

1 **5.2.5 Wildlife**

2 This section describes the environmental consequences of the NorthMet Project Proposed Action
3 to wildlife including direct effects such as the loss of individuals/populations of affected species
4 or a decrease in habitat, as well as indirect effects such as displacement, competition, or changes
5 in the greater regional area.

6 **Summary**

7 The NorthMet Project Proposed Action is expected to affect one federally listed species, the
8 Canada lynx, through localized direct decrease and fragmentation of designated critical habitat
9 and the increased potential (albeit low) for incidental take resulting from vehicular collisions due
10 to increased NorthMet Project Proposed Action-related traffic. Restoration of disturbed areas as
11 part of mine closure would ~~eventually potentially create a complex of upland forest, wetlands,
12 and open water at the Mine Site, which would likely serve as~~ lynx habitat, although this
13 successional process could take decades. The NorthMet Project Proposed Action is not likely to
14 affect the state-listed bald eagle, which is also protected under federal law (although not a
15 federally listed endangered or threatened species). Four additional state-listed species, which
16 include the gray wolf, the eastern heather vole, the wood turtle, and the yellow rail, may be
17 affected by the NorthMet Project Proposed Action. It is expected that the Laurentian tiger beetle
18 would not be affected. SGCN, RFSS, and other wildlife species, including those considered
19 tribally or culturally significant, may be affected by human activity, noise and vibration, rail and
20 vehicle traffic, and decrease of habitat.

21 **5.2.5.1 Methodology and Evaluation Criteria**

22 This section uses data presented in Section 4.2.5 to analyze effects on wildlife. Specifically,
23 survey reports and GIS data were obtained regarding land cover and habitat types, forest stand
24 age classes, listed ETSC, SGCN, RFSS, and other wildlife species. GIS analysis was used to
25 calculate direct and indirect effects on these resources.

26 The analysis of direct effects included the potential of a take of federally or state-listed species.
27 Pursuant to the federal ESA, *take* is defined as “to harass, harm, pursue, hunt, shoot, wound, kill,
28 trap, capture, or collect, or to attempt to engage in any such conduct.” Take of an individual or
29 population could occur for various reasons such as traffic collisions, habitat destruction, or
30 change in an individual or population’s habitat use due to noise, other disturbance, or
31 contamination of food or water sources. Take of a listed species would be considered a
32 significant effect. The USFWS can issue a permit for the incidental take of a federally listed
33 wildlife species consistent with the goal of conservation of the species. Permit applicants must
34 design, implement, and demonstrate availability of funding for a conservation plan that
35 minimizes and mitigates harm to the affected species during the proposed project. Without a
36 permit, the take of a federally listed protected species is punishable by fines or imprisonment.
37 Permitting for taking of a state-listed species is regulated by the MDNR.

38 Analysis was also conducted for potential indirect effects to federally or state-listed species, such
39 as increased competition for resources or habitat due to displacement of individuals from the
40 affected area into the territory of other animals, or other indirect effects that cause mortality or
41 reduced breeding and recruitment in the future population.

42 In addition to listed species, analysis was completed of potential direct and indirect effects on
43 habitat types that affect population size and long-term viability for other species potentially at
44 risk (SGCN, RFSS, and species of cultural concern). Direct effects could include vegetation
45 removal by clearing, burial, or other destructive activity. Indirect effects could include changes
46 within larger ecological units (e.g., the Laurentian Uplands or Partridge River Watershed), but
47 not necessarily at the Mine Site or Plant Site, that could occur at a later point in time, such as a
48 change in long-term vegetation composition or dominance, habitat conversion due to hydrologic
49 changes, invasion by non-native species, or disruption of natural disturbance regimes (e.g., the
50 annual natural hydrological cycle). Depending on the magnitude of the effect, direct effects may
51 require mitigation.

52 **5.2.5.2 NorthMet Project Proposed Action**

53 This section describes the effects on wildlife due to construction and operation activities.

54 **5.2.5.2.1 Federally Listed Species**

55 As required under Section 7 of the ESA, the USACE and the USFS have initiated consultation
56 with the USFWS regarding potential effects to federally listed species to ensure that actions they
57 authorize or permit would not jeopardize listed species or designated critical habitats.
58 Consultation is currently ongoing and will continue throughout the EIS process. A Biological
59 Assessment is being prepared as part of the consultation process. The conclusions of the
60 consultation process will be included in the FEIS.

61 **Canada Lynx**

62 In 2009, it was estimated that there were likely fewer than 200 lynx in Minnesota (Moen 2009).
63 However, individuals can travel well beyond their home range, specifically when prey is scarce,
64 at times more than 1,000 km (Moen 2010). Three individual lynx have been harvested in
65 Ontario, approximately 400 road miles from their known locations in Minnesota. Of the 55
66 incidental take records the USFWS has documented from 2001 through 2013, two of the records
67 involved lynx killed by trains and seven of the records involved lynx struck by vehicle traffic
68 along roads (USFWS 2013).

69 The NorthMet Project area is currently within the 8,065 square mile designated critical habitat
70 for the Canada lynx (USFWS ~~2008~~2009), which includes much of St. Louis, Lake, and Cook
71 counties. ~~Surveys did not find any evidence of lynx denning, foraging, or travel at the NorthMet~~
72 ~~Project area, but~~ Surveys identified at least 20 different individual lynx were identified within 18
73 miles (ENSR 2006), and lynx sign was observed on the Mine Site in 2010. A collared and
74 studied lynx, L11, was identified adjacent to the NorthMet Project area, south of Dunka Road.
75 This animal may have been using the NorthMet Project area for forage and travel as part of her
76 home range between when she was collared in early 2004 and when she was trapped in Ontario,
77 Canada in 2006. Lynx tracks were observed at the Mine Site in 2010, and there have been
78 multiple observations of lynx sign within 5 miles of the Federal lands (USFS 2013).

