and riparian habitat).

To further minimize impacts Guardian has planned construction during the summer months (summer 2008), which according to long-term USGS gauging records in and near the project area, is typically a low-flow period. Guardian's construction contractor would monitor weather conditions prior to the installation of stream crossings, and may, if necessary, delay installation of a crossing if construction is scheduled to occur following a rainfall event substantial enough to create a high-flow condition. As stated above, Guardian would employ a dry crossing technique in streams that contain perceptible flow at the time of the crossing.

Blasting can have adverse effects on aquatic organisms. Guardian has identified one area associated with an unnamed intermittent stream, located at MP 21.4, that is underlain by shallow bedrock and is likely to require blasting to excavate the trench and install the crossing section. To minimize impacts on this stream, Guardian would conduct this crossing during a period of low or no flow. A concern was raised by the Oneida Nation about potential blasting in the vicinity of Duck Creek (MP 102.6). Guardian performed initial field surveys and does not anticipate encountering shallow bedrock within trench depth in this area. Additional geotechnical investigations at Duck Creek are planned during spring of 2007 to assist in the design of that creek crossing. **We recommend that:**

- **Guardian should file with the Secretary for review and approval by the Director of OEP prior to construction the final plan for the crossing of Duck Creek with records of consultation with the Oneida Nation.**

Other areas that could require blasting may be identified during Guardian's geotechnical investigations. In general, where blasting is required, preparation of the rock for blasting (e.g., drilling shot holes) causes enough disturbance to displace most mobile aquatic organisms from the immediate vicinity of the blast. To further reduce the potential for impacts on aquatic organisms, Guardian would use techniques such as scare charges or banging on a submerged piece of pipe before the blast to displace mobile aquatic organisms before the blast is conducted. Immediately following blasting, Guardian would remove shot rock that impedes stream flow. Guardian would also conduct all blasting in accordance with all applicable federal, state, and local laws, permits, and authorizations.

Aboveground facilities such as compressor stations, meter and regulator stations, and mainline valves would be located in upland areas away from waterbodies. Guardian would implement the measures included in our Plan to prevent or minimize erosion in upland areas, thereby limiting impacts on waterbodies. Some of the mitigation measures identified in the Plan include installing erosion controls (e.g., slope breakers, silt fencing, and mulch) during construction to control runoff, reducing the duration of soil disturbance, and re-establishing contours and vegetative cover as soon as practicable (see section 4.4.2).

Given these factors and protective measures, any effects to waterbodies associated with construction and operation of the proposed aboveground facilities should be effectively minimized.

Accidental Spills and Releases

To minimize potential impacts associated with accidental spills and releases, Guardian would use its SPCC Plan prepared under Docket No. CP00-36-000 (with appropriate updates). The SPCC Plan describes measures that Guardian personnel and contractors would implement to prevent and, if necessary, control any inadvertent spill of fuels, lubricants, solvents, and other hazardous materials that could affect water quality. A copy of the SPCC Plan is included as appendix F to this EIS. This SPCC Plan would be updated with site-specific information prior to the initiation of construction activities.

Guardian has also adopted our standard measures regarding spill prevention, containment, and minimization near waterbodies. These measures include, but are not limited to:

- managing operations to reduce the risk of accidental spills or exposure of fuels or other hazardous materials into the environment;
- conducting proper training of employees handling fuels and other hazardous materials;
- conducting regular inspection of all equipment to ensure it is in good operating order;
- ensuring hazardous materials are stored and equipment refueled at least 100 feet from any waterbody or in an upland area at least 100 feet from any wetland;
- prohibiting concrete-coating activities within 100 feet of a waterbody or wetland;

- ensuring that provisions are made for the necessary tools, equipment, and supplies to be on hand to contain and recover spilled materials at the job site; and
- ensuring prompt reporting of any spills to the appropriate agencies.

When refueling activities must be conducted within 100 feet of a waterbody, Guardian would employ monitors to supervise refueling activities and take additional precautions such as spill kit readiness and containment for pumps.

Given the adoption of the measures outlined in our Procedures and these additional measures, the risk of accidental spills or other introductions of hazardous materials to waterbodies would be effectively minimized.

Operation

Operation of the G-II Project would not impact any surface waters, unless maintenance activities involving pipe excavation and repair are required in or near streams or wetlands. For maintenance activities, Guardian would employ essentially the same protective measures used during construction. As a result, any impacts from maintenance would be short-term and similar to those discussed above for initial construction.

4.3.2.3 Site-Specific Surface Water Impacts and Mitigation

Construction

Sensitive Waterbodies

There are no waterbodies designated as National Wild and Scenic Rivers in the project area nor are any of the streams along the proposed route designated as either high quality or outstanding natural resource waters. Further, there are no surface water intakes for public water supply systems within 3 miles of any of the proposed surface water crossing locations. Therefore, no impacts on specially designated areas are anticipated.

Guardian proposes to cross the Fox River in a location that is known to be used by the bald eagle, a federal-listed and state species of concern. Guardian has consulted the resource agencies regarding this crossing to minimize impacts on this protected species. The potential impacts and proposed mitigation measures associated with this crossing are discussed in the following section on HDD.

Guardian proposes to cross seven waterbody segments that have been listed as impaired waterbodies under Section 303(d) of the CWA and/or contain contaminated sediments. Contaminants in all seven streams are the result of atmospheric deposition and non-point sources such as agricultural runoff. Six of these streams would be crossed using the open-cut method, and the Fox River would be crossed using the HDD method (see the section on HDD below). Installation activities are not likely to affect water quality in regard to the pre-existing contamination of these streams; however, it could result in short-term, local increases in suspended sediment levels as discussed in section 4.3.2.1.

There are three water body crossings that are 100 feet or more in length, including the Fox River (1,100 feet), the Rock River (120 feet), and the East Branch of the Rock River (100 feet). As indicated above, Guardian proposes to cross the Fox River using the HDD method. Guardian also proposes to use this method to cross the Rock River (see section on HDD below). Guardian

proposes to cross the East Branch of the Rock River using the open-cut wet trench method. Protective measures for crossing the Rock, East Branch of the Rock, and Fox Rivers would follow the guidelines established in our Procedures. Accordingly, for these major waterbody crossings Guardian would file with the Secretary site-specific detailed construction plans for review and approval by the Director of the OEP. Guardian has also developed a Horizontal Directional Drill Contingency Plan (see appendix J) to address potential impacts associated with an inadvertent release of drilling fluid while conducting HDD crossings (see section on HDD below).

Watershed Protection Areas

Guardian proposes to cross one WDNR-owned conservation easement located at MP 57.7 along Pipe Creek that would temporarily disturb about 0.61 acre of the easement. The proposed route through Pipe Creek would be collocated with an existing ATC electric power line. To minimize impacts on the easement, Pipe Creek and associated wetlands, Guardian would reduce its construction right-of-way width to 75-feet through the easement. Additional temporary work space (totaling about 0.6 acre) would be located just outside the easement in active agricultural land to facilitate crossing the easement and stream.

Guardian would construct the pipeline on either side of the easement using conventional pipeline construction techniques for agricultural lands in accordance with our Plan and Guardian's AMP. In wetland areas and near the Creek, Guardian would employ the measures outlined in our Procedures with minor site-specific variation to minimize impacts on both the easement and the wetland (see sections 4.3.2.2 and 4.4.1.3). During construction, erosion and sedimentation control measures would be used to temporarily replace the functions of the easement buffer within the construction right-of-way and to ensure that soil would not migrate off construction areas and into Pipe Creek.

Following construction, Guardian would restore the construction right-of-way within agricultural land in accordance with the standard requirements in our Plan and Procedures to stabilize the right-of-way and prevent soil erosion and sedimentation into the wetlands and stream within the easement. The current easement consists of a combination of old field successional plant species, two areas of reed canary grass-dominated emergent wetland, and an area currently in alfalfa production. Guardian would revegetate the easement with an appropriate seed mix, based on recommendations received from the WDNR, if different from our Plan and Procedures.

Guardian would retain a 50-foot-wide permanent easement for operation of the pipeline, which would not eliminate the WDNR easement, but would limit construction of structures over the pipeline and preclude the planting of trees within Guardian's easement. Guardian would also conduct periodic vegetation clearing along the permanent easement to facilitate pipeline safety inspections. Guardian would cooperate with the WDNR in managing the corridor to protect the resources associated with Pipe Creek, as intended by the state's conservation easement.

Given the construction, operation, and maintenance measures to be employed by Guardian at Pipe Creek and the fact that this portion of the easement is already subject to routine vegetation maintenance as part of the existing ACT power line operations, we do not believe the conservation easement would be adversely affected by the Project. Guardian would, however, continue consultations with the WDNR regarding any additional requirements associated with the construction, operation, and maintenance of the Project within the easement.

Horizontal Directional Drill Crossings

Guardian proposes to use HDD to install the pipeline across two waterbodies, the Rock River at MP 9.8 and the Fox River at MP 93.0. The Fox River is the only waterbody that would be crossed that has contaminated sediments (see section 4.3.2.1).

HDD is a trenchless crossing method that may be used to avoid direct impacts on sensitive resources, such as water bodies, by directionally drilling beneath them. A successful HDD would result in little or no impact to the waterbody being crossed. The feasibility of each proposed HDD would be evaluated based on site-specific geotechnical data collected at each of the proposed HDD sites. The results of those geotechnical analyses would be provided to the FERC for review prior to construction. In the event of HDD failure, Guardian would have to report the failure and take steps to minimize any leakage of drilling fluids or other adverse impacts.

Should the proposed HDD crossing of the Rock River fail, Guardian proposes to install the crossing using a dry-crossing method. The crossing would be located to the southeast of the HDD crossing. Detailed plans for the alternative crossing are expected to be prepared in the first quarter of 2007.

If the proposed HDD crossing of the Fox River fails, Guardian would attempt an alternative alignment within 100 feet on either side of the proposed HDD alignment with follow-up attempts to install an HDD crossing.

Guardian would only employ alternative crossing techniques if the planned HDD crossings of the Fox and/or Rock Rivers are unsuccessful. **We recommend that:**

- **In the event the planned HDD crossing of the Fox and/or Rock Rivers fail, Guardian should develop final alternative crossing plans in consultation with the COE, EPA, and WDNR. The final alternative crossing plans should be filed with the Secretary for review and for written approval from the Director of the OEP prior to conducting any such alternative crossing.**

A successful HDD is a preferred method for crossing sensitive habitats because it eliminates stream bottom disruption and subsequent impacts. With the HDD method, drilling fluid, primarily consisting of fresh water and bentonite, is pumped into the borehole, and serves to lubricate the drill bit, maintain the borehole, and remove cuttings. At the drill entry or exit holes, drilling fluid normally returns to the surface pits and is collected for reuse after cleaning. The pits also hold the drilling fluid far from the water's edge to prevent it from entering the water.

However, HDD methods are not without risk, because inadvertent drilling fluid releases could result if the drilling fluid escapes containment at the pits or if a "frac-out" occurs. A frac-out occurs when drilling fluids migrate unpredictably to the surface through fractures, fissures, or other conduits in the underlying rock or unconsolidated sediments. A frac-out would cause turbidity and sedimentation with the impacts described previously. As suspended materials settle out of the water column, sedimentation would partially or entirely cover the waterbody substrate and any sessile benthic organisms. Temporary displacement of fish species and their prey items, as well as the potential for the smothering or burying of prey items, and the clogging of fishes' gills could also occur.

To minimize the potential impacts from frac-outs, Guardian has prepared an HDD Contingency Plan for Inadvertent Releases of Drilling Fluid (HDD Contingency Plan) (see appendix J). The HDD Contingency Plan describes standard drill monitoring and sampling procedures, clean-up practices such as the use of straw bales, silt fencing, or turbidity curtains to contain the mud and cuttings, followed by mechanically or manually removing the drilling mud. The HDD Contingency Plan also addresses procedures to contain and clean up inadvertent releases of drilling mud into waterbodies.

If a frac-out occurred in the Fox or Rock River, Guardian would work with its HDD contractor to minimize the volume of drilling fluid released, and implement additional measures to prevent further releases of drilling fluids while it worked to complete the HDD crossing. HDD drilling fluid consists of water and bentonite, which is a mixture of mainly inert and non-toxic clays and rock particles consisting of about 85 percent montmorillonite clay, 10 percent quartz and feldspars, and 5 percent accessory materials, such as calcite and gypsum. The release of these materials should not pollute the river waters or sediments, although it may temporarily increase turbidity.

Contaminated Sites

The Fox River is the only waterbody with known contaminated sediments that would be crossed. Crossing this waterbody using the HDD method should make adverse effects resulting from resuspension of contaminants unlikely.

Operation

Operation of the G-II Project would not cause impacts on any surface waters, unless maintenance activities involving pipe excavation and repair in or near streams or wetlands are required. For maintenance activities, Guardian would employ protective measures substantially the same as those used during construction. As a result, any impacts derived from maintenance would be short-term in nature and similar to those discussed above for the initial pipeline construction.

4.3.2.4 Hydrostatic Testing

Before being placed into service, the proposed pipeline and compressor stations would be hydrostatically tested to DOT standards, as listed in 49 CFR 192, to ensure structural integrity. Guardian proposes to hydrostatically test the pipeline and pipeline lateral using water from rivers and streams along the proposed pipeline route. Test water would be withdrawn through a screened intake to prevent fish entrainment, used for testing, and then discharged back to the waterbodies from which it was withdrawn, or to well-vegetated upland areas. Discharges of hydrostatic test water would comply with permit conditions and follow the guidelines outlined in our Procedures. In agricultural lands, discharges would follow measures described in Guardian's AMP.

Guardian would also use diffusers to minimize the potential for stream scour from water discharged into waterbodies, sediment control devices, and other energy dissipating devices to prevent erosion from discharges that do not go directly back into waterbodies. Guardian would not add chemicals to the water or otherwise treat it for use. Therefore, the chemistry of the water discharged following testing should not differ from the chemistry of the source water.

Guardian anticipates hydrostatically testing the pipeline in 16 segments and minimizing water withdrawals by cascading water between segments to reuse as much water as possible. However, Guardian cannot provide a specific water volume estimate until its final Hydrostatic Testing Plan is completed. Assuming that no water would be reused during testing and that new water withdrawals are made for each segment provides a conservative estimate. In this case, Guardian would need about 17.9 million gallons of water. The actual amount should be substantially less.

Hydrostatic testing of the pipeline would be conducted as follows:

- MP 0.0 to MP 16.05—Four test sections using about 3.0 million gallons from the Rock River. The discharge points for each of these sections are unknown at this time because a hydrostatic test plan has not been finalized.
- MP 16.05 to MP 83.65—Five test sections using about 12.6 million gallons from the East Branch of the Rock River. It is likely that most of this water would not be discharged back into the river, but rather at upland locations and other approved waterbodies along the pipeline route, which are capable of receiving such large volumes of water.
- MP 83.65 to MP 109.88—Seven test sections using about 2.3 million gallons from the Fox River. Guardian intends to obtain all the water required for the 20-inch-diameter pipeline section from the Fox River, and also discharge the water from this work into the Fox River.

Hydrostatic testing of the compressor station facilities would use water obtained from municipal sources or from wells that Guardian proposes to install at each compressor station. Guardian anticipates using 98,500 gallons of water for hydrostatic testing of the Sycamore Compressor Station and 103,000 gallons for the Bluff Creek Compressor Station. Discharge of hydrostatic test water at each of the compressor stations would be conducted in accordance with the standard requirements outlined in our Procedures and Guardian's AMP, as appropriate.

Guardian would comply with any permit conditions necessary for the use of municipal water sources, as well as follow the guidelines regarding the use and discharge of hydrostatic test waters pursuant to the requirements of the General Permit to Discharge under the Wisconsin Pollutant Discharge Elimination System (WPDES).

4.4 VEGETATION

4.4.1 Wetlands

The COE defines wetlands as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas (Environmental Laboratory, 1987). Wetlands perform a number of valuable functions. Among these are flood flow attenuation, sediment retention, nutrient retention, provision of wildlife habitat, groundwater recharge and discharge, recreation, and erosion control.

Section 404 of the CWA of 1972 established standards to minimize impacts on wetlands under the regulatory jurisdiction of the COE. These standards require avoidance of wetlands, where

possible, and minimization of disturbance where impacts are unavoidable, to the degree practicable. Any unavoidable impacts must be mitigated, and any remaining impacts may require compensatory mitigation. All wetland crossings would be subject to review and approval by the St. Paul District of the COE and the WDNR. Guardian would comply with the conditions of the permits issued by the COE and WDNR, including the provisions of any required wetland compensatory mitigation.

4.4.1.1 Existing Wetland Resources

Guardian conducted wetland investigations in areas along the proposed pipeline route where landowners had granted access, as well as at the proposed aboveground facility sites (compressor stations, meter stations, and mainline valves), and at all extra work areas (extra workspaces, access roads, and pipe storage/contractor yard) through review of available NRCS, National Wetland Inventory (NWI), and WWI maps and soil surveys. From June 2006 through September 2006, Guardian conducted wetland field surveys to delineate wetland boundaries in accordance with the requirements of the Corps of Engineers Wetland Delineation Manual (Environmental Laboratory, 1987), the NRCS approach for evaluating remote sensing data (Woodward, 1997), and the WWI. The properties investigated contained 90 percent of the areas identified in the off-site evaluation as potential wetlands. Wetlands along the Guardian pipeline were classified using the FWS classification system (Cowardin et al., 1979) and the WWI classification system (WDNR, 1993). Guardian will continue to evaluate wetland impacts along the proposed route in response to stakeholder concerns. Additional wetland information will be provided to the FERC and other relevant agencies as necessary. All additional information will also be included in the final EIS.

Based on the off-site analysis and field investigations, the pipeline route would cross a total of 124 wetlands. Table 4.4.1.1-1 identifies the NWI classification, length of crossing, and temporary and long-term impacts on the wetlands crossed by the G-II pipeline. A listing of the wetlands crossed by milepost is also provided in appendix K.

Palustrine (freshwater) wetlands are nontidally influenced freshwater wetlands that are generally dominated by persistent emergents, emergent mosses, lichens, scrub-shrubs, or trees. They are found in all water regimes, except subtidal and irregularly exposed systems. Emergent wetlands consist of erect, rooted, herbaceous wetland plants that generally persist for most of the growing season. Scrub-shrub wetlands include areas dominated by woody vegetation less than 20 feet tall and are vegetated with true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. Forested wetlands contain woody vegetation that is 20 feet or taller.

As indicated above, the pipeline would affect palustrine emergent, scrub-shrub, and forested wetlands. Representative palustrine emergent and scrub-shrub wetland plant species found within the pipeline right-of-way include reed canary grass (*Phalaris arundinacea*), cattails (*Typha angustifolia*), red-osier dogwood (*Cornus sericea*), corn (*Zea mays*), jewelweed (*Impatiens capensis*), sandbar willow (*Salix interior*), umbrella sedge (*Cyperus eragrostis*), rough barnyard grass (*Echinochloa muricata*), green ash (*Fraxinus pennsylvanica*), northern water-plantain (*Alisma triviale*), speckled alder (*Alnus rugosa*), silver maple (*Acer saccharinum*), common buttonbush (*Cephalanthus occidentalis*), quack grass (*Agropyron repens*), black ash (*Fraxinus nigra*), common sneezeweed (*Helenium autumnale*), eastern cottonwood (*Populus deltoids*), and black willow (*Salix nigra*).

TABLE 4.4.1.1-1				
Wetlands Affected by the G-II Pipeline Project <u>a/</u>				
Facility	NWI Classification <u>b/</u>	Length of Crossing (feet)	Temporary Construction Impact (acres) <u>c/</u>	Long-term Operational Impact (acres) <u>d/</u>
G-II Pipeline	<i>Forested</i>			
	PFO	939	1.58	0.62
	PEM/PFO	519	1.16	0.15
	PFO/PSS	1,899	3.21	1.06
	PFO/PEM	2,546	4.89 <u>e/</u>	0.32 <u>e/</u>
	Subtotal	5,903	10.84	2.15
	<i>Non-forested</i>			
	PEM	8,044	16.52	0
	PEM - farmed	9,962	25.39	0
	PSS	16	0.06	0
	PEM/PSS	2,587	5.56	0.21
	PSS/PEM	1,294	1.93	0.16
	Subtotal	21,903	49.46	0.37
	Project Total	27,806	60.3	2.52
<u>a/</u> There are no wetland impacts associated with any of the permanent or temporary aboveground facilities including meter stations, compressor stations, pipe storage areas, contractor yards, and access roads.				
<u>b/</u> NWI Classification:				
PEM = Palustrine Emergent				
PSS = Palustrine Scrub-shrub				
PFO = Palustrine Forested				
<u>c/</u> Temporary construction impact is based on a 75-foot-wide construction right-of-way.				
<u>d/</u> A permanent impact due to pipeline operation would include 30 feet of forested wetland that would be permanently converted either to scrub-shrub or emergent cover types, or 10 feet of scrub-shrub wetland that would be permanently converted to emergent cover type. A permanent impact indicates the amount of forest that would be within new permanent right-of-way and permanently converted to scrub-shrub or emergent cover types. Scrub-shrub and emergent cover types would be allowed to revert to their original conditions.				
<u>e/</u> Pipeline segment, at MP 9.8, is crossed using the HDD technique. Impacts on the forested portion of the wetland (2.5 acres) associated with the Rock River would be avoided by using HDD.				

Representative forested wetland plant species found along the pipeline right-of-way include green ash (*Fraxinus pennsylvanica*), silver maple (*Acer saccharinum*), red maple (*Acer rubrum*), box elder (*Acer negundo*), black ash (*Fraxinus nigra*), and quaking aspen (*Populus tremuloides*) with an herbaceous and scrub-shrub understory that contains many of the species described above.

Guardian's off-site analysis and field investigations did not identify wetlands associated with the temporary or permanent facilities necessary for construction or operation of the Project. This includes compressor stations, meter stations, pipe storage/contractor yard, and access roads.

4.4.1.2 General Construction and Operational Impacts

Construction and operation may affect the three parameters that define a wetland: vegetation, soils, and hydrology. During construction, the removal of vegetation (trees, shrubs, and herbaceous plants) would occur within the construction right-of-way. After pipeline construction, the trench would be backfilled and restored to the maximum extent possible to pre-construction contours, and both wetland substrate and hydrology would be restored as well, followed by the restoration of vegetation through natural successional processes. Forested and

scrub-shrub wetlands would regenerate at much slower rates than emergent wetlands. Regeneration rates of forested and scrub-shrub wetlands would be dependent on site-specific conditions, but generally could be measured in tens of years for the vegetation structure to return to a pre-construction state. A permanent 10-foot-wide corridor over the pipeline would be maintained in an herbaceous state. Trees greater than 15 feet high, and within 15 feet of the pipeline center (totaling 30 feet across), may be selectively cut in accordance with our Procedures for right-of-way maintenance.

The primary impact of G-II pipeline construction and right-of-way maintenance on wetlands would be the temporary alteration of wetland vegetation. There were no wetlands identified within the temporary or permanent rights-of-way associated with any of the proposed aboveground facilities. The aboveground facilities include compressor stations, meter stations, pipe storage/contractor yard, and access roads. Along the proposed pipeline route, approximately 5.23 miles of wetlands would be crossed (see table 4.4.1.1-1). Construction of the pipeline would affect about 60.3 acres of wetlands, based on a 75-foot-wide construction corridor in wetland areas. Of this amount, about 10.87 acres (18 percent) of the total wetland acres within the construction corridor are forested wetlands and 10.76 acres (17.8 percent) are scrub-shrub wetlands. About 2.5 acres of forested wetland clearing would be avoided by the use of HDD to cross the Rock River.

Following construction, a total of 2.52 acres of wetlands would be retained for operation and maintenance of the pipeline. Of this amount, 2.15 acres (85.3 percent) of previously forested wetlands would be maintained as emergent and scrub-shrub wetlands as a result of routine vegetation clearing along the pipeline. An additional 0.37 acre (14.7 percent) of emergent and scrub-shrub wetlands would be affected by routine vegetation maintenance. The acreages of each wetland affected and the amount of forested wetland clearing that would be required for the pipeline are listed in appendix K.

4.4.1.3 Wetland Construction and Mitigation Procedures

To minimize impacts on wetlands during construction, Guardian would implement the construction measures in our Procedures. These measures include, but are not limited to, the following:

- limit the width of the construction right-of-way to 75 feet in all wetlands;
- limit the amount of equipment and extra workspace in and adjacent to wetlands;
- in saturated wetlands where soils are unstable, use temporary work surfaces, such as timber mats or travel pads within wetlands to prevent soil compaction;
- limit the amount of grading in wetlands;
- segregate topsoil over the trench line when passing through unsaturated wetlands;
- restore wetland contours;
- install silt fencing and/or hay bales at the edges of the construction right-of-way in wetlands to prevent trench spoil from flowing into undisturbed areas;
- if the pipeline trench contains water, leave trench plugs in the trench where the trench enters and exits a wetland, until the trench is dewatered, which would be immediately before the pipe is installed;
- install permanent trench breakers, when necessary, where the trench enters and exits wetlands to maintain the hydrologic integrity of the wetland;

- locate ATWS areas at a minimum of 50 feet away from wetland boundaries, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land;
- implement Guardian's SPCC Plan (see appendix F) to minimize the potential for spills, and any impacts from spills, because inadvertent spills of fluids used during construction, such as fuels, lubricants, and solvents, could contaminate wetland soils and vegetation; and
- conduct follow-up monitoring to ensure each wetland becomes re-established successfully in accordance with Guardian's standard conditions and/or in accordance with protocols specified by the applicable permitting agencies.

Additionally, in farmed wetlands Guardian would construct the pipeline using standard upland methods. Most seasonally saturated farmed wetlands are used for crop production and topsoil would be segregated in the same manner as topsoil in upland agricultural lands. Pipe stringing and fabrication may occur within the farmed wetland adjacent to the trench, or adjacent to the farmed wetland in a designated ATWS.

In wetlands that are unsaturated at the time of construction, Guardian would also segregate topsoil from the trench line in order to protect its integrity and help preserve the seed bank. Segregating the topsoil should preserve the potential for natural revegetation of the right-of-way to its pre-construction plant community.

Guardian proposes to locate 29 ATWS closer than 50 feet of wetlands, in site-specific locations (see table 4.4.1.3-1 for list of all ATWS variances requested along the pipeline route in wetland areas and their justifications). We have reviewed these locations and have determined that the requests are acceptable.

Guardian proposes to use the HDD technique at the Rock River (MP 9.8). This technique would avoid impacts on a forested wetland, but impacts on the emergent component of the wetland (2.5 acres) are expected.

Jurisdictional wetland crossings would require pre-construction authorization from the WDNR and the COE. Guardian would coordinate with the WDNR and COE throughout the permitting processes to further refine crossing plans if necessary. Guardian would also coordinate with the Sovereign Oneida Nation of Wisconsin (Oneida Nation) for wetland permits/authorization, as appropriate. Guardian will also coordinate with the EPA regarding Section 401 permitting requirements on Oneida Nation Reservation lands. Guardian intends to submit its Section 404 permit application to the COE St. Paul District in the spring of 2007. Once the COE has reviewed the application and verified the wetland impacts, a jurisdictional determination for wetland impacts for the Project would be issued. Guardian would file a complete wetland delineation report before starting any construction in wetland areas.

Following construction and restoration to all the impacted wetlands, a wetland monitoring program would be conducted by Guardian in accordance with our Procedures, and/or in accordance with protocols specified by the applicable permitting agencies. We believe that this post-construction monitoring will facilitate the re-establishment of natural wetland communities, wherever possible, and would minimize the extent, magnitude, and duration of construction impacts.

TABLE 4.4.1.3-1

Additional Temporary Work Spaces Within 50 Feet of Wetlands

Facility MP	Wetland Identification	Reason/Justification
2.1	002W1	Road crossing at County Highway CW, space limitations presented by configuration of the road and forested land.
12.3	011W3	Rubicon River and wetland crossing, constraints associated with surrounding wetland, riparian, and forestland habitat.
12.4 a/	011W3	Road crossing at State Highway 60 and wetland crossing, space limitations presented by configuration of road, forested land, and wetland habitat.
16.1	016W1	Woodland Creek and wetland crossing, constraints associated with surrounding wetland, riparian, and forestland habitat.
32.3 b/	032W1	Kummel Creek crossing, constraints associated with adjacent riparian habitat.
37.9 c/	037W1	West Branch of the Milwaukee River crossing, constraints associated with surrounding wetland, riparian, and forestland habitat.
64.7	064W1	Unnamed creek crossing, space limitations associated with the surrounding habitat.
64.8	064W1	Unnamed creek crossing, space limitations associated with the surrounding habitat.
65.0	064W1	Unnamed ditch crossing, space limitations associated with the surrounding habitat.
69.8	069W2	Wetland crossing, constraints associated with surrounding wetland habitat.
70.1	069W2	Wetland crossing, constraints associated with the surrounding wetland habitat.
72.0	072W1	Unnamed ditch crossing, space limitations associated with the surrounding habitat.
73.4	073W2	Road crossing at Fargo Springs Road, space limitations associated with the surrounding habitat.
77.6 d/	077W2	North Branch of the Manitowoc River crossing, constraints associated with the surrounding riparian habitat.
93.3 e/	093W1	Fox River HDD Entry Site, constraints associated with the surrounding riparian habitat.
94.6	094W2	Ashwaubenon Creek crossing, constraints associated with the surrounding riparian habitat.
100.5	100W1	Road crossing at Fernando Drive, space limitations presented by configuration of the road.
101.9	101W4	Unnamed stream crossing, space limitations presented by configuration of road and steep topography and constraints associated with surrounding riparian habitat.
102.6 f/	101W4	Duck Creek crossing, constraints associated with the surrounding habitat.
105.3	105W1	Wetland crossing, constraints associated with the surrounding wetland habitat.
107.8 g/	107W8	Unnamed stream crossing, constraints associated with the surrounding riparian and forestland habitat.

a/ Construction activities at MP 12.4 would require that three ATWS be located within 50 feet of a wetland. Refer to appendix C for further details.

b/ Construction activities at MP 32.3 would require that two ATWS be located within 50 feet of a wetland. Refer to appendix C for further details.

c/ Construction activities at MP 37.9 would require that two ATWS be located within 50 feet of a wetland. Refer to appendix C for further details.

d/ Construction activities at MP 77.6 would require that two ATWS be located within 50 feet of a wetland. Refer to appendix C for further details.

e/ Construction activities at MP 93.3 would require that two ATWS be located within 50 feet of a wetland. Refer to appendix C for further details.

f/ Construction activities at MP 102.6 would require that two ATWS be located within 50 feet of a wetland. Refer to appendix C for further details.

g/ Construction activities at MP 107.8 would require that two ATWS be located within 50 feet of a wetland. Refer to appendix C for further details.

Guardian is currently in discussions with the WDNR and COE regarding mitigation for wetland impacts and the extent of function and value analysis that may be necessary to develop a mitigation plan. Based on these discussions, Guardian anticipates being required to mitigate for the permanent impacts on forested wetlands and plans to file with the Secretary of the Commission a copy of its wetland mitigation plan once available.

4.4.2 Upland Vegetation

Historically, the dominant vegetation in the vicinity of the proposed G-II pipeline route consisted of southern broadleaf forests in the southern portion of the state and northern mixed forests in the

northern half of the state. These two forest regions are separated by an area referred to as the Tension Zone. Forested areas within the Tension Zone consist of plant species that are found in both the northern and southern forests (WDNR, 2000). Currently, the vegetative cover types found along the G-II pipeline route reflect the intensive historical tree-clearing and agricultural activities and present-day agricultural practices in this part of the upper Midwest (WDNR, 2000). In recent years, residential and commercial developments have also become more widespread in the region. The southern broadleaf forest and northern mixed forest along the pipeline route have virtually been eliminated by conversion to cropland or other agricultural purposes. A few narrow strips and/or tracts of forested land may still be found along the proposed right-of-way, primarily on ridges and slopes; along property lines, roads and railroads; along streams, rivers and lakes; and in some wetland areas. Despite the loss of forest cover within the Tension Zone, the amount of forested lands in Wisconsin increased by 4.5 percent between 1983 and 2004 (table 4.4.2-1) (WDNR, 2006), and as of 2005, 16.1 million acres of forests were identified (Perry and Brand, 2006).

TABLE 4.4.2-1							
Forested Land Use in the Project Area							
Locale	Wisconsin				Proposed Project		
	Total Forested Acreage 1983	Total Forested Acreage 1996	Total Forested Acreage 2004	Change Since 1983	Percent of Project that Crosses Forest	Construction Impacts (ac) to Forested Lands <u>a/</u>	Operation Impacts (ac) to Forested Lands <u>a/</u>
Wisconsin	15,351,300	15,963,026	16,037,233	4.5%			
Brown	49,100	46,914	52,896	7.7%	0.4%	4.3	2.7
Calumet	25,100	17,618	27,807	10.8%	1.8%	19.1	12.0
Dodge	27,800	39,713	22,879	-17.7%	1.3%	13.8	8.7
Fond du Lac	35,100	33,194	29,705	-15.4%	0.6%	6.4	4.0
Jefferson	29,300	47,335	46,069	57.2%	0.3%	3.2	2.0
Outagamie	70,700	67,284	54,023	-23.6%	0.4%	4.3	2.7
Project Totals					4.8%	51.0	32.1

a/ Forested lands include upland and wetland forests.
Source: WDNR, 2006

4.4.2.1 Existing Vegetation Resources

Vegetative communities along the proposed G-II pipeline route were determined through review of aerial photography and field observation during wetland and waterbody surveys. The upland vegetative communities crossed by the proposed pipeline route and located at the proposed aboveground facilities consist of three primary types including agriculture, forest lands, and developed lands; the remaining vegetation types include non-forested wetlands and forested wetlands.

Agricultural areas include row crops (mainly corn, soybeans, and wheat), as well as hay and alfalfa fields, pasturelands, fallow fields, and uncultivated grasslands. Wooded areas along the pipeline route primarily consist of floodplain forests, wooded hedgerows, and small to medium tracts of upland forest, with hardwood tree species dominating both the southern broadleaf and northern mixed forest regions. Developed lands consist of maintained lawns and other lands associated with residential and commercial/industrial developments. The upland vegetative

cover types crossed by the proposed Project, as well as a listing of representative species, are described in table 4.4.2.1-1. Vegetation occurring in wetland habitat types that would be crossed by the proposed Project is discussed in section 4.4.1.1, and potential project effects on agricultural areas are discussed in section 4.7.

TABLE 4.4.2.1-1		
Upland Vegetation Cover Types Occurring Along the Proposed G-II Pipeline		
Vegetation Cover Type	General Description	Common Species
Agricultural	Row crops, small grains, alfalfa hay, uncultivated grasslands, idle and old fields and pastures.	<p><u>Crops</u> – Corn, soybeans, wheat, hay, alfalfa, small grains.</p> <p><u>Uncultivated lands</u> – smooth brome, timothy grass, red clover, Canada thistle, quackgrass, reed canary grass, goldenrods, milkweeds, fescues, blackberry, raspberry, honeysuckle, dogwoods, and willows.</p> <p><u>Old fields</u> – smooth brome, birdsfoot-trefoil, goldenrods, chicory, ragweed, wild carrot, and asters. Common woody shrub and young tree species include black raspberry, dogwoods, honeysuckle, sumacs, boxelder, mulberry, and silver maple. Scattered mature white oak or black oak are common in southern Wisconsin, while scattered red oak, pines and maples are common tree species in northern Wisconsin.</p> <p><u>Pasture</u> – foxtails, orchard grass, brome grasses, legumes.</p>
Upland Forest	Small to medium tracts of hardwood tree species of the southern broadleaf and northern mixed forest regions.	Canopy species include American basswood, bur oak, and red oak; understory consists of Morrow's honeysuckle, black raspberry, and northern prickly ash; vines include Virginia creeper and poison ivy.
Developed Land	Lawns and planted landscaping species associated with residential and commercial/industrial developments.	<p><u>Lawn</u> – Kentucky bluegrass, red fescue, and perennial rye.</p> <p><u>Landscaped areas</u> – planted tree and shrub species such as green and blue spruce, white cedar, ash, juniper, taxus, potentilla, spirea, and lilac.</p>

4.4.2.2 Vegetative Communities of Special Concern or Value

Vegetative Resources of Cultural Significance to the Oneida Nation

The Oneida Nation identified several vegetative species that have cultural significance, including wild bergamot, black ash, northern white cedar, and sweet flag. During wetland surveys, sweet flag and black ash were observed on tribal property within a wetland just north of Duck Creek (MP 10.8); the affected wetland area measured 0.10 acre. No other occurrences of these four species were identified on tribal lands in areas surveyed.

Unique, Sensitive and Protected Vegetation Communities

The Wisconsin Natural Heritage Inventory (NHI) did not identify any protected vegetative communities in the general vicinity of the G-II Pipeline. However, the proposed pipeline route would be located in proximity to a unique geologic feature known as the Niagara Escarpment (see section 4.7.5).

Noxious Weeds and Other Invasive Plants

Consultations with the FWS and WDNR identified a number of invasive plant species that could potentially occur in wetlands along the proposed G-II pipeline route. These species include purple loosestrife, common reed, reed canary grass, glossy buckthorn, and common buckthorn.

According to invasive plant species regulations at Wisconsin Statutes Chapter 23.22, invasive species are defined as non-indigenous species whose introduction causes or is likely to cause economic or environmental harm or harm to human health. Under this statutory scheme, the WDNR has established and implemented a statewide management program for the control of invasive species in the state. Nuisance weeds such as purple loosestrife, or hybrids thereof, and multiflora rose are regulated under Chapter 23.235 of the Wisconsin statutes. This regulation prohibits the sale, distribution, or cultivation of these species. Noxious weed regulations occur at Wisconsin Statute 66.0407 and define noxious weeds as Canada thistle, leafy spurge, and field bindweed, and any other weed a governing body of a municipality or county board declares to be noxious within its respective jurisdiction.

Based on consultations with townships, counties, and municipalities along the proposed pipeline route, it was determined that no township or county lists additional noxious weed species beyond those that are deemed noxious or invasive under the regulations described above. These consultations also indicated that in the absence of local, township, or county ordinances, the control and management of noxious weeds and invasive plants defaults to the state regulations described above.

Within Illinois, noxious weed laws occur at 8 Illinois Administrative Code 220 and Illinois Compiled Statutes, Chapter 50, Part 100/1 et seq. The governing body of each county is the Control Authority, and it is the duty of the Control Authority to carry out the duties and responsibilities set forth in these regulations. The Control Authority is responsible for enforcing the state regulations, as well as developing a program for the control and eradication of noxious weeds within its county boundaries.

Within DeKalb County, Illinois the Department of Environmental Health handles noxious weeds and other invasive plant species on a “complaint basis” only within the county. Because of the absence of local and/or county ordinances, DeKalb County defers to the state regulations identified above.

4.4.2.3 General Impacts and Mitigation

The primary impact of the proposed Project on vegetative cover types would be the clearing and removal of vegetation that occurs along the proposed route or at the aboveground facility sites during construction. The duration and severity of these impacts depend on the type and amount of vegetation that would be affected, the rate at which the vegetation would regenerate after construction, and the frequency of vegetation maintenance that would be conducted during operation of the proposed project facilities.

Most impacts would be short-term, such as temporary loss of plants on the construction right-of-way and other work areas from the cutting, clearing, and/or removal of existing vegetation. Because the Project proposes to actively revegetate disturbed areas (except those covered by active row cropping), annual and perennial herbaceous species would be expected to rapidly re-establish on or colonize the construction right-of-way. Thus, it is anticipated that herbaceous vegetative cover would typically return to areas disturbed by construction within one growing season after restoration is completed.

Clearing of forest and/or woodland vegetation within the construction right-of-way would result in long-term environmental change. As indicated in table 4.4.2-1, forest cover as a whole

increased in Wisconsin from 1983 to 2004; however, individual counties experienced gains or losses of forest cover (WDNR, 2006) during that time. Clearing would result in increased soil erosion, elevated soil temperatures, and permanent or temporary loss and alteration of wildlife habitat. Clearing would also affect existing forest vegetation growing along the edges of the cleared areas. By exposing some edge trees to elevated levels of sunlight and wind, evaporation rates and the probability of wind throws would increase. Because of the increased light levels penetrating the previously shaded interior, shade intolerant species will be able to grow, resulting in a change in species composition of the newly created forest edge. The proposed clearing would also temporarily reduce local competition for available soil moisture and light and may allow some early successional species to become established and persist on the edge of newly cleared areas adjacent to the right-of-way.

To minimize construction-related effects, Guardian would implement the standard measures for pipeline construction in our Plan. The intent of the measures in our Plan is to identify baseline mitigation measures for minimizing erosion and enhancing revegetation in upland areas. Implementation of these measures would aid vegetative restoration and prevent or minimize sedimentation and turbidity in streams and wetlands. Some of the restoration and BMPs identified in our Plan include the following:

- use of at least one environmental inspector per construction spread, who will ensure compliance with our Plan and Procedures, and other required conditions;
- segregation of topsoil;
- installation of temporary erosion control measures such as slope breakers, sediment barriers, and mulch;
- commencement of cleanup immediately after backfilling, and completion of restoration within 20 days;
- installation of permanent erosion control devices such as trench breakers and slope breakers;
- testing and mitigation for soil compaction;
- revegetation in accordance with the recommendations of the local soil conservation authority, other land management agencies, or the affected owner;
- provision of barriers to control off-road vehicle activities; and
- post-construction monitoring and maintenance of revegetated areas.

