DEPARTMENT OF NATURAL RESOURCES

RECORD OF DECISION

In the Matter of the Determination of the Need for an Environmental Impact Statement for the Minntac Mine Extension Project in Mountain Iron, St. Louis County, Minnesota

FINDINGS OF FACT, CONCLUSIONS, AND ORDER

FINDINGS OF FACT

1. United States Steel Corporation (U.S. Steel) proposes a 483-acre extension to its existing open pit mining facilities in Mountain Iron, St. Louis County, Minnesota. The mine extension will necessitate the relocation of the Minntac access road and a portion of County State Aid Highway (CSAH) 102.

2. The proposed project requires preparation of a State Environmental Assessment Worksheet (EAW) according to Minnesota Rules part 4410.4300, subpart 11B for projects that would extend a mine by 320 or more acres.

3. The relocation of CSAH 102 is a connected action, based on *Minnesota Rules* 4410.1000, subpart 4.

4. The Minnesota Department of Natural Resources (MDNR) is the Responsible Governmental Unit (RGU) for preparation and review of environmental documents related to the Minntac Mine Extension project (Minntac).

5. The MDNR prepared an EAW for the mine extension and CSAH 102 relocation,

6. The EAW is incorporated by reference into this Record of Decision on the Determination of Need for an Environmental Impact Statement (EIS).

7. The EAW was filed with the Environmental Quality Board (EQB) and a notice of its availability was published in the EQB *Monitor* on August 6, 2012. A copy of the EAW was sent to all persons on the EQB Distribution List, to those persons known by MDNR to be interested in the proposed project, and to those persons requesting a copy. A press release announcing the availability of the EAW was sent to newspapers, and radio and television stations, statewide. Copies of the EAW were also available for public review and inspection at the MDNR Northeast Regional Office, the MDNR Hibbing office, the MDNR Central Office library, the Minneapolis Public Library, the Mountain Iron Public Library, the Duluth Public Library, and the Virginia Public Library. The EAW was also made available to the public via posting on the MDNR's website.

8. The 30-day EAW public review and comment period began August 6, 2012 and ended September 5, 2012, pursuant to *Minnesota Rules*, part 4410.1600. The opportunity was

provided to submit written comments on the EAW to the MDNR by U.S. Mail, by facsimile, or electronically.

9. During the 30-day EAW public review and comment period, the MDNR received written comments from the following agencies or individuals. Some commenters submitted a prescribed letter (in part and in whole), and those individuals are indicated below with an asterisk (*) next to their name. The comment letters are included in the Record of Decision as Attachment A.

1) Abel, Kathleen*
2) Alfson, Audrey*
3) Alger, Ryan*
4) Anderson, Mary*
5) Arneson, Carla*
6) Bambenek, Jim*
7) Barnett, James*
8) Bartlett, Bob*
9) Benito, Robert*
10) Bennett-Leet, Deborah*
11) Bock, Connie*
12) Bol, Scot*
13) Brown, Ronald & Joann*
14) Buckanaga, Ronald*
15) Carlson, Christopher*
16) Chayka, Catherine*
17) Christensen, Craig*
18) Clark, Barbara*
19) Clements, Carolyn*
20) Colatch, Zach*
21) Conger, Bill*
22) Conger, Nancy*
23) Conway, James*
24) Coons, Lisa*
25) Corliss, Nan*
26) Coulter, Jessica*
27) Cowie, Anne*
28) Culver, Sara
29) Dahlquist, Scott*
30) Dannenbring, Cheryl*
31) Dark River Basin Association, Dennis Good
32) Dosch, Mary*
33) Draper, Janet*
34) Dosch, Mary (2 letters) *
35) Duggleby, Linda*
36) DuShane, James*
37) Dustin, William*
38) Dziuk, Peter*

39) Erickson, Lorraine*
40) Ferderber, Garrett*
41) Ferguson, Mike*
42) Finley-Shea, Barbara*
43) Fond du Lac and Grand Portage Bands of Lake Superior Chippewa, Nancy Schuldt, Margaret Watkins
44) Fortunak, Sharon*
45) Fosse, Jane*
46) Foutts, Rosemary*
47) Frank, Christine*
48) Frazier, Madelynn*
49) Gardner, Amy*
50) Gardner, Annie*
51) Giguere, Nancy*
52) Good, Mark*
53) Goshert, William*
54) Goss, Cynthia*
55) Goustin, C. *
56) Greenfield, Jan*
57) Grisez, Bernard*
58) Gutzmann, Carly*
59) Haenisch, Chris*
60) Hancock, Allan*
61) Hawkins, Blanche*
62) Hawkins, Ellen
63) Heeter, Chris*
64) Helms, K. *
65) Henning, Brian*
66) Herzberg, William*
67) Hoerter, Jamie*
68) Hoffman, Christine*
69) Holloway, Kristin*
70) Husby, Jason*
71) Hutchinson, Jay*
72) Irish, Dale
73) Jalonen, Ann*
74) Jalonen, Bob*
75) Jalonen, F Emil*
76) Janisch, Jason, Jasper Engineering
77) Jensen, Geraldine*
78) Jensen, Jeanne*
79) Johnson, Lowell*
80) Johnson, Matt*
81) Johnston, Dale*
82) Jones, Kathleen*
83) Kaluza, Mary Ellen*

84) Karakash, Louis and Mary
85) Karon, Jan*
86) Kassal, Mark*
87) Kelley, Ryan*
88) Kemper, Mike*
89) Knuttila, Joan*
90) Koschak, Jane*
91) Kosuth, Robert*
92) Krantz, Lawrence*
93) Krikava, Martha*
94) Laakaniemi, Karen*
95) Lambrecht, Andrea*
96) Larkin, Colles
97) LePlatt, Elizabeth*
98) Lindbloom, Kathy*
99) Loch, Christopher*
100) Londgren, Donelle*
101) Long, Mike*
102) Lovejoy, Carlen*
103) Macy, June*
104) Magliulo, Sharon*
105) Makinen, Martin*
106) Maloney-Hills, Cathy*
107) Malwitz, Jim*
108) Mammel, Richard*
109) Manary, Gordon*
110) Mandel, Kristine*
111) Marie, Ann*
112) Martin, Virgina*
113) Masco, Jeffrey*
114) McCleary, Harriet*
115) McLarnan, Sarah*
116) McQuillan, Kathleen*
117) Megarry, Martha*
118) Meller, Karl*
119) Merz, Elizabeth*
120) Metcalf, Connie*
121) Metis, Saraphine*
122) Minnesota Center for Environmental Advocacy (MCEA), Kathryn M. Hoffman
123) Minnesota Department of Health (MDH), James Lundy
124) Minnesota Historical Society (MHS)/State Historic Preservation Office (SHPO), Mary Ann Heidemann
125) Minnesota Pollution Control Agency (MPCA), Tom Estabrooks
126) Minnesota Power, Dave McMillan
127) Monson, Margo (2 letters) *

128) Moore, Paul*
129) Moriarty, Mary*
130) Munn, Mary*
131) Neber, Rosie*
132) Nelson, Judy*
133) Nethercut, Richard*
134) Nickell, Marie*
135) Norbury, Christopher*
136) Oberholtzer, John*
137) Ohse, Madonna*
138) Olander, Alan*
139) Olson, Richard*
140) Overlid, Greg*
141) Parkinson, Dudley*
142) Poehler, Gaius*
143) Poppe, Robin*
144) Porter, Jim*
145) Porter, Truman & Noelyn*
146) Prom, Sue & Mike*
147) Ramsden, Rebecca*
148) Reichensperger, John*
149) Reinke, Tom*
150) Reisenweber, Doretta*
151) Rice, Michael*
152) Robbins, Robert*
153) Rocheleau, Jessica*
154) Ross, Jean*
155) Rossiter, Stephen*
156) Rost, Gary*
157) Roy, John Paul*
158) Sack, Carl*
159) Samson, Craig
160) Sand, Gail*
161) Save Our Sky Blue Waters and Save Lake Superior Association, Elanne Palcich, LeRoger Lind
162) Saykally, Barbara*
163) Schaefer, Elizabeth*
164) Schaenzer, David*
165) Schauland, Laura*
166) Schlimgen, Lance*
167) Schultz, Nancy*
168) Siebke, Melissa*
169) Sierra Club North Star Chapter and Center for Biological Diversity, Lori Andreson, Annah Gardner, Marc Fink
170) Smith, Dwight*
171) Smith, Mary*

172) Smith, Noah*
173) Spencer, Kathleen*
174) Stenlund, DeeAnn*
175) Stimmler, Cynthia*
176) Stoike, Jon*
177) Strand, Melvin*
178) Suelflow, Melinda*
179) Sutton, Jean*
180) Sweatt, Ginny*
181) Szymialis, Dennis
182) Taylor, Jeanne*
183) Thomas, Rob*
184) Torbica, Arlene*
185) Tourdot, Holly*
186) Tuff, Dianne*
187) Ulrich, Richard*
188) Videen, Pam*
189) Wacha, Mary*
190) Wahlquist, Pauline*
191) Water Legacy, Paula Maccabee
192) Waugh, Anna*
193) Weaver, Verba*
194) Wehrman, Carol*
195) Welander, Ivan*
196) Whitman, Fran*
197) Wilkinson, Art*
198) Williams, Terry J. *
199) Wilson, Karen*
200) Zeitler, Jennifer*
201) Zimney, David*
202) Zink, Mary*

10. Comments received during the public review and comment period addressed the following topics:

a. Project Description - Tailings Basin Dams
b. Permits and Approvals
c. Land Use Issues
d. Fish, Wildlife, Sensitive Resources and Habitat
e. Water Resources – Streams and Wetlands
f. Water Use – Wells, Water Quantity
g. Shoreland
h. Water Quality
i. Geology and Groundwater
j. Air Emissions – Haze, Mercury

k. Nearby Resources - Historical and Cultural Resources, Trails
l. Cumulative Effects
m. Other

11. Each comment that was submitted is summarized and grouped by topic below with MDNR's response following each comment. Comments of similar content are consolidated into one comment and a single response provided. Specific commenters are identified by last name at the end of each consolidated comment. Commenters that submitted the prescribed letter, as indicated with an asterisk by their name in Findings of Fact 9, are referred to as '*group*' at the end of each consolidated comment.

a. Project Description – Tailings Basin Dams

Comment a-1: The commenter asserts that because the low hazard dam classification of Minntac's tailing basin may no longer be appropriate and a hazard class review is needed, the issue should be explored further and more complete details provided in an EIS. (*Sierra Club/Center for Biological Diversity*)

Response: The EAW presents that the current classification of the Minntac tailings basin as a Class III low hazard dam may no longer be appropriate and that a hazard class review is needed. The hazard class review will take place during permitting.

According to Minn. R. 4410.1200 EAW Content, part E, the EAW shall identify "potential environmental impacts and issues that may require further investigation before the project is commenced…" With regard to the proposed changes to the tailings basin interior dams and their potential need for reclassification, the EAW (pg. 4) has identified the issue and that additional investigation (dam breach analysis, hazard class review) will need to occur before the project commences. The purpose of the classification is to assess the risk of dam failure and require appropriate structural design to address the risk.

The proposer will need to complete a dam breach analysis to determine if the proposed work is subject to dam safety regulations. If the analysis shows that failure of the interior dam causes water to overtop the perimeter dam, then the interior dam is subject to dam safety regulations. If the analysis shows that failure of the interior dam does not cause water to overtop the perimeter dam, then the interior dam is not subject to dam safety regulations as no water would leave the basin.

The proposer will be required to demonstrate that "adequate factors of safety will result" and the EAW indicates in several places that design plans and changes proposed to the tailings basin will need to be reviewed and approved by Dam Safety.

The proposer has provided the following additional information regarding the tailings basin dams:

In the February 7, 2012 Minntac Tailings Basin Report, AECOM evaluated the future storage capacity of the Minntac Mine Tailings Basin through the vertical expansion of the interior basin cells. U. S. Steel has selected the Tailings Basin expansion option that

includes the vertical raising of the interior cell dikes with an approximate 40-foot wide bench at each proposed 20-foot rise in elevation.

To further evaluate the vertical expansion and demonstrate that adequate factors of safety will result, the following actions will be performed by AECOM: piezocone soundings, soil test borings, installation of multi-level piezometers, laboratory testing, and the reassessment of the tailings impoundment stability using the latest material strength data.

The structural integrity of the Minntac Mine Tailings Basin has been closely monitored and maintained for over 40 years. The additional stability testing and installation of piezometer monitoring devices will ensure adequate factors of safety continue with the future vertical expansion of the interior cell dikes.

b. Permits and Approvals

Comment b-1: The commenters state that Sec. 8, *Permits and approvals required* makes no reference to the required Section 106 consultation with the Bands under the National Historic Preservation Act or the need for United States Environmental Protection Agency (EPA) approval of a current National Pollutant Discharge Elimination System (NPDES) permit. (*FDL GP Bands*)

Response: The commenters are correct that the Section 106 process is required. It is triggered by the need for a Section 404 permit and the United States Army Corps of Engineers (hereafter, "USACE" or "the Corps") is coordinating the process with SHPO. The EAW noted (in Item 8) that a "Historic Property and Cultural Resources Review" under SHPO had been requested. The need for a Section 106 consultation is added as a potential approval in this Record of Decision and the project proposer will be notified of this potential requirement. The NPDES permit is not being reissued at this time. EPA does not approve NPDES permits.

Comment b-2: The commenters state that USACE will issue a Section 404 permit, and presumably, the EPA will also be involved in the Clean Water Act (CWA) review. All federal agencies share in the federal government's trust responsibility to the Bands to maintain those treaty resources. Tribal consultation and full evaluation of treaty resources will also have to happen before either of those agencies can issue a permit. (*FDL GP Bands*)

Response: Comment noted. The commenters are discussing a federal process. Also see response to Comment b-1.

Comment b-3: The commenters assert that the Bands have Treatment-in-the-same-manner-As-a-State ("TAS") status under the CWA for purposes of administering water quality standards ("WQS"), and are treated as downstream regulators from the Project (and the state of Minnesota). To the extent that there is a dispute between the state and the Bands regarding whose WQS should apply to the Project, the Bands can seek recourse to the EPA to act as mediator between the two before issuance of any

new NPDES permit, if ultimately required, as the Bands argue it must be. (*FDL GP Bands*)

Response: This comment does not address the accuracy and completeness of information, potential impacts that warrant further investigation, nor the need for an EIS. The MPCA and the project proposer will be notified of this jurisdictional issue. The NPDES permit is not being reissued at this time. The MPCA will consider all applicable water quality standards when the permit is reissued.

c. Land Use Issues

Comment c-1: Commenters assert the proposed mine extension and CSAH 102 relocation includes excavating or disturbing several contaminated sites without any plans for proper disposal of contaminated materials. These sites include the Atkins Mine, Hanna and Pilot mines, Inland Steel - Iroquois Mine Site, Mountain Iron dumpsite, Parkville Dump, and Park Ridge Road Landfill. (*FDL GP Bands, MCEA; Save our Sky Blue Waters/Save Lake Superior Association; Szymialis*)

Response: Item 9 of the EAW identifies potential hazards such as soil contamination, as required. Item 9 reads (underscore added): "*Describe current and recent past land use and development on the site and on adjacent lands. Discuss project compatibility with adjacent and nearby land uses. Indicate whether any potential conflicts involve environmental matters. Identify any potential environmental hazards due to past site uses, such as soil contamination or abandoned storage tanks, or proximity to nearby hazardous liquid or gas pipelines.*" The EAW notes that "If contamination is encountered during proposed project activities, the activities would cease, proper notifications would be made (State Duty officer), and appropriate response measures would be implemented." The EAW also notes that a contingency plan is recommended to ensure that a plan is in place if contamination is encountered. The MDNR permit to mine requires reclamation of the mine site, including reclamation of previously contaminated areas.

In addressing Item 9 further, MDNR reviewed information supplied by U.S. Steel with regard to previous studies completed in the project area, completed a search of the MPCA online database "What's in My Neighborhood," and held follow-up discussions with MPCA staff regarding the two sites that appear to be close to the CSAH 102 Relocation corridor. Additional information obtained from the MPCA in response to this comment is provided below.

The Superfund cleanup process begins with site discovery or notification to EPA of possible releases of hazardous substances. Sites are discovered by various parties, including citizens, State agencies, and EPA Regional offices. Once discovered, sites are entered into the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), EPA's computerized inventory of potential hazardous substance release sites.

The Preliminary Assessment (PA) and Site Inspection (SI) are used by EPA to evaluate the potential for a release of hazardous substances from a site. A Preliminary Assessment is designed to determine whether a site poses little or no threat to human health and the environment or if it does pose a threat, whether the threat requires further investigation. PA investigations collect readily available information about a site and its surrounding area. The PA is designed to distinguish, based on limited data, between sites that pose little or no threat to human health and the environment and sites that may pose a threat and require further investigation. The PA also identifies sites requiring assessment for possible response actions. If the PA results in a recommendation for further investigation, a Site Inspection is performed. If the assessment determines there is little or no threat to human health and the environment the Site is designated as a 'No Further Response Action' site.

The Inland Steel Mining Company – Iroquois Mine MND980609929 and the Atkins Mine MND980609903 were designated in the late 1980s by the EPA and the MPCA as "No Further Action Site(s)". In summary, these sites were listed on CERCLIS as possible sites of concern, assessed by the two agencies and a determination was made in the 1980s that they did not warrant further investigation. Based on this determination it appears that the sites would represent a limited level of concern.

Comment c-2: Commenters state the EAW does not specify the materials to be used in the CSAH 102 relocation. The EAW should clarify whether Minntac intends to use tailings as building material for the proposed relocation. (*MCEA, WaterLegacy*)

Response: The current plan is not to utilize taconite coarse tailings as a building material in the construction of the relocated CSAH 102. However, the use of taconite tailings has been documented as an acceptable construction material. According to the *Minnesota Department of Transportation Waste Products in Highway Construction* report, "Since 1975, some taconite tailings have been accepted by the State of Minnesota as an alternate to sand and gravel for embankment, base and some surfacing material in highway construction. These approved taconite tailing sources are Eveleth, U.S. Steel (Minntac), Inland Steel Co ~ Butler, and Jackson County Iron Co. Taconite. Prohibited tailings contain asbestos that is harmful to humans." In addition, a January 2012 report by the Natural Resource Research Institute, funded by the United States Department of Transportation and the Federal Highway Administration, documented the benefits of adding taconite tailings to the asphalt mixture.

Comment c-3: Commenters assert that tax policy and pollution have inhibited the agricultural economies of the towns of Cherry, Toivola, Meadowlands, and Brookston along the St. Louis River and that the proposed Minntac expansion may prolong and intensify that effect. (*Save our Sky Blue Waters/Save Lake Superior Association; Szymialis*)

Response: Tax policy and economics are not subjects covered by an EAW. The pollution of the St. Louis River is a cumulative effects issue (See Findings of Fact 13s). The EAW identified that the proposed extension has the potential for a 5% increase in mine pit dewatering that would be discharged to the St. Louis River watershed; the

potential increase in volume would remain within the permitted water appropriation limits (West Pit: 22,000 gpm; East Pit: 21,570 gpm). The contribution of the proposed extension to pollution in the St. Louis River is limited in extent and is also subject to ongoing public regulatory authority under the MPCA's NPDES permitting program and MDNR's permit to mine.

d. Fish, Wildlife, Sensitive Resources and Habitat

Comment d-1: Commenters state that Sec. 11, *Fish, wildlife and ecologically sensitive resources* makes no reference to wild rice and sturgeon, both species of exceptional cultural significance to the Bands, and which exhibit sensitivity to high-sulfate waters. Releases of high concentrations of sulfates, chlorides, hardness, and conductance from permitted seeps, and the dilution and discharge of tailings basin waters has and is likely to continue to damage at least two treaty resources in the Sandy, Dark, and West Two River watersheds: fisheries and wild rice. (*FDL GP Bands*)

Response: MDNR is not aware that lake sturgeon have occupied any waters in the Dark Lake/River watershed. They have been sampled in the Sturgeon River downstream of the inlet from Dark River.

In 2004-5 the Duluth, Grand Rapids and Tower Fisheries Areas, in cooperation with the Fond du Lac Resource Management Office, completed a fish survey on the St. Louis River from Cloquet to Seven Beaver Lake on the upstream end. No lake sturgeon were sampled in any of the sites. The report references an earlier investigation, in 1976-77, that also did not collect lake sturgeon. Lake sturgeon are present in the very lower reaches on the St. Louis River but several large, hydro-electric dams would likely block any upstream migration.

A survey for potential wild rice production waters downstream of the mine pits is in progress. No waters either downstream of the mine pit or the tailings basin have been determined as waters used for the production of wild rice.

As part of its 404 permit from the USACE (issued 12/10/12) for the West Pit Progression project, U.S. Steel requested a condition be added that the company would evaluate opportunities for wild rice restoration in the Twin Lakes. Within 120 days of issuance of the permit, the company is required to submit a Twin Lakes Wild Rice Restoration Opportunities Plan (Plan) to evaluate and identify implementation alternatives for the reestablishment of wild rice beds within Little Sandy and Sandy Lakes, collectively known as the Twin Lakes. The Plan is to include development of a five-year wild rice restoration and monitoring program for those areas of the Twin Lakes that show the greatest potential for restoration. The target date for implementation of the Plan is October 31, 2013, unless an extension is requested in writing by the company and granted by the USACE.

With regard to the tailings basin, U.S. Steel is currently operating under a Schedule of Compliance executed June 2011 and is working to reduce sulfate loading to the tailings basin through the installation of dry air pollution controls and an alternate water source

lower in sulfate for its make-up water system. The 2011 Schedule of Compliance (SOC) also requires the construction of a seepage collection and return system to eliminate surface water seepage discharges from the west side of the tailings basin to the Dark River.

A February 2013 amendment to the SOC requires submittal of a Ground Water Sulfate Reduction Plan that ensures sulfate concentrations in the groundwater that the property boundary returns to compliance with the standard as soon as possible.

In addition, previous enforcement actions required the construction of a seepage collection and return system on the east side of the tailings basin. The seep collection system on the east side of the tailings basin was installed in 2010 and the discharge of surface water seepage to the Sand River via the east side of the basin has been eliminated. Reduced sulfate concentrations in the downstream waters (Twin Lakes) have been observed since the seepage collection system was installed.

Applications of these regulatory requirements to the facility are expected to reduce potential adverse impacts to fisheries and wild rice resources (see Finding of Fact 13c)

Comment d-2: Commenter states that fisheries in the Sandy River, the Pike River, and Pike Bay of Lake Vermilion are affected by the Minntac operations. Pike Bay is used extensively as a fishery by tribal members. Pike Bay also provides critical fish spawning habitat and is home to a walleye spawn collection facility. (*FDL GP Bands*)

Response: The waters listed by the commenter are downstream of the existing Minntac tailings basin. In 2010, the company installed a seep collection and return system on the east side of the tailings basin to remove the surface water seepage discharge to the Sand River in response to the November 2007 SOC issued to the company by MPCA. Thus this discharge has been eliminated. This project collects the surface and shallow subsurface seepage and returns it to the basin. Monitoring results from the Twin Lakes (Sandy Lake and Little Sandy Lake) indicate that sulfate levels have decreased since startup of the system.

Comment d-3: Commenters state a portion of the Dark River is a designated trout stream, and it appears that releases of tailings basin waters through permitted seeps to this watershed could have significant impacts on the trout population. (*FDL GP Bands*)

Response: The portion of Dark River designated and suitable for trout is downstream of Dark Lake. The brook trout population appears to be doing very well and is sustained through natural reproduction.

The existing discharge of surface water seepage from the tailings basin to the Dark River is in the process of being eliminated. A seepage collection and return system is required by the SOC and planned for construction after receipt of all permits and regulatory approvals, anticipated at this time to be constructed in 2014. Applications of these regulatory requirements to the facility are expected to reduce potential adverse impacts to fisheries downstream from the tailings basin.

Comment d-4: Commenters assert that permitting more discharges of diluted tailings basin waters to the West Two River will also likely cause an increase in the concentrations of sulfates to both the West Two River and portions of the St. Louis River, potentially impacting fisheries used by tribal members. (*FDL GP Bands*)

Response: The tailings basin does not discharge to the West Two River. Mine pit dewatering from the existing Minntac mine and the proposed mine extension discharge to the West Two River and eventually reach the St. Louis River. Environmental effects from the tailings basin and the mine site discharges are addressed below in Findings of Fact Nos. 13c, 13e, 13h, 13j, and 13s.

Comment d-5: The commenters are concerned about the presence of sulfates from the proposed project promoting the methylation of mercury and causing environmental effects, including impacts to fisheries. (*FDL GP Bands; group; Save Our Sky Blue Water/Save Lake Superior Association*)

Response: Water impairment due to mercury in fish is a cumulative effects issue that is the result of many sources, only one of which was the Minntac tailings basin. In 2010, the company installed a seep collection and return system on the east side of the tailings basin to remove the surface water seepage discharge to the Sand River. Thus this discharge has been eliminated. This project collects the surface and shallow subsurface seepage and returns it to the basin. Monitoring results from the Twin Lakes (Sandy Lake and Little Sandy Lake) indicate that sulfate levels have decreased since startup of the system. Ongoing public regulatory authority from MPCA's NPDES program and MDNR's permit to mine will monitor discharges from the tailings basin to determine the success of proposed measures and to implement additional measures if needed. See also the response to Comment h-9.

The relationship between sulfate concentrations and methylation of mercury is complex and it is therefore not accurate to characterize the proposed mine extension as increasing mercury pollution due to sulfate levels causing increased methylation of mercury. Several studies are being led by and conducted by the MDNR and the MPCA on the behavior and environmental interactions of sulfate and mercury, specifically in the St. Louis River basin and in general to better understand that cycling. The results of those studies and site specific work being conducted through the SOC will be used to inform the permitting process.

Comment d-6: Commenters are concerned what effect sulfate releases from the tailings basin into the Sandy and Pike River watersheds will have on wild rice stands. They are also requesting wild rice mitigation information. (*FDL GP Bands; Koschak; Save Our Sky Blue Water/Save Lake Superior Association; Szymialis*)

Response: The existing Minntac tailings basin has discharged seepage containing elevated concentrations of sulfate to the Sandy River. The company has been operating under a Schedule of Compliance to address water quality at the tailings basin. Prior to the 2011 SOC, the company has installed a seep collection and return system on the east side of the tailings basin in 2010 to remove the surface water seepage discharge to the Sand

River. Monitoring results from the Twin Lakes (located in Sand River watershed) indicate a reduction in sulfate concentrations since the seepage collection system was installed in 2010. The 2011 SOC requires the reduction of sulfate loading to the tailings basin through the installation of dry air pollution controls and an alternate water source lower in sulfate for its make-up water system. Monitoring wells have been installed and the company is in the process of developing a ground water model as required by the 2011 SOC. The results of the ground water model will be used to develop a target concentration in the tailings basin necessary to meet ground water standards at the property boundary. A recent amendment to the SOC requires the company to submit a Groundwater Sulfate Reduction Plan by July 12, 2013 to address exceedances of the ground water standard at the Facility's property boundary.

The extension will increase the amount of tailings in the basin and increase the number of years of process water within the basin due to extension of the life of the mine. These additions will not necessarily result in increased discharges to the Sandy River. Ongoing public regulatory authority from MPCA's NPDES program and MDNR's permit to mine will monitor discharges from the tailings basin to determine the success of proposed measures and to implement additional measures if needed. Potential mitigation measures that can address the issue include covering the tailing basin dike, alternate water management, passive water treatment, and active water treatment. The Groundwater Sulfate Reduction Plan required as part of the SOC Amendment will evaluate treatment technologies; the results of these evaluations will inform the MDNR Permit to Mine and NPDES reissuance.

