APPENDIX D4
Wetlands

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Cumulative Wetland Effect Assessment

Prepared for Excelsior Energy

Mesaba Energy Project

SEH No. EXENR0502.03

November 13, 2006

(Revised – June 5, 2007)

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Short Elliott Hendrickson Inc.
3535 Vadnais Center Drive
St. Paul, MN 55110-5196
651.490.2000

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Cumulative Wetland Effect Assessment

Prepared for Excelsior Energy

Mesaba Energy Project

Introduction

This assessment of cumulative impacts to wetlands has been prepared on behalf of Excelsior Energy for the proposed Mesaba Energy Project and to assist the federal and state agencies in the preparation of the environmental impact statement (EIS).

The Department of Energy (DOE) National Energy Technology Laboratory (NETL) is required by the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S.C. 4321, *et seq*.), the Council on Environmental Quality NEPA regulations (40 Code of Federal Regulations [C.F.R.] Parts 1500-1508), and the DOE NEPA regulations (10 C.F.R. Part 1021) to prepare an EIS as part of its participation in the Mesaba Energy Project.

Similarly, under the Power Plant Siting Act (PPSA) (Minnesota Statutes §§ 116C.51-.697) a site permit from the Public Utilities Commission (PUC) is required to build a large electric power generating plant (LEPGP), including preparation of a State EIS. The EIS requirements under NEPA and the PPSA are substantially similar, and DOE will prepare, in cooperation with the Minnesota Department of Commerce and the Minnesota Public Utilities Commission, a joint EIS that will fulfill the requirements of both state and federal law. The information contained in this report will be used in the preparation of that EIS.

The Minnesota Wetland Conservation Act and Section 404 of the Clean Water Act provide programs for evaluating the project-specific wetland impacts. The NEPA provides the context and carries the mandate to analyze the cumulative effects of federal actions (in this case, funding provided by the DOE). The Council on Environmental Quality (CEQ) regulations for implementing the NEPA defines cumulative effects as:

> The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions (40 CFR § 1508.7).

The consideration of past, present and reasonable foreseeable future actions provide a context for assessing the cumulative impacts on the wetland resources.

Study Area

The PPSA and Applicable Rules requires definition of at least two potential sites for the proposed project, identification of which a preferred site, and justification for its preference. In compliance with these requirements, Excelsior Energy has identified two potential project sites, the West Range site and the East Range site.

The West Range site includes approximately 1,260 acres of undeveloped land within the city limits of Taconite, Minnesota in Iron Range Township as shown on **Figure 1**. The East Range site includes approximately 810 acres of undeveloped property located within the city limits of Hoyt Lakes, Minnesota as shown on **Figure 2**. The West Range site has been identified as the preferred location on which to construct the Mesaba Energy Project, however, final determination of the project site will be made by the Minnesota Department of Commerce and the Minnesota Public Utilities Commission under the PPSA requirements. The EIS includes a description of additional supporting project elements, including roadways, railroad, natural gas and electric transmission, required for operation of the proposed project at both alternative sites. This assessment includes evaluation of the potential wetland impacts from the preferred alternative project elements for each alternate site.

Because many of the primary functions performed by wetlands are related to the surrounding watershed, the study area for the cumulative effects assessment was defined according to the limits of the affected subwatersheds for each alternative site. The paragraphs below describe the study area for both the West Range and East Range sites. The characteristics of the study areas are described in the following sections.

West Range Site

The West Range site is located within subwatersheds on the boundary between the Swan River and Prairie River watersheds. The study area associated with the West Range site (See **Figure 3**) is defined as follows.

1) That part of the Swan River watershed upstream of the point where Holman Lake discharges to the Swan River. The Holman Lake discharge point represents the point on the Swan River affected by discharge and drainage from the West Range site.

2) That part of the Prairie River watershed upstream of Prairie Lake.

Swan River Watershed

The portion of the Swan River watershed considered within the study area covers approximately 114,266 acres extending from just northeast of the City of Grand Rapids to just northwest of the City of Hibbing (**Figure 3**) and then south and east. Seven small communities (Coleraine, Bovey, Taconite, Marble, Calumet, Nashwauk and Keewatin) are located along the Mesabi Iron Range that lies just south of the divide between the Swan River

watershed and the adjacent Prairie River watershed to the north. These communities, along with the associated iron and ore mining that support them, represent the primary development in the study area.

Outside of the small urban areas and scattered farmsteads and rural residences, land uses in the watershed primarily consists of ore mine pits and spoil areas. The remainder of this portion of the study area is a mixture of deciduous and mixed forest and wetland. The MNDNR Census of the Land (1996) identifies the primary land cover in the watershed as gravel pits and open mines, deciduous and mixed wood forest and open water.