In the absence of other specific requirements, Guardian would employ industry standards and proven technology to revegetate disturbed areas as recommended in our Plan and Procedures. Timely restoration of the construction right-of-way and reseeding with an appropriate seed mix would minimize the duration of vegetative disturbance.

To maximize the revegetation potential, Guardian would implement general and, where necessary, site-specific restoration measures which include:

- preservation of topsoil, native seed sources, and root stock;
- preparation of an adequate seedbed, including decompaction;
- use of seed mixes compatible with the native vegetation community and soil conditions;
- careful monitoring of the seeding rate; and
- mulching high erosion potential areas.

4.4.2.4 Site-Specific Impacts and Mitigation

Guardian's proposed pipeline installation, access roads, and extra work spaces would affect a total area of 1,589.2 acres of upland vegetation during construction and 701.4 acres during operation (see table 4.4.2.4-1). Approximately 1,465.5 acres of agricultural lands would be affected during construction, and 629.1 acres would be affected during operation of the proposed Project. Construction and operation of the proposed Project would affect 65.9 and 35.8 acres, respectively, of open lands. Approximately 51.0 acres of forested lands would be affected by construction and 32.1 acres would be affected by operation of the proposed Project. Of the remaining vegetated uplands, about 6.8 and 4.4 acres of developed land would be affected by construction and operation, respectively. As discussed, most areas would be revegetated in one growing season, but impacts on forest and areas associated with aboveground facilities would result in permanent loss or conversion of vegetation community types.

In order to minimize the extent of disturbance on woody vegetation, Guardian has proposed to locate the proposed pipeline primarily in open land and agricultural areas where woody vegetation is not present. Additionally, to the extent practicable, the pipeline route would be located adjacent to existing pipeline and utility corridors to reduce the amount of woody vegetation that would need to be cleared for construction. To further reduce impacts on forested areas, Guardian would limit the width of the construction corridor to 75 feet in upland forest areas. Routine vegetation maintenance following construction would be performed in accordance with our Plan. Of the 51.0 acres of forested lands that would be affected by construction of the proposed Pipeline, 18.9 acres would be allowed to revegetate to pre-construction conditions, and the remaining 32.1 acres would be permanently converted to non-forested lands.

TABLE 4.4.2.4-1								
Acres of Upland Vegetation Types Affected by Construction and Operation of the Proposed G-II Project ^{a/}								
Facility	Agriculture		Open Land ^{c/}		Forest ^{d/}		Developed Land ^{e/}	
	Con. ^{a/}	Op. ^{b/}	Con. ^{a/}	Op. ^{b/}	Con. ^{a/}	Op. ^{b/}	Con. ^{a/}	Op. ^{b/}
Pipeline Totals ^{f/}	1,263.9	629.1	54.5	35.8	47.9	32.1	6.8	4.4
Additional Temporary Workspace Areas Total	161.8	0.0	11.4	0.0	3.1	0.0	0.0	0.0
Pipe Storage and Contractor Yard Totals	27.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Access Road Totals ^{g/}	12.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Project Totals	1,465.5	629.1	65.9	35.8	51.0	32.1	6.8	4.4
^{a/} Con. = Construction. Op. = Operation. Based on a 110-foot construction right-of-way for the 30-inch pipeline and an 80-foot-wide construction right-of-way for the 20-inch pipeline except for a 75-foot right-of-way in wetlands and upland forests. Does not include developed, commercial land, open water, or other areas that do not exhibit vegetative characteristics. Does not include aboveground facilities. ^{b/} No permanent impacts will occur as part of pipeline construction as vegetation will be allowed to revert to pre-construction conditions with the exception of areas required for permanent aboveground facilities; forested areas will be maintained in accordance with our Plan and Procedures. ^{c/} Open Land includes non-forested wetlands, emergent marshes, scrub-shrub wetlands, and other non-agricultural open land. ^{d/} Values indicate impacts on non-agricultural upland and wetland forest types. ^{e/} Residential, Industrial and Commercial land uses. ^{f/} Pipeline Totals include Aboveground Facilities which would affect 48.0 acres and 38.6 acres of agricultural lands, respectively. ^{g/} Operation-related impacts from access roads are listed in section 2.2.3.2 in table 2.2.3.2-1.								

The forest patches along the proposed G-II pipeline route are relatively small and generally not large enough to support many forest-interior bird species. The majority of forested land along the G-II pipeline route consists of small- to medium-sized woodlots, hedgerows, and floodplain forests, most of which are not connected to larger forested areas and are well dispersed along the G-II pipeline route. Guardian routed the pipeline, to the maximum extent practicable, to avoid forested areas and collocated with existing utility and road corridors to further reduce impacts on forested lands. The four largest areas of forest land crossed by the pipeline route include:

- the Rock River floodplain (MP 9.8);
- an area along a power line corridor (MP 74);
- along an existing ANR pipeline corridor (MP 80.5); and
- Plum Creek corridor (MP 85.4).

Impacts on the forested floodplain along the Rock River would be avoided by using HDD technology to cross this area. Impacts on the remaining forested areas would be minimized because the pipeline would be adjacent to an existing utility right-of-way where it would cross the forested areas at MPs 74.0 and 80.5, and would cross Plum Creek at its narrowest location.

Although Guardian does not plan to replace trees removed from upland areas during construction, Guardian would compensate landowners for the loss of merchantable timber. Following construction, non-cropland disturbed by construction would be revegetated with appropriate seed mixes, and/or stabilized with temporary cover and allowed to revert naturally to pre-construction conditions. It is anticipated that trees removed from the temporary right-of-way would rapidly re-establish through natural regeneration.

The construction of Guardian's proposed aboveground facilities would involve the removal of 48.0 acres of non-forested vegetation (agricultural fields, row crops, and pasture vegetation), resulting in the permanent loss of 38.6 acres of vegetative communities. No forested areas would be permanently replaced by aboveground facilities. The compressor station sites, meter stations, and MLVs would be fenced and converted to graveled and/or paved areas, or buildings, thereby permanently displacing the existing vegetative cover. Impacts on vegetation from construction and operation of the proposed aboveground facilities are summarized in table 4.4.2.4-1.

Guardian proposes to use 24 access roads. A total of 12.2 acres of agricultural lands would be affected by construction of access roads (see table 4.4.2.4-1). Of this total, about 1.8 acres would be retained as permanent access roads (this acreage of converted land from permanent access roads has been included in the impact for the associated aboveground facility).

4.4.2.5 Vegetation Communities of Special Concern or Value

Unique, Sensitive, and Protected Vegetation Communities

The NHI did not identify any protected vegetative communities that occur in the general vicinity of the G-II pipeline. In addition, field investigations conducted by Guardian and consultations with the WDNR and FWS indicate that the construction and operation of the Project would not affect the unique vegetation communities known to be associated with the Niagara Escarpment.

Noxious Weeds and Other Invasive Plants

Vegetation removal and soil disturbance during construction could create optimal conditions for the establishment of invasive, non-native plant and noxious weed species. Construction equipment traveling from weed- and invasive plant-infested areas into weed-free areas could disperse invasive plant and noxious weed seeds and propagates, resulting in the establishment of undesirable vegetation in previously weed-free areas.

Guardian has included the potential invasive wetland plants in its plant species lists during wetland delineations. The presence and relative abundance of these plants has been recorded and would be used to assess the potential for spreading these invasive plants from wetlands containing a high abundance of invasive species to wetlands with low abundance or no invasive plant species. In addition, Guardian is consulting with the NRCS to determine whether upland weed species, other than those listed in Wisconsin state statutes, should be included in Guardian's weed management planning.

Guardian would prepare a Noxious Weed Management Plan that incorporates details regarding known occurrences of noxious weeds along the proposed pipeline alignment, current treatment of known noxious weed areas, and mitigation measures that Guardian would implement to minimize the spread and establishment of noxious weed species. Guardian would file its Noxious Weed Management Plan with the FERC prior to construction.

In Illinois, the spread of noxious weeds and other invasive plants as a result of construction of the Sycamore Compressor Station is unlikely because the compressor station would be built in a single location and would not involve the movement of construction vehicles from one location to another along a construction right-of-way, which could potentially spread noxious weeds and invasive plants to non-infested areas.

4.5 WILDLIFE AND AQUATIC RESOURCES

4.5.1 Wildlife

There are several general habitat types affected by the G-II pipeline, including agricultural land, open land, forested land, open water, and developed areas. The following subsections describe each of these habitat types and the potential effects of the Project on the associated terrestrial wildlife species. Sensitive wildlife habitats and wildlife management areas and wildlife resources of cultural significance to the Oneida Nation are also described. Table 4.5.1-1 lists the representative species along the pipeline route by habitat type.

Agricultural Land

The majority of the proposed pipeline route would cross agricultural land and pasture/rangeland (approximately 89 percent). These habitats have generally been significantly altered from their original vegetation community structures and replaced with crop production and livestock grazing. Typically, large croplands tend to support relatively low wildlife diversity. Croplands do, however, play an important role in providing cover and a source of food for a variety of game species such as white-tailed deer, ring-necked pheasant, and migrating waterfowl such as ducks and geese (see table 4.5.1-1). Other species, generally those that are tolerant of disturbances, and habitat generalists are also common in these landscapes, which supply some of their life requirements.

TABLE 4.5.1-1

Representative Wildlife Species within Existing Vegetation Types ^{a/}

Habitat Type	Representative Species	Habitat Type	Representative Species
Agricultural Land	Deer mouse (<i>Peromyscus manicula</i>) Meadow vole (<i>Microtus pennsylvanicus</i>) Woodchuck (<i>Marmota monax</i>) Eastern cottontail rabbit (<i>Sylvilagus floridanus</i>) Virginia opossum (<i>Didelphis virginiana</i>) Striped skunk (<i>Mephitis mephitis</i>) Red fox (<i>Vulpes vulpes</i>) Coyote (<i>Canis latrans</i>) White-tailed deer (<i>Odocoileus virginianus</i>) American goldfinch (<i>Carduelis tristis</i>) Eastern meadowlark (<i>Sturnella magna</i>) Dickcissel (<i>Spiza americana</i>) Red-winged blackbird (<i>Agelaius phoeniceus</i>) Ring-necked pheasant (<i>Phasianus colchicus</i>) Snow goose (<i>Chen caerulescens</i>)	Open Water/Aquatic Habitats	Great blue heron (<i>Ardia herodias</i>) Common muskrat (<i>Ondatra zibethicus</i>) Great egret (<i>Ardea alba</i>) Mink (<i>Mustela vison</i>) Snapping turtle (<i>Chelydra serpentina</i>) Green frog (<i>Rana clamitans</i>) Canada goose (<i>Branta canadensis</i>) Beaver (<i>Castor canadensis</i>) Green heron (<i>Butorides virescens</i>) American bittern (<i>Botaurus lentiginosus</i>) Mallard (<i>Anas platyrhynchos</i>) Northern shoveler (<i>Anas clypeata</i>) Greater yellowlegs (<i>Tringa melanoleuca</i>) Black-bellied plover (<i>Pluvialis squatarola</i>)
Non-forested Wetland/ Open Land	Common snipe (<i>Gallinago gallinago</i>) Sedge wren (<i>Cistothorus platensis</i>) Mink (<i>Mustela vison</i>) Northern harrier (<i>Circus cyaneus</i>) Mallard (<i>Anas platyrhynchos</i>) Green frog (<i>Rana clamitans</i>) Sora (<i>Porzana carolina</i>) Common muskrat (<i>Ondatra zibethicus</i>) Raccoon (<i>Procyon lotor</i>)	Forested Wetlands/ Floodplain Forests	Wood duck (<i>Aix sponsa</i>) Beaver (<i>Castor canadensis</i>) River otter (<i>Lutra canadensis</i>) Wood thrush (<i>Hylocichla mustelina</i>) Barred owl (<i>Strix varia</i>) White-tailed deer (<i>Odocoileus virginianus</i>) Mink (<i>Mustela vison</i>) Yellow warbler (<i>Dendroica petechia</i>)
Southern Broadleaf Forest	White-tailed deer (<i>Odocoileus virginianus</i>) Raccoon (<i>Procyon lotor</i>) Gray squirrel (<i>Sciurus carolinensis</i>) Wild turkey (<i>Meleagris gallopavo</i>) American toad (<i>Bufo americanus</i>) Tiger salamander (<i>Ambystoma tigrinum</i>) Eastern garter snake (<i>Thamnophis sirtalis sirtalis</i>) Red fox (<i>Vulpes vulpes</i>) Red squirrel (<i>Tamiasciurus hudsonicus</i>) Sharp-shinned hawk (<i>Accipiter striatus</i>)	Developed Land	Raccoon (<i>Procyon lotor</i>) Gray squirrel (<i>Sciurus carolinensis</i>) Blue jay (<i>Cyanocitta cristata</i>) Mourning dove (<i>Zenaidura macroura</i>) European starling (<i>Sturnus vulgaris</i>) American robin (<i>Turdus migratorius</i>) Chipping sparrow (<i>Spizella passerine</i>) Common grackle (<i>Quiscalus quiscula</i>) American crow (<i>Corvus brachyrhynchos</i>)
Northern Mixed Forests	Ruffed grouse (<i>Bonasa umbellus</i>) Black bear (<i>Ursus americanus</i>) American beaver (<i>Castor canadensis</i>) Eastern chipmunk (<i>Tamias striatus</i>) Broad-winged hawk (<i>Buteo platypterus</i>) Veery (<i>Catharus fuscescens</i>) Red-eyed vireo (<i>Vireo olivaceus</i>) Leopard frog (<i>Rana pipiens</i>) Pileated woodpecker (<i>Dryocopus pileatus</i>) Raccoon (<i>Procyon lotor</i>) Red squirrel (<i>Tamiasciurus hudsonicus</i>) Black-capped chickadee (<i>Poecile atricapilla</i>)		

^{a/} Sources: WDNR, 2000; Kurta, 1995; Wisconsin Breeding Bird Atlas, 2002

Other open areas such as uncultivated grasslands, pasture, hayfields, and old fields support a greater diversity of herbaceous and low-growing woody vegetation, which offers more suitable habitat for wildlife. These open areas can sustain populations of small mammals, including mice and meadow vole; larger herbivorous mammals including deer, woodchuck, and eastern cottontail rabbit; several larger omnivorous and carnivorous mammals such as raccoon, Virginia opossum, striped skunk, and red fox; as well as a variety of birds, including American goldfinch, European starling, eastern meadowlark, dickcissel, red-winged blackbird, and various sparrow species (both native and introduced). Open areas, both cultivated and uncultivated, that are

bordered by woodland habitat or that contain fence or hedge rows, tend to have a greater species diversity because these provide cover, food sources, and other features, which provide foraging, nesting, and roosting opportunities.

Open Land

Open lands include non-agricultural open and scrub-shrub fields and wetlands, emergent wetlands, and Conservation Reserve Program (CRP) lands. Approximately 5.3 percent of the pipeline route crosses non-forested wetland habitats (emergent and scrub-shrub). For a detailed description and discussion of wetlands, see section 4.4.1. Non-forested wetlands and marshes are associated with perennial and intermittent streams and isolated, depressional, and often perched wetlands that are seasonally flooded. These wetland areas may provide more abundant plant seeds and invertebrates that make them attractive feeding and resting areas for migrating waterfowl and shorebirds. In the spring, when seasonal flooding occurs, depressional wetlands are used as pairing ponds by ducks, and provide an abundant food source of invertebrates for egg-laying hens. In addition, the lack of fish and other predators in seasonally flooded areas improves breeding success for a variety of reptile and amphibian species (Harding, 1997). Non-forested wetlands also support a diversity of herbaceous and low growing woody vegetation, well suited to provide habitat for species such as common snipe, sedge wren, white-tailed deer, eastern cottontail, mink, and waterfowl. Marshes, which are characterized by emergent aquatic plants growing in permanent to seasonal shallow water, attract waterfowl, shorebirds, rails, and wading birds, as well as reptiles and amphibians. These birds use marshes for breeding and feeding. Raptors, such as the northern harrier, also favor marshes when searching for prey.

Forested Land

Approximately 4.8 percent of the pipeline would cross forested habitat, which include uplands and forested wetlands. Upland forests along the pipeline route include both southern broadleaf and northern mixed forests. The nuts from trees such as oaks and hickories provide food for deer, turkeys, mice, and squirrels. Berries from understory shrubs and woody vines may also provide an important source of food for wildlife. Secondary canopy shrubs and saplings, brush piles, and fallen logs provide cover for various small to medium-sized mammals. Large standing dead trees with cavities and peeling bark provide nesting or roosting sites for a variety of birds, bats, and mammal species, as well as foraging opportunities for birds such as woodpeckers, brown creepers, and nuthatches. Forested areas provide important habitat for warblers and other migrating and nesting neo-tropical migrant songbirds.

Forested wetland areas are typically dominated by mature lowland deciduous hardwood species and, generally, they are associated with ancient lake basins, glacial melt water features (such as kettles), and former river channels and oxbow lakes. Wooded swamps and forested wetlands retain storm and floodwaters and provide important wildlife habitat for many species including game mammals and birds, furbearing animals, neo-tropical migrant songbirds, ruffed grouse, wood duck, barred owl, as well as reptiles and amphibians. Floodplain forest wetlands can support wildlife species that may not typically be found in adjacent wooded upland habitat, although some species use both wetland and upland habitats at different times of the year. They provide nesting/denning spaces, food, cover, and water for a variety of wildlife including deer, furbearing mammals, songbirds, herons, owls, reptiles, and amphibians. Several native songbird species, such as the yellow warbler and wood thrush, prefer swamp wetlands and floodplain

forests. Typically, floodplain forests also have a greater seasonal diversity of plant and animal species because they serve as migration corridors for many wildlife species.

Open Water

Open water habitats include streams, rivers, and ponds. Only a small portion of the pipeline route (0.2 percent) would cross open water habitats. Some mammal and bird species are dependent on open water habitats for food and cover including beaver, muskrat, egrets, and herons, as are fish, amphibians, and some reptiles, as well as invertebrates.

Developed Land

Developed lands, which include residential, commercial, and industrial areas, are not considered high quality habitat for wildlife. However, they do provide supplemental habitat for many adaptable species, such as Canada geese, depending on their management. Approximately 0.7 percent of the land that would be crossed by the pipeline is classified as developed land. Typical wildlife species found in developed lands are summarized on table 4.5.1-1. Many of these animals are adaptable, opportunistic species, which may inhabit many of the other habitat types described, but have thrived in developed lands.

Sensitive Wildlife Habitats and Wildlife Management Areas

No designated sensitive wildlife habitats or designated Wildlife Management Areas would be crossed by the proposed G-II pipeline route. However, the proposed G-II pipeline route is near the Niagara Escarpment, a unique geologic feature that provides habitat for a number of wildlife and plant species (see additional discussion in section 4.7.5.1).

Wildlife Resources of Cultural Significance to the Oneida Nation of Wisconsin

The Oneida Nation regards the black bear and the wolf as wildlife species that have strong cultural significance. The black bear has been reported within the Oneida Reservation, and there are unconfirmed sightings of the wolf.

4.5.1.1 Potential Project Impacts and Mitigation Measures

Wildlife Resources

The impact on wildlife and wildlife habitats resulting from construction of the proposed Project would vary depending on the location, time of year, and type of construction. The particular species present within the project area during the time of construction would also contribute to the expected project impacts. In general, impacts on terrestrial wildlife would be short-term and minimal because most terrestrial species would be able to temporarily relocate to similar habitats adjacent to the project right-of-way during construction. Some of the smaller, less mobile species, such as small mammals, amphibians and reptiles, would be killed by clearing, grading, and trenching activities.

A potential long-term impact on wildlife results from the clearing of forest vegetation. Approximately 51.0 acres of forested land (3.3 percent) would be affected during construction. A total of 32.1 acres (2.0 percent) would be retained as permanent right-of-way following construction. The remaining 18.9 acres of forest within the right-of-way would be allowed to revegetate, and is likely to eventually return to its preconstruction forest composition (which may be accelerated by active management). Guardian has routed the pipeline to avoid or minimize

clearing existing forested areas by following forest edges or previously cleared rights-of-way to the maximum extent practicable. In addition, Guardian would limit its construction workspace in upland and wetland forest areas to 75 feet.

Forest clearing in riparian areas may favor the establishment of scrub-shrub swamp, marsh, and open land habitats that would otherwise be forested. Because riparian areas tend to be more dynamic and variable due to seasonal flooding, channel shifts, and beaver activity, the effect of tree clearing on wildlife would likely be less than in a more stable ecosystem. Tree clearing in these riparian areas within the right-of-way may affect wildlife diversity by creating and maintaining a different type of non-cultivated vegetative community (i.e., marsh and scrub-shrub habitats) that may support other wildlife species in a landscape that is dominated by cultivated row crops. However, this could still reduce the overall quality of the landscape by reducing the total amount of woodland habitat available, and reducing the quality of the remaining habitat by increasing the amount of edge. In addition, clearing of forested land in riparian areas may reduce or cut off wildlife corridors that provide a link to neighboring forests. Many wildlife species use riparian habitats for food and cover as they move from location to location, and clearing of these areas may cause wildlife to abandon them in order to locate to undisturbed areas.

Construction and operation of the proposed Project is not likely to significantly affect the black bear or timber wolf within the Oneida Reservation. The black bear requires large tracts of forested land with suitable vegetation, cover, and denning trees for breeding. The pipeline does not cross any large expanses of forested land on this land, but rather is sited, to the extent practicable, through non-forested areas and along power lines and roads with existing cleared rights-of-way, thus reducing the amount of tree clearing necessary to install the pipeline. Any black bear present in the project area, are likely to avoid the construction site when operations are proceeding. Black bears are most common in the northern forests of Wisconsin and only occasionally found along the proposed pipeline route through the Oneida Reservation (WDNR, 2004a). Guardian anticipates that construction of the pipeline through the Oneida Reservation would occur no earlier than May, but potentially as late as August. This would be after the winter denning period and the birth of black bear cubs (late January or early February). Sightings of black bears in southern Wisconsin are typically of sub-adults that have been forced out of the breeding territories in the northern forests in search of new habitat (WDNR, 2004a). Bears that occur in the project area during the summer months would be expected to move north to breed and because of the increasing level of other human activity along the northern portion of the pipeline route, black bears have been pushed northward into less developed regions of the state (WDNR, 2004a).

According to the WDNR's Timber Wolf Distribution Map, known wolf pack territories are generally found only in the extreme northern areas of Wisconsin, and a small area of north-central Wisconsin (WDNR, 2006d). Both of these areas are far away from the pipeline route within the Oneida Reservation. Construction and operation of the proposed pipeline would not affect the timber wolf packs because of this distance. Guardian reported no sightings of black bear or timber wolf during its 2006 field surveys within the Oneida Nation lands. Guardian would report any sightings of these species on the Oneida Nation lands during future field surveys, and if necessary, consult with the Oneida Nation in order to minimize any potential impacts on this wildlife species of cultural significance.

Avian Resources

The clearing of forest habitat for the pipeline right-of-way may contribute to forest fragmentation. Forest fragmentation has been shown to reduce neotropical migrant bird use of forests adjacent to corridors 50 to 75 feet in width (Rich et al., 1994). However, much of the woodland habitat in the project area, however, has already been fragmented by agriculture, existing utility corridors, and other developments. Very few species occurring in the project area prefer large tracts of unbroken forests. Nearly all of them are well adapted to edge or open habitats; therefore, although right-of-way clearing would have a long-term impact on forest vegetation, the effect on wildlife would be incremental and is not expected to be significant in most locations along the route.

Construction of the pipeline would occur during the nesting season of some migratory birds, which may have an impact on nesting success during the period of construction and restoration. A list of the more common migratory bird species that may potentially nest in forested or grassland habitats along the pipeline route are summarized in table 4.5.1.1-1.

TABLE 4.5.1.1-1			
Subset of Migratory Nesting Bird Species that Could Potentially be Affected by the Proposed Project			
Species	Scientific Name	Species	Scientific Name
Wood Duck	<i>Aix sponsa</i>	Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>
Mallard	<i>Anas platyrhynchos</i>	Wood Thrush	<i>Hylocichla mustelina</i>
Great Blue Heron	<i>Ardea herodias</i>	American Robin	<i>Turdus migratorius</i>
Great Egret	<i>Ardea alba</i>	Gray Catbird	<i>Dumetella carolinensis</i>
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Cedar Waxwing	<i>Bombicilla cedrorum</i>
Northern Harrier	<i>Circus cyaneus</i>	Blue-winged Warbler	<i>Vermivora pinus</i>
Cooper's Hawk	<i>Accipiter cooperii</i>	Yellow Warbler	<i>Dendroica petechia</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>	Black-throated Blue Warbler	<i>Dendroica caerulescens</i>
American Kestrel	<i>Falco sparverius</i>	Cerulean Warbler	<i>Dendroica caerulea</i>
Sora	<i>Porzana carolina</i>	Prothonotary Warbler	<i>Protonotaria citrea</i>
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Ovenbird	<i>Seiurus aurocapillus</i>
Mourning Dove	<i>Zenaidura macroura</i>	Common Yellowthroat	<i>Geothlypis trichas</i>
Belted Kingfisher	<i>Ceryle alcyon</i>	Scarlet Tanager	<i>Piranga olivacea</i>
Easter Wood-Pewee	<i>Contopus virens</i>	Eastern Towhee	<i>Pipilo erythrophthalmus</i>
Eastern Phoebe	<i>Sayornis phoebe</i>	Chipping Sparrow	<i>Spizella passerina</i>
Great-crested Flycatcher	<i>Myiarchus crinitus</i>	Vesper Sparrow	<i>Poocetes gramineus</i>
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Savannah Sparrow	<i>Passerculus sandwichensis</i>
Warbling Vireo	<i>Vireo gilvus</i>	Rose-breasted Grosbeak	<i>Pheucticus ludovicianus</i>
Red-eyed Vireo	<i>Vireo olivaceus</i>	Indigo Bunting	<i>Passerina cyaneus</i>
House Wren	<i>Troglodytes troglodytes</i>	Dickcissel	<i>Spiza americana</i>
Sedge Wren	<i>Cistothorus platensis</i>	Eastern Meadowlark	<i>Sturnella magna</i>
Eastern Bluebird	<i>Sialia sialis</i>	Baltimore Oriole	<i>Icterus galbula</i>

The potential impacts on nesting migratory birds include forest fragmentation, which could lead to the loss of forest habitat and opening the way to edge species such as nest parasites; temporary removal of vegetation in grassland habitats, which could cause grassland nesting bird species to relocate to other suitable habitat; and the noise and vibrations during construction that may disturb nesting birds. Guardian proposes to use HDD to cross the riparian floodplain habitats of the Rock River at MP 9.8 and the Fox River at MP 93.0. The use of this method would reduce the possible impacts on nesting birds, by avoiding the need to cut down trees that may be used by forest-dwelling species for nesting; however, the noise of construction can still be a potential impact on nesting birds when using this method. Woody vegetation on the west side of the Fox River had recently been cleared, most likely for power-line right-of-way maintenance in late 2006. Grasslands affected by construction would generally be restored to pre-construction conditions following construction.

Project construction, specifically the clearing of vegetation, could impact approximately 1,587.2 acres of land classified as agricultural, open land, forested land, developed land, and open water. During operation of the Project, approximately 664.2 acres of these land classes would be affected (for a more detailed analysis of land use classifications, see section 4.7). These impacts affect habitat suitable for use by migratory birds protected under the Migratory Bird Treaty Act of 1918. The Migratory Bird Treaty Act implements various treaties and conventions for the protection of migratory birds, and makes taking, killing, or possessing migratory birds unlawful. In order to minimize impacts on migratory birds during operation of the Project, in accordance with our Plan, Guardian would not conduct routine vegetation maintenance more frequently than once every 3 years (with the exception of a 10-foot-wide corridor centered over the pipeline that may be maintained annually if necessary), and that routine vegetation maintenance would not occur between April 15 and August 1 of any year.

Aboveground Facilities

There are no anticipated pipeline-related impacts on wildlife from the construction of the Sycamore Compressor Station in DeKalb County, Illinois. Construction of the Bluff Creek Compressor Station in Wisconsin is expected to have minimal impacts on wildlife. A relatively small amount of land would be converted from agricultural to industrial land use at these facilities; approximate impacts for these compressor stations are 12.5 acres and 20 acres, respectively. Both compressor station sites are in active agricultural fields, with very little habitat quality. The two compressor station sites are surrounded by large (1 square mile or more) areas of similar agricultural habitat. Existing wildlife can readily move to other, nearby locations with suitable similar habitat during construction. Neither of the proposed compressor station sites have been designated as sensitive wildlife habitats by the WDNR or the Illinois Department of Natural Resources (IDNR). Guardian received concurrence of “no effect” from the FWS, Rock Island, Illinois District as well as from the IDNR regarding the proposed Sycamore Compressor Station location. There are no occurrences of listed species from the NHI database at the Bluff Creek Compressor Station in Wisconsin. Based on these factors, construction and operation of the proposed aboveground facilities would result in minimal impact to wildlife. In addition, there are seven other aboveground facilities, with construction impacts ranging from 0.6 to 1.4 acres and operation impacts ranging from 0.5 to 1.1 acres. All of these aboveground facilities are sited in areas of agricultural land use. Construction and operation of these aboveground facilities would also result in minimal impact to wildlife.

4.5.2 Aquatic Resources

4.5.2.1 Existing Aquatic Resources

The proposed G-II Project would cross 111 waterbodies, including 29 perennial streams, 80 intermittent streams, one fluctuating stream, and one pond. Appendix I to this EIS identifies the waterbodies crossed by the proposed Project, as well as their width, location along the proposed route, state waterbody classification, and proposed crossing method. Waterbodies crossed by the proposed Project are discussed in more detail in section 4.3.2.

The majority of the perennial waterbodies crossed by the G-II Project provide habitat for a variety of warm water fish communities composed of sport fish, rough fish, and forage minnows. One waterbody, Stony Brook (MP 66.8), provides habitat for a coldwater trout community. Table 4.5.2.1-1 provides a list of commonly occurring fish species in the streams along the proposed project route.

TABLE 4.5.2.1-1					
Representative Fish Species in Warm Water and Cold Water Fisheries Along the G-II Pipeline Route					
Sport Fish		Rough Fish		Forage Minnows	
Common Name	Scientific Name	Common Name	Scientific Name	Common Name	Scientific Name
Black Crappie	<i>Pomoxis nigromaculatus</i>	Bowfin	<i>Amia calva</i>	Brassy Minnow	<i>Hybognathus hankinsoni</i>
Bluegill	<i>Lepomis macrochirus</i>	Black Bullhead	<i>Ameiurus melas</i>	Johnny Darter	<i>Etheostoma nigrum</i>
Longear sunfish	<i>Lepomis megalotis</i>	Carp	<i>Cyprinus carpio</i>	Stoneroller	<i>Campostoma anomalum</i>
Orange spotted sunfish	<i>Lepomis humilis</i>	Longnose Gar	<i>Lepisosteus osseus</i>	Mottled Sculpin	<i>Cottus bairdii</i>
Pumpkinseed	<i>Lepomis gibbosus</i>	White Sucker	<i>Catostomus commersoni</i>	Spotfin Shiner	<i>Cyprinella spiloptera</i>
Walleye	<i>Stizostedion vitreum</i>			Brook Stickleback	<i>Culaea inconstans</i>
Channel Catfish	<i>Ictalurus punctatus</i>				
Largemouth Bass	<i>Micropterus salmoides</i>				
Smallmouth Bass	<i>Micropterus dolomieu</i>				
Northern Pike	<i>Esox lucius</i>				
Rock Bass	<i>Ambloplites rupestris</i>				
Brook Trout	<i>Salvelinus fontinalis</i>				
Rainbow Trout	<i>Oncorhynchus mykiss</i>				

Source: Becker, 1983

Waterbodies in the project area are classified into one of the following fishery types (WDNR, 2004b):

- **Cold Water Communities (CW):** includes surface waters capable of supporting a community of cold water fish and other aquatic life or serving as a spawning area for cold water fish species. For management purposes, cold water communities are further assigned to one of three classes (WDNR, 2002a; 2004b):

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- Class I—Waters having sufficient natural reproduction to sustain populations of wild trout, at or near carrying capacity. These streams require no stocking of hatchery trout;
 - Class II—Waters having some natural trout reproduction but not enough to utilize available food and space. Stocking is required to maintain a desirable sport fishery; and
 - Class III—Waters that are marginal trout habitat with no natural reproduction occurring. These streams require annual stocking of trout to provide trout fishing.
- **Warm Water Sport Fish Communities (WWSF):** includes surface waters capable of supporting a community of warm water sport fish or serving as a spawning area for warm water sport fish.
 - **Warm Water Forage Fish Communities (WWFF):** includes surface waters capable of supporting an abundant diverse community of forage fish and other aquatic life.
 - **Limited Forage Fish Communities (LFF):** includes surface waters of limited capacity because of low flow, naturally poor water quality, or poor habitat. These surface waters are capable of supporting only a limited community of forage fish and aquatic life.
 - **Limited Aquatic Life (LAL):** includes surface waters severely limited because of very low or intermittent flow and naturally poor water quality or poor habitat. These surface waters are capable of supporting only a limited community of aquatic life.
 - **Fish and Aquatic Life (FAL):** this is a default use designation that applies to surface waters when the WDNR has not completed a formal site visit of a stream segment. This designation is equivalent to a WWSF Community classification. Surface waters assigned this use designation support a diverse community of game fish, forage fish, and other aquatic life that are not tolerant of organic pollution.

Of the 111 waterbodies crossed by the proposed pipeline, 94 streams are classified as FAL (of which one is proposed to be classified as LAL); 12 are classified as LFF; three are classified as LAL; and one stream (Stony Brook) is classified as Class III CW trout. The remaining unnamed artificial pond crossed by the proposed pipeline (MP 60.3) is unclassified by the WDNR.

Review of the Wisconsin NHI database identified only one rare fish species with recorded occurrence in any of the waterbodies crossed by the G-II Project. This occurrence record was for the redbreasted dace in Trout Creek in Outagamie County, Wisconsin, with the date of last observance in 1975. Guardian proposes to cross Trout Creek near MP 107.8 and parallel the creek between MP 107.3 and 107.4 for just over 500 feet. This area of Trout Creek consists of an intermittent drainage filled with cattail and reed canary grass, bordered by active cropland and is separated from the surrounding agricultural land by a narrow herbaceous buffer strip dominated by annual weeds. At the time of Guardian's 2006 field surveys there was no flow in the channel.

In the vicinity of the proposed pipeline route are three unnamed ponds (MP 41.2, MP 41.8 and MP 105.3). Each of these ponds is a privately owned, man-made waterbody that are not managed by, nor have, a WDNR fisheries classification. These ponds would not be crossed by the pipeline, but could be affected by the construction right-of-way. An additional unnamed

pond serving as a wastewater treatment pond, is located near MP 42.0, approximately 100 feet east of the G-II pipeline. This pond is on an adjacent property not crossed by the pipeline alignment, and would therefore not be affected by construction or operation of the G-II pipeline.

Outstanding and Exceptional Resource Waters

Outstanding and Exceptional Resource Waters (OERW) are defined by the WDNR as waters of the highest water quality and fisheries in the state and are therefore deserving of special protection (WDNR, 2006e). None of the waterbodies that would be crossed by the Project are designated as OERW (WDNR, 2006e). While Jefferson, Fond du Lac, and Outagamie Counties contain OERWs, none of the OERW streams within these counties are within 1 mile of the proposed pipeline route, nor would any of the tributaries to these waterbodies be crossed by the G-II Project.

4.5.2.2 General Impacts and Mitigation

Construction

Guardian's proposed construction method for crossing each waterbody is listed in appendix I. Depending on the construction method used, direct impacts on aquatic habitats and species would either be avoided (e.g., through HDD) or would be confined to localized areas. Application of the WDNR's permitting standards for waterbody crossings would ensure that the impacts were adequately evaluated and controlled. Waterbody crossings would be implemented using "wet" or "dry" construction techniques, as described in section 2.3.1.2. As proposed, 107 of the proposed 111 waterbody crossings would be achieved using open-cut methods; two would be achieved using HDD, and one is still to be determined. Other dry crossing techniques, including flume or dam and pump, would be conducted as required by state permits at site-specific locations.

Generally, impacts from open-cut crossings would affect aquatic life such as plankton, aquatic vegetation, amphibians, fish, and aquatic invertebrates. Impacts on water quality and associated aquatic habitats would include sedimentation, turbidity, altered water temperatures, dissolved oxygen levels, and introduction of contaminants; all of which can affect the ability of aquatic life to survive and reproduce. Impacts would also include the physical disturbance or destruction of instream cover due to trenching and removal of riparian vegetation. Construction activities could also block fish migrations, interrupt spawning activities, and entrain fish or reduce stream flows during withdrawals for hydrostatic testing. These potential impacts are discussed below in more detail.

Pipeline construction using the dry crossing, dam and pump, or flume techniques would also produce in-stream disturbances; however, downstream flow of water would not be interrupted and the release of sediment to the waterbody would be generally less and of shorter duration than with the wet-trench open-cut crossing method.

Sedimentation and Turbidity

Pipeline construction using the wet-trench open-cut method would result in sedimentation and turbidity in surface waters and aquatic habitats through clearing and grading of stream banks, in-stream trenching, trench dewatering, and backfilling of the in-stream trench.

Turbidity resulting from suspension of sediments during in-stream construction or erosion of cleared right-of-way areas would reduce light penetration and photosynthetic oxygen production (resulting in decreased levels of dissolved oxygen), increase invertebrate drift, reduce fish feeding for brief periods, and affect the benthic community. Benthic macroinvertebrates, which typically provide a key food source for fish, would also be removed with the trenched material, and/or become buried under accumulated sediments, along with fish-nesting sites containing eggs or larvae (if disturbance occurs during periods when eggs or larvae are present) as a result of increased turbidity from construction activities. Removal of vegetation from riparian areas could also cause an increase in surface runoff and soil erosion.

Turbidity from in-stream trenching and backfilling activities could also affect fish by obstructing their gills and inhibiting their sight. Such impacts could disrupt feeding patterns and/or spawning activities. Sedimentation may also affect survival of fish eggs and juveniles, as well as benthic community diversity and health, spawning habitat, and the ability of fish and other aquatic wildlife to see and capture prey. Organic materials suspended in the water can further reduce dissolved oxygen by increasing the biochemical oxygen demand. Reduced levels of dissolved oxygen can result in stress, displacement, and mortality to aquatic organisms, particularly during periods of low flows or high water temperatures.

Guardian has agreed to implement the standard requirements for pipeline construction in our Plan and Procedures. To contain disturbed soils in upland areas and minimize the potential for sediment loss to waterbodies, temporary and permanent sediment controls (e.g., silt fence and slope breakers) would be used to direct surface runoff to well-vegetated areas along the sides of the construction right-of-way. Guardian has also stated its intent to construct during the summer months, a typically low-flow period in the project area to further minimize impacts. The rapid pace of construction (typically less than 24 hours for minor streams and less than 48 hours for intermittent streams) would reduce the impacts of sedimentation and turbidity on aquatic life. Overall, the impact to aquatic species in any particular waterbody, and at any specific crossing, resulting from construction of the proposed Project would be minor, localized, and short-term, because most of the habitat in each waterbody would remain undisturbed. Additionally, occasional turbid conditions are common in many of the waterbodies in this region, mainly due to land use conditions.

Loss of Cover

Overhanging vegetation in riparian and adjacent wetland areas, undercut banks, logs, and other streamside features provide cover for fish. These types of cover and in-stream habitats would be disturbed by clearing and open-cut trenching during construction, resulting in decreased shading, increased water temperatures, and displacement of fish from disturbed areas. Long-term streamside clearing would be limited to a 30-foot-wide corridor centered on the pipeline, a portion of which (20 feet) would be allowed to re-establish to shrubby vegetation that would provide some shade. The remaining 10-foot-wide strip, centered over the pipeline, would be maintained as herbaceous vegetation. Given the limited amount of streambank canopy that would be cleared relative to the existing riparian vegetation and total length of stream reach to be affected, potential impacts on water temperature would be minor.

Introduction of Water Pollutants

Introduction of pollutants into waterbodies and aquatic habitats could occur through disturbance of contaminated soils or sediments, accidental spills, and inadvertent releases of drilling fluids

during HDD operations. Pollutants could affect fishes and other aquatic life through acute or chronic toxicity, and sub-lethal effects that could affect reproduction, growth, and recruitment. As noted above, herbicides or pesticides would not be used within 100 feet of any waterbody.