79 Site clearing and mining activities associated with the NorthMet Project Proposed Action would
80 potentially affect lynx by reducing available habitat and increasing habitat fragmentation. The
81 total effect from increased activity is not known, as lynx have been known to habituate to
82 increased human activity (Sunde et al. 1998). The NorthMet Project Proposed Action mining
83 activities would disturb approximately 2 square miles (1,454.0 acres) of suitable lynx habitat,

84 currently a mix of upland forest and lowland forest and bog. Restoration of disturbed areas as
 85 part of mine closure would eventually ~~create create a complex of upland forest, wetlands, and~~
 86 ~~open water at the Mine Site, which would likely serve as potential~~ lynx habitat, although this
 87 successional process could take decades. Potential lynx habitat would be lost for the duration of
 88 mine operations (over 20 years) and an additional 20 years or more after closure before suitable
 89 lynx habitat would again occur at the Mine Site (ENSR 2006).

90 Assuming that the territory of a resident lynx is ~~28-58~~ square miles for males and ~~58-28~~ square
 91 miles for females, the reduction of habitat at the Mine Site corresponds to a reduction of three to
 92 seven percent of an individual's territory (ENSR 2006). Territory size expands in response to
 93 periods of reduced snowshoe hare density, and the related lynx and snowshoe hare populations
 94 tend to loosely follow a 10-year cycle, though other factors contribute to lynx population shifts.
 95 Surveys for the NorthMet Project Proposed Action were done during a low point in the
 96 lynx/snowshoe hare density cycle.

97 Though no lynx were identified during surveys, those that may currently be using the Mine Site
 98 could expand their territory into surrounding areas. Lynx density in the vicinity is considered low
 99 relative to the rest of the Minnesota lynx range (ENSR 2006). Individuals displaced from the
 100 Mine Site may be affected by increased stress and potential mortality due to utilization of
 101 unfamiliar territory and competition with other lynx or predator species. Although the NorthMet
 102 Project Proposed Action would result in a reduction and fragmentation of lynx habitat at the
 103 Mine Site, little to no effect on statewide lynx populations would occur as it is unlikely that an
 104 individual lynx or pair of lynx would be affected by the habitat decrease.

105 According to the USFS, LAUs are land areas identified for purposes of analysis and
 106 development of conservation measures for lynx (USFS 2004b). They range in size from just
 107 under 17,000 acres up to more than 91,000 acres. As discussed in Section 4.2.5.2.1, the federal
 108 lands (including the Mine Site) are located within LAU 12.

109 The USFS determined that approximately ~~1,0782,737~~ acres, or ~~1.6 percent~~4.0 percent, of LAU
 110 12 is currently unsuitable for lynx use (USFS ~~2011e~~2013). ~~As noted above, the NorthMet~~
 111 ~~Project Proposed Action would disturb 1,454 acres of lynx habitat, or approximately 3.8, making~~
 112 ~~them unsuitable for lynx. The~~ percent of LAU 12 ~~being~~ unsuitable for lynx would increase to
 113 6.1 percent. This percentage is well within the Forest Plan guideline (G-WL-3) condition that
 114 unsuitable habitat is not exceed 30 percent of the LAU. ~~(USFS Unpublished Data 2009).~~

115 The increased vehicle traffic associated with the NorthMet Project Proposed Action mining
 116 activities could affect species such as the lynx. An average of 2,066 miles per day of vehicular
 117 traffic is expected within the Mine Site, primarily to haul ore to the rail siding and waste rock to
 118 the stockpiles (Table 5.2.5-1).

119 **Table 5.2.5-1 Vehicle Traffic within the Mine Site Only**

Vehicle type	Vehicle Weight (Tons)	Speed (Average MPH)	Total Road Miles in Mine Site	Annual Vehicle Miles Traveled (Estimated)	Estimated Average Total Miles Per Day (Estimated)
Haul Trucks and Construction Vehicles	81.5-425	12-14	15.3	61,400-979,000	2,066.0

120 Source: Barr 2012i.

121 Although there is the potential for incidental take as a result of vehicle collisions with lynx, haul
 122 traffic at the Mine Site would likely have little direct effect on lynx. Current lynx use of the Mine
 123 Site appears to be very low; in the future, the area would be heavily affected by mining
 124 operations and not likely to be used by lynx.

125 The NorthMet Project area is currently within designated critical habitat for the Canada lynx
 126 (USFS 2008). Lynx may be affected by increased vehicle and train traffic. Lynx are highly
 127 mobile and lynx habitat can be found immediately adjacent to the corridor. The increased vehicle
 128 traffic associated with the NorthMet Project Proposed Action, including train and small vehicle
 129 traffic between the Mine Site and Plant Site, could potentially result in vehicle collisions with
 130 lynx (Table 5.2.5-2). The NorthMet Project Proposed Action would generate 1,734.9 miles of
 131 vehicle traffic between the Mine Site and Plant Site each day. This traffic would consist
 132 primarily of light trucks and maintenance vehicles traveling 30 to 45 mph and a few large fuel
 133 trucks, waste/supply trucks, and trains traveling 15 to 40 mph.

134 **Table 5.2.5-2 Vehicular and Train Traffic Volume along the Transportation and Utility**
 135 **Corridor**

Vehicle Type	Vehicle Weight (Tons)	Speed (Min – Max MPH)	Total Miles (Per Day)
Light Cars, Trucks, and Vans – primarily Mine Site to Area 2 Shops	2	30-45	961.1
Fuel Trucks, Supply and Waste Trucks	40	25-40	346.7
Haul Trucks	81.5 – 240	35	9.1
Trains	3,000	15-25	418.0
Total			1,734.9

136 Source: Barr 2012i.

137 Though vehicle traffic increases the chance of incidental lynx mortality, this species does not
 138 rely upon roads for travel (Moen 2010). Straight-line movement of collared lynx through the
 139 roadless BWCAW suggests that when roads are not available, lynx will still travel in a line
 140 where possible. As such, while lynx may be affected by vehicle traffic along the Transportation
 141 and Utility Corridor, the flat terrain near the NorthMet Project area would allow lynx to travel
 142 through the area.