In addition to these measures, the USACE has recently authorized wetland impacts within the existing U.S. Steel permit to mine boundary. This authorization included a requirement that U.S. Steel develop and implement a Twin Lakes Wild Rice Restoration Opportunities Plan ("Plan") to evaluate and identify implementation alternatives to the reestablishment of wild rice beds within Little Sandy and Sandy Lakes.

Comment d-7: Some commenters are concerned that the project will contribute to the already acidic condition of the St. Louis River as indicated by fish consumption advisories that indicate a fragile condition that cannot sustain more loading of these substances. (*Save Our Sky Blue Water/Save Lake Superior Association; Szymialis*)

Response: MDNR consulted with MPCA and they indicated that they are not aware of data having been collected that suggests that the St. Louis River has been acidified.

Comment d-8: Some commenters are concerned about existing and proposed increases of sulfates being discharged to the St. Louis River basin further impacting wild rice, biota that use wild rice as a food source, and fisheries. (*Save Our Sky Blue Water/Save Lake Superior Association; Szymialis*)

Response: The St. Louis River watershed is downstream of the Minntac mine pits. The proposed extension is anticipated to result in continued pumping of mine dewatering waters from within the enlarged mine pits. Water that collects in mine pit sumps is a mix of stormwater runoff and groundwater that must be pumped out of the mine in order to

prevent flooding and allow mining operations to continue. Since the ore to be mined through the Extension project is similar to that currently being mined, it would be anticipated that the sulfate concentrations within the mine pit extension area sumps would be similar to the current sulfate concentrations within the present mine pit sumps. However, the EAW notes that the increased in-pit disposal may result in runoff and mine sump dewatering discharges with increased concentrations of some pollutants. The company is required to comply with the requirements of its National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) permit and meet all applicable water quality standards in its mine pit dewatering discharge. Also see Findings of Fact (FOF) 13h regarding the DNR regulatory authority to modify the Permit to Mine at any time if the NPDES permit identifies a water quality issue.

At this time, the MPCA has not identified portions of the St. Louis River watershed potentially affected by current or proposed U.S. Steel activities that would be 'waters used for production of wild rice' to which the Class 4A sulfate water quality standard would apply. The MPCA has requested the company to conduct a wild rice survey of waters downstream of the mine pit dewatering discharges. The results of the survey are expected to be available in early 2013 and will be used to identify waters used for the production of wild rice and subject to the Class 4A sulfate water quality standard. This information will be used to determine permit conditions for the mine pit dewatering discharges.

Comment d-9: Commenters state that the EAW underestimates the effect of the cone of depression. Drying out of soils indicates that trees depending on those soils die with the dry out. Trees hardy to drying out are more susceptible to fire. Increasing the risk of fire increases the threat of forest fire and endangers jobs in forestry and tourism. (*Save Our Sky Blue Water/Save Lake Superior Association; Szymialis*)

Response: Generally, tree health with respect to adequate moisture is mostly driven by climate and not a decrease in the water table elevation. Climate is also the core factor for increasing fire risk. Tree species that occur in wetland areas containing a high water table, such as the black spruce (*Picea mariana*) and tamarack (*Lirix laricina*), occur in those locations because they have a greater tolerance for a high water table than other species. However, these species also thrive when the water table is well below rooting depth. Herbaceous wetland vegetation is susceptible to decreases in the shallow ground water that sustains those wetlands, whether it is a perched or locally high water table. Impacts to wetlands have been addressed in the EAW.

The EAW (pgs. 18-19) acknowledges that indirect impacts to wetlands due to potential drawdown are possible and identifies that mitigation for wetland impacts will be accomplished "through use of the new U.S. Steel project-specific wetland replacement site in Aitkin County, Minnesota. Creation of this Aitkin County project-specific replacement site (the Palisade site) will be in advance and/or concurrent with the mine extension project." Indirect impacts to wetlands are difficult to predict; therefore, a typical approach is to monitor for indirect effects and if identified, mitigate accordingly. If they occur, it is likely that indirect effects would be limited to areas near the mine pit extensions.

Indirect impacts associated with the Extension will be addressed by the USACE Section 404 Wetlands Permit for the project. Recent USACE permits issued for other mining projects (Keetac, Northshore) have included a requirement for monitoring for indirect impacts to wetlands and streams. Based on these recent mining permits and the potential for indirect wetland impacts to occur as a result of mine pit expansions, it is highly likely that monitoring for indirect impacts to wetlands and streams would be a special condition in a USACE permit for the Minntac Extension Project (if approved). The DNR is also authorized through the Permit to Mine to require mitigation if adjacent wetlands are adversely impacted. If it is determined that wetlands adjacent to the Extension area are being detrimentally impacted by the activity, U.S. Steel will be required to provide corrective measures and/or compensatory mitigation as determined by the MDNR and/or USACE at that time.

Comment d-10: Some commenters are concerned that the fishing rights of the Fond Du Lac Band are threatened with rising levels of sulfates and methyl mercury. Also violated are their riparian water rights through a taking by the mining companies of water for taconite processing but also the contamination of fugacious river water beneath their riparian lands. (*Save Our Sky Blue Water/Save Lake Superior Association; Szymialis*)

Response: An EAW does not include evaluation of cultural resources or usufructuary rights. EAW Item 25 does require identification of historic and/or archaeological resources, which may or may not be applicable to native and non-native indigenous populations. The EAW and this Record of Decision do address environmental effects to water quality and fisheries. See also FOF 13h.

Historically, water quality impacts have not been associated with a taking of water rights. Riparian water rights have been associated with physical access to the water.

Comment d-11: Commenters assert that, loss of headwater stream portions, alteration of watersheds, dewatering discharges, and sediment transport will contribute to hydrological and habitat changes in tributaries such as the West Two Rivers, Kinney Creek and Parkville Creek that will harm many aquatic species, and that the effect to hydrologic functions needs further evaluation. (*group; Karakash; Koschak; Reichensperger; Reisenweber; Sierra Club/Center for Biological Diversity; WaterLegacy*)

Response: This issue was addressed in response to EAW Items 11, 12, and 13.

While it is true there is loss of stream channel related to past, present and future mining activity, flows to downstream waters are being augmented subject to MDNR's water appropriation permit authority. The *U.S. Steel Minntac Subwatershed and Stream Information* (Liesch, 2012) report, provided as EAW Attachment A, calculates stream and watershed area impacts up to the southern boundary of mining, including the proposed extension limits.

Past stream impacts have occurred as documented in EAW Attachment A. The further downstream the impacts are measured, the smaller the change that is discernible. For example, approximately 82 acres of the Kinney Creek watershed area would be converted

to mine pit due to the proposed actions (there are no direct physical impacts on Kinney Creek). This alteration of the watershed area would lead to a 0.09 cfs or 40 gpm reduction to Kinney Creek's mean annual flow. What this value means for immediate downstream impacts is it would translate into a 0.7% reduction of inflow into McQuade Lake, which has an estimated mean annual inflow of 12.3 cfs (5534 gpm). A loss of 40 gpm would be indiscernible in stream flow monitoring at that point in the watershed.

Additionally, there is another 15,039 feet of remaining Parkville Creek between the future extension boundary and the confluence with the East Branch - West Two River. For Parkville Creek, the total stream channel, pre-mining, from headwaters to East Branch - W Two River was 44,852 feet. Using Liesch's number of 25,811 feet already impacted and 29,813 feet corresponding to the cumulative impacts including the proposal, the percentages of destroyed would be 57% and 66%, respectively.

As stated in the EAW, mitigation for stream impacts will be required by the USACE. Specifically, the EAW identifies that impacts to Parkville Creek will be mitigated under the USACE 404 permit, through the *Compensatory Mitigation for Losses of Aquatic Resources* final rule (33 CFR 332).

Although a specific site has not been selected yet, specific mitigation requirements that may be applied are known (see below) and would be required by the USACE to be implemented if the project were to be approved. If the company proposes to impact the stream before mitigation work would be completed, the USACE has indicated that the agency would likely require a financial assurance or an increase in the mitigation ratio, or both. Based on previous stream mitigation projects, a minimum 5-year monitoring period post-construction would be anticipated.

When looking at a stream mitigation project, there are three general options – restoration, enhancement and preservation. Restoration is the process of converting an unstable, altered, or degraded stream corridor, including adjacent riparian zone (buffers) and flood-prone areas, to its natural stable condition considering recent and future watershed conditions. Enhancement includes stream rehabilitation activities undertaken to improve water quality or ecological function of a fluvial system. Level I Enhancement includes improvements to the stream channel and riparian zone that restore dimension and profile, while Level II includes activities that augment channel stability, water quality and stream ecology in accordance with a reference condition but fall short of restoring both dimension and profile. Preservation is the protection of ecologically important streams, generally, in perpetuity through the implementation of appropriate legal and physical mechanisms.

The regulatory agencies involved have indicated they will all be following the USACE guidance on stream mitigation requirements and ratios. This is based on stream mitigation guidance from other Corp Districts, the 2008 Final Mitigation Rule and the St. Paul District Compensatory Mitigation Guidance. The compensatory mitigation ratio is first based on the quality of Parkville Creek. The ratios are as follows: Poor to Fair (1:1), Good (2:1) and Excellent (3:1). Stream quality data was collected in September to assess the biological diversity, water quality and morphology of Parkville Creek. The

result of this survey will determine the compensatory mitigation ratio. A review of available stream mitigation sites has begun. Based on the available sites U.S. Steel will work with the regulatory agencies to determine which site is appropriate for mitigation activities.

Based on a comprehensive stream assessment of Parkville Creek, the compensatory mitigation ratio would fall between 1:1 and 3:1, resulting in stream mitigation consisting of the restoration or enhancement of approximately 4,000 to 12,000 linear feet of a stream with a similar flow regime and watershed size as Parkville Creek.

The EAW acknowledges that fish populations may be adversely affected. An Aquatic Biota Evaluation and Stream Morphology Assessment have been completed for the forthcoming USACE Environmental Assessment and subsequent USACE permitting.

As part of the Permit to Mine amendment for the currently proposed Minntac Mine Extension, the MDNR will consider requiring an aquatic enhancement plan (similar to that in place as part of the required mitigation for the post 1996 impacts to the public water Kinney Creek) that develops littoral zone reclamation in the East Pit to mitigate effects to the non-public water Parkville Creek. Regarding the previous Kinney Creek impacts, the Permit to Mine Reclamation Plan includes an aquatic enhancement "littoral zone" in-pit stockpiling plan that was prepared in accordance with conceptual plans developed by the MDNR Division of Waters (Minntac In-pit Stockpile Scenarios MDNR 3-25-10). This is part of the required mitigation for the post 1996 impacts to Kinney Creek and is included in the financial assurance. Minntac's Water Appropriation Permit also requires baseflow augmentation of 1,000 gpm to Kinney Creek due to watershed alteration from the prior extension in 1996.

U.S. Steel must comply with their MPCA storm water pollution prevention plan and NPDES permit with respect to Best Management Practices for controlling runoff and meeting water quality standards where mine pit water is discharged to Parkville Creek. In addition, MPCA's Section 401 Water Quality Certification will require mitigation for all regulated stream impacts resulting from the proposed mine extension.

Comment d-12: The commenter states that the project reduces potential lynx habitat. Lynx could travel through the area and it is reasonably foreseeable that project activities could impact movements through the area or cause accidental mortality. (*Sierra Club/Center for Biological Diversity*)

Response: The EAW identifies that the project "lies outside of the current boundaries designated as critical habitat for Canada lynx" and that the acres to be impacted by the project that are suitable for lynx represent a small portion of the typical territory size. The EAW states that "the proposed mine extension would remove 483 acres of land area, of which approximately 227 acres is forested upland and could have potential as lynx habitat. The remainder of the area that would be affected by the mine extension consists of wetlands or previously-impacted lands generally unsuitable for lynx. This represents a small fraction of the territory size (28 and 58 mi^2 for a female and male, respectively) of a resident lynx pair (should resident individuals even be present)."

EAW Item 11 also notes that the proposed mine extension project does not extend into areas identified as wildlife travel corridors. Though not anticipated to be likely, if an accidental lynx taking occurs, the United States Fish and Wildlife Service (USFWS) will need to be notified.

In accordance with MDNR mineland reclamation requirements, taconite mine operators are required to return the landscape to a state useful for wildlife habitat, recreation, and other public purposes.

Comment d-13: The commenter is concerned about having enough information to assess cumulative impacts of mining projects on Monarch butterfly northern habitats, including Northern Minnesota, Wisconsin, and Michigan. (*Szymialis*)

Response: The comment appears to be stating that a cumulative impact study of monarch butterfly habitat in northern Minnesota, Wisconsin, and Michigan, where mining occurs, is needed. This is beyond the scope of the Minntac Mine Extension Project EAW. Minntac's specific impact to monarch butterfly Northern habitat is small in comparison with other potential projects and activities along the full range of the butterfly's northern habitat, southern habitat, and migration routes.

Comment d-14: Commenters assert that Kinney Creek and West Two Rivers are designated trout streams pursuant to Minnesota Rules. Minn. R. 6264.0050, Subp. 4 (Y)(37) and Subp. 4 (PP)(82)(2012); Minn. R. 7050.0470, Subp. 1A (116) and Subp. 2A (62) (2012). *(group; Reisenweber; WaterLegacy)*

Response: The statement is incorrect - Kinney Creek and West Two Rivers in the project area are not designated trout streams.

The references to Kinney Creek in Minn. R. 6264.0500, Subp. 4 (Y) (37) and 7050.0470, Subp. 1A (116) are for a stream in Lake County. The proposed mine extension project is in St. Louis County. The references to West Two Rivers in Minn. R. 6264.0500, Subp. 4 (PP) 82 and Minn. R. 7050.0470, Subp. 2A (62) are for a stream located south of Tower, approximately 19 miles NE of the Minntac tailings basin. These are two different streams outside of the scope of influence of this project.

Comment d-15: The commenter asserts the potential for significant environmental effects on aquatic life and wild rice from sulfate, hardness, alkalinity and chloride discharge is exacerbated since the Mine "Extension" proposal does not include a mine stockpiling plan, so locations and stockpile designs are unknown. An EIS is needed both to analyze environmental impacts of tailings basin and mine site pollution and to provide alternatives to prevent, minimize and mitigate that harm. (*WaterLegacy*)

Response: The stockpiling plan for the extension project is to continue stockpiling rock in-pit and on existing stockpile footprints. No new stockpiles are proposed; therefore, no "new" stockpile footprints require consideration for the EAW. The actual placement and management of rock stockpiles is subject to ongoing public regulatory authority from MDNR's permit to mine.

e. Water Resources – Streams and Wetlands

Comment e-1: Commenters assert that the cumulative impacts of this Expansion and prior Minntac mining activities results in 100 percent of stream contributing area and streamflow being lost for several creeks and tributaries. (*group; Reisenweber; WaterLegacy*)

Response: Past stream impacts have occurred as documented in the *U.S. Steel Minntac Subwatershed and Stream Information* report (Liesch, 2012), provided as Attachment A to the EAW. The Liesch report calculates stream and watershed area impacts up to the southern boundary of mining, including the proposed extension limits. Thus, it does not calculate percentage of entire stream channel or entire watershed area for a given stream. For example, there is another 15,039 feet of remaining Parkville Creek between the future extension boundary and the confluence with the East Branch - West Two River. For Parkville Creek, the total stream channel, pre-mining, from headwaters to East Branch - West Two River was 44,852 feet. Using Liesch's number of 25,811 feet already impacted and 29,813 feet corresponding to the cumulative impacts including the proposal, the percentages of stream channel destroyed would be 57% and 66%, respectively, not 100% as the comment suggests.

Items 12 and 29 of the EAW consider potential cumulative effects, including projected loss of stream corridors and watershed alteration. Detailed information is provided in Item 12 and summarized in Item 29. Cumulative effects are those resulting from the incremental impact of the proposed action when added to other past, present and reasonably foreseeable future actions. There are no future projects for which a basis of expectation has been laid that will affect the same stream corridors and watershed areas as the Minntac Mine Extension project. Therefore potential cumulative effects with respect to these resources are limited to past actions and the proposed project. The EAW, in Items 12 and 29, addresses potential cumulative effects including project-related loss of stream corridor and alteration of contributing watershed. See also FOF 13d.

The EAW identifies that impacts to Parkville Creek will be mitigated under the USACE 404 permit, through the *Compensatory Mitigation for Losses of Aquatic Resources* final rule (33 CFR 332). Although a specific site has not been selected yet, specific mitigation requirements that may be applied are known and would be required by the USACE to be implemented if the project were to be approved. Based on a comprehensive stream assessment of Parkville Creek, the compensatory mitigation ratio would fall between 1:1 and 3:1, resulting in stream mitigation consisting of the restoration or enhancement of approximately 4,000 to 12,000 linear feet of a stream with a similar flow regime and watershed size as Parkville Creek. If the company proposes to impact the stream before mitigation work would be completed, the USACE has indicated that the agency would likely require a financial assurance or an increase in the mitigation ratio, or both. Based on previous stream mitigation projects, a minimum 5-year monitoring period post-construction would be anticipated.

Minntac's Water Appropriation Permit requires baseflow augmentation of 1,000 gpm to Kinney Creek due to alteration of watershed from the prior extension in 1996. The

Permit to Mine Reclamation Plan includes an aquatic enhancement "littoral zone" in-pit stockpiling plan that was prepared in accordance with conceptual plans developed by the MDNR Division of Waters (Minntac In-pit Stockpile Scenarios MDNR 3-25-10). This is part of the required mitigation for the post 1996 impacts to Kinney Creek and is included in the financial assurance.

As part of the Permit to Mine amendment for the currently proposed Minntac Mine Extension, the MDNR will consider requiring a similar aquatic enhancement plan that develops littoral zone reclamation in the East Pit to mitigate effects to Parkville Creek.

Comment e-2: Commenters are concerned about the loss of wetlands and lack of detail in mitigation plans as well as concerned that the proposed use of wetland credits will not replace the lost wetland functions. *(group, Koschak; MCEA, Reichensperger; Reisenweber; Sierra Club/Center for Biological Diversity; WaterLegacy)*

Response: Item 10 of the EAW form requires that acreages of cover types before and after development be provided, including "Types 1-8 wetlands." Item 12 of the EAW requires that if there will be physical impacts on water resources due to the proposed project, that the water resources be identified and MDNR public waters inventory numbers be provided if applicable. Item 12 also requires that alternatives considered and proposed mitigation measures to minimize impacts be described. The EAW for the Minntac Mine Extension Project included the required information related to wetlands under both of these Items.

The proposed extension will directly impact 65.8 acres of wetland. The company is required to mitigate for wetland impacts under the Wetland Conservation Act (WCA)/Permit to Mine and Section 404 of the CWA. The EAW notes that mitigation will occur according to an approved mitigation plan. Prior to impacting any wetlands due to the extension project, U.S. Steel will have to submit a wetland impact and replacement plan application to MDNR for approval identifying how the company proposes to apply wetland credits available at their project specific wetland bank site (Palisade III site in Aitkin County) to mitigate for proposed wetland impacts at the mine site. The company will also need to obtain approval from the USACE for its proposed mitigation using wetland bank credits for wetland impacts regulated by the USACE.

The mitigation bank plan (Palisade site (I, II, and III)) as a larger mitigation strategy for Minntac's wetland impacts has been reviewed, commented upon, and modified, and was approved by the MDNR on January 6, 2012 through the Permit to Mine's WCA compliance procedures. The WCA requires that functions and values of impacted wetlands be considered when determining appropriate mitigation. The Palisades III mitigation bank is planned to be utilized for impacts related to the Minntac Extension project.

Comment e-3: Commenters are concerned about the EAW not identifying indirect impacts to wetlands and the lack of identified mitigation for indirect wetland impacts. (*FDL GP Bands; Sierra Club/Center for Biological Diversity, WaterLegacy*)

Response: The EAW (pgs. 18-19) acknowledges that indirect impacts to wetlands due to potential drawdown are possible and identifies that mitigation for wetland impacts will be accomplished through use of the new U.S. Steel project-specific wetland replacement site in Aitkin County, Minnesota. Creation of this Aitkin County project-specific replacement site (the Palisade site) will be in advance and/or concurrent with the mine extension project. Indirect impacts to wetlands are difficult to predict; therefore, a typical approach is to monitor for indirect effects and if identified, mitigate accordingly. If they occur, it is likely that indirect effects would be limited to areas near the mine pit extensions.

Indirect impacts associated with the Extension will be addressed by the USACE Section 404 Wetlands Permit for the project. Recent USACE permits issued for other mining projects (Keetac, Northshore) have included a requirement for monitoring for indirect impacts to wetlands and streams. Based on these recent mining permits and the potential for indirect wetland impacts to occur as a result of mine pit expansions, it is highly likely that monitoring for indirect impacts to wetlands and streams would be a special condition in a USACE permit for the Minntac Extension project (if approved). The DNR is also authorized through the Permit to Mine to require mitigation if adjacent wetlands are adversely impacted. If it is determined that wetlands adjacent to the Extension area are being detrimentally impacted by the activity, U.S. Steel will be required to provide corrective measures and/or compensatory mitigation as determined by the MDNR and/or USACE at that time.

To the extent known at the time of the EAW, information was included that was applicable to wetlands permitting under Section 404 and WCA. It is appropriate in an EAW to identify federal regulatory authority over a project when determining the extent to which a project's environmental effects are subject to specific ongoing regulatory authority.

Comment e-4: Commenters assert that the proposed Palisade wetland mitigation site will not adequately replace the lost function and values of wetlands impacted by the Minntac extension and that it is not appropriate because it already exhibits wetland characteristics. (*MCEA, WaterLegacy*)

Response: There is a documented crop history of the Palisade site, and even though the soil types are those associated with wetlands, the site is drained well enough that it has and does produce crops. The existing Palisade site does not provide wetland functions in its current condition, as it is being farmed.

The Palisades III mitigation bank is planned to be utilized for impacts related to the Minntac Extension project. The mitigation plan was revised based on agency feedback and redistributed to the Interagency Review Team (IRT) for agency review. The comment period for this review ended on September 24, 2012, and no additional comments were received from the reviewing agencies.

The Palisades mitigation bank site (as a whole) was approved by the MDNR on January 6, 2012 through the Permit to Mine's WCA compliance procedures. A follow-up

meeting was held with BWSR to discuss details regarding the mitigation site and DNR's role as the Local Governmental Unit (LGU) under WCA.

Prior to impacting any wetlands due to the extension project, U.S. Steel will have to submit a wetland impact and replacement plan application to MDNR for approval identifying how the company proposes to apply wetland credits available at its project specific wetland bank site (Palisade III site in Aitkin County) to mitigate for proposed wetland impacts at the mine site. The company will also need to obtain approval from the USACE for its proposed mitigation using wetland bank credits for wetland impacts regulated by the USACE. If it is determined that the Palisades III site is incapable of meeting mitigation requirements, U.S. Steel will be required to provide additional mitigation.

The wetland delineation for the Minntac Extension project was previously reviewed and approved through the Permit to Mine's WCA compliance procedures, including review by a technical evaluation panel (TEP) and public noticing.

Financial assurance for wetland impacts and mitigation (including the wetland replacement at the Palisade site) is included with the overall financial assurance for the entire site through the Permit to Mine. The financial assurance makes the company liable for all costs associated with the site.

Comment e-5: The commenter is concerned about the cumulative loss of wetlands. *(WaterLegacy)*

Response: The proposed project would include impacts to 66.7 acres of wetland for the Mine Extension Area and new mine access road. Impacts resulting from the new mine access road are expected to be minimized where possible during the planning and design process. The potential new CSAH 102 relocation corridor could affect up to 2.0 acres of additional wetlands. The environmental effects of this change are described in the EAW.

The Environmental Assessment prepared in 1976 for the "Step III" Expansion Project does not identify any wetland impacts, but it is likely that wetland loss occurred with the initial development and growth of the mine as well as from the initial mining in the 1950s. The EAW prepared for the previous Minntac mine extension in 1996 reports a loss of 275 acres of wetland habitat from the 1,360-acre extension of the mine pits. A Section 404 permit was issued by the USACE for 80.6 acres of wetland impact, the last portion of the 275 acres described in the 1996 EAW, on December 10, 2012.

The proposed extension of the Minntac mine will result in further wetland loss in the headwaters of the St. Louis River watershed. However, upon cessation of mining, dewatering will cease and the mined pits will flood and become other deep water pits. This will result in a loss of the functions and values provided by shallow marsh, shrub, and forested wetland habitat that are not replaced by open water habitat.

The proposed action will result in 66.7 acres of direct wetland impacts. Previous permits have been granted by the USACE for 5.1 acres of wetland impact. In addition, it is expected that 5.4 acres of additional wetland area will be lost due to indirect impacts by

fragmenting portions of wetlands. Subtracting previously permitted impacts (5.1 acres) and adding potential indirect impacts (5.4 acres), mitigation is expected to be required for up to 67.0 acres of impact. These wetland losses will be replaced at an anticipated minimum ratio of 1.5:1 in advance of or concurrent with the extension. The loss of wetland functions and values was mitigated from the last mine extension and will be mitigated from the proposed extension as well.

The CSAH 102 relocation corridor could affect up to 2.0 acres of wetland. Relocation of the road corridor is expected to generate development in the City of Mountain Iron industrial park. The number, size, and location of potential developments along the relocated roadway corridor cannot be quantified at this time. The National Wetlands Inventory identifies wetlands in the area. However, sufficient upland area is available for development without substantial impacts to wetlands.

f. Water Use – Wells, Water Quantity

Comment f-1: Commenters are concerned about the increased volume of dewatering and the effect the duration of Minntac's water appropriation will have on wells. (*group; Koschak; WaterLegacy*)

Response: The extension project has the potential to increase runoff into the pits by up to 5%, thereby potentially increasing discharge by up to 5%. However, based on average water use for years 2005-2010, sumps #3 and #6 in the West Mine have appropriated 71% and 40%, respectively, remaining within permit limits, and sump #2 and the Prindle sump in the East Mine have appropriated 75% and 70%, respectively, also remaining within permit limits. Therefore, an increase of 5% of runoff within both pits will leave Minntac well within permit limits for mine pit dewatering.

Minntac's water use under Water Appropriation Permit # 1963-0846 for years 2005 through 2010 averaged 1,711,360,353 gallons per year, which equates to 19% of Minntac's permitted volume. Minntac's appropriations are within permit limits. The proposer is not requesting any changes in permitted appropriation volumes with the Extension project. EAW Item 13 presented the currently permitted volumes under the company's existing appropriation permits, the average rate of discharge for all dewatering installations in the East and West Mine Pits based on pumping records over the period January 2010 – December 2011, and the minimum and maximum discharge rates over this period. The EAW noted that even with a potential 5% increase due to the Extension project, the company will remain within its permitted water appropriation volumes and discharge rates.

The EAW states that a review of the County Well Index (CWI) indicated that thirty one (31) private or municipal water supply wells are located within ½-mile of the West Pit and twenty six (26) private or municipal water supply wells are located within ½-mile of the East Pit and proposed roadway relocations (shown on EAW **Figure 8**). Five of the wells are shown to be located in the middle of the West Pit and no longer exist. A number of the other wells identified by the CWI have been abandoned and/or sealed, particularly those wells shown in, or directly adjacent to, the Permit to Mine boundary, though the

CWI continues to list them as active wells. The status of the other wells identified by the CWI in the vicinity of the project has not been determined, nor have their locations been verified in the field.

Minnesota Statutes 6115.0730 Well Interference Problems Involving Appropriation provides the regulatory authority for the MDNR to require mitigation for well interference problems through its water appropriations permit.