Pollutants can also be released during discharge of hydrostatic test waters. However, Guardian has stated that biocides and other potentially toxic hydrostatic test water additives would not be used during hydrostatic testing. The proposed HDD drilling fluid would consist of water and bentonite, which is a mixture of non-toxic clays and rock particles which, if released in small quantities, is unlikely to be detrimental to fisheries or water quality. However, the release of large quantities into a waterbody could result in adverse impacts on fisheries. To minimize the potential impacts on fisheries and water quality, Guardian has prepared an HDD Contingency Plan for Inadvertent Releases of Drilling Fluid (see appendix J). The plan describes standard drill monitoring and sampling procedures; clean-up practices such as the use of straw bales, silt fencing, or turbidity curtains to contain the mud and cuttings; followed by mechanical or manual removal of the drilling mud. The plan also addresses procedures to contain and clean up inadvertent releases of drilling mud into waterbodies.

Operation of heavy equipment or other vehicles in and near surface waterbodies could also introduce chemical contaminants, such as fuels and lubricants, or result in accidental spills during construction. Guardian has adopted our recommendations regarding spill prevention, containment, and minimization into their Procedures for construction in waterbodies and wetlands. Guardian has also developed an SPCC Plan for the Project (see appendices E and F). Given these measures, the risk of accidental spills or the introduction of other hazardous materials to waterbodies, and their effects on aquatic life would be effectively minimized.

Entrainment and Reduction of Flows during Hydrostatic Testing

Hydrostatic testing of the pipeline would be conducted using water withdrawn from selected source waterbodies in the vicinity of the Project (see section 4.3.2.4). However, hydrostatic testing of the compressor stations would be conducted using groundwater wells or municipal sources and therefore would not affect adjacent aquatic resources. Entrainment of fish and other aquatic organisms would occur during withdrawals of hydrostatic test water from the selected source waterbodies. These waterbodies include the Rock River, the East Branch of the Rock River, and the Fox River. Guardian would prevent or adequately limit impacts from hydrostatic testing by implementing the requirements for hydrostatic testing in our Procedures. No chemicals would be added to the test water and water would be discharged back to the waterbodies from which water was withdrawn, or to well-vegetated upland areas. Guardian would use diffusers to minimize the potential for stream scour from water discharged into waterbodies, or use filter bags and other energy-dissipating devices to prevent erosion in upland areas and other locations. Guardian would also regulate the timing, rate, and volume of hydrostatic test water withdrawals to ensure a stable and sufficient downstream flow within the waterbodies from which hydrostatic test water would be withdrawn.

4.5.2.3 Site-Specific Impacts and Mitigation

Guardian proposes to use HDD to cross two waterbodies, the Fox and the Rock River. As described in section 4.3.2.3, a pipeline crossing by HDD would avoid stream bottom disruption and subsequent impacts on aquatic habitats along that portion of the pipeline route. However, HDD methods are not without risk, because inadvertent drilling fluid releases could result if the

drilling fluid escapes containment at pits or tanks at the HDD entrance and exit points, or if a “frac-out” occurs. A frac-out occurs when drilling fluids migrate unpredictably to the surface through fractures, fissures, or other conduits in the underlying rock or unconsolidated sediments. Typically, frac-outs are more likely to occur closer to entry and exit points where the hole is closer to the surface. During HDD operations, a frac-out would cause turbidity and sedimentation. If a frac-out were to occur in a waterbody, potential impacts from increased turbidity would include decreased water quality and compromised aquatic habitat integrity. As suspended materials settle out of the water column, sedimentation would partially or entirely cover the waterbody substrate and any sessile, benthic organisms. Temporary displacement of fish species and their prey items, as well as the potential for the smothering or burying of prey items, and the clogging of fish gills could also occur.

To minimize the potential impacts from frac-outs, Guardian has prepared an HDD Contingency Plan (see appendix J). The plan describes standard drill monitoring and sampling procedures, clean-up practices such as the use of straw bales, silt fencing, or turbidity curtains to contain the mud and cuttings, followed by mechanical or manual means to remove the drilling mud. The plan also addresses procedures to contain and cleanup inadvertent releases of drilling mud into waterbodies.

Guardian has not yet completed its geotechnical investigation of the proposed HDD locations at the Rock and Fox Rivers, and cannot fully assess the potential for frac-outs in these locations at this time. Geotechnical investigations are scheduled to occur in the spring of 2007. This information will be filed with the Secretary prior to construction.

Guardian proposes to cross Trout Creek near MP 107.8 and parallel the creek between MP 107.3 and 107.4 for just over 500 feet. As mentioned earlier, a rare fish species, the redbside dace, is recorded as occurring in this creek. In order to minimize the impacts on Trout Creek and any potential impacts on the redbside dace, Guardian would offset the construction right-of-way in this area to maintain this 15-foot buffer and would employ appropriate erosion control measures to avoid sedimentation from construction activities. Following construction, this area would be restored to preconstruction conditions. Assuming successful implementation of the proposed mitigation measures and the general lack of suitable habitat in this portion of Trout Creek to support redbside dace, the WDNR do not anticipate any adverse impacts on Trout Creek or the redbside dace from the construction of the Project.

Construction of the proposed Project could affect three ponds located at MPs 41.2, 41.8, and 105.3 along the pipeline route. In accordance with our Procedures, Guardian would offset its construction right-of-way to maintain a minimum of 15 feet of vegetative cover between the ponds and the construction right-of-way. It would also employ appropriate erosion control measures to minimize potential sedimentation impacts on these waterbodies. Given these proposed mitigation measures, we do not anticipate any impacts on the ponds from construction activities.

Operation

Operation of the G-II Project would not have a permanent impact on fishery resources. The pipeline would be buried below the bed of waterbodies, and the bed and banks of the streams would be stabilized and restored. If maintenance activities were required, Guardian would employ protective measures substantially the same as those used during construction. As a

result, any impacts derived from maintenance would be short-term in nature and similar to those discussed above for the initial pipeline construction.

4.6 THREATENED, ENDANGERED, AND OTHER SPECIAL STATUS SPECIES

Special status species are those species for which state or federal agencies afford an additional level of protection by law, regulation, or policy. For the purposes of this EIS, included in this category are species federally listed as endangered or threatened, or are considered as candidates for such listing by the FWS, and those species that are state-listed as threatened or endangered or designated as a state species of concern.

In accordance with Section 7 of the ESA, the lead agency (in this case, the FERC) in coordination with the FWS must ensure that any action authorized, funded, or carried out does not jeopardize the continued existence of a federally listed threatened or endangered species, or result in the adverse modification of the designated critical habitat of a federally listed species. For actions involving major construction activities with the potential to affect listed species or designated critical habitats, the federal agency must prepare a biological assessment (BA) for those species that may be affected. The action agency must submit its BA to the FWS and, if it is determined that the action may adversely affect a listed species, the federal agency must submit a request for formal consultation to comply with Section 7 of the ESA. In response, the FWS would issue a biological opinion as to whether or not the federal action would likely jeopardize the continued existence of a listed species, or result in the destruction or adverse modification of designated critical habitat.

Our analysis of the G-II Project resulted in a determination that the Project does not have a potential to affect listed species. The FWS concurred both formally and informally with this finding prior to the issuance of the draft EIS; therefore, consultation under Section 7 of the ESA is complete.

Our analysis of special status plant and wildlife species originally focused on those species that were identified as potentially occurring in the Project area, as derived from species lists, agency consultations, and references. Our subsequent evaluation of potential impacts of the G-II Project indicated that some of these species are highly unlikely to occur in the Project area or would otherwise not be affected by the Applicant's proposed action. These species have been identified in table 4.6-1 and will not be discussed further in this EIS.

TABLE 4.6-1				
Federal and State-Listed Endangered and Threatened Species Eliminated from Further Consideration for the G-II Project				
Species	Federal Status <u>a</u> /	State Status <u>b</u> /	Reason for Elimination from Further Consideration <u>b</u> /	Determination
Federally Listed Species				
Whooping crane (<i>Grus Americana</i>)	Experimental Population		Indicated by FWS in June 22, 2006 letter that species is not likely to be found in the proposed Project area.	No Effect
Eastern massasauga (<i>Sistrurus catenatus catenatus</i>)	F – C	WI - E	Indicated by FWS in June 22, 2006 letter that species is not likely to be found in the proposed Project area.	No Effect
Karner blue butterfly (<i>Lycaeides Melissa samuelis</i>)	F – E	WI - SC	Indicated by FWS in June 22, 2006 letter that species is not likely to be found in the proposed Project area.	No Effect

TABLE 4.6-1				
Federal and State-Listed Endangered and Threatened Species Eliminated from Further Consideration for the G-II Project				
Species	Federal Status <u>a/</u>	State Status <u>b/</u>	Reason for Elimination from Further Consideration <u>b/</u>	Determination
Dwarf lake iris (<i>Iris lacustris</i>)	F – T	WI - T	Indicated by FWS in June 22, 2006 letter that species is not likely to be found in the proposed Project area.	No Effect
Indiana bat (<i>Myotis sodalis</i>)	F – E	WI - SC	Suitable habitat not present within proposed Sycamore Compressor Station.	No Effect
Prairie bush clover (<i>Lespedeza leptostachya</i>)	F – T	WI - E	Suitable habitat not present within proposed Sycamore Compressor Station.	No Effect
Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>)	F – T	IL - T	Suitable habitat not present within proposed Sycamore Compressor Station.	No Effect
Small white lady's-slipper (<i>Cypripedium candidum</i>)	--	WI - T	Suitable habitat not present within 1 mile of the proposed pipeline facilities.	No Effect
Prairie parsley (<i>Polytaenia nuttallii</i>)	--	WI - T	Suitable habitat not present within 1 mile of the proposed pipeline facilities.	No Effect
Northern Yellow Lady's-Slipper (<i>Cypripedium parviflorum</i> var. <i>makasir</i>)	--	WI - SC	Suitable habitat not present within 1 mile of the proposed pipeline facilities.	No Effect
A land snail (<i>Catinella gelida</i>)	--	WI - SC/N	Project does not cross suitable habitats (i.e., rock outcroppings or ledges).	No Effect
Honey Vertigo (<i>Vertigo tridentata</i>)	--	WI - SC/N	Project does not cross suitable habitats (i.e., rock outcroppings or ledges).	No Effect
Thin-Lip Vallonia (<i>Vallonia perspectiva</i>)	--	WI - SC/N	Project does not cross suitable habitats (i.e., rock outcroppings or ledges).	No Effect
Side-Swimmer (<i>Crangonyx gracilis</i>)	--	WI - SC/N	Rivers and streams crossed by Project do not exhibit preferred habitat characteristics.	No Effect
Redside Dace (<i>Clinostomus elongatus</i>)	--	WI - SC/N	Rivers and streams crossed by Project do not exhibit preferred habitat characteristics.	No Effect
Two-Spotted Skipper (<i>Euphyes bimacula</i>)	--	WI - SC/N	Preferred habitats may occur within Project area; however, this species has a limited distribution and no known occurrences exist from counties crossed by the Project.	No Effect
ILLINOIS-LISTED SPECIES				
Slippershell (<i>Alasmidonta viridis</i>)	--	IL - T	Project does not cross suitable habitat (i.e., sand or fine gravel in shallow water or small streams).	No Effect
Wooly Milkweed (<i>Asclepias lanuginosa</i>)	--	IL - E	Project does not cross suitable habitat (i.e., native oak and sand prairies, oak barrens, or rocky soils).	No Effect
Gravel Chub (<i>Erimystax x-punctatus</i>)	--	IL - T	Project does not cross suitable habitat (i.e., deep, swift waters of medium- to large-sized rivers over a pea-gravel bottom).	No Effect
Iowa Darter (<i>Etheostoma exile</i>)	--	IL - T	Project does not cross suitable habitat (i.e., slow-moving waters of medium to small lakes, bog ponds, streams, or cool, slow rivers that tend to have clear to moderately turbid waters).	No Effect
Loggerhead Shrike (<i>Lanius ludovicianus</i>)	--	IL - T	Project does not cross suitable habitat (i.e., edge habitat such as hedgerows in agricultural areas and along roadsides).	No Effect
Red-berried Elder (<i>Sambucus racemosa</i> ssp. <i>pubens</i>)	--	IL - E	Project does not cross suitable habitat (i.e., upland forests, swamps, or cool drainages).	No Effect
Dog Violet (<i>Viola conspersa</i>)	--	IL - T	Project does not cross suitable habitat (i.e., moist woods, damp fields, or swamps).	No Effect

TABLE 4.6-1 Federal and State-Listed Endangered and Threatened Species Eliminated from Further Consideration for the G-II Project				
Species	Federal Status <u>a/</u>	State Status <u>b/</u>	Reason for Elimination from Further Consideration <u>b/</u>	Determination
Eastern Prairie Fringed Orchid (<i>Platanthera leucophaea</i>)	--	IL - T	Project does not cross suitable habitat (i.e., moist soil wetlands or wet prairies).	No Effect
Indiana Bat (<i>Myotis sodalis</i>)	--	IL - E	Project does not cross suitable habitat (i.e., cool and humid caves, mines, and tunnels); woodlands, floodplains, or riparian forests.	No Effect
Prairie Bush Clover (<i>Lespedeza leptostachya</i>)	--	IL - T	Project does not cross suitable habitat (i.e., moist native prairies and thin soil at margins of rocks or loamy soil).	No Effect
a/ F = Federal, E = Endangered species, T = Threatened species, C = Candidate species b/ WI = Wisconsin, E = Endangered species, T = Threatened species, SC = special concern species, IL = Illinois, SC/N = no laws regulating use, possession, or harvesting				

4.6.1 Federally Listed or Proposed Threatened and Endangered Species

After reviewing information about the proposed route (sent by Guardian in a letter to the FWS Ecological Services Branch in Green Bay, Wisconsin on June 1, 2006), the FWS concluded that two federally listed species potentially occur in the project area, including the bald eagle and the eastern prairie fringed orchid. In its written response on July 1, 2006, the FWS identified records of bald eagle nests within about 0.5 mile of the proposed Fox River crossing location, and the eastern prairie fringed orchid was identified in the vicinity of the proposed G-II pipeline route in Jefferson County, Wisconsin (table 4.6.1-1). These species are discussed in further detail below.

TABLE 4.6.1-1 Federal and State-Listed Endangered and Threatened Species Potentially Occurring in the Vicinity of the Proposed Project			
Species	Federal Status <u>a/</u>	State Status <u>b/</u>	Notes
Federally Listed Species			
Bald eagle (<i>Haliaeetus leucocephalus</i>)	F – T	WI – T	Two nests identified within 0.5 mile of the Fox River crossing.
Eastern prairie fringed orchid (<i>Platanthera leucophaea</i>)	F – T	WI – E	This species may be found in moist soil wetlands and wet prairies.
Wisconsin-Listed Species			
Blanchard's cricket frog (<i>Acris crepitans blanchardi</i>)	--	WI – E	Historically, the range of this species in Wisconsin is limited to the southern half of the state. Mud flats and stream banks with abundant, low emergent vegetation are preferred habitats. Also inhabit marshes, fens, and wet prairies near permanent and flowing water.
Foamflower (<i>Tiarella cordifolia</i>)		WI – E	Rich deciduous woods.
Blanding's Turtle (<i>Emydoidea blandingii</i>)	--	WI – T	Found throughout the state, except the extreme north-central. Concentrated in the vast marshes along the Wisconsin River. Primarily inhabit marshes and the shallow bays of lakes, but also utilize shallow, slow-moving rivers and streams.

TABLE 4.6.1-1			
Federal and State-Listed Endangered and Threatened Species Potentially Occurring in the Vicinity of the Proposed Project			
Species	Federal Status <u>a/</u>	State Status <u>b/</u>	Notes
Wood turtle (<i>Clemmys insculpta</i>)	--	WI – T	Primarily found along the Black, Wisconsin, St. Croix, Brule, and Baraboo Rivers. Forage in deciduous forests and open meadows adjacent to these rivers during the summer. Some individuals may inhabit rivers year-round.
Handsome sedge (<i>Carex Formosa</i>)	--	WI – T	Difficult to identify in the field. Only two known sites in Wisconsin. This species range in Wisconsin includes Door, Brown, Milwaukee, Outagamie, and Ozaukee Counties.
Cerulean warbler (<i>Dendroica cerulea</i>)	--	WI – T	Found in mature mesic deciduous woodlands; prefers forest tracts > 40 acres in size. Uncommon to rare migrant and summer resident.
Red-shouldered hawk (<i>Buteo lineatus</i>)	--	WI – T	Suitable habitat in Wisconsin found in unfragmented mature floodplain forests along major rivers.
Yellow gentian (<i>Gentiana alba</i>)	--	WI – T	Found in mesic prairie, dry mesic prairie, or oak openings. Found in Brown, Calumet, Dodge, Fond du Lac, Jefferson, and Outagamie Counties, among others.
Forked aster (<i>Aster furcatus</i>)	--	WI – T	Prefers dry to mesic hardwoods on streambanks or slopes with dolomite near the surface.
Great egret (<i>Ardea alba</i>)	--	WI – T	Open, muddy or marshy edges of permanent ponds, lakes, bogs, floodplain ponds, and slow-moving streams and rivers.
Northern harrier (<i>Circus cyaneus</i>)	--	WI – SC/M	Marshes, wet meadows, sloughs, swamps, open fields. Requires open country for hunting. Nests on the ground, typically in tall grasses or under shrubs near wetlands.
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	--	WI – SC/M	Open woodlands with clearing and a dense shrub layer, including abandoned farmland, old fruit orchards, successional shrubland and dense thickets, often along water.
Black-throated blue warbler (<i>Dendroica caerulescens</i>)	--	WI – SC/M	Interior understory of deciduous and mixed woodland, second growth, partially cleared forest. Nests in small trees, saplings, or shrubs in dense undergrowth within 1 meter of the ground.
Prothonotary warbler (<i>Protonotaria citrea</i>)	--	WI – SC/M	Secondary cavity nester, preferring areas with stagnant or slow-moving water, especially those that only flood intermittently, such as swamps, ponds, wet forested bottomlands, flooded river valleys, and streams with willows.
Western meadowlark (<i>Sturnella neglecta</i>)	--	WI – SC/M	Open country, including native grasslands, pastures, agricultural fields, roadsides, and desert grassland. Prefers high forb and grass cover, low to moderate litter cover, and little or no woody cover.
a/ F = Federal, T = Threatened species			
b/ WI = Wisconsin, E = Endangered species, T = Threatened species, SC = Special concern species, SC/M = fully protected by federal and state laws under the Migratory Bird Treaty Act			

In a letter dated June 22, 2006 to the FWS, Green Bay Field Office, Guardian requested additional information about listed species that could potentially occur in the vicinity of the two alternative compressor station sites in Walworth County, Wisconsin. The FWS indicated that no

federally listed species would be affected at either of these alternative compressor station sites (FWS, 2006).

Guardian consulted with FWS, Rock Island, Illinois, Ecological Services Field Office regarding threatened and endangered species that could occur within or near the proposed compressor station in De Kalb County, Illinois. Only one species, the eastern prairie fringed orchid, was identified by FWS from within the Illinois portion of the Project, as listed in table 4.6-1.

The two species identified as potentially occurring in the vicinity of the proposed pipeline route are discussed in further detail in the following paragraphs.

Bald Eagle (*Haliaeetus leucocephalus*)

The bald eagle is found only in North America where they historically inhabited the entire continent wherever there were adequate nest sites and an abundant supply of fish. However, due to human activities, bald eagle populations have declined dramatically throughout most of the species' range. Small numbers of eagles currently nest in many regions of North America, with the largest breeding populations being found in Canada and Alaska. In Wisconsin, bald eagles nest primarily along the shores of inland lakes and rivers in the northern-third of the state (WDNR, 2005).

Bald eagle distribution varies seasonally. Individuals that breed in the northern part of the species' range will migrate south in the winter as northern waters freeze. They will often congregate and share communal roosting and feeding grounds. In Wisconsin, bald eagles are suspected to move south where there is open water, generally concentrating along the Mississippi and Lower Wisconsin Rivers (WDNR, 2005). During the breeding season, eagles establish and defend territories, with mated pairs generally returning to the same breeding territory each year.

Preferred breeding habitat in Wisconsin consists of suitable nesting sites (large trees) located near waters with an adequate supply of fish (WDNR, 2005). Bald eagles also require isolated areas, where they are less likely to be disturbed by human activities. In February or March, eagles that breed in Wisconsin begin building a nest or repairing one they occupied the previous year, generally in a tall tree, such as a live white pine (WDNR, 2005).

Until the 1800s, bald eagles bred throughout the state of Wisconsin, but as the state was settled, eagle populations began to decline due to factors such as habitat disturbance and destruction and shooting (WDNR, 2005). With the passage of the Migratory Bird Treaty Act of 1916 and the Bald Eagle Protection Act in 1940, it became illegal to shoot bald eagles. By 1950, eagles no longer were found in the southern two-thirds of the state. Eagle populations remained stable in northern Wisconsin until the 1950s, when the use of pesticides such as DDT became common, which reduced the viability of eagle eggs (WDNR, 2005).

In 1972, the bald eagle was placed on the Wisconsin Endangered Species List and the federal government banned the use of DDT. However, bald eagle populations were slow to recover with a gradual increase from 82 breeding pairs in 1970 to 414 breeding pairs in 1991 (WDNR, 2005). More recently, the number of bald eagle breeding pairs within Wisconsin was estimated at 880, 994, and 1,020 occupied breeding territories in 2003, 2004, and 2005, respectively (WDNR, 2005). Similarly, the bald eagle was placed on the Federal Endangered Species List in 1973. However, because Wisconsin's eagle population is higher and more stable than that of most

other states, the federal government listed Wisconsin's eagles as threatened, rather than endangered in 1978 (WDNR, 2005).

The Project could affect breeding bald eagles if nest trees are removed, if trees used for roosting near feeding areas are removed, or if construction occurs near an active nest when eagles are breeding and/or rearing their young. Reduced reproductive success and nest abandonment could also occur as a result of project activities.

The FWS noted two recorded bald eagle nesting locations near the proposed G-II pipeline route in the Fox River Valley. Because it is not known whether these nests represent two breeding pairs, or if the nests are alternative nest sites for one breeding pair, the FWS recommended conducting pre-construction surveys to determine whether there are any new nesting sites closer to the pipeline crossing of the Fox River. If additional nest sites are identified, the FWS advised Guardian to plan construction activities to avoid adversely affecting the species. Specifically, in Wisconsin no construction activities should occur within 300 feet of an active nest, but the FWS recommended considering a more conservative distance of 0.25 mile. If any bald eagle nest is found within 0.25 mile of the project corridor, the FWS recommended that Guardian schedule construction to avoid the most critical, moderately critical, and low critical periods (generally February 1 to July 1, or when the chicks leave the nest) as described in the Northern States Bald Eagle Recovery Plan (FWS Northern States Bald Eagle Recovery Team, 1983). Should Guardian be unable to comply with these recommendations, the FWS would require further consultation with Guardian.

On December 15, 2006, Guardian sent a letter to the Green Bay Ecological Services Field Office of the FWS stating that they believe the Project would have "no effect" on the bald eagle. Guardian made this determination based on the following factors: both nests being located farther than 0.25 mile from the proposed route, which is the buffer area described in the Northern States Bald Eagle Recovery Plan; and construction occurring in mid- to late-May, which is well into the nesting cycle, and therefore would not cause any eagles to abandon their nests. Guardian also stated that pre-construction surveys would not be warranted because the corridor is beyond the 0.25-mile buffer zone; bald eagles would not be likely to construct a nest closer to the proposed pipeline alignment; and because construction would take place during a period when nest disturbance or abandonment is highly unlikely.

The FWS responded in a letter dated January 3, 2007 stating they concurred with Guardian's determination. Based on this letter, the construction time period, and the fact that construction would take place outside of the 0.25-mile buffer zone, we believe the project would have *no effect* on the bald eagle.

Eastern Prairie Fringed Orchid (*Platanthera leucophaea*)

The eastern prairie fringed orchid is a federally threatened species limited to fewer than 60 sites located within Illinois, Iowa, Maine, Michigan, Virginia, and Wisconsin. This species is generally found in areas with moist soils in mesic to wet, unplowed tallgrass prairies and wet prairies, but has also been found in old fields, roadside ditches, bogs, fens, and sedge meadows. Although the greatest threat to this orchid is habitat loss, this species is also threatened by conversion of its habitat to cropland, competition with invasive plants and noxious weeds, filling of wetlands, intensive hay mowing, fire suppression, and overgrazing (FWS, 1988; 1999).

The FWS recommended that Guardian screen the project corridor for suitable habitat for this species, which includes moist soil wetlands and wet prairies, and then conduct surveys for the species within any identified suitable habitat prior to construction. Guardian has been conducting this screening for the eastern prairie fringed orchid during its wetland delineation field surveys. No suitable habitat for this species has been identified. If suitable habitat or individuals of the species are identified during construction, Guardian would consult with the FWS, and would implement any measures recommended by the FWS to avoid, minimize, or mitigate potential impacts on the eastern prairie fringed orchid.

Based on review of aerial photography, topographic mapping, and habitat requirements, Guardian determined, and the FWS concurred (FWS, 2006b), that suitable habitat was not present within or adjacent to the proposed compressor station in De Kalb County, Illinois and, therefore, construction at the proposed compressor station site would not affect the eastern fringed prairie orchid.

In an e-mail from the FWS on March 8, 2007, the FWS indicated that no suitable habitat was present in the project corridor in Jefferson County and that they believe the determination that the eastern prairie fringed orchid would not be affected by the project is appropriate.

Based on the lack of suitable habitat and informal consultation with the FWS, we conclude that the Project would have *no effect* on the eastern prairie fringed orchid.

4.6.2 State-Listed Threatened or Endangered Species

4.6.2.1 Wisconsin

To investigate the presence of state-listed species in the vicinity of the project area, Guardian used the Wisconsin NHI data obtained through a license agreement with the WDNR's Bureau of Endangered Resources. Guardian generated data regarding known occurrences of individual species using a 2-mile-wide buffer. The 2-mile-wide buffer was used because: (1) the NHI database is incomplete, especially in areas dominated by private lands; and (2) if reroutes were made during project development these areas would already have been considered.

Guardian also consulted directly with the WDNR Bureau of Endangered Resources to develop a list of potential special status species that could be affected by the proposed Project. This screening entailed a three-phase analysis of (1) identifying species listed in the NHI database; (2) conducting a habitat assessment to determine what additional species could reasonably occur along the proposed pipeline but had not yet been observed during field surveys; and (2) compiling a site-specific Threatened and Endangered Species Work Plan and Habitat Assessment (TES Work Plan) to determine survey locations for the species identified in earlier phases.

Results of the investigations produced 12 listed species occurrences, of which two are also federally listed. An additional five species are designated as species of special concern (see table 4.6.1-1).

State species of special concern are those for which a problem of abundance or distribution is suspected, but not yet proven. The main purpose of this classification is to focus attention on certain species before they become threatened or endangered. Guardian has identified five species of special concern that may occur in the proposed project area. Within Wisconsin,

regulations regarding special concern species afford a range of classifications, varying from full protection to no protection. The current categories for special concern species and their respective level of protection are as follows:

1. SC/P – fully protected;
2. SC/H – take regulated by establishment of open/closed seasons;
3. SC/F – federally protected as endangered or threatened, but not so designated by WDNR;
4. SC/M – fully protected by federal and state laws under the Migratory Bird Treaty Act; and
5. SC/N – no laws regulating use, possession, or harvesting.

Because of the lack of protection afforded to these five special concern species, they are not described further in this EIS. However, Guardian is continuing its consultation with the WDNR to identify appropriate survey requirements and, if necessary, measures to avoid and/or minimize potential impacts on state-listed special concern species.

Wisconsin state-listed species are discussed in the following paragraphs. The bald eagle and eastern prairie fringed orchid are discussed in section 4.6.1.

Blanchard's Cricket Frog (*Acris crepitans blanchardi*)

The Blanchard's cricket frog has been listed as a state-endangered species since 1982. Its historical range was limited to the southern half of the state (WDNR, 2006f). Cricket frogs require fairly permanent water in open country and prefer open mud flats and stream banks with abundant, low emergent vegetation (WDNR, 2006f). They inhabit marshes, fens, and low prairies near permanent or flowing water (WDNR, 1997; 2006f). In the Great Lakes region, populations have declined sharply and are currently restricted to small, localized populations. Loss of wetland habitat, as well as poor water quality due to contamination from pesticides, fertilizers, highway salts, and other pollutants have reduced the number of frogs in this region (WDNR, 2006f).

The proposed Project could result in mortality and reduced habitat quality for this species if areas they occupy are disturbed during construction. Guardian has agreed to conduct searches for Blanchard's cricket frog and its habitat in 2007. If suitable habitat or presence of this species is verified, Guardian should consult with WDNR to develop appropriate mitigation measures, such as timing restrictions, to avoid impacts on this species and its habitat.

Blanding's Turtle (*Emydoidea blandingii*)

The Blanding's turtle has been listed as a state-threatened species since 1979. It may be found throughout the state, with the exception of the extreme north-central counties, as well as in suitable habitat throughout much of the Great Lakes region (WDNR, 2006g). This species is generally found in marshes and the shallow bays of lakes, but may also be found in shallow, weedy waters of slow-moving rivers, streams, and some northern bogs (WDNR, 2006g). This species may also inhabit rivers, where they concentrate their activities in backwaters, embayments, and sloughs, but they are considered only transient in portions of streams with more than a sluggish current (Harding, 1997). Primarily limited to aquatic habitats, this species hibernates underwater from late October or early November until late March or early April. Blanding's turtles may be found in terrestrial habitats during the spring and, to a lesser extent, in fall when adults travel to find mates or suitable nest sites (WDNR, 2006g). During the nesting

season (primarily June), female turtles may travel more than 0.5 mile from water to find open, sunny spots with moist but well-drained sandy or loamy soils to dig their nests (WDNR, 2006g). Road-kill mortality associated with construction of roads that separate aquatic habitats and available upland nesting sites has greatly reduced local turtle populations. This species has also been eliminated from many places through the destruction and degradation of wetland and adjacent upland habitats (WDNR, 2006g).

The proposed Project could result in mortality and reduced habitat quality for this species if areas they occupy are disturbed during construction. Guardian has agreed to conduct surveys for this species during 2007. Guardian will continue its consultation with the WDNR regarding survey requirements and measures to avoid impacts on this species if suitable habitat is identified during surveys. Avoidance measures generally include timing restriction or installation of exclusion fencing.

Wood Turtle (*Clemmys insculpta*)

The wood turtle has been listed as a state-threatened species since 1975 and was once found throughout all but the southwestern-most portion of Wisconsin (WDNR, 2006h). Currently, only small, scattered populations exist in isolated habitats. This species is a semi-aquatic turtle that inhabits rivers and streams mainly along the Black, Wisconsin, St. Croix, Brule, and Baraboo Rivers (WDNR, 2006h). From April to November, this species is active by day, and are omnivorous feeding on insects, mussels, carrion, berries, dandelions, and other succulent herbs. During the fall, wood turtles inhabit stream banks and hibernate over winter in large community burrows. Wood turtles mate in spring and fall and females dig nests in June on communal gravel sites along stream banks or railroad beds. Eggs are laid in June and hatch in September (WDNR, 2006h). Water pollution, irrigation, and forest erosion are the primary causes for loss of suitable habitat for this species.

The proposed Project could result in mortality and reduced habitat quality for this species if areas they occupy are disturbed during construction. Guardian will continue its consultation with the WDNR regarding survey requirements and measures to avoid impacts on this species if suitable habitat is identified during surveys. Avoidance measures generally include timing restrictions or installation of exclusion fencing.

Cerulean Warbler (*Dendroica cerulea*)

The cerulean warbler is a state-threatened bird found in mature mesic deciduous woodlands, including maple, basswood, and especially oak in both uplands and lowlands or floodplain forests. Often found near small canopy openings in large continuous forest tracts, they prefer medium and large tracts over small tracts (less than 40 acres). Within the state, this species is considered an uncommon migrant in the south and central areas, a rare migrant in the north, an uncommon summer resident in the south and central areas, and rare summer resident in the north (WDNR, 2006i).

Project clearing may directly affect nesting cerulean warblers or may disturb breeding or nesting birds adjacent to the pipeline route. Although this species may be present in forested areas within or adjacent to the pipeline route; it is less likely to nest there because most of the affected forested patches are smaller than its preferred habitats. Guardian has agreed to conduct breeding bird surveys for the cerulean warbler; if identified within the proposed Project area, Guardian

would consult with WDNR regarding appropriate mitigation that would reduce impacts on this species.

Red-shouldered Hawk (*Buteo lineatus*)

The red-shouldered hawk is a state-threatened species. Its preferred breeding habitat includes bottomland hardwoods, mesic deciduous or mixed deciduous-conifer forests, and wooded margins of marshes. They prefer to nest in oaks, pines, and other large trees, 20 to 70 feet high in a closed canopy. Nest building may begin as early as March. Suitable habitat in Wisconsin has been found in unfragmented, mature floodplain forests along major rivers, including the Mississippi River, St. Croix River north to St. Croix Falls, the Chippewa River to Chippewa Falls, the Wisconsin River to Wausau, and the Wolf River to Shawano (WDNR, 2006i).

Project clearing may directly affect nesting red-shouldered hawks or may disturb breeding or nesting birds adjacent to the pipeline route. Although this species may be present in forested areas within or adjacent to the pipeline route, it is less likely to nest there because most of the affected forested patches is small. Guardian has agreed to conduct nest searches and raptor call-response surveys for the red-shouldered hawk as part of its TES Work Plan.

Handsome Sedge (*Carex formosa*)

The handsome sedge is a state-threatened species that is primarily found in forests, forest edges, road sides, and less frequently in open meadows (NYNHP, 2006). This species may be found in soils ranging from fairly dry to moderately wet, and may be found adjacent to areas of fairly wet soils. This species also occurs where there is limestone bedrock or calcareous soils. It occurs from New England to Southern Ontario, and North Dakota to New Jersey, a range that includes Wisconsin (NYNHP, 2006). Within Wisconsin, it has been recorded in Jefferson, Outagamie, and Brown Counties along the route (WDNR, 2006k). The handsome sedge is often associated with canopy species such as red and sugar maples, hickory, and white ash, as well as understory species such as cinnamon fern and other *Carex* species. Threats to this species include residential development, invasive and noxious weeds, and logging activities that have changed the hydrology of suitable habitat.

Guardian has agreed to conduct surveys for this species during 2007 as part of its TES Work Plan.

Yellow Gentian (*Gentiana alba*)

The yellow gentian is a state-threatened plant that is found in clay soils in wooded ravines, thin soil and sand fields, dry woods, open woodlands and edges, ridges and bluffs, wet sandy prairies, railroad rights-of-way, and roadside ditches. These communities are often classified as mesic prairie, dry mesic prairie, or oak openings. Yellow gentian has been found in Brown, Calumet, Dodge, Fond du Lac, Jefferson, Outagamie, Rock, Walworth, and Waukesha Counties along the route. It flowers from late August through early October (WDNR, 2006l).

Guardian conducted surveys for the yellow gentian and did not find individuals within the proposed Project area; therefore, this species is unlikely to be affected by the proposed Project.

Forked Aster (*Aster furcatus*)

The forked aster is a state-threatened species. It prefers dry to mesic hardwoods, and is often found on streambanks or slopes with dolomite near the surface. Blooming occurs from early August to mid-October. The optimum identification period is from mid-August to late September (WDNR, 2006m). Guardian conducted surveys for the forked aster and did not find individuals within the proposed Project area; therefore, this species is unlikely to be affected by the proposed Project.

4.6.2.2 Illinois

Review of the IDNR online information identified seven species in DeKalb County, including slippershell, woolly milkweed, gravel chub, Iowa darter, loggerhead shrike, red-berried elder, dog violet, eastern prairie fringed orchid, prairie bush clover, and Indiana bat, that could potentially occur in or near the proposed compressor station; however, further communication from IDNR (2006) indicated no records of state-protected species or their habitats, or specially designated lands (preserves, natural areas, etc.) within the proposed Project area. Therefore, we determined that the Project would not affect these species.

4.6.3 Conclusions on Threatened and Endangered Species

We have determined that with the implementation of Guardian's proposed construction and mitigation measures, the project would have *no effect* on federally listed species. Habitat availability is believed to be the primary limiting factor for some threatened, endangered, and special-status species. The distribution and abundance of threatened, endangered, and special-status species is limited; therefore, any impact on these species may affect the size or viability of the existing populations. Those species with habitat that could potentially occur in the project area such as the Blanchard's cricket frog, wood turtle, Blanding's turtle, and rare plant species could experience reduced habitat quality or mortality (e.g., crushing or trapping) if areas they occupy are disturbed during construction. Other species such as cerulean warbler, red-shouldered hawk, and other bird species could experience nest failure or loss of nesting and breeding habitats if areas they occupy are disturbed during construction.

During operation of the proposed Project, routine vegetation maintenance has the potential to affect threatened and endangered species. Where vegetation maintenance would be required, impacts on these species using the right-of-way would be minimized by limiting vegetation maintenance to no more than once every 3 years and by employing seasonal mowing restrictions, typically between April 15 and August 1 of any year.

Guardian has completed initial consultations with the WDNR to identify the specific state-listed species and/or species of special concern that should be included in the threatened and endangered species surveys for the G-II Project. Guardian is also working with the WDNR to identify measures to avoid and/or minimize potential impacts on these species if suitable habitat is identified during surveys. Because Guardian has yet to complete surveys for state-listed species, **we recommend that:**

- **If a state-protected species or its habitat are found within the proposed construction right-of-way or construction work areas, Guardian should consult with WDNR regarding survey methodology, and develop mitigation plans, if necessary, to avoid**

or minimize impacts to that species. Guardian should file the results of any state-threatened and endangered species surveys (including survey methodology) and mitigation plans with the Secretary prior to construction.

4.7 LAND USE, RECREATION, AND VISUAL RESOURCES

Several potential land use effects may result from construction and operation of the G-II Project. Many of these potential impacts are related to construction and include disturbance of existing land uses within construction work areas along the rights-of-way, creation of new permanent rights-of-way for operation and maintenance of the facilities, and short-term disruption to land uses, primarily agricultural land. Recreational and visual impacts could occur because of operation of the aboveground facilities associated with the Project.

A discussion of the effects of the Project on land use, residences and structures, recreation and special interest areas, visual resources, and hazardous waste sites is provided below.

4.7.1 Land Use

The land use/land cover types crossed by the proposed pipeline route and located at the proposed aboveground facility sites are comprised of six primary cover types: agricultural, open land, forest land, open water, commercial/industrial, and residential. Impacts associated with each land use are discussed in further detail below. Residential lands are discussed in further detail in section 4.7.4.

Construction of the proposed Project would affect a total of about 1,587.2 acres of land: 1,323.1 acres for the pipelines; 48.0 acres for the aboveground facilities (including the seven meter stations, associated mainline valves, and launcher receiver facilities); 12.2 acres for access roads; 176.3 acres for additional temporary workspace; and 27.6 acres for a pipe storage/contractor yard. Operation of the Project would affect about 702.8 acres of land, of which 38.6 acres would be permanently converted for operation of the aboveground facilities, and the remaining 664.2 acres would be permanently converted to maintain the pipeline. Table 4.7.1-1 summarizes the acres of each land use category that would be affected by both the construction and operation of the proposed Project.

The majority of land that would be crossed by the proposed Project would be agricultural land (97.6 miles or 89.0 percent). Of the remaining land uses 5.8 miles or 5.3 percent of open land, 5.3 miles or 4.8 percent of forest land, 0.3 mile or 0.3 percent of commercial/industrial land, 0.2 mile or 0.2 percent of open water, and 0.2 mile or 0.2 percent of residential land would be affected (see table 4.7.1-2).

Guardian proposes to use a 110-foot-wide construction right-of-way to fabricate and install the 30-inch-diameter pipeline and an 80-foot wide construction right-of-way to fabricate and install the 20-inch-diameter pipeline. In non-farmed wetlands and upland forested areas, the construction right-of-way would be reduced to 75 feet wide for both the 30- and 20-inch-diameter pipelines. The construction right-of-way would comprise 1,323.1 acres for the pipeline. Following construction, a 50-foot-wide permanent right-of-way would be maintained for operation of the respective pipeline (664.2 acres for the pipeline).