143 Evidence of lynx was not found during surveys of the Plant Site. Approximately 76 percent of
 144 the Plant Site cover/habitat type is disturbed or aquatic, which is considered unsuitable lynx
 145 habitat. Lynx are unlikely to utilize the Plant Site, but may forage in the surrounding area. As
 146 such, activities at the Plant Site are unlikely to affect the Canada lynx.

147 State and federal forest lands near the Mine Site or Plant Site would continue to provide refuge
 148 for lynx, and it is likely lynx would favor these areas over those affected by mining for the
 149 duration of mine operations. Overall, the effects to the Canada lynx described above would result
 150 in the localized direct decrease and fragmentation of habitat, including designated critical habitat,
 151 and the increased potential (albeit low) for incidental take resulting from vehicular collisions;
 152 however, these effects are not anticipated to threaten the overall species population level and
 153 abundance in Minnesota.

154 **5.2.5.2.2 State-listed Species**

155 Rulemaking was conducted with the intent to update the list of Endangered, Threatened, and
156 Special Concern Species (Minnesota Rules, part 6134.0100 to 6134.0400), with new listings
157 becoming effective on August 19, 2013. The FEIS will consider any new listings, or changes in
158 the previous listings, associated with the updated list.

159 ***Gray Wolf***

160 On May 4, 2011, the USFWS proposed to reinstate the April 2009 decision to delist the gray
161 wolf population in the western Great Lakes after it was relisted in July 2009. This decision was
162 finalized on December 26, 2011, and was effective January 27, 2012. The final rule also removes
163 the designation of critical habitat in Minnesota.

164 Field surveys indicate the likelihood of a single wolf pack whose territory includes the Mine Site
165 and Plant Site. The footprint of the Mine Site would remove approximately 2 square miles (1,454
166 acres) of habitat, or 1 percent to a maximum of 10 percent of a single wolf pack territory. This
167 reduction in available habitat is small and is not expected to affect the highly mobile wolf
168 population in the region, which is considered healthy by the MDNR. After closure, this area
169 would again be available and suitable as wolf habitat, but, as described above for the lynx, this
170 would not occur for more than 40 years.

171 Vehicle collisions are a cause of wolf mortality (Fuller and Harrison 2005). The increased
172 vehicular activity associated with the NorthMet Project Proposed Action could potentially result
173 in vehicle collisions with wolves. The haul road network would increase the road density (linear
174 miles of road per square mile of habitat) at the Mine Site; however, mining operations would
175 disturb the Mine Site such that it would reduce habitat availability for the gray wolf. Therefore,
176 the haul road network itself would not influence the overall effects of the NorthMet Project
177 Proposed Action on the gray wolf.

178 State and federal forest lands near the Mine Site or Plant Site would continue to provide refuge
179 for wolves, and it is likely wolves would favor these areas over those affected by mining for the
180 duration of mine operations. The gray wolf population in Minnesota (estimated at 2,922 gray
181 wolves) is considered fully recovered by the MDNR as it has surpassed the federal delisting goal
182 of 1,251 to 1,400 wolves. The MDNR established a hunting and trapping season for 2012, with a
183 quota of 400 wolves (MDNR 2012i), split between an early hunting season and a later hunting
184 and trapping season. Additional wolves may be taken if they pose a threat to people, pets, or
185 livestock.

186 Overall the effects described above would result in the direct decrease and fragmentation of
187 habitat suitable for the gray wolf, the increased potential for incidental take from vehicular
188 collisions, and indirect decline in prey species due to habitat decrease. Together these factors are
189 not anticipated to threaten the overall species population level and abundance in Minnesota.

190 ***Bald Eagle***

191 Bald eagles typically nest in large trees within 500 feet of lakes or rivers (Guinn 2004). There are
192 no large lakes or rivers at the Mine Site that would provide optimal nesting/foraging habitat,
193 though the Partridge River (approximately 0.5 mile south of the Mine Site) would provide some,
194 though less-than-optimal, habitat. The Partridge River is 4.9 miles south of the Plant Site, and the
195 Embarrass River is 2.5 miles north and west. The USFWS National Bald Eagle Management
196 Guidelines (USFWS 2007) suggest that human activity within 0.25 mile to 2 miles can be seen

197 or heard by eagles and, depending on the level of screening and habituation of individual eagles,
198 may cause them to abandon a nest. Generally, the closer the activity is, the greater the effect. If
199 eagles were to nest on the portion of the Partridge River or the Embarrass River near the
200 NorthMet Project area, they could be within the 2-mile disturbance range. The nearest recorded
201 bald eagle nest to the Mine Site is approximately 6.5 miles to the southeast (MDNR 2013a).

202 Bald eagle nesting territories in Minnesota generally have a 10-mile radius that varies with
203 habitat quality (Guinn 2004). Bald eagle nests near the NorthMet Project area are on average 5.7
204 miles apart (3.8 to 9.4 mile range), which is less than the average territory radius. This suggests
205 that the area is densely populated with bald eagle nesting territories and that no new eagles are
206 likely to move into the area (MDNR 2013a). As eagles become more numerous, any eagles
207 seeking to establish new territories in the area would need to select lower quality habitat and/or
208 move into closer proximity to human activity.

209 Surface water contaminants (e.g., mercury) that are absorbed by prey species such as waterfowl
210 via dietary exposure (e.g., through the consumption of fish) could lead to ingestion of
211 contamination by eagles (Marr 2008). ~~The Band representative(s) identified potential mercury~~
212 ~~intake by apex predators, such as eagles, for consideration in the SDEIS.~~ However, bald eagles
213 are relatively insensitive to the toxic effect of mercury exposure through their food (Judd 2013).
214 In addition, waterfowl and some birds of prey demethylate mercury, which reduces their
215 potential exposure.