Prairie River Watershed

The portion of the Prairie River watershed considered in the study area covers approximately 285,890 acres along the same portion of the Mesabi Iron Range (**Figure 3**) but extending north and west. Because the existing communities lie primarily along the southern edge of the iron formation, there are no established communities within this area of the Prairie River watershed. Outside of widely scattered farmsteads and rural residences, land use in the watershed is primarily mixed wood and deciduous forest and wetland. The MNDNR Census of the Land (1996) identifies the primary land cover in the watershed as deciduous and mixed wood forest, regenerating forest, wetlands, and water.

East Range Site

The East Range site is located in a subwatershed of the Partridge River in St. Louis County, Minnesota. The study area of the East Range site (See **Figure 4**) is defined as point on the Partridge River approximately 5 miles downstream of the confluence with First Creek.

Partridge River Watershed

The portion of the Partridge River watershed considered in the study area covers approximately 88,692 acres extending from the City of Aurora northeast toward the City of Babbitt (**Figure 4**). Outside of the small urban areas of Aurora and Hoyt Lakes and widely scattered farmsteads and rural residences, land use in the watershed is primarily mining, mixed wood forest and wetland. The MNDNR Census of the Land (1996) identifies the primary land cover in the watershed as deciduous and mixed wood forest, regenerating forest, gravel pits and open mines, wetlands, and water.

Methodology

This analysis includes the evaluation of the incremental impact of the proposed project when added to other past, present, and reasonably foreseeable future actions. The proposed project will be evaluated along with reasonably foreseeable future actions within the study area to determine the potential for cumulative effects on wetland resources for each alternative site.

Previous Conditions (1980s)

The past condition of wetland resources in the project area is defined as the condition that existed at the time of the National Wetlands Inventory (NWI). The existing NWI data is used to represent the wetland area that existed at the time the aerial photography was flown.

Existing Conditions

Wetland areas estimated for the existing conditions were developed by compiling the following data.

1. The NWI was used to identify wetlands in most areas, particularly where additional detailed information was unavailable. However more accurate or more detailed data were used in place of NWI data where available, as described below.

2. Wetlands shown to be disturbed by mining and other development and industry were identified through interpretation of aerial photography. Where wetlands were shown to be filled or otherwise obliterated, they were removed from the "existing wetlands" data.

A "composite" wetlands layer was developed by deleting all of the NWI wetlands from the areas where additional data and/or photo interpretation show that wetlands have been impacted.

Foreseeable Future Conditions

Wetland areas estimated for future conditions were developed by defining reasonably foreseeable projects that are expected to be implemented in the future (± 20 years). In addition to identifying several project currently undergoing separate environmental assessment and permitting, potential future municipal and county highway departments projects were considered. The following table provides a summary of the projects considered reasonably foreseeable in each of the study areas. The potential effects of each project on existing wetland resources was estimated using the existing conditions wetland mapping described above and an assumed footprint of disturbance for each potential future project.

Table 1
Reasonably Foreseeable Future Actions

West Range Site Study Area	East Range Site Study Area
Minnesota Steel Industries	PolyMet Mining NorthMet Project
Nashwauk Gas Pipeline	Mesabi Nugget
Itasca County Highway 7 Realignment	St. Louis County – new roadway from Hoyt Lakes to Babbitt
Itasca County Railroad	

Cumulative Effects Assessment

The past condition of wetland resources in the project area is represented by the resources included on the NWI. Wetland area features used in this assessment were mapped as part of the NWI performed by the US Fish and Wildlife Service (USFWS) and made available in ARC/INFO format by the MNDNR GIS Data Deli. The wetland types described in this assessment utilize the Circular 39 Classification (Shaw and Fredine, 1956), a means of classifying the wetland basins of the U.S. It is composed of 20 types of which 8 are found in Minnesota. Three additional types were added into the GIS database to completely classify the Minnesota NWI wetlands into Circular 39 types. These additional classifications include Type 80

(Municipal and industrial activities, water regime), Type 90 (Riverine systems), and Type 98 (Uplands, i.e., the absence of wetland).

West Range Site

Past Conditions (1980s)

Swan River Watershed

The NWI data shows there are approximately 28,554 acres of wetland habitat in that portion of the Swan River watershed within the study area. At the time of the NWI, wetland habitat represented approximately 25% of the landscape within the study area. The majority of the wetland habitat was either shallow open water, shrub swamp or bog. **Table 2** below provides a summary of the wetlands by wetland type. For simplification, the Circular 39 classification is used.

Table 2
Past Conditions:
Wetlands Previously in the Swan River Study Area

Wetland Type	Description	Total Wetland Area (acres)	Percent of Wetland Area	Percent of Total Area
Type 1	Seasonally flooded basin or flat	3.95	0.01%	0.004%
Type 2	Wet meadow	855.60	3.00%	0.75%
Type 3	Shallow marsh	1,347.86	4.72%	1.18%
Type 4	Deep marsh	566.36	1.98%	0.50%
Type 5	Shallow open water	6,589.87	23.08%	5.77%
Type 6	Shrub swamp	6,009.28	21.05%	5.26%
Type 7	Wooded swamp	2,318.29	8.12%	2.03%
Type 8	Bog	6,320.11	22.13%	5.53%
Type 80	Municipal and industrial activities, water regime	4,501.66	15.77%	3.94%
Type 90	Riverine systems	40.75	0.14%	0.04%
Total		**28,553.73**		**24.99%**

Source: National Wetlands Inventory (NWI) from MNDNR GIS Data Deli.