Pursuant to MN Statute 6115.0730, Subp. 2, if complaints are made to the MDNR by private domestic well owner(s) or public water supply authority regarding the effects of a water appropriation on the domestic water supplies, the MDNR will investigate and evaluate the complaint by analyzing and evaluating the facts and characteristics of the water systems involved. Where adverse effects on the domestic well(s) are substantiated, the commissioner shall notify the permittee of the facts and findings of that complaint evaluation. In the event that the commissioner determines that the domestic water supply is endangered the commissioner shall, pursuant to part 6115.0750, subpart 7, unless a temporary solution is worked out, restrict or cancel the appropriation until such time as a decision has been made by either negotiation, settlement, or hearing.

The proposer has made commitments to ensure that drinking water supplies are protected for the cities of Mountain Iron and Kinney. Specifically, U.S. Steel will work with each city to develop monitoring and contingency plans well before mining progresses into the proposed extension areas. U.S. Steel will initiate monthly baseline monitoring of groundwater levels and water chemistry at the municipal wells, in cooperation with the Public Works Departments of the two cities, within 6 months of receipt of all permits related to the proposed extension. U.S. Steel will also work with each of the cities, along with the MDH, to develop a contingency plan should monitoring indicate that mining of the proposed extension is negatively impacting municipal water supplies.

Upon issuance of all permits related to the proposed mine extension, U.S. Steel has committed to conduct a survey of all wells contained in the County Well Index (CWI) and within 1/2 mile of the new permit-to-mine boundary to determine which are water supply wells versus monitoring wells. Of the identified water supply wells, U.S. Steel will identify which are: 1) present and currently being used for private water supply, 2) present but no longer used and not sealed, and 3) no longer in use and sealed. U.S. Steel will contact those individuals with active water supply wells within the 1/2-mile zone described above and include consideration of their wells within the monitoring and contingency planning program to be implemented for potentially affected municipal supply wells.

Comment f-2: Commenters are concerned about the impacts to potable water due to groundwater contamination from mine pit dewatering, including the Drinking Water Supply Management Area (DWSMA) in Mountain Iron and Kinney. (*FDL GP Bands; MDH*)

Response: Adverse impacts to potable water quality from mine pit dewatering are not anticipated. This is due to the hydrologic potential created by dewatering of the mine pit,

which will induce groundwater flow back towards the pit. Groundwater will be infiltrating into the pit and will be discharged via mine pit dewatering. Discharge of the mine pit dewatering water (groundwater) will be subject to NPDES/SDS permit requirements and water quality standards.

To ensure that drinking water supplies are protected for the cities of Mountain Iron and Kinney, U. S. Steel will work with each city to develop monitoring and contingency plans well before mining progresses into the proposed extension areas. U. S. Steel will initiate monthly baseline monitoring of groundwater levels and water chemistry at the municipal wells, in cooperation with the Public Works Departments of the two cities, within 6 months of receipt of all permits related to the proposed extension. U. S. Steel will also work with each of the cities, along with the MDH, to develop a contingency plan should monitoring indicate that mining of the proposed extension is negatively impacting municipal water supplies. Also see FOF 13e.

Comment f-3: The commenter is concerned about water fluctuation levels near their residence and the effect it will have on beaver ponds, wetlands, and the occurrence of Blastomycosis. (*Irish*)

Response: Beaver activity certainly affects stream flow and ponding in areas and will likely continue to in the area unless they are actively managed. However, the potential incremental increase in flows from the proposed project will have a negligible impact on beaver activity and the possibility of blastomycosis occurrence.

Comment f-4: The commenter is concerned about flooding of a wetland near their property and Parkville Road and general flooding to wetlands in the area. (*Karakash*)

Response: It does not appear the flooding issues described by the commenter would result from the proposed Extension project. The wetland near their property and Parkville Road does not receive Minntac dewatering flows.

To get at and extract taconite in the Extension area, U.S. Steel will need to strip the area of vegetation and surficial glacial material, called overburden. This process will extend the contributing area for surface water runoff into the mine pit. Therefore, those areas of activity will have runoff that leads back into the East Pit, not affecting the wetlands noted in the comment with additional runoff. Water is collected in the East Pit in Minntac's Prindle sump and pumped into Parkville Creek. Moreover, U.S. Steel must comply with their MPCA storm water pollution prevention plan and NPDES permit with respect to Best Management Practices for controlling runoff and meeting water quality standards where mine pit water is discharged to Parkville Creek.

Comment f-5: Commenter states that the proposed access road realignment will cross a portion of the DWSMA for the City of Mountain Iron. The Wellhead Protection Plan that was developed to support the delineation of that DWSMA indicates that the Iroquois Mine pit lake, which is situated immediately to the west of the proposed access road realignment, provides a significant quantity of recharge to city well number 1 (unique well number 150524). The degree of hydraulic connection between the Iroquois Mine pit

lake and the Wacootah Mine pit lake, which will be directly impacted by the proposed access road, is unknown at this time. It will be important to construct and operate the proposed access road in a manner which will safeguard the water quality of the Iroquois Mine pit lake so as not to degrade the City of Mountain Iron drinking water supply. Please consider the enclosed "Source Water Protection Issues Related to Storm Water". (*MDH*)

Response: Protection of the Wacootah Mine pit lake water quality will be a primary consideration during design of the access road. Design factors will include, but not be limited to: selection of appropriate roadway support/foundation material for the section of road crossing the Wacootah Mine pit, storm water control features to limit discharge of potential contaminants into the lake, and storm water BMPs at the access road approach points on either side of the mine pit lake. Additionally, the new access road and activities associated with transportation of regulated substances will be included in the Minntac Facility Response Plan to address potential releases to the mine pit lake.

Comment f-6: The commenter asserts that the EAW should evaluate any proposed changes in operation of Sump #6/SD003 to determine if these changes will in any way contribute to the impairment and/or otherwise exacerbate existing water quality or habitat conditions of Un-named Creek (Assessment Unit ID# 04010201-551). (*MPCA)*

Response: The proposed diversion of flows from the #6 sump for process make-up water is in response to the SOC issued by the MPCA to U.S. Steel. The flow diversion is one of the alternatives for source reduction actions proposed by the company and approved by the MPCA as a means to reduce sulfate and hardness at their source and lessen the loading to the tailings basin. While this action is not part of the proposed project, it is included in the evaluation of cumulative effects.

With respect to potential impairment and/or habitat concerns, 1,000 gpm will be required as a minimum discharge to Kinney Creek should Minntac divert water for use as process make-up water. The intent of this minimum is to maintain flows in the creek that mimic (80%) pre-mining watershed flow delivery. U.S. Steel is required to conduct annual aquatic macroinvertebrate surveys as well as stream morphology as part of a monitoring plan established for the appropriation permit amendment.

A review of the MPCA's Web-based Environmental Data Access tool for Assessment Unit ID# 04010201-551, Unnamed Creek: Unnamed cr to McQuade Lk (Stream), indicates that there was a fish assessment conducted on this stream reach in 2009, resulting in a fish IBI of 67. No other assessments could be located for this stream reach.

After working with MDNR and discussing requirements for flow needed in the stream, U. S. Steel is proposing to divert to the plant for process make-up water all but 80% of the pre-mining average annual runoff that historically would have reported to Kinney Creek at SD003. The company is required to maintain flow equal to 80% of the pre-mining average annual runoff (equivalent to approximately 1,000 cfs for Kinney Creek at this location). Historically, the company has discharged all mine pit dewatering flow from the west end of the West Pit (i.e., from the #6 Sump) through SD003 to Kinney

Creek. Under the proposed conditions, all of the additional volume beyond the amount needed to maintain the required stream flow would be diverted to the plant for process make-up water. Therefore, Kinney Creek at Assessment Unit ID# 04010201-551 will be receiving flows more typical of rates that were common prior to development of the Minntac West Pit. A return to more typical pre-mining flows in Kinney Creek should not contribute to fish-related impairment or exacerbate existing water quality or habitat conditions because there will be less mass loading compared to current dewatering discharges.

Comment f-7: The commenter asserts that more information is needed to determine how much water is appropriated from which watershed, how much water is diverted to another watershed and how much water is consumed by the Minntac facilities. (*WaterLegacy*)

Response: The EAW Figure 6c indicates the locations of the mine pit sumps and discharge locations. These features are discussed in EAW Item 13, including permitted volumes. The company is appropriating substantially less water than it is permitted to appropriate, even with the Extension project. The volume of water transferred across the watershed boundary is also currently permitted, and is thus considered as part of the existing conditions not being changed by the proposed Extension project, though the time period in which the transfer will continue will be lengthened.

Comment f-8: Commenters assert that the proposed project exceeds the 5 MGD consumptive use required for notice, consultation and approval of all of the Great Lakes States Governors under the 1985 Great Lakes Charter, and cannot be "grandfathered in" using a 2003 water appropriations permit. There is no discussion regarding consultation and approval that must be sought before any expected increase can occur. (*FDL GP Bands; Save Our Sky Blue Waters/Save Lake Superior Association; Szymialis; WaterLegacy*)

Response: The Great Lakes Charter of 1985 was a good-faith effort that was based on volunteer participation from the Great Lakes States as well as the Great Lake Provinces. The Great Lakes – St. Lawrence River Basin Water Resources Compact of 2005 was passed into law through an interstate compact which went in force on December 8, 2008. On December of 2009 a letter was sent to the Great Lakes – St. Lawrence River Basin Water Resources Council pursuant to Section 4.12.2 of the Great Lakes – St. Lawrence River Basin Water Resources Compact; and , Article 207, Paragraph 1 of the Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement which documented the baseline list of Withdrawals, Diversions and Consumptive Uses that would be used to determine any New or Increased Diversions, Consumptive Use or Withdrawals. The baseline for each state was established by either the withdrawal approval (permitted volume) or the capacity of the existing system.

U.S. Steel Minntac is permitted as part of the baseline which was sent to the Great Lakes Council. Minntac is permitted under Water Appropriations Permit #1963-0846 for 24 MGD of Diversion/Consumptive Uses for process water make-up. They appropriated 4.6 MGD in 2010. The largest appropriation to date has been 10 MGD. Their

Diversion/Consumptive Use appropriation is under the permitted volumes. U.S. Steel also holds four additional water appropriation permits for mine pit dewatering, dust control, drill watering, and other miscellaneous mining needs that are not related to diversion or consumption. The appropriation limit for these four additional permits combined is 63.2 MGD. The 20.5 MGD discharge rate is a long-term average of mine pit dewatering discharges into the West Two River/St. Louis watershed. This water remains in the Great Lakes Basin and is well below the permit limit of 63.2 MGD. Consultation and approval under the Great Lakes Compact charter is not needed.

The company was allotted a certain annual appropriation volume that was "grandfathered in" as part of the baseline volumes considered when the compact was developed. Minntac's current and projected water appropriations are expected to remain well below that grandfathered volume.

Comment f-9: The commenter states that U.S. Steel's consultants assert that 0.86 million gallons per day of surface seepage enters watersheds of the Rainy River Basin from the west side of the Minntac tailings basin perimeter dike in the Lake Superior Basin. This assertion is likely to be an understatement of the consumption and diversion of Great Lakes waters. (*WaterLegacy*)

Response: Although the Minntac tailings basin is not in the Lake Superior Basin, U.S. Steel Minntac is permitted for up to 24 MGD of diversion/consumptive use from waters of the Lake Superior Basin. Even with the extension, the company remains within its permit limits.

The 0.86 MGD of surface seepage is a reasonable estimate for the Dark River seepage outflow which equates to 600 GPM. The Minntac tailings basin is approximately 8,035 acres in size. Runoff due to annual precipitation is on the order of 9.5" annually which would equate to 3,900 GPM of runoff that would have reported to the Rainy River Watershed via the Sandy and Dark rivers if the tailings basin had not been built. Thus, 600 GPM of surface seepage does not necessarily equal 600 GPM loss of Lake Superior Basin water.

g. Shoreland

Comment g-1: Commenter asserts that shorelines must be protected and further information regarding shorelines and final design plans must be included in an EIS. (*Sierra Club/Center for Biological Diversity*)

Response: This issue was addressed in EAW Item 14. Figure 6b identifies the shoreland zone areas that will be impacted. The extension project and CSAH 102 relocation will impact a small amount of shoreland zone area. The EAW notes that "these impact areas may be reduced based on final design."

h. Water Quality

Comment h-1: The commenters assert that water discharges from the Minntac tailings basin have adversely affected receiving waters and the proposed project

will continue and increase the environmental effects from these discharges, and that further evaluation of this issue is needed. (*Arneson; Culver; DRBA; FDL GP Bands; group; Koschak; Karakash; Larkin; MCEA; Reichensperger; Save Our Sky Blue Waters/Save Lake Superior Association; Sierra Club/Center for Biological Diversity; Szymialis; WaterLegacy*)

Response: This was addressed in EAW Items 17 and 30. Reduced water quality at the tailings basin is an existing condition appropriately considered as part of the cumulative effects analysis. The potential contribution of the proposed project is also considered as part of the analysis. No additional future projects that would contribute are known at this time to be proposed.

The Minntac tailings basin is located in the Sandy and Dark River watersheds. In the early 1990s, elevated levels of sulfate and hardness were found in the Dark River, which caused the MPCA to consider the Minntac tailings basin as a potential source of the elevated levels. In 2006 Minntac proposed to install a wet scrubber air control system on the one pellet furnace that at that time did not have a scrubber to comply with the new Taconite Maximum Achievable Control Technology (MACT) standard for particulate air emissions from the processing plant. Although designed for particulate removal the scrubber also provides incidental SO2 control. The MPCA had concerns that the contribution from the wet scrubber system would increase sulfate levels in the tailings basin. To address this potential the MPCA amended the NPDES permit in 2007 to allow for construction of a treatment system for the scrubber water and for the discharge of the scrubber water from this treatment system to the tailings basin to prohibit any increase in hardness or mass of sulfate from the scrubber system. Data collected between 2006 and 2012 indicated an increase in total pounds of hardness and sulfate had been added to the tailings basin as a result of the installation of the wet scrubber system.

The MPCA is addressing noncompliance at the tailings basin through the June 2011 SOC. The SOC is a tool used as a bridge to move toward compliance so permitting can take place. The information collected through the SOC will be used to develop limit requirements for a reissued permit in the future.

There are challenges to addressing water quality issues at the tailings basin that are a result of many factors including; 1) the high concentration of pollutants in the water in the tailings basin, a result of the facility's process, 2) a tailings basin that originated prior to environmental regulation, that was designed to drain, not contain the water, 3) the number of surface and subsurface seeps, and 4) the large size of the tailings basin. Due to these characteristics there is not often an exact formula or immediately known solution to resolve these legacy compliance issues. To ensure the greatest likelihood of success, possible solutions must be evaluated and trialed by the Company under the MPCA's NPDES/SDS authority.

The Company has been under several enforcement actions (SOCs) with the MPCA to address elevated levels of hardness and sulfate in the tailings basin. In 2010 U.S. Steel installed a Seep Collection and Return (SC&R) system on the Sand River side (east side) of the tailings basin. This project collects the surface and shallow subsurface seepage

and returns it to the basin. Monitoring results from the Twin Lakes (Sandy Lake and Little Sandy Lake) indicate that sulfate levels have decreased since startup of the SC&R. A SC&R system for the west side of the tailings basin is proposed for construction after receipt of all permits and regulatory approvals, anticipated at this time to be constructed in 2014 to eliminate seepage discharges to the Dark River system.

U.S. Steel is currently operating under this SOC to address seepage discharge from its tailings basin and source reduction of sulfate through the installation of dry air pollution controls and an alternate water source lower in sulfate for its make-up water system.

Monitoring wells have been installed and the company is in the process of developing a groundwater model as required by the SOC to address the tailings basin's effect on groundwater quality. The results of the groundwater modeling will be used in permitting efforts to develop a target concentration in the tailings basin necessary to meet ground water standards at the property boundary. A recent amendment to the SOC requires the company to submit a Groundwater Sulfate Reduction Plan by July 12, 2013 to address exceedances of sulfate ground water standards at the property boundary.

The extension will increase the amount of tailings in the basin and increase the number of years of process water within the basin due to extension of the life of the mine. These additions will not necessarily result in increased discharges to the Sandy River. Ongoing public regulatory authority from MPCA's NPDES program and MDNR's permit to mine will monitor discharges from the tailings basin to determine the success of proposed measures and to implement additional measures if needed. Potential mitigation measures that can address the issue include covering the tailing basin dike, alternate water management, passive water treatment, and active water treatment. The Groundwater Sulfate Reduction Plan required as part of the SOC Amendment will evaluate treatment technologies; the results of these evaluations will inform the MDNR Permit to Mine and NPDES reissuance.

These mitigation measures will also address any additional constituents introduced into the Minntac tailings basin and recirculating process water system by tailings generated from the extension areas.

Several studies have been or are being conducted that will assist in anticipating and controlling sulfate in the tailings basin. Specifically a mass balance of water and sulfate in the tailings basins at Minntac and Keetac is being completed (MWRAP Study 1). Other studies include Mineralogy, Spatial Distribution, and Isotope Geochemistry of Sulfide Minerals in the Biwabik Iron Formation and Carbon and Iron Additions to Stimulate In-Pit Sulfate Reduction and Removal. The results of those studies and site specific work being conducted through the SOC may be used to inform the Permit to Mine process. The Permit to Mine amendment that the Minntac extension project requires will be noticed to the public and will contain a special condition describing the relationship to any water quality mitigation measures identified at that time. The amendment will also make clear that the permit to mine can be amended again, at any time, if or when additional mitigation measures are warranted to address water quality issues and compliance with NPDES requirements. Specifically, if any mitigation

measures are determined in the future to be required at Minntac that would modify the conditions in the Permit to Mine, the permit can be re-opened and those modifications/new conditions could be included in another amendment.

Comment h-2: The commenter questioned whether or not downstream sulfate concentration monitoring in the Sand River and Dark River Watersheds would be conducted, and if so, if the information would be publically available. (*DRBA*)

Response: The Sand River at Station SW001 (formerly Station 701) is required to be monitored by the company under NPDES/SDS Permit No. MN0057207. Monitoring data results are reported to the MPCA and are available for review by the public. In addition, under an agreement between the Bois Forte Band of Chippewa and U.S. Steel, a water quality monitoring program was initiated in 2010 at Sandy Lake and Little Sandy Lake (Twin Lakes). Three years of monitoring results indicate that sulfate levels have decreased since startup of the seepage collection and return system.

When the seepage collection and return system is constructed on the west side of the tailings basin, water quality in the Dark River will be required to be monitored by the company under the June 2011 SOC. The data will be available to the public once it is collected and received by the MPCA.

Comment h-3: Commenters assert that the proposed mine pit extension will increase water quality concerns, including sulfate, in water discharges from mine pit dewatering. *(FDL GP Bands; Koschak; MCEA; Reichensperger; Save Our Sky Blue Waters/Save Lake Superior Association; Sierra Club/Center for Biological Diversity; Szymialis; WaterLegacy)*

Response: The proposed extension is anticipated to result in continued pumping of mine dewatering waters from within the enlarged mine pits. Water that collects in mine pit sumps is a mix of stormwater runoff and groundwater that must be pumped out of the mine in order to prevent flooding and allow mining operations to continue. Since the ore to be mined through the Extension project is similar to that currently being mined, it would be anticipated that the sulfate concentrations within the mine pit extension area sumps would be similar to the current sulfate concentrations within the present mine pit sumps. However, the EAW notes that increased in-pit disposal may result in runoff and mine sump dewatering discharges with increased concentrations of pollutants. The company is required to comply with the requirements of its NPDES/SDS permit and meet all applicable water quality standards in its mine pit dewatering discharge.

The current NPDES/SDS Permit for the mine area does not have sulfate effluent limits for mine dewatering discharges; therefore there have been no sulfate effluent limit violations associated with this permit. The proposed extension does not require an amendment to the existing NPDES/SDS permit for mine dewatering discharge. MPCA staff has requested the Company to conduct surveys for wild rice in downstream waters to which the mine area discharges. Results of those surveys are expected to be received in early 2013. This and other information regarding wild rice would be used by MPCA staff

to determine the appropriate sulfate effluent limit that would be applied in a reissued Permit at the facility.

The Minntac Extension requires a Permit to Mine amendment. The Permit to Mine can be opened for amendment at any time if a water quality issue is identified, such as through exceedance of an NPDES permit effluent limit. When MPCA re-issues the NPDES permit, if new water quality standards are applied, then DNR will open the permit to mine and amend it if a change in the closure plan is needed in order to protect the affected resource. Examples of specific mitigation measures that could be included as permit conditions/modifications in an amendment to address water quality issues related to the mine pits could include requirements to: cover stockpiles; implement different water management techniques; enhance/encourage sulfate reduction (such as by additions of iron and carbon); dispose of waste rock subaqueously; utilize alternate discharge locations; implement passive treatment (such as with wetlands or floating bogs); and/or implement active water treatment.

The ferrous mining rules authorize MDNR to require water quality controls on a facility with water quality problems under the Permit to Mine. Specifically, under Minnesota Rule 6130.2100 Stockpile Design and Construction Standards, the Commissioner has the authority to require changes to the Permit to Mine based on water quality problems:

> F. When a water quality problem has occurred or is likely to result from leaching of stockpiled material, the commissioner shall require one or more of the following based on the type of material and the nature and location of the problem:
>
> (1) the design of a monitoring system and the monitoring of water quality;
>
> (2) the construction of an impermeable base pad to isolate the stockpile from the groundwater;
>
> (3) the construction of a permeable base pad containing soil material capable of absorbing and holding the toxic materials in the leachates;
>
> (4) the diversion of surface waters around and away from the stockpile;
>
> (5) covering of stockpiles to minimize the infiltration of precipitation;
>
> (6) the use of internal layers of soil or other material to hold the toxic materials in the leachate;
>
> (7) the use of material which controls pH of the leachate; and
>
> (8) the collection and treatment of leachate.

Comment h-4: Commenters are concerned that the West Pit filling and outflowing to the West Branch of the West Two Rivers would result in discharge of polluted water from in-pit stockpiling. (*FDL GP Bands*)

Response: The EAW notes that increased in-pit disposal may result in runoff and mine sump dewatering discharges with increased concentrations of pollutants. The company is required to comply with the requirements of its NPDES/SDS permit and meet all applicable water quality standards in its mine pit dewatering discharge.

As noted above, when MPCA re-issues the NPDES permit, if new water quality standards are applied, then DNR will open the permit to mine and amend it if a change in the closure plan is needed in order to protect the affected resource. Examples of specific mitigation measures that could be included as permit conditions/modifications in an amendment to address water quality issues related to the mine pits could include requirements to: cover stockpiles; implement different water management techniques; enhance/encourage sulfate reduction (such as by additions of iron and carbon); dispose of waste rock subaqueously; utilize alternate discharge locations; implement passive treatment (such as with wetlands or floating bogs); and/or implement active water treatment.

The company is required to prepare and submit for review and approval by the MDNR a reclamation plan that addresses post-closure issues such as the natural overflow discharge of waters from the pits after the mine closes. Also see response to Comment h-3.

Comment h-5: Commenters assert that NPDES permitting process is not an effective mitigation tool for the Minntac extension because the permit is expired, the current SOC does not take into account the proposed extension, U.S. Steel is not in compliance with its permit, and is under its fourth Schedule of Compliance since 2000. *(FDL GP Bands; MCEA)*

Response: The Company is currently operating under expired NPDES/SDS permits as allowed by Minnesota Rules 7001.0160. In the early 1990s, elevated levels of sulfate and hardness were found in the Dark River, which caused the MPCA to consider the Minntac tailings basin as a potential source of the elevated levels. In 2006 Minntac proposed to install a wet scrubber air control system on the one pellet furnace that at that time did not have a scrubber to comply with the new Taconite Maximum Achievable Control Technology (MACT) standard for particulate air emissions from the processing plant. Although designed for particulate removal the scrubber also provides incidental SO2 control. The MPCA had concerns that the contribution from the wet scrubber system would increase sulfate levels in the tailings basin. To address this potential the MPCA amended the NPDES permit in 2007 to allow for construction of a treatment system for the scrubber water and for the discharge of the scrubber water from this treatment system to the tailings basin to prohibit any increase in hardness or mass of sulfate from the scrubber system. Data collected between 2006 and 2012 indicated an increase in total pounds of hardness and sulfate had been added to the tailings basin as a result of the installation of the wet scrubber system.

The MPCA is addressing noncompliance at the tailings basin through the June 2011 SOC. The SOC is a tool used as a bridge to move toward compliance so permitting can take place. The information collected through the SOC will be used to develop limit requirements for a reissued permit in the future.There are challenges to addressing water

quality issues at the tailings basin that are a result of many factors including; 1) the high concentration of pollutants in the water in the tailings basin, a result of the facility's process, 2) a tailings basin that originated prior to environmental regulation, that was designed to drain, not contain the water, 3) the number of surface and subsurface seeps, and 4) the large size of the tailings basin. Due to these characteristics there is not often an exact formula or immediately known solution to resolve these legacy compliance issues. To ensure the greatest likelihood of success, possible solutions must be evaluated and trialed by the Company under the MPCA's NPDES/SDS authority.

The Company has been under several enforcement actions (SOCs) with the MPCA to address elevated levels of hardness and sulfate in the tailings basin. In 2010 U.S. Steel installed a Seep Collection and Return (SC&R) system on the Sand River side (east side) of the tailings basin. This project collects the surface and shallow subsurface seepage and returns it to the basin. Monitoring results from the Twin Lakes (Sandy Lake and Little Sandy Lake) indicate that sulfate levels have decreased since startup of the SC&R. A SC&R system for the west side of the tailings basin is required to be constructed to eliminate seepage discharges to the Dark River.

U.S. Steel is currently operating under this SOC to address seepage discharge from its tailings basin and source reduction of sulfate through the installation of dry air pollution controls and an alternate water source lower in sulfate for its make-up water system.

Monitoring wells have been installed and the company is in the process of developing a groundwater model as required by the SOC to address the tailings basin's effect on groundwater quality. The results of the groundwater modeling will be used in permitting efforts to develop a target concentration in the tailings basin necessary to meet ground water standards at the property boundary. A recent amendment to the SOC requires the company to submit a Groundwater Sulfate Reduction Plan by July 12, 2013 to address exceedances of the sulfate ground water standard at the property boundary.

The extension will increase the amount of tailings in the basin and increase the number of years of process water within the basin due to extension of the life of the mine. These additions will not necessarily result in increased discharges to the Sandy River. Ongoing public regulatory authority from MPCA's NPDES program and MDNR's permit to mine will monitor discharges from the tailings basin to determine the success of proposed measures and to implement additional measures if needed. Potential mitigation measures that can address the issue include covering the tailing basin dike, alternate water management, passive water treatment, and active water treatment. The Groundwater Sulfate Reduction Plan required as part of the SOC Amendment will evaluate treatment technologies; the results of these evaluations will inform the MDNR Permit to Mine and NPDES reissuance.

These mitigation measures will also address any additional constituents introduced into the Minntac tailings basin and recirculating process water system by tailings generated from the extension areas.

The MPCA and EPA have recently entered into an agreement developed to facilitate timely NPDES permitting actions for metallic mining projects in Minnesota to address outstanding environmental issues, eliminate permit backlog, and issue permit decisions. Reissuance of the Minntac Tailings Basin permit is a top priority under this agreement.

Comment h-6: The commenter asserts that the Permit to Mine is not adequate ongoing public regulatory authority to mitigate the impacts of increased sulfates and the EAW fails to describe any specific measures that could be taken to reduce sulfate levels. (*MCEA*)

Response: The MDNR appropriately identifies the permit as a means to require mitigation through a condition of the permit. The EAW discusses several measures that could be taken or are being taken to address sulfate levels, any or all of which may be reasonably expected to effectively reduce sulfate loading to receiving waters.