Guardian would obtain easements from the landowners in order to construct the pipeline. An easement would be used to convey both temporary (for construction) and permanent (for

TABLE 4.7.1-1

Acres of Land Affected by Construction and Operation of the Proposed G-II Pipeline Project

Facility	Agricultural Land <u>d/</u>		Open Land <u>e/</u>		Forest Land <u>f/</u>		Open Water <u>g/</u>		Commercial/Industrial <u>h/</u>		Residential <u>i/</u>		Total	
	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.	Con.	Op.
30-inch-diameter pipeline <u>a/</u>	994.4	452.0	40.2	26.3	39.8	26.7	0.1	0.1	0.8	0.8	3.8	1.8	1078.2	507.7
20-inch-diameter pipeline <u>b/</u>	221.5	138.5	14.3	9.5	8.1	5.4	1.3	1.3	1.2	1.2	1.0	0.6	244.9	156.5
Subtotal Pipeline	1,215.9	590.5	54.5	35.8	47.9	32.1	1.4	1.4	2.0	2.0	4.8	2.4	1323.1	664.2
Sycamore Compressor Station	22.5	12.5	--	--	--	--	--	--	--	--	--	--	22.5	12.5
Bluff Creek Compressor Station	20	20	--	--	--	--	--	--	--	--	--	--	20	20
Ixonia Meter Station <u>c/</u>	0	0	--	--	--	--	--	--	--	--	--	--	0	0
Rubicon Meter Station	0.7	0.5	--	--	--	--	--	--	--	--	--	--	0.7	0.5
Sheboygan Meter Station	0.7	1.1	--	--	--	--	--	--	--	--	--	--	0.7	1.1
Chilton Meter Station	0.6	0.6	--	--	--	--	--	--	--	--	--	--	0.6	0.6
Fox Valley Meter Station	1.4	1.8	--	--	--	--	--	--	--	--	--	--	1.4	1.8
Denmark Meter Station	0.7	0.5	--	--	--	--	--	--	--	--	--	--	0.7	0.5
Southwest Green Bay Meter Station	0.7	1.1	--	--	--	--	--	--	--	--	--	--	0.7	1.1
West Green Bay Meter Station	0.7	0.5	--	--	--	--	--	--	--	--	--	--	0.7	0.5
Subtotal Aboveground Facilities	48	38.6	--	--	--	--	--	--	--	--	--	--	48	38.6
Contractor Yards	27.6	0	0	0	0	0	0	0	0	0	0	0	27.6	0
Additional Temporary Workspace	161.8	0	11.4	0	3.1	0	0	0	0	0	0	0	176.3	0
Access Roads	12.2	0	0	0	0	0	0	0	0	0	0	0	12.2	0
Project Total	1,465.5	629.1	65.9	35.8	51.0	32.1	1.4	1.4	2.0	2.0	4.8	2.4	1,587.2	702.8

a/ Includes nominal 110- and 75-foot-wide construction right-of-way, respectively, and a 50-foot-wide operation right-of-way.

b/ Includes nominal 80- and 75-foot-wide construction right-of-way for the pipeline, respectively, and a 50-foot-wide operational right-of-way.

c/ The Ixonia Meter Station would be located in Guardian's existing pipeline facilities; all new construction would occur within the fence line.

d/ Agricultural – actively cultivated uplands, farmed wetlands, hay fields, pastures, tree farms, orchards, and nurseries. Also includes fence lines, windbreaks, and shelter belts.

e/ Open – non-agricultural open and scrub-shrub fields and wetlands, emergent wetlands, fallow croplands, and CRP and Conservation Reserve Enhancement Program (CREP) lands.

f/ Forest – non-agricultural wooded uplands and wetlands.

g/ Open Water – surface water crossings greater than 100 feet.

h/ Com./Ind. – existing and planned commercial and industrial developments including retail stores, office buildings, manufacturing plants, utility stations, rock quarries, and landfills. Also includes existing access roads, railroad crossings, and road crossings greater than 50 feet wide with four or more lanes.

i/ Residential – existing and planned rural, suburban, and urban residential developments.

Notes: The totals of some columns differ slightly from the sum of each row in the column due to rounding.

Open Water and Commercial/Industrial Land would be crossed using either HDD technique or by conventional road bore, which would not generate surface disturbance during construction.

TABLE 4.7.1-2

Land Uses Crossed by Pipeline Facilities (in miles)

Facility/County	Agricultural <u>a/</u>		Open <u>b/</u>		Forest <u>c/</u>		Open Water <u>d/</u>		Com./Ind. <u>e/</u>		Residential <u>f/</u>		Total	
	(mi)	(%)	(mi)	(%)	(mi)	(%)	(mi)	(%)	(mi)	(%)	(mi)	(%)	(mi)	(%)
30-inch-diameter pipeline														
Jefferson County	1.7	1.5	0.1	0.1	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	2.1	1.9
Dodge County	30.4	27.7	0.9	0.8	1.4	1.3	<0.1	<0.1	0.0	0.0	0.3	0.3	33.0	30.1
Fond du Lac County	22.0	20.1	1.5	1.4	0.7	0.6	0.0	0.0	0.0	0.0	0.0	0.0	24.2	22.1
Calumet County	19.0	17.3	1.8	1.6	2.0	1.8	0.0	0.0	0.1	0.1	0.0	0.0	22.9	20.8
Outagamie County	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
Brown County	1.3	1.2	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	<0.1	0.0	0.0	1.3	1.2
20-inch-diameter pipeline														
Brown County	15.7	14.3	1.1	1.0	0.4	0.4	0.2	0.2	0.1	0.1	0.1	0.1	17.6	16.1
Outagamie County	7.2	6.6	0.4	0.4	0.5	0.4	0.0	0.0	0.1	0.1	0.0	0.0	8.2	7.5
Total	97.6	89.0	5.8	5.3	5.3	4.8	0.2	0.2	0.3	0.3	0.4	0.4	109.6	100.0
<u>a/</u> Agricultural – actively cultivated uplands, farmed wetlands, hay fields, pastures, tree farms, orchards, and nurseries. Also includes fence lines, windbreaks, and shelter belts. <u>b/</u> Open – non-agricultural open and scrub-shrub fields and wetlands, emergent wetlands, fallow croplands, and CRP and CREP lands. <u>c/</u> Forest – non-agricultural wooded uplands and wetlands. <u>d/</u> Open Water – surface water crossings greater than 100 feet. <u>e/</u> Com./Ind. – existing and planned commercial and industrial developments including retail stores, office buildings, manufacturing plants, utility stations, rock quarries, and landfills. Also includes existing access roads, railroad crossings, and road crossings greater than 50 feet wide with four or more lanes. <u>f/</u> Residential – existing and planned rural, suburban, and urban residential developments. Note: The totals of some columns differ slightly from the sum of each row in the column due to rounding.														

operation) rights-of-way to Guardian. The easement would give Guardian the right to construct, operate, and maintain the pipeline, and establish a permanent right-of-way. In return, Guardian would compensate the landowner for use of the land. The easement agreement between the company and the landowner typically specifies compensation for the loss of use during construction, loss of nonrenewable or other resources, and allowable uses and restrictions on the permanent right-of-way after construction. These restrictions can include prohibition of construction of aboveground structures, including house additions, garages, patios, pools, or any other object not easily removable; roads or driveways over the pipeline; or the planting and cultivating of trees or orchards within the permanent easement. The areas used as temporary construction right-of-way and additional temporary workspaces would be allowed to revert to pre-construction uses with no restrictions.

The acquisition of an easement is a negotiable process that would be carried out between Guardian and individual landowners. If the necessary land cannot be obtained through good faith negotiations with property owners and the Project has been certificated by the Commission, Guardian may use the right of eminent domain granted under Section 7(h) of the Natural Gas Act and the Federal Rules of Civil Procedure (Rule 71A) to obtain easements. Guardian would still be required to compensate the landowner for the right-of-way and damages incurred during construction; however, according to state or federal law a court would determine the level of compensation.

4.7.1.1 Agricultural Land

Agricultural land in the project area consists of actively cultivated croplands, hay fields, and pastures, including intervening fence lines, windbreaks, and shelterbelts. The proposed pipeline would cross 97.6 miles of agricultural land and would disturb a total of 1,465.5 acres of agricultural land during construction of the pipeline, aboveground facilities, and associated ancillary facilities. Of this total, the agricultural land required for the construction of the Bluff Creek and Sycamore Compressor Stations (46.4 acres) is considered prime farmland. Several alternative compressor station locations were evaluated to minimize impacts on prime farmland and are discussed in further detail in section 3.3.4. Additional information regarding prime farmland soils can be found in section 4.2.

Most cultivated areas in Wisconsin are used to grow corn, soybeans, or wheat. Other crops include hay, sorghum, oats, rye, and specialty crops including sweet corn, green beans, peas, carrots, potatoes, horseradish, mint, cranberries, pumpkins, apples, and nursery products (USDA, 1999). Corn, soybeans, wheat, and other row crops are grown in the project area, including hay and alfalfa. No special crops or orchards were identified along the pipeline route that would require unique construction techniques. Guardian will continue to actively consult with landowners affected by the proposed Project to identify any specialty crops along the route.

Guardian's proposed route would cross one certified organic farm (Midlakes Organic Farm) between MP 73.1 and MP 73.4 in Calumet County. The center of the proposed pipeline would pass within 50 feet of a second certified organic farm (operated by Mr. Arthur Steinbach) located in Dodge County between MP 22.8 and MP 23.3. Guardian received several comments about crossing certified organic farming operations. Regulation of organic farming was authorized in 1990 under the Organic Foods Production Act. After a 12-year comment and discussion period the National Organic Program (NOP) was fully implemented on October 21, 2002. Pipeline construction-related concerns of certified organic farmers and farmers transitioning from

conventional to a certified organic operation would include maintaining certification, ensuring that impacts on the current certified organic crop within the affected field(s) (but outside of the construction right-of-way) are minimized, receiving adequate compensation, and proper restoration of the soil to be consistent with organic farming principles.

Guardian also received a comment from the owner of a private nursery business along the proposed pipeline route. This landowner was concerned that the pipeline and permanent easement restrictions would preclude the future planting of nursery stock. During further route refinements, Guardian adopted a route variation that would place the pipeline approximately 0.25 mile west of this area to avoid the nursery.

Guardian has consulted with each town and county along the proposed route to identify both lands enrolled in the Farm and Ranch Lands Protection Program (FRPP) and lands enrolled in the Wisconsin Farmland Preservation Program (FPP) that would be crossed by the Project. Based on the results of Guardian's inquiries, the Project would not cross any FRPP areas. Some of the lands crossed would be enrolled in the FPP. However, the existence of the pipeline would not prevent either the county or individual landowners from participating in the FPP or receiving state income tax credits for the preservation of their land under this program.

A total of 629.1 acres of agricultural land would be retained as permanent right-of-way following construction to facilitate pipeline monitoring and maintenance and for aboveground facilities. Of this total, about 36.4 acres of prime farmland would be permanently converted to commercial/industrial land use to support the two compressor stations, meter stations, and six MLV locations. In all other areas along the pipeline route, agricultural land use would not be affected during operation because routine brushing and clearing would not be required in agricultural areas and the land would return to routine farming uses once construction was completed.

4.7.1.2 Open Land

The Project would cross 5.8 miles of open land and would disturb approximately 65.9 acres of open land during construction of the pipeline. Open land is defined as non-agricultural, open and scrub-shrub uplands and wetlands, emergent wetlands, fallow croplands, and CRP and Conservation Reserve Enhancement Program (CREP) lands. Within the project area, open land occurs most commonly as narrow strips at waterbodies, floodplains, roads, and railroad crossings.

Guardian consulted with the USDA, Farm Service Agency (FSA) in each county, the agricultural land manager for the Oneida Nation, and landowners to obtain information regarding lands enrolled in the CRP that could be crossed by the Project. The FSA in each county indicated that the Wisconsin State FSA Office reviewed Guardian's request and determined that the CRP land information is protected by the Freedom of Information Act, exemption 6, 5 United States Code 552(b) (6), because the disclosure of the requested information would constitute an unwarranted invasion of the personal privacy of any contract holders. However, during landowner negotiations Guardian determined that the Project would cross nine parcels that contain CRP easements. Guardian will continue to coordinate with these landowners to identify the exact location of these areas.

Guardian consulted with the Land and Water Conservation Department (LWCD) in each county, the agricultural land manager for the Oneida Nation, and landowners to obtain information regarding lands enrolled in the CREP that could be crossed by the Project. As of October 2006, Guardian received responses from four of the six county LWCDs (Jefferson, Calumet, Fond du Lac, and Brown Counties, Wisconsin). Responses indicated that the Project would not cross any CREP lands in these counties. Guardian would file with the FERC Secretary copies of all future correspondence regarding CREP lands received from the remaining three county LWCDs.

Guardian consulted with the NRCS in each county, the agricultural land manager for the Oneida Nation, and landowners to obtain information regarding lands enrolled in the Wetland Reserve Program (WRP) that could be crossed by the Project. Based on responses as of October 2006, Guardian determined that the Project would not cross any WRP areas.

Guardian identified a WDNR conservation easement at MP 57.7 near Pipe Creek. The purpose of this non-point source easement would be to provide a vegetative buffer to minimize impacts from agricultural runoff to a priority watershed. About 0.61 acre of the easement would be temporarily affected by construction of the Project. A detailed discussion of the construction and operation impacts associated with the crossing of this conservation easement and the proposed mitigation measures are provided in section 4.3.2.3.

In all open lands, Guardian would retain a 50-foot-wide permanent easement for operation of the pipeline and to facilitate pipeline monitoring and maintenance. About 35.8 acres of open land would be retained as permanent right-of-way for this purpose. The remaining 30.1 acres of land used during construction would be allowed to revert to its preconstruction condition.

4.7.1.3 Forest Land

Forest land consists of non-agricultural wooded uplands and wetlands. Forest areas crossed by the Project would be dominated by riparian, oak-hickory, and maple-basswood communities. The Project would cross about 5.3 miles of forest land and approximately 51.0 acres of forest land would be affected during construction. A total of 32.1 acres would be retained as permanent right-of-way following construction. The remaining 18.9 acres would be allowed to revert to its preconstruction condition.

4.7.1.4 Open Water

Open water consists of surface water crossings (e.g., rivers, lakes, and ponds) greater than 100 feet wide. The Project would cross about 0.2 mile of open water at the Rock and Fox Rivers. Because these areas would be crossed utilizing the HDD crossing technique, no areas classified as open water would be affected during construction. A total of 1.4 acres would be retained as permanent right-of-way following construction.

Operation of the pipeline would not affect open waters because routine brushing and clearing would not occur in these areas.

None of the waterbodies that would be crossed by the Project are listed on the Nationwide Rivers Inventory or are classified as National Wild and Scenic Rivers or Wisconsin Exceptional Resource Waters. However, a portion of the pipeline and the three meter stations to be located in Brown County, Wisconsin (including the Fox Valley, Denmark, and Southwest Green Bay Meter Stations) would be located within a coastal zone management area. Guardian will be required to

obtain a federal consistency determination for this portion of its pipeline and the meter stations located in Brown County. No other project facilities in Wisconsin or Illinois are located in designated coastal zone management areas and therefore would not be subject to Coastal Zone Consistency review.

4.7.1.5 Commercial/Industrial Land

Commercial and industrial land includes existing commercial and industrial developments including retail stores, office buildings, manufacturing plants, utility stations, rock quarries, and landfills. Railroad crossings and road crossings greater than 50 feet wide with four or more lanes were included as commercial and industrial land uses; new access roads and smaller road crossings were included as part of their surrounding land use.

The Project would cross about 0.3 mile of commercial and industrial land, including three active quarries. All of the commercial and industrial land crossed would consist of railroads or four-lane divided highways. Guardian proposes to bore these crossings; therefore, no commercial/industrial land would be affected during construction.

The presence of commercial and industrial buildings within 50 feet of the proposed Project was also considered. There are no commercial or industrial buildings within 50 feet of the construction work area and, therefore, would not result in impacts during construction and operation of the pipeline.

Prior to construction, a total of 2.0 acres would be retained as permanent right-of-way. Commercial/industrial land use would not be affected during operation because routine brushing and clearing would not be required in commercial/industrial areas.

4.7.2 General Land Use Impacts and Mitigation

The general impacts on land cover associated with construction of the proposed Project would be a function of the construction methods employed, the restoration actions implemented once construction has been completed, and the nature of the land cover type affected. Section 2.0 provides a detailed discussion of the proposed construction methods and post-construction restoration.

Permanent land cover changes would occur to those lands contained within the permanent pipeline right-of-way where reversion to the preconstruction cover type would not be compatible with operation of the proposed project facilities. Land uses not allowed in the permanent pipeline right-of-way would include aboveground construction, below ground construction, and the growth, planting, or cultivation of trees. Forest land cover would therefore be precluded from the permanent pipeline right-of-way. Allowable land uses generally permitted within the permanent right-of-way would include row crops and pastureland. Permanent changes would also be associated with the proposed aboveground facilities and those access roads maintained during operations, because acreage required for these facilities would be converted to a commercial/industrial cover type for the life of the Project. Although these impacts would be permanent, lasting for the life of the Project, the overall impact would not be significant given the limited acreage involved.

4.7.3 Site-Specific Land Use Impacts and Mitigation

4.7.3.1 Agricultural Land

Construction could affect the productivity of agricultural land in the construction and permanent rights-of-way. Most cultivated areas would be taken out of production for one season, whereas hay and alfalfa fields, and pastures may take an additional year or two to return to previous production levels. To minimize potential effects, Guardian would compensate landowners for crop loss and other damages, and would take steps to minimize the loss of future crop production. Guardian has also agreed to employ a third-party AM for the Project to monitor all construction activities in the agricultural lands (see section 2.5 for further details).

Croplands and FPP land, except those within the operational areas of aboveground facilities, would return to agricultural use after construction. According to the requirements in our Plan and Guardian's AMP, restoration of the right-of-way would be monitored after construction to determine whether the crops have returned to expected productivity. After the monitoring period, landowners who believe they have a pipeline-related crop deficiency would be requested to notify Guardian prior to harvest for individual crop inspections and evaluations. Information regarding the potential causes of future loss of crop production and mitigation measures to minimize such losses is discussed in our Plan and section 4.2.

Additional construction effects would include inconveniences to some farmers whose pastures are used for livestock grazing, resulting from the removal of livestock fences in the construction work area. Guardian identified five livestock farms and one horse farm where grazing was occurring on the proposed pipeline route during the summer of 2006 and all of the fences were of a temporary nature (i.e., single-strand electric barbed wire). To minimize impacts, Guardian would arrange with landowners or tenants to relocate livestock away from the right-of-way during construction in accordance with our Plan and Guardian's AMP. If relocation of livestock were not possible, temporary fencing would be installed. These fences would typically remain in place until vegetation is re-established. Where livestock would be grazed on adjacent lands, Guardian would consult with the landowner prior to construction regarding how and where temporary fences should be installed to maintain appropriate access to pastures. Additionally, Guardian's contractors would be responsible to close any gates to pastures after working hours. Permanent fences that are removed during construction would be repaired to their preconstruction condition or better.

In agricultural areas, the pipeline trench would be excavated to a sufficient depth to generally allow a minimum of 4 feet of soil cover between the top of the pipeline and the final land surface after backfilling. One exception to this would be in areas containing shallow bedrock, which may have less than 4 feet of cover (e.g., 24 inches in consolidated rock). At least 4 feet of cover would be achieved at waterbodies, railroads, and road crossings.

Generally, Guardian would remove excess rock from the full construction right-of-way, either manually or using a mechanical rock picker, until the size and distribution of rocks on the right-of-way corresponds to rock in the adjacent areas that would not be disturbed by construction.

Topsoil would be segregated from the entire construction right-of-way on agricultural land. Topsoil and subsoil removed from the pipeline trench would be stored separately during construction and would not be allowed to mix. Following construction, subsoil would be

returned to the trench and topsoil would be returned to those areas from where it was removed. See section 4.2 for further discussion of topsoil management during construction.

Guardian would work with landowners to identify drain tile systems in advance of construction and would mark the locations of any tile broken during pipeline trenching operations. Guardian would implement temporary tile line repairs to maintain the functionality of tile drainage systems during construction. Before the trench would be backfilled, Guardian would ensure that permanent tile repairs have been implemented. Guardian has also committed to have a qualified tile contractor conduct all tile repairs. Following completion of construction and restoration, Guardian would work with landowners to repair or correct tile drainage problems as long as the damage was directly caused by construction of the pipeline.

To minimize impacts on the Midlakes Organic Farm and other certified organic farms, Guardian would implement site-specific construction techniques as described in section 2.3.1.2. These construction practices would be based on Guardian's BMPs for organic agricultural land as defined in its AMP. To support its BMPs, Guardian would request a copy of the Organic System Plan for the farm and would work with the producer to develop a site-specific plan to cross the farm in a manner that would minimize the risk of losing certification.

At the Steinbach organic farm property located between MP 22.8 and MP 23.3, the construction workspace would be located within about 15 feet from the edge of the property boundary. Standard procedures for organic farmers outlined in the NOP require the installation and maintenance of a buffer between the crop production portion of a certified organic field and neighboring, non-organic land uses. Because the Project would not cross the Steinbach Farm, Guardian would not be able to review the Organic System Plan for the farm because Organic System Plans are proprietary documents. As a result, the actual width of the buffer between the organic production area and the adjacent property boundary would not be known. Guardian would install erosion and sedimentation control devices along the edge of the workspace consistent with the standard requirements for pipeline construction in our Plan, and would ensure that construction personnel and materials (including soil and stormwater runoff from the adjacent property) would not penetrate the buffer. Guardian's upland construction techniques are not appreciably different from the tillage, planting, and other standard farming practices conducted by the farm operation bordering the Steinbach Farm. As such, we believe the existing buffer would be adequate to protect the certified organic status of the Steinbach property.

There is no evidence to suggest that the presence of a pipeline would prohibit landowners from applying for organic certification of their lands in the future. However, if the presence of the pipeline were to prohibit organic certification of a landowner's property, it is likely the prohibition would be limited to the 50-foot permanent easement plus an additional buffer zone on either side of the easement.

4.7.3.2 Open Land

Construction impacts on open land would be minor and short-term. The preconstruction herbaceous and shrub communities would become re-established within one or two growing seasons after construction. To minimize impacts, Guardian would work with landowners, the FSA, and DATCP to reseed any CRP lands crossed by the Project with appropriate seed mixes to ensure continued eligibility for enrollment in the CRP program. Open land uses, including CRP, would continue in the permanent right-of-way after construction.

4.7.3.3 Forest Land

The primary effect of construction on forest areas would be the removal of trees and shrubs from the construction work area. In addition, approximately 1.6 acres of forested land would be temporarily disturbed for the purpose of additional temporary workspaces. The impacts associated with temporary additional workspaces are the result of site-specific constraints at road, wetland, and/or waterbody crossings (specifically at MPs 12.3, 93.3, 102.6 and 102.7) that would inhibit construction engineering and equipment maneuverability requirements.

Following construction, trees and shrubs would be allowed to regenerate in the areas not retained as permanent right-of-way, and the permanent right-of-way would be maintained in accordance with the standard requirements for pipeline operation in our Plan and Procedures. The rate of forest regrowth would depend on the type of vegetation cleared and the fertility of the soils. Early successional species would begin colonizing the right-of-way within a few years of construction, followed by the establishment of later successional species. Additionally, to minimize impacts on affected forest land, Guardian would limit the width of the construction right-of-way to 75 feet in forest areas.

The creation of new forest fragments would be minimized in the project area to the extent possible by avoiding large forest areas and sharing existing utility corridors where feasible. The majority of forest land that would be crossed, particularly on the Oneida Reservation, would be located along the existing ATC right-of-way. By collocating within this right-of-way, potential construction impacts on forest land have been decreased by approximately 0.4 acre (35 foot overlap for a distance of approximately 500 feet) and operational impacts have been decreased by approximately 0.3 acre (25 foot overlap for a distance of approximately 500 feet). The only areas of new forest clearing would be located between MP 104.7 and MP 104.9 (0.2 mile). A more detailed discussion of the impacts of forest fragmentation on vegetation and wildlife is provided in section 4.5.1.

4.7.3.4 Open Water

The Rock River and Fox River are the only two surface waters in the project area that meet the criteria of open water and may be affected during construction of the Project. To minimize impacts, Guardian proposes to cross the Rock and Fox Rivers using the HDD crossing technique, which would avoid direct impacts on the water, beds, and banks of these rivers. Guardian proposes to cross the other streams and creeks using an open-cut method. Contingency open-cut construction plans would be prepared for each HDD if the crossings prove unsuccessful. The effects of construction on surface waters are discussed further in section 4.3.

4.7.3.5 Commercial/Industrial Land

Guardian proposes to bore both paved roads and all operating railroads, which would avoid most direct impacts on the road or the vehicles using the roads or railways. However, motorists may encounter slow moving vehicles and road closures during construction. Unpaved roads would be crossed either by boring or by using the open-cut method. The open-cut method could temporarily disrupt road traffic. If necessary, to minimize traffic delays at roads that are open-cut, Guardian would establish detours before excavating the roadbed. If no reasonable detours were feasible, at least one traffic lane of the road would be maintained open, except for brief periods when road closure would be essential to lay the pipeline. Guardian would minimize the

duration of open-cut crossings and, in most cases, would complete these road crossings in one day or less. Prior to closing roads, Guardian would notify law enforcement agencies and would arrange a road closure schedule with any residents or businesses within the immediate area, which may be affected by the closure. Driveways would be kept open by horizontally boring the drive or by placing steel plates across the trench during construction.

Short-term construction impacts would occur as a result of heavy equipment tracking soil and mud onto roadways. To minimize impacts, Guardian would monitor roads crossed by construction. If excess soil or mud were tracked onto roadways, it would be removed as soon as practicable and placed back in the construction work area. Sediment barriers would be installed at the base of slopes adjacent to roads to prevent sediment from the construction right-of-way from being washed onto roads during rain events. Guardian proposes to cross paved roads on a combination of rubber mats, tires, and/or plywood sheets to minimize impacts. Guardian would also coordinate with the appropriate transportation authority regarding the need for road repair following construction.

As indicated in section 4.1.2, there are three quarries located within 0.25 mile of the pipeline route. The pipeline would cross the closest of these quarries, Eden Stone Company, at MP 42. Information on the effects of blasting operations from surrounding quarries and mitigation measures to minimize such effects are also discussed in section 4.1.2.

4.7.4 Existing and Planned Residences and Structures

4.7.4.1 Existing Residences and Structures

Residential land consists of existing rural, suburban, and urban residential developments. The proposed Project would cross 0.4 mile of residential land, and 4.8 acres of residential land would be affected by construction.

Two residences, two barns, and one warehouse would be located within 50 feet of the pipeline construction work area. Table 4.7.4.1-1 lists these residences and structures by MP and indicates the distance of each from the proposed construction work area.

In residential areas, the two most significant impacts associated with construction and operation of the pipeline is disturbance during construction and encumbrance of property for future uses (e.g., the limitation on future permanent structures within the permanent pipeline right-of-way). Residences within 50 feet of construction work areas are considered to be the most likely to experience the effects of pipeline construction. Temporary construction impacts on residential areas could include inconvenience caused by noise and dust generated by construction equipment (see sections 4.11.1 and 4.11.2 for further details); trenching through roads or driveways; ground disturbance of lawns; removal of landscaping or natural vegetative screening; potential damage to existing septic systems or wells; and removal of aboveground structures, such as sheds or trailers, from within the right-of-way. For residences and other structures located within 50 feet of the construction work area, Guardian would prepare site-specific construction mitigation plans to minimize disruption and maintain access to these areas. Guardian would file these plans with the Commission Secretary prior to construction.

TABLE 4.7.4.1-1 Structures Within 50 Feet of the Proposed Construction Work Areas of the Proposed G-II Pipeline Project			
Facility/ County	Milepost	Feature	Distance from Edge of Construction Work Area
30-inch-diameter pipeline			
Fond du Lac County	41.7	House	40 feet
Calumet County	71.9	Barn	24 feet
20-inch-diameter pipeline			
Brown County	93.8	House	13 feet
Outagamie County	103.0	Warehouse	20 feet
Outagamie County	105.3	Barn	6 feet

Following construction, approximately 2.4 acres of the 4.8 acres of residential land affected by construction would be retained as permanent right-of-way. The remaining 2.4 acres of residential land affected during construction would be restored to preconstruction conditions and existing use. In general, residential land use would not be affected during operation because typical routine vegetation maintenance would not be conducted in residential areas. The establishment of permanent structures or trees, however, on the permanent right-of-way would be prohibited. To ensure pipeline safety, Guardian would work with landowners and developers to develop encroachment agreements to allow roads and utilities to cross the right-of-way. Guardian routinely participates in the planning of developments to accommodate the developer's needs while protecting pipeline safety. To further ensure safety, **we recommend that:**

- **For all residences within 50 feet of the construction work area Guardian should:**
 - a. **leave mature trees and landscaping within the edge of the construction work area, unless necessary for safe operation;**
 - b. **restore all lawn areas and landscaping within the construction work area consistent with the requirements of our Plan immediately after backfilling the trench; and**
 - c. **fence the edge of the construction work area adjacent to the residence for a distance of 100 feet on either side of the residence to ensure that construction equipment and materials including the spoil pile remain within the construction work area.**
- **For all residences closer than 25 feet of the construction work area Guardian should file a site-specific plan which includes:**
 - a. **a description of construction techniques to be used (such as reduced pipeline separation, centerline adjustments, use of stove-pipe or drag-section techniques, working over existing pipelines, pipeline crossover, bore, etc.), and include a site plan that shows:**
 - (1) **the location of the residence in relation to the new pipeline and, where appropriate, the existing pipelines;**
 - (2) **the edge of the construction work area;**
 - (3) **the edge of the new permanent right-of-way; and**

(4) other nearby residences, structures, roads, or waterbodies.

- b. a description of how Guardian will ensure that the trench is not excavated until the pipe is ready for installation and that the trench is backfilled immediately after installation.**

4.7.4.2 Planned Residences and Structures

Four planned developments are currently proposed along the pipeline route. In addition, the pipeline route would cross or come within 0.25 mile of two planned wind farms (Forward Wind Energy Center project and Blue Sky Green Field Wind project) at MPs 31.5 to 35.9 and MPs 59.4 to 55.3, respectively, and more than 0.5 mile from a third proposed wind farm (Cedar Ridge Project). However, due to the Project's distance from the Cedar Ridge Project no impacts are anticipated. The pipeline would also come within 0.25 mile or cross one dairy operation under construction at MP 72.9, and a sewer expansion project in the Town of Holland.

Guardian has identified four subdivision plats (Brookside Estates Second Addition, Carpenter's Crossing, Fox River Meadows First Addition, and Holland Heights II) that were proposed over the past 3 to 4 years and located near the proposed pipeline route in Brown County, Wisconsin. All four of these subdivisions have been completed and have been avoided by the pipeline and therefore would have no adverse effects on these existing developments.

Guardian has received comments indicating that the pipeline route would traverse areas that have the potential for development in the future or were identified in Smart Growth Plans as possible building areas. However, as of October 2006, there have been no specific plans or plats proposed for development in these areas. In the event plans to develop these areas are proposed and/or realized prior to construction of the Project, Guardian would consult with the appropriate individuals and organizations to minimize potential impacts, as necessary.

In September 2004, Forward Energy L.L.C. (Forward) submitted its application for a Certificate of Public Convenience and Necessity (CPCN) to the PSC pursuant to Wisconsin Statutes §196.491(3) and Chapter PSC 111, Wisconsin Administrative Code for authorization to construct the proposed Forward Wind Energy Center project. The proposed project would be situated within approximately 32,400 acres of predominantly agricultural land near Brownsville, Wisconsin, in the towns of Oakfield, Byron, Leroy, and Lomira in southern Fond du Lac and northern Dodge Counties. The project proposal included 150 potential wind turbine tower locations. Forward would use up to 135 wind turbine locations for construction of the project. Based on a project semi-annual progress report, dated March 3, 2006, Forward is obtaining required permits and approvals. Construction of the wind farm is anticipated to begin after Forward completes the final turbine and collection system layout, resolves outstanding issues pursuant to the CPCN Order, and receives all of the necessary permits or approvals. The anticipated in-service date of the proposed project is expected within 8 to 12 months after the commencement of construction.

On March 17, 2006, We Energies filed a CPCN with the PSC pursuant to Wisconsin Statutes §196.491(3) and Chapter PSC 111, Wisconsin Administrative Code, for authorization to construct the Blue Sky Green Field Wind project. The proposed project would be located in an area covering 10,600 acres in the Towns of Calumet and Mansfield in Fond du Lac County, Wisconsin. The proposed project would use 88 wind turbines and associated auxiliary facilities,

with a total capacity of up to 203 MW of electric generation. We Energies is obtaining required permits and approvals and commercial operation is anticipated to begin in 2008 or 2009.

Construction-related impacts associated with these two wind farms would occur if both projects are constructed simultaneously, or if the pipeline were constructed before the wind farms are in operation. Based on preliminary maps of the Forward Wind Energy Center project, the proposed pipeline would cross within 100 feet of the preliminary location of turbine 101 and within 300 feet of the preliminary locations of turbines 107, 109, and 110. Based on preliminary maps of the Blue Sky Green Field Wind project, the closest proposed turbine would be located about 400 feet from the proposed Project. Additionally, the Project would, in some cases, cross underground collection system cable lines associated with both projects. Based on both wind energy applications to the PSC, Guardian understands that not all of the turbine sites would be developed. Additionally, Guardian should be able to route the pipeline around individual turbines and install the pipeline beneath cable lines for the underground collection system if necessary. If either of these planned wind projects go to construction, Guardian would coordinate with both wind energy companies to identify any conflicts that may arise to minimize potential impacts. If any conflicts were identified, Guardian would work with both companies to minimize potential impacts, as necessary. No operational impacts are anticipated.

A large dairy operation is under construction at MP 72.9 in Calumet County, Wisconsin. The proposed pipeline would be constructed along an existing ATC power line corridor through the planned dairy operation. By following the ATC corridor, Guardian would be able to install the pipeline 15 feet inside the power line easement. This increases the degree of overlap between Guardian's permanent easement and the power line easement, placing all but 10 feet of Guardian's permanent easement inside the power line corridor. Guardian has and would continue to coordinate with the developer to minimize impacts on the proposed development and ensure safe construction and operation of the development and the proposed pipeline. No construction or operation impacts are anticipated in regards to the proposed dairy operation.

Members of the Town of Holland have expressed concern regarding the potential of the proposed pipeline crossing a planned municipal sewer expansion. Guardian has requested information from the Planning Chair, the Board Chair, and the Holland Sanitation District. As of October 2006, Guardian has not received a response to these inquiries. Guardian will continue to coordinate with the Town of Holland to determine the potential impact of the proposed pipeline on the sewer expansion.

4.7.5 Recreation and Special Interest Areas

Three special interest areas have been identified along the proposed pipeline route. The pipeline route would cross or come within 0.25 mile of the Niagara Escarpment (MPs 18 to 93), the Oneida Nation Reservation (MPs 96.5 to 109.9), and the Kettle Moraine Scenic Drive. No other recreation or special interest areas such as developed recreational facilities, parks, forests, wildlife management areas, wilderness areas, trails, or registered natural landmarks have been identified in the vicinity of the proposed Project.

4.7.5.1 Niagara Escarpment

The Niagara Escarpment underlies four of the counties that are crossed by the proposed pipeline route: Brown, Dodge, Calumet, and Fond du Lac, Wisconsin. From MPs 18 to 93, the pipeline

would traverse 75 miles of public and private land along the Niagara Escarpment in these counties.

The Niagara Escarpment is a 650-mile-long sickle-shaped bedrock ridge that runs south of Rochester, New York, across portions of southeastern Canada, and southward around the western side of Lake Michigan to southeastern Wisconsin. During the last half of the nineteenth century, much of the pre-settlement forest was cut and much of the land was cleared for agriculture, especially fruit orchards. Farming along the escarpment was difficult due to the shallow soils and steep slopes, and settlement patterns were affected by the bedrock-controlled topography. At one time the dolomite bedrock was used for foundation material and/or burned to produce lime. Today, a number of counties along the escarpment operate or privately own quarries that supply crushed stone primarily for road base, concrete aggregate, and riprap (WDNR, 2002b). The shoreline near the escarpment has also been extensively developed near the Cities of Green Bay, Fond du Lac, and Sturgeon Bay, Wisconsin including many areas between these cities.

In recent years, the Niagara Escarpment has emerged as a statewide critical natural resource area due to its geology and other ecological characteristics that support rare plants and animals threatened by growing development pressures. As such, the escarpment has become a priority study area for the WDNR Bureau of Endangered Resources, as well as other regional and state agencies and private conservation organizations in Wisconsin. It was also identified as a priority area for conservation and recreation in the state's Land Legacy Report published in 2006.

The WDNR NHI Program, Bureau of Endangered Resources, conducted a study from 1999 to 2001 to collect and compile information about the biodiversity of the Niagara Escarpment and to identify elements of biodiversity that are most closely related with the escarpment (Anderson et al., 2002; WDNR, 2006n). This WDNR study identified several classes of rare threatened and endangered wildlife and plant species within Brown, Dodge, Calumet, and Fond du Lac Counties, Wisconsin. As proposed, the G-II Pipeline does not directly cross any vertical exposure or rock outcroppings associated with the escarpment, but rather the route parallels the escarpment from southwest to northeast. Field investigations conducted by Guardian and consultations with the WDNR and FWS indicate that the construction and operation of the Project would not affect the unique species known to be associated with the Niagara Escarpment.

4.7.5.2 Oneida Nation of Indians of Wisconsin

The Oneida Nation is a member of the Iroquois Confederacy, indigenous to central New York State. The Oneida Nation is a federally recognized Indian Nation of 14,533 members, one-third of whom live on or near the 65,000-acre semi-rural reservation. The Oneida Nation was established by the Oneida Treaty of 1838 (7 Stat. 566, Feb. 3, 1838). The Oneida Nation is located southwest of the City of Green Bay and west of the Fox River. It straddles the boundary between Brown and Outagamie Counties and includes all or portions of the City of Green Bay, Villages of Ashwaubenon and Howard, and the Towns of Hobart, Oneida, and Pittsfield. The Oneida tribal members own nearly 22 percent of the total land acreage within the Oneida Reservation. This percentage is expected to increase as the Oneida Nation continues to implement a policy of reacquiring title to all land within the boundaries of the reservation set by the 1838 Treaty (EPA, 2006).

From MPs 96.5 to 109.9, the proposed pipeline would traverse 13.4 miles of the Oneida Nation Reservation in Brown and Outagamie Counties, Wisconsin. Approximately 157.7 acres of tribal land would be affected by construction and 75.8 acres would be retained as a permanent pipeline right-of-way and for operation of aboveground facilities. Guardian would use conventional upland and wetland construction techniques, in accordance with our Plan and Procedures and Guardian's AMP, to construct the pipeline across the reservation, and, therefore, project impacts would be similar to those along the remainder of the pipeline route. Guardian met with representatives of the Oneida Nation on March 11, 2006, April 4, 2006, April 17, 2006, May 18, 2006, and June 2, 2006 to discuss the Project. As a result of these meetings, Guardian revised its proposed route based on discussions with Oneida officials. Guardian will continue discussions with the Oneida Nation regarding routing, environmental impacts, and other issues of concern as needed. Coordination and consultation with the Oneida Nation would effectively help minimize impacts on Oneida Nation lands in the project area.

4.7.5.3 Kettle Moraine Drive

At MP 110.2, the Bluff Creek Compressor Station would be located along Kettle Moraine Drive, which is part of the Kettle Moraine Scenic Drive in Walworth County, Wisconsin. The portion of the scenic drive along Kettle Moraine Drive is 2.8 miles long and is located outside of the Kettle Moraine State Forest in an area that is surrounded by agricultural land. The Kettle Moraine Scenic Drive is a 115-mile-long scenic byway developed under the direction of the Kettle Moraine State Forest. A number of interesting historic and geologic features can be observed along this scenic roadway, including the Sylvanus Wade House, Lapham Peak, kames, eskers, drumlins, kettles, and interlobate moraine (WDNR, 2006o). This drive traverses six counties in Wisconsin, running from the Whitewater Lake Region in Walworth County north to Broughton Sheboygan Marsh Park and Wildlife Area in Sheboygan County.

The closest point of interest along the drive, The Heart Prairie Glacial Outwash Plain, would be located approximately 0.5 mile to the east of the Bluff Creek Compressor Station. This outwash plain was formed when glacial meltwater deposited large amounts of sand and gravel across this area. No remnants of this prairie are known to exist and the area is now agricultural land (Kettle Moraine Natural History Association, 2003). The Bluff Creek Compressor Station would be visible to motorists traveling along the drive for approximately 0.8 mile (0.7 percent) of the total length of the drive. A more detailed assessment of the potential visual impacts of the compressor station on motorists traveling along the scenic drive is located in section 4.7.6.

4.7.6 Visual Resources

Visual resources refer to the composite of basic terrain, geologic features, hydrologic features, vegetative patterns, and anthropogenic features that influence the visual appeal an area may have for residents or visitors. The proposed Project could alter existing visual resources in three ways: (1) construction activity and equipment may temporarily alter views; (2) vegetation clearing for the pipeline construction right-of-way and routine right-of-way maintenance would alter existing vegetation patterns; and (3) aboveground facilities would represent permanent alterations to the viewscape. The significance of these visual impacts would be primarily dependent upon the quality of the current viewshed, the degree of alteration of that view, the number of potential viewers, and the perspective of the viewer.

4.7.6.1 Current Viewshed

The degree of visual impact that may result from the proposed Project is typically determined by considering the general character of the existing landscape and the visually prominent features of the proposed facilities. The proposed pipeline would be constructed primarily on rural agricultural land, interspersed with forested areas, open land, human development, and open water. The most prominent visual feature of the proposed Project would be its aboveground facilities, two compressor stations, and seven meter stations.