Prairie River Watershed

The NWI data shows there are approximately 100,363 acres of wetland habitat in that portion of the Swan River watershed within the study area. At the time of the NWI, wetland habitat represented approximately 35% of the landscape within the study area. As in the adjacent Swan River Watershed, the majority of the wetland habitat was either shallow open water, shrub swamp or bog. **Table 3** below provides a summary of the wetlands by wetland type.

Table 3
Past Conditions:
Wetlands Previously in the Prairie River Study Area

Wetland Type	Description	Total Wetland Area (acres)	Percent of Wetland Area	Percent of Total Area
Type 1	Seasonally flooded basin or flat	627.65	0.63%	0.22%
Type 2	Wet meadow	4,171.95	4.16%	1.46%
Type 3	Shallow marsh	2,260.88	2.25%	0.79%
Type 4	Deep marsh	485.25	0.48%	0.17%
Type 5	Shallow open water	23,686.65	23.60%	8.29%
Type 6	Shrub swamp	24,659.21	24.57%	8.63%
Type 7	Wooded swamp	9,233.76	9.20%	3.23%
Type 8	Bog	34,790.63	34.66%	12.17%
Type 80	Municipal and industrial activities, water regime	230.40	0.23%	0.08%
Type 90	Riverine systems	216.40	0.22%	0.08%
Total		**100,362.78**		**35.11%**

Source: National Wetlands Inventory (NWI) from MNDNR GIS Data Deli.

Existing Conditions

The existing condition is represented by the "composite" wetlands layer developed from NWI data and aerial photo interpretation as described above. The following sections provide a summary of the existing wetland resources in each of the watershed study areas and a description of the wetland losses to the present.

Swan River Watershed

The existing conditions data shows there are approximately 25,058 acres of wetland habitat in that portion of the Swan River watershed within the study area. This represents a loss of approximately 3,496 acres or 12.24% of the past wetland habitat. The loss represents approximately 3% of the land cover in the study area. **Table 4** below provides a summary of the wetlands by wetland type.

Table 4
Existing Conditions:
Wetlands in the Swan River Study Area

Wetland Type	Previous Wetland Area from NWI (acres)	Wetlands Lost (acres)	Percent Lost	Remaining Area (acres)	Percent of Total Area
Type 1	3.95	0.00	0.0%	3.95	0.004%
Type 2	855.60	15.35	1.8%	840.85	0.74%
Type 3	1,347.86	168.64	12.5%	1,179.22	1.03%
Type 4	566.36	237.55	41.9%	328.81	0.29%
Type 5	6,589.87	1,105.79	16.8%	5,484.08	4.80%
Type 6	6,009.28	275.80	4.6%	5,733.49	5.02%
Type 7	2,318.29	138.85	6.0%	2,179.44	1.91%
Type 8	6,320.11	100.04	1.6%	6,220.07	5.44%
Type 80	4,501.66	1,454.08	32.3%	3,047.58	2.67%
Type 90	40.75	0.00	0.0%	40.75	0.04%
Totals	**28,553.73**	**3,496.1**	**12.24%**	**25,058.24**	**21.93%**

Source: National Wetlands Inventory (NWI) from MNDNR GIS Data Deli.

The difference between past and present wetland areas is primarily due to the effects of ore mining and establishment of small urban communities. However, the effects of mining and the related human development in this area extends back to the early 1900s when iron mining and mining camps were established as the precursors of the development seen today. There was certainly additional pre-settlement wetland habitat affected by mining and other human disturbance that was removed prior to development of the NWI and therefore prior to the time considered in the scope of this assessment.

Prairie River Watershed

The existing conditions data shows there are approximately 100,264 acres of wetland habitat in that portion of the Swan River watershed within the study area. This represents a loss of approximately 99 acres of wetland or 0.10% of the past wetland habitat. The loss represents only 0.04% of the land cover in the study area. **Table 5** below provides a summary of the wetlands by wetland type. The lesser effect of mining and related human development on the northern side of the iron formation can be seen in the smaller change in wetland loss between the two watersheds.