The Permit to Mine can be opened for amendment at any time if a water quality issue is identified, such as through exceedance of an NPDES permit effluent limit. When MPCA re-issues the NPDES permit, if new water quality standards are applied, then DNR will open the permit to mine and amend it if a change in the closure plan is needed in order to protect the affected resource. Examples of specific mitigation measures that could be included as permit to mine conditions/modifications in an amendment to address water quality issues related to the mine pits could include requirements to: cover stockpiles; implement different water management techniques; enhance/encourage sulfate reduction (such as by additions of iron and carbon); dispose of waste rock subaqueously; utilize alternate discharge locations; implement passive treatment (such as with wetlands or floating bogs); and/or implement active water treatment.

The ferrous mining rules authorize MDNR to require water quality controls on a facility with water quality problems under the Permit to Mine. Specifically, under Minnesota Rule 6130.2100 Stockpile Design and Construction Standards, the Commissioner has the authority to require changes to the Permit to Mine based on water quality problems:

> F. When a water quality problem has occurred or is likely to result from leaching of stockpiled material, the commissioner shall require one or more of the following based on the type of material and the nature and location of the problem:
>
> (1) the design of a monitoring system and the monitoring of water quality;
>
> (2) the construction of an impermeable base pad to isolate the stockpile from the groundwater;
>
> (3) the construction of a permeable base pad containing soil material capable of absorbing and holding the toxic materials in the leachates;
>
> (4) the diversion of surface waters around and away from the stockpile;
>
> (5) covering of stockpiles to minimize the infiltration of precipitation;

(6) the use of internal layers of soil or other material to hold the toxic materials in the leachate;

(7) the use of material which controls pH of the leachate; and

(8) the collection and treatment of leachate.

Comment h-7: The commenter asserts U.S. Steel, by increasing the life of the mine, will increase its mercury emissions, and thus, will not achieve their Total Maximum Daily Load (TMDL) goal. (*MCEA*)

Response: The TMDL program assumes that currently operating taconite facilities will continue to operate. Therefore, a time extension in the life of a mine is not considered an increase in emissions and does not prevent Minntac from fulfilling its TMDL goals. U.S. Steel is not proposing to increase Minntac's air emissions of mercury or other pollutants with the extension. The MPCA is not permitting U.S. Steel for new or expanding air releases with this extension.

In addition, mercury discharges from SD004 have been monitored on a quarterly basis over the past several years, as per requirements of NPDES/SDS Permit MN0052493. Mercury concentrations in the SD004 discharges are typically just over the 0.5 ng/L detection limit for low-level mercury analysis by EPA Method 1631. As such, mercury inputs to the West Two River Reservoir are considered minimal.

Comment h-8: Commenters are concerned that Minntac's sulfate problems are increasing as the company digs deeper and to the south and that Minntac could encounter an overlay of sulfide bearing rock in the formation. Stockpiling volumes and stockpile locations and discussion of measures to prevent or minimize potential environmental problems associated with the proposed extension and roadway relocations should be addressed prior to permitting. (*Save Our Sky Blue Waters/Save Lake Superior Association; Szymialis; WaterLegacy*)

Response: The EAW notes in Item 30 that "the ore to be mined through the proposed extension project is of similar sulfur content as the ore currently being mined and processed at the site." However, the EAW also notes that increased in-pit disposal may result in runoff and mine sump dewatering discharges with increased concentrations of pollutants.

Item 6 of the EAW states: "In an effort to minimize wetland impacts, existing stockpiles or other disturbed areas would continue to be utilized for stockpiling. Currently Minntac does not anticipate requiring any new out-of-pit stockpiles. Some of the existing stockpiles within the current permitted stockpile limits will be elevated by up to 170 feet to accommodate waste materials; in-pit stockpiling will continue to be utilized as much as possible. In-pit disposal of mine waste materials will continue to be maximized in order to limit the overall mining area footprint." The stockpiling plan for the extension project is to continue stockpiling rock in-pit and on existing stockpile footprints. No "new" stockpile footprints require consideration for the EAW. (See also h-3)

Comment h-9: Commenters assert that increases in sulfate discharges from the proposed project could result in increases to methylation of mercury and the MDNR must also address and disclose how this mine expansion would not contribute to additional mercury pollution in streams that are already designated as water quality limited under Section 303(d) of the Clean Water Act. *(Arneson; DRBA; Sierra Club/Center for Biological Diversity, WaterLegacy)*

Response: There is not an increase in volume of industrial wastewater with this extension of the Minntac mine site, nor is there an increase in mercury discharge or emissions. However, the EAW acknowledged that increased in-pit stockpiling may result in increased levels of some constituents (including sulfate) in mine pit dewatering discharges. The time period of mining operations will also be extended.

The Company has been under several enforcement actions, called SOCs with the MPCA to address tailings basin water quality concerns. The November 2007 SOC required installation of a seepage collection and return system to eliminate the discharge of surface seepage from the eastern tailings basin dike to the Twin Lakes/Sandy River watershed. This system was installed in mid-2010 and there have been no discharges of surface seepage from the eastern tailings basin dike since then. Three years of monitoring data indicate that downstream sulfate levels in Twin Lakes (Sandy Lake and Little Sandy Lake) have decreased since installation of the system.

The current SOC of June 2011, requires the Company to implement a number of measures to lower the concentrations of sulfate and hardness within the tailings basin. These include the installation of dry air pollution controls and using an alternate water source lower in sulfate and hardness for the make-up water system.

The 2011 SOC also requires the construction of a seepage collection and return system to eliminate surface water seepage discharges from the west side of the tailings basin to the Dark River.

The relationship between sulfate concentrations and methylation of mercury is complex and it is therefore not accurate to characterize the proposed mine extension as increasing mercury pollution due to sulfate levels causing increased methylation of mercury. Several studies are being led by and conducted by the MDNR on the behavior and environmental interactions of sulfate and mercury, specifically in the St. Louis River basin and in general to better understand that cycling. The results of those studies and site specific work being conducted through the SOC will be used to inform the permitting process. Also see response to Comment d-5.

i. Geology and Groundwater

Comment i-1: Commenters are concerned that the EAW did not address existing groundwater contamination around the tailings basin and the potential that the project will make the contamination worse. *(FDL GP Bands)*

Response: Degraded water quality at the tailings basin is an existing condition appropriately considered as part of the cumulative effects analysis. The potential

contribution of the proposed project is also considered as part of the analysis. The proposed mine extension will increase the amount of tailings deposited in the tailings basin. This increase has the potential to further impact groundwater quality due to seepage from the basin. No additional future projects that would contribute are known at this time to be proposed.

The MPCA and the company are working to address groundwater issues at the tailings basin. Recent monitoring data from sampling of a piezometer at the property boundary indicates sulfate concentrations in groundwater exceed the drinking water standard of 250 mg/L.

U.S. Steel is currently operating under this SOC to address seepage discharges from its tailings basin and source reduction of sulfate through the installation of dry air pollution controls and an alternate water source lower in sulfate for its make-up water system.

Monitoring wells have been installed and the company is in the process of developing a groundwater model as required by the SOC to address the tailings basin's effect on groundwater quality. The results of the groundwater modeling will be used in permitting efforts to develop a target concentration in the tailings basin necessary to meet ground water standards at the property boundary. A recent amendment to the SOC requires the company to submit a Groundwater Sulfate Reduction Plan by July 12, 2013 to address exceedances of the ground water standard for sulfate at the property boundary.

The extension will increase the amount of tailings in the basin and increase the number of years of process water within the basin due to extension of the life of the mine. These additions will not necessarily result in increased discharges to the Sandy River. Ongoing public regulatory authority from MPCA's NPDES program and MDNR's permit to mine will monitor discharges from the tailings basin to determine the success of proposed measures and to implement additional measures if needed. Potential mitigation measures that can address the issue include covering the tailing basin dike, alternate water management, passive water treatment, and active water treatment. The Groundwater Sulfate Reduction Plan required as part of the SOC Amendment will evaluate treatment technologies; the results of these evaluations will inform the MDNR Permit to Mine and NPDES reissuance.

These mitigation measures will also address any additional constituents introduced into the Minntac tailings basin and recirculating process water system by tailings generated from the extension areas.

j. Air Emissions - Haze, Mercury

Comment j-1: Commenters are concerned about the cumulative effect of regional haze on health and visibility in the area from mining operations. (*Koschak; Save Our Sky Blue Water/Save Lake Superior Association*)

Response: Haze is caused by fine particles in the atmosphere. These fine particles can cause health impacts. The MPCA's State Implementation Plan (SIP) and U.S. EPA's Federal Implementation Plan (FIP) address the contributions of Minnesota sources to

regional haze over scenic areas. Under these plans, U.S. Steel is required to meet emission levels representing Best Available Retrofit Technology (BART) in order to limit its contribution to haze. These emission limits are on SO_2 (sulfur dioxide) and NO_X (nitrogen oxide) emissions, which contribute to the formation of fine particles. In addition, the SIP requires Minntac (and all other taconite facilities) to conduct modeling and, if necessary, propose emission controls, to ensure that they are meeting new National Ambient Air Quality Standards (NAAQS) for SO_2 and NO_2. The NAAQS are set to protect human health. Currently Minnesota meets the NAAQS (the federal health-based standard) for all air pollutants, with the exception of lead in a small area of Dakota County.

It should be noted that the MPCA is not permitting U.S. Steel for new or expanding air releases with this extension. No new or increased emissions are anticipated for the project. However, there will be a longer period of emissions with the extension of mining operations through 2031.

All the taconite mining companies are required to have as part of their operations a fugitive dust control plan. Occasionally environmental factors such as weather conditions can make the dust control measures implemented less effective. Concerns can be reported to the MPCA using an online form or by telephone; see MPCA's website, Assitance tab, Complaints section: http://www.pca.state.mn.us/index.php/about-mpca/assistance/citizen-complaints.html for more information.

Comment j-2: The commenter asserts that the company will not be successful in reducing its emissions. (*MCEA*)

Response: There is not an increase in mercury emissions associated with the extension at Minntac. The MPCA is not permitting U.S. Steel for new or expanding air releases with this extension though there will be a longer period of emissions with the extension of mining operations through 2031.

Comment j-3: Commenters state that further study needs to be done regarding the impact of air pollution on migratory birds, butterflies, honey bees and native wildlife, to avoid a violation of treaty rights and international law. *(Koschak; Save Our Sky Blue Water/Save Lake Superior Association, Szymialis)*

Response: The proposed project would extend mining operations through 2031, though the EAW notes in Item 23 that "no new sources of air emissions would result from the proposed project." As further stated, the proposed mine extension would not be expected to increase any air emissions above the current levels, so no additional air quality evaluations are needed for the proposed mine extension. EPA sets primary NAAQS to protect human health and secondary NAAQS to protect human welfare and the environment. The area around Minntac is currently in attainment with all ambient air quality standards. The Minntac facility is in compliance with its Title V air emissions permit.

Comment j-4: Commenters allege the digging of a deeper pit and a longer hauling distance would entail more use of hauling and digging machinery and fuel. (*Save Our Sky Blue Water/Save Lake Superior Association; Szymialis*)

Response: The EAW indicates that vehicles would continue to operate at current operational levels within the adjacent extension area, and that haul distance will be similar to current operation. Although haul distances may increase somewhat, they will remain within the same magnitude as existing operations.

k. Nearby Resources - Historical and Cultural Resources, Trails

Comment k-1: Commenters assert that the Historical and Cultural Resources section of the EAW does not address Tribal historic sites or the need for consultation with the Bands' Tribal Historic Preservation Offices. The Bands have not been invited to participate in the USACE-SHPO Programmatic Agreement for historic review. (*FDL GP Bands*)

Response: Comments regarding Tribal consultation do not address the accuracy and completeness of the EAW, identify specific impacts that require further evaluation, or the need for an EIS.

Commenters do not identify any specific additional historic sites that may be affected by the proposed project.

Tribal consultation is a federal process that is implemented by federal agencies, not state agencies. U.S. Steel reports that no Programmatic Agreement is currently in place for the Minntac Extension Project. Tribal consultation letters were mailed to the Bands by the USACE on July 18, 2012 inviting the bands to participate in the process. Consulting bands will be invited to participate in the Programmatic Agreement process if or when that is needed.

Although State agency tribal consultation is outside the scope of the EAW, these comments will be considered by the MDNR as part of future policy decisions relating to Tribal consultation.

Comment k-2: Commenter asserts the loss of approximately 7 miles of ATV trails within this proposed area. These ATV trails are mapped and included in the MDNR inventoried trail system. These trails are used by both ATV and snowmobile enthusiast as a through-way connecting the east and west Iron Range and should be replaced alongside the proposed new County Road 102 Relocation. (*Irish*)

Response: The "ATV trails" the commenter refers to are actually designated "Forest Access Routes." While Forest Access Routes (FAR) are typically open to the public, they are not maintained for ATV use. There is no Grant in Aid status (nor funding) involved in the FAR the commenter is concerned with.

However, it is acknowledged that there will be a loss of recreational riding opportunity for the public due to the mine extension and possibly the CSAH 102 reroute. The

comment is being forwarded to U.S. Steel and St. Louis County Public Works for consideration as the CSAH 102 relocation project is designed.

Comment k-3: Commenter states that the project is currently part of a Section 106 review by the USACE, St. Paul District. SHPO has a Programmatic Agreement with the USACE for the "Minntac Western Progression" (the west pit). USACE is also reviewing the east pit and the access roads, but the commenter states they have not yet received this information. If this project is considered for federal assistance, or requires a federal permit or license, it should be submitted to SHPO by the assisting federal agency. (*MHS SHPO*)

Response: The Section 106 review will be added as potential approval in this record of decision and the project proposer will be notified of the potential need for this approval. The project does require a federal permit – a Section 404 permit from the USACE. The USACE, as the federal permitting authority, is responsible for and will continue its coordination with the MHS SHPO regarding this matter.

Comment k-4: The commenter asserts a portion of the Minntac Mine Extension area at the east pit overlaps with the proposed Mountain Iron Mining Landscape Historic District. Therefore additional review for historical archaeology (under the Minnesota Field Archaeology Act) is needed within the overlap area. Further, the proposed access roads cut through the middle of the historic district, and the road impact areas should be reviewed for historical archaeology. Finally, proposed east pit extension areas near the National Historic Landmark should be evaluated for potential visual effects. Because of the existing mining landscape, those effects may not necessarily be adverse, but will need to be looked at to assure protection of the Landmark. (*MHS SHPO*)

Response: The MDNR acknowledges the potential additional impacts identified by the commenter. Information used to prepare the EAW identified the National Register-eligible Mountain Iron Mining Landscape Historic District within the environmental settings boundary for the Minntac Mine. MDNR understands that review of the effects of the project (including access roads) on the Mountain Iron Mining Landscape Historic District and the Mountain Iron Mine National Historic Landmark will be completed during the Section 404 permitting process. The SHPO comment letter has been forwarded to the USACE and the project proposer.

Comment k-5: The commenter states that as part of the USACE's overall project review, they have not yet received the full report of the Phase I or Phase II archaeological survey for both pits. The commenter concurred with the recommendation in the summary report for Phase II evaluation of the Staff Family Farmstead site, located in the Western Progression portion of the west pit, but very near one of the proposed extension areas covered by the EAW. The EAW states that "no additional work is recommended within the Extension areas." The commenter disagrees with that statement, because of the recommendation for the Phase II work. It is also possible that USACE will recommend further archaeological work in connection with pending wetland permit requirements. (*MHS SHPO*)

Response: As stated by the commenter, the Staff Family Farmstead will be studied as part of the Phase II study, and this information will be used by USACE as part of their permitting process. This information has been forwarded to the USACE and the project proposer.

Comment k-6: The commenter states that the USACE is reviewing the project in regard to potential Traditional Cultural Properties (TCPs) and other traditional use areas, including pollution of wild rice and fish spawning grounds, and the Laurentian divide. (*MHS SHPO*)

Response: Comment noted. These are appropriate topics for federal tribal consultation.

l. Cumulative Effects

Comment l-1: Commenters assert that the EAW should address in more detail the cumulative effects that will result from the proposed project, in addition to that from past projects, or foreseeable future projects within each minor watershed, as well as collectively in the subwatershed of the St. Louis River. (*Culver; MPCA; WaterLegacy*)

Response: The MDNR notes that a qualitative discussion of project specific impacts and cumulative effects is presented in Item 12 of the EAW and summarized in Item 29. Specific quantitative information limited to the project area was also discussed in Item 12 and summarized in Item 29.

Minnesota Environmental Review rules require a cumulative effects evaluation for foreseeable projects, only if a basis of expectation has been laid for those future projects. St. Louis County was consulted to identify any potential projects that may have an environmental effect that overlaps with the Minntac Extension. This information is included in the EAW. Regarding cumulative effects of stream loss and watershed alteration, there are no future projects for which a basis of expectation has been laid that would add to the effects. Therefore, with respect to cumulative effects, the EAW evaluates past projects in aggregate as the existing background condition along with the incremental contribution of the currently proposed project.

The memo from Liesch provided as EAW Attachment A summarizes the physical and hydrologic changes that have occurred since Minntac began mining. The memo presents quantitative information for pre-mine conditions, the mined areas, the areas to be mined under the current Permit to Mine, and the areas to be mined through the extension project. Because an EAW is to be focused on a specific project, the information is to be limited to the Minntac mining area and the waterbodies immediately downstream. Flow reductions that may result from the extension project in context with current flows are described in the following paragraphs.

Mean annual flow of the St. Louis River at Scanlon is 2160 cfs. Including the existing permit to mine limits in the West and East pits, delivery of natural flow to West Two River has been reduced 11.6 cfs which translates into a reduction of flow at Scanlon of 0.5%. The proposed action increases the total flow reduction to the St Louis River watershed at Scanlon 14.15 cfs or 0.7%.

Existing, average dewatering flows to West Two River via Kinney Creek and Parkville Creek is 6.6 cfs and 5 cfs, respectively totaling 11.6 cfs, matching pre-mining conditions. Kinney Creek's flow will be reduced to a minimum 2.2 cfs (1,000 gpm) reducing the total delivery to West Two River to 9.4 cfs. However, Sump #3 in the West Pit also delivers water to West Two River via the East Branch (MDNR does not require Minntac through the Water Appropriation Permit to report volumes to Mountain Iron Pit relative to East Branch).

Stream mitigation is required by the USACE (as stated in EAW Item 12) based on the *Compensatory Mitigation for Losses of Aquatic Resources* final rule (33 CFR 332). Mitigation continues to be developed and although a specific site has not been selected yet, specific requirements that may be applied are known and will be enforced by the USACE. Mitigation is also required by MPCA under the Section 401 Water Quality Certification under the CWA.

Comment I-2: The commenter asserts that in addition to the 483 acres that would be converted to open-pit mining in the Minntac Mine "Extension," approximately 20,000 acres of land use has been permanently converted to mining through past Minntac activities. (*WaterLegacy*)

Response: The Minntac mine began operating in 1967 and has undergone several expansions, which now together constitute background or existing conditions to which the current project is compared.

In addressing cumulative effects, the EAW is to assess the incremental contribution of the Minntac Mine Extension project's environmental impacts compared to and in conjunction with the impacts of past projects ("existing conditions") and future projects that can be reasonably anticipated. The mine is located on the Mesabi Iron Range, which is approximately three miles wide and extends in a northeasterly direction for approximately 120 miles in northeastern Minnesota. Currently there are six iron mining and processing facilities operating on the range. The extent of land conversion within this area is extensive.

The Minntac mine facility has contributed about 20,000 acres to this land conversion. A previous West Pit extension underwent state environmental review in 1996; the Permit to Mine amendment that was issued after this environmental review authorized a mine and stockpile expansion of 950 acres. This previously authorized land conversion in addition to the 483-acre extension currently proposed totals a land conversion of 1433 acres.

The 1996 expansion and current proposed extension together constitute a relatively small portion of this land conversion and this addition will not significantly add to this total.

This land conversion is subject to ongoing public regulatory authority by MDNR mineland reclamation that requires taconite mine operators to return the landscape to a state useful for wildlife habitat, recreation, and other public purposes.

Comment I-3: The commenter is concerned with the cumulative impacts to wildlife habitat, including wolf habitat. (*WaterLegacy*)

Response: In addressing cumulative effects, the EAW is to assess the incremental contribution of the Minntac Mine Extension project's environmental impacts compared to and in conjunction with the impacts of past projects ("existing conditions") and future projects that can be reasonably anticipated.

The EAW acknowledges in Item 11 the habitat impacts of the proposed Minntac Mine Extension project.

The proposed mine extension project does not extend into wildlife travel corridors that were identified as part of cumulative effects analysis for wildlife habitat conducted in 2009.

In accordance with MDNR mineland reclamation requirements, taconite mine operators are required to return the landscape to a state useful for wildlife habitat, recreation, and other public purposes.

The following summary describes the protection levels afforded to wolves under the Endangered Species Act and how the protection status has changed over time in Minnesota as the wolf population has recovered. In 1978, the gray wolf was relisted as endangered at the full species level (*C. lupus*) throughout the conterminous 48 States and Mexico, except for Minnesota where it was reclassified as threatened (50 CFR 17.11(h)). Wolves in Minnesota significantly increased and expanded their range (Fuller et al. 1992; Berg and Benson 1999). In January 2012, wolves in the western Great Lakes population, including Minnesota, were completely removed from the federal Endangered Species List. Gray wolves were originally state listed as threatened in Minnesota in 1984, but as wolf numbers continued to increase, they were reclassified as state special concern in 1996. Their status as a state special concern species is also expected to end.

m. Other

Comment m-1: Commenters are supportive of the proposed mine extension. *(MN Power, Janisch)*

Response: The comment does not address the accuracy and completeness of the information, potential impacts that warrant further investigation or the need for an EIS. The comment is noted.

Comment m-2: Many commenters suggested that an EIS should be prepared for the Minntac Extension project. The rationale for EIS preparation included specific issues such as cumulative effects; previous water quality problems; loss of wetlands; impacts to streams, hydrology, soil, wild rice, trout, wildlife, wellheads, human health; increased mercury emissions and its effects; additional detail on mitigation, project scope, design and project alternatives—among others. Other commenters made only general statements that an EIS was warranted. *(Dosch; FDL GP Bands; Frazier; Goss; group; Hawkins; Koschak; Larkin; McQuillan; MCEA; Monson; Reisenweber; Samson; Save our Sky Blue Waters/Save Lake Superior Association; Sierra Club/Center for Biological Diversity; Szymialis; Ulrich; WaterLegacy)*

Response: Each of the specific issues identified as a rationale for EIS preparation are discussed above in the response to comments section that addresses the specific environmental effect in question. To the degree possible general comments that could correlate to an area of environmental effect have been discussed above as well. All environmental effects of the proposed project that could be reasonably expected to occur are discussed in detail below in Findings of Fact Nos. 13a to 13s. Each of these environmental effects will be evaluated against the criteria contained in Minnesota Rules, part 4410.1700, subp. 7, to determine if the project has the potential for significant environmental effects. These criteria include:

A. type, extent, and reversibility of environmental effects;

B. cumulative potential effects. The RGU shall consider the following factors: whether the cumulative potential effect is significant; whether the contribution from the project is significant when viewed in connection with other contributions to the cumulative potential effect; the degree to which the project complies with approved mitigation measures specifically designed to address the cumulative potential effect; and the efforts of the proposer to minimize the contributions from the project;

C. the extent to which the environmental effects are subject to mitigation by ongoing public regulatory authority. The RGU may rely only on mitigation measures that are specific and that can be reasonably expected to effectively mitigate the identified environmental impacts of the project; and

D. the extent to which environmental effects can be anticipated and controlled as a result of other available environmental studies undertaken by public agencies or the project proposer, including other EISs.

Comment m-3: Comments about the concerns to natural resources, generally. *(Anderson; Culver; Heeter; Koschak; Larkin; Megarry; Metis; Monson; Save Our Sky Blue Water/Save Lake Superior Association; Sierra Club/Center for Biological Diversity; Strand; Szymialis; WaterLegacy)*

Response: Without the identification of specific resources and impacts, it is difficult to provide a meaningful response. The EAW and the Record of Decision do specifically identify environmental effects of the proposed project.

Comment m-4: Commenters state the need for State-Tribal consultation for projects that may affect treaty resources. (FDL GP Bands)

Response: The MDNR notes the EAW was provided to the Indian Affairs Council, which is listed on the EQB EAW Distribution List. The EAW does provide usable information for other governmental units, including signatories to the 1854 Treaty, to understand the primary environmental effects of the proposed project on any tribal interests in the project area.

Comment m-5: The commenter is concerned about the buffer of surrounding properties. *(Irish)*

Response: The buffer is not being extended at this time. Item 9 of the EAW states, "the extension of mining southward does not result in a requirement that additional properties be purchased. However, as mining activity advances southward, U.S. Steel may decide to purchase and vacate additional properties to provide flexibility for a desired buffer."

Comment m-6: The commenter believes a more conservative approach should be used and all the lands should be turned over for control by Minntac except on an as needed bases like the Extended Reserve buffer of 78 acres, instead of all the 483 acres, which most will not get mined, due to use as a buffer zone. (*Irish*)

Response: It appears the commenter is suggesting a different approach to how the mining companies should gain control of the land and how that relates to buffers to adjacent properties. Land acquisition by U.S. Steel is outside the scope of an EAW.

Comment m-7: Commenters are concerned about socioeconomic effects, such as tourism, job creation, commerce, and tax policy. **(***Koschak; MN Power; Save Our Sky Blue Waters/Save Lake Superior Association; Szymialis)*

Response: Socioeconomic impacts are not evaluated as part of an EAW. If a project is determined to have the potential for significant environmental effects, an EIS will be ordered and socioeconomic impacts can then be considered.

Comment m-8: Some commenters are concerned with the MDNR's ability to regulate mining given statutes that encourage mineral development. *(Save Our Sky Blue Water/Save Lake Superior Association; Szymialis)*

Response: The comment does not address the accuracy or completeness of the information in the EAW, potential impacts of the Minntac Extension that warrant further investigation, or the need for an EIS.

Looking at all of the laws directing MDNR's involvement in mineral development, it is clear that the agency needs to balance mineral development and environmental review with protection of the environment and natural resources. MDNR is fulfilling Minnesota Statutory and Minnesota Rule obligations when evaluating mineral resources, permitting mines, and leasing minerals in Minnesota. The particular Minnesota State Statute Chapter and Minnesota Rules that apply are Minnesota Statute Chapter 93 Mineral Lands and Minnesota Rules 6125 Mineral Resources, 6130 Ferrous Metallic Mineral Mining, 6131 Peat Mining, and 6132 Nonferrous Metallic Mineral Mining. These Minnesota Statutes and Rules state that the Commissioner of the MDNR is to issue both mineral leases and the Permit to Mine. MDNR funding for performing these statutorily defined obligations is also set forth in Minnesota State Statute Chapter 93 in MS 93.2236 and MS 93.481. The total area currently under State mineral lease in St Louis County is 55,361.34 acres, which includes iron ore leases, metallic mineral leases, industrial mineral leases, peat leases, and iron ore residue (tailing) leases.

Following is some of the applicable language within Minnesota Statute Chapter 93.

93.001 POLICY FOR MINERAL DEVELOPMENT states: "It is the policy of the state to provide for the diversification of the state's mineral economy through long-term support of mineral exploration, evaluation, environmental research, development, production, and commercialization."

93.14 ISSUANCE OF LEASES TO PROSPECT FOR ORES. The commissioner may execute leases to prospect for iron ore and other ores upon lands belonging to the state or in which the state has an interest and for the mining of the ores, subject to the conditions provided in sections 93.15 to 93.28.

93.2236 MINERALS MANAGEMENT ACCOUNT. (a) The minerals management account is created as an account in the natural resources fund. Interest earned on money in the account accrues to the account. Money in the account may be spent or distributed only as provided in paragraphs (b) and (c).