4.7.6.2 Impacts and Mitigation Measures

No designated scenic features would be crossed by the proposed Project. Public viewing opportunities occur primarily where the Project would intersect streams, roads, developments, and special interest areas. Construction and operation of the proposed pipeline may affect visual resources by altering the terrain and vegetation patterns during construction or right-of-way maintenance and from the presence of new aboveground facilities. The landscape setting along the proposed pipeline route is generally rolling topography and irregular plains featuring morainal areas and outwash and drumlin fields. Impacts on visual resources due to the pipeline would be primarily temporary and short-term, occurring during construction. During construction, the cleared and graded right-of-way, as well as the construction equipment could be visible from any surrounding residences and local roads. The clearing and grading would result in color changes to the landscape, and the construction equipment would create tracks, compress vegetation, and expose soils. Because the terrain over much of the project area is gently rolling, views of the construction activities may extend for some distance. Following construction, the right-of-way would be restored to pre-existing conditions and the farmers would be allowed to grow crops over the pipeline on agricultural lands. Construction work areas would normally be difficult to distinguish from surrounding areas. Therefore, no long-term visual impacts would result from construction and operation of the pipeline in non-forested areas (95.2 percent of the project route).

Clearing of forested areas (3.2 percent of the project route) would produce longer-term impacts. Clearing of trees within the construction right-of-way (51.0 acres) would convert existing forested areas to open areas and would result in a visually conspicuous corridor. Over time, trees and shrubs would regenerate outside of the permanently maintained right-of-way of 18.9 acres and the effects of clearing would become less obvious. Operational impacts on existing land uses would be limited to forested areas where periodic routine brushing and clearing would be conducted on the permanent right-of-way in accordance with our Plan and Procedures.

Guardian would minimize impacts associated with creating a new pipeline right-of-way and clearing forest areas by installing 33.5 miles (30.6 percent) of the pipeline parallel to existing rights-of-way. Where the pipeline parallels another right-of-way, the effects of construction would be less significant because no new lines or forms would be introduced to the landscape. Guardian would further reduce impacts on forest areas by limiting the width of the construction right-of-way to 75 feet in forested uplands and to the maximum extent possible in wetlands.

Guardian proposes to install several aboveground facilities associated with the pipeline, including two compressor stations (including aboveground piping, buildings, perimeter fencing, and pavement); seven meter stations (including regulators, launchers, and receiver facilities); and

six MLV sites. Because some of the facilities would be collocated, aboveground facilities would be constructed at nine separate locations along the pipeline.

The aboveground facilities would be the most visible features constructed as part of the Project and would result in long-term visual impacts on the landscape. The degree of impact depends on several factors, including the existing landscape, number of viewpoints from which to observe the structures, the type of viewers who would view the structures, and the remoteness of the location. Of the new facilities, the compressor stations would be the largest and most visually intrusive. Construction of the meter stations, receiver and launcher facility, and MLVs would have visual impacts, but these facilities would be significantly smaller in size and less intrusive than the compressor stations. All aboveground facilities would be constructed in rural agricultural areas, with relatively few potential viewers.

As proposed, the aboveground facilities would be located on private land surrounded by a combination of agricultural and residential land uses. The landscape along the proposed pipeline route and the location of each compressor station and metering station would be dominated by agricultural land use with some residential areas ranging from 150 to 825 feet near the compressor stations. Sensitive visual resources, including residential subdivisions and adjacent roads, were identified in the vicinity of these aboveground facilities.

The Sycamore Compressor Station located at MP 57.5 would be visible from nearby residences and motorists traveling along Story Road. This facility would be constructed on agricultural land surrounded by a combination of agricultural and residential land uses. A series of outbuildings would be located about 250 feet south of the property line, and the nearest residence would be 825 feet west of the property. A site-specific screening plan has not yet been finalized by Guardian for the Sycamore Compressor Station site; however, to minimize the visual impact of the facility, Guardian has indicated it would enclose the compressor equipment in a building that would be similar in appearance to a modern farm building. Guardian would also consider vegetative screening that would, over time, create an appearance that is more typical of farmstead sites in the vicinity. Guardian is also committed to appropriately maintaining the grounds of the compressor station (e.g., mowing and maintenance of any trees and/or shrubbery) to ensure both safety and the “kept” appearance of the overall site. Although the architecture and grounds of the site would help the facility blend in with the surrounding landscape, it would introduce a new structure to the existing setting. However, by implementing Guardian’s proposed screening methods, the visual impact of the aboveground facility would not have a significant effect on the aesthetics of the landscape along the proposed pipeline route.

The Bluff Creek Compressor Station would be located at MP 110.9 and would be visible from nearby residences and motorists traveling along Kettle Moraine Drive, McCabe Road, and County Road O. This facility would be constructed on agricultural land surrounded by a combination of agricultural and residential land uses. The nearest residence would be 150 feet north of the property. The section of Kettle Moraine Road near the compressor facility is part of the Kettle Moraine Scenic Drive. The compressor station would be visible to travelers on this road for about 0.8 mile (0.7 percent) of the total length of the 115-mile route. The closest point of interest along the drive, The Heart Prairie Glacial Outwash Plain, would be located approximately 0.5 mile east of the compressor station facility. No remnants of this prairie are known to exist and the area is now agricultural land (Kettle Moraine Natural History Association, 2003). In addition, the stretch of the Kettle Moraine Scenic Drive viewshed that would be affected by the presence of the compressor station has already been altered by views of

agricultural fields. To date, a site-specific screening plan has not yet been finalized by Guardian for the Bluff Creek Compressor Station; however, as described above Guardian would enclose the compressor equipment in a building that would be similar in appearance to a modern farm building, consider vegetative screening, and properly maintain the grounds associated with the site to ensure visual impacts are minimized. As such, the visual impact of the proposed compressor station would not have a significant effect on the aesthetics of the landscape along the proposed pipeline route.

The Rubicon, Sheboygan, Chilton, Fox Valley, Denmark, Southwest Green Bay, and West Green Bay meter stations would be constructed in agricultural fields at MPs 13.3, 43.9, 66.4, 83.7, 91.6, 93.9, and 109.9, respectively. Three of the proposed seven meter stations (Rubicon, Denmark, and Southwest Green Bay meter stations), would be located within 350 feet of existing residences. The six MLVs and the proposed launcher/receiver facilities would be located either within the compressor station sites, some of the meter station properties, or along the permanent right-of-way. MLVs within the permanent right-of-way would be located in agricultural or open areas. Given their location in agricultural fields, these facilities would be conspicuous in the landscape. If required by local zoning regulations, Guardian would propose to use a variety of additional visual screening options to obstruct the view of the meter stations and MLVs, including fences, and/or trees.

4.7.7 Hazardous Waste Sites

Guardian conducted a search of available environmental database records within 0.25 mile of the pipeline route. The G-II Project crosses one site on the EPA's NPL, the Fox River, which contains sediments contaminated with PCBs. Guardian would install the pipeline beneath the Fox River using the HDD technique, and therefore does not anticipate any impacts on the contaminated sediments, or impacts on the pipeline from interactions with PCB-contaminated sediment.

Additionally, both closed and open LUST and ERP sites were identified within 0.5 mile of the Project. These sites would be located at the following MPs along the pipeline route:

- MP 41.7, 0.21 mile southeast of the proposed pipeline;
- MP 41.7, 0.46 mile southeast of the proposed pipeline;
- MP 41.8, 0.23 mile southeast of the proposed pipeline;
- MP 41.8, 0.36 mile southeast of the proposed pipeline;
- MP 46.0, 0.37 mile west of the proposed pipeline;
- MP 54.0, 0.48 mile southeast of the proposed pipeline;
- MP 95.3, 0.17 mile southwest of the proposed pipeline; and
- MP 101.7, 0.41 mile northeast of the proposed pipeline.

Of the sites identified six are closed LUST sites, one is a closed ERP site, and one is an open ERP site. The open ERP site contains petroleum-contaminated soils and is located 0.36 mile southeast of the proposed pipeline route at MP 41.8 in Fond du Lac County, Wisconsin. Based on consultation with the Wisconsin Department of Commerce, this site is a former bulk storage facility that once contained numerous aboveground petroleum storage tanks that have since been removed. The facility has low-level soil contamination but no groundwater contamination. However, because the site is located approximately 0.36 mile from the proposed pipeline, it is not likely that contaminated soils or water would be encountered during construction (Weis, 2006).

Guardian would implement the procedures outlined in its plan for the Unanticipated Discovery of Hazardous Wastes or Contaminated Soils should contaminated soils be encountered along the pipeline construction right-of-way. In addition, Guardian has developed a SPCC Plan that would describe spill prevention practices, spill handling, and emergency notification procedures, and training requirements. Implementation of its Unanticipated Discovery of Hazardous Wastes or Contaminated Soils Plan would address steps that would be taken should soil contamination be encountered, and includes cleanup procedures and reporting guidelines. Using the measures detailed in this plan would minimize spread of contaminated soils.

4.8 SOCIOECONOMICS

Several potential socioeconomic effects may result from construction and operation of the G-II Project. Many of these potential impacts are related to construction and include the number of local and non-local construction workers who would work on the Project, their income and local expenditures, and their impact on population, public services, and temporary housing during construction. The proposed Project may also have construction and operation impacts on property values and crop values. Potential economic benefits associated with operation of the Project include increased property tax revenue and increased job opportunities and income.

A discussion of the effects of the Project on local population (including environmental justice), economy and employment, housing, public services, and property values is provided below.

4.8.1 Population

Table 4.8.1-1 provides a summary of selected population and socioeconomic statistics for the state of Illinois and DeKalb County, and Wisconsin and its associated counties: Brown, Calumet, Dodge, Fond du Lac, Jefferson, Outagamie, and Walworth. Both states and all associated counties had population increases ranging from 2 percent to 10 percent between 2000 and 2005. The 2005 population density in DeKalb County, Illinois and Dodge County, Wisconsin continued to be lower than their respective state densities. The remaining counties in Wisconsin were higher than the state population density (102 persons per square mile), ranging from 137 to 452 persons per square mile.

Project area population impacts are expected to be temporary and relatively minor. The total population change would equal the total number of non-local construction workers, plus any family members accompanying them. The Project would be located near small communities and the Milwaukee, Green Bay, and Chicago metropolitan areas. It is assumed that workers could find housing in these communities. As discussed further in section 4.8.2, Guardian expects to employ between 36 to 46 percent of its workers from the local area. Therefore, the estimated number of people who would temporarily relocate to the area during construction would not constitute a major impact on the local population. Once completed, operation of the proposed pipeline would require approximately eight full-time positions, three of which would be existing Guardian employees. This small staff could be comprised of existing residents or non-local personnel, but would not have a significant impact on the local population.

TABLE 4.8.1-1							
Existing Socioeconomic Conditions in the Vicinity of the Proposed G-II Pipeline Project							
State/ County	Population			Population Density (person/ sq. mi.)	Per Capita Income	Civilian Labor Force	Unemployment Rate
	2000 Census	2005 Estimate	Percent Change	2005	2002	2000	2006
Illinois	12,419,293	12,763,371	2.8%	229.6	\$33,404	6,208,597	4.7%
DeKalb County	88,969	97,665	9.8%	150.6	\$26,208	48,878	3.7%
Wisconsin	5,363,675	5,536,201	3.2%	101.9	\$29,923	2,869,236	4.2%
Brown County	226,778	238,987	5.4%	451.8	\$31,095	125,304	4.1%
Calumet County	40,631	44,137	8.6%	137.9	\$30,050	22,747	3.6%
Dodge County	85,897	88,103	2.6%	99.8	\$25,684	44,684	5.0%
Fond du Lac County	97,296	99,337	2.1%	137.4	\$29,487	53,683	4.7%
Jefferson County	74,021	79,328	4.7%	142.4	\$28,805	41,555	3.6%
Outagamie County	160,971	171,006	6.2%	267.2	\$29,850	88,426	4.9%
Walworth County	93,759	99,844	8.5%	179.9	\$27,364	51,861	3.6%
Sources: U.S. Census Bureau, 2006; U.S. Census Bureau, 2000; Wisconsin Department of Workforce Development, 2006; Illinois Department of Employment Security, 2006.							

4.8.1.1 Environmental Justice

United States Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (59 CFR 7629, 16 February 1994) directs federal agencies to “make...achieving environmental justice part of its mission” and to identify and address “...disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.” This section identifies any minority and low-income populations that may be affected by the proposed Project.

Minority Populations

Minority populations are persons of Hispanic or Latino origin, Blacks or African Americans, American Indians or Alaska Natives, Asians, and Native Hawaiian and other Pacific Islanders. Minority populations for 2004 are identified in table 4.8.1.1-1. The CEQ identifies these groups as minority populations when either (1) the minority population of the affected area exceeds 50 percent, or (2) the minority population percentage in the affected area is meaningfully greater than the minority population percentage in the general population or appropriate unit of geographical analysis (CEQ, 1997a).

The two largest minority groups reported in DeKalb County, Illinois in 2004 were Black or African American persons (15 percent) and persons of Hispanic or Latino origin (14 percent). DeKalb County had the highest proportion of total minority groups (16 percent), but is less than the state average of 34 percent (table 4.8.1.1-1). Brown (5 percent), Jefferson (5 percent), and Walworth (8 percent) Counties have a higher proportion of Hispanic or Latino persons than the Wisconsin state average of 4 percent. Brown and Outagamie Counties have a higher proportion

of Native Americans (3 and 2 percent, respectively) than the Wisconsin state average of 1 percent, presumably because the Oneida Nation's Reservation is located in both counties.

TABLE 4.8.1.1-1							
2004 Minority Populations for the Proposed G-II Pipeline Project							
State/ County	White	Percent Minority Composition ^{a/}	Hispanic or Latino	American Indian and Alaska Native	Black or African American	Asian	Native Hawaiian and Other Pacific Islander
Illinois	66.2%	33.5%	14.0%	0.3%	15.1%	4.0%	0.1%
DeKalb County	83.6%	15.7%	7.9%	0.3%	4.9%	2.5%	0.1%
Wisconsin	86.2%	13.0%	4.3%	0.9%	5.9%	1.9%	0.0%
Brown County	87.6%	11.7%	5.2%	2.5%	1.6%	2.4%	0.0%
Calumet County	94.8%	4.6%	1.9%	0.4%	0.6%	1.7%	0.0%
Dodge County	93.3%	6.5%	2.9%	0.4%	2.8%	0.4%	0.0%
Fond du Lac County	94.4%	5.1%	2.7%	0.5%	1.1%	0.8%	0.0%
Jefferson County	93.1%	6.6%	5.1%	0.4%	0.5%	0.6%	0.0%
Outagamie County	92.2%	7.1%	2.3%	1.6%	0.7%	2.5%	0.0%
Walworth County	89.8%	9.9%	8.1%	0.3%	0.8%	0.7%	0.0%

Source: U.S. Census Bureau, 2006
^{a/} Totals may not add to Percent Minority because of reporting classifications and/or the value is greater than zero but less than one-half unit of measurement.

Calumet and Outagamie Counties have a higher proportion of Asian persons (2 and 3 percent, respectively) than the Wisconsin state average of less than 2 percent.

As shown in table 4.8.1.1-1, the proposed Project is not expected to create disproportionately high or adverse human health or environmental effects on the minority population. Because none of the counties crossed by the Project have higher total percentages of minorities than the state that they are located, the potential adverse impacts that may be associated with the proposed Project would not disproportionately affect minorities. In addition, local communities would benefit from the payroll salaries paid to construction workers and the state sales tax on materials purchased within each county's jurisdiction. Although these benefits would be short-term, they may provide significant revenues to the affected counties.

Low Income Populations

According to the Department of Housing and Urban Development, low-income neighborhoods are those where more than 50 percent of the population has an income less than 50 percent of the median per capita income for the whole community. Low-income populations for 2003 are illustrated in table 4.8.1.1-2.

Low-income populations are defined by environmental justice guidance by using the statistical poverty threshold of the U.S. Census Bureau. In 2003, the poverty-weighted average threshold for a family of four was \$18,810 and \$9,393 for an unrelated individual (U.S. Census Bureau, 2006). The national poverty level was over 12 percent. To be classified meaningfully greater, CEQ recommends a formula describing the environmental justice low-income threshold as being 10 percent above the national rate (or 22.5 percent) as applied to local poverty rates (CEQ, 1997a). As shown in table 4.8.1.1-2, the proposed Project is not expected to create

disproportionately high or adverse human health or environmental effects on the low-income population.

TABLE 4.8.1.1-2	
2003 Low-Income Populations for the Proposed G-II Pipeline Project	
Jurisdiction	Percent Below Poverty Level
United States	12.5%
State of Illinois	11.4%
DeKalb County	9.3%
State of Wisconsin	8.9%
Brown County	8.0%
Calumet County	4.8%
Dodge County	6.7%
Fond du Lac County	6.9%
Jefferson County	5.7%
Outagamie County	5.6%
Walworth County	8.0%
Source: U.S. Census Bureau, 2006	

4.8.2 Economy and Employment

The G-II Project will establish a second interstate natural gas pipeline serving eastern Wisconsin, which will benefit consumers through increased competition and increased reliability in gas transportation services to the region. Additionally, the construction of the Project would provide employment opportunities, as well as contribute to local community businesses and provide additional service opportunities. Currently, Guardian has received 88 comment letters from local unions, businesses, colleges, universities, and hospitals indicating their support for the proposed Project.

Educational services, health care, and social assistance; manufacturing; and retail trade are the largest economic sectors in both states and the project area. The 2002 per capita income in Brown (\$31,095) and Calumet (\$30,050) Counties were slightly more than the 2002 Wisconsin per capita income. The per capita income in all other counties was lower than Illinois' average of \$33,404 and Wisconsin's average of \$29,923. The 2006 unemployment rate in Dodge (5 percent), Fond du Lac (4.7 percent), and Outagamie (4.9 percent) Counties was higher than the Wisconsin average of 4.2 percent. The unemployment rate in all other counties was lower than the state averages (table 4.8.1-1).

Construction of the proposed 109.5-mile, 30-inch and 20-inch-diameter pipeline and associated aboveground facilities would be performed using a single spread over a 7-month timeframe (likely March through October 2008). During construction of the pipeline, Guardian estimated it would employ approximately 294 to 364 construction workers and an additional 47 inspectors (341 and 411 workers total), with a peak of 420 to 520 workers. Of this number, up to approximately 420 to 520 workers would construct the pipeline and associated meter stations in Wisconsin; up to 80 construction workers would build the Sycamore Compressor Station in DeKalb, Illinois; and up to 80 workers would construct the Bluff Creek Compressor Station in Walworth County, Wisconsin. It is estimated that 30 inspectors would be employed during

construction of the pipeline and associated meter stations in Wisconsin, and 7 inspectors would be employed during construction of each compressor station in Illinois and Wisconsin.

Guardian expects to employ local construction workers where the local workforce possesses the required skills, and hire workers who reside within a reasonable distance from the Project. Based on previous construction experience, Guardian anticipates that local hires would account for approximately 136 (36 percent) to 173 (46 percent) workers for the pipeline and associated meter stations, and up to 40 workers for the construction of each compressor station (50 percent each). All inspectors are estimated to be non-local because of the specialized knowledge required for the position. Additional construction personnel hired from outside of the project area would include highly skilled mechanical, electrical, and instrumentation and control tradesmen who would temporarily relocate to site.

During the proposed 7-month construction period, Guardian estimates that the total project payroll would amount to about \$3 to \$4 million in Illinois and \$18 to \$20 million in Wisconsin. During this period, some portion of the construction payroll would be spent locally for the purchase of housing, food, gasoline, entertainment, and luxury items. The dollar amount would depend on the number of construction workers in a given area and the duration of their stay. Sales tax would be paid on any construction materials as well as any goods and services purchased with payroll monies. Guardian estimates that about \$600,000 to \$700,000 would be spent on materials and services during construction of the Project in Illinois; \$2.5 to \$2.7 million would be spent on materials and services during construction of the Project in Wisconsin. Direct payroll and materials expenditures would have a positive impact on local economies and would stimulate indirect expenditures within the project area.

During operation of the Project, Guardian expects to employ up to eight full-time positions, three of which would be existing Guardian employees. The salary range for each employee would be between \$30,000 and \$60,000 annually and estimated state taxes would be \$2,000 to \$4,000 per employee. The employees are not anticipated to significantly affect existing housing supplies, or local government expenditures for public services or facilities.

Indirect sales, jobs, and salaries would be created in new or existing businesses and organizations such as construction companies, parts and equipment suppliers, and other businesses that supply goods and services to the facility during construction and operation. In addition, jobs and salaries would be created in establishments that would supply goods and services to the Project's employees and their families, such as restaurants, retail stores, grocery stores, and banks.

In Wisconsin, natural gas transmission lines are centrally assessed for property taxes, meaning they are appraised by the state. Property taxes on pipelines are paid directly to the state and the revenue goes into the State General Fund. Currently, local taxing authorities do not receive property taxes directly from the pipelines in Wisconsin. Property taxes are estimated at \$2 to \$3 million per year for the facilities constructed in the G-II Project.

In Illinois, generally natural gas pipeline machinery and equipment are exempt from property taxes. Local taxing authorities only tax land and improvements (real estate). Taxes are paid to the county treasurer or collector and are estimated to be \$15,000 to \$50,000 per year for the facilities constructed in the G-II Project.

4.8.3 Housing

Housing statistics are presented in table 4.8.3-1. The median value of owner-occupied units in DeKalb County is \$5,100 more than the Illinois' median value of \$130,800. The median value of owner-occupied units in Brown, Jefferson, and Walworth Counties are between \$3,900 and \$16,200 more than Wisconsin's median value of \$112,200. Walworth County had a higher percentage of vacant housing units (21 percent) than Wisconsin (10 percent) at 9,261 units. The relatively large number of units in Walworth County suggests that the total number of people may significantly increase during portions of the year, particularly in the summer months (Walworth County, 2001).

TABLE 4.8.3-1 2000 Housing Characteristics for the Proposed G-II Pipeline Project						
State/ County	Total Housing Units	Vacant Housing Units	Seasonal, Recreational, or Occasional Use	Median Value, Owner-Occupied Units	Median Contract Monthly Rent	Vacancy Rate
Illinois	4,885,615	293,836	29,712	\$130,800	\$605	6.0%
DeKalb County	32,988	1,314	111	\$135,900	\$577	4.0%
Wisconsin	2,321,144	236,600	142,313	\$112,200	\$540	10.2%
Brown County	90,199	2,904	414	\$116,100	\$520	3.2%
Calumet County	15,758	848	287	\$109,300	\$491	5.4%
Dodge County	33,672	2,255	815	\$105,800	\$528	6.7%
Fond du Lac County	39,271	2,340	573	\$101,100	\$500	6.0%
Jefferson County	30,092	1,887	784	\$123,800	\$564	6.3%
Outagamie County	62,614	2,084	237	\$106,000	\$534	3.3%
Walworth County	43,783	9,261	7,458	\$128,400	\$588	21.2%
Source: U.S. Census Bureau, 2005						

Temporary housing is available in the form of daily, weekly, and monthly rentals in numerous motels, hotels, campgrounds, and RV parks located within commuting distance of the Project. Because the Project is located near small communities and the Milwaukee, Green Bay, and Chicago metropolitan areas, it is assumed that workers could find nearby housing in each county. In 2000, all counties had a combined vacant housing unit rate of 22,893. Of the total combined county vacant housing units, 10,679 seasonal, recreational, and occasional use housing units were available (table 4.8.3-1).

On average, approximately 36 to 46 percent of the construction workers would come from within the project area and would not require temporary housing. The remaining 54 to 64 percent of the workers for the pipeline would require temporary housing in the project vicinity during construction. The average number of non-local workers for the pipeline would be 203 to 240 in any given month, and possibly 254 to 301 at peak construction. Assuming double occupancy, these workers would require an average of 127 to 150 hotel and/or motel rooms or other housing units per month. This number could be lower because some workers may provide their own housing units (e.g., travel trailers or campers).

Based on the information above, there is an adequate supply of local housing and temporary accommodations in all counties for the expected project demand. In addition, nearly half of the

employees are expected to be hired locally and therefore already have housing, which would reduce the overall demand from the project workforce. Because the proposed Project is scheduled to be constructed during summer months, this could coincide with other demands for housing and temporary accommodations from tourism and other unrelated construction projects. Because the demand (in both number and time) from these other users could be influenced by factors such as weather and economic conditions, such demand would be unpredictable. At present, it is reasonable to assume that the facilities available near the project area would be able to accommodate the expected workforce. Eight permanent employees, three of whom would be existing Guardian employees, would be anticipated for operation of the pipeline and associated facilities, but this number is minor; therefore, no long-term major impacts on local housing are anticipated.

4.8.4 Public Services

Table 4.8.4-1 provides additional information about the existing infrastructure, revenues, and communities within 1 mile of the pipeline facilities. The project area has well-developed infrastructure to provide health, police, fire, emergency, and social services near the project site. Public health infrastructure in the eight-county project area includes 30 hospitals, 90 sheriff/police departments, and 121 fire/emergency departments. Police, ambulance, fire, and hazardous materials services are provided by county and/or municipal jurisdictions, as well as volunteer organizations, and private hospitals.

There are many communities within 1 mile of the pipeline facilities in Illinois and Wisconsin and some of these communities are located in the metropolitan areas of Milwaukee, Green Bay, and Chicago (table 4.8.4-1). Most of these communities support government and public services such as police protection, fire protection, and medical services.

The eight-county project area includes a combined total of 30 hospitals, where two hospitals in DeKalb County are located in the nearby community of Sycamore. Other nearby communities along the proposed Project do not have hospitals, but these facilities are located between 5 and 30 miles from the nearby communities. The project area includes a combined total of 90 sheriff and police departments. Each county has a sheriff's department, and both communities in DeKalb County (Sycamore and Genoa) have local police departments. Sheriff departments in the other communities range from 8 to 25 miles away. The project area includes a combined total of 121 fire and emergency departments. Most nearby communities have local fire departments with volunteer firefighters.

Project demands on local agencies during construction could include increased enforcement activities associated with issuing permits for vehicle load and width limits, local police assistance during construction to facilitate traffic flow, and emergency medical services to treat any injuries resulting from construction accidents. There are adequate providers of professional and commercial services near the project area in the nearby communities, capable of meeting the needs of the project workforce. Because the non-local workforce would be small relative to the current population of the area, the Project would not have a significant impact on local infrastructure and public services.

TABLE 4.8.4-1					
Public Services for the Proposed G-II Pipeline Project					
State/County	Medical Services	Sheriff/Police Departments	Fire/Ambulance Departments	County Tax Levy (millions)	Communities within 1 Mile of the Pipeline Facilities
Illinois					
DeKalb County	4	15	11	\$15	Sycamore and Genoa
Wisconsin					
Brown County	5	8	19	\$71	Holland, Wrightstown, and Little Rapids
Calumet County	1	4	9	\$13	Jericho, St. John, and Dundas
Dodge County	6	13	23	\$110	Lebanon, Woodland, Iron Ridge, Knowles, Nasbro, Brownsville, and Lomira
Fond du Lac County	3	7	17	\$29	Byron, Eden, Marblehead, St. Peter, Malone, Johnsborg, and Garnet
Jefferson County	4	9	12	\$23	None
Outagamie County	5	13	19	\$50	Oneida
Walworth County	2	21	11	\$49	None
Total	30	90	121	\$360	--
Sources: Hometown Locator, 2006; Firehouse Network, 2006.					

Personnel associated with operating and maintaining the pipeline typically would reside in communities near the permanent facilities (i.e., Sycamore and Bluff Creek compressor stations, Chilton meter station). These employees are not anticipated to significantly affect local government expenditures for public services or facilities.

4.8.5 Property Values

The proposed pipeline may have an impact on the property values of the surrounding area. This valuation would depend on many factors, including the size of the parcel, the values of adjacent properties, the presence of other utilities, the current value of the land, and the current land use. The majority of land use crossed by the pipeline route is agricultural.

Guardian would acquire an easement for both temporary (construction) and permanent (operational) rights-of-way. This easement would give Guardian the right to construct, operate, and maintain the pipeline, and establish a permanent right-of-way. Guardian would purchase outright any land that would be permanently occupied by a major aboveground facility (e.g., compressor stations, meter stations). Land required for smaller aboveground appurtenances, such as the MLV sites, would be acquired by easement.

Landowners would be compensated for agricultural-related losses according to agreements negotiated between each landowner and Guardian. Property value guidelines would be determined by a professional experienced in Wisconsin valuation and Guardian would offer the landowners fair compensation for the temporary and permanent rights-of-way, and any damages due to crop or other loss. The easement would detail the allowable uses and restricted uses of the permanent right-of-way. If an easement cannot be negotiated with the landowner and the Project becomes certificated, the easement may be acquired by eminent domain proceedings. In this case, Guardian would compensate the property owner, but the courts would determine the

amount of compensation. Guardian would make every effort to negotiate in good faith to minimize the need to use the eminent domain process.

Guardian's proposed route would cross one certified organic farm. If construction activities were to result in decertification, this would be limited to the right-of-way and additional buffer areas, but the remainder of the field would retain its certification. Decertification of the right-of-way would temporarily reduce the amount of organic production available for the local market, but Guardian anticipates that the reduction would be relatively small in relation to the total organic production in the area, and that other organic producers in the area could make up any deficit. Guardian would implement measures to minimize the potential for construction activities to result in loss of organic certification. In the event that a portion of an organic farm loses its certification as a result of pipeline construction, there would be a reduction of income from the affected areas. In addition, the presence of a strip of non-certified land through an otherwise certified field could interfere with some field operations. These losses would have to be determined on a case-by-case basis, but Guardian would fully compensate the organic producer for the income loss to the extent due to construction of the pipeline. In most cases, Guardian anticipates the area could be recertified within a period of 3 years.

Property taxes are generally based on the actual use of the land. Construction of the pipeline would not change the general use of the land, but would preclude construction of aboveground structures on the permanent right-of-way. If a landowner feels that the presence of a pipeline easement reduces the value of his or her land, resulting in an overpayment of property taxes, he or she may appeal the issue of the assessment and subsequent property taxation to the local property tax agency. This issue is beyond the scope of this EIS.

4.9 TRANSPORTATION AND TRAFFIC

Several potential transportation effects may result from construction of the G-II Project. These potential impacts are short-term and include daily commuting of the construction workforce to the work site and pipeline right-of-way, the movement of construction equipment and material to and from the work areas, and construction of the pipeline across roads.

A discussion of the effects of the Project on transportation and traffic is provided below, including mitigation measures.

4.9.1 Existing Transportation, Impacts, and Mitigation Measures

The local road and highway system in the project area is well developed, consisting of U.S. highways, state highways, county highways, and local streets. The pipeline would cross approximately 5 U.S. highways, 11 state highways, 113 county highways, as well as other paved and unpaved roads in Wisconsin.

Two railway systems, the Wisconsin and Southern Railroad Company (WSOR) and the Canadian National Railway (CN), also operate in the project area. The pipeline would cross the WSOR once at MP 16.9 and the CN four times at MPs 35.9, 42.1, 78.6, and 93.9.

To avoid or minimize direct impacts on roads and railways or the vehicles using the roads or railways, Guardian proposes to bore paved roads and all operating railroads. However, motorists may encounter slow moving vehicles and road closures during construction. Unpaved roads

would be crossed either by boring or by using the open-cut method. The open-cut method could temporarily disrupt road traffic.

To maintain safe conditions, Guardian would direct its construction contractors to comply with applicable vehicle weight and width restrictions, and to remove soil that is left on the road surface by the crossing of construction equipment. In addition, when it is necessary for equipment to move across paved roads, mats or other appropriate measures would be used to prevent damage to the road surface.

4.9.2 Traffic, Impacts, and Mitigation Measures

Construction of the pipeline and associated facilities would increase traffic on local roadways for the delivery of equipment and materials, and for construction worker transportation. These roads are primarily two-lane local roads that cross mostly rural agricultural land. Guardian would use 172 existing public roads and 15 existing private roads, as well as 8 new access roads (5 temporary and 3 permanent) related to support construction and/or operation of its proposed pipeline and aboveground facilities.

Travelers would experience some minor inconveniences for local traffic on lightly traveled and unimproved county roads that would be crossed by the pipeline using the open-cut method. To minimize traffic delays at roads that are open-cut, Guardian would establish detours before excavating the roadbed. In the absence of reasonable detours, construction across the roadway would be staged to allow at least one lane of traffic to remain open, except for brief periods when road closure is essential to lay the pipeline. Guardian would minimize the duration of open-cut crossings and, in most cases, would complete these road crossings in one day or less. Efforts would be made to schedule lane closures outside of peak traffic periods.

The movement of construction equipment and materials from the pipe storage/contractor yard to the construction work area would also result in an additional short-term impact on the transportation network. Guardian estimates that about 58 heavy truck deliveries and 286 general truck deliveries would occur per day to the project site. This level of traffic would occur throughout the day. In general, these delivery trucks would be distributed along the length of the construction spread, which would tend to reduce the impact on traffic at any one location. As such, the Project should not add significantly to road congestion.

Construction workers commuting to the project area are expected to add an average of between 341 and 411 vehicle trips per day (to and from the work site). This level of traffic would remain fairly constant throughout the construction period, and would typically occur at early morning hours and evening hours. Road congestion caused by construction workers commuting to work would be significant only if each of the several hundred workers used a personal vehicle to travel to the work site, and if most of this travel took place during peak traffic hours. Pipeline construction work, however, is generally scheduled to take advantage of daylight hours so that most workers commute to and from the sites in off-peak hours. Construction workers would typically leave a number of personal vehicles at the pipe storage/contractor yard and share rides to the construction right-of-way with other workers, thereby reducing overall traffic. Furthermore, workers would be distributed along the length of the construction spread, which tends to reduce the impact on traffic at any one location. Given these reasons, the Project should not add significantly to road congestion.

Detours or obstructions in traffic flow due to the large vehicles or construction of pipeline road crossings may require short-term assistance from local police in limited instances. Project-related demands on local police workloads are not expected to be significant.

4.10 CULTURAL RESOURCES

Section 106 of the NHPA, as amended, requires the FERC to take into account the effect of its undertakings (including the issuance of Certificates) on any properties listed in, or eligible for listing in, the NRHP and to provide the ACHP an opportunity to comment. Guardian, as a non-federal party, is assisting the FERC in meeting its obligation under Section 106 by conducting the field surveys and evaluations required by ACHP regulations in 36 CFR 800.

The FERC is responsible for consulting with the appropriate SHPO prior to making determinations of NRHP eligibility and project effects. In addition, the views of other consulting parties and interested Indian tribes will be considered if any historic properties or sites of religious or cultural importance to a tribe would be adversely affected by the Project.

4.10.1 Results of Cultural Resource Surveys

4.10.1.1 Wisconsin

Guardian had a contractor (Public Service Archaeology Program of the University of Illinois [PSAP]) conduct cultural resources surveys for the Project. The surveys covered about 7.6 miles of the pipeline route on lands managed by the Oneida Nation and about 84.4 miles along the pipeline route outside of the reservation. An additional 2.3 miles of route alternatives have been partially surveyed. About 23.0 miles of pipeline route have not been surveyed due to lack of access. The width of the survey corridors inspected varied from 200 to 400 feet to cover ATWSs at stream and road crossings. In addition, surveys were conducted at 18 proposed access road locations, the proposed Fond du Lac County pipe storage/contractor yard, and the proposed Bluff Creek Compressor Station location.

Within the Oneida Reservation, PSAP identified five previously unknown archaeological sites. Elsewhere along the proposed pipeline route, PSAP identified five previously unknown archaeological sites and relocated one previously recorded archaeological site. Of the 11 sites identified during PSAP's surveys, nine were recommended as being not eligible for nomination to the NRHP, requiring no further work.

Only two sites (47DO657 and AOS8) were unevaluated or recommended as potentially eligible to the NRHP. Site 47DO657, a multicomponent prehistoric site, had been previously recorded, and was relocated just west of the proposed pipeline construction right-of-way. Although PSAP recommended site 47DO657 as potentially eligible for the NRHP, it should not be affected by the Project because Guardian has filed a reroute that would avoid the site. Site AOS8, a multicomponent prehistoric and historic archaeological site, was also recommended as potentially eligible for the NRHP. However, because AOS8 appears to be within the proposed pipeline construction right-of-way, PSAP recommended that additional research be conducted at this site (Walz et al., 2006a and 2006b). The pipeline route may cross a portion of another previously reported prehistoric site, 47BR146. This area was not accessible by PSAP for survey and has not been evaluated for project impact or NRHP eligibility.

Guardian submitted copies of the survey reports to the Wisconsin SHPO and interested Indian tribes on October 9, 2006. In a letter dated November 9, 2006, the SHPO accepted PSAP's report of its summer 2006 cultural resources survey, and agreed with the report's recommendations that sites 47BR451, 47CT217, 47DO709, 47DO710, and 47DO711 are not eligible for the NRHP, and require no further work. While the SHPO also agreed that site 47DO657 qualified for the NRHP, it would be outside the construction right-of-way and not affected by the Project. We concur that for the parcels surveyed in 2006, the PSAP report did not identify any historic properties outside of the Oneida Reservation in Wisconsin that would be adversely affected.

4.10.1.2 Illinois

Guardian's search of site files maintained by the Illinois Historic Preservation Agency did not identify any cultural resources within 1 mile of the proposed Sycamore Compressor Station. Guardian initiated consultation with the Illinois SHPO through a letter dated March 23, 2006. By letter dated September 5, 2006, the SHPO concurred with Guardian's recommendation that no survey is necessary at the proposed Sycamore Compressor Station, because the undertaking at that location is not likely to affect historic properties. We agree that no additional investigations are necessary at the proposed Sycamore Compressor Station because it is not likely that historic properties would be found or would be adversely affected at that location.

4.10.2 Unanticipated Discoveries Plan

Guardian filed draft Unanticipated Discoveries Plans to handle cultural resources or human remains encountered during construction of the proposed Project. Unfortunately, these draft plans were formulated for the original Guardian Project in 1999, and are considered by staff to be out-of-date. We requested that Guardian provide updated state-specific plans, developed in consultation with the SHPOs and interested tribes, that adhere to Section III of OEP's "Guidelines for Reporting on Cultural Resources Investigations for Pipeline Projects" (December 2002 version).

Guardian provided a revised Unanticipated Discovery Plan to the Illinois SHPO on November 3, 2006. In a letter dated November 16, 2006, the Illinois SHPO accepted that revised plan. Both the revised plan and correspondence with the SHPOs were filed with the FERC on February 1, 2007. A copy of the revised plan for Wisconsin was provided to the Oneida Nation on January 25, 2007. The revised Unanticipated Discovery Plan for Wisconsin was appended to PSAP's survey report that the Wisconsin SHPO accepted on November 9, 2006. We agree with the Illinois and Wisconsin SHPOs that the revised discovery plans are acceptable.

4.10.3 Native American Consultations

Guardian, or its consultants, contacted 22 Indian tribes regarding its proposed Project. The tribes contacted include the Oneida Nation, Bad River Band of Lake Superior Chippewa Indians of Wisconsin, Forest County Potawatomi Community, Ho-Chunk Nation, Lac Courte Oreilles Band of Lake Superior Chippewa Indians of Wisconsin, Lac du Flambeau Band of Lake Superior Chippewa Indians, Menominee Indian Tribe of Wisconsin, Red Cliff Band of Lake Superior Chippewa, Sokoagon Chippewa Community, St. Croix Chippewa Tribe of Wisconsin, Stockbridge-Munsee Band of Mohican Indians, Sac and Fox Nation of Missouri in Kansas and Nebraska, Sac and Fox Nation of Mississippi in Iowa, Iowa Tribe of Oklahoma, Winnebago

Tribe of Nebraska, Kickapoo Tribe of Kansas, Kickapoo Traditional Tribe of Texas, Kickapoo Tribe of Oklahoma, the Prairie Band of Potawatomi Nation, Citizen Potawatomi, and the Hannahville Indian Community.

4.10.3.1 Consultations with the Bureau of Indian Affairs

Guardian consulted with the BIA-Midwest Regional Office about the 13.9-mile portion of the Project (MP 96.5 to MP 110.4) that is proposed to be built across land managed by the Oneida Nation. A summary of Guardian's consultation with the BIA is contained within appendix L, table 1-L, to this EIS. Guardian applied for an Archaeological Resources Protection Act (ARPA) Permit to conduct cultural resources investigations on Oneida Nation lands. On August 14, 2006, the permit was reviewed by Corinna Williams, Oneida Tribal Historic Preservation Officer (THPO), approved by the tribe, and on August 16, 2006, it was executed by the BIA. On August 28, 2006, the THPO approved survey of a minor proposed route variation on Oneida Nation lands and an amendment to the ARPA permit was executed by the BIA on August 30, 2006. In a telephone conversation with Guardian's consultant, a representative of the BIA confirmed that they had received a copy of PSAP's 2006 survey report, and had no specific comments.