Table 5
Existing Conditions:
Wetlands in the Prairie River Study Area

Wetland Type	Previous Wetland Area from NWI (acres)	Wetlands Lost (acres)	Percent Lost	Remaining Area (acres)	Percent of Total Area
Type 1	627.65	0.00	0.0%	627.65	0.22%
Type 2	4,171.95	0.86	0.0%	4,171.09	1.46%
Type 3	2,260.88	2.89	0.1%	2,257.99	0.79%
Type 4	485.25	10.97	2.3%	474.28	0.17%
Type 5	23,686.65	0.37	0.0%	23,686.28	8.29%
Type 6	24,659.21	1.01	0.0%	24,658.20	8.63%
Type 7	9,233.76	1.79	0.0%	9,231.97	3.23%
Type 8	34,790.63	2.20	0.0%	34,788.43	12.17%
Type 80	230.40	78.73	34.2%	151.67	0.05%
Type 90	216.40	0.00	0.0%	216.40	0.08%
Totals	**100,362.78**	**98.82**	0.10%	**100,263.96**	35.07%

Source: National Wetlands Inventory (NWI) from MNDNR GIS Data Deli.

Mesaba Energy Project

The Mesaba Energy Project is to be constructed in two phases. Phase I will include construction of Mesaba One, the first IGCC unit, along with associated facilities including high voltage transmission line (HVTL), gas pipeline, roads, railroads, and utilities. Phase II will include construction of Mesaba Two, the second IGCC unit. The preferred alternatives for the supporting infrastructure are intended to support the operation of both IGCC units and are the alternatives for which wetland impacts are described below. **Table 6** below provides a summary of the wetland impacts from the Mesaba Energy Project on the West Range Site. The wetland impacts shown in **Table 6** are a summary of all wetland impacts, both within and outside of the study area defined for this assessment of cumulative effects. The wetland impacts within the study area are divided by subwatershed (Swan River and Prairie River) in the following sections.

Table 6
Summary of Wetland Impacts
Mesaba Energy Project – West Range Site

Project Element	Type 1	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8	Total
Wetland Filling									
IGCC Power Station, Phase I							17.33		17.33
IGCC Power Station, Phase II			0.12				1.99	11.52	13.63
Power Transmission (fill)		0.0006	0.0012			0.0013	0.0026	0.0045	0.01
Railroad			0.14			4.80	19.99	1.52	26.45
Plant Access Road (acres in ROW)						3.44	0.39	0.04	3.87
Subtotal Wetland Filling									**61.29**
Temporary Disturbance									
Gas Pipeline (acres in ROW)	0.12	1.28	1.14			3.98	6.94	4.01	17.47
Process Water – Lind Pit to Canisteo (acres in ROW)									0.00
Process Water – Canisteo to IGCC site (acres in ROW)						0.04	0.88	2.81	3.73
Process Water – Gross Marble to Canisteo (acres in ROW)				0.42	0.20	1.33	1.47	0.37	3.79
Process Water – Discharge to Holman Lake						0.32	0.88	2.78	4.07
Process Water – Discharge to Canisteo Pit						5.71	0.24	7.65	13.60
Potable Water and Sanitary Sewer						0.13	0.52	1.14	1.79
Subtotal Temporary Disturbance									**44.45**
Type Conversion									
Power Transmission						8.63	7.37	14.21	30.21
Gas Pipeline						3.98	6.94	4.01	14.93
Process Water – Canisteo to IGCC site						0.04	0.88	2.81	3.73
Process Water – Gross Marble to Canisteo						1.33	1.47	0.37	3.17
Process Water – Discharge to Holman Lake						0.32	0.88	2.78	3.98
Process Water – Discharge to Canisteo Pit						5.71	0.24	7.65	13.60
Potable Water and Sanitary Sewer						0.13	0.52	1.14	1.79
Subtotal Type Conversion									**71.41**
Note: In instances where NWI and other data identify wetland complexes of multiple types, the information above uses the most predominant wetland type.									

Swan River Watershed

Table 7 is a summary of wetland fill within the Swan River Watershed that would result from construction of the Mesaba Energy Project on the West Range Site. The table includes only those wetland impacts within the Swan River Watershed portion of the cumulative effects study area and only wetland fill impacts. The table excludes temporary wetland impacts or changes in wetland type as well as wetland impacts outside of the cumulative effects study area. The data show that construction of the proposed Mesaba Energy Project on the West Range Site would affect approximately 0.13% of the existing wetland area in the Swan River Watershed (within the study area).

Table 7
Summary of Mesaba Energy Project Wetland Impacts in Swan River Watershed

Wetland Types	Wetland Impact (acres)	Percent of Existing Wetland Area	Percent of Total Area
Type 1	0.00	0.000%	0.0000%
Type 2	0.31	0.037%	0.0003%
Type 3	4.11	0.349%	0.0036%
Type 4	0.42	0.128%	0.0004%
Type 5	0.20	0.004%	0.0002%
Type 6	21.21	0.370%	0.0186%
Type 7	4.25	0.195%	0.0037%
Type 8	2.27	0.037%	0.0020%
Total	**32.77**	**0.131%**	**0.0287%**

Note: In instances where NWI and other data identify wetland complexes of multiple types, the information above uses the most predominant wetland type.