(b) If the balance in the minerals management account exceeds $3,000,000 on June 30, the amount exceeding $3,000,000 must be distributed to the permanent school fund and the permanent university fund. The amount distributed to each fund must be in the same proportion as the total mineral lease revenue received in the previous biennium from school trust lands and university lands.

(c) Subject to appropriation by the legislature, money in the minerals management account may be spent by the commissioner of natural resources for mineral resource management and projects to enhance future mineral income and promote new mineral resource opportunities.

93.25 ORES OTHER THAN IRON; LEASES Subdivision 1. Leases. The commissioner may issue leases to prospect for, mine, and remove minerals other than iron ore upon any lands owned by the state, including trust fund lands, lands forfeited for nonpayment of taxes whether held in trust or otherwise, and lands otherwise acquired, and the beds of any waters belonging to the state. For purposes of this section, iron ore means iron-bearing material where the primary product is iron metal.

93.44 DECLARATION POLICY. In recognition of the effects of mining upon the environment, it is hereby declared to be the policy of this state to provide for the reclamation of certain lands hereafter subjected to the mining of metallic minerals or peat where such reclamation is necessary, both in the interest of the general welfare and as an exercise of the police power of the state, to control possible adverse environmental effects of mining, to preserve the natural resources, and to encourage the planning of future land utilization, while at the same time promoting the orderly development of mining, the encouragement of good mining practices, and the recognition and identification of the beneficial aspects of mining.

93.481 PERMIT TO MINE. Subdivision 1. Prohibition against mining without permit; application for permit. Except as provided in this subdivision, after June 30, 1975, no person shall engage in or carry out a mining operation for metallic minerals within the

state unless the person has first obtained a permit to mine from the commissioner. Any person engaging in or carrying out a mining operation as of the effective date of the rules adopted under section 93.47 shall apply for a permit to mine within 180 days after the effective date of such rules. Any such existing mining operation may continue during the pendency of the application for the permit to mine. The person applying for a permit shall apply on forms prescribed by the commissioner and shall submit such information as the commissioner may require, including but not limited to the following:

(1) a proposed plan for the reclamation or restoration, or both, of any mining area affected by mining operations to be conducted on and after the date on which permits are required for mining under this section;

(2) a certificate issued by an insurance company authorized to do business in the United States that the applicant has a public liability insurance policy in force for the mining operation for which the permit is sought, or evidence that the applicant has satisfied other state or federal self-insurance requirements, to provide personal injury and property damage protection in an amount adequate to compensate any persons who might be damaged as a result of the mining operation or any reclamation or restoration operations connected with the mining operation;

(3) an application fee of:

(i) $25,000 for a permit to mine for a taconite mining operation;

(ii) $50,000 for a permit to mine for a nonferrous metallic minerals operation;

(iii) $10,000 for a permit to mine for a scram mining operation; or

(iv) $5,000 for a permit to mine for a peat operation;

(4) a bond which may be required pursuant to section 93.49; and

(5) a copy of the applicant's advertisement of the ownership, location, and boundaries of the proposed mining area and reclamation or restoration operations, which advertisement shall be published in a legal newspaper in the locality of the proposed site at least once a week for four successive weeks before the application is filed, except that if the application is for a permit to conduct lean ore stockpile removal the advertisement need be published only once.

Comment m-9: The commenter references comments made by Tom Power in his testimony before the Minnesota State Legislature. (*Szymialis*)

Response: The RGU is not obligated to consider information that is not provided in a comment. Further, this comment does not address the accuracy or completeness of information presented in the EAW, nor does it address the need for an EIS. The comment is not considered substantive and a response is not required.

Comment m-10: The commenter wants the RGU to consider the prospects of the impending school trust legislation that congressional representatives in Minnesota are proposing that will exempt from EIS scrutiny. (*Szymialis*)

Response: The comment does not address the accuracy or completeness of the information in the EAW, potential impacts of the Minntac Extension that warrant further investigation, or the need for an EIS.

Comment m-11: The commenter requests an evaluation of project alternatives. *(WaterLegacy)*

Response: The EAW process does not evaluate project alternatives. State environmental review only requires evaluation of alternatives as part of an EIS.

Comment m-12: The commenter asserts that records from the 1996 expansion indicate that no public comments were received relating to Kinney Creek impacts. In fact, is appears that no comments at all were received from the public, environmental stakeholders or tribes. (*WaterLegacy*)

Response: The commenter is correct. The 1996 Record of Decision notes in Findings of Fact #6 that the only comments received on the EAW for the Minntac Extension proposed at that time were from SHPO and MPCA.

Comment m-13: The commenter is concerned about the phased development of the Minntac mine site and accompanied phased review of environmental effects. (*WaterLegacy*)

Response: The proposer is allowed to choose the timing of when it will cease its operations, though with each expansion or extension proposed, the company is required to plan as if it will be its last so that it is certain that a plan for reclamation, along with financial assurance, is in place. This ensures that a project site will be reclaimed properly and returned to a state that is useful for wildlife habitat, recreation, and other public purposes.

It should be noted that environmental review is not being avoided by way of project segments. The magnitude of the proposed Minntac Extension project is sufficient enough in size to require that a mandatory EAW be completed to review its environmental impacts. In determining the need for an EAW, there is a 3-year look-back provision in Minn. R. 4410.4300 subp. 1 that requires an RGU to consider activities within a three-year period in determining if a project exceeds a mandatory EAW threshold.

12. DNR also received 6 comment letters from the following individuals after close of the comment period. These comments are not being specifically responded to but they will be forwarded to the project proposer. These comment letters are included in Attachment B.

    a. Mike Conrad, received 09/19/12
    b. Dale Dahlquist, received 09/11/12

c. Jedidiah Krauss, received 09/08/12
d. Rebecca Lucking, received 09/13/12
e. Heyward Nash, received 09/07/12
f. Robert Tammen, received 09/05/12, 11:07 p.m.

13. Based upon the information contained in the EAW and received as public comments, the MDNR has identified the following potential environmental effects associated with the project:

a. Project Design – Mine Pits, Tailings Basin Dams, Road Construction, Stockpiles
b. Land Use - Disturbance of Contaminated Sites, Land Use Change
c. Fish, Wildlife, Sensitive Resources and Habitat
d. Physical Impacts on Water Resources – Streams and Wetlands
e. Water Use – Wells, Water Quantity, Drinking Water Supply Management Area
f. Water-Related Land Use Management Districts
g. Erosion and Sedimentation
h. Water Quality
i. Water Quality - Wastewater
j. Geology and Groundwater
k. Solid Wastes, Hazardous Wastes
l. Traffic
m. Air Emissions – Haze, Mercury
n. Odors, Noise and Dust
o. Nearby Resources - Historical and Archaeological Resources, Trails
p. Visual Impacts
q. Compatibility with Plans
r. Impact on Infrastructure
s. Cumulative Effects

Each these environmental effects are discussed in more detail below.

a. Project Design - Tailings Basin Dams, Road Construction, Stockpiles

This topic is addressed in EAW Item 6.

Mine Pits: The area of the mine extension is generally defined as the increment change beyond what is allowed under the existing permit to mine established in 1983. The proposed extension would include a southerly extension of the East Pit by 235.8 acres and a southerly extension of the West Pit by 247.2 acres in four locations.

Tailings Basin Dams: The Minntac tailings basin covers approximately 8,000 acres. When operating at full production capacity, Minntac produces tailings at an annual rate that requires approximately 3 feet of vertical storage volume over 3,000 acres. Mining

within the existing permit to mine and the extension will require future storage capacity for approximately 550,000,000 cubic yards of tailings.

The original Permit to Mine has a typical dike construction of outside slopes of 3:1 and inside slopes of 2:1. The current (2011) exterior dike elevation is ~910 on the east, north, and west sides. Interior dikes range from 895 to 1045.

Two design options have been developed to accommodate the future tailings volume:

- Option 1: Construction using a straight 1 foot vertical to 2 foot horizontal slope will require elevating the inner basin approximately 70 feet higher than current elevation.
- Option 2: Construction using a 40 foot benched, 1 foot vertical to 2 foot horizontal slope design will require elevating the inner basin approximately 90 feet higher than current elevation.

At this time, increases in the heights of the exterior tailings basin dams are not proposed, nor are other changes proposed to exterior dams. Additional dam construction as part of increased tailings is subject to ongoing public regulatory authority by the DNR Dam Safety permit. Design plans to accommodate the additional tailings will need to be reviewed and approved as part of this permit.

The Minntac tailings basin is currently classified by Dam Safety as a class iii, or "Low Hazard" Dam. This classification may no longer be appropriate and a hazard class review is needed per MDNR Dam Safety requirements. It is likely that this hazard review would result in the tailings basin being re-classified as a significant hazard (class ii) dam. As part of that review, Minntac or its consultant will need to demonstrate, through completion of a dam breach analysis on the existing and proposed dams, that a failure of an interior dam will not cause a perimeter dam to be overtopped.

Road Construction - Mine Access: The new mine access road would be constructed as a paved, four-lane roadway within an anticipated 100-foot right-of-way, similar to that roadway within the existing Minntac property. Roadway construction would include clearing of vegetation within the construction limits, road embankment and ditch grading, culvert installation, and paving and striping of the driving surface.

That segment of the mine access road that crosses the Wacootah Pit would be constructed on a land bridge made from available fill material from nearby stockpiles or Minntac waste rock. Depending on the materials used to construct the land bridge, water quality in the Wacootah Pit could be impacted through leaching of chemical constituents. The chemical composition of leachate that might be expected from the materials would vary depending on the type of rock used. Plans for the land bridge construction (including materials to be used) will be provided to DNR Lands and Minerals for review under the Permit to Mine Amendment.

If 3:1 slopes are used for the land bridge, the approximate fill in the pit is 325,000 CY. If angle of repose of fill is used (assuming about 1:1), the approximate fill in the pit is

200,000 CY. Regarding fill material below the water surface, current external engineering recommendations are to fill with mine waste rock or a granular fill material with less than 20% passing the No. 200 sieve. The best material would most likely be mine waste rock. Above the water surface and up to within 3 feet of the top of final road grade, the overburden material from the stockpile just north of the land bridge crossing (in the current Hoover shop area) is planned to be used. The top 3 feet will include the road section of select granular borrow, Class V, and bituminous. As far as source of materials, it is currently under investigation if any rock stockpiles are available for filling below water surface of the Wacootah Pit. Use of taconite coarse tailings for fill was also considered by the company as a potential option as it meets gradation. At this time, although approved for use in construction of roadways, the proposer has indicated that tailings will not be used for construction of the road. As stated above, plans for the land bridge construction (including materials to be used) will be provided to DNR Lands and Minerals for review.

Road Construction – CSAH 102 Relocation: A segment of CSAH 102 lies along the southern boundary of the East Pit and serves as a connection between Trunk Highway 53 and Trunk Highway 169 through the city of Mountain Iron (shown on EAW Figure 3). The proposed mine extension will eliminate approximately 1.5 miles of CSAH 102, resulting in the need to relocate the road. Relocation of the road is considered a "connected action" to the Minntac Extension project under Minn. R. 4410.1000, Subp.4.

Minntac has coordinated with St. Louis County Public Works and the City of Mountain Iron to identify an alignment for CSAH 102 south of the current alignment. This is the preferred alignment for the roadway relocation and will connect CSAH 109 and the existing CSAH 102 (Mineral Avenue) in Mountain Iron. It will reasonably replace the functionality of the existing CSAH 102 and provide local transportation connectivity independent of Trunk Highway 169. Although an accepted practice by Mn/DOT for use in construction of roadways, the proposer has indicated that it is not planned for tailings to be used for construction of the roads. Selection of materials will be at the discretion of the contractor; although tailings are a viable alternative if the contractor chooses to utilize them, it is likely the materials will be obtained from local aggregate sources nearby.

Stockpiles: No new stockpile areas are proposed with the extension project. Stockpiling will occur within existing stockpile footprints; in-pit stockpiling will continue to be utilized as much as possible.

b. Land Use - Disturbance of Contaminated Sites, Land Use Change

This topic is addressed in EAW Item 9. Land use in the project area is dominated by the existing Minntac mine operations (EAW Figure 4a and Figure 4b). Highway 169 extends east and west approximately 1-½ miles south along the length of the existing East and West mine pits. The municipalities of Kinney, Mountain Iron, and Virginia with the associated residential and commercial development are located south and at the west end, midpoint, and east end of the pits, respectively. Other, more rural, development exists along County Road 708 between Kinney and Mountain Iron. The remainder of the area remains undeveloped, with expanses of wooded habitat, open agricultural areas, wetlands

and both natural water bodies and man-made water bodies (*i.e.*, abandoned natural ore mine pits).

Smaller land conversions would also occur due to construction of the approximately 26-acre mine access road corridor and approximately 42-acre corridor for relocation of CSAH 102.

***Mine Extension*:** Land use within the proposed mine extension area consists of similar undeveloped land with land cover dominated by wooded habitat with some areas of old field, wetlands, and other openings. The proposed mine extension will convert 483 acres of this relatively open landscape to open pit mining. No residential or other development exists within the extension area. The easternmost portion of the extension area includes a 74-acre area south of CSAH 102 and on either side of Nichols Avenue that was formerly a portion of a residential development known as the Parkville Addition of the City of Mountain Iron (EAW Figure 4b). The northern portion of that development was vacated through purchase of residential properties by U. S. Steel to provide a buffer from encroaching mining activities. The remainder of the Parkville Addition still exists south of the mine. The extension of mining southward does not result in a requirement that additional properties be purchased. However, as mining activity advances southward, U.S. Steel may decide to purchase and vacate additional properties to provide flexibility for a desired buffer.

Land use within the proposed mine extension area also includes all or portions of three abandoned natural ore mine pits that are currently isolated shallow or deep water filled pits. These include the Atkins Mine in the West Pit extension, and the Hanna and Pilot Mines in the East Pit extension. Overburden stockpiles associated with these abandoned pits are also present, many of which have become vegetated. These stockpiles would be removed and relocated to Minntac's permitted out-of-pit or in-pit stockpiles as part of the extension for both the East and West Pits. Portions of the extension area have been crossed with haul roads, or contain public roadways.

The Atkins Mine in the West Pit extension area is identified by the MPCA database as an inactive CERCLIS/Superfund site. According to information on the EPA Superfund website, discovery occurred in 1981 and a preliminary assessment was completed in 1984. In 1990, another preliminary inspection is indicated to have been completed. The site did not meet the criteria for inclusion on the National Priorities List (NPL) and it was archived in 1990. No additional information was provided and the site is listed as inactive, indicating there are no active investigation and cleanup activities ongoing at the site.

If contamination is encountered during proposed project activities, the activities would cease, proper notifications would be made (State Duty officer), and appropriate response measures would be implemented. The MDNR Permit to Mine requires reclamation of the mine site, including reclamation of previously contaminated areas.

***New Mine Access Road*:** Land use along the proposed new mine access roadway alignment is primarily undeveloped, dominated by forest, wetland, abandoned natural ore

mine pits and mine dumps. Approximately 26 acres will be converted to the mine access road corridor. The new mine access road will bisect the existing Hoover construction site. Hoover Construction has a surface lease with the State of Minnesota and Minntac has the mineral lease with the State of Minnesota. Hoover Construction has received notice from the State that future road development is planned and will require Hoover to vacate the premises. The new access road construction will not disturb the old cemetery located west of the Wacootah pit.

The Inland Steel – Iroquois Mine Site is identified by the MPCA database as an inactive CERCLIS/Superfund site near the alignment for the new mine access road. According to information on the EPA Superfund website, discovery occurred in 1981 and a preliminary assessment was completed in 1985. In 1988, a site inspection was conducted at the site. The site did not meet the criteria for inclusion on the National Priorities List (NPL) and it was archived in 1988. No additional information was provided and the site is listed as inactive, indicating there are no active investigation and cleanup activities ongoing at the site.

If contamination is encountered during proposed project activities, the activities would cease, proper notifications would be made (State Duty officer), and appropriate response measures would be implemented. The MDNR Permit to Mine requires reclamation of the mine site, including reclamation of previously contaminated areas.

***County State Aid Highway 102 Relocation – Connected Action*:** Land use along the proposed roadway alignment is primarily undeveloped, dominated by forest, wetland, abandoned natural ore mine pits and mine dumps. Approximately 42 acres will be converted to the relocated CSAH 102 corridor. There are three dump sites within the area proposed for relocation of CSAH 102. The northeast quadrant of the proposed intersection of the CSAH 102 relocation at the existing road alignment is the site of the former Mountain Iron dump site, shown on EAW Figure 4. This site was previously owned by U.S. Steel Corporation but was sold to the City of Mountain Iron in 2006. It has been the subject of at least two Phase I Environmental Site Assessments (STS Consultants, 2000 and Wenck, 2001). The Mountain Iron dumpsite was operated by the City of Mountain Iron from 1959 to 1981. The site is currently gravel-surfaced and used by the City of Mountain Iron Public Works Department for utility equipment and aggregate storage. The site is approximately four acres in size, approximately 20 feet above former grade, and is estimated to contain approximately 27,000 cubic yards of materials. No further information about the contents of the dump site is available; however, it is under consideration by the City of Mountain Iron for reuse as a portion of an industrial park development.

The other two dump sites identified in the database are the Parkville Dump and the Park Ridge Road Landfill, both mapped close together at the eastern end of the proposed alignment. This area is reported to have been redeveloped between 2006 and 2009; Rock Ridge Drive and associated building developments now exist in the area. The database indicates the Parkville Dump is classified as an unpermitted dump. "Unpermitted dumps" are usually old farm or municipal disposal sites that accepted household waste. Many of

these dumps predate the existence of the MPCA. Additional information is not provided for the Parkville Dump.

The City of Mountain Iron entered the Park Ridge Road Landfill into the Voluntary Investigation and Cleanup (VIC) program March 30, 2009. A work plan was approved by the MPCA February 1, 2011. A Phase II investigation was completed in June of 2011. Two Phase II approval letters have been issued by the MPCA, one in January of 2012 and one in May of 2012. Information from MPCA staff indicates the approximate extent of the dump has been determined and lead contamination has been documented in the soil. Contamination in ground water is unknown; depth to ground water is at least 70 feet below grade. Remediation of the site has not begun. City of Mountain Iron representatives have been notified by the MPCA that the anticipated CSAH 102 alignment (and potential right of way acquisitions) may disturb a portion of the dump property; St. Louis County has also been notified. MPCA recommended that a construction contingency plan be submitted for MPCA review and approval prior to the planned roadwork activities.

The CSAH 102 relocation corridor will avoid historical dump sites to the extent possible.

If contamination is encountered during proposed project activities, the activities would cease, proper notifications would be made (State Duty officer), and appropriate response measures would be implemented. The MDNR Permit to Mine requires reclamation of the mine site, including reclamation of previously contaminated areas.

c. Fish, Wildlife, Ecologically Sensitive Resources and Habitat

This topic is addressed in EAW Items 10, 11, 12, and 29.

Mine Extension:

Rare Resources

The project area is within the distributional ranges of Canada lynx (*Lynx canadensis* – federal status, Threatened; state status, unlisted), the gray wolf (*Canis lupus* – federal status, delisted Threatened; state status, Special Concern), and the breeding range of the bald eagle (*Haliaeetus leucocephalus* – federal status, delisted Threatened; state status, Special Concern).

Several state-listed botanical species (particularly *Botrychium* spp.) have been found in northern Minnesota in association with historic mine stockpiles. A review of the MDNR Natural Heritage Information System (NHIS) database identified three species of *Botrychium* and one colonial waterbird nesting area within one mile of the proposed mine extension limits. None of these species are federally-listed.

Because suitable habitat for *Botrychium* spp. is present within the mine extension area, a botanical survey for these rare plant species was conducted in 2011, which covered the proposed extension, CSAH 102 relocation, and mine access road (Barr, 2011). The field survey did not identify any *Botrychium* spp. in the project area. Concurrence of the field survey results was received from the MDNR Division of Ecological and Water Resources

on February 6, 2012. The proposed project would avoid impact to the colonial waterbird nesting area. Potential impacts to rare resources will be limited in extent.

Habitat

Wildlife habitat in the project area includes a mixture of wetlands and uplands. Wooded habitat predominates with 227.0 acres of the total 483-acre extension being upland wooded habitat. The wetlands are also dominated by wooded habitat, with 39.4 acres out of the 66.2 wetland acres classified as hardwood swamps, typically black ash swamps. In total, the wooded portion covers more than 55% of the extension area, most of which is second-growth forest composed of aspen and birch. Grassland areas are also common, but most of these areas were previously landscaped yards that are no longer maintained, or areas that have recently been cleared of trees. The grassland habitat is typically old field and pioneer species, not native grassland or prairie. Much of the habitat is fragmented by existing haul roads, CSAH 102, and older mine features, such as the inactive Pilot, Hanna, and Atkins Pits. Wildlife typically associated with this habitat includes white-tailed deer, black bear, ruffed grouse, small mammals, and migratory songbirds.

Habitat in the project area includes resources that provide food for wildlife. Some of these resources, such as wild rice, are also important culturally to Native American populations. Wild rice has been documented downstream of the Minntac tailings basin in the Sandy River watershed. The shallow surface water seepage to this watershed has been discontinued and Minntac is required under a USACE permit to develop a wild rice restoration opportunities plan for the area. The company has also been required to conduct a survey of wild rice downstream of the mine pits. This information will be used by the MPCA for determining permit conditions as part of NPDES permit reissuance.

The project area is adjacent to the active Minntac Mine. Typical mining activities conducted include operation of excavators, mining trucks, and weekly blasting of material. Wildlife species accustomed to human disturbances and activities such as that in the adjacent mine area may use the existing habitat within the extension area. However, though habitat within the extension area may be present for these faunal species, their abundance and frequency may be limited due to habitat fragmentation and the type of adjacent human activities within the active mine.

The Proposed Action would result in the conversion of 483.2 acres of land to open mine. The land proposed for conversion, includes 303.3 acres of vegetated land, 65.8 acres of wetland, 94.4 acres of impervious surfaces, and 19.7 acres of open water. Wildlife species using the habitat in the 483-acre extension area would be displaced as mining advances.

Potential impacts to wetland resources are regulated by ongoing public regulatory authority by MDNR's Permit to Mine, as well as the USACE's Section 404 permit and MPCA's Section 401 Water Quality Certification.

A wildlife corridor is identified west of Minntac's West Pit. Extension of the pit southward is not expected to affect the quality of the corridor.

Streams

Several perennial and intermittent stream segments are mapped within the mine extension area (shown on EAW Figure 6). However, based on a field visit by USACE staff, the stream segments mapped within the West Pit extension area would not be classified as stream and would likely have limited value as stream habitat, though they may have value as wetland habitat. The East Pit extension would impact 4,002 feet of a stream known as Parkville Creek. Parkville Creek flows into the West Two River Reservoir, and is a major tributary.

Loss of habitat in the tributaries can impact the resident fish but also can negatively impact downstream fisheries. Northern pike and white sucker populations may be impacted as they likely move between the West Two Rivers Reservoir and the tributaries, particularly for spawning. Fish movement, i.e., immigration into the reservoir, is prevented by the reservoir dam so the upstream habitat is especially important for maintaining the population of these two species and others.

Stream habitat impacts will occur due to excavation of the extension area for mining activities. Avoidance is not feasible because of the location of the ore. In addition to the direct loss of stream habitat, impacts to downstream water bodies (including downstream public waters) will also occur as the natural hydrology of the area is changed. The following acreages of stream-contributing watershed will be altered by the proposed mine extension: 82 acres of the McQuade (aka Kinney) Creek watershed; 127 acres of the Kinross Creek watershed; 56 acres of the West Branch of West Two River watershed; and 205 acres of the Parkville Creek watershed.

Extension of the mine pits could result in an overall incremental increase in dewatering rates (up to 5%) as the surface area of the mine increases, thereby increasing surface water flow in receiving surface water systems (e.g., Parkville Creek, Kinney Creek). However, the incremental flow increases would be lost within the normal fluctuation in discharge as pumping rates are varied to match local meteorological events and runoff. Increased dewatering rates are not expected to be sufficient to alter in-stream habitat or the composition of a small stream fishery that may be present. Also see FOF 13d.

While mine pit dewatering discharge will replace some of the natural flow that is lost, downstream water bodies may also be impacted by the "cone of depression" that results from pumping, particularly groundwater-fed streams and water bodies. These changes could impact fisheries in the streams to be removed as well as in downstream waters.

Potential impacts to stream resources are regulated by ongoing public regulatory authority by MDNR's Permit to Mine and water appropriation permit, as well as the USACE's Section 404 permit and MPCA's Section 401 Water Quality Certification.

***New Mine Access Road*:** Wildlife habitat and use along the proposed roadway corridor is similar to that in the mine extension area. The proposed new mine access road would not include any stream crossings, but would include construction of a land bridge across the Wacootah Pit. The Wacootah Pit has no public boating access and is not a managed fishery. Fish and other aquatic organisms may be present in the ore pits and may be

impacted by the proposed project.

County State Aid Highway 102 Relocation – Connected Action: The proposed relocation of CSAH 102 would affect similar habitat as the proposed mine extension.

The proposed relocation of CSAH 102 would cross Parkville Creek approximately midway along the alignment between CSAH 109 and existing CSAH 102. The roadway crossing would accommodate the stream with a culvert or other appropriate conveyance.

The existing culvert is a four foot diameter concrete culvert, 62 feet in length. Though Parkville Creek still receives some flow from its remaining watershed, flow through the culvert is primarily from mine dewatering discharge equivalent to the volume discharged from the Prindle Sump through permitted outfall SD004. Minntac reports that over the past 10 years, the flow has varied from 0-8.2 MGD (5,694 gpm), with an average flow equal to 3.6 MGD (2,530 gpm). It appears the existing culvert placement may be at an elevation that is higher than ideal – water must rise two to three feet before it will flow through the culvert. MDNR would not recommend the culvert be replaced at the same elevation. Typically culverts of this size would be buried 1 to 1.5 feet. MDNR recommends that the new culvert be designed and placed following St. Louis County Public Works General Permit 1996-2091 conditions for proper sizing and placement. As is currently planned, the culvert should accommodate wildlife passage beneath the road surface.

The crossing of Parkville Creek by CSAH 102 is subject to ongoing public regulatory authority by MDNR's Work in Public Waters permit, as well as the USACE's Section 404 permit and MPCA's Section 401 Water Quality Certification.

d. Physical Impacts on Water Resources – Streams and Wetlands

This topic is addressed in EAW Items 10, 11, 12, and 29.

No public waters or waterways exist within the extension area. Public waters and watercourses in the vicinity of the project include: Yates Lake (69-780), Kinney Lake (69-781), Kinney Creek, West Two River Reservoir (69-994), Parkville Creek, McQuade Creek and unnamed waters. Non-public waters such as drainage ditches and multiple mine pits are also present in the vicinity and/or the extension area.

The relocation of CSAH 102 will require the crossing of Parkville Creek, which is a public watercourse in the area of the crossing. McQuade Creek is also a public watercourse located near the West Pit Extension.

The proposed mine extension south of the East Pit would necessitate the relocation of the outfall (SD004) for the Prindle Sump. Water from the Prindle Sump would ultimately flow to Parkville Creek, as under current conditions, and no changes are proposed to the permitted flow rate through the outfall SD004 though the project will extend the time period through 2031.

The proposed extension project is located within the St. Louis River watershed, with the active mining operations located within the Mountain Iron Mine minor watershed (HUC 040102010501). The East Pit Extension, the mine access and the CSAH 102 relocation are also located within this minor watershed. The West Pit Extension is located within the Kinney Lake (HUC 040102010503) and West Two River (HUC 040102010502) minor watersheds. These watersheds flow away from the existing mine, and into the St. Louis River approximately 15 miles south of the Minntac Mine.