216 The NorthMet Project Proposed Action is not likely to affect bald eagles because the known
217 nesting sites are more than 2 miles from the NorthMet Project area; optimal habitat for nesting
218 and foraging bald eagles is not present at the Mine Site, Plant Site, or Transportation and Utility
219 Corridor; and bald eagles are not sensitive to mercury exposure.

220 **Wood Turtle**

221 There is no habitat suitable for wood turtles at the Mine Site and no individuals are known to
222 occur. Individuals could potentially use the southern riparian fringe of the Mine Site though no
223 wood turtles are currently known to occur in the fringe areas that would be affected by the
224 project. The fringe areas would also not be affected by activities at the Transportation and Utility
225 Corridor. There is no suitable habitat for wood turtles at the Plant Site and no individuals are
226 known to occur.

227 The predicted small decrease in Upper Partridge River flow during active mining is not likely to
228 negatively affect the wood turtle. The most likely effect of a decrease in water level would be to
229 expose additional nesting areas. Over the long term, the exposed soil on the lower bank would be
230 overtaken by vegetation from the upper bank and become less suitable habitat for the wood
231 turtle.

232 Wood turtles are not likely to be affected by project activities because there would be no direct
233 loss of individuals, populations, or suitable habitat and the NorthMet Project Proposed Action
234 would have no indirect effects on downstream habitat.

235 **Eastern Heather Vole**

236 The eastern heather vole has not been observed within 10 miles of the Mine Site nor has it been
237 found in small mammal surveys in the region (Christian 1993; Jannett 1998). The NorthMet
238 Project area is at the southern edge of its range. Approximately 1,445 acres of potentially

239 suitable habitat exist at the Mine Site (Table 4.2.4-1), and there is potentially suitable habitat for
240 the species along the Transportation and Utility Corridor. Additionally, there is potentially
241 suitable habitat for the eastern heather vole at the Plant Site, 32 percent of which may be affected
242 by the NorthMet Project Proposed Action (Table 5.2.4-4). The eastern heather vole could be
243 present at the NorthMet Project area, but, if so, it is likely to be in very small numbers. Given the
244 lack of known occurrences of eastern heather vole in the area, the habitat effects are unlikely to
245 jeopardize the presence of eastern heather vole in Minnesota.

246 **Yellow Rail**

247 The yellow rail was not found during PolyMet's surveys at the Mine Site and was not reported in
248 the NHIS database within 10 miles of the NorthMet Project area. Small, scattered areas of its
249 preferred habitat, sedge/wet meadow, are present at the Mine Site, but the minimum nesting
250 patch size used by rails (54 acres) (Goldade et al. 2002) exceeds the total amount of suitable
251 habitat available (39.5 acres at the Mine Site and 1.5 acres at the Plant Site; refer to Section
252 4.2.3). Since the yellow rail was not detected in surveys and patches of its preferred habitat are
253 smaller than the reported minimum patch size for nesting, it is not expected that the NorthMet
254 Project Proposed Action would affect the yellow rail.

255 **Laurentian Tiger Beetle**

256 The lack of suitable habitat and any NHIS recorded observations in the NorthMet Project area
257 for the tiger beetle suggest that the species does not occur at the Mine Site, Plant Site, or
258 Transportation and Utility Corridor. Therefore, the NorthMet Project Proposed Action should
259 have no effect on the tiger beetle.

260 **5.2.5.2.25.2.5.2.3 Species of Greatest Conservation Need**

261 Along with federally and state-listed species, the NorthMet Project Proposed Action would affect
262 SGCN at the Mine Site as a result of increased human activity and noise, collisions with
263 vehicular and rail traffic, and decrease of habitat. Due to the number of SGCN species identified
264 (Table 4.2.5-1) effects are classified by the type of disturbance.

265 **Increased Human Activity**

266 SGCN would be directly affected through increased human activity due to mining activities.
267 Factors such as noise, dust, light, and vehicle traffic may frighten some species and discourage
268 their use of otherwise suitable habitat. In general, suitable habitat is available in the area adjacent
269 to the NorthMet Project area and most mobile wildlife species would be displaced. Following
270 migration to new areas, displaced individuals could increase the competition for resources in
271 their new habitat. Displaced species could also suffer increased mortality due to foraging in new
272 areas. Less mobile species, such as herptiles (e.g., frogs, turtles), would likely incur relatively
273 high mortality rates since they cannot quickly migrate from the area and would be more
274 susceptible to changing habitat conditions. During the winter, a combination of plowing and
275 sand, gravel, or salt (magnesium chloride) applications would be used to keep roadways
276 passable. The potential exists for sand and salts to accumulate in the trenches adjacent to the
277 roadways and affect less mobile species. These areas are not considered high quality habitat and
278 are not likely to affect wildlife.

279 | Effects to wildlife due-related to trapping and hunting are unlikely-minimal because public
280 | access would be restricted. Through the Land Exchange Proposed Action, NorthMet Project area
281 | lands would enter into private ownership and would not be accessible for public use. As
282 | discussed in Section 5.2.11.2.1, The main access road (Dunka Road) is privately owned and
283 | would remain gated to prevent public access is limited and would remain limited to non-
284 | NorthMet Project Proposed Action-related access-activities during mining operations and
285 | following mine closure. As such, wildlife species are not likely to be affected by changes in
286 | hunting and trapping activity.

287 | Ground-nesting bird species and some raptor species have been known to utilize cliff areas for
288 | nesting and foraging. The SGCN include the northern goshawk, common nighthawk, and
289 | northern harrier. These birds could be affected by disturbance if they were to nest along the cliffs
290 | created by the pit rims.