Prairie River Watershed

Table 8 is a summary of wetland fill within the Prairie River Watershed that would result from construction of the Mesaba Energy Project on the West Range Site. The table includes only those wetland impacts within the Prairie River Watershed portion of the cumulative effects study area and only wetland fill impacts. The table excludes temporary wetland impacts or changes in wetland type as well as wetland impacts outside of the cumulative effects study area. The data show that construction of the proposed Mesaba Energy Project on the West Range Site would affect approximately 0.02% of the existing wetland area in the Prairie River Watershed (within the study area).

Table 8
Summary of Mesaba Energy Project Wetland Impacts in Prairie River Watershed

Wetland Types	Wetland Impact (acres)	Percent of Existing Wetland Area	Percent of Total Area
Type 1	0.00	0.000%	0.0000%
Type 2	0.00	0.000%	0.0000%
Type 3	0.04	0.008%	0.00001%
Type 4	0.00	0.000%	0.0000%
Type 5	0.00	0.000%	0.0000%
Type 6	0.27	0.001%	0.0001%
Type 7	24.13	0.261%	0.0084%
Type 8	0.00	0.000%	0.0000%
Total	**24.44**	**0.024%**	**0.0085%**
Note: In instances where NWI and other data identify wetland complexes of multiple types, the information above uses the most predominant wetland type.			

Foreseeable Future Conditions

Reasonably foreseeable future projects in the West Range study area include:

- the proposed Minnesota Steel Industries steel plant northeast of the West Range Site,
- a proposed gas pipeline intended to serve Minnesota Steel and others to be constructed by the Nashwauk Public Utilities Commission,
- a new railroad to serve Minnesota Steel to be constructed by Itasca County,
- and a proposed realignment of County Road 7 also to be constructed by Itasca County.

See **Figure 3** for the location of these potential future projects in relation to the Mesaba Energy Project West Range Site and the cumulative effects study area. No other reasonably foreseeable future projects were identified after consideration of potential projects by the individual municipalities in the study area and the Itasca County Highway Department.

Minnesota Steel

Minnesota Steel Industries, LLC proposes to reactivate the former Butler Taconite mine and tailings basin near Nashwauk and add direct-reduced iron production and steel making and rolling equipment in an integrated facility to make steel directly from Minnesota taconite ore. The MNDNR is currently preparing an Environmental Impact Statement (EIS) for the proposed project.

The Draft Environmental Impact Statement (DEIS) published for the Minnesota Steel project states that an anticipated total of between 945 and 1,163 acres of wetlands and deepwater habitats will be impacted as a result of the project including: plant facilities, mining activities, tailings basin,

tailings pipeline, rock and overburden stockpiling. Detailed wetland mitigation planning has begun and an overall mitigation plan is included as part of the DEIS.

Table 9 provides a summary of wetland impacts as reported in the DEIS. The division of impacts between the Swan River and Prairie River watersheds is not known. The Minnesota Steel site lies on or near the division between the two watersheds, similar to the Mesaba Energy Project West Range Site. However, most of the site is believed to be located in the Swan River Watershed.

Table 9
Minnesota Steel
Summary of Wetland Impacts

	Total wetland impacts with Stage I Tailings Basin (acres)	Total wetland impacts with Alternative Tailings Basin (acres)
Type 1	10.5	10.5
Type 2	107.7	71.0
Type 3	94.3	1.1
Type 4	66.1	59.7
Type 5	222.1	99.0
Type 6	231.8	207.8
Type 7	32.1	88.3
Type 8	1.2	9.0
Deepwater	398.2	398.2
Total	**1163.1**	**944.9**

Nashwauk Gas Pipeline

The Nashwauk Public Utilities Commission (NPUC) is planning to construct a natural gas pipeline to provide operating fuel to the Minnesota Steel Industries Nashwauk Taconite Reduction Plant described above. NPUC is proposing to install a 21.5 mile high-pressure natural gas pipeline extending from the existing Great Lakes Gas (GLG) 36-inch pipeline in Blackberry Township to the City of Nashwauk as shown on **Figure 3**.

Construction of the pipeline would result in temporary and some permanent impacts to wetland habitats, although the project has yet to reach a stage in planning where wetland impacts have been assessed. **Table 10** below provides a summary of the wetland habitat identified on the NWI within an assumed 70-foot right-of-way along the proposed alignment. Although the proposed pipeline alignment uses existing rights-of-way where possible, some new ROW will be established, resulting in conversion of wetland types from shrub and forested cover to emergent.

Table 10 Wetland Impacts from Nashwauk Gas Pipeline		
Wetland Type	Swan River Watershed	Prairie River Watershed
	Area in permanent ROW (acres)	
Type 2	0.31	0.00
Type 3	1.56	2.46
Type 4	0.00	0.36
Type 6	5.60	1.36
Type 7	2.07	5.92
Type 8	1.87	4.08
Totals	**11.41**	**14.18**

Itasca County Railroad

Itasca County is planning to construct a railroad spur to provide rail access to the Minnesota Steel Industries Nashwauk Taconite Reduction Plant described above. The rail spur is approximately eight miles in length extending from existing rail lines along Highway 169 in a northeasterly direction to the Minnesota Steel Industries site as shown on **Figure 3**. Construction of the railroad is expected to impact approximately 12 acres of wetland, all within the Swan River Watershed.