4.10.3.2 Consultations with the Oneida Nation

Appendix L, table 2-L, summarizes consultations between Guardian and their consultants and representatives of the Oneida Nation about the proposed Project. At a meeting with Oneida Nation representatives on March 1, 2006, Guardian was informed that Duck Creek is considered by the tribe to be a sensitive natural and cultural resource. In correspondence on August 14, 2006, the Oneida THPO indicated that there are five previously recorded prehistoric archaeological sites, four historic sites, and four culturally sensitive areas located within 1 mile of the proposed Project on Oneida Nation lands. In approving the BIA-issued ARPA permits discussed in section 4.10.3.1, the tribe gave permission for Guardian to perform cultural resources surveys within the Oneida Reservation, and to temporarily store collected artifacts at the University of Illinois at Urbana-Champaign until the Oneida Nation Museum becomes available for permanent curation.

On August 25, 2006, the Oneida THPO and the PSAP field director visited four newly discovered sites and examined associated artifact assemblages. By e-mail to Guardian's consultant on January 3, 2007, the Oneida THPO recommended Phase II testing at sites AOS8 and AOS9, and additional background research for sites AOS7 and AOS10. The THPO suggested that these additional data be included in a revised Phase I report along with the Unanticipated Discoveries Plan. In a January 15, 2007 e-mail, the THPO approved the curation plans drafted by PSAP for collections to be returned to the Oneida Nation. The THPO will provide these to the PSAP once they are available.

4.10.3.3 Consultations with Other Interested Indian Tribes

Consultations with interested Indian tribes, other than the Oneida Nation, are summarized in appendix L, table 3-L. The Sac and Fox Nation of Missouri in Kansas and Nebraska, Sac and Fox Tribe of the Mississippi in Iowa, Lac du Flambeau Band of Lake Superior Chippewa Indians, Stockbridge-Munsee Band of Mohican Indians, Winnebago Tribe of Nebraska, Sac and Fox Nation of Oklahoma, Ho-Chunk Nation, Menominee Indian Tribe of Wisconsin, Kickapoo

Traditional Tribe of Texas, Bad River Band of Lake Superior Chippewa Indians of Wisconsin, Forest County Potawatomi Community, and Prairie Band Potawatomi Nation responded to Guardian's consultation request letters sent to them in March 2006 or to follow-up correspondence, e-mails from Guardian's consultants, and telephone calls.

As a result of Guardian's contact program, the Sac and Fox Nation of Missouri in Kansas and Nebraska, Sac and Fox Tribe of the Mississippi in Iowa, Lac du Flambeau Band of Lake Superior Chippewa Indians, Ho-Chunk Nation, Winnebago Tribe of Nebraska, Citizen Potawatomi Nation, Forest County Potawatomi, Citizen Potawatomi Nation, Menominee Indian Tribe of Wisconsin, and Prairie Band Potawatomi Nation requested that they be notified if burial sites or other cultural resources are discovered.

The Lac du Flambeau Band of Lake Superior Chippewa Indians indicated to Guardian that its THPO would be available to conduct archival research to identify cultural, archaeological, and historical resources. Likewise, the Ho-Chunk Nation Heritage Preservation Office indicated that it could assist in the identification of cultural, archaeological, and historical resources, and that tribal records may include sites significant to the Ho-Chunk Nation that may not be listed in SHPO databases. However, no information has been provided by the Ho-Chunk Nation in response to PSAP's request for information about culturally significant sites or locations that may be affected by the Project.

The THPO of the Stockbridge-Munsee Band of Mohican Indians indicated that it has information on archaeological sites, burial mounds and cemeteries, and traditional cultural properties from oral and written traditions from tribal members. The THPO for the Stockbridge-Munsee Band of Mohican Indians participated in a meeting held on July 27, 2006, with Guardian and its cultural resources consultant, and the Oneida THPO. In a August 8, 2006 conversation with PSAP, the THPO for the Stockbridge-Munsee Band of Mohican Indians stated that she no longer had concerns about the Project's potential impact on cultural or religious sites of importance to the tribe because of the Project's distance away from Lake Winnebago.

The Lac du Flambeau Band of Lake Superior Chippewa Indians requested copies of the archaeological survey reports, and indicated that the tribe should be consulted by the FERC in the event that a historic property would be adversely affected by the Project. Copies of cultural resources survey reports were also requested by the Ho-Chunk Nation. Guardian documented that it sent copies of the survey reports to the Oneida Nation, Bad River Band of Lake Superior Chippewa Indians of Wisconsin, Lac de Flambeau Band of Lake Superior Chippewa Indians, Ho-Chunk Nation, Menominee Indian Tribe of Wisconsin, and Stockbridge-Munsee Band of Mohican Indians on October 9, 2006.

4.10.4 Compliance with NHPA

We have fulfilled our responsibilities with regards to section 101(d)(6) of the NHPA, 36 CFR 800.2(c)(2), and the American Indian Religious Freedom Act. Guardian, as our non-federal representative, contacted Indian tribes that may attach religious or cultural significance to sites in the project area. The Oneida Nation indicated concerns about potential impacts on Duck Creek and on bears and wolves. Elsewhere in this EIS we address how Guardian would avoid, reduce, or mitigate impacts on those animal species. The Oneida Nation has also expressed concern for two vegetative species of cultural significance, sweet flag and black ash, identified within the

proposed construction right-of-way during wetland surveys on the Reservation. To ensure impacts on these culturally significant plant species are minimized, **we recommend that:**

- **Guardian should file with the Secretary for review and approval by the Director of OEP compensatory mitigation plans or plans to minimize impacts on sweet flag and black ash on the Oneida Reservation near Duck Creek during construction and operation of the pipeline developed in consultation with the Oneida Nation prior to construction. The plans should include records of consultation with the Oneida Nation.**

No other Indian tribes have identified traditional cultural properties that may be adversely affected by this project, nor have any specific sites of religious or cultural importance to Indian tribes within the area of potential effect been identified by Guardian's cultural resources consultants, or the SHPOs.

We have not yet completed the process for complying with Section 106 of the NHPA. About 23 miles of pipeline route has not yet been surveyed for cultural resources because of lack of access. These parcels cannot be surveyed until after the Project is authorized or Guardian obtains access to the tracts. Guardian indicated that it would conduct additional investigations for sites within the Oneida Reservation in the spring of 2007.

We cannot make determinations about NRHP eligibility or project effects until the additional data have been provided. If any historic property would be adversely affected, the FERC would consult with the appropriate parties, including the SHPO and interested Indian tribes, to resolve adverse effects, and would request if the ACHP would like to participate in accordance with 36 CFR 800.6(a)(1). Guardian would be required to produce site-specific treatment plans for the mitigation of adverse effects at historic properties that cannot be avoided, to be reviewed and approved by the appropriate parties. These treatment plans would then be included as part of a Memorandum of Agreement (MOA) between the FERC, SHPO, Oneida Nation (if the affected historic property is on Oneida Nation-managed land), other interested Indian tribes, and the ACHP (if it chooses to participate). Once an MOA is executed, Guardian would implement the specified treatment measures, after the Commission issues an Order authorizing the Project. The FERC would ensure that treatment is carried out according to the terms of the MOA before construction is allowed in any given area where a historic property would be affected.

To ensure that the FERC's responsibilities under the NHPA and its implementing regulations are met, **we recommend that:**

- **Guardian defer construction and use of facilities, including staging, storage, and temporary work areas and new or to be improved access roads until:**
 - a. **Guardian files with the Secretary all additional required cultural resource inventory and evaluation reports, and necessary avoidance or treatment plans;**
 - b. **Guardian files copies of comments from the Wisconsin SHPO and interested Indian tribes on all reports and plans;**
 - d. **the ACHP has been provided an opportunity to comment if any historic properties would be adversely affected; and**
 - e. **the Director of OEP reviews and approves all reports and plans and notifies Guardian in writing that it may proceed with treatment or construction.**

All material filed with the Commission that contains location, character, and ownership information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: “CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE.”

4.11 AIR QUALITY AND NOISE

4.11.1 Air Quality

4.11.1.1 Regional Climate

The climate in the project area is predominantly continental results in with some modification by the influence of Lake Michigan. The area is characterized by cold, snowy winters and warm summers. The moderating effect of Lake Michigan results in temperatures that are somewhat higher during cold weather conditions and lower during warm weather conditions, when compared with temperatures of areas at similar latitudes. Annual average temperatures range from approximately 49°F, for the southern portion of the project area, to approximately 44°F for the northern portion of the project area. The long-term mean annual precipitation ranges from about 28 to 39 inches, and thunderstorms are a typical summer phenomenon. Average annual wind speeds range from approximately 10.3 miles per hour (mph) in the southern portion of the project area to approximately 9.8 mph in the northern portion of the project area.

4.11.1.2 Existing Air Quality

Ambient Air Quality Standards and Attainment Status

Ambient air quality is protected by federal and state regulations. The EPA has established National Ambient Air Quality Standards (NAAQS) for criteria pollutants for the purpose of protecting human health (primary standards) and welfare (secondary standards). The NAAQS set limits for ambient (outdoor) levels of the following criteria pollutants: nitrogen dioxide (NO₂), carbon monoxide (CO), ozone (O₃), sulfur dioxide (SO₂), lead (Pb), and particulate matter (PM₁₀ and PM_{2.5}). The NAAQS are codified in 40 CFR 50 and summarized in table 4.11.1.2-1. The EPA used results of clinical and epidemiological studies to establish the primary NAAQS to protect public health, including the health of “sensitive” populations such as asthmatics, children, and the elderly. The secondary NAAQS protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

The WDNR and Illinois Environmental Protection Agency (IEPA) have adopted the NAAQS as the ambient air quality standards for their states.

Air Quality Monitoring and Existing Air Quality

The WDNR and IEPA maintain an extensive network of air quality monitors located throughout their states for a variety of purposes. Air quality monitoring data were reviewed to characterize the background air quality for criteria pollutants in the project area. Data were reviewed for monitoring stations located in Dodge County, Wisconsin and Winnebago County, Illinois. If data were unavailable from these counties, data were reviewed from Milwaukee County, Wisconsin. The maximum background concentrations for all monitoring data reviewed are also presented in table 4.11.1.2-1.

The entire United States has been classified by the EPA as being in “attainment,” “non-attainment,” or “un-classified” with respect to ambient air quality standards. The EPA has designated all parts of the G-II Project area as in attainment for all criteria pollutants.

TABLE 4.11.1.2-1

National Ambient Air Quality Standards and Ambient Background Concentrations

Pollutant	Averaging Time	NAAQS ($\mu\text{g}/\text{m}^3$)	Ambient Background ($\mu\text{g}/\text{m}^3$)
SO ₂	Annual <u>a</u> /	80 (0.030 ppm)	NA
	24-Hour <u>b</u> /, <u>d</u> /	365 (0.14 ppm)	0.012 ppm
	3-Hour <u>c</u> /, <u>d</u> /	1,300 (0.5 ppm)	0.003 ppm
PM ₁₀	Annual <u>a</u> /, <u>e</u> /	50	21
	24-Hour <u>b</u> /, <u>d</u> /	150	55
PM _{2.5}	Annual <u>a</u> /, <u>f</u> /	15	16
	24-Hour <u>b</u> /, <u>g</u> /	65	47
CO	8-Hour <u>b</u> /, <u>d</u> /	10,000 (9 ppm)	4.5 ppm
	1-Hour <u>b</u> /, <u>d</u> /	40,000 (35 ppm)	9.5 ppm
Ozone	8-Hour <u>c</u> /, <u>h</u> /	157 (0.08 ppm)	0.082 ppm <u>i</u> /
	1-Hour <u>b</u> /	235 (0.12 ppm)	0.098 ppm
NO ₂	Annual <u>a</u> /	100 (0.05 ppm)	0.017 ppm
Lead	Quarter <u>a</u> /	1.5	

a/ Arithmetic mean.
b/ Block average.
c/ Rolling average.
d/ Not to be exceeded more than once per year.
e/ To attain this standard, the 3-year average of the weighted annual mean PM₁₀ concentration at each monitor within an area must not exceed 50 $\mu\text{g}/\text{m}^3$.
f/ To attain this standard, the 3-year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 $\mu\text{g}/\text{m}^3$.
g/ To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 65 $\mu\text{g}/\text{m}^3$.
h/ To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
i/ Due to rounding, the background ozone concentration of 0.082 ppm complies with the 8-hour standard.
 $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter.
ppm = parts per million.

4.11.1.3 Regulatory Requirements for Air Quality

The proposed G-II Project would generate air pollutant emissions through both short-term construction activities and long-term operation of the stationary emission units at the compressor stations. Emissions from all phases of construction and operation of the emission units would be subject to applicable state and federal air regulations. The compressors would be electric motor-driven; therefore, the only long-term source of air pollutants would be the emergency diesel-fuel-fired backup generators. However, because these emergency generators would be limited to 500 hours per year, potential emissions are also limited. The significant equipment to be located at the compressor stations are as follows:

Bluff Creek Compressor Station

- one 39,000 hp electric-motor-driven compressor; and
- one 350 hp diesel-fired emergency backup generator.

Sycamore Compressor Station

- one 39,000 hp electric-motor-driven compressor; and
- one 350 hp diesel-fired emergency backup generator.

The CAA of 1970, 42 United States Code 7401 et seq., as amended in 1977 and 1990, and 40 CFR 50-99 are the basic federal statutes and regulations governing air pollution in the United States. We have reviewed the following federal requirements to determine their applicability to the proposed G-II Project. The provisions of the CAA that are potentially applicable to the Project include:

- New Source Review/Prevention of Significant Deterioration;
- New Source Performance Standards;
- Title V Operating Permit;
- National Emission Standards for Hazardous Air Pollutants;
- Maximum Achievable Control Technology;
- General Conformity; and
- State Regulations.

New Source Review (NSR)

Separate procedures have been established for federal pre-construction review of certain large proposed projects in either attainment areas or non-attainment areas. The federal pre-construction review for new or modified sources located in attainment areas is Prevention of Significant Deterioration (PSD). The review process is intended to prevent the new source from degrading existing air quality below acceptable levels. The federal pre-construction review for new or modified major sources located in non-attainment areas is commonly called Non-Attainment New Source Review (NNSR). NNSR only applies to new sources of these pollutants or their precursors within areas that are classified as non-attainment. A new facility can undergo both PSD and NNSR review, depending on the emissions of various pollutants and the attainment status of the area. The entire G-II Project area is classified as attainment for all criteria pollutants. Therefore, the proposed project area is not subject to NNSR permitting.

Prevention of Significant Deterioration

One of the factors considered in the PSD permit review is potential impacts on protected Class I airsheds located throughout the country. Class I areas are specifically designated as pristine wilderness areas. The G-II Project would not be located in a Class I area, nor would it be located within 100 kilometers (62 miles) of a Class I area; therefore, a full Class I analysis would not be required to be included in the permit application. The closest Class I areas to the G-II Project is Rainbow Lake, Wisconsin, which is approximately 250 miles northwest of the proposed Bluff Creek Compressor Station. Therefore, the Federal Class I Area requirements do not apply to this Project.

“Major sources” that produce a significant emissions increase are reviewed for compliance with the PSD regulations. PSD review for major stationary sources includes an assessment of the existing air quality; the use of analytic dispersion models to demonstrate compliance with the NAAQS and applicable PSD increments; a demonstration that control of emissions through use of best available control technology (BACT) has been applied to the subject emission sources;

and an assessment of the impact of new emissions on the environmental resources such as soils and vegetation.

The emission threshold for “major stationary sources” varies under PSD according to the type of facility. As defined by 40 CFR 52.21 (b)(1)(i), a facility is considered major under PSD if it emits or has the potential to emit 250 tons per year (tpy) or more of any criteria pollutant or 100 tpy for specified source categories. There are no processes at any of the proposed project facilities that are included as a specified source category; therefore, the PSD threshold for the proposed facilities is 250 tpy. As shown in table 4.11.1.3-1, potential annual emissions from the proposed G-II Project would not exceed the 250 tpy threshold for any criteria pollutant and would not be considered a “major stationary source.” Therefore, the proposed Project would not be subject to PSD permitting requirements.

TABLE 4.11.1.3-1						
Potential Emissions for Proposed G-II Compressor Stations (in tons per year) ^{a/}						
Emission Source	NO ₂ (tpy)	CO (tpy)	SO ₂ (tpy)	PM ₁₀ /PM _{2.5} (tpy)	VOC (tpy)	Pb (tpy)
Bluff Creek Compressor Station - Emergency Generator	1.0	0.3	0.2	0.04	0.04	Negligible
Sycamore Compressor Station - Emergency Generator	1.0	0.3	0.2	0.04	0.04	Negligible

^{a/} Potential emissions based on 500 hours per year operation of the emergency generators.

New Source Performance Standards

New Source Performance Standards (NSPS), codified at 40 CFR 60, establish emission limits and associated requirements for monitoring, reporting, and recordkeeping for specific emission source categories. NSPS apply to new, modified, or reconstructed sources. The federal NSPS have been incorporated into Wisconsin (Administrative Code NR440) and Illinois (Title 35, Subtitle B, Chapter 1, Subchapter e, Part 230) state regulations. The following NSPS requirements were identified as potentially applicable to the specified sources at the facility.

Subpart IIII of 40 CFR Part 60, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, applies to stationary compression ignition (i.e., diesel-fueled) internal combustion engines that were ordered after July 11, 2005 and manufactured after April 1, 2006. The proposed emergency generators at the Bluff Creek and Sycamore Compressor Stations would be subject to Subpart IIII regulations. Guardian would purchase emergency generators from a manufacturer certifying that the generators meet model year 2007 emission limits. Guardian would also comply with requirements applicable to owners and operators of emergency generators. These requirements include:

- operating each generator only during 1) emergencies, and 2) up to 100 hours per year for maintenance and readiness checks;
- installing a non-resettable hour meter on each generator;
- maintaining records of operating time;
- operating and maintaining the generators according to manufacturer instructions and approved procedures; and
- meeting low-sulfur diesel fuel requirements that become effective on October 1, 2007 and on October 1, 2010.

Subpart Kb of 40 CFR Part 60, Standards of Performance for Volatile Organic Liquid Storage Vessels for which Construction, Reconstruction, or Modification Commenced After July 23, 1984, applies to storage vessels with a capacity greater than or equal to 75 cubic meters (m^3) (19,813 gallons) that is used to store volatile organic liquids (VOL). This subpart does not apply to storage vessels with a capacity greater than or equal to 151 m^3 storing a liquid with a maximum true vapor pressure less than 3.5 kilopascals (kPa) or with a capacity greater than or equal to 75 m^3 but less than 151 m^3 storing a liquid with a maximum true vapor pressure less than 15.0 kPa. Therefore, Subpart Kb potentially could be applicable. However, because the storage tanks at the Bluff Creek and Sycamore Compressor Stations will be 1,000 gallons in capacity or less, Subpart Kb does not apply.

Subpart GG of 40 CFR Part 60, Standards of Performance for Stationary Gas Turbines, applies to stationary gas turbines that have a heat input at peak load equal to or greater than 10 MMBtu/hr. The compressors at the Bluff Creek and Sycamore Compressor Stations are electric motor-driven and, therefore, are not subject to Subpart GG.

Subpart LLL of 40 CFR Part 60, Standards of Performance for Onshore Natural Gas Processing: SO_2 , applies to onshore facilities that process natural gas: each sweetening unit, and each sweetening unit followed by a sulfur recovery unit. A sweetening unit is defined as a process device that separates the hydrogen sulfide (H_2S) and carbon dioxide (CO_2) contents from the sour natural gas stream. The Project will not install equipment to remove H_2S or CO_2 from the gas; therefore, Subpart LLL does not apply.

Title V Operating Permit

The Title V Operating Permit Program, as described in 40 CFR 70, requires major sources of air pollutant emissions and certain affected non-major sources to obtain a federal operating permit. Authority to issue Title V operating permits has been delegated by EPA to the states of Wisconsin and Illinois. The major source emissions thresholds for determining the need for a Title V operating permit are 100 tpy of any regulated air pollutant, 10 tpy of any individual hazardous air pollutant (HAP), or 25 tpy for all HAPs. As shown in table 4.11.1.3-1, potential emissions from the proposed G-II Project are below the major source emissions thresholds. Therefore, a Title V Operating Permit is not required for either compressor station.

National Emissions Standards for Hazardous Air Pollutants

The National Emissions Standards for Hazardous Air Pollutants (NESHAPs), codified in 40 CFR Parts 61 and 63, regulate HAP emissions. Part 61 was promulgated prior to the 1990 Clean Air Act Amendments (CAAA) and regulates only eight types of hazardous substances (asbestos, benzene, beryllium, coke oven emissions, inorganic arsenic, mercury, radionuclides, and vinyl chloride). Natural gas transmission, compression, and storage do not fall under one of the source categories regulated by Part 61; therefore, the requirements of Part 61 are not applicable.

Maximum Achievable Control Technology

The 1990 CAAA established a list of 189 HAPs, resulting in the promulgation of Part 63. Part 63, also known as the Maximum Achievable Control Technology (MACT) standards, regulates HAP emissions from major sources of HAP emissions and specific source categories that emit HAPs. Part 63 defines a major source of HAPs as any source that has the potential to emit 10 tpy of any single HAP or 25 tpy of HAPs in aggregate. Emissions of HAPs from the

proposed Project would not exceed the associated major source thresholds; therefore, no MACT standards apply to the proposed facility.

General Conformity

A conformity determination must be conducted by the lead federal agency if a federal action would generate emission that would exceed the conformity threshold levels (*de minimis*) of the pollutant(s) for which an air basin is in non-attainment. According to Section 176(c)(1) of the CAA (40 CFR 51.853), a federal agency cannot approve or support any activity that does not conform to an approved State Implementation Plan. Conforming activities or actions should not, through additional air pollutant emissions, cause or contribute to new violations of the NAAQS in any area; increase the frequency or severity of any existing violation of any NAAQS; or delay timely attainment of any NAAQS or interim emission reductions. Emissions from sources subject to NSR or PSD requirements are exempt and are deemed to have conformed. The requirements for a conformity determination are listed in 40 CFR Parts 6, 51, and 93, and became effective March 15, 1994. Because the project area is classified as in attainment for all criteria pollutants, a General Conformity Determination is not required.

Portions of the laterals are within EPA nonattainment areas. We Energies' Hartford-West Bend pipeline is located in Dodge and Washington Counties and its Fox Valley pipeline routes are located in Brown, Calumet and Outagamie Counties. Washington County, Wisconsin is within the Milwaukee-Racine Consolidated Metropolitan Statistical Areas and is designated as nonattainment for the 8-hour ozone standard. The Governor of Wisconsin has petitioned EPA for ozone attainment redesignation of Washington County. At this time, however, Washington County is considered a nonattainment area for ozone with regards to General Conformity and must be evaluated as such if it is a "Federal Project." The laterals are nonjurisdictional facilities and FERC does not have approval authority over the laterals. In addition, the laterals, being a total of 10 to 12 miles, should not have emission increases in excess of the conformity thresholds; therefore, a General Conformity Determination is not required.

Applicable State Air Quality Requirements

The proposed Bluff Creek and Sycamore Compressor Stations would be classified as stationary air emission sources under both Wisconsin and Illinois regulations. They incorporate the federal program requirements listed in 40 CFR 50-99 and establish permit review procedures for all facilities that can emit pollutants to the ambient air. Any new facility is required to obtain an air quality permit prior to initiating construction. Facilities can trigger additional review by EPA if emissions exceed the major source thresholds listed in 40 CFR Section 52.21(b)(1)(i). However, because the compressors would be electric motor-driven, the only source of air pollutants would be the emergency backup generators, and the compressor stations would be exempt from most state air quality regulations.

Potentially applicable Wisconsin air quality regulations are found in the following Chapters of the WDNR air pollution control rules:

- NR 406 – Construction Permit. A construction permit is required for stationary sources that are not otherwise exempted and whose maximum potential allowable emissions exceed specified thresholds given in NR 406.04(2)(b-f). The Bluff Creek Compressor Station's maximum potential allowable emissions are below the specified thresholds.

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- NR 407 – State Non-part 70 Operating Permit. The Bluff Creek Compressor Station would not be subject to a non-part 70 operating permit because the maximum potential emissions would be below the emissions threshold.
 - NR 415.03 – Control of Particulate Emissions. Particulate emissions from both the construction and operation of Bluff Creek Compressor Station would be controlled in a manner that meets the regulatory requirements of this regulation.
 - NR 415.04 – Fugitive Dust. The Bluff Creek Compressor Station would be required to take precautions to prevent particulate matter from becoming airborne. Dust-prevention measures may include sprinkling work areas with water and/or reducing the maximum travel speed of vehicles on non-paved surfaces.
 - NR 417.03 – Control of Sulfur Emissions. The operation of the emergency generators would emit sulfur compound emissions. Because of the low emissions of sulfur, the Bluff Creek Compressor Station would comply with this requirement.
 - NR 419.03 – Control of Organic Compound Emissions. Although the Bluff Creek Compressor Station is not subject to specific volatile organic compound (VOC) emission limits, it must limit VOC emissions from transfer operations. The Bluff Creek Compressor Station would comply with requirements in NR 419.03(2). The facility would use good operating practices and take reasonable precautions to prevent spills and emissions of organic compounds, such as VOC emissions from diesel fuel transfers for use in the backup generator.
 - NR 428.03 – Control of Nitrogen Compound Emissions. The operation of the emergency generators would emit nitrogen compound emissions. Because of the low emissions of nitrogen compounds, Bluff Creek Compressor Station would comply with this requirement.
 - NR 431.05 – Control of Visible Emissions. Visible emissions of shade or density greater than Ringlemann Chart 1 or 20 percent opacity are prohibited with certain exceptions. The Bluff Creek Compressor Station would comply with all visible emissions limits.
 - NR 445.09 – Control of Hazardous Pollutants. This regulation limits the emissions of hazardous pollutants. The diesel generator at Bluff Creek Compressor Station would be exempt due to its use as an emergency generator.

The potentially applicable Illinois air quality regulations are found in Title 35 of the Illinois Administrative Code (IAC), Subtitle B, Chapter 1 in the following sections:

- Section 201.141 – Prohibition of Air Pollution. This rule prohibits the discharge or emission of any contaminant that 1) would cause air pollution in Illinois, 2) violate the provisions of Chapter 1, or 3) prevent the attainment or maintenance of any ambient air quality standard.
- Section 201.146 – Permits and General Provisions. The Sycamore Compressor Station would be exempt from both construction and operating permit requirements. Stationary internal combustion engines less than 1,500 hp and organic liquid storage of less than

10,000 gallons are exempt. The emergency generator would be 349 hp and the diesel storage tank is 1,000 gallons.

- Section 212.123 – Visible Emissions Limitations for All Other Emission Units. This rule prohibits the emission of smoke or other particulates with an opacity greater than 30 percent. The generators at Sycamore Compressor Station would comply with this limit.
- Section 212.301 – Fugitive Particulate Matter. This rule prohibits the emission of fugitive particulate matter from any process, including any material handling or storage activity that is visible by an observer looking generally toward the zenith at a point beyond the property line of the source. The Sycamore Compressor Station would comply with this rule. Dust-prevention measures may include sprinkling work areas with water and/or reducing the maximum travel speed of vehicles on non-paved surfaces.
- Section 212.206 – Emission Units Using Liquid Fuel Exclusively. This rule prohibits particulate matter emissions in any 1-hour period that exceed 0.15 kg of particulate matter per MW-hr of actual heat input from any fuel combustion emission unit using liquid fuel exclusively (0.10 lbs/MMbtu). The emergency generator at Sycamore Compressor Station would not emit particulate matter at a rate that exceeds the limit.
- Section 214.122 – New Fuel Combustion Emission Sources. This rule prohibits the emission of sulfur dioxide in any 1-hour period from any new fuel combustion source with actual heat input smaller than, or equal to, 73.2 MW (250 MMbtu/hr), in excess of 0.46 kg of sulfur dioxide per MW-hr of actual heat input when distillate fuel oil is burned (0.3 lbs/MMbtu/hr).

4.11.1.4 Air Quality Impacts and Mitigation

Construction and operation of the G-II Project would result in two types of air pollutant emissions: 1) those related to the construction of the Project, and 2) those related to the operation of the compressor stations. Construction emissions would only be generated during the estimated 7-month construction period. Operational emissions from the compressor stations would be long-term and result from the operation of the emergency generators that would be located at the compressor stations.

There are no nearby Wilderness Areas or National Parks classified as Class I areas. This fact, combined with the low level of emissions from the compressor stations, means that there would be no impacts on any Class I areas.

The primary emissions during construction activities would be particulate matter in the form of dust generated by mechanical disturbance of soil by construction equipment. On cultivated land, the generation of dust by construction equipment would be comparable to that generated by farm equipment. The emissions from construction vehicles and equipment should have an insignificant impact on the air quality of the region, because this equipment must meet current EPA standards for mobile sources. During construction, dust emissions would be minor and of short duration. As pipeline construction proceeds, equipment movement and site preparation would generate dust. However, because construction in a single location would only occur for a short time, the impact of these emissions at any single location would be minor. Emissions from construction are not expected to cause or significantly contribute to a violation of an ambient air

quality standard because the construction equipment would be operated on an as-needed basis primarily during daylight hours only.

Estimated emissions for criteria pollutants and HAPs have been calculated for the construction of both compressor facilities. As shown in table 4.11.1.4-1, emissions from construction would not cause or significantly contribute to a violation of an ambient air quality standard because the construction equipment would be operated on an as-needed basis during daylight hours only. Guardian will also implement dust control measures, as needed, to minimize dust generated during certain construction activities such as excavation, grading, and use of access roads. These measures may include spraying the work areas with water and/or reducing the maximum travel speed of vehicles on non-paved surfaces.

TABLE 4.11.1.4-1							
Compressor Station Construction Emissions a/							
Compressor Station	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	Total HAPs
Bluff Creek	2.5	0.2	4.8	0.14	6.4	1.2	0.03
Sycamore	3.3	0.35	5.9	0.14	6.38	1.2	0.04

a/ During the estimated 7-month construction timeline.

Because the compressors would be electric motor-driven, the only source of air pollutants during operation of the compressor stations would be the diesel fuel-fired emergency backup generators. However, because these emergency generators would be limited to 500 hours per year, potential emissions from these units would also be limited. As shown in table 4.11.1.3-1, maximum potential annual emissions for these units are well below major source emission thresholds.

With these controls and the low level of emissions, there would be no significant permanent impacts on air quality in the region.

4.11.2 Noise

Noise would affect the local environment during both the construction and operation of the proposed G-II Project. At any location, both the magnitude and frequency of environmental noise may vary considerably over the course of the day and throughout the week. This variation is caused in part by changing weather conditions and the effects of seasonal vegetative cover. Two measures used by federal agencies to relate the time-varying quality of environmental noise to its known effect on people are the 24-hour equivalent sound level ($L_{eq(24)}$) and the day-night sound level (L_{dn}). The $L_{eq(24)}$ is the level of steady sound with the same total (equivalent) energy as the time-varying sound of interest, averaged over a 24-hour period. The L_{dn} is the $L_{eq(24)}$ with 10 decibels on the A-weighted scale (dBA) added to the nighttime sound levels between the hours of 10 p.m. and 7 a.m. to account for the greater sensitivity of people to sound during the nighttime hours.

In 1974, the EPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA, 1974). This publication evaluates the effects of environmental noise with respect to health and safety. The document provides information for state and local governments to use in developing their own ambient noise standards. The EPA has determined that in order to protect the public from activity

interference and annoyance outdoors in residential areas, noise levels should not exceed an L_{dn} of 55 dBA. The FERC has adopted this criterion for new compression and associated pipeline facilities. An L_{dn} of 55 dBA is equivalent to a continuous noise level of 48.6 dBA for facilities that operate at a constant level of noise.

The State of Illinois noise regulations (Title 35: Environmental Protection; Subtitle H: Noise; Chapter I: Pollution Control Board; Part 901: Sound Emission Standards and Limitations for Property Line-Noise-Sources) limit sound levels from industrial facilities to Noise Sensitive Areas (NSAs). The regulations are set forth in terms of octave-band limits and are equivalent to the A-weighted values of L_{eq} 61 dBA during daytime hours, and L_{eq} 51 dBA at night for the level of noise allowed at a residential area from an industrial source. These limits translate to an L_{dn} of 61 dBA, which is less restrictive than the FERC L_{dn} noise limit of 55 dBA.

Wisconsin does not have any pertinent noise regulations regarding the proposed compressor station. The state regulates noise from recreational vehicles (e.g., water craft or all-terrain vehicles), but does not impose NSA property-line noise limits for new facilities.

4.11.2.1 Existing Noise Levels

The nearest NSA to the proposed Sycamore Compressor Station is an isolated single-family residence located about 1,380 feet northwest of the acoustic center of the station off Story Road (MP 58.0). The intervening area is relatively flat with no trees or other obstructions. There are a total of 16 isolated rural residences within a 1-mile radius of the proposed compressor station site.

The site of the proposed Bluff Creek Compressor Station is in a similarly remote rural area with only 17 residences within a 1-mile radius. The nearest NSA is 1,160 feet north of the acoustic center of the station (MP 110.0). This area is also relatively flat with no trees or other obstructions between the NSA and the station.

There are no fixed sources of noise near either of the proposed compressor station sites. Farming activities and traffic on local roads are the only regular sources of man-made noise. Consequently, the ambient noise level was assumed to be an L_{dn} of 45 dBA (38.6 dBA L_{eq}) at the NSAs at both sites in accordance with guidance provided by the EPA for rural areas (EPA, 1974). An ambient noise survey was not conducted.

4.11.2.2 General Impacts and Mitigation

Construction Noise

During construction of the G-II Pipeline, neighbors in the vicinity of the construction right-of-way would hear construction noise. Traffic and farm machinery are the primary sources of ambient noise. Pipeline construction would proceed at rates of from several hundred feet to 1 mile per day. However, due to the assembly line nature of construction, activities in any area could last from several weeks to several months on an intermittent basis.

Construction equipment would be operated on an as-needed basis. Exact noise levels cannot be determined; however, estimates of noise levels as a function of the distance of the receptor from the equipment can be made. Assuming the operation of a piece of equipment results in a typical noise level of 88 dBA at 50 feet, the noise impact of that equipment would be 82 dBA at 100 feet, 76 dBA at 200 feet and 70 dBA at 400 feet from the equipment. Noise would diminish

rapidly as the distance from the noise source increases. While individual receptors in the immediate vicinity would experience an increase in noise, the effect would be temporary and local.

Normally, there would be no nighttime noise from construction because most construction would be limited to daytime hours. A typical exception is HDD operations, which are typically sometimes 24-hour per day operations requiring up to 2 weeks for completion.

Guardian is proposing to use the HDD method at two locations, the Rock River crossing near MP 10.3 and the Fox River crossing near MP 93.3. The equipment would be set up at locations relatively close to NSAs (760 feet at Rock River and 540 feet at Fox River). Guardian estimates that it would take 5 weeks to complete the Rock River crossing and 3 weeks to complete the Fox River crossing. However, Guardian is proposing to limit HDD activities to six 10-hour shifts per week with activities shutdown at night. The only nighttime construction would occur during the HDD pull-back, when the drill rig could operate 24 hours a day. However, this is a short-duration activity lasting only a few days. Although guardian has proposed only drilling during daytime hours, this is very atypical for HDD operations. Typical HDD operations must operate on a continuous 24 hour basis to ensure that the drill hole does not collapse, or drill binding occurs.

Guardian has conducted a modeling analysis of the noise and determined that the impact from the HDD drilling would be below 55 dBA at the closest NSA to the entry hole. Guardian did not perform a modeling analysis of the noise from the exit hole. While noise typically is lower at the exit locations, this effect can be nullified by NSAs close to the exit location. In table 4.11.2.3-1, Guardian estimated that the maximum noise increase at the NSA is 7.6 decibels. While 3 decibels is the threshold of the human noise change perceptibility, 6 decibels is clearly noticeable, and 10 decibels is a significant increase to a human listener.

TABLE 4.11.2.2-1				
Estimated Noise at NSAs due to HDD Operations				
HDD Location	Existing Ambient (L_{dn} , dBA)	HDD Noise a/ (L_{dn} , dBA)	Total Noise (L_{dn} , dBA)	Noise Increase at Closest NSA
Rock River	45 b/	46.9	49.1	4.1
Fox River	45 b/	51.8	52.6	7.6

a/ Determined via the Power Acoustics, Inc. SPM9613 noise modeling software.
b/ Estimate of rural noise, EPA 1974, Information on Levels of Environmental Noise Requisites to Protect Public Health and Welfare with an Adequate Margin of Safety.

Guardian has stated that it would implement temporary noise mitigation measures if the 55 dBA L_{dn} level is exceeded, or if the noise becomes an issue at either location. Erecting a barrier using hay bales is one approach suggested by Guardian. Such a barrier could potentially be more effective than a commercially available product because of the thickness and sound-absorptive characteristics of hay bales. They may also be readily available in rural areas at very low cost.

Construction of the two compressor stations would occur over a period of about 7 months. The highest levels of noise would occur during the foundation preparation and concrete pouring where levels of about 85 dBA at 50 feet would be expected from earth-moving equipment and trucks. The noise would be very noticeable at the nearest NSAs, but it would not produce

significant permanent impacts because the impacts would be limited to the 7-month timeframe and construction of activity would occur only during the day.

Operational Noise

The proposed equipment at the two compressor stations would be identical and the corresponding predicted sound levels are the same at 64 dBA at a reference distance of 50 feet. This low level would be achieved through the use of electrically driven compressors instead of combustion-turbine-driven compressors. The compressors and electric motors would be enclosed in acoustically designed buildings. The outside sources of noise would include the compressor building ventilators, gas aftercoolers, and aboveground gas piping. The gas aftercoolers would be specified to produce a noise level of no more than 61 dBA at 50 feet. The aboveground piping would be insulated to significantly reduce noise. Expected levels at the NSAs were calculated from the total 64 dBA level at 50 feet using geometric spreading of the sound wave only, providing a conservative result. The results of the analysis are presented in table 4.11.2.2-2.

TABLE 4.11.2.2-2					
Noise Impact Analysis at the Nearest Noise Sensitive Areas					
Compressor Station	NSA Distance and Direction from Acoustic Center	Estimated Ambient L_{dn} for Rural Areas (dBA)	Calculated L_{dn} of Compressor Station (dBA)	Estimated Total L_{dn} (dBA)	Potential Noise Increase (dBA)
Sycamore	NSA 1 1,380 feet Northwest	45	42.0	46.8	1.8
Bluff Creek	NSA 1 1,160 feet North	45	43.1	47.2	2.2

The calculated operational noise levels of both stations are less than the estimated ambient level L_{dn} of 45 dBA. The addition of the two compressor stations to the existing environment would raise the ambient noise levels by an estimated 1.8 dBA at the Sycamore Station and 2.2 dBA at the Bluff Creek Station. An increase of 3 dBA is generally considered to be the smallest increase that is perceptible. In addition, the predicted station L_{dn} levels of 42.0 and 43.1 dBA are significantly below the 55 dBA level required by the FERC. Thus, noise from operation of the Sycamore and Bluff Creek Compressor Stations should not create a significant noise impact at the nearest NSAs. However, should noise reach 55 dBA, considering the rural nature of the area and the estimated noise level of 45 dBA, there could be a significant increase in noise at the nearest NSAs. Expected levels at the more distant NSAs would be even lower. To ensure that there would be no excessive impacts on noise quality at the nearest NSAs as a result of compressor station operations, **we recommend that:**

- **Guardian should make all reasonable efforts to assure its predicted noise levels from the compressor stations are not exceeded at NSAs and file noise surveys showing this with the Secretary no later than 60 days after placing the compressor stations in service. If the noise attributable to the operation of compressor stations exceeds 55 dBA L_{dn} at an NSA, Guardian should file a report on what changes are needed and should install additional noise controls to meet the level within one year of the in-service date. Guardian should confirm compliance with these requirements by filing a second noise survey with the Secretary no later than 60 days after it installs the additional noise controls.**

4.12 RELIABILITY AND SAFETY

The transportation of natural gas by pipeline involves some risk to the public in the event of an accident and subsequent release of gas. The greatest hazard is a fire or explosion following a major pipeline rupture.

Methane, the primary component of natural gas, is colorless, odorless, and tasteless. It is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death.

Methane has an ignition temperature of 1,000°F and is flammable at concentrations between 5.0 percent and 15.0 percent in air. Unconfined mixtures of methane in air are not explosive. However, a flammable concentration within an enclosed space in the presence of an ignition source can explode. It is buoyant at atmospheric temperatures and disperses rapidly in air.

4.12.1 Safety Standards

The DOT is mandated to provide pipeline safety under Title 49, United States Code Chapter 601. The Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. Many of the regulations are written as performance standards, which set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve safety. PHMSA ensures that people and the environment are protected from the risk of pipeline incidents. This work is shared with state agency partners and others at the federal, state, and local level. Section 5(a) of the Natural Gas Pipeline Safety Act provides for a state agency to assume all aspects of the safety program for intrastate facilities by adopting and enforcing the federal standards, while Section 5(b) permits a state agency that does not qualify under Section 5(a) to perform certain inspection and monitoring functions. A state may also act as DOT's agent to inspect interstate facilities within its boundaries; however, the DOT is responsible for enforcement action. The majority of the states have either 5(a) certifications or 5(b) agreements, while nine states act as interstate agents.

The DOT pipeline standards are published in Parts 190-199 of Title 49 of the CFR. Part 192 of 49 CFR specifically addresses natural gas pipeline safety issues.