291 | **Noise Effects**

292 | Noise associated with mining activities, including noise from vehicle and rail traffic, would
293 | likely affect wildlife. Mammals can be sensitive to sound levels below the range of human
294 | hearing, which is 20-16,000 hertz. The sensitivity thresholds for animals are generally lower,
295 | some below 20 hertz (US FHWA 2011). Effects due to acute noise (such as blasting) are not well
296 | studied, but would likely cause animals to startle and would interrupt forage or nesting activities
297 | (Larkin 1994). Noise does not appear to seriously affect invertebrates or fish, but does result in
298 | some disturbance to mammals (such as startling, forage interruption, and avoidance of the area of
299 | potential effect [Larkin 1994]). Bird communication would be masked by noise if the
300 | vocalizations are less than 18-20 dB above noise levels in the environment (US FHWA 2011).
301 | Changes in communication have been known to result in decreased reproduction and anomalies
302 | in learned vocalizations (Larkin 1994). Songbird populations have been shown to decrease with
303 | noise levels as low as 35 dB (Foreman and Alexander 1998). Section 5.2.8 provides further
304 | discussion on the noise modeling predictions for the NorthMet Project area. Though wildlife
305 | species are likely to be sensitive to changes in noise levels, there are no local, national, or
306 | international standards or limits that are applicable to the NorthMet Project Proposed Action.
307 | Wildlife species may be affected by noise in the NorthMet Project area, though adjacent habitat
308 | is available.

309 | **Vehicular and Rail Traffic Effects**

310 | Wildlife mortality generally increases with increasing traffic volumes and vehicle speed. In
311 | general, highly mobile species and habitat generalists (species that utilize a wide variety of
312 | habitats) are known to have higher road mortalities.

313 | As discussed above, vehicular traffic would average 2,066 miles per day within the Mine Site
314 | (Table 5.2.5-1). Traffic effects from collisions with wildlife depend upon factors such as traffic
315 | volume, traffic speed, and the species involved. The potential for road effects increases if the
316 | roads are bordered by high-quality habitat or are crossed by wildlife travel corridors. The high
317 | density of affected wetlands at the Mine Site bordering- the haul roads may result in a relatively
318 | high rate of amphibian and reptile effects. Shrubs and trees near roadsides can increase road
319 | crossings by deer and birds. The barrier effect of roads is greater for small mammals,
320 | amphibians, and reptiles than for birds and large mammals (Kaselloo 2004). Species that utilize
321 | the small preserved forest island remnants between haul roads at the Mine Site would be most

322 affected. Indirect effects from vehicle activities are expected locally at the Mine Site for SGCN
 323 species but would not be measurable at the scale of the Nashwauk and Laurentian Uplands or the
 324 Partridge River Watershed.

325 Effects at the Transportation and Utility Corridor are primarily related to vehicle and rail traffic.
 326 Travel between the Mine Site and Plant Site is expected to average 1,735 miles per day with
 327 travel speeds averaging between 15 and 45 mph, with trains, fuel, and waste/supply trucks
 328 traveling somewhat slower (Table 5.2.5-2). SGCN may be affected by noise and light associated
 329 with vehicle and rail traffic, and by collisions with vehicles or trains.

330 Transportation effects at the Plant Site are primarily related to vehicle traffic associated with
 331 construction of the NorthMet Project Proposed Action. Typical daily operations at the Plant Site
 332 would generate approximately 828 miles of vehicle traffic, primarily light trucks. Though noise
 333 and light may affect SGCN at the Plant Site, the disturbed nature of the area would mean that
 334 effects would be negligible.

335

336 **Wildlife Habitat Effects**

337 The direct effect on wildlife habitat (and by inference on SGCN species) was assessed by
 338 evaluating the acres of habitat types that would be lost under the NorthMet Project Proposed
 339 Action. The changes in cover type are summarized in Table 5.2.5-3.

340 **Table 5.2.5-3 Direct Effects on Key Habitat Types**

Key Habitat Types	Total Acres¹ of Cover Type Present at Mine Site (Total Acres¹ of Cover Type Directly Affected)	Total Acres¹ of Cover Type Present at Transportation and Utility Corridor (Total Acres¹ of Cover Type Directly Affected)	Total Acres¹ of Cover Type Present at Plant Site (Total Acres¹ of Cover Type Directly Affected)
Mature Upland Forest, Continuous Upland/Lowland Forest (MIH1-13)	2,627.2 (1,535.3)	5.5 (5.5)	788.4 (362.8)
Open Ground, Bare Soils (no MIH)	128.0 (44.0)	94.4 (94.4)	2,755.5 (1,102.5)
Grassland and Brushland, Early Successional Forest (no MIH)	246.6 (133.2)	17.5 (17.5)	333.4 (139.5)
Aquatic Environments (MIH 14)	12.7 (6.0)	2.7 (2.7)	636.7 (572.7)
Total	3,014.5 (1,718.56)	120.1 (120.1)	4,514.0 (2,177.5)

341 Data from Tables 5.2.4-1, 5.2.4-4, and 5.2.4-5.

342 ¹ Total acres may be more or less than presented due to rounding.

343 **Mature Upland/Lowland Forest**

344 At the Mine Site, approximately 1,535 acres (58 percent) of the mature forest would be lost as a
 345 result of the NorthMet Project Proposed Action. All of the SGCN found in this mature upland
 346 forest habitat are birds (Table 4.2.5-1), which would be displaced, but likely not injured or killed,

347 during mine construction and operation. Nesting birds could be affected during the breeding
348 season, especially during brooding and until fledglings become independent. Reclamation of the
349 Mine Site would include revegetating nearly all disturbed ground according to *Minnesota Rules*,
350 part 6132.2700.

351 Of the 5.5 acres of mature upland/lowland forest along the Transportation and Utility Corridor,
352 all 5.5 acres would be affected. As such, activities would affect SGCN in mature upland/lowland
353 forest habitat along the Transportation and Utility Corridor, though effects would be narrow and
354 primarily located along the corridor.

355 Most of the Plant Site is developed or disturbed with only approximately 17 percent (788 acres)
356 consisting of forest habitat (Table 5.2.5-3). Approximately 363 acres of this forest habitat at the
357 Plant Site would be disturbed, most of which is in small or isolated patches of aspen-birch forest
358 that are in poor to fair condition (MDNR 2013a). Therefore, activities at the Plant Site would not
359 have an effect on SGCN using mature upland/lowland forest habitat.