Itasca County Road 7 Realignment

Itasca County is also considering realignment of County Road 7 as shown on **Figure 3**. The new roadway would replace the existing County Road 7 which would become part of the entrance to the Mesaba Energy Project. This realignment would occur only if the Mesaba Energy Project was constructed at the West Range Site. If constructed the roadway would impact approximately 1.8 acres wetland area as shown in **Table 11**. All of the wetland impacts would be in the Swan River Watershed.

Table 11 Wetland Impacts from Itasca County Road 7 Realignment	
Wetland Type	Wetland Impact (acres)
Type 4	0.43
Type 6	0.42
Type 7	0.55
Type 8	0.40
Total	**1.80**

East Range Site

Previous Conditions (1980s)

The NWI data shows there are approximately 34,500 acres of wetland habitat in that portion of the Partridge River watershed within the study area. At the time of the NWI, wetland habitat represented nearly 39% of the landscape within the study area. The majority of the wetland habitat (over 60%) was bog. **Table 12** below provides a summary of the wetlands by wetland type.

Table 12
Past Conditions:
Wetlands Previously in the Partridge River Study Area

Wetland Type	Description	Total Wetland Area (acres)	Percent of Wetland Area	Percent of Total Area
Type 1	Seasonally flooded basin or flat	0.00	0.00%	0.00%
Type 2	Wet meadow	235.24	0.68%	0.27%
Type 3	Shallow marsh	552.30	1.60%	0.62%
Type 4	Deep marsh	308.05	0.89%	0.35%
Type 5	Shallow open water	2,847.50	8.25%	3.21%
Type 6	Shrub swamp	4,707.21	13.64%	5.31%
Type 7	Wooded swamp	4,864.80	14.10%	5.49%
Type 8	Bog	20,783.08	60.24%	23.43%
Type 90	Riverine systems	201.90	0.59%	0.23%
Totals		**34,500.08**		**38.90%**

Source: National Wetlands Inventory (NWI) from MNDNR GIS Data Deli.

Existing Conditions

The existing conditions data shows there are approximately 33,212 acres of wetland habitat in that portion of the Partridge River watershed within the study area. This represents a loss of approximately 1,288 acres or 3.73% of the past wetland habitat. The loss represents less than 0.5% of the land cover in the study area. **Table 13** below provides a summary of the wetlands by wetland type.

Table 13
Existing Conditions:
Wetlands in the Partridge River Study Area

Wetland Type	Previous Wetland Area from NWI (acres)	Wetlands Lost (acres)	Percent Lost	Remaining Area (acres)	Percent of Total Area
Type 1	0.00	0.00	0.0%	0.00	0.00%
Type 2	235.24	10.36	4.4%	224.88	0.25%
Type 3	552.30	39.84	7.2%	512.46	0.58%
Type 4	308.05	169.08	54.9%	138.97	0.16%
Type 5	2,847.50	314.32	11.0%	2,533.19	2.86%
Type 6	4,707.21	176.07	3.7%	4,531.15	5.11%
Type 7	4,864.80	158.71	3.3%	4,706.10	5.31%
Type 8	20,783.08	420.08	2.0%	20,363.01	22.96%
Type 90	201.90	0.00	0.0%	201.90	0.23%
Totals	**34,500.08**	**1,288.46**	**3.73%**	**33,211.66**	**37.45%**
Source: National Wetlands Inventory (NWI) from MNDNR GIS Data Deli.					

As at the West Range Site, the difference between past and present wetland areas is primarily due to the effects of ore mining and establishment of small urban communities. However, the effects of mining and the related human development in this area extends back to the early 1900s when iron mining and mining camps were established as the precursors of the development seen today. There was certainly additional pre-settlement wetland habitat affected by mining and other human disturbance that was removed prior to development of the NWI and therefore prior to the time considered in the scope of this assessment.

Mesaba Energy Project

As described for the West Range Site, the Mesaba Energy Project is to be constructed in two phases. Phase I will include construction of Mesaba One, the first IGCC unit, along with associated facilities including high voltage transmission line (HVTL), gas pipeline, roads, railroads, and utilities. Phase II will include construction of Mesaba Two, the second IGCC unit. The preferred alternatives for the supporting infrastructure are intended to support the operation of both IGCC units and are the alternatives for which wetland impacts are described below. **Table 14** below provides a summary of the wetland impacts from the Mesaba Energy Project on the East Range Site. The wetland impacts shown in **Table 14** are a summary of all wetland impacts, both within and outside of the study area defined for this assessment of cumulative effects. The wetland impacts within the study area are described in **Table 15**.