Tailings from processed ore will be deposited in the existing tailings basin that is located within the Little Fork River watershed (major watershed No. 76), which drains north to the Rainy River. The area immediately northeast of the mine and tailings basin is within the Vermilion River watershed, which is also part of the Rainy River drainage, but is a separate major watershed (No. 73). Potential environmental effects from tailings are addressed below in Findings of Facts 13h, 13j, and 13s.

Wetland Loss

The EAW identified that 65.8 acres of wetland would be directly impacted by the mine extension. Portions of eight wetlands would be small remnants when the majority of the wetland is removed by mining. These basins would be predicted to be indirectly lost, and are quantified as an additional 5.4 acres of potential impact. In addition, there is the potential that mine pit dewatering could indirectly impact wetlands as the cone of depression from mine dewatering extends further to the south and lowers groundwater levels.

Impacts to wetlands require a permit from the USACE under Section 404 of the Clean Water Act and from the MDNR under the requirements of the Wetland Conservation Act (WCA) administered through the MDNR Permit to Mine. The Section 404 Clean Water Act permit also includes Section 401 Clean Water Act Water Quality Certification, which is authorized by the MPCA. The project is subject to a 1.5:1 replacement under WCA. Under this rule, a minimum of 98.7 acres of wetland mitigation credit (to achieve 1.5:1 replacement) would be required to compensate for direct wetland impacts. An additional area of 5.4 acres is anticipated to be needed as compensation for indirect wetland impacts per USACE requirements, but this value must be further defined during permitting. Under USACE requirements, the project is subject to 1:1 replacement.

Indirect impacts to wetlands are difficult to predict; therefore, a typical approach is to monitor for indirect effects and if identified, mitigate accordingly. If they occur, it is likely that indirect effects would be limited to areas near the mine pit extensions.

Indirect impacts associated with the Extension will be addressed by the USACE Section 404 Wetlands Permit for the project. Recent USACE permits issued for other mining projects (Keetac, Northshore) have included a requirement for monitoring for indirect impacts to wetlands and streams. Based on these recent mining permits and the potential for indirect wetland impacts to occur as a result of mine pit expansions, it is highly likely that monitoring for indirect impacts to wetlands and streams would be a special condition in a USACE permit for the Minntac Extension Project (if approved). The DNR is also authorized through the Permit to Mine to require mitigation if adjacent wetlands are

adversely impacted. If it is determined that wetlands adjacent to the Extension area are being detrimentally impacted by the activity, U.S. Steel will be required to provide corrective measures and/or compensatory mitigation as determined by the MDNR and/or USACE at that time.

Mitigation for wetland loss is proposed through use of the new U.S. Steel project-specific wetland replacement site in Aitkin County, Minnesota. Creation of this replacement site (the Palisade site) will be in advance and/or concurrent with the mine extension project. The Aitkin County Palisade site contains approximately 4,400 acres of farmed and/or drained wetland that would qualify for wetland restoration to achieve the required compensatory mitigation for the mine extension project, and future projects, if any, at U.S. Steel's Minnesota Ore Operations facilities.

The Palisade mitigation bank site (as a whole) was approved by the MDNR on January 6, 2012 through the Permit to Mine's WCA compliance procedures. Prior to impacting any wetlands due to the extension project, U.S. Steel will have to submit a wetland impact and replacement plan application to MDNR for approval identifying how the company proposes to apply wetland credits available at their project-specific wetland bank site (Palisade III site in Aitkin County) to mitigate for proposed wetland impacts at the mine site. The company will also need to obtain approval from the USACE for its proposed mitigation using wetland bank credits for wetland impacts regulated by the USACE.

Stream Loss and Watershed Alteration

Stream impacts (non-public water) will occur due to excavation of the extension area for mining activities. Avoidance is not feasible because of the location of the ore. In order to better understand the effects of mining on streams in the project area, MDNR requested U.S. Steel to quantify previous and proposed impacts to streams and their contributing watershed areas. According to a memorandum prepared for U.S. Steel by Liesch Associates, Inc., July 3, 2012 (EAW Attachment A), past mining activities have previously removed 17,983 linear feet (3.4 miles) of stream within the West Pit, and 25,811 linear feet (4.9 miles) within the East Pit, based on the publically-available MDNR 24k stream coverage (1:24,000 scale). The proposed Extension Project would remove an additional 4,002 linear feet within the East Pit. East Pit stream impacts from the Extension Project will be to Parkville Creek and its tributaries. Parkville Creek will also be impacted by the relocation of CSAH 102, as discussed below in that section.

In addition to the direct loss of stream habitat, impacts to downstream water bodies (including downstream public waters) will also occur as the natural hydrology of the area is changed. Contributing watershed areas are altered due to mining activity, directly affecting runoff from precipitation and resultant streamflow. The Liesch report that was prepared for the EAW calculated stream and watershed area impacts up to the southern boundary of mining, including the proposed extension limits. Thus, it does not calculate percentage of entire stream channel or entire watershed area for a given stream. According to information presented in the Liesch memorandum, 90% (6,802 acres) of the total contributing subwatershed in the West Pit area has been impacted by past mining, with an additional 476 acres to be impacted under the current Permit to Mine. Consequently, past and currently permitted mining in the West Pit results in a

reduction of natural mean annual streamflow to McQuade (Kinney) Creek, Kinross Creek and the West and East Branches of West Two River by 7.97 cubic feet per second (3,577 gallons per minute).

In the East Pit area, 93% (2,774 acres) of the total contributing subwatershed has been impacted. Past mining in the East Pit has resulted in a reduction of natural mean annual streamflow to Parkville Creek by 3.03 cubic feet per second (1,360 gallons per minute) and East Two River by 0.36 cubic feet per second (161 gallons per minute).

The proposed Extension Project would impact an additional 265 acres in the West Pit (82 acres of McQuade/Kinney Creek watershed, 127 acres of Kinross Creek watershed, and 56 acres of the West Branch of West Two River watershed) and 205 acres in the East Pit (Parkville Creek watershed). This is estimated to result in an additional reduction of natural mean annual flow of 0.29 cubic feet per second (130 gallons per minute) and 0.22 cubic feet per second (99 gallons per minute), respectively, due to loss of contributing subwatershed area.

As an example, for Kinney Creek in particular, the alteration of 82 acres of watershed results in a reduction in flow of 0.9 cfs (40 gpm), translating to an impact immediately downstream of a 0.7% reduction of inflow into McQuade Lake, which has an estimated mean annual inflow of 12.3 cfs (5534 gpm). A loss of 40 gpm would be indiscernible in stream flow monitoring at that point in the watershed.

Past, present and proposed stream and watershed impacts were presented in EAW Tables 12-3 and 12-4.

While mine pit dewatering discharge will replace some of the natural flow that is lost, dewatering flows do not mimic the natural hydrologic processes, chemically or physically (including high flows and low flows), that occurred prior to mining. In addition, downstream water bodies may also be impacted by the "cone of depression" that results from pumping, particularly groundwater-fed streams and water bodies. Specifically with regard to Parkville Creek, the flow through this stream is primarily from the dewatering of Minntac's East Pit through the Prindle Sump, though it still receives some flow from its remaining watershed. Excavation in the mine extension area will remove a section of Parkville Creek and require that the location of the Prindle Sump discharge point be moved southward, further downstream on Parkville Creek. The sump will continue to discharge to the creek, as its discharge point is moved further south as mining activity proceeds. McQuade (Kinney) Creek will also continue to receive augmentation flows from West Pit mine dewatering.

Minntac's Water Appropriation Permit requires baseflow augmentation of 1,000 gpm to Kinney Creek due to watershed alteration from the prior extension in 1996. The Permit to Mine Reclamation Plan includes an aquatic enhancement "littoral zone" in-pit stockpiling plan that was prepared in accordance with conceptual plans developed by the MDNR Division of Waters (Minntac In-pit Stockpile Scenarios MDNR 3-25-10). This is part of the required mitigation for the post 1996 impacts to Kinney Creek and is included in the financial assurance.

As part of the Permit to Mine amendment for the currently proposed Minntac Mine Extension, the MDNR will consider requiring a similar aquatic enhancement plan that develops littoral zone reclamation in the East Pit to mitigate effects to Parkville Creek.

As stated in the EAW, mitigation for stream impacts will be required by the USACE. Although a specific site has not been selected yet, specific mitigation requirements that may be applied are known and would be required by the USACE to be implemented if the project were to be approved. If the company proposes to impact the stream before mitigation work would be completed, the USACE has indicated they would likely require a financial assurance or an increase in the mitigation ratio, or both. Based on previous stream mitigation projects, a minimum 5-year monitoring period post-construction would be anticipated.

The regulatory agencies involved have indicated they will all be following the USACE guidance on stream mitigation requirements and ratios. This is based on stream mitigation guidance from other Corps Districts, the 2008 Final Mitigation Rule and the St. Paul District Compensatory Mitigation Guidance. The compensatory mitigation ratio is first based on the quality of Parkville Creek. The ratios are as follows: Poor to Fair (1:1), Good (2:1) and Excellent (3:1). Based on a comprehensive stream assessment of Parkville Creek, the compensatory mitigation ratio would fall between 1:1 and 3:1, resulting in stream mitigation consisting of the restoration or enhancement of approximately 4,000 to 12,000 linear feet of a stream with a similar flow regime and watershed size as Parkville Creek. Stream quality data was collected in September to assess the biological diversity, water quality and morphology of Parkville Creek. The result of this survey will determine the compensatory mitigation ratio.

Mine Pits

Deep, open water areas within the mine extension include 19.7 acres over three abandoned natural ore pits. The abandoned pits will be dewatered through existing NPDES/SDS outfalls before the pits are breached by stripping or other activities. U.S. Steel will obtain approval from the DNR and MPCA prior to any dewatering activities. Impacts to these deep, open water areas may require additional permitting depending on the jurisdictional extent of the USACE under the Clean Water Act and the MPCA under Minnesota Rules 7050. Following a jurisdictional determination, U.S. Steel will address appropriate requirements related to mitigation during permitting.

Expected East Pit outflow is at approximately 853 elevation (602 Lake Superior datum). The eventual discharge from the East Pit would be to Parkville Creek, which would be in accordance with MR 6130.2200 – returning post-mining flows to the original watershed. Expected West Pit outflow is at approximately 886 (referenced to a Lake Superior datum elevation of 602), based on the current proposed extension pit limits; the runout would be to the West Branch of West Two Rivers. As discussed in EAW Item 11, a future littoral zone in the West Pit is designed to accommodate a range of elevations (848 to 888) and is part of the required mitigation for the post 1996 impacts to Kinney Creek. Upon mine closure, it is likely that Kinney Creek will receive little flow, only that ensuing from the watershed area remaining after mining ceases.

On-going pit reclamation, as described in the annual Operating Plan submitted on January 31, 2012 will continue to address future pit reclamation activities. The mine closure plan will be submitted to the MDNR for approval two years prior to deactivation of the Minntac Mine and will provide specific details on the closure of the mine, including the tailings basin. When pit limits are reached, the associated surface banks will be reclaimed in accordance with Chapter 6130 DNR Mineland Reclamation standards. Runoff from the mine will be managed to comply with the conditions in Minnesota Rules 6130.2200. Once mining is completed and pit dewatering has ceased, inactive reclaimed mine pits will fill with water. During this time, stream flow augmentation will likely be required in order to maintain the health of the stream systems. After the mine pits have filled and reached the point at which they naturally overflow, stream augmentation would no longer be required and the systems would revert to a natural cycle dependent on precipitation, snowmelt, and other climatic events.

New Mine Access Road: The proposed Mine Access Road corridor contains wetlands that were previously delineated but the delineation has been updated during the summer of 2011 to ensure that all areas of the proposed alignment have been reviewed (NTS, 2011). Based on a 200-foot corridor along the proposed centerline of the mine access road, a total of 0.9 acres of wetland would be impacted.

These impacts would be permitted in association with the mine extension and mitigation, at an anticipated replacement ratio of 1.5:1. Mitigation is proposed through using U.S. Steel's private project-specific wetland bank (Palisade) that is currently under development in Aitkin County, Minnesota. It is anticipated that credits established within this private wetland bank would be used for project-specific replacement at U.S. Steel's Minnesota Ore Operations facilities (Minntac and Keetac), and the bank would be in advance and/or concurrent with construction of the new mine access road.

The proposed alignment would require the filling of a portion of the Wacootah Pit. The Wacootah Pit is not a wetland or a MDNR Public Water, but may be considered by the USACE to be a Water of the United States if it is determined that it is not isolated and can be connected to a navigable water. Impacts from the proposed pit crossing would be determined as the roadway design is finalized. Any potential compensatory mitigation that may be required therein would be determined during the permitting phase of the project. No impacts to streams or other watercourses are anticipated due to construction of the mine access road.

County State Aid Highway 102 Relocation – Connected Action: Approximately 2.0 acres of wetland will be impacted for the CSAH 102 relocation.

The CSAH 102 relocation will also require the crossing of Parkville Creek, which is a MDNR public watercourse. Approximately 122 linear feet of Parkville Creek lies within the proposed right-of-way of the road relocation. There is currently a culvert crossing (four foot diameter concrete culvert, 62 feet in length) for the creek within the proposed alignment, but a larger crossing (with 60 feet of new impact) will be required to accommodate a roadway design that meets St. Louis County's County State Aid Highway design standards. The new crossing will require a MDNR Public Waters Work

Permit for work in the bed of the public watercourse.

As mentioned in EAW Item 11, it appears the existing culvert placement may be at an elevation that is higher than ideal – water must rise two to three feet before it will flow through the culvert. MDNR would not recommend the culvert be replaced at the same elevation. Typically culverts of this size would be buried 1 to 1.5 feet. MDNR recommends that the new culvert be designed and placed following St. Louis County Public Works General Permit 1996-2091 conditions for proper sizing and placement. As is currently planned, the culvert should accommodate wildlife passage beneath the road surface.

Flow through the culvert is and would continue to be from mine dewatering discharge, equivalent to the volume discharged from the Prindle Sump through permitted outfall SD004. Minntac reports that over the past 10 years, the flow has varied from 0-8.2 MGD (5,694 gpm), with an average flow equal to 3.6 MGD (2,530 gpm).

U.S. Steel will work with the MDNR, USACE, and MPCA regarding the design and placement of the culvert in a manner that minimizes impacts to Parkville Creek. It is anticipated that wetland impacts from the relocated CSAH 102 will be mitigated by purchasing credits from a wetlands bank. Construction in the vicinity of Parkville Creek will be subject to current construction stormwater regulations and will require NPDES permit coverage under the MN General Stormwater Permit for Construction Activity program (MN R100001). U.S. Steel will be required to design and place the culvert in a manner that minimizes impacts to Parkville Creek.

e. Water Use – Wells, Water Quantity, Drinking Water Supply Management Area

This topic is addressed in EAW Item 13.

***Mine Extension Area*:** Three water appropriation permits for the Minntac facility do not contain installations associated with direct discharges to waters of the state (Permit Number 63-0846 for 8,798 MGY, Permit Number 98-2002 for 3 MGY, Permit Number 99-2063 for 100 MGY). These permits respectively are for process make-up water, potable water and fire protection, and miscellaneous mining needs such as haul road fugitive dust control and source water for rotary drills. Additional appropriations beyond what is currently permitted for these uses are not anticipated to be needed with the extension project.

Two additional water appropriations permits allow for mine pit dewatering from the Minntac West Pit (Permit Number 80-2084 for a total of 22,000 gpm) and the Minntac East Pit (Permit Number 80-2085 for a total of 21,570 gpm) to receiving waters of the state. Each of these two appropriations permits contains three dewatering installations, only two of which are active in each permit. Permit limits and discharge volumes are provided in the EAW.

No expansion of the processing facility (crusher, concentrator, or pellet plant) is proposed under the project. Additional appropriations for water supply are not anticipated. The rate of production would not increase, so no change would occur to the ongoing use of

process make-up water that is obtained directly from the Mountain Iron Pit (Water Appropriations Permit No. 63-0846) and indirectly from dewatering Sump No. 2 in the Minntac East Pit (Water Appropriations Permit No. 80-2085) and Sump No. 3 in the Minntac West Pit (Water Appropriations Permit No. 80-2084) into the Mountain Iron Pit.

The current average rate of discharge for all dewatering installations in the East and West Mine Pits is 20.5 MGD (14,236 gpm), based on pumping records over the period January 2010 – December 2011. A review of pumping records over the period January 2001 – December 2011 showed that dewatering discharge rates have varied from a minimum of 7.5 MGD (5,200 gpm) to a maximum of 30 MGD (20,830 gpm) for all dewatering installations combined. The area subject to surface water runoff and groundwater inflow is estimated to increase by approximately 5% at the limit of the proposed extension. Therefore, dewatering discharges could potentially increase by an equal amount. Dewatering discharge rates will not increase beyond currently permitted maximums.

Additional appropriation of water would not likely be required for dewatering the extension areas. The potential 5% increase in dewatering is within the existing authorized water appropriation.

A review of the County Well Index (CWI) indicated that thirty one (31) private or municipal water supply wells are located within a ½-mile of the West Pit and twenty six (26) private or municipal water supply wells are located within a ½-mile of the East Pit and proposed roadway relocations. Five of the wells identified in the middle of the West Pit no longer exist. A number of the other wells identified by the CWI have been abandoned and/or sealed, particularly those wells shown in, or directly adjacent to, the Permit to Mine boundary. The status of the other wells identified by the CWI in the vicinity of the project has not been determined, nor have their locations been verified in the field.

With respect to the remainder of the domestic supply wells located within ½ mile of the proposed extension boundary, properties within 3,000 feet of active mining will continue to be evaluated for buyout to allow for a safety buffer during blasting. Those existing wells beyond the 3,000-foot buffer zone may experience some drop in water levels as the cone of depression from mine pit dewatering moves to the south. Though not anticipated, if maintaining adequate water levels in the wells becomes problematic, U.S. Steel will work with the well owners on an appropriate course of action to address the issue. Minnesota Statutes 6115.0730 Well Interference Problems Involving Appropriation provides the regulatory authority for the MDNR to require mitigation for well interference problems through its water appropriations permit.

Information received from the MDH indicates that the proposed southerly extension of mine activities may alter existing groundwater flow pathways and water levels within the Biwabik Iron Formation aquifer. This aquifer is the drinking water supply for the cities of Mountain Iron and Kinney, whose wells and DWSMA's lie in close proximity to the proposed extensions. Given the uncertain nature of groundwater flow within the fractured rock that comprises the iron formation aquifer, it is not possible to predict with certainty what impact if any the proposed extension will have on these water

supplies. Because of this uncertainty, the MDH recommends that Minntac work with the cities of Kinney and Mountain Iron to develop a monitoring and contingency plan prior to the proposed expansion.

Specific commitments made by the proposer are as follows. Upon issuance of all permits related to the proposed mine extension, U.S. Steel will conduct a survey of all wells contained in the CWI and within 1/2 mile of the new Permit to Mine boundary to determine which are water supply wells versus monitoring wells. Further, of the identified water supply wells, U. S. Steel will identify which are: 1) present and currently being used for private water supply, 2) present but no longer used and not sealed, and 3) no longer in use and sealed. U. S. Steel will contact those individuals with active water supply wells within the 1/2-mile zone and include consideration of their wells within the monitoring and contingency planning program to be implemented for potentially affected municipal supply wells described below.

Similarly, the proposer has made commitments to ensure that drinking water supplies are protected for the cities of Mountain Iron and Kinney. Specifically, U.S. Steel will work with each city to develop monitoring and contingency plans well before mining progresses into the proposed extension areas. U.S. Steel will initiate monthly baseline monitoring of groundwater levels and water chemistry at the municipal wells, in cooperation with the Public Works Departments of the two cities, within 6 months of receipt of all permits related to the proposed extension. U.S. Steel will also work with each of the cities, along with the Minnesota Department of Health, to develop a contingency plan should monitoring indicate that mining of the proposed extension is negatively impacting municipal water supplies.

Water appropriations by Minntac between the Lake Superior watershed and the Rainy are subject to the Great Lakes Compact for out-of-basin water transfers. U.S. Steel Minntac is permitted as part of the baseline which was sent to the Great Lakes Council when the Great Lakes Compact was being developed. Minntac is permitted under Water Appropriations Permit #1963-0846 for 24 MGD of Diversion/Consumptive Uses for process water make-up. The company was allotted this annual appropriation volume that was "grandfathered in" as part of the baseline volumes considered when the Compact was developed. The largest appropriation to date under this authorization has been 10 MGD. The proposed extension project will have no effect on the Great Lakes Compact as Minntac's current and projected water appropriations are expected to remain well below that grandfathered volume.

***New Mine Access Road*:** The mine access road would not involve installation or abandonment of any water wells, or connection to or changes in any public water supply. The construction may require temporary appropriation of ground or surface water for dewatering during construction.

Information received from the MDH states that the proposed access road realignment will cross a portion of the Drinking Water Supply Management Area (DWSMA) for the City of Mountain Iron. The Wellhead Protection Plan that was developed to support the delineation of that DWSMA indicates that the Iroquois Mine pit lake, which is situated

immediately to the west of the proposed access road realignment, provides a significant quantity of recharge to city well number 1 (unique well number 150524). The degree of hydraulic connection between the Iroquois Mine pit lake and the Wacootah Mine pit lake, which will be directly impacted by the proposed access road, is unknown at this time. It will be required through the permit to mine to construct and operate the proposed access road in a manner which will safeguard the water quality of the Iroquois Mine pit lake so as not to degrade the City of Mountain Iron drinking water supply.

***County State Aid Highway 102 Relocation – Connected Action*:** The relocation of CSAH 102 will not involve installation or abandonment of any water wells, or connection to or changes in any public water supply. The construction may require temporary appropriation of ground or surface water for dewatering during construction.

f. Water-Related Land Use Management Districts

This topic is addressed in EAW Item 14.

The proposed project would impact approximately 0.25 acres of the 300-ft shoreland zone of McQuade Creek (a.k.a. Kinney Creek) and approximately 0.48 acres of the 1,000-ft shoreland zone surrounding Yates Lake (shown on EAW Figure 6b). These areas will be converted to open pit mining.

Based on pre-design assumptions for CSAH 102 relocation, up to 3.5 acres of shoreland zone surrounding Parkville Creek would be impacted. However, these impact areas may be reduced based on final design. Impacts to shoreland areas from the CSAH 102 relocation are subject to ongoing public regulatory authority by the City of Mountain Iron.

FEMA 100-year floodplains are shown on EAW Figure 6. The southern extension of the East Mine Pit would remove approximately 15.3 acres of 100-year floodplain from the uppermost reaches of Parkville Creek. This would result in a slight reduction in the width of the 100-year floodplain for some distance downstream from the mine extension due to decreased flow in the stream channel. The removal of 15.3 acres of floodplain is offset by removal of a portion of the headwaters area, which results in less contributing area for the downstream 100-year floodplain. The mine pit will act as an equalization basin during extreme precipitation or runoff events, dampening the flood peak. The approximate increase of 5% in mine pit dewatering discharge when the limits of the extension have been reached, is not expected to alter flood levels or floodplains.

g. Erosion and Sedimentation

This topic is addressed in EAW Item 16.

***Mine Extension Area*:** To get at and extract taconite in the proposed extension area, U.S. Steel will need to strip the area of vegetation and surficial glacial material (overburden). This process will extend the contributing area for surface water runoff into the mine pit. Therefore, those areas of activity will have runoff that leads back into the mine pits. Specifically regarding the East Pit, water will continue to be collected in the in Minntac's

Prindle sump and pumped into Parkville Creek. U.S. Steel must comply with their MPCA Storm Water Pollution Prevention Plan (SWPPP) and NPDES permit with respect to Best Management Practices (BMPs) for controlling runoff and meeting water quality standards where mine pit water is discharged to Parkville Creek.

The proposed mine extension would not affect the Minntac facility site and the current storm water management practices or water quality related to storm water runoff. Minntac would continue to manage storm water runoff and compliance in accordance with the facility NPDES/SDS permits, SWPPP, and industrial storm water rules and regulations.

***New Mine Access Road*:** The project area for the proposed mine access road potentially includes a 200-foot corridor along the proposed centerline. The project area has been estimated to be 26.6 acres for the mine access road. The future right-of-way for the mine access road is assumed to be 100 feet. It is unlikely that the entire right-of-way would be disturbed; therefore these impact quantities are conservative estimates. Estimated volumes of graded material will be determined upon completion of the final roadway design. The project would result in some potential for erosion as existing ground cover will be disturbed.

A General Stormwater Permit for Construction Activity (MN R100001) and associated SWPPP would be required for this project. Erosion prevention and sediment control BMPs will be followed in accordance with the NPDES permit, which includes an erosion control plan, as well as BMPs such as those contained in Mn/DOT's standard specifications, details, and special provisions for roadway construction. Temporary and permanent erosion control features may include timely revegetation of disturbed areas, silt fences, fabric blankets, and sediment ponds. Erosion and sediment control measures would be implemented to protect all drainage areas leading to wetlands, lakes, ponds, and streams. Regular inspections are required as part of the permit to ensure that erosion and sediment control measures implemented are maintained and function as intended. Generally, inspections are required every seven days during active construction and within 24 hours of a rainfall event greater than 0.5 inches in a 24-hour period. A follow-up inspection is required within seven days of the event.

A SWPPP would be developed as part of the final design plans of the preferred alternative in accordance with NPDES requirements. The SWPPP would specifically identify which BMPs will be used and what purpose they will serve in minimizing potential short-term and long-term erosion and sedimentation that could adversely affect water quality.

***County State Aid Highway 102 Relocation*:** The project area to be disturbed for the CSAH 102 relocation potentially includes 200-foot corridors along the proposed centerlines. The project area has been estimated to be 42.5 acres for the CSAH 102 relocation. The future right-of-way for CSAH 102 is assumed to be 100 feet. It is unlikely that the entire right-of-way will be disturbed however; therefore these impact quantities are conservative estimates. Estimated volumes of graded material will be determined upon completion of the final roadway design. The project will result in some

potential for erosion as existing ground cover will be disturbed. Slopes associated with the roadway will be consistent with county and state guidelines. Construction of the road will be subject to MPCA's current construction stormwater regulations and will require NPDES permit coverage under the MN General Stormwater Permit for Construction Activity program (MN R100001). Requirements of the permit discussed above for the mine access road would also apply to the CSAH 102 relocation.

Additional measures to address the potential sources of erosion would be addressed as part of ongoing public regulatory authority under the MDNR Permit to Mine (including WCA responsibilities), MDNR Work in Public Waters Permit, U.S. Army Corps of Engineers Section 404 Permit, and MPCA Section 401 Water Quality Certification.

h. Water Quality

This topic is addressed in EAW Items 12, 16, 17, and 30.

***Mine Extension Area*:**

Tailings Basin

The extension will increase the amount of tailings deposited and chemical constituents from these additional tailings have the potential to affect water quality drainage from the tailings basin.

The Minntac tailings basin is located in the Sandy and Dark River watersheds. In the early 1990s, elevated levels of sulfate and hardness were found in the Dark River, which caused the MPCA to consider the Minntac tailings basin as a potential source of the elevated levels. In 2006 Minntac proposed to install a wet scrubber air control system on the one pellet furnace that at that time did not have a scrubber to comply with the new Taconite Maximum Achievable Control Technology (MACT) standard for particulate air emissions from the processing plant. Although designed for particulate removal the scrubber also provides incidental SO2 control. The MPCA had concerns that the contribution from the wet scrubber system would increase sulfate levels in the tailings basin. To address this potential the MPCA amended the NPDES permit in 2007 to allow for construction of a treatment system for the scrubber water and for the discharge of the scrubber water from this treatment system to the tailings basin to prohibit any increase in hardness or mass of sulfate from the scrubber system. Data collected between 2006 and 2012 indicated an increase in total pounds of hardness and sulfate had been added to the tailings basin as a result of the installation of the wet scrubber system.