Under a Memorandum of Understanding on Natural Gas Transportation Facilities (Memorandum) dated January 15, 1993 between the DOT and the FERC, the DOT has the exclusive authority to promulgate federal safety standards used in the transportation of natural gas. Section 157.14(a)(9)(vi) of the FERC's regulations require that an applicant certify that it will design, install, inspect, test, construct, operate, replace, and maintain the facility for which a certificate is requested in accordance with federal safety standards and plans for maintenance and inspection, or shall certify that it has been granted a waiver of the requirements of the safety standards by the DOT in accordance with Section 3(e) of the Natural Gas Pipeline Safety Act. The FERC accepts this certification and does not impose additional safety standards other than the DOT standards. If the Commission becomes aware of an existing or potential safety problem, there is a provision in the Memorandum to promptly alert DOT. The Memorandum

also provides for referring complaints and inquiries made by state and local governments and the general public involving safety matters related to pipeline under the Commission's jurisdiction.

The FERC also participates as a member of the DOT's Technical Pipeline Safety Standards Committee, which determines if proposed safety regulations are reasonable, feasible, and practicable.

The pipeline and aboveground facilities associated with the G-II Project must be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. Part 192 specifies material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion.

Part 192 also defines area classifications, based on population density in the vicinity of the pipeline, and specifies more rigorous safety requirements for populated areas. The class location unit is an area that extends 220 yards on either side of the centerline of any continuous 1-mile length of pipeline. The four area classifications are defined as follows:

- Class 1 Location with 10 or fewer buildings intended for human occupancy.
- Class 2 Location with more than 10 but less than 46 buildings intended for human occupancy.
- Class 3 Location with 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building, or small well-defined outside area occupied by 20 or more people during normal use.
- Class 4 Location where buildings with four or more stories aboveground are prevalent.

Class locations representing more populated areas require higher safety factors in pipeline design, testing, and operation. Pipelines constructed on land in Class 1 locations must be installed with a minimum depth of cover of 30 inches in normal soil and 18 inches in consolidated rock. Class 2, 3, and 4 locations, as well as drainage ditches of public roads and railroad crossings, require a minimum cover of 36 inches in normal soil and 24 inches in consolidated rock. Guardian proposes to meet or exceed these requirements and install the proposed pipeline with 48 inches of cover in soils and 24 inches or more in consolidated rock along the entire route. All pipelines installed in navigable rivers, streams, and harbors must have a minimum cover of 48 inches in soil or 24 inches in consolidated rock.

Class locations also specify the maximum distance to a sectionalizing block valve (e.g., 10.0 miles in Class 1, 7.5 miles in Class 2, 4.0 miles in Class 3, and 2.5 miles in Class 4). Pipe wall thickness and pipeline design pressures, hydrostatic test pressures, maximum allowable operating pressure, inspection and testing of welds, and frequency of pipeline patrols and leak surveys must also conform to higher standards in more populated areas. Guardian is currently evaluating the class location information along the proposed pipeline route. The information will be provided in a supplemental filing once the evaluation is complete.

If a subsequent increase in population density adjacent to the right-of-way indicates a change in class location above the existing design for the pipeline, Guardian would reduce the maximum

allowable operating pressure or replace the segment with pipe of sufficient grade and wall thickness, if required to comply with the DOT code of regulations for the new class location.

In 2002, Congress passed an act to strengthen the nation's pipeline safety laws. The pipeline Safety Improvement Act of 2002 (HR 3609) was passed by Congress on November 15, 2002, and signed into law by the President in December 2002. Since December 17, 2004, gas transmission operators are required to develop and follow a written integrity management program that contains all the elements described in Section 192.911 and addresses the risks on each covered transmission pipeline segment. Specifically, the law establishes an integrity management program which applies to all high consequence areas (HCAs). The DOT (68 FR 69778, 69 FR 18228, and 69 FR 29903) defines HCAs as they relate to the different class zones, potential impact circles, or areas containing an identified site as defined in Section 192.903 of the DOT regulations.

OPS published a series of rules from August 6, 2002 to May 26, 2004 (69 FR 29903) that defines HCAs as locations where a gas pipeline accident could do considerable harm to people and their property, and requires an integrity management program to minimize the potential for an accident. This definition satisfies, in part, the Congressional mandate in 49 United States Code 60109 for OPS to prescribe standards that establish criteria for identifying each gas pipeline facility in a high-density population area.

The HCA may be defined in one of two ways. In the first method an HCA includes:

- current Class 3 and 4 locations;
- any area in Class 1 or 2 where the potential impact radius² is greater than 660 feet and there are 20 or more buildings intended for human occupancy within the potential impact circle;³ or
- any area in Class 1 or 2 where the potential impact circle includes an identified site.⁴

In the second method, an HCA includes any area within a potential impact circle which contains:

- 20 or more buildings intended for human occupancy; or
- an identified site.

Once a pipeline operator has determined the HCAs on its pipeline, it must apply the elements of its integrity management program to those segments of the pipeline within the HCAs. The DOT regulations specify the requirements for the integrity management plan at Section 192.911. The HCAs are determined based on the relationship of the pipeline centerline to other nearby structures and identified sites. The pipeline integrity management rule for HCAs requires inspection of the entire pipeline in HCAs every 7 years.

² The potential impact radius is calculated as the product of 0.69 and the square root of the maximum allowable operating pressure of the pipeline in psi multiplied by the pipeline diameter in inches.

³ The potential impact circle is a circle of radius equal to the potential impact radius.

⁴ An identified site is an outside area or open structure that is occupied by 20 or more persons on at least 50 days in any 12-month period; a building that is occupied by 20 or more persons on at least 5 days a week for any 10 weeks in any 12-month period; or a facility that is occupied by persons who are confined, are of impaired mobility, or would be difficult to evacuate.

Part 192 prescribes the minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Guardian has stated that it will operate and maintain the proposed pipeline in a manner that meets or exceeds the requirements of Part 192. Guardian operators would establish public awareness and damage prevention programs and would perform regular pipeline patrols, leak surveys, pipeline marking and other surveillance activities to promote pipeline safety. The staff would be fully trained in pipeline operations, maintenance, and normal, abnormal, and emergency procedures.

The pipeline would be patrolled and inspected by aircraft and on the ground on a periodic basis. These inspections would identify conditions indicative of pipeline leaks, evidence of pipeline damage or deterioration, damage to erosion controls, loss of cover, third-party activities, or conditions that may currently or in the future affect pipeline integrity, safety, or operation of the pipeline. The pipeline system fully participates in the Wisconsin's Diggers Hotline one-call system that provides contractors, highway workers, farmers, and anyone digging along a pipeline right-of way with the ability to call a single number to have all underground utilities located prior to excavation activities.

Under Section 192.615, each pipeline operator must also establish an emergency plan that includes procedures to minimize the hazards in a natural gas pipeline emergency. Key elements of the plan include procedures for:

- receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;
- implementing emergency shutdown of system and safe restoration of service;
- making personnel, equipment, tools, and materials available at the scene of an emergency; and
- protecting people first and then property, and making them safe from actual or potential hazards.

Part 192 requires that each operator must establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline emergency, and to coordinate mutual assistance. The operator must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials. Guardian would provide the appropriate training to local emergency service personnel before the pipeline is placed in service. No additional specialized local fire protection equipment would be required to handle pipeline emergencies.

4.12.2 Pipeline Accident Data

Since February 9, 1970, 49 CFR 191 has required all operators of transmission and gathering systems to notify the DOT of any reportable incident and to submit a report on form F7100.2 within 20 days. Reportable incidents are defined as any leaks that:

- caused a death or personal injury requiring hospitalization;

- required taking any segment of transmission line out of service;
- resulted in gas ignition;
- caused estimated damage to the property of the operator, or others, or both, of a total of \$5,000 or more;
- required immediate repair on a transmission line;
- occurred while testing with gas or another medium; or
- in the judgment of the operator was significant, even though it did not meet the above criteria.

The DOT changed reporting requirements after June 1984 to reduce the amount of data collected. Since that date, operators must only report incidents that involve property damage of more than \$50,000, injury, death, release of gas, or that are otherwise considered significant by the operator. Table 4.12.2-1 presents a summary of incident data for the 1970 to 1984 period, as well as more recent incident data for 1986 through 2005, recognizing the difference in reporting requirements. The 14.5-year period from 1970 through June 1984, which provides a larger universe of data and more basic report information than subsequent years, has been subject to detailed analysis, as discussed in the following sections.⁵

TABLE 4.12.2-1		
Natural Gas Service Incidents by Cause		
Cause	Incidents per 1,000 Miles of Pipeline (percentage)	
	1970-1984	1986-2005
Outside Force	0.70 (53.8)	0.10 (38.5)
Corrosion	0.22 (16.9)	0.06 (23.1)
Construction or Material Defect	0.27 (20.8)	0.04 (15.4)
Other	0.11 (8.5)	0.06 (23.1)
Total	1.30	0.26

During the 14.5-year period, 5,862 service incidents were reported over the more than 300,000 total miles of natural gas transmission and gathering systems nationwide. Service incidents, defined as failures that occur during pipeline operation, have remained fairly constant over this period with no clear upward or downward trend in annual totals. In addition, 2,013 test failures were reported. Correction of test failures removed defects from the pipeline before operation (Jones et al., 1986).

Additional insight into the nature of service incidents may be found by examining the primary factors that caused the failures. Table 4.12.2-1 provides a percentage distribution of the causal factors as well as the annual frequency of each factor per 1,000 miles of pipeline in service.

The dominant incident cause is outside forces, constituting 53.8 percent of all service incidents. Outside forces incidents result from the encroachment of mechanical equipment such as bulldozers and backhoes; earth movements due to soil settlement, washouts, or geologic hazards; weather effects such as winds, storms, and thermal strains; and willful damage. Table 4.12.2-2

⁵ Jones, D.J., G.S. Kramer, D.N. Gideon, and R.J. Eiber, 1986. "An Analysis of Reportable Incidents for Natural Gas Transportation and Gathering Lines 1970 Through June 1984." NG-18 Report No. 158, Pipeline Research Committee of the American Gas Association.

shows that human error in equipment usage was responsible for approximately 75 percent of outside forces incidents. Since April 1982, operators have been required to participate in “One Call” public utility programs in populated areas to minimize unauthorized excavation activities in the vicinity of pipelines. The “One Call” program is a service used by public utilities and some private sector companies (e.g., oil pipelines and cable television) to provide preconstruction information to contractors or other maintenance workers on the underground location of pipes, cables, and culverts. The 1986 through 2005 data (as shown on table 4.12.2-1) show that the portion of incidents caused by outside forces has decreased to 38.5 percent.

TABLE 4.12.2-2	
Outside Forces Incidents by Cause (1970-1984)	
Cause	Percent
Equipment Operated by Outside Party	67.1
Equipment Operated by or for Operator	7.3
Earth Movement	13.3
Weather	10.8
Other	1.5

The pipelines included in the dataset in table 4.12.2-2 vary widely in terms of age, pipe diameter, and level of corrosion control. Each variable influences the incident frequency that may be expected for a specific segment of pipeline.

The frequency of service incidents is strongly dependent on pipeline age. While pipelines installed since 1950 exhibit a fairly constant level of service incident frequency, pipelines installed before that time have a significantly higher rate, partially due to corrosion. Older pipelines have a higher frequency of corrosion incidents because corrosion is a time-dependent process. Further, new pipe generally uses more advanced coatings and cathodic protection to reduce corrosion potential.

Older pipelines have a higher frequency of outside forces incidents partly because their location may be less well known and less well marked than newer lines. In addition, the older pipelines contain a disproportionate number of smaller diameter pipelines, which have a greater rate of outside forces incidents. Small diameter pipelines are more easily crushed or broken by mechanical equipment or earth movements.

Table 4.12.2-3 clearly demonstrates the effectiveness of corrosion control in reducing the incidence of failures caused by external corrosion. The use of both an external protective coating and a cathodic protection system, required on all pipelines installed after July 1971, significantly reduces the rate of failure compared to unprotected or partially protected pipe. The data show that bare, cathodically protected pipe actually has a higher corrosion rate than unprotected pipe. This anomaly reflects the retrofitting of cathodic protection to actively corroding spots on pipes.

TABLE 4.12.2-3	
External Corrosion by Level of Control (1970-1984)	
Corrosion Control	Incidents per 1,000 Miles per Year
None-bare Pipe	0.42
Cathodic Protection Only	0.97
Coated Only	0.40
Coated and Cathodic Protection	0.11

4.12.3 Impacts on Public Safety

The service incident data summarized in table 4.12.2-1 include pipeline failures of all magnitudes with widely varying consequences. Approximately two-thirds of the incidents were classified as leaks, and the remaining third classified as ruptures, implying a more serious failure.

Table 4.12.3-1 presents the average annual fatalities that occurred on natural gas transmission and gathering lines from 1970 to 2005. Fatalities between 1970 and June 1984 have been separated into employees and non-employees to better identify a fatality rate experienced by the general public. Of the total 5.0 nationwide average, fatalities among the public averaged 2.6 per year over this period. The simplified reporting requirements in effect after June 1984 do not differentiate between employees and non-employees. However, the data show that the total annual average for the period 1984 through 2005 decreased to 3.6 fatalities per year. Subtracting two major offshore incidents in 1989, which do not reflect the risk to the onshore public, yields a total annual rate of 2.8 fatalities per year for this period.

TABLE 4.12.3-1			
Annual Average Fatalities—Natural Gas Transmission and Gathering Systems <u>a</u> , <u>b</u> /			
Year	Employees	Non-employees	Total
1970-June 1984	2.4	2.6	5.0
1984-2005 <u>c</u> /	-	-	3.6
1984-2005 <u>c</u> /	-	-	2.8 <u>d</u> /
<u>a</u> / 1970 through June 1984 - American Gas Association, 1986. <u>b</u> / DOT Hazardous Materials Information System. <u>c</u> / Employee/non-employee breakdown not available after June 1984. <u>d</u> / Without 18 offshore fatalities occurring in 1989 – 11 fatalities resulted from a fishing vessel striking an offshore pipeline and seven fatalities resulted from explosion on an offshore production platform.			

The nationwide totals of accidental fatalities from various man-made and natural hazards are listed in table 4.12.3-2 in order to provide a relative measure of the industry-wide safety of natural gas pipelines. Direct comparisons between accident categories should be made cautiously, however, because individual exposures to hazards are not uniform among all categories. Nevertheless, the average 2.6 public fatalities per year is relatively small considering the more than 300,000 miles of transmission and gathering lines in service nationwide. Furthermore, the fatality rate is approximately two orders of magnitude (100 times) lower than the fatalities from natural hazards such as lightning, tornadoes, floods, earthquakes, etc.

The available data show that natural gas pipelines continue to be a safe, reliable means of energy transportation. Based on approximately 301,000 miles in service, the rate of public fatalities for the nationwide mix of transmission and gathering lines in service is 0.01 per year per 1,000 miles of pipeline. Using this rate, the G-II Project might result in a public fatality every 913 years. This would represent a slight increase in risk to the nearby public.

TABLE 4.12.3-2	
Nationwide Accidental Deaths <u>a/</u>	
Type of Accident	Fatalities
All Accidents	90,523
Motor Vehicles	43,649
Falls	14,985
Poisoning	9,510
Fires and Burns	3,791
Drowning	3,488
Suffocation by Ingested Object	3,206
Tornado, Flood, Earthquake, etc. (1984-93 average)	181
All Liquid and Gas Pipelines (1986-2003 average) <u>b/</u>	22
Gas Transmission and Gathering Lines, Non-employees Only (1970-84 average) <u>c/</u>	2.6
<u>a/</u> All data, unless otherwise noted, reflects 1996 statistics from the U.S. Department of Commerce, Bureau of the Census, "Statistical Abstract of the United States 118 th Edition." <u>b/</u> U.S. Department of Transportation, Office of Pipeline Safety, www.ops.dot.gov/stats . <u>c/</u> American Gas Association, 1986.	

4.13 CUMULATIVE IMPACTS

In accordance with NEPA and FERC policy, we considered the cumulative impacts of the proposed G-II Project and other projects in the general project area. Cumulative impacts represent the incremental effects of the proposed action when added to other past, present, or reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a given period of time. The direct and indirect impacts of the proposed Project are discussed in other sections of this EIS.

The purpose of this cumulative impact analysis is to identify and describe cumulative impacts that would potentially result from implementation of the proposed Project. This cumulative impact analysis generally follows the methodology set forth in relevant guidance (CEQ, 1997b; EPA, 1999). Under these guidelines, inclusion of other projects within the analysis is based on identifying commonalities of impacts from other projects to potential impacts that would result from the proposed Project. An action must meet the following three criteria to be included in the cumulative impacts analysis:

- impact a resource area potentially affected by the proposed Project;
- cause this impact within all, or part of, the proposed project area; and
- cause this impact within all, or part of, the time span for the potential impact from the proposed Project.

For the purposes of this cumulative impact analysis, we considered the project area to be the counties traversed by the proposed Project.

The actions considered in the cumulative impact analysis may vary from the proposed Project in nature, magnitude, and duration. These actions are included based on the likelihood of completion, and only projects with either ongoing impacts or that are "reasonably foreseeable" future actions were evaluated. Existing or reasonably foreseeable actions that would be expected to affect similar resources during similar time periods as the proposed Project were considered

further. The anticipated cumulative impacts of the proposed Project and these other actions are discussed below, as well as any pertinent mitigation actions. The anticipated cumulative impacts were based on NEPA documentation, agency and public input, and best professional judgment.

We identified three types of past, present, and reasonably foreseeable future projects that would potentially result in a cumulative impact when considered with the proposed Project. These are: (1) other natural gas pipeline projects; (2) facilities that would be associated with construction of the proposed Project but that are not under the FERC's jurisdiction; and (3) unrelated projects that are either in place, are under construction in the vicinity of the proposed Project, or are proposed (table 4.13-1).

TABLE 4.13-1 Existing or Planned Projects that Could Result in Cumulative Impact on Environmental Resources in the G-II Project Area			
Project	Description	Anticipated Construction Date	Counties
Natural Gas Pipelines			
G-II Project	109.5 miles of 30-inch and 20-inch-diameter pipeline, two new 39,000 hp electric motor-driven compressor stations, aboveground appurtenances.	2008	Jefferson, Dodge, Fond du Lac, Calumet, Brown, Outagamie, and Walworth, WI; DeKalb, IL.
Guardian Pipeline Project	150 miles of 36-inch, 30-inch, 24-inch, and 16-inch-diameter pipeline, one 22,000 natural-gas-driven compressor station, aboveground appurtenances.	2002-2003	Walworth, WI; DeKalb, IL. <u>a/</u>
Nonjurisdictional Facilities			
We Energies – Hartford/West Bend Project	14.1 miles of 12-inch-diameter pipeline and appurtenant aboveground facilities.	2008	Dodge and Washington, WI.
We Energies-Fox Valley Project	12.8 miles of 20-inch, 16-inch, 12-inch, and 8-inch-diameter pipeline and appurtenant aboveground facilities.	2008	Brown and Outagamie, WI.
WPS Sheboygan Project	33.0 miles of 16-inch, 14-inch, and 12-inch-diameter pipeline and appurtenant aboveground facilities.	2008	Fond du Lac and Sheboygan, WI.
WPS Chilton Project	1.7 miles of 4-inch-diameter pipeline and appurtenant aboveground facilities.	2008	Calumet, WI.
WPS Denmark Project	14.2 miles of 12-inch-diameter pipeline and appurtenant aboveground facilities.	2008	Brown, WI.
WPS SW Green Bay Project	8.0 miles of 20-inch and 12-inch-diameter pipeline and appurtenant aboveground facilities.	2008	Brown, WI.
WPS West Green Bay Project	Flow control and odorization facilities and regulator station modifications.	2008	Outagamie, WI.
ComEd Sycamore Power Line and Substation	2.5 miles of 138 kV electric transmission line and transformer/substation.	2008	DeKalb, IL.
ATC Bluff Creek Substation	Transformer/substation.	2008	Walworth, WI.
Unrelated Projects			
Forward Wind Energy Center	About 133 wind energy turbines, access roads, and electrical gathering and transmission facilities.	2007	Dodge and Fond du Lac, WI.
Green Field Blue Sky Wind Energy Project	Up to about 88 wind energy turbines, access roads, and electrical gathering and transmission facilities.	2007 - 2009	Fond du Lac, WI.

TABLE 4.13-1			
Existing or Planned Projects that Could Result in Cumulative Impact on Environmental Resources in the G-II Project Area			
Project	Description	Anticipated Construction Date	Counties
Holsum Elm Dairy	New 6,060-animal dairy operation.	2006 - 2007	Calumet, WI.
Cedar Ridge Wind Farm	About 41 wind energy turbines, access roads, and electrical gathering and transmission facilities.	2007 - 2008	Fond du Lac, WI.
a/ For purpose of this cumulative impacts analysis, only those counties that are shared with the G-II Project area are included for the original Guardian Pipeline.			

The identified projects consist of one existing and one proposed natural gas transmission pipeline, seven nonjurisdictional pipeline projects that would extend from the proposed G-II Project and two nonjurisdictional electric utility projects required for the two proposed new compressor stations, and four unrelated projects. We identified these projects through scoping and independent research, as well as information provided by Guardian and the PSC. While we did not specifically contact each county, community, or other entity regarding new projects or plans for expansion, we did request information on other projects in the NOI. We have identified the tentative construction schedules of these projects, as available, but the actual construction schedules would depend on factors such as issuance of permits, economic conditions, the availability of funds, and political considerations.

The potential impacts associated with these projects that are most likely to be cumulative are related to wetlands and waterbodies, vegetation and wildlife (including federally and state-listed endangered and threatened species), land use, air quality, and noise.

4.13.1 Other Natural Gas Pipeline Projects

One other major natural gas pipeline project has been constructed recently in the same general area as the proposed G-II Project.

Guardian Pipeline Project (Phase I)

The Guardian Pipeline was reviewed and approved by the FERC in 2002 and was constructed in 2002 and 2003. The Guardian Pipeline includes about 150 miles of 36-inch, 30-inch, 24-inch, and 16-inch-diameter natural gas transmission pipeline from Joliet, Illinois to Ixonia, Wisconsin; one compressor station in Joliet, Illinois; and seven meter stations. The Guardian Pipeline is located in seven counties in Illinois and Wisconsin, of which three would also include portions of the proposed G-II Project. Facilities located in the same counties include 24.1 miles of the existing Guardian Pipeline and 2.1 miles of the proposed G-II Project pipeline in Jefferson County, Wisconsin; 35.5 miles of the existing Guardian Pipeline and the G-II Project's proposed Sycamore Compressor Station in DeKalb County, Illinois; and 34.3 miles of the existing Guardian Pipeline (including a pipeline lateral) and the G-II Project's proposed Bluff Creek Compressor Station in Walworth County, Wisconsin.

The FERC (1989) concluded that the general impact of building more than one pipeline would be primarily additive, and the cumulative impact may be calculated by adding together the impact of each individual project.

4.13.2 Nonjurisdictional Facilities

As described in section 1.5, nonjurisdictional facilities for the G-II Project would include seven intrastate natural gas pipeline laterals and associated appurtenances, and two electric utility projects associated with the two proposed new compressor stations, as described below.

We Energies – Hartford/West Bend Project

A 14.3-mile two-segment (Hartford Segment 1 and West Bend Segment 2) 12-inch-diameter pipeline lateral to be constructed and operated within the counties of Dodge and Washington, Wisconsin. The pipeline lateral would interconnect with the G-II pipeline at the proposed Rubicon Meter Station. Additional facilities would include the construction and operation of the Hartford/West Bend Gate Station, two 12-inch-diameter valves, and a new regulator station.

We Energies – Fox Valley Project

A 12.8-mile four-segment pipeline lateral comprised of 20-inch-diameter (Segment 1), 8-inch-diameter (Segment 2), 16-inch-diameter (Segment 3), and 12-inch-diameter (Segment 4) lateral to be constructed and operated within the counties of Brown and Outagamie, Wisconsin. The pipeline lateral would interconnect with the G-II pipeline at the proposed Fox Valley Meter Station. Additional facilities would include the construction and operation of the Fox Valley Gate Station, Kaukauna Regulator Station, Kimberly Regulator Station, WPPI Delivery Point Customer Metering Facility, Appleton Regulator/Metering Station, and the Kaukauna and Little Chute Valve Assembly.

WPS Sheboygan Project

A 31.0-mile 14-inch and 12-inch-diameter pipeline lateral to be constructed and operated within the counties of Fond du Lac and Sheboygan. The pipeline lateral would interconnect with the G-II pipeline at the proposed Sheboygan Meter Station. A 2.07-mile 16-inch-diameter distribution pipeline would also be constructed and operated in Sheboygan, Wisconsin. Additional facilities would include the construction and operation of odorization and pigging facilities, the New West Sheboygan Regulator Station, and the New Plymouth Regulator Station. Modifications would also be made to the existing Sheboygan ANR Meter/WPS Regulator Station and the Plymouth ANR Meter/WPS Regulator Station.

WPS Chilton Project

A 1.7-mile 4-inch-diameter pipeline lateral to be constructed and operated in Calumet County, Wisconsin. The pipeline lateral would interconnect with the G-II pipeline at the proposed Chilton Meter Station. Additional facilities would include the construction and operation of odorization, pigging, and valve facilities and the New Chilton Regulator Station. Modifications would also be made to the existing Chilton ANR Meter/WPS Regulator Station and distribution system connection facilities.

WPS Denmark Project

A 14.2-mile 12-inch-diameter pipeline lateral to be constructed and operated in Brown County, Wisconsin. The pipeline lateral would interconnect with the G-II pipeline at the proposed Denmark Meter Station. Additional facilities would include the construction and operation of odorization and pigging facilities and modifications would be made to the existing Denmark ANR Meter/WPS Regulator Station.

WPS Southwest Green Bay Project

A 1.4-mile 12-inch-diameter pipeline lateral that would be constructed and operated in Brown County, Wisconsin. The pipeline lateral would interconnect with the G-II pipeline at the proposed Southwest Green Bay Meter Station. Additional facilities would include the construction and operation of odorization, pigging, and valve facilities and the Southwest Green Bay Regulator Station. Modification would also be made to the existing ANR Green Bay Meter/WPS Broadway Regulator Station.

WPS West Green Bay Project

Facilities and modifications would include the construction and operation of flow control and odorization facilities, and modifications to the West Green Bay Regulator Station.

ATC Bluff Creek Substation

Facilities would consist of the construction and operation of the Bluff Creek Transformer/Substation in Walworth County, Wisconsin.

ComEd Sycamore Power Line and Substation

Facilities would include the construction and operation of 2.5 miles of new Sycamore Compressor Station Power Line and the Sycamore Transformer/Substation in DeKalb County, Illinois.

4.13.3 Unrelated Projects**Forward Wind Energy Center**

The Forward Wind Energy Center is proposed by Forward Energy LLC, and would be situated within approximately 32,400 acres of predominantly agricultural land near Brownsville, Wisconsin, within the Towns of Oakfield, Byron, Leroy, and Lomira in southern Fond du Lac and northern Dodge Counties (WPS, 2005). The project would include about 133 wind turbines. Forward Energy received project approval from the PSC in July 2005, and is currently in the process of obtaining required remaining permits and approvals. Construction of the wind farm would begin after Forward Energy completes the final turbine and collection system layout and receives all of the necessary permits or approvals. The project would be in-service an estimated 8 to 12 months after the start of construction.

Blue Sky Green Field Wind Project

The Blue Sky Green Field Wind Project is proposed by We Energies, and would be located within an area covering about 10,600 acres in the Towns of Calumet and Marshfield in Fond du Lac County, Wisconsin. The project would include 88 wind turbines and associated auxiliary facilities, with a total capacity of up to 203 MW of electric generation. The wind farm would be connected to an existing 345-kV electric transmission line that traverses the project area via a new substation called the Cypress Substation. The PSC issued a final decision approving the project on February 1, 2007. We Energies hopes to begin commercial operation in 2008 or 2009.

Holsum Elm Dairy

Holsum Elm Dairy is currently constructing a new large farm dairy operation with a capacity for 6,060 animals in the Town of Chilton, in Calumet County, at MP 72.9 of the G-II Pipeline.

Cedar Ridge Wind Farm

The Cedar Ridge Wind Farm is proposed by Alliant Energy, and would consist of about 41 wind turbines spread across about 7,800 acres in the Townships of Eden and Empire in Fond du Lac County (Alliant Energy, 2006). The project has been under development since 2004. Preliminary permits, including zoning, land use agreements, and environmental studies have been completed, with some permitting and engineering ongoing. Wisconsin Power and Light hopes to receive the PSC's rulings on the applications in early 2007; in which case, construction would occur during 2007 and 2008.

4.13.4 Potential Cumulative Impacts of the Proposed Action

Potential cumulative impacts are grouped by resource area in this section. The most likely cumulative impacts would be to wetlands and waterbodies, vegetation and wildlife, land use, and air quality and noise.

Except for the Guardian Project (Phase 1), the FERC has no authority over the permitting, licensing, funding, construction, or operation of the projects included in our analysis. Federal, state, and local agencies must review these projects for compliance with requirements for construction of facilities at sites or places where a governmental license or permit may be required. The expansion or construction of intrastate pipelines would require state or federal permits and approvals to ensure compliance with Section 7 of the ESA; Sections 401, 402, and 404 of the CWA; and the CAA. Where appropriate, environmental conditions designed to minimize or avoid impacts would be attached to the necessary permits and approvals.

4.13.4.1 Wetlands and Waterbodies

Construction and operation of the proposed G-II Project would result in both short-term and long-term impacts on waterbodies and wetlands. The short-term impacts such as soil or sediment disturbance would dissipate over a period of weeks, while longer-term impacts, such as regrowth of forested wetlands within the temporary construction rights-of-way, would persist for months or years. The primary impacts on wetlands and waterbodies during operation of the proposed pipeline would be associated with routine right-of-way maintenance. All maintenance activities would comply with applicable federal regulations, but would continue throughout the life of the proposed Project.

If approved and constructed, the G-II Project and other past and reasonably foreseeable future projects would affect wetlands, and would include the permanent loss or conversion of some existing wetlands. Construction of the Wisconsin portion of the original Guardian pipeline affected about 33 acres of wetlands. Construction of the proposed nonjurisdictional pipeline laterals would affect about 28 acres of wetlands. Available information for the other projects (see table 4.13-1) indicates these projects would affect about 5 acres of wetlands. Elements of these projects that have the potential to affect wetlands and waterbodies would be subject to review and approval under Section 404 of the CWA, as administered by the COE, as well as state and local wetland regulations. Any permanent or long-term impacts on wetlands and waterbodies would require appropriate mitigation. Construction of the G-II Project would affect about 64 acres of wetlands, including about 11 acres of forested wetland. Section 4.4.1 discusses project- or site-specific mitigation measures for this impact. Further, discharges to wetlands and other surface waters associated with construction and operation would require review, approval, and mitigation (if necessary) under the state's stormwater discharge programs. During operation

of the Project, about 2 acres of previously forested wetland would be maintained as scrub-shrub or emergent wetland as a result of vegetation maintenance on the pipeline right-of-way.

Construction of the G-II Project would result in 113 waterbody crossings. As described in section 4.3.2.3, Guardian proposes to use HDD techniques to cross two waterbodies. The use of HDD would avoid direct impacts on waterbodies and minimize impacts on riparian vegetation at those crossings. Though impacts on surface waters could occur during HDD crossings, either through an inadvertent release of drilling fluids (frac-out) or through accidental fuel and chemical spills, the likelihood and potential damage associated with such events would be greatly reduced by the implementation of HDD and SPCC Plans.

Because most of the projects listed in table 4.13-1 are located within the same major watersheds crossed by the G-II Project, and because some of these projects would likely involve direct and indirect waterbody impacts, the G-II Project and other past and reasonably foreseeable future projects would result in some cumulative impacts on waterbodies. The original Guardian pipeline included 19 waterbody crossings in Walworth County. The proposed nonjurisdictional pipeline laterals would involve 54 waterbody crossings. Available information for the other projects listed in table 4.13-1 indicates these projects would involve about 60 waterbody crossings, mostly by access roads and buried electrical cables associated with the wind energy projects. Because the G-II Project would not involve construction of permanent diversions or dams, impacts on surface water quality from this project would be temporary. These temporary impacts would include runoff from construction areas, temporary and localized increases in turbidity and sedimentation associated with in-water construction, and withdrawal and discharge of surface waters for hydrostatic testing of the pipeline. As described in section 4.3.2.2, these effects would be relatively minor and would be further minimized with the implementation of our Procedures.

We believe the cumulative impacts of the G-II Project and the projects listed in table 4.13-1 on wetlands and waterbodies would not be significant.

4.13.4.2 Vegetation and Wildlife

Construction of the proposed Project and other reasonably foreseeable future projects would have a cumulative impact on vegetation and associated wildlife. These cumulative impacts would be most significant if 1) the projects were constructed at or near the same time and within proximity of one another, and 2) the affected vegetative communities would take a long time to recover. The G-II Project, if approved, would impact approximately 52 acres of forest habitat, 71 acres of open land, and 1,460 acres of agricultural habitats. Construction of the Wisconsin portion of the original Guardian pipeline resulted in clearing about 30 acres of forest habitat, 75 acres of open land, and 714 acres of agricultural habitat. Of this, about 20 acres of land that was forested prior to construction is maintained as non-forest habitat within the operational pipeline right-of-way. Construction of the proposed nonjurisdictional pipeline laterals would impact about 20 acres of forested habitat, 286 acres of open land, and 558 acres of agricultural habitat. Available information for the other projects listed in table 4.13-1 indicates these projects would impact about 42 acres of forested habitat and about 360 acres of agricultural habitat. These impacts would likely have a cumulative effect on vegetation and wildlife when considered in conjunction with the G-II Project.

Cumulative impacts such as lost acreage of forestland within a region are additive. Further, many wildlife species depend on mature contiguous tracts of forest to sustain their migratory and

reproduction cycles. These species include dozens of migratory songbirds and terrestrial mammals that are not migratory, but that require large tracts of forest to support their home ranges. The impacts of fragmentation of forest habitat on some of these species can be immediate.

The extent and duration of habitat fragmentation and other cumulative impacts on wildlife habitat associated with construction of the proposed Project and other reasonably foreseeable future projects would be minimized by siting these projects to the greatest extent practicable through existing maintained rights-of-way and other disturbed areas. About 32.4 miles (29.6 percent) of Guardian's proposed route would be adjacent to existing utility rights-of-way, which would minimize impacts on previously undisturbed vegetation. Additionally, approximately 94 percent of the proposed pipeline route would traverse agricultural and open lands that would typically experience rapid revegetation, and where fragmentation of forest habitat would not occur. About 57 miles (66 percent) of the route of the proposed nonjurisdictional pipeline laterals would be adjacent to existing utility corridors.

Two federally listed threatened species, and eleven state-listed endangered, threatened, or special concern species could be potentially affected by construction of the G-II Project. The two federally listed species were not known to occur in the vicinity of the Wisconsin portion of the original Guardian pipeline. As described in section 4.6.1, we believe that the proposed Project would not affect, or would not be likely to adversely affect any federally listed species. Habitat for some state-listed species (Blanchard's cricket frog, wood turtle, Blanding's turtle, and handsome sedge) could potentially occur along the proposed pipeline, and these species could potentially be affected by pipeline construction and operation. Guardian is continuing consultations with the WDNR to identify the specific state-listed species and/or species of special concern that should be included in the species surveys for the G-II Project. Guardian is also working with the WDNR to identify measures to avoid and/or minimize potential impacts on this species if suitable habitat is identified during surveys. A number of listed species potentially occur in the vicinity of the proposed nonjurisdictional pipeline laterals; however, based on review of potentially affected habitats, We Energies and WPS report that none of these species would likely be affected by construction and operation of the laterals.

The wind energy projects could potentially affect several protected species of birds and bats as a result of potential impact from turbine blades during operation. Because this potential impact is specific to operation of the wind turbines, no cumulative impact on these species would be expected from the G-II Project and the wind energy projects.

4.13.4.3 Land Use

Construction of the G-II Project and other reasonably foreseeable future projects would result in temporary and permanent changes in land use within the project area. The G-II Project would affect about 1,586 acres of land during construction. While impacts on most land uses would be temporary in nature, occurring only during construction, operation of the Project would result in long-term impacts during operation to about 33 acres of forest land.

Construction of the Wisconsin portion of the original Guardian pipeline affected about 825 acres of land, of which about 356 acres are maintained in a herbaceous condition within the operational right-of-way, including about 20 acres of land that was forested prior to construction. Construction of the nonjurisdictional pipeline laterals would affect about 997 acres of land, of which about 490 acres would be maintained in a herbaceous condition within the operational

right-of-way following construction, including about 20 acres of land that is currently forested. Available and estimated information on the other projects listed in table 4.13-1 indicates that about 2,565 acres would be affected during construction, and about 265 acres would be permanently affected during operation, primarily agricultural lands. Land use impacts associated with those projects would likely have a cumulative effect when considered in conjunction with the G-II Project.

4.13.4.4 Air Quality

Air quality would be affected by construction and operation of the G-II Project and other reasonably foreseeable future projects. Construction of these projects would temporarily affect air quality by 1) generating emissions from operation of fossil-fueled construction equipment, and 2) fugitive dust from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. Some impacts would occur during operation as well. The existing Guardian pipeline generates ongoing air emissions from operation of the Joliet Compressor Station. Air emissions that would be generated from operation of the dairy farm in Calumet County are unknown. The G-II Project, as well as the three planned wind projects would not generate air emissions during operation. None of the proposed nonjurisdictional pipeline laterals or electric utility projects would include compressor stations or other facilities that would produce emissions during operation.

Because construction-related air emissions would be temporary and localized in nature, they would be unlikely to contribute significantly to cumulative air quality impacts.

Operation of the proposed Project and the wind energy projects listed in table 4.13-1 could reduce air emissions by providing a competitively priced source of energy that could replace the dirtier forms of energy that are currently being used. Natural gas is a relatively clean and efficient form of energy compared to other fossil fuels. By burning natural gas rather than other fossil fuels such as coal and fuel oil, it could be possible to reduce the emissions of regulated pollutants (e.g., mercury, NO_x, SO₂, and PM₁₀) or unregulated greenhouse gases (e.g., CO₂). Similarly, energy generated by the wind energy projects and the replacement of the coal-powered electric generation plant with a gas-fired electric generation plant could replace energy currently generated by coal-fueled plants. As such, it is possible that the G-II Project and the regional wind energy projects could cumulatively improve air quality in the region.

4.13.4.5 Noise

Potential noise impacts associated with the G-II Project and those projects listed in table 4.13-1 would occur during construction and operation. Because of the linear nature of the G-II Project and the nonjurisdictional pipeline laterals, construction-related noise impacts for these projects would be of short duration in a given area. Some noise impacts would occur during construction of the three wind power projects, but these impacts would also be of short duration in any particular location, occurring during installation of tower foundations, towers, and electrical interconnects. Most construction activities would be limited to daylight hours, so construction-related noise impacts would not occur at night for the most part. Potential noise-related impacts during operation of the G-II Project and the other pipeline projects listed in table 4.13-1 would primarily be limited to the vicinity of the associated compressor stations. As described in section 4.11, the estimated noise that would be generated by the proposed Sycamore and Bluff Creek Compressor Stations would meet acceptable levels at the nearest NSA. Noise would also be generated from each turbine within the three wind energy projects, as well as from the new

dairy operation. During operation, turbines within the wind energy projects would generate up to about 50 dBA of noise within the zone immediately surrounding each turbine depending on wind speed, with noise decreasing with distance from the turbines.

Noise emissions from compressor station operations may be additive with noise-generating elements of other reasonably foreseeable future projects if they are located near a common NSA. However, no other compressor station, or other noise-generating source for the identified projects would be located within 1 mile of the G-II Project's proposed Sycamore or Bluff Creek Compressor Stations. Therefore, the cumulative impact of the proposed Project and other projects in the region on the noise environment would be negligible.

4.13.5 Conclusions on Cumulative Impact

If the G-II Project were approved by the Commission and the project proceeded to construction, several other projects could also be constructed within the same general area and same general time span. Additionally, the type of project, construction methods, and impacts would be similar. Though the nonjurisdictional projects identified in our analysis would also be constructed within a similar time span using similar construction methods, any potential contribution to cumulative impacts of the proposed Project would be negligible due to the small scope of those projects. The unrelated projects identified in our cumulative impact analysis would be of a different nature than the proposed Project, but would affect similar resources. Each of these unrelated projects would result in temporary and minor effects during construction, but each project would be designed to avoid or minimize impacts on the human environment and to wetlands, waterbodies, protected and special status species, and other sensitive resources. Additionally, significant unavoidable impacts on sensitive resources resulting from these projects would be mitigated. Mitigation generally leads to the avoidance or minimization of cumulative impacts. We therefore consider that the potential cumulative impacts of the two pipeline projects under our review have been or would be minimized.