Table 14
Summary of Wetland Impacts
Mesaba Energy Project – East Range Site

Project Element	Riv.	Type 2	Type 3	Type 4	Type 5	Type 6	Type 7	Type 8	Total
Wetland Filling									
IGCC Power Station, Phase I			6.38				5.53		11.91
IGCC Power Station, Phase II		0.003					3.70		3.70
Power Transmission (fill)	0.0006	0.0019			0.0006	0.0211	0.0030	0.0189	0.05
Railroad		0.06				0.85	9.77		10.68
Plant Access Road (acres in ROW)						0.47	2.76		3.23
Subtotal Wetland Filling									**29.57**
Temporary Disturbance									
Gas Pipeline (acres in ROW)	0.18	3.46			0.68	17.58	6.37	18.54	46.81
Process Water – intake (acres in ROW)				0.23	0.29	1.13			1.65
Potable Water and Sanitary Sewer					0.45				0.45
Subtotal Temporary Disturbance									**48.91**
Type Conversion									
Power Transmission						14.87	2.65	11.70	29.22
Gas Pipeline						17.58	6.37	18.54	42.49
Process Water – intake						1.13			1.13
Subtotal Type Conversion									**72.84**
Note: In instances where NWI and other data identify wetland complexes of multiple types, the information above uses the most predominant wetland type									

Table 15 is a summary of wetland fill within the Partridge River Watershed that would result from construction of the Mesaba Energy Project on the East Range Site. The table includes only those wetland impacts within the Partridge River Watershed portion of the cumulative effects study area and only wetland fill impacts. The table excludes temporary wetland impacts or changes in wetland type as well as wetland impacts outside of the cumulative effects study area. The data show that construction of the proposed Mesaba Energy Project on the East Range Site would affect 0.10% of the existing wetland area in the Partridge River Watershed (within the study area).

Table 15
Summary of Mesaba Energy Project Wetland Impacts in Partridge River Watershed

Wetland Types	Wetland Impact (acres)	Percent of Existing Wetland Area	Percent of Total Area
Type 1	0.00	0.000%	0.0000%
Type 2	0.36	0.160%	0.0004%
Type 3	0.21	0.041%	0.0002%
Type 4	0.23	0.166%	0.0003%
Type 5	1.42	0.056%	0.0016%
Type 6	24.15	0.533%	0.0272%
Type 7	6.35	0.135%	0.0072%
Type 8	1.21	0.006%	0.0014%
Total	**33.93**	**0.102%**	**0.0383%**
Note: In instances where NWI and other data identify wetland complexes of multiple types, the information above uses the most predominant wetland type.			

Foreseeable Future Conditions

Reasonably foreseeable future projects in the East Range study area include:

- the mine portion of the PolyMet Mining project (excluding the processing facility),
- the Mesabi Nugget project, and
- the corridor for a new roadway between Hoyt Lakes and Babbitt as proposed by St. Louis County.

See **Figure 4** for the location of these potential future projects in relation to the Mesaba Energy Project East Range Site and the cumulative effects study area. No other reasonably foreseeable future projects were identified after consideration of potential projects by the individual municipalities in the study area and the St. Louis County Highway Department.

PolyMet Mining, Inc. NorthMet Project

PolyMet Mining Inc. proposes an open pit mine to extract copper, nickel, cobalt and precious metals by dissolution and precipitation from a low-grade mineral deposit. The project includes a new mine area and use of the currently inactive Cliffs Erie taconite processing facility. The MNDNR is currently preparing an Environmental Impact Statement (EIS) for the proposed project.

The Scoping Environmental Assessment Worksheet (SEAW) prepared for the PolyMet Mining project identifies a total of 1,257 acres of wetland that would be impacted by the proposed mining, construction of mine support facilities, rock and overburden stockpiling, and miscellaneous transportation and utility requirements during the life of the project. Preliminary evaluations indicate that approximately one-half of these wetlands are predominantly bog communities. Approximately one-fourth of the potential wetland impacts are predominantly shrub swamp communities. The remaining one-fourth of the potential wetland impacts includes a mix of wet/sedge meadows, shallow marshes, and lowland hardwood swamps.

Table 16 PolyMet Mining Corp. Projected wetland impact summary by wetland type		
Circular 39 Wetland Classification	**Number of Wetlands**	**Area (acres)**
Type 2	6	2.7
Type 2/3	8	24.5
Type 2/7	2	3.3
Type 3	4	32.5
Type 3/6	1	1.9
Type 3/7	1	2.5
Type 3/8	8	48.9
Type 6	12	100.8
Type 6/3	1	4.8
Type 6/7	7	161.5
Type 6/8	4	111.5
Type 7	15	82.5
Type 8	28	647.3
Type 8/7	1	32.0
Total	98	1,256.7

Mesabi Nugget

Mesabi Nugget, LLC (MNC) has proposed a new commercial iron production plant that would use a new process for producing high purity iron (97% metallic iron) directly from iron ore. The company has completed a small-scale pilot plant at Silver Bay and proposes a a large scale demonstration plant (LSDP) on the Ling-Temco-Vought (LTV) property near the City of Aurora (see **Figure 4**). It is not known how much wetland will be affected by the Mesabi Nugget project. It is believed that the project will utilize existing structures and infrastructure and will likely have little, if any, impact to wetlands. **Table 17** below provides a summary of the wetlands shown on the NWI within the project boundary and within the cumulative impacts study area.