The MPCA is addressing noncompliance at the tailings basin through the June 2011 SOC. The SOC is a tool used as a bridge to move toward compliance so permitting can take place. The information collected through the SOC will be used to develop limit requirements for a reissued permit in the future.

There are challenges to addressing water quality issues at the tailings basin that are a result of many factors including; 1) the high concentration of pollutants in the water in the tailings basin, a result of the facility's process, 2) a tailings basin that originated prior to environmental regulation, that was designed to drain, not contain the water, 3) the

number of surface and subsurface seeps, and 4) the large size of the tailings basin. Due to these characteristics there is not often an exact formula or immediately known solution to resolve these legacy compliance issues. To ensure the greatest likelihood of success, possible solutions must be evaluated and trialed by the Company under the MPCA's NPDES/SDS authority.

The Company has been under several enforcement actions (SOCs) with the MPCA to address elevated levels of hardness and sulfate in the tailings basin. In 2010 U.S. Steel installed a Seep Collection and Return (SC&R) system on the Sand River side (east side) of the tailings basin. This project collects the surface and shallow subsurface seepage and returns it to the basin. Monitoring results from the Twin Lakes (Sandy Lake and Little Sandy Lake) indicate that sulfate levels have decreased since startup of the SC&R. A SC&R system for the west side of the tailings basin is required to be constructed to eliminate seepage discharges to the Dark River system.

U.S. Steel is currently operating under this SOC to address seepage discharge from its tailings basin and source reduction of sulfate through the installation of dry air pollution controls and an alternate water source lower in sulfate for its make-up water system.

Monitoring wells have been installed and the company is in the process of developing a groundwater model as required by the SOC to address the tailings basin's effect on groundwater quality. The results of the groundwater modeling will be used in permitting efforts to develop a target concentration in the tailings basin necessary to meet ground water standards at the property boundary. A recent amendment to the SOC requires the company to submit a Groundwater Sulfate Reduction Plan by July 12, 2013 to address exceedances of the ground water standard for sulfate at the property boundary.

The MPCA and EPA have recently entered into an agreement developed to facilitate timely NPDES permitting actions for metallic mining projects in Minnesota to address outstanding environmental issues, eliminate permit backlog, and issue permit decisions. Reissuance of the Minntac Tailings Basin permit is a top priority under this agreement.

The extension will increase the amount of tailings in the basin and increase the number of years of process water within the basin due to extension of the life of the mine. These additions will not necessarily result in increased discharges to the Sandy River. Ongoing public regulatory authority from MPCA's NPDES program and MDNR's permit to mine will monitor discharges from the tailings basin to determine the success of proposed measures and to implement additional measures if needed. Potential mitigation measures that can address the issue include covering the tailing basin dike, alternate water management, passive water treatment, and active water treatment. The Groundwater Sulfate Reduction Plan required as part of the SOC Amendment will evaluate treatment technologies; the results of these evaluations will inform the MDNR Permit to Mine and NPDES reissuance.

These mitigation measures will also address any additional constituents introduced into the Minntac tailings basin and recirculating process water system by tailings generated from the extension areas.

Several studies have been or are being conducted that will assist in anticipating and controlling sulfate in the tailings basin. Specifically a mass balance of water and sulfate in the tailings basins at Minntac and Keetac is being completed (MWRAP Study 1). Other studies include Mineralogy, Spatial Distribution, and Isotope Geochemistry of Sulfide Minerals in the Biwabik Iron Formation and Carbon and Iron Additions to Stimulate In-Pit Sulfate Reduction and Removal. The results of those studies and site specific work being conducted through the SOC will be used to inform the Permit to Mine process. The Permit to Mine amendment that the Minntac extension project requires will be noticed to the public and will contain a condition describing the relationship to any water quality mitigation measures identified at that time. The Permit to Mine can be opened for amendment at any time if a water quality issue is identified, such as through exceedance of an NPDES permit effluent limit. When MPCA re-issues the NPDES permit, if new water quality standards are applied, then DNR will open the permit to mine and amend it if a change in the closure plan is needed in order to protect the affected resource.

The potential cumulative effect to water quality from the tailings basin is addressed below in FOF 13s.

Mine Pits

There will be an estimated 5% increase in pit area subject to surface runoff and groundwater inflow as a result of the proposed mine extension. The increase in pit volume is expected to result in a small incremental increase in surface runoff and groundwater capture. However, in terms of surface water flow in the affected watersheds, these incremental increases will be negligible in comparison to the natural inputs that the watersheds will receive from seasonal and long-term climatic variations in precipitation.

The volume of dewatering is expected to increase slightly as the pit expansions increase the catchment area and the mine pits deepen. However, dewatering discharge rates are expected to remain within currently permitted maximum volumes.

In-pit disposal of mine waste materials (in-pit stockpiling) will continue to be maximized in order to limit the overall mining area footprint. Increased in-pit disposal may result in runoff and mine sump dewatering discharges with elevated concentrations of certain dissolved constituents (e.g., sulfate, hardness, alkalinity, chloride), resulting in increases in these constituents in downstream receiving waters, with concentrations decreasing with distance from the point of discharge. Levels of these constituents in mine pit dewatering discharges are subject to ongoing public regulatory authority by MPCA's NPDES/SDS permit.

The Permit to Mine Amendment required for the project will describe surface water flow from the mining areas and waste rock stockpile drainage flow directions, storm water flow associated with the mine extension, and dewatering activities.

The Permit to Mine can be opened for amendment at any time if a water quality issue is identified, such as through exceedance of an NPDES permit effluent limit. When MPCA re-issues the NPDES permit, if new water quality standards are applied, then DNR will

open the permit to mine and amend it if a change in the closure plan is needed in order to protect the affected resource. Examples of specific mitigation measures that could be included as permit conditions/modifications in an amendment to address water quality issues related to the mine pits could include requirements to: cover stockpiles; implement different water management techniques; enhance/encourage sulfate reduction (such as by additions of iron and carbon); dispose of waste rock subaqueously; utilize alternate discharge locations; implement passive treatment (such as with wetlands or floating bogs); and/or implement active water treatment.

The ferrous mining rules authorize MDNR to require water quality controls on a facility with water quality problems under the Permit to Mine, specifically under Minnesota Rule 6130.2100 Stockpile Design and Construction Standards.

The 2010 Impaired Waters List was reviewed for impaired waters in and downstream of the project area. Two receiving waters downstream of the proposed mine extension have been listed as impaired - the St. Louis River and the West Two River Reservoir. The West Two River Reservoir was listed as impaired for fish tissue mercury in 1998 and is shown in the 2006 Impaired Waters List, but is not listed in the 2008 or 2010 Impaired Waters lists. The only discharges from the proposed mine extension that enter the West Two River Reservoir are associated with SD004 (Prindle Sump discharges). Mercury discharges from SD004 have been monitored on a quarterly basis over the past several years, as per requirements of NPDES/SDS Permit MN0052493. Mercury concentrations in the SD004 discharges are typically just over the 0.5 ng/L detection limit for low-level mercury analysis by EPA Method 1631. As such, mercury inputs to the West Two River Reservoir are considered minimal.

The St. Louis River is listed on both the 2010 list and draft 2012 list as impaired for several designated uses – aquatic consumption, aquatic life, and aquatic recreation. Pollutants/stressors include mercury in fish tissue, mercury in the water column, DDT, dieldrin, PCB in fish tissue, PCB in the water column, dioxin, toxaphene, and fecal coliform. Pollutant sources include contaminated sediments, abandoned hazardous waste sites, poorly designed or leaky landfills, airborne deposition, industrial discharges, chemical spills, improperly sewered wastes, and surface runoff. The potential contribution from the proposed Minntac extension is not anticipated to exacerbate these impairment conditions.

***New Mine Access Road*:** A storm water management system for the mine access road would be designed to meet the requirements of the NPDES General Storm Water Permit for Construction Activity to be obtained from the MPCA and any other local requirements. Since the project would result in an increase in impervious area, storm water runoff calculations would be estimated and the increased storm water impacts will be evaluated when the proposed roadways are designed. Management of surface water runoff for the roadway realignment would be described for construction and post-construction timeframes.

The new mine access road is proposed over the existing haul road between the Wacootah and Iroquois Pits. The mine access road is not expected to have adverse effects on surface

water discharge rates or volumes within the existing subwatersheds. It is expected that surface water runoff from the mine access road will continue to shed off the roadway as it does currently from the haul road. See Finding of Fact 13a for discussion on potential effects to Wacootah Pit from road construction.

The General Storm Water Permit and accompanying SWPPP required for the project will define the appropriate surface runoff management for the NPDES permit, including BMPs for controlling and/or treatment of the runoff discharge. Dewatering during construction may be required depending on the design of the roadway. Water would be discharged through vegetated swales and/or ditches, and would be managed to ensure that water quality and water volume requirements are achieved. These requirements would offset the effects from the additional impervious surface created and the potential loss of infiltration. Roadway design is anticipated to be rural, and therefore lack curb and gutter and storm water collection infrastructure.

The roadway design is currently in progress, and will account for the appropriate management and treatment of surface water runoff as required. Treatment of runoff will likely be accomplished through the use of adjacent roadside ditches and vegetated swales to promote infiltration of runoff and removal of sediment and nutrients prior to discharge into a receiving water. This data will be available upon final design of the new mine access road and described in more detail in the appropriate state and federal permit applications for the project.

***County State Aid Highway 102 Relocation – Connected Action*:** The CSAH 102 relocation is not expected to have adverse effects on surface water discharge rates or volumes within the existing subwatersheds. Surface water runoff from the CSAH 102 relocation corridor will be collected and discharged through ponds, vegetated swales, and/or ditches, but would be managed to ensure that water quality and water volume requirements are achieved. The General Storm Water Permit and accompanying SWPPP required for the project will define the appropriate surface runoff management for the NPDES permit. These requirements would offset the effects from the additional impervious surface created, and the potential loss of infiltration. The roadway design is currently in progress, and will account for the appropriate management and treatment of surface water runoff as required.

The mine extension project, mine access road, and CSAH 102 relocation are subject to ongoing public regulatory authority under the MPCA NPDES/SDS permit, the MDNR Water Appropriation Permit, the MDNR Work in Public Waters Permit, U.S. Army Corps of Engineers Section 404 Permit, and MPCA Section 401 Water Quality Certification.

i. Water Quality - Wastewater

This topic is addressed in EAW Item 18. The proposed project is an extension of mining operations and would not change the volume or composition of wastewater generated at the Minntac mine. However, it is acknowledged that the Extension project would lengthen the time period of mining operations and wastewater generated through 2031.

U.S. Steel holds three NPDES/SDS permits for its Minntac operation: MN0052493 authorizes mine pit dewatering discharges from the Mining Area; MN0057207 authorizes seepage discharge from the tailings basin; and MN0050504 authorizes operation and discharge from of treated effluent from Minntac's main domestic wastewater treatment plant (WWTP) to the tailings basin. The NPDES/SDS permits for the main WWTP and tailings basin do not need to be modified for the extension project. Similarly, as long as the discharge remains to the same receiving water currently permitted (as proposed), the NPDES/SDS permit for the mine will not need to be modified to address the relocation of the Prindle Sump and discharge point further to the south as mining progresses southward in the East Pit extension area.

Sanitary facilities at the processing facility buildings generate wastewater of typical municipal composition. Additional sanitary facilities are provided for those locker facilities located in buildings north of both the East and West Pits.

Sanitary waste generated at Minntac's Administration Building is discharged directly into the City of Mountain Iron's municipal sanitary collection system. No change in sanitary waste volume or quality is anticipated from the Minntac Administration Building as a result of the proposed project.

Sanitary wastewater generated at the processing facility buildings is treated and discharged on-site, either to subsurface disposal via drainfields, or to the tailings basin following effluent disinfection. Waste sludge is transported to the City of Mountain Iron Municipal Wastewater Treatment System for disposal. Because there would be no change or increase in sanitary waste generation, no changes would be necessary for the existing wastewater treatment methods or pollution prevention efforts related to sanitary wastewater.

j. Geology and Groundwater

This topic is addressed in EAW Item 19. Depth to groundwater is highly variable and influenced by mine pit dewatering activities. Wells in the area show groundwater at 35 feet below ground surface on average, according to source data from the U.S. Geological Survey. Minimum depth to groundwater is 0 feet in some areas, due to groundwater presence at the surface of streambeds and wetlands.

The proposed mine extension will increase the amount of tailings deposited in the tailings basin. This increase has the potential to impact groundwater quality due to deep seepage from the basin. See Finding of Fact 13h for the discussion on potential effects to groundwater from the tailings basin.

There are no known sinkholes, shallow limestone formations, or karst conditions observed on, or adjacent to the site according to the DNR's Karst Features Database.

The Soil Survey for St. Louis County (Web Soil Survey 2.1, National Cooperative Soil Survey, Version 9, November 17, 2008) provides soils information with regards to the project. Soils information for the entire study area was retrieved and reviewed, and shown on EAW Figure 9.

The majority of the soils in the project area are composed of loam or sandy loam, often associated with glacial till. Areas of peat and muck deposits are also present.

Tables 19-1, 19-2, and 19-3 in the EAW identified the mapped soils within the 483-acre mine extension area, the new mine access road corridor, and the CSAH 102 relocation corridor, respectively. The tables also indicated the soils identified as hydric, prime farmland soils, and/or soils of statewide importance. All topsoil and underlying parent material and residuum is stripped and piled together within designated stockpile areas within the active mine. It is not feasible to discriminate between differing soil consociations during land-stripping activities to stockpile these soils in separate stockpiles based on soil classification. Reclamation under the Permit to Mine requires taconite operators to return the land to a state useful for wildlife habitat, recreation, and other public purposes.

k. Solid Wastes and Hazardous Materials

This topic is addressed in EAW Item 20. Minntac mine waste will continue to be managed as indicated under the existing Permit to Mine. The mine waste characterization remains the same as under the original permit. In general terms, mine waste consists of surface overburden, loose material, and waste rock. Waste rock consists of blasted material of sufficient size to be loaded into haul trucks – typically 8 feet square down to minus 50 mesh.

***Mine Extension*:** Minntac is currently licensed as a Small Quantity Generator of hazardous waste. Wastes are managed and disposed of in accordance with this license. No changes to waste production would result from the proposed mine extension, though the time period will be lengthened.

Continuation of mining operations would include the continued transportation and use of blasting agents including ANFO (ammonium nitrate and fuel oil) and emulsion blend explosives. Other materials present would include those associated with mobile equipment including lubricants (greases, hydraulic fluid, oil), fuel oil and gasoline, antifreeze, batteries, and tires. Current operations include preventative measures such as transportation of explosives by vendors in leak-proof trucks, proper maintenance BMPs in fueling and waste disposal. These practices would continue as mining progresses into the extension area.

There are aboveground storage tanks (ASTs) on the Minntac property. Currently at the West Pit, Minntac maintains two diesel fueling sites with ASTs for heavy mobile equipment. At the East Pit, Minntac maintains one diesel fueling site with an AST for heavy mobile equipment. There would be no new above or below ground petroleum product storage facilities within the limits of the proposed mine extension area. All fuels, lubricants and other liquid products to be used would continue to be supplied from existing storage and supply sources within the mining operation. All on-site equipment fueling would continue to be performed using BMPs to avoid and clean up spills.

***New Mine Access Road*:** Construction of the proposed roadway would not generate substantial amounts of solid or hazardous waste. Contractors would be likely to produce small amounts of solid waste during construction that would be hauled offsite and disposed of in accordance with federal, state and local requirements.

During construction, it is anticipated that construction equipment would contain gasoline, diesel fuel, antifreeze, lubricants, and other fluids. If these products are used, they would be disposed of in accordance with local, state, and federal regulations. Fueling of construction machinery and equipment will be completed in areas away from wetlands, water bodies and waterways.

Minntac has Emergency Response Plans and procedures in place through the ISO 14001 management system which would be utilized for this project. The procedures provide instructions for actions to be taken should an incident occur, such as a spill.

***County State Aid Highway 102 Relocation – Connected Action*:** Construction of the proposed roadway is not likely to generate substantial amounts of solid or hazardous waste. It is anticipated that the existing bituminous driving surface from CSAH 102 will not be reused for the relocated CSAH 102 due to the timing of vacating the road. The deconstruction of the existing CSAH 102 is likely to occur after the new road is constructed in order to allow for continuity of the connection between Mountain Iron and Virginia. The contractor responsible for the construction/deconstruction activities may stockpile reuseable materials from the existing CSAH 102 for future use in other roadway projects.

During construction, it is anticipated that construction equipment will contain gasoline, diesel fuel, antifreeze, lubricants, and other fluids. Fueling of construction machinery and equipment will be completed in areas away from wetlands, water bodies and waterways.

l. Traffic

This topic is addressed in EAW item 21. CSAH 102 (also known as Old Highway 169) provides a continuous connection along CSAH 102 between Trunk Highways (TH) 53 and 169 and the communities of Virginia and Mountain Iron. CSAH 102 is a public roadway which provides access to the Minntac mine facility as well as connectivity between TH 53 and 169. The western segment of the roadway provides access to the historic area of Mountain Iron as well as access to the Minntac mine from the west. The proposed mine extension would result in elimination of approximately 1.5 miles of the eastern segment of CSAH 102 and require relocation of the roadway in accordance with Minn. Statute 160.10. Traffic going to the Minntac facility would utilize the new mine entrance road and no longer have the option of going through downtown Mountain Iron. However, the proposed mine extension would not increase the number of personnel at the Minntac operation or result in any net change in daily trips or the time of peak traffic.

A Minntac Entrance Traffic Impact Study was conducted by the St. Louis County Public Works Department in 2009 to assess existing traffic and turning movements at the

Minntac entrance and determine the potential effect of the loss of CSAH 102 access from the east. The study investigated whether Mineral Avenue is physically/structurally capable of carrying the additional traffic generated if a new mine access road was not constructed. The traffic study's conclusion addresses only the physical capacity of the roadway quantified in vehicles per hour, i.e. could the road handle the additional traffic.

The study evaluated two options for rerouting mine traffic: 1) routing traffic on the western segment of CSAH 102 (Mineral Avenue) through Mountain Iron, and 2) using a new mine access road that would bypass the old downtown area of Mountain Iron. Traffic projections were completed for CSAH 102 and the mine entrance road.

There are currently an estimated 2,050 vehicles per day using Mineral Avenue through Mountain Iron. The study shows that the loss of CSAH 102 east of the existing mine entrance would result in an additional 510 eastbound vehicles and 400 westbound vehicles traveling through Mountain Iron each day with a peak during the period between 5:30 a.m. and 7:00 a.m. (the shift change involving the largest number of employees). This would increase the traffic volume on Mineral Avenue by 910 vehicles per day to approximately 2,960 vehicles. This represents an increase of approximately 44 percent, but is less than the estimated 4,000 vehicles per day that would use the roadway if mine employment was at the higher levels of the 1970s.

The study reports that the increase in traffic that would result from routing mine traffic along Mineral Avenue in Mountain Iron would not exceed the capacity of the roadway, would not diminish the level of service from an "A" rating without altering existing traffic control. Therefore, no adverse consequences would be expected.

Construction and use of a private mine access road would accommodate approximately 2,790 mine-related trips and reduce traffic in Mountain Iron from 2,050 vehicles per day to 170 vehicles per day.

m. Air Emissions - Haze, Mercury

This topic is addressed in EAW Items 22 and 23. No new stationary sources of air emissions would result from the proposed project. The proposed project would not be expected to increase any air emissions (including mercury) above the current levels. The MPCA is not permitting U.S. Steel for new or expanding air releases with the mine extension. However, it is acknowledged that the Extension project would extend the time period of mining operations and associated emissions through 2031.

The MPCA's State Implementation Plan (SIP) and U.S. EPA's Federal Implementation Plan (FIP) address the contributions of Minnesota sources to regional haze over scenic areas. Under these plans, Minntac is required to meet emission levels representing Best Available Retrofit Technology (BART) in order to limit its contribution to haze. These emission limits are on SO_2 and NO_X emissions, which contribute to the formation of fine particles. In addition, the SIP requires Minntac (and other taconite facilities) to conduct modeling and, if necessary, propose emission controls, to ensure that they are meeting

new National Ambient Air Quality Standards (NAAQS) for SO_2 and NO_2. The NAAQS are set to protect human health.

As mining activities continue into the extension area, emissions related to the operation of production trucks, loaders, graders, automotive vehicles would continue at their current operational levels into the adjacent extension area. Haul distance and mining equipment usage requirements would be similar to the current operation. Employees would continue to report to work at existing locations and using the new mine access road, resulting in no net increase in personal vehicle emissions. There would be no net effect on air quality as a result of the proposed mine extension project.

In addition, traffic on the realigned CSAH 102 is expected to be the same as that carried on the existing CSAH 102, thus no increase in vehicle-related emissions are anticipated. Traffic could increase as development occurs in the area, but this would be unrelated to the proposed project.

n. Odors, Noise and Dust

This topic is addressed in EAW Item 24.

***Mine Extension*:** The proposed project would generate mining equipment diesel engine exhaust; dust as a result of blasting, materials handling, and equipment movement on unpaved roads; and noise as a result of blasting and heavy mining equipment engine operation. These potential environmental effects (odors, dust, noise) will be the same as current operations. The length of time will increase with the extension through 2031.

Dust: Fugitive dust generated from haul road traffic and other routine mining activities would be minimized by following the procedures outlined in Minntac's Fugitive Emissions Control Plan. This Plan includes control measures such as use of dust suppressants, watering, grading, and covering roadway surfaces with crushed rock. Dust generated from blasting would be controlled by blast technique and taking advantage of optimum weather conditions (*i.e.*, wind).

Noise (Blasting): Blasting is a necessary part of mining; it cannot be eliminated but it can be controlled to what most people agree is acceptable. Bureau of Mines research has found that if blasting is controlled so that structural damage limits are met, most people find the noise and vibrations tolerable. The level of noise from a blast is influenced by many factors including the size and location of the blast, the rock being blasted, the amount of explosives, and meteorological conditions. These factors are so variable that mining company personnel must continually adjust blasting patterns to compensate for the variability.

U.S. Steel completes blasts at its Minntac facility only when the meteorological conditions are conducive. Seismographs and sound level meters are placed in nearby neighborhoods to monitor whether ground vibration and noise levels are held to acceptable levels.

A noise survey was conducted in association with the environmental review conducted

for the previous Minntac mine extension in 1996. At that time, the nearest residence was located 2,500 feet from the perimeter of the extension and the study concluded that noise standards would not be exceeded at that location. The proposed extension of the West Pit would not decrease the distance between mine operations and residential uses (i.e.; bring these land uses closer together). Extension of the East Pit would decrease the distance to the Parkville area. Currently, there are two remaining residences within 1200 feet of the future East Pit Extension pit boundary. The closest residence is approximately 250 feet from the boundary. The second residence is approximately 400 feet from the future boundary. Relocation efforts are on-going with both residences. U.S. Steel continues to purchase residences in the northern portion of Parkville in order to provide a buffer between residences and mining activities. It is expected that that portion of Parkville between 2nd Avenue and Township Road 6811 will be vacated by the time mining begins in the proposed extension area, providing a similar buffer as the one that exists today, to ensure that noise standards will continue to be met.

***New Mine Access Road and CSAH 102 Relocation – Connected Action*:** Odors generated during construction of the roadways are anticipated to be minor. Noise may be generated by equipment during construction. Contractors would be required to follow the local noise ordinances and would follow industry standard for times worked during the day.

Fugitive dust is expected to be generated on-site by heavy equipment during construction. Dust generation would be minimized through BMPs during construction including minimizing the periods and extent of exposed and/or graded areas, watering construction areas as appropriate, and minimizing the use of vehicles on unpaved surfaces. Potential environmental effects from road construction are temporary.

o. Nearby Resources - Historical and Archaeological Resources, Trails

This topic is addressed in EAW Item 25.

Archaeological, Historical or Architectural Resources

The Mountain Iron Mine Historic Site is a water-filled pit of the previous Mountain Iron Mine (and known as the Mountain Iron Pit). It is listed on the National Register of Historic Places (NRHP) and is a National Historic Landmark (NHL). The pit is now used as a reservoir by U.S. Steel. The Mountain Iron Mine Historic Site is also named as an historic place by the State of Minnesota.

The Mountain Iron Landscape Historic District (District) includes ten properties located at the southeast tip of the Mountain Iron Mine water-filled pit. One of the investigations completed in the project area indicated that the District may be eligible for inclusion in the NRHP under Criterion A for its association with early mine exploration and the development of the Mesabi Iron Range. Based on information available at the time, the EAW indicated that "Neither the Mountain Iron Mine Historic Site nor the District will be directly impacted with the mining extension or construction of the proposed roadways. The sites are within the Environmental Settings Boundary for the Minntac Mine but are not within the current or proposed permit to mine limits." Recent information indicates

these statements are not correct. The mine extension of the east pit and the mine access road are proposed within the Mountain Iron Mining Landscape Historic District. Properties within the Mountain Iron Mining Historic District would be directly impacted by the proposed access road and mine expansion. Effects to the Mountain Iron Mining Historic District would likely be adverse.

SHPO has indicated that proposed east pit extension areas near the National Historic Landmark should be evaluated for potential visual effects. Because of the existing mining landscape, those effects may not necessarily be adverse, but will need to be looked at to assure protection of the Landmark.

The USACE is coordinating with SHPO regarding potential effects on historic properties, as required by the federal CWA Section 404 permitting process. This ongoing public regulatory authority will ensure that any adverse effects on historic properties would be resolved before permits could be issued for the project.

Designated Parks, Recreation Areas or Trails

The Mesabi Trail extends from Grand Rapids to Ely and bisects the project area traversing through the City of Mountain Iron and east to the City of Virginia (as shown on EAW Figure 4). The proposed mine access road would cross the Mesabi Trail. Temporary impacts to users of the trail during construction of the road include temporary closure of the trail, dust, and noise. In addition, the trail experience/surroundings in this area will be somewhat different after the road's construction as there will be occasional traffic and associated noise. Other portions of the trail extend through areas with traffic, and the impact to trail users is not anticipated to be substantial. Current plans indicate a below grade box culvert will be used to reroute the trail at the new mine access road crossing, thus trail connectivity through the area will be maintained. The proposed reroute plan has been reviewed and approved by the St. Louis County Regional Rail Authority.

MDNR manages a state snowmobile trail (The Laurentian Trail), which has segments that originate on the west side of the project area in Kinney, and on the east side in Virginia. The trail is entirely outside the extension area, and would not be affected by the proposed project.

Forest Access Routes (FARs) are also located in the project area. FARs are typically open to the public for all terrain vehicle (ATV) use, though they are not maintained for ATV use. There will be a loss of recreational riding opportunity on FARs for the public due to the mine extension and possibly the CSAH 102 reroute. This potential effect will be identified for the U.S. Steel and St. Louis County Public Works for potential mitigation as part of CSAH 102 reroute design.

Scenic Views and Vistas

Located approximately one mile from Mountain Iron Park, the Wacootah Overlook provides a view of the Minntac taconite plant and mine. Due to the proximity to the existing mine entrance, privatization of the proposed mine access road would eliminate public access to the Wacootah Overlook.

p. Visual Impacts

This topic is addressed in EAW Item 26. The proposed project would not increase visual impacts related to lighting, cooling towers, exhaust stacks, or other barriers. Due to the isolated location, large property boundary, fencing, berming, and forested buffers surrounding Minntac, adverse visual impacts have been and will continue to be minimal. Height increases in stockpiles and inner tailings basin cells would continue to be noticeable from certain distant viewpoints. However, future mining activity and roadway closures are scheduled to eliminate the current best publicly accessible views of Minntac such as the northbound Highway 53 Eveleth to Virginia corridor, the Virginia "Mine View in the Sky" overlook, and the Mt. Iron Wacootah overlook.

q. Compatibility with Plans

This topic is addressed in EAW Item 27.