360 Reclamation and revegetation of the NorthMet Project area would initiate vegetative succession
361 on stockpiles, the East Pit and Central Pit, and Mine Site infrastructure (PolyMet 2012s). The
362 Category 1 Stockpile would be incrementally and progressively reclaimed throughout the life of
363 the mine through contouring the stockpile to provide topographic variety, covering with a layer
364 of evapotranspiration soil, and finally seeding of grasses and forbs.

365 Reclamation and re-vegetation of the NorthMet Project area would improve wildlife habitat
366 relative to conditions during mine operations; however, the quality of habitat for SGCN is likely
367 to remain degraded for some decades after closure relative to pre-mining operations due to
368 conversion of high-quality habitat to lower-quality habitat.

369 **Open Ground/Bare Soils**

370 The likelihood of SGCN using open ground or bare soils at the Mine Site, Transportation and
371 Utility Corridor, or Plant Site is small. These areas were the result of past mining activity, are
372 generally of low-quality, and are expected to decrease after mine closure as a result of
373 reclamation.

374 Therefore, NorthMet Project Proposed Action effects on open ground/bare ground habitat should
375 result in little effect on wildlife.

376 **Brush/Grassland**

377 Approximately 133 of the 247 total acres (54 percent) of brush/grassland at the Mine Site would
378 be directly affected by the NorthMet Project Proposed Action. Brush and grassland (including
379 early successional forest) at the Mine Site and Plant Site consist of small vegetative patches that
380 are generally not suitable for SGCN. Young trees (less than 4 inches dbh) make up most of this
381 habitat type (ENSR 2005). One SGCN associated with this habitat type, the American
382 woodcock, was observed by USFS personnel at the Mine Site. The least weasel may occur as
383 well. Most of the other SGCN (Table 4.2.5-1) are associated with large patches of grassland and
384 savanna habitats, which are not present at the Mine Site.

385 Stands of brush/grassland (including early successional forest) along the Transportation and
386 Utility Corridor consist of small vegetative patches that are generally not suitable to SGCN.
387 Young trees (less than 4 inches dbh) make up most of this habitat type (ENSR 2005). Most of the

388 other SGCN (Table 4.2.5-1) are associated with large patches of grassland and savanna habitats.
389 Though all 17.5 acres of brush/grassland at the Transportation and Utility Corridor would be
390 directly affected, activities at the Transportation and Utility Corridor would not affect
391 grassland/brush SGCN based on the fragmented nature of this habitat.

392 Similar to the Mine Site, brush/grassland (including early successional forest) at the Plant Site
393 consists of small vegetative patches that are generally not suitable to SGCN. Young trees (less
394 than 4 inches dbh) make up most of this habitat type (ENSR 2005). Most of the other SGCN
395 (Table 4.2.5-1) are associated with large patches of grassland and savanna habitats.
396 Approximately 140 of the 333 acres of brush/grassland at the Plant Site would be directly
397 affected by the activities at the Plant Site. The reclaimed Plant Site, specifically the Tailings
398 Basin, would be revegetated with grassland vegetation species. Overall, the NorthMet Project
399 Proposed Action would have no adverse effects on grassland/brush SGCN.

400

401 During reclamation, PolyMet would remove or cover portions of the existing road, railroad, and
402 ditch and dike systems and restore them. Reclamation of these areas, which currently constitute
403 poor wildlife habitat, would ultimately enhance wildlife habitat when compared to current
404 conditions. Some SGCN, such as the eastern meadowlark, northern harrier, and common
405 nighthawk would most likely use the grasslands until they are replaced by early successional
406 forest about 20 to 50 years after closure. Early successional forests are likely to support the two
407 following SGCN: white-throated sparrow and American woodcock.

408 **Open Water**

409 SGCN such as the black duck, American bittern, and swamp sparrow utilize open water habitats.
410 The NorthMet Project Proposed Action would create approximately 321 acres of open water at
411 the Mine Site by eventually flooding the West Pit, which is estimated to fill in year 40. The West
412 Pit would be fenced as a deterrent to wildlife species even though this habitat is not likely to
413 provide high quality foraging habitat for waterfowl because of a lack of emergent or submerged
414 vegetation along the pit fringes. Ponds at the wastewater treatment facilities would also be
415 fenced to prevent wildlife from using the water. At the Plant Site, open water habitat primarily
416 occurs in the existing LTVSMC Tailings Basin. None of the SGCN targeted during a 2005
417 survey were observed on open water during the survey (ENSR 2005); however, common
418 waterfowl and water birds were observed at the Tailings Basin during migration, in particular
419 Canada goose and ducks. Existing open water habitat would be maintained during operations,
420 though the acreage of open water would fluctuate according to processing needs.

421 Wildlife, specifically aquatic birds, may utilize open water habitat created by the NorthMet
422 Project Proposed Action. Wildlife species have been observed utilizing the existing LTVSMC
423 Tailings Basin, as well as other Mesabi Iron Range tailings basins, specifically during migration.
424 Unlike arid states such as Nevada, pit lakes and tailings basins are not the only readily available
425 source of open water for wildlife use. Minnesota has over 13 million acres of lakes and wetlands,
426 and the NorthMet Project Proposed Action would result in less than one hundredth of a percent
427 increase in habitat. Though adjacent habitat is readily available, wildlife species may still utilize
428 the Tailings Basin. Because adjacent habitat is abundantly available, the pit lake and waste water
429 treatment ponds would be fenced, and high-quality foraging habitat would not be present in these
430 open bodies of water, surface water habitat effects on wildlife would likely be minimal. The

431 ~~USEPA identified the potential for wildlife to utilize open water habitat created by the NorthMet~~
432 ~~Project Proposed Action as an issue for consideration in the SDEIS.~~