Because natural gas is a relatively clean and efficient form of energy compared to other fossil fuels such as coal and fuel oil, burning natural gas rather than other fossil fuels may reduce emissions of regulated pollutants or unregulated greenhouse gases. Similarly, energy generated by the wind energy projects could replace energy currently generated by fossil fuel plants and result in less emissions. As such, it is possible that the G-II Project and the regional wind energy projects could cumulatively improve air quality in the region.

We believe that impacts associated with the proposed Project would be relatively minor, and we have included recommendations in this EIS to further reduce the environmental impacts associated with the Project. The environmental impacts associated with the G-II Project would be minimized by project routing, avoidance, and utilization of HDD techniques to avoid and minimize impacts on some sensitive resources, and implementation of appropriate mitigation measures. Consequently, only a small cumulative effect is anticipated when the impacts of the proposed Project are added to past, present, or reasonably foreseeable future projects in the area.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 SUMMARY OF THE STAFF'S ENVIRONMENTAL ANALYSIS

We have determined that construction and operation of the proposed G-II Project would result in limited adverse environmental impacts and would be an environmentally acceptable action based on information provided by Guardian and data developed from information requests; field investigations; literature research; alternatives analysis; comments from federal, state, and local agencies; and input from public groups and individual citizens and the mitigation measures recommended below.

As part of our review, we developed specific mitigation measures that we believe would appropriately and reasonably reduce the environmental impacts resulting from construction and operation of the proposed Project. We believe that environmental impacts would be minimized if the proposed Project is constructed and operated in accordance with applicable laws and regulations, Guardian's proposed mitigation, and our additional mitigation measures. We are, therefore, recommending that our mitigation measures be attached as conditions to any authorization issued by the Commission. A summary of the anticipated project impacts and our conclusions is provided below by resource area.

5.1.1 Geology

Construction and operation of the Project would have minimal impact on geological resources. There would be a disturbance to the existing topography along the construction right-of-way; however, Guardian would restore topographic contours to the extent practicable to preconstruction conditions following installation of the pipeline.

A limited amount of blasting is anticipated along the pipeline and geologic conditions at the proposed compressor stations and remaining aboveground facility sites would not require blasting, special equipment, or techniques. Impacts to residences, wells, and structures during blasting would be avoided or minimized through Guardian's establishment of site-specific blasting procedures that would be filed with the Secretary for approval by the Director of FERC's OEP prior to construction.

There are several quarry operations adjacent to the right-of-way. Guardian would avoid impacts on these operations by negotiating with the affected landowners/operators to obtain easement agreements that govern mining activities in the immediate area of the pipeline.

The Project would be located in an area of low seismic risk. Site-specific analysis conducted for the Project revealed that due to low level of ground motion predicted at the site, earthquake hazards were not considered a controlling factor in facility design. A low risk of seismic activity and faulting effects can be reasonably anticipated for the project area.

5.1.2 Soils and Sediments

Construction and operation of the proposed pipeline route and associated aboveground facilities would affect soil characteristics including prime farmland, certified organic farmland, hydric soils, stony/rocky soils, compaction potential, erosion potential (via wind and water), revegetation potential, topsoil depth, and soil contamination.

The Project would be constructed and operated in accordance with our Plan. Implementation of these measures would minimize potential adverse effects due to erosion, compaction, horizon mixing, revegetation potential, and soil contamination. In addition, Guardian would develop specific BMPs as part of their AMP in consultation with the DATCP to minimize or mitigate adverse effects on agricultural land. The AMP would also address construction procedures in the vicinity of Certified Organic farms.

5.1.3 Water Resources

Groundwater

Construction and operation of the proposed Project would be conducted in accordance with the standard requirements for pipeline construction and operation in our Plan. The proposed Project would avoid impacts on sole-source aquifers, wellhead protection areas, drinking water wells, and springs. The Project would also not cross any known areas associated with contaminated groundwater.

Other potential impacts on groundwater resources would be avoided or minimized by the implementation of our standard recommendations and requirements as included in our Plan, Guardian's SPCC Plan, Guardian's commitment to repair or replace wells damaged by construction, and our recommendation that Guardian file information concerning any private or domestic water wells damaged and repaired as a result of blasting.

Surface Water

The proposed Project would cross 29 perennial streams, 80 intermittent streams, one fluctuating stream, and one pond. As proposed, the majority of the waterbodies crossings would be accomplished using open-cut methods during periods of low flow. HDD installation techniques would be used to accomplish pipeline installation across two waterbodies (the Rock River and the Fox River). Waterbody crossings would be accomplished in accordance with our Procedures and the terms of any applicable federal or state permits that may be granted.

Accidental spills during construction and operation would be prevented or adequately minimized through implementation of our Procedures and Guardian's SPCC Plan. Additionally, Guardian's HDD Contingency Plan describes the procedures that would be implemented to monitor for, contain, and clean up any inadvertent releases of drilling fluids during HDD operations.

Guardian has proposed to use surface waters for hydrostatic testing of the proposed pipeline, although municipal water supplies may be used as test water sources for the compressor stations. Guardian would also avoid or adequately minimize potential effects to waterbodies resulting from hydrostatic testing by implementing our Plan and by avoiding the use of potentially toxic test water additives.

5.1.4 Vegetation

Wetland Vegetation

Construction of the proposed G-II Project would affect about 60.3 acres of wetland areas and result in a total of 2.52 acres of permanent wetland disturbance, including approximately 2.15 acres of forested wetlands and approximately 0.37 acre of palustrine, scrub-shrub or emergent wetlands. No wetlands would be affected by the proposed aboveground facilities

Guardian would avoid and minimize wetland impacts by reducing the construction right-of-way width through wetlands to 75 feet. Guardian specified 29 locations where site-specific constraints require that the additional temporary workspace be located within 50 feet of the wetland boundary. Guardian would coordinate with the WDNR and the COE, prior to construction, to receive additional authorization for any jurisdictional wetland crossings. Guardian would also coordinate with the Oneida Nation for wetland permits and authorizations, as appropriate, on lands under jurisdiction of the Oneida Nation. Guardian intends to submit their Section 404 permit application in the spring of 2007.

Affected wetlands located outside the maintained portion of the permanent pipeline right-of-way would be allowed to revert to preconstruction conditions. Impacts on emergent and scrub-shrub wetlands would be minor overall as regeneration to preconstruction condition would occur rapidly in these areas, and maintenance of the permanent pipeline right-of-way would not result in a permanent conversion of emergent wetlands. Impacts on forested wetlands would be either permanent or long-term due to the slow regeneration time of forested areas. Guardian would also develop and conduct a wetland monitoring and forested wetland mitigation plan in coordination with WDNR and the COE.

Upland Vegetation

The primary impact of the proposed Project on vegetation would be the clearing and removal of vegetation during construction. The upland vegetative community types most affected by the construction of the proposed pipeline, workspaces, and the associated above ground facilities are agricultural lands. Approximately 92.1 percent of the upland vegetative communities affected by the Project are agricultural lands, 2.6 percent are forested uplands, 1.0 percent are non-agricultural open lands, and 0.3 percent are developed lands. The remaining vegetative communities affected are forested wetlands (0.7 percent) and non-forested wetlands (3.3 percent). Guardian's proposed aboveground facilities would involve the removal of 48.0 acres of non-forested agricultural vegetation (including agricultural fields, row crops, and pasture land), with a permanent impact of 38.6 acres during project operation. Guardian proposes to construct 24 access roads for use during construction of the Project, 3 of which would be kept and used during operation of the Project. A total of 12.2 acres of agricultural lands would be affected by construction of the access roads, 1.8 acres of which would be permanently impacted along the 3 permanent access roads.

Most impacts on vegetation would be short-term and temporary. Guardian would implement our Plan to minimize erosion and enhance revegetation in upland areas, as well as follow the specific recommendations of local agencies. To further minimize impacts on previously undisturbed vegetation and forested lands, where possible Guardian has routed the pipeline to avoid forested lands, follow forest edges or previously cleared rights-of-ways, or has sited the pipeline to follow existing utility and road corridors.

With the use of Guardian's proposed measures and our recommendations for construction and restoration, the effects to upland vegetation would be effectively minimized.

5.1.5 Wildlife and Aquatic Resources

Wildlife

The wetlands and upland vegetation communities crossed by the proposed pipeline route support habitats that provide cover and forage for a variety of wildlife species including birds, mammals, reptiles, and amphibians. Physical disturbance, displacement, and clearing of herbaceous upland and wetland habitats would affect wildlife at or near the time of construction, but such effects would be largely temporary as most terrestrial wildlife would relocate and many habitats would generally recover quickly following construction. In addition, the majority of the land (89 percent) affected by the pipeline is agricultural. Habitats associated with agricultural areas have already been significantly altered from their original vegetative communities, and typically support a low diversity of wildlife. Some wildlife, such as small mammals, amphibians, and reptiles, would have a higher than normal mortality rate during construction, as they would have less ability to relocate during clearing, grading, and trenching activities.

A potential long-term impact to wildlife is associated with the clearing of forest habitat. Along the proposed route, upland and wetland forested habitats would be affected most substantially, with a long-term conversion of wooded areas to successional stages in the temporary construction right-of-way and a permanent conversion to scrub-shrub or herbaceous habitats within the permanent pipeline right-of-way. About 51 acres (3.3 percent) of forested land would be affected during construction, of which 19.6 acres would be permanently converted to non-forest habitat (e.g., low shrub or grassland habitats) for the life of the Project along the permanent right-of-way. To minimize impacts on previously undisturbed vegetation and wildlife habitats, where possible, Guardian has routed the pipeline to avoid forested lands, followed forest edges or previously cleared rights-of-ways, or has located the pipeline within existing utility rights-of-way.

Guardian would further minimize impacts on wildlife habitats through implementation of our Plan and Procedures. In addition, to minimize impacts on migratory birds during operation of the pipeline, routine vegetation maintenance of the pipeline right-of-way would be performed no more frequently than every three years and would not take place between April 15 and August 1 of any year to avoid impacts on nesting birds.

Proposed aboveground facilities would be located in agricultural fields, therefore impacts on wildlife during construction and operation of these facilities would be minimal. We do not expect wildlife to be significantly impacted by the Project.

Aquatic Resources

The waterbodies that would be crossed by the proposed Project provide habitat for a variety of aquatic species, including warm water fishes and a coldwater trout community. Potential impacts on fisheries and aquatic habitats would include sedimentation and turbidity, loss of cover, introduction of pollutants into the aquatic environment, potential blockage of fish migrations and interruptions of spawning, and entrainment or loss of stream flow during construction and hydrostatic testing. As described above, all waterbody crossings would be accomplished in accordance with our Procedures. At three locations site-specific constraints require that the additional temporary workspaces be located within 50 feet of the water's edge.

Waterbody crossings would also be accomplished in accordance with the terms and conditions of any applicable federal or state permits that may be granted.

Aquatic habitat impacts at crossing locations would be largely temporary, as crossings would be completed in less than 48 hours in most instances. Additionally, intake screening to limit entrainment of fishes and maintenance of adequate stream flow rates to protect aquatic life during hydrostatic test water withdrawals would further ensure that any project-related impacts on aquatic habitats would be minor and temporary. Direct impacts on aquatic resources would also be avoided by the use of HDD at the two major waterbodies, the Fox and the Rock Rivers.

5.1.6 Threatened, Endangered, and Other Special Status Species

Two federally protected species were identified as potentially occurring within the proposed G-II Project area. Based on our review of known occurrences of the two federal species within the project area, we have determined that the Project would have no effect on these species.

Twelve State of Wisconsin protected species and five Wisconsin species of special concern were identified as potentially occurring within the proposed G-II Project area. Guardian has conducted habitat screening to identify appropriate habitats for focused searches for protected species to take place during 2007 prior to construction. If habitat or species presence is verified during these investigations, Guardian has agreed to consult with appropriate federal and state agencies to develop mitigation strategies that reduce impacts on those species. We are recommending that Guardian file the results of its state-listed threatened, endangered, and special status species surveys with the Secretary in addition to developing mitigation strategies that reduce impacts on those species. Based on our analysis of habitat that would be affected by the Project, along with the implementation of our recommendation, and Guardian's commitment to develop measures to avoid or minimize potential impacts on these species if suitable habitat is identified, we have determined that the Project would not adversely affect these state-listed species.

5.1.7 Land Use, Recreation, and Visual Resources

Construction of the Guardian II Pipeline Project would affect a total of about 1,587.2 acres of land: 1,323.1 acres for the pipelines, 48 acres for the aboveground facilities (including the seven meter stations, associated mainline valves, and launcher receiver facilities); 12.2 acres for access roads; 176.3 acres for additional temporary workspace; and 27.6 acres for a pipe storage and contractor yard. Operation of the Project would affect about 702.8 acres of land, of which 38.6 acres would be permanently converted for operation of the aboveground facilities, and the remaining 664.2 acres would be within the permanent operational right-of-way.

The proposed Project would cross 0.4 mile of residential land, and 4.8 acres of residential land would be affected by construction. Two residences, two barns, and one warehouse would be located within 50 feet of the pipeline construction work area. Temporary construction impacts on residential areas could include inconvenience caused by noise and dust generated by construction equipment; trenching through roads or driveways; ground disturbance of lawns; removal of landscaping or natural vegetative screening; potential damage to existing septic systems or wells; and removal of aboveground structures, such as sheds or trailers, from within the right-of-way. Following construction approximately 2.4 acres of the 4.8 acres of residential land affected by construction would be retained as permanent right-of-way.

To minimize disruption to residences within 50 feet of the construction right-of-way and ensure public safety, we have recommended that Guardian leave mature trees and landscaping along the edge of the construction work area, restore lawns and landscaping according to our Plan immediately after backfilling, and fence the edge of the construction right-of-way for a distance of 100 feet on either side of a residence. For those residences within 25 feet of the construction right-of-way we have recommended that Guardian develop site-specific plans. In general, residential land use would not be affected during operation, because typical routine vegetation maintenance would not be conducted in residential areas.

Three special interest areas have been identified along the proposed pipeline route. The pipeline route would cross the Niagara Escarpment and the Oneida Nation Reservation (MPs 96.5 to 109.9). The proposed Bluff Creek Compressor Station site in Walworth County, Wisconsin would be located along Kettle Moraine Scenic Drive. No other recreation or special interest areas such as developed recreational facilities, parks, forests, wildlife management areas, wilderness areas, trails, or registered natural landmarks have been identified in the vicinity of the proposed Project.

The Niagara Escarpment would not be affected by the construction or operation of the Project, because the pipeline does not cross any vertical exposure or rock outcroppings associated with the Escarpment. Impacts to Duck Creek would be minimized by our recommendation that Guardian file a final crossing plan for review and approval by the Director of OEP that includes records of consultation with the Oneida Nation as well as mitigation plans or plans to minimize impacts to nearby sweet flag and black ash. Guardian has also agreed to minimize the potential impacts to the Kettle Moraine Scenic Drive by enclosing aboveground facilities in buildings that are similar in appearance to those of the surrounding landscape. Guardian is also committed to appropriately maintaining the grounds of its aboveground facilities (e.g., mowing and maintenance of any trees and/or shrubbery) to ensure both safety and the “kept” appearance of the overall site. Given our recommendation to develop a final crossing plan for Duck Creek in consultation with the Oneida Nation and Guardian’s plans to construct buildings similar to those of the surrounding landscape and properly maintain aboveground facilities, impacts to special interest areas would be minor.

Impacts on visual resources due to the pipeline would be primarily temporary and short-term, occurring during construction. During construction, the cleared and graded right-of-way, as well as the construction equipment could be visible from any surrounding residences and local roads. The clearing and grading would result in color changes to the landscape, and the construction equipment would create tracks, compress vegetation, and expose soils. Because the terrain over much of the project area is gently rolling, views of the construction activities may extend for some distance. Following construction, the right-of-way would be restored to preexisting conditions and the farmers would be allowed to grow crops over the pipeline on agricultural lands. Within one or two years construction work areas would normally be difficult to distinguish from surrounding areas. Therefore, no long-term visual impacts would result from construction and operation of the pipeline in non-forested areas. Guardian would also develop site-specific screening plans for each of the proposed compressor stations.

5.1.8 Socioeconomics

Construction of the proposed Project would not have a significant adverse impact on local populations, housing, employment, community services, or local commerce. Any adverse

impacts would be highly localized and temporary due to the relatively short construction period and the rapid rate at which construction crews would pass through any one area.

Construction of the proposed Project would require a maximum of 420 to 520 workers during the 7-month construction period (March 2008 to October 2008). This number would temporarily increase demand for public services such as medical, police, and fire protection, but these effects would be offset by increased tax revenues to local governments. The proposed Project would have positive impacts on local spending, employment, and tax income during construction and operation. There is no evidence that the proposed Project would have a disproportionate share of adverse environmental or socioeconomic impacts on any racial, ethnic, or socioeconomic group.

5.1.9 Transportation and Traffic

Construction of the proposed Project would not have a significant adverse impact on local transportation and traffic. Any adverse impacts would be highly localized and temporary due to the relatively short construction period and the rapid rate at which construction crews would pass through any one area during construction of the pipeline. Construction of the compressor stations would have the longest construction times in any single location. Because of the rural nature of the area, construction of the compressor stations would only have minor impacts on transportation and traffic in the vicinity of the compressor stations.

Construction workers commuting to the project area are expected to add an average of approximately 341 to 411 vehicle trips per day. At the peak of construction, a maximum of 420 to 520 construction worker vehicle trips are expected. An additional 344 trucks would make deliveries each day all along the pipeline route. This level of traffic would remain fairly constant throughout the construction period; however, pipeline construction work is generally scheduled to take advantage of daylight hours so that most workers commute to and from the sites in off-peak hours. Detours or obstructions in traffic flow due to the large vehicles or construction of pipeline road crossings may result in short-term interruptions in local traffic. To minimize impacts on local traffic Guardian would notify affected towns and counties prior to construction. In addition, when it is necessary for equipment to move across paved roads, mats or other appropriate measures would be used to prevent damage to the road surface. Guardian contractors would also comply with applicable vehicle weight and width restrictions, and to remove soil that is left on the road surface by the crossing of construction equipment. Additional traffic control and safety measures may also be required as conditions of state, county, or local road crossing permits.

5.1.10 Cultural Resources

Guardian's contractor has surveyed about 7.6 miles along the pipeline route on lands managed by the Oneida Nation and about 84.4 miles along the pipeline route outside of the reservation. There remains about 17.5 miles of pipeline route to be surveyed. Of 11 archaeological sites recorded within the Area of Potential Effect (APE), 2 sites were recommended as potentially eligible to the National Register of Historic Places (NRHP). Guardian has developed a reroute that would avoid site 47DO657 while further investigations are recommended at site AOS8 to determine if it may be eligible to the NRHP.

Guardian is working with the Oneida Nation to possibly identify an acceptable crossing of Duck Creek, an area considered a sensitive natural and cultural resource. The Oneida Nation indicated

concerns about the potential impacts on Duck Creek and on sweet flag and black ash in the vicinity of Duck Creek. We have recommended that Guardian consult the Oneida Nation to develop a final crossing plan for Duck Creek, which would include mitigation plans or plans to minimize impacts to sweet flag and black ash. Guardian has also consulted with other interested Indian tribes about the Project and potential presence of culturally sensitive areas within the APE. No additional specific areas have been identified as culturally sensitive.

The Illinois State Historic Preservation Office (SHPO) has commented that the Project may proceed in Illinois and has not noted any specific project effects. The Wisconsin SHPO has reviewed the initial Phase I report of archaeological survey and will review and comment on subsequent submittals for the Project as they become available.

To ensure compliance with the NHPA, we have recommended that Guardian defer construction until all cultural resource surveys, evaluation reports, and necessary avoidance or treatment plans are filed with the Secretary; copies of comments from the Wisconsin SHPO and interested Indian tribes on all reports and plans have been provided; and the ACHP has been given an opportunity to comment if any historic properties would be adversely affected.

Guardian has developed updated Unanticipated Discoveries Plans that it proposes to implement during project construction. The plan for Illinois was accepted by the SHPO. The Wisconsin SHPO has not specifically commented on the plan for Wisconsin.

5.1.11 Air Quality and Noise

Air Quality

Air quality impacts associated with construction of the proposed Project would include emissions from fossil-fueled construction equipment and fugitive dust. However, such air quality impacts would generally be temporary and localized and are not expected to cause or contribute to a violation of applicable air quality standards. Because the compressors at the proposed Bluff Creek and Sycamore Compressor Stations would be electrically driven, the only source of air contaminants would be the diesel-fuel-fired emergency backup generators. Operation of these emergency generators would be limited to 500 hours per year, and air emissions associated with operation of these emergency generators would meet all federal or state air quality requirements.

Noise

Local traffic and farming activities are the primary sources of existing noise in the rural areas where the pipeline would be located. Noise from operation of the electric-powered Bluff Creek and Sycamore compressor stations should not create a significant noise impact at the nearest Noise Sensitive Areas (NSAs) to each station. During construction of the Guardian II Pipeline, neighbors in the vicinity of the construction right-of-way would hear the daytime construction activities, but there would be no nighttime construction except during a few days at the Rock River and Fox River crossings where the HDD technique would be used. Predicted noise levels due to operation of the two compressor stations and construction of the two river crossings using the HDD technique would not exceed the day-night sound level (L_{dn}) limit of 55 decibels on the A-weighted scale (dBA).

5.1.12 Reliability and Safety

The U.S. Department of Transportation (DOT) is mandated to provide pipeline safety under Title 49, United States Code Chapter 601. The DOT pipeline standards are published in Parts 190-199 of Title 49 of the Code of Federal Regulations (CFR). Part 192 of 49 CFR specifically addresses natural gas pipeline safety issues.

The pipeline and aboveground facilities associated with the G-II Project must be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. Because the G-II Project would be built according to DOT standards, we do not believe it would be a threat to public safety, and no specific mitigation is recommended.

5.1.13 Cumulative Impacts

The original Guardian Pipeline (G-I) consisting of 150 miles of pipeline was approved by FERC in 2002 and was constructed in 2002 and 2003 from Joliet, Illinois to Ixonia, Wisconsin. If the G-II Project was approved by the Commission and constructed, it would extend northward from Ixonia where the previous project had ended, and the two compressor stations would be constructed along the previously constructed pipeline.

If the G-II Project was approved by the Commission and the Project proceeded to construction, several other projects could also be constructed within the same general area and same general time span. Additionally, the type of project, construction methods, and impacts would be similar. Though the nonjurisdictional We Energies and WPS lateral projects identified in our analysis would also be constructed within a similar time span using similar construction methods, any potential contribution to cumulative impacts of the proposed Project would be negligible due to the small scope of those projects. Also, the ComEd Sycamore Power Line and Transformer/Substation and the ATC Bluff Creek Transformer/Substation would be constructed to bring electric power to Guardian's compressor stations. The transformer/substations would be built within the footprint of the compressor stations, thereby minimizing additional impact. The 2.5-mile, 138 kV ComEd Power Line to the Sycamore Compressor Station would be constructed within a new power line easement disturbing 45 acres. The unrelated projects, which include the Forward Wind Energy Center, Green Field Blue Sky Wind Energy, Holsum Elm Dairy, and Cedar Ridge Wind Farm projects, identified in our cumulative impact analysis would be of a different nature than the proposed Project, but would affect similar resources. Each of these unrelated projects would result in temporary and minor effects during construction, but each project would be designed to avoid or minimize impacts on the human environment and to wetlands, waterbodies, protected and special status species, and other sensitive resources. Additionally, significant unavoidable impacts on sensitive resources resulting from these projects would be mitigated. Mitigation generally leads to the avoidance or minimization of cumulative impacts. We therefore consider that the potential cumulative impacts of the previous G-I and the proposed G-II Projects under our review have been or would be minimized.

We believe that impacts associated with the proposed Project would be relatively minor, and we have included recommendations in this EIS to further reduce the environmental impacts associated with the Project. The environmental impacts associated with the G-II Project would be minimized by careful project routing, utilization of HDD techniques to avoid and minimize

impacts on some sensitive resources, and implementation of appropriate mitigation measures. Consequently, only a small cumulative effect is anticipated when the impacts of the proposed Project are added to past, present, or reasonably foreseeable future projects in the area.

5.1.14 Alternatives

The EIS addresses alternatives to the proposed actions before the FERC. The proposed action before the FERC is to consider issuing to Guardian a Section 7 Certificate of Public Convenience and Necessity for a new natural gas pipeline. Section 3.0 of the EIS clearly describes the criteria for alternative selection.

We considered the alternatives of no action or postponed action, pipeline system alternatives and route alternatives. While the no action or postponed action alternatives would eliminate or postpone the environmental impacts identified in this EIS, the objectives of the proposed Project would not be met.

Our analysis of system alternatives included an evaluation of the use of existing pipeline systems. None of the existing facilities has the ability to add the capacity proposed in this Project. We also analyzed and evaluated five pipeline route alternatives, 15 route variations (including eight minor variations), and four modifications. Our alternatives analysis included the evaluation of five meter station location alternatives and two compressor station location alternatives. None were considered to be environmentally preferable to the proposed Project.

Based upon this alternatives analysis, we have determined that the proposed G-II Project, as modified by our recommended mitigation, is the preferred alternative that can meet the project objectives.

5.2 FERC STAFF'S RECOMMENDED MITIGATION

If the Commission issues their authorization for the proposed Project, we recommend that the Commission's Order (Order) include the following measures as conditions to the Order section. We believe these measures would further mitigate the environmental impacts associated with the construction and operation of the proposed Project.

1. Guardian shall follow the construction procedures and mitigation measures described in its application, supplemental filings (including responses to staff information requests), and as identified in the Environmental Impact Statement (EIS), unless modified by the Order. Guardian must:
 - a. request any modification to these procedures, measures, or conditions in a filing with the Secretary of the Commission (Secretary);
 - b. justify each modification relative to site-specific conditions;
 - c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and
 - d. receive approval in writing from the Director of OEP **before using that modification.**
2. The Director of OEP has delegated authority to take whatever steps are necessary to ensure the protection of all environmental resources during construction and operation of the Project. This authority shall allow:

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- a. the modification of conditions of the Commission's Order; and
 - b. the design and implementation of any additional measures deemed necessary (including stop work authority) to assure continued compliance with the intent of the environmental conditions as well as the avoidance or mitigation of adverse environmental impact resulting from Project construction and operation.
3. **Prior to any construction**, Guardian shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, environmental inspectors (EIs), and contractor personnel will be informed of the EI's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.
 4. The authorized facility location shall be as shown in the EIS, as supplemented by filed alignment sheets, and shall include all of the staff's recommended facility locations. **As soon as they are available, and prior to the start of construction**, Guardian shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. All requests for modifications of environmental conditions of the Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

Guardian's exercise of eminent domain authority granted under Natural Gas Act (NGA) Section 7(h) in any condemnation proceedings related to the Order must be consistent with these authorized facilities and locations. Guardian's right of eminent domain granted under NGA Section 7(h) does not authorize it to increase the size of its natural gas pipeline to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

5. Guardian shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, and documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **prior to construction** in or near that area.

This requirement does not apply to route variations required herein or minor field realignments per landowner needs and requirements, which do not affect other landowners or sensitive environmental areas such as wetlands.

Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

- a. implementation of cultural resources mitigation measures;

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- b. implementation of endangered, threatened, or special concern species mitigation measures;
 - c. recommendations by state regulatory authorities; and
 - d. agreements with individual landowners that affect other landowners or would affect sensitive environmental areas.
6. **Within 60 days of the acceptance of this certificate and prior to construction,** Guardian shall file an initial Implementation Plan with the Secretary for review and written approval by the Director of OEP describing how Guardian would implement the mitigation measures required by the Order. Guardian must file revisions to the plan as schedules change. The plan shall identify:
- a. how Guardian will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;
 - b. the number of EIs assigned per spread, and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;
 - c. company personnel, including EIs and contractors, who will receive copies of the appropriate material;
 - d. what training and instructions Guardian will give to all personnel involved with construction and restoration (initial and refresher training as the Project progresses and personnel change), with the opportunity for OEP staff to participate in the training session;
 - e. the company personnel (if known) and specific portion of Guardian's organization having responsibility for compliance;
 - f. the procedures (including use of contract penalties) Guardian will follow if noncompliance occurs; and
 - g. for each discrete facility, a Gantt or Program Evaluation Review Technique (PERT) chart (or similar project scheduling diagram), and dates for:
 - (1) the completion of all required surveys and reports;
 - (2) the mitigation training of onsite personnel;
 - (3) the start of construction; and
 - (4) the start and completion of restoration.
7. Guardian shall employ one or more EIs per construction spread. The EIs shall be:
- a. responsible for monitoring and ensuring compliance with all mitigative measures required by the Order and other grants, permits, certificates, or other authorizing documents;
 - b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract and any other authorizing document;
 - c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;
 - d. a full-time position, separate from all other activity inspectors;
 - e. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and

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- f. responsible for maintaining status reports.
8. Guardian shall file updated status reports with the Secretary on a **weekly** basis **until all construction-related activities, including restoration, are complete for each phase of the Project**. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:
- a. the current construction status of each spread, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally sensitive areas;
 - b. a listing of all problems encountered and each instance of noncompliance observed by the EI(s) during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);
 - c. a description of corrective actions implemented in response to all instances of noncompliance, and their cost;
 - d. the effectiveness of all corrective actions implemented;
 - e. a description of any landowner/resident complaints that may relate to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and
 - f. copies of any correspondence received by Guardian from other federal, state or local permitting agencies concerning instances of noncompliance, and Guardian's response.
9. Guardian must receive written authorization from the Director of OEP **before commencing service** for each phase of the Project. Such authorization will only be granted following a determination that rehabilitation and restoration of areas affected by the Project are proceeding satisfactorily.
10. **Within 30 days of placing the certificated facilities in service**, Guardian shall file an affirmative statement with the Secretary, certified by a senior company official:
- a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or
 - b. identifying which of the certificate conditions Guardian has complied with or will comply with. This statement shall also identify any areas affected by the Project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.
11. Guardian shall develop and implement an environmental complaint resolution procedure. The procedure shall provide landowners with clear and simple directions for identifying and resolving their environmental mitigation problems/concerns during construction of the Project and restoration of the right-of-way. **Prior to construction**, Guardian shall mail the complaint procedures to each landowner whose property would be crossed by the Project.
- a. In its letter to affected landowners, Guardian shall:
 - (1) provide a local contact that the landowners should call first with their concerns; the letter should indicate how soon a landowner should expect a response;

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- (2) instruct the landowners that, if they are not satisfied with the response, they should call Guardian's Hotline; the letter should indicate how soon to expect a response; and
 - (3) instruct the landowners that, if they are still not satisfied with the response from Guardian's Hotline, they should contact the Commission's Enforcement Hotline at (888) 889-8030, or hotline@ferc.gov.
 - b. In addition, Guardian shall include in its weekly status report a copy of a table that contains the following information for each problem/concern:
 - (1) the date of the call;
 - (2) the identification number from the certificated alignment sheets of the affected property and approximate location by MP;
 - (3) the description of the problem/concern; and
 - (4) an explanation of how and when the problem was resolved, will be resolved, or why it has not been resolved.
 12. To ensure that restoration in agricultural lands is satisfactorily completed, Guardian shall provide copies of the third-party monitoring reports to FERC staff.
 13. To minimize the potential introduction of rock into agricultural land from blasting, Guardian shall file with the Secretary for review and approval by the Director of the OEP **prior to construction** a blasting plan detailing the procedures to be used during blasting to prevent the introduction of blast rock into agricultural lands.
 14. Guardian shall file with the Secretary for review and approval by the Director of OEP **prior to construction** the final plan for the crossing of Duck Creek with records of consultation with the Oneida Nation.
 15. Guardian shall file with the Secretary for review and approval by the Director of OEP compensatory mitigation plans or plans to minimize impacts on sweet flag and black ash on the Oneida Reservation near Duck Creek during construction and operation of the pipeline developed in consultation with the Oneida Nation prior to construction. The plans shall include records of consultation with the Oneida Nation.
 16. In the event the planned HDD crossing of the Fox and/or Rock Rivers fail, Guardian shall develop final alternative crossing plans in consultation with the COE, EPA, and WDNR. The final alternative crossing plans shall be filed with the Secretary for review and for written approval from the Director of the OEP **prior to conducting any such alternative crossing**.
 17. If a state-protected species or its habitat are found within the proposed construction right-of-way or construction work areas, Guardian shall consult with WDNR regarding survey methodology, and develop mitigation plans, if necessary, to avoid or minimize impacts to that species. Guardian shall file the results of any state-threatened and endangered species surveys (including survey methodology) and mitigation plans with the Secretary **prior to construction**.

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18. For all residences within 50 feet of the construction work area Guardian should:
- leave mature trees and landscaping within the edge of the construction work area, unless necessary for safe operation;
 - restore all lawn areas and landscaping within the construction work area consistent with the requirements of our Plan immediately after backfilling the trench; and
 - fence the edge of the construction work area adjacent to the residence for a distance of 100 feet on either side of the residence to ensure that construction equipment and materials, including the spoil pile, remain within the construction work area.

For all residences closer than 25 feet of the construction work area Guardian shall file a site-specific plan that includes:

- a description of construction techniques to be used (such as reduced pipeline separation, centerline adjustments, use of stove-pipe or drag-section techniques, working over existing pipelines, pipeline crossover, bore, etc.), and a site plan that shows:
 - the location of the residence in relation to the new pipeline and, where appropriate, the existing pipelines;
 - the edge of the construction work area;
 - the edge of the new permanent right-of-way; and
 - other nearby residences, structures, roads, or waterbodies.
 - a description of how Guardian would ensure that the trench is not excavated until the pipe is ready for installation and that the trench is backfilled immediately after installation.
19. To ensure that the FERC's responsibilities under the NHPA and its implementing regulations are met, Guardian shall defer construction of facilities, including the use of staging, storage, and temporary work areas, and new or to be improved access roads **until**:
- Guardian files with the Secretary all additional required cultural resource inventory and evaluation reports, and necessary avoidance or treatment plans;
 - Guardian files copies of comments from the Wisconsin SHPO and interested Indian tribes on all reports and plans;
 - the ACHP has been provided an opportunity to comment if any historic properties would be adversely affected; and
 - the Director of OEP reviews and approves all reports and plans and notifies Guardian in writing that it may proceed with treatment or construction.

All material filed with the Commission that **contains location, character, and ownership** information about cultural resources must have the cover and any relevant pages therein clearly labeled in bold lettering: **"CONTAINS PRIVILEGED INFORMATION - DO NOT RELEASE."**

20. To ensure that there will be no excessive impacts to noise quality at the nearest NSAs as a result of compressor station operations, Guardian shall make all reasonable efforts to

ensure its predicted noise levels from the compressor stations are not exceeded at NSAs and file noise surveys showing this with the Secretary **no later than 60 days** after placing the compressor stations in service. If the noise attributable to the operation of compressor stations exceeds 55 dBA L_{dn} at an NSA, Guardian shall file a report on what changes are needed and shall install additional noise controls to meet the level **within 1 year** of the in-service date. Guardian shall confirm compliance with these requirements by filing a second noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls.

GUARDIAN EXPANSION AND EXTENSION PROJECT
DRAFT EIS
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ACRONYMS AND ABBREVIATIONS

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter
ACHP	Advisory Council on Historic Preservation
AM	Agricultural Monitor
AMP	Agricultural Impact Mitigation Plan
ANR	ANR Pipeline Company
APE	Area of Potential Effect
API	American Petroleum Institute
ARPA	Archaeological Resources Protection Act
ATC	American Transmission Company, LLC
ATWS	additional temporary workspace
BA	biological assessment
BACT	best available control technology
Bcf	billion cubic feet
BIA	Bureau of Indian Affairs
BMP	best management practice
BOD	biochemical oxygen demand
Btu	British thermal units
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CEQ	Council on Environmental Quality
Certificate	Certificate of Public Convenience and Necessity
CFR	Code of Federal Regulations
CN	Canadian National Railway
CO	carbon monoxide
CO ₂	carbon dioxide
COE	U.S. Army Corps of Engineers
ComEd	Commonwealth Edison Power Company
CPCN	Certificate of Public Convenience and Necessity
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program
CW	Cold Water Communities
CWA	Clean Water Act
DATCP	Wisconsin Department of Agriculture, Trade, and Consumer Protection
dBA	decibels on the A-weighted scale
DOE	Department of Energy
DOT	U.S. Department of Transportation
ECM	Environmental Compliance Manager
EIA	Energy Information Administration
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ERP	Environmental Repair Program

ESA	Endangered Species Act
FAL	Fish and Aquatic Life
FEMA	Federal Emergency Management Agency
FERC or Commission	Federal Energy Regulatory Commission
Forward	Forward Energy L.L.C.
Fox River Trail	Fox River State Recreational Trail
FPP	Wisconsin Farmland Preservation Program
FR	Federal Register
FRPP	Farm and Ranch Lands Protection Program
FSA	Farm Service Agency
FWS	U.S. Fish and Wildlife Service
G-II Project or Project	Guardian Expansion and Extension Project
GIS	geographic information system
gpm	gallons per minute
GLGT	Great Lakes Gas Transmission Company
Guardian	Guardian Pipeline, L.L.C.
H ₂ S	hydrogen sulfide
HAP	hazardous air pollutant
HCA	high consequence area
HDD	horizontal directional drilling
HDD Contingency Plan	HDD Contingency Plan for Inadvertent Releases of Drilling Fluid
HEL	highly erodible land
hp	horsepower
IAC	Illinois Administrative Code
IDNR	Illinois Department of Natural Resources
IEPA	Illinois Environmental Protection Agency
JULIE	Joint Utility Locating Information for Excavators
kPa	kilopascals
kV	kilovolt
LAL	Limited Aquatic Life
LDCs	local distribution companies
L _{dn}	day-night sound level
L _{eq(24)}	24-hour equivalent sound level
LFF	Limited Forage Fish Communities
LNG	liquefied natural gas
LPG	liquefied petroleum gas
LUST	Leaking Underground Storage Tank
LWCD	Land and Water Conservation Department
m ³	cubic meters
MACT	Maximum Achievable Control Technology
Memorandum	Memorandum of Understanding on Natural Gas Transportation Facilities
MLRA	Major Land Resource Area

MLV	mainline valve
MMcfd	million cubic feet per day
MMIS	Modified Mercalli Intensity Scale
MOA	Memorandum of Agreement
MP	milepost
mph	miles per hour
msl	mean sea level
MW	megawatt
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act of 1969
NESHAPs	National Emissions Standards for Hazardous Air Pollutants
NGA	Natural Gas Act
NGPL	Natural Gas Pipeline Company of America
NHI	Wisconsin Natural Heritage Inventory
NHPA	National Historic Preservation Act
NNSR	Non-Attainment New Source Review
NO ₂	nitrogen dioxide
NOI	Notice of Intent
NOP	National Organic Program
NNG	Northern Natural Gas Company
NO _x	nitrogen oxide
NPL	National Priorities List
NRCS	National Resources Conservation Service
NRHP	National Register of Historic Places
NSA	Noise Sensitive Area
NSPS	New Source Performance Standards
NSR	New Source Review
NWI	National Wetland Inventory
O ₃	ozone
OEP	FERC's Office of Energy Projects
OERW	Outstanding and Exceptional Resource Waters
Oneida Nation	Sovereign Oneida Nation of Wisconsin
OPS	Office of Pipeline Safety
Order	Commission's Order
Pb	lead
PCB	polychlorinated biphenyl
PEM	Palustrine Emergent
PFO	Palustrine Forested
PHEL	potentially highly erodible land
PHMSA	Pipeline and Hazardous Materials Safety Administration
Plan	Upland, Erosion Control, Revegetation and Maintenance Plan
PM ₁₀	particulate matter of 10 microns in diameter or smaller
PM _{2.5}	particulate matter less than 2.5 microns in diameter

ppm	parts per million
Procedures	Wetland and Waterbody Construction and Mitigation Procedures
PSAP	Public Service Archaeology Program of the University of Illinois
PSC	Public Service Commission of Wisconsin
PSD	Prevention of Significant Deterioration
psi	pounds per square inch
PSS	Palustrine Scrub-shrub
RFP	Request for Proposals
SHPO	State Historic Preservation Office
SO ₂	sulfur dioxide
SPCC Plan	Spill Prevention, Control and Countermeasures Plan
Tcf	trillion cubic feet
TES	threatened and endangered species
TES Work Plan	Threatened and Endangered Species Work Plan and Habitat Assessment
THPO	Oneida Tribal Historic Preservation Officer
TMDLs	total maximum daily loads
tpy	tons per year
USDA	U.S. Department of Agriculture
USGS	United States Geological Survey
VGTC	Viking Gas Transmission Company
VOC	volatile organic compound
VOL	volatile organic liquids
WDNR	Wisconsin Department of Natural Resources
WEG	wind erodibility group
WGNHS	Wisconsin Geological and Natural History Survey
WMU	Watershed Management Unit
WPDES	Wisconsin Pollutant Discharge Elimination System
WPS	Wisconsin Public Service Corporation
WRP	Wetland Reserve Program
WSOR	Wisconsin and Southern Railroad Company
WWFF	Warm Water Forage Fish Communities
WWI	Wisconsin Wetland Inventory
WWSF	Warm Water Sport Fish Communities

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