***Mine Extension*:** The City of Mountain Iron has zoned the mine extension area "Mineral Mining District" (MM), the purpose of which is *"to provide areas for active mining use and to protect from urban development those areas which have minerals, timber or other potentially marketable natural resources."* Mining, processing, storage and transportation of taconite and other metallic ores are permitted uses. The proposed project is compatible with the zoning and land use plans for the area.

***New Mine Access Road*:** The new Mine Access Road would serve as an entrance to the Minntac facility to alleviate the need for traffic flow through downtown Mountain Iron.

***County State Aid Highway 102 Relocation – Connected Action*:** Minntac has coordinated with St. Louis County Public Works and the City of Mountain Iron to identify an alignment for CSAH 102 south of the current alignment as shown on Figure 3 of the EAW. This is the preferred alignment for the roadway relocation and will connect CSAH 109 and the existing CSAH 102 (Mineral Avenue) in Mountain Iron. It will reasonably replace the functionality of the existing CSAH 102 and provide local transportation connectivity independent of Trunk Highway 169. Final road alignment is pending wetland permitting.

r. Impact on Infrastructure

This topic is addressed in EAW Item 28. The proposed mine extension would result in elimination of a portion of the eastern segment of CSAH 102 which impacts the public road infrastructure and access to the mining facility from the east. Elimination of this segment of CSAH 102 will also remove the local highway connection between Trunk Highways 53 and 169 and the communities of Mountain Iron and Virginia.

In cooperation with St. Louis County Public Works and the City of Mountain Iron, U.S. Steel has identified an alignment for CSAH 102 south of the current alignment as shown on Figure 3 of the EAW. Reconstruction of CSAH 102 is being designed by a consultant engineering firm retained by U.S. Steel and the plans will be subject to review and approval by the St. Louis County Public Works Department and the Mn/DOT State Aid

Office. The roadway reconstruction project will be permitted, funded, and constructed by U.S. Steel, based on the tentative agreement reached between the company and the County. Upon completion and approval of the reconstructed roadway, the St. Louis County Public Works Department will take over ownership of the new CSAH 102 transportation corridor.

s. Cumulative Effects

This topic is addressed in EAW Items 11, 12, 17, and 29. Cumulative effects are those that result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency or individual undertakes such other actions. The proposed Minntac Mine Extension project may have the following environmental effects that could combine with other projects for cumulative potential effects:

- Land Conversion/Habitat
- Stream Habitat Loss and Watershed Alteration
- Wetland Loss
- Impaired Waters
- Water Quality

Reasonably foreseeable future projects for which a basis of expectation has been laid within the vicinity of the Minntac Extension area include three reclaim and overlay projects on county highways and an industrial park development in Mountain Iron. These projects will not significantly add to the potential cumulative effects identified for the Minntac mine extension project (including the new access road), or the connected action CSAH 102 relocation project. 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 Public Works Department. Because no future potential impacts have been identified, potential cumulative effects are limited to past environmental effects and any effects from the proposed project.

Land Conversion/Habitat

The environmental effects of this change are described in the EAW and Findings of Fact Nos. 13b and 13c. The Minntac mine began operating in 1967 and has undergone several expansions, which now together constitute background or existing conditions to which the current project is compared.

In addressing cumulative effects, the EAW is to assess the incremental contribution of the Minntac Mine Extension project's environmental impacts in conjunction with the impacts of past projects ("existing conditions") and future projects that can be reasonably anticipated. The mine is located on the Mesabi Iron Range, which is approximately three miles wide and extends in a northeasterly direction for approximately 120 miles in northeastern Minnesota. Currently there are six iron mining and processing facilities operating on the range.

The Minntac mine facility has contributed about 20,000 acres to this land conversion. A previous West Pit extension underwent state environmental review in 1996; the Permit to Mine amendment that was issued after this environmental review authorized a mine and stockpile expansion of 950 acres. This previously authorized land conversion in addition to the 483-acre extension currently proposed totals a land conversion of 1433 acres.

The 1996 expansion and current proposed extension together constitute a relatively small portion of this land conversion and this addition will not significantly add to this total.

This land conversion is subject to ongoing public regulatory authority by MDNR mineland reclamation that requires taconite mine operators to return the landscape to a state useful for wildlife habitat, recreation, and other public purposes.

Stream Habitat Loss and Watershed Alteration

The environmental effects of this change are described in the EAW and Findings of Fact No. 13c. Stream habitat loss from past, current and future mining activities has a cumulative effect. The health of a river system is dependent on connectivity and access to diverse habitat is important for game fish populations as well as their prey. The West Two Rivers Reservoir dam is a barrier to fish passage, and since the fish and mussel populations in the reservoir are already disconnected from downstream waters and populations, loss of upstream tributary habitat is important. Approximately 4,002 linear feet of stream would be removed through the proposed Extension Project. Approximately 45,123 linear feet (8.5 miles) of stream has already been removed due to past mining activity.

The environmental effects of this change are described in the EAW and Findings of Fact Nos. 13c and 13d. In addition to the direct loss of stream habitat, cumulative effects to downstream public waters and other water bodies will also occur as the natural hydrology of the area is changed. Contributing watershed areas are altered due to mining activity. The proposed Extension Project will impact 470 acres of watershed contributing area. Approximately 10,052 acres of watershed have already been impacted or will be, due to past or current mining activities.

Wetland Loss

The environmental effects of this change are described in the EAW and Findings of Fact No. 13d. The proposed project would include impacts to 66.7 acres of wetland for the Mine Extension Area and new mine access road. Impacts resulting from the new mine access road are expected to be minimized where possible during the planning and design process. The potential new CSAH 102 relocation corridor could affect up to 2.0 acres of additional wetlands.

The Environmental Assessment prepared in 1976 for the "Step III" Expansion Project does not identify any wetland impacts, but it is likely that wetland loss occurred with the initial development and growth of the mine as well as from the initial mining in the 1950s. The EAW prepared for the previous Minntac mine extension in 1996 reports a loss of 275 acres of wetland habitat from the 1,360-acre extension of the mine pits. A section 404 permit was issued by the USACE for 80.6 acres of wetland impact, the last

portion of the 275 acres described in the 1996 EAW, on December 10, 2012.

The proposed extension of the Minntac mine will result in further wetland loss in the headwaters of the St. Louis River watershed. However, upon cessation of mining, dewatering will cease and the mined pits will flood and become other deep water pits. This will result in a loss of the functions and values provided by shallow marsh, shrub, and forested wetland habitat that are not replaced by open water habitat.

The proposed action will result in 66.7 acres of direct wetland impacts. Previous permits have been granted for 5.1 acres of wetland impact. In addition, it is expected that 5.4 acres of additional wetland area will be lost due to indirect impacts by fragmenting portions of wetlands. Subtracting previously permitted impacts (5.1 acres) and adding potential indirect impacts (5.4 acres), mitigation is expected to be required for up to 67.0 acres of impact. These wetland losses will be replaced at an anticipated ratio of 1.5:1 in advance of or concurrent with the extension. The loss of wetland functions and values was mitigated from the last mine extension and will be mitigated from the proposed extension as well.

Construction of the new CSAH 102 corridor is expected to generate development in the City of Mountain Iron industrial park. The number, size, and location of potential developments along the relocated roadway corridor cannot be quantified at this time. The National Wetlands Inventory identifies wetlands in the area. However, sufficient upland area is available for development without substantial impacts to wetlands.

Impaired Waters

The environmental effects of this change are described in the EAW and Findings of Fact No. 13h. The 2010 Impaired Waters List was reviewed for impaired waters in and downstream of the project area. Two receiving waters downstream of the proposed mine extension have been listed as impaired - the St. Louis River and the West Two River Reservoir. The West Two River Reservoir was listed as impaired for fish tissue mercury in 1998 and is shown in the 2006 Impaired Waters List, but is not listed in the 2008 or 2010 Impaired Waters lists. The only discharges from the proposed mine extension that enter the West Two River Reservoir are associated with SD004 (Prindle Sump discharges). Mercury discharges from SD004 have been monitored on a quarterly basis over the past several years, as per requirements of NPDES/SDS Permit MN0052493. Mercury concentrations in the SD004 discharges are typically just over the 0.5 ng/L detection limit for low-level mercury analysis by EPA Method 1631. As such, mercury inputs to the West Two River Reservoir are considered minimal.

The St. Louis River is listed on both the 2010 list and draft 2012 list as impaired for several designated uses – aquatic consumption, aquatic life, and aquatic recreation. Pollutants/stressors include mercury in fish tissue, mercury in the water column, DDT, dieldrin, PCB in fish tissue, PCB in the water column, dioxin, toxaphene, and fecal coliform. Pollutant sources include contaminated sediments, abandoned hazardous waste sites, poorly designed or leaky landfills, airborne deposition, industrial discharges, chemical spills, improperly sewered wastes, and surface runoff. The potential

contribution from the proposed Minntac extension is not anticipated to exacerbate these impairment conditions.

Water Quality

The environmental effects of this change are described in the EAW and Findings of Fact Nos. 13h and 13j.

The following information pertains to sulfate concentrations in facility-related discharges, which is an existing issue at the Minntac site.

Tailings Basin

The ore to be mined through the proposed extension project is of similar sulfur content as the ore currently being mined and processed at the site. The extension will increase the amount of tailings deposited and chemical constituents from these additional tailings have the potential to affect water quality from the tailings basin.

The Minntac tailings basin is located in the Sandy and Dark River watersheds. In the early 1990s, elevated levels of sulfate and hardness were found in the Dark River, which caused the MPCA to consider the Minntac tailings basin as a potential source of the elevated levels. In 2006 Minntac proposed to install a wet scrubber air control system on the one pellet furnace that at that time did not have a scrubber to comply with the new Taconite Maximum Achievable Control Technology (MACT) standard for particulate air emissions from the processing plant. Although designed for particulate removal the scrubber also provides incidental SO2 control. The MPCA had concerns that the contribution from the wet scrubber system would increase sulfate levels in the tailings basin. To address this potential the MPCA amended the NPDES permit in 2007 to allow for construction of a treatment system for the scrubber water and for the discharge of the scrubber water from this treatment system to the tailings basin to prohibit any increase in hardness or mass of sulfate from the scrubber system. Data collected between 2006 and 2012 indicated an increase in total pounds of hardness and sulfate had been added to the tailings basin as a result of the installation of the wet scrubber system.

The MPCA is addressing noncompliance at the tailings basin through the June 2011 SOC. The SOC is a tool used as a bridge to move toward compliance so permitting can take place. The information collected through the SOC will be used to develop limit requirements for a reissued permit in the future.

There are challenges to addressing water quality issues at the tailings basin that are a result of many factors including; 1) the high concentration of pollutants in the water in the tailings basin, a result of the facility's process, 2) a tailings basin that originated prior to environmental regulation, that was designed to drain, not contain the water, 3) the number of surface and subsurface seeps, and 4) the large size of the tailings basin. Due to these characteristics there is not often an exact formula or immediately known solution to resolve these legacy compliance issues. To ensure the greatest likelihood of success, possible solutions must be evaluated and trialed by the Company under the MPCA's NPDES/SDS authority.

The Company has been under several enforcement actions (SOCs) with the MPCA to address elevated levels of hardness and sulfate in the tailings basin. In 2010 U.S. Steel installed a Seep Collection and Return (SC&R) system on the Sand River side (east side) of the tailings basin. This project collects the surface and shallow subsurface seepage and returns it to the basin. Monitoring results from the Twin Lakes (Sandy Lake and Little Sandy Lake) indicate that sulfate levels have decreased since startup of the SC&R. A SC&R system for the west side of the tailings basin is required for construction after receipt of all permits and regulatory approvals, anticipated at this time in 2014, to eliminate seepage discharges to the Dark River system.

U.S. Steel is currently operating under this SOC to address seepage discharge from its tailings basin and source reduction of sulfate through the installation of dry air pollution controls and an alternate water source lower in sulfate for its make-up water system.

Monitoring wells have been installed and the company is in the process of developing a groundwater model as required by the SOC to address the tailings basin's effect on groundwater quality. The results of the groundwater modeling will be used in permitting efforts to develop a target concentration in the tailings basin necessary to meet ground water standards at the property boundary. A recent amendment to the SOC requires the company to submit a Groundwater Sulfate Reduction Plan by July 12, 2013 to address exceedances of the ground water standard for sulfate at the property boundary.

The MPCA and EPA have recently entered into an agreement developed to facilitate timely NPDES permitting actions for metallic mining projects in Minnesota to address outstanding environmental issues, eliminate permit backlog, and issue permit decisions. Reissuance of the Minntac Tailings Basin permit is a top priority under this agreement.

The extension will increase the amount of tailings in the basin and increase the number of years of process water within the basin due to extension of the life of the mine. These additions will not necessarily result in increased discharges to the Sandy River. Ongoing public regulatory authority from MPCA's NPDES program and MDNR's permit to mine will monitor discharges from the tailings basin to determine the success of proposed measures and to implement additional measures if needed. Potential mitigation measures that can address the issue include covering the tailing basin dike, alternate water management, passive water treatment, and active water treatment. The Groundwater Sulfate Reduction Plan required as part of the SOC Amendment will evaluate treatment technologies; the results of these evaluations will inform the MDNR Permit to Mine and NPDES reissuance.

These mitigation measures will also address any additional constituents introduced into the Minntac tailings basin and recirculating process water system by tailings generated from the extension areas.

Several studies have been or are being conducted that will assist in anticipating and controlling sulfate in the tailings basin. Specifically a mass balance of water and sulfate in the tailings basins at Minntac and Keetac is being completed (MWRAP Study 1). Other studies include Mineralogy, Spatial Distribution, and Isotope Geochemistry of

Sulfide Minerals in the Biwabik Iron Formation and Carbon and Iron Additions to Stimulate In-Pit Sulfate Reduction and Removal. The results of those studies and site specific work being conducted through the SOC may be used to inform the Permit to Mine process.

Mine Pits

There will be an estimated 5% increase in pit area subject to surface runoff and groundwater inflow as a result of the proposed mine extension. The increase in pit volume is expected to result in a small incremental increase in surface runoff and groundwater capture. However, in terms of surface water flow in the affected watersheds, these incremental increases will be negligible in comparison to the natural inputs that the watersheds will receive from seasonal and long-term climatic variations in precipitation.

The volume of dewatering is expected to increase slightly as the pit expansions increase the catchment area and the mine pits deepen. However, dewatering discharge rates are expected to remain within currently permitted maximum volumes.

In-pit disposal of mine waste materials (in-pit stockpiling) will continue to be maximized in order to limit the overall mining area footprint. Increased in-pit disposal may result in runoff and mine sump dewatering discharges with elevated concentrations of certain dissolved constituents (e.g., sulfate, hardness, alkalinity, chloride), resulting in increases in these constituents in downstream receiving waters, with concentrations decreasing with distance from the point of discharge. Levels of these constituents in mine pit dewatering discharges are subject to ongoing public regulatory authority by MPCA's NPDES/SDS permit.

Monitoring of mine pit dewatering waters in the Prindle Sump (SD004) and the #3 Sump (SD001) over the last five years has reported sulfate levels ranging from 371 mg/L to 501 mg/L and 261mg/L to 358 mg/L, respectively. Sulfate levels in the #6 Sump (SD003) have ranged from 126 mg/L to 154 mg/L.

The Permit to Mine Amendment required for the project will describe surface water flow from the mining areas and waste rock stockpile drainage flow directions, storm water flow associated with the mine extension, and dewatering activities.

MDNR Lands and Minerals and the MPCA are currently exploring if materials handling/stockpiling at the site could be managed in such a way that reductions in sulfate levels could be achieved at the mine site. The manner in which materials are handled/stored could reduce or avoid long term generation and release of sulfate. Potential changes in operations related to materials handling/stockpiling could become requirements or conditions incorporated into the Permit to Mine Amendment if and when it is issued for the extension project.

The Permit to Mine can be opened for amendment at any time if a water quality issue is identified, such as through exceedance of an NPDES permit effluent limit. When MPCA re-issues the NPDES permit, if new water quality standards are applied, then DNR will open the permit to mine and amend it if a change in the closure plan is needed in order to

protect the affected resource. Examples of specific mitigation measures that could be included as permit to mine conditions/modifications in an amendment to address water quality issues related to the mine pits could include requirements to: cover stockpiles; implement different water management techniques; enhance/encourage sulfate reduction (such as by additions of iron and carbon); dispose of waste rock subaqueously; utilize alternate discharge locations; implement passive treatment (such as with wetlands or floating bogs); and/or implement active water treatment.

The ferrous mining rules authorize MDNR to require water quality controls on a facility with water quality problems under the Permit to Mine, specifically under Minnesota Rule 6130.2100 Stockpile Design and Construction Standards.

14. The MDNR requested and was granted a 15-day extension for making a decision on the need for an EIS as provided under the provisions of Minnesota Rules, chapter 4410.1700 Subp. 2.b. Due to the volume of comments received, additional time beyond the extension was needed.

15. The following permits and approvals are needed for the project:

Unit of government	Type of application
US Army Corps of Engineers	Section 404 Permit
MPCA	NPDES Construction Storm Water General Permit (for access road)
MPCA	Section 401 Water Quality Certification
MDNR	Permit to Mine Amendment
MDNR	Wetland Conservation Act through Permit to Mine
MDNR	Dam Safety Permit
SHPO	Historic Property and Cultural Resources Review
City of Mountain Iron	Building Permit (for pass control building on mine access road)

16. The following permits and approvals are needed for the connected action CSAH 102 Relocation project:

Unit of government	Type of application
US Army Corps of Engineers	Section 404 Permit
MPCA	Section 401 Water Quality Certification, if US Army Corps of Engineers issues an Individual Permit for Section 404
MPCA	NPDES Construction Storm Water General Permit
MDNR	Public Waters Work Permit
BWSR	Wetland Conservation Act, Minn. Rules 8420 Compliance
Mn/DOT	State Aid Plan and Specification Review and Approval
Mn/DOT	Final Roadway Construction Review and Approval

St. Louis County Public Works Dept	Plan, Specification, Right of Way, Review and Approval
St. Louis County Public Works Dept	Final Roadway Construction Review and Approval

CONCLUSIONS

1. The Minnesota Environmental Review Program Rules, *Minnesota Rules*, part 4410.1700, subparts 6 and 7 set forth the following standards and criteria, to which the effects of a project are to be compared, to determine whether it has the potential for significant environmental effects.

   In deciding whether a project has the potential for significant environmental effects, the following factors shall be considered:

   A. type, extent, and reversibility of environmental effects;

   B. cumulative potential effects. The RGU shall consider the following factors: whether the cumulative potential effect is significant; whether the contribution from the project is significant when viewed in connection with other contributions to the cumulative potential effect; the degree to which the project complies with approved mitigation measures specifically designed to address the cumulative potential effect; and the efforts of the proposer to minimize the contributions from the project;

   C. the extent to which the environmental effects are subject to mitigation by ongoing public regulatory authority. The RGU may rely only on mitigation measures that are specific and that can be reasonably expected to effectively mitigate the identified environmental impacts of the project; and

   D. *the extent to which environmental effects can be anticipated and controlled as a result of other available environmental studies undertaken by public agencies or the project proposer, including other EISs.*

2. *Type, extent, and reversibility of environmental effects*

   Based on the Findings of Fact above, the MDNR concludes that the following potential environmental effects, as described in the Finding of Facts, will be limited in extent, temporary, or reversible, or otherwise not significant:

   Project Design - Mine Pits, Tailings Basin Dams, Road Construction, Stockpiles
   Land Use - Disturbance of Contaminated Sites, Land Use Change
   Fish, Wildlife, Sensitive Resources and Habitat
   Physical Impacts on Water Resources – Streams and Wetlands

Water Use – Wells, Water Quantity, Drinking Water Supply Management Area
Water-Related Land Use Management Districts
Erosion and Sedimentation
Water Quality
Water Quality - Wastewater
Geology and Groundwater
Solid Wastes, Hazardous Wastes
Traffic
Air Emissions – Haze, Mercury
Odors, Noise and Dust
Nearby Resources - Historical and Archaeological Resources, Trails
Visual Impacts
Compatibility with Plans
Impact on Infrastructure

3. *Cumulative potential effects. The RGU shall consider the following factors: whether the cumulative potential effect is significant; whether the contribution from the project is significant when viewed in connection with other contributions to the cumulative potential effect; the degree to which the project complies with approved mitigation measures specifically designed to address the cumulative potential effect; and the efforts of the proposer to minimize the contributions from the project;*

   Based on the Findings of Fact above, the MDNR concludes that the following cumulative potential environmental effects, as described in the Finding of Facts, are not significant when viewed in connection with other contributions; the degree to which the project complies with approved mitigation measures specifically designed to address cumulative potential effects; and/or the efforts the proposer has made to minimize contributions from the project:

   Land Conversion/Habitat
   Stream Habitat Loss and Watershed Alteration
   Wetland Loss
   Impaired Waters
   Water Quality

4. *Extent to which environmental effects are subject to mitigation by on-going public regulatory authority.*

   Based on the Findings of Fact above, the MDNR concludes that the following potential environmental effects are subject to mitigation by on-going regulatory authority:

   Land use - disturbance of contaminated sites effects are subject to mitigation by MDNR Permit to Mine and state reporting rules under the MPCA.

Fish, wildlife, ecologically sensitive resources and habitat effects are subject to mitigation by U.S. Army Corps of Engineers Section 404 Permit, Minnesota Wetland Conservation Act through the MDNR Permit to Mine, MDNR Work in Public Waters Permit, and MDNR Water Appropriation Permit.

Physical impacts on water resources – streams and wetlands effects are subject to mitigation by U.S. Army Corps of Engineers Section 404 Permit, Minnesota Wetland Conservation Act through the MDNR Permit to Mine for extension project and through the County for CSAH 102 relocation, MDNR Work in Public Waters Permit, MDNR Water Appropriation Permit, MPCA NPDES/SDS Permit, MPCA NPDES Construction Storm Water General Permit, and MPCA Section 401 Water Quality Certification.

Water use – wells, water quantity effects are subject to mitigation by MDNR Water Appropriation Permit.

Erosion/sedimentation effects are subject to mitigation by U.S. Army Corps of Engineers Section 404 Permit, Minnesota Wetland Conservation Act through the MDNR Permit to Mine, MDNR Work in Public Waters Permit, MPCA NPDES Construction Storm Water General Permit, and MPCA Section 401 Water Quality Certification.

Water quality - surface water effects are subject to mitigation by MPCA NPDES Permit, MPCA SDS Permit, MPCA NPDES Construction Storm Water General Permit, and MPCA Section 401 Water Quality Certification.

Nearby resources effects are subject to mitigation by State Historic Preservation Office Section 106, Historical & Cultural Resources.

Cumulative potential effects are subject to mitigation by U.S. Army Corps of Engineers Section 404 Permit, Minnesota Wetland Conservation Act through the MDNR Permit to Mine, MDNR Work in Public Waters Permit, MDNR Water Appropriation Permit, MPCA NPDES/SDS Permit (and SOC), MPCA NPDES Construction Storm Water General Permit, and MPCA Section 401 Water Quality Certification.

5. *Extent to which environmental effects can be anticipated and controlled as a result of other environmental studies undertaken by public agencies or the project proposer, or other EISs.*

   The following environmental studies can assist in anticipating and controlling environmental effects from the Minntac Mine Extension project and the connected action CSAH 102 Relocation:

   U.S. Steel - Minntac Water Inventory Reduction Project EIS, MPCA, 2005.

   Minntac Mine Extension EAW, MDNR, 1996.

   Minntac Mine Western Progression Environmental Assessment, USACE, 2011.

   MWRAP Study 1: Sulfate and Water Balance on or near Mining Properties, M. E. Berndt, T. K. Bavin, M. Kelly, MDNR, in progress.

MWRAP Study 2: Sulfur and oxygen isotope study of sulfate and sulfide in NE Minnesota surface waters downstream from taconite mining operations. (M. E. Berndt, M. Kelly, Minnesota DNR).

MWRAP Study 3: Methylmercury production and release from NE Minnesota sediments and peatlands exposed to elevated sulfate. (Co PIs are N. Johnson, University of Minnesota; D. Engstrom, Minnesota Science Museum; C. Mitchell, University of Toronto, Project funded by the Minnesota DNR).

MWRAP Study 4: Methylmercury transport and bioaccumulation in NE Minnesota streams and lakes with elevated sulfate (Co PIs are J. Jeremiason, Gustavus College; G. Aiken, USGS; D. Latch, Seattle University - Project is funded by the DNR).

Wild rice survey in waters downstream of the Minntac mine pits, Barr Engineering, in progress.

Sulfate and mercury chemistry of the St. Louis River in Northeastern Minnesota: A Report to the Minerals Coordinating Committee, M. E. Berndt and T. K. Bavin, MDNR, 2009.

Sulfate and Mercury Cycling in Five Wetlands and a Lake Receiving Sulfate from Taconite Mines in Northeastern Minnesota: A Report to Iron Ore Cooperative Research Program, M. E. Berndt and T. K. Bavin, MDNR, 2011.

Methylmercury and Dissolved Organic Carbon Relationships in a Wetland-Rich Watershed Impacted by Elevated Sulfate from Mining, Northeastern Minnesota, Environmental Pollution 161, 321-327, M. E. Berndt and T. K. Bavin, MDNR, 2012.

On the Cycling of Sulfur and Mercury in the St. Louis Watershed, Northeastern Minnesota, A report to the Environmental and Natural Resources Trust Fund, M. E. Berndt and T. K. Bavin, MDNR, 2012.

Sulfur and Carbon Controls on Methylmercury in St, Louis River Estuary Sediments Phase II, A report to the Environmental and Natural Resources Trust Fund, University of Minnesota Duluth Research Report, N. W. Johnson and B. F. Beck, University of Minnesota Duluth, 2012.

Carbon and Iron Additions to Stimulate In-Pit Sulfate Reduction and Removal, A report to the Environmental and Natural Resources Trust Fund, University of Minnesota Duluth Research Report, N. W. Johnson and X. Zhu, University of Minnesota Duluth, 2012.

Mineralogy, Spatial Distribution, and Isotope Geochemistry of Sulfide Minerals in the Biwabik Iron Formation, Geology, S. A. Theriault, University of Minnesota, 2011.

Cumulative Effects Analysis on Wildlife Habitat Loss/Fragmentation and Wildlife Travel Corridor Obstruction/Landscape Barriers in the Mesabi Iron Range and Arrowhead Regions of Minnesota, Emmons & Olivier Resources, Inc., 2006.

Cumulative effect Analysis of Wildlife Habitat and Threatened and Endangered Wildlife Species, Barr Engineering, 2009.

6. The MDNR has fulfilled all the procedural requirements of law and rule applicable to determining the need for an environmental impact statement on the proposed Minntac Mine Extension Project and connected action CSAH 102 Relocation in St. Louis County, Minnesota.

7. Based on considerations of the criteria and factors specified in the Minnesota Environmental Review Program Rules (*Minnesota Rules*, part 4410.1700, subpart 6 and 7) to determine whether a project has the potential for significant environmental effects, and on the Findings and Record in this matter as identified in Conclusions 1-5 above, the MDNR determines that the proposed Minntac Mine Extension Project and connected action CSAH 102 Relocation do not have the potential for significant environmental effects.

ORDER

Based on the above Findings of Fact and Conclusions:

The Minnesota Department of Natural Resources determines that an Environmental Impact Statement is not required for the Minntac Mine Extension Project and connected action CSAH 102 Relocation in St. Louis County, Minnesota.

Any Findings that might properly be termed Conclusions and any Conclusions that might properly be termed Findings are hereby adopted as such.

Dated this 11th day of April, 2013.

STATE OF MINNESOTA

DEPARTMENT OF NATURAL RESOURCES

Barb Naramore

Barb Naramore

Assistant Commissioner