433 ~~Additionally, surface water quality standards do not apply to the pit lake or Tailings Basin. Any~~
434 ~~discharge water, such as the pit lake overtopping, would be treated in order to meet water quality~~
435 ~~standards and, as such, would not likely affect wildlife species. Some wildlife species,~~
436 ~~specifically those that feed on aquatic prey, may be susceptible to mercury exposure~~
437 ~~(USEPA1997) directly from open water sources such as the pit lake and Tailings Basin pond,~~
438 ~~and indirectly at the Partridge and Embarrass Rivers. Affects to aquatic species are discussed in~~
439 ~~Section 5.2.6.2. Specific species such as loons, osprey, mink, and otter may be affected. As~~
440 ~~discussed in Section 5.2.5.2.2, eagles may be less likely to be affected by mercury. While~~
441 ~~wildlife use of open water created by the NorthMet Project may be limited due to fencing and~~
442 ~~available habitat, wildlife species may be affected.~~

443 ~~Additionally, s~~Surface water quality standards do not apply to the pit lake or Tailings Basin. Any
444 discharge water, such as the pit lake overtopping, would be treated in order to meet water quality
445 standards and, as such, would not likely affect wildlife species.

446

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447 **Wetlands**

448 Of the wetland-related SGCN, the marbled godwit and olive-sided flycatcher were surveyed for,
449 but not found (ENSR 2005). The bog copper butterfly also was not found during surveys and
450 there are no known NHIS records of any sightings within 12 miles of the Mine Site. As discussed
451 above, the black duck, American bittern, and swamp sparrow are not likely to be present because
452 they require open water and non-forested wetlands, which are relatively scarce at the Mine Site.
453 The red-backed salamander is primarily an upland species, but may be present along the edges of
454 mixed hardwood swamps. The disa alpine butterfly may inhabit the black spruce bogs of the
455 Mine Site and is historically known to occur in the Laurentian and Nashwauk Uplands (MDNR
456 2006d).

457 Based on the site-specific wetland delineation, the NorthMet Project Proposed Action would
458 directly affect 758.2 acres of wetlands at the Mine Site, primarily coniferous bog (508.3 acres
459 directly affected), shrub swamp (97.8 acres directly affected), and coniferous swamp (70.3 acres
460 directly affected). These wetland types are common in the Partridge River Watershed.
461 Consequently, the decrease of this habitat at the Mine Site is expected to displace wildlife into
462 surrounding similar habitat, which would be large enough to absorb the displaced wildlife.

463 There are 7.2 acres of wetlands/open water along the Transportation and Utility Corridor, and
464 those 7.2 acres would be affected by activities along the corridor. There are 147.1 acres of
465 affected wetland at the Plant Site ~~and Colby Lake Water Pipeline Corridor (Table 4.2.3-7)~~. On-
466 site wetland use by the SGCN described above may be limited, and these wetlands are generally
467 considered to be of low quality.

468 Wetland mitigation is proposed both on-site and off-site. Approximately 101.8 acres of wetland
469 creation is proposed for on-site mitigation. This would not replace in-kind the wetland habitat
470 affected (primarily coniferous bog and shrub/conifer swamp). Off-site mitigation would consist
471 of 1,631.4 acres of wetland compensation and 225.0 acres of upland buffer areas of various
472 habitat types at three sites.

473 **Multiple Habitats**

474 Species using multiple habitats and known to occur on or near the NorthMet Project area (e.g.,
475 gray wolf, Canada lynx, least flycatcher) are discussed above. Most multiple-habitat SGCN use
476 mature/continuous and early successional forest. NorthMet Project Proposed Action effects are
477 therefore largely limited to the mature/continuous forest habitats described above.

478 **Wildlife Corridors**

479 There is one wildlife corridor located approximately 0.5 mile northwest of the Mine Site. [\(see](#)
480 [Figure 6.2.3-1\)](#). Mine Site operations, which provide a source of disturbance from noise and
481 mining activity, would indirectly affect the corridor by reducing the effective, undisturbed size of
482 the large habitat block southeast of the corridor. These activities would limit access to the
483 corridor in the vicinity of the Mine Site; however, the corridor would continue to be accessible
484 north of the Mine Site and from south and southwest of the corridor. Vegetative restoration of
485 the stockpiles and disturbed areas, as proposed during closure, would mitigate some of the
486 effects of habitat loss in this large habitat block in the long term. Not all [of](#) the Mine Site would
487 be available for habitat restoration due to fencing around the mine pits and the open water in the
488 West Pit.

489 Rail and vehicular traffic between the Mine Site and Plant Site would increase as a result of the
490 NorthMet Project Proposed Action. While the Transportation and Utility Corridor is outside of
491 wildlife corridors, it runs parallel to the wildlife corridors and would potentially affect wildlife
492 use.

493 Additionally, there is one wildlife corridor located approximately 1 mile southeast of the existing
494 Plant Site. The existing LTVSMC Tailings Basin provides poor habitat, is not likely to be
495 heavily used by wildlife, and currently obstructs animal movement. Because current use is
496 already limited, increased activity at the Tailings Basin would have minimal effect on wildlife
497 movement through the corridor. The proposed vegetative restoration of the Tailings Basin and
498 adjacent processing plant at closure may increase the value of the corridor by improving habitat
499 to the northwest. The mining features surrounding this corridor would not be complete barriers to
500 wildlife movement (Barr 2009a).

501 ~~5.2.5.2.35.2.5.2.4~~ **Regional Forester Sensitive Species**

502 Of the 18 terrestrial RFSSs on the 2011 list for the Superior National Forest, four of these are
503 also state-listed ETSC species (gray wolf, bald eagle, wood turtle, and eastern heather vole) and
504 are discussed above. Seven other RFSS (the boreal owl, olive-sided flycatcher, bay-breasted
505 warbler, Connecticut warbler, taiga alpine, Freija's grizzled skipper, and Nabokov's blue) are on
506 the SGCN list and are discussed by habitat type in Table 4.2.5-1 and above. The remaining seven
507 species, including the northern myotis, eastern pipistrelle, little brown bat, northern goshawk,
508 great gray owl, three-toed woodpecker, and Quebec emerald are discussed below.