Table 17
Mesabi Nugget
Wetlands within project site

Wetland Types	Wetlands Identified within Project Area (acres)
Type 4	2.56
Type 5	29.88
Type 6	27.42
Type 7	23.50
Type 8	2.07
Total	**85.43**

Note: In instances where NWI and other data identify wetland complexes of multiple types, the information above uses the most predominant wetland type.

St. Louis County New Hoyt Lakes – Babbitt Connection

St. Louis County has proposed a new roadway segment, a new connection between Hoyt Lakes and Babbitt. This segment is part of a larger initiative to more efficiently link the Iron Range communities of Aurora, Hoyt Lakes, Babbitt, and Ely to enhance the potential for new industry and to help mitigate the existing economic situation in the area by developing a new tranportation corridor. To date, several alternative alignments have been identified and evaluation of those alternatives is proposed to begin in 2007. Therefore, no estimate of potential wetland impacts is available for this future project. However, it is expected that because of the extent of wetland habitat in the area, constrution of the project will result in some impact to wetlands.

Conclusions

Table 18 provides a summary of the past and present estimates of wetland habitat in the West Range study area and the area of wetland within the study area that would be filled by the proposed Mesaba Energy Project. It also includes a comparison of potential wetland impacts from other reasonably foreseeable future projects in the study area.

Table 18
Summary of Cumulative Wetland Impacts
West Range Site Study Area

	Swan River Watershed		Prairie River Watershed		Total	
	Wetland Area (acres)	Percent of Present Wetland Area	Wetland Area (acres)	Percent of Present Wetland Area	Wetland Area (acres)	Percent of Present Wetland Area
Past	28,554	---	100,363	---	128,917	---
Present	25,058	12.24% lost from past	100,264	0.10% lost from past	125,322	2.79% lost from past
Mesaba Energy Project	32.77	0.13%	24.44	0.02%	57.21	0.05%
Future Projects						
MSI	945 – 1,163*	3.77% - 4.64%*	0*	---	945 – 1,163	0.75% - 0.93%
Gas Pipeline	11.41	0.05%	14.18	0.02%	25.59	0.02%
Railroad	12	0.05%	0	---	12	0.01%
CR 7	1.8	0.007%	0	---	1.8	0.001%

* The vast majority of wetland impacts are known to fall within the Swan River watershed; however, a small portion of this impact may instead fall within the Prairie River watershed.

Mining and other development in the study area has impacted less than 3% of the wetlands identified on the NWI. Of those remaining, the Mesaba Energy Project would affect 0.05% of the wetlands in the study area. Most of the wetland impacts would occur in the Swan River Watershed.

Similarly, of the reasonably foreseeable future projects, most of the wetland impacts would occur in the Swan River Watershed (within the study area).

This is primarily because the existing mining and human development lies on and south of the iron formation and within the Swan River Watershed. There is little development, other than widely scattered rural residences in the Prairie River Watershed (within the study area).

Of the reasonably foreseeable future projects, the Minnesota Steel Industries project represents the greatest potential impact to wetlands in the study area and is of a magnitude 17 to 20 times greater than the Mesaba Energy Project.

Table 19 provides a summary of the past and present estimates of wetland habitat in the East Range study area and the area of wetland within the study area that would be filled by the proposed Mesaba Energy Project. It also includes a comparison of potential wetland impacts from other reasonably foreseeable future projects in the study area.

Table 19
Summary of Cumulative Wetland Impacts
East Range Site Study Area

	Partridge River Watershed	
	Wetland Area (acres)	**Percent of Present Area**
Past	34,500	---
Present	33,212	3.73% lost from past
Mesaba Energy Project	33.93	0.10%
Future Projects		
PolyMet	1,256.7	3.78%
Mesabi Nugget	Unknown	---
St. Louis County New Hoyt Lakes – Babbitt Connection	Unknown	---

Mining and other development in the study area has impacted less than 4% of the wetlands identified on the NWI. Of those remaining, the Mesaba Energy Project would affect 0.10% of the wetlands in the study area. Of the reasonably foreseeable future projects, the PolyMet NorthMet project represents the greatest potential impact to wetlands in the study area and is of a magnitude nearly 40 times greater than the Mesaba Energy Project.

List of Figures

Figure 1 – West Range Site

Figure 2 – East Range Site

Figure 3 – West Range Study Area

Figure 4 – East Range Study Area