509 Baseline acoustic surveys for bats, which include the northern myotis, the eastern pipistrelle, and
510 the little brown bat, have been completed in the Superior National Forest east of the NorthMet
511 Project area (Abel 2011). These studies generally found that bat foraging activities is highest
512 near aquatic features. Forest edges, such as those along utility corridors, are also used for bat
513 foraging. Bats tend to forage along these features more than in interior forest habitat, and data are
514 still being analyzed by the Superior National Forest and the Natural Resources Research Institute
515 of the University of Minnesota Duluth. These The RFSS bat species may utilize forage habitat at
516 the Mine Site, but there are no caves or mine shafts that could be used for hibernation. The three
517 RFSS bats may forage along the edge habitat at the Transportation and Utility Corridor, but there
518 are no caves or mine shafts present that may be used for hibernation. Bats have occasionally
519 been observed in Plant Site buildings, but do not hibernate or roost in great numbers at the Plant
520 Site. As such, bat species are not expected to be affected by The -NorthMet Project Proposed
521 Action development is not expected to affect bat hibernacula, but may would reduce roosting and
522 foraging habitat.

523 The northern goshawk may occasionally be present at the Mine Site, since nest sites have been
524 identified by the USFS approximately 0.75 mile west of the Mine Site and near the proposed
525 East Pit and Central Pit areas. -Goshawks have nested on the mine site and adjacent Federal
526 Lands in 2000, 2009, 2011, and 2013 (USFS 2013 data) and the area has been identified as an
527 active territory. The NorthMet Project Proposed Action would directly affect one of the two
528 known nest site areas, though that nest has not been occupied in recent years (AECOM 2009a).
529 The northern goshawk may be occasionally present at the Transportation and Utility Corridor,
530 since active nest sites have been identified on and adjacent to the Mine Site. No nests are known
531 to occur at the Plant Site. Because the northern goshawk has nested in the area in the past and

532 was identified during calling surveys, activities at the Mine Site may affect the northern
533 goshawk.

534 During owl surveys (AECOM 2009a), one great gray owl was observed foraging along the
535 Transportation and Utility Corridor near the Mine Site, ~~though no nest was observed~~. A great
536 gray owl had used a historic goshawk nest at the Mine Site, ~~but did not return to the nest in the~~
537 ~~following year~~. Great gray owls nested in the NorthMet Project area in 2006 (AECOM 2009a),
538 2010, and 2011 (USFS 2013 data). Only three great gray owl nests have been observed in the
539 Superior National Forest in recent years (AECOM 2009a). Owls are sensitive to disturbance, so
540 populations would be unlikely to use the NorthMet Project area during mine operations, though
541 the species may be affected by the NorthMet Project as it has been observed and has nested in
542 the area.

543 Systematic survey data for three-toed woodpeckers are lacking; however, one bird was observed
544 during overall field surveys (ENSR 2000) and by USFS personnel in 2007. Generally, the young
545 age of the forest habitat at the Mine Site is not suitable for three-toed woodpeckers, and
546 populations or individuals in the area are not likely to occur. Woodpeckers are sensitive to
547 disturbance and would not be expected to use the Mine Site during mining operations. Though
548 not surveyed, the Transportation and Utility Corridor and Plant Site lack the old-growth forest or
549 recent burn habitat preferred by the three-toed woodpecker. Woodpeckers are sensitive to
550 disturbance and would not be expected to use the Transportation and Utility Corridor or Plant
551 Site. ~~Because Though~~ existing populations are estimated to be low, and prime habitat is not
552 available, the three-toed woodpecker populations are not expected to be affected~~may be affected~~
553 by loss of overall forest habitat in the NorthMet Project area.

554 The Quebec emerald dragonfly inhabits poor fens, a wetland type not identified at the Mine Site
555 but similar to the sedge/wet meadow that is present. Approximately 38.2 of the existing 39.5
556 acres of wet meadow/sedge meadow at the Mine Site would be affected by mining activities. The
557 presence of the Quebec emerald dragonfly in the region and the existence of similar habitat at the
558 Mine Site suggest that this species may be affected. There are no poor fens found along the
559 Transportation and Utility Corridor or Plant Site, though approximately 1.5 acres of sedge/wet
560 meadow are present at the Plant Site, and 1.4 acres would be affected by activities. There has
561 only been one documented occurrence of this species in Minnesota (Lake County in 2006, more
562 than 20 miles east of the NorthMet Project area) (Minnesota Odonata Survey Project ~~2009~~2012);
563 therefore, the likelihood of observing Quebec emerald dragonfly individuals or populations
564 within the vicinity of the NorthMet Project area is low. As such, this species is not expected to be
565 affected.

566 ~~5.2.5.2.45.2.5.2.5~~ **Other Wildlife Species**

567 Other wildlife species in the NorthMet Project area, including common and/or game species
568 (such as white-tailed deer, moose, ~~fox~~, bear, fox, porcupine, etc.) would likely be affected in
569 ways similar to special status species. Mobile individuals would avoid direct effects but may be
570 indirectly affected by a decrease of habitat. Given the adjacent habitat available to these species,
571 local effects are expected, but these would not threaten overall populations. Effects on wildlife
572 species important to the Bands are discussed in Section 5.2.9 on a connected ecosystems level.

573 Due to the relative stability in population and harvest levels for white-tailed deer and bear
574 (MDNR 2013b, MDNR 2013c), along with the limited hunting access at the NorthMet Project

575 and available adjacent habitat, the NorthMet Project is not likely to threaten deer or bear
576 populations or hunting opportunities.

577 Habitat fragmentation and loss, climate change, disease, and predation are all potential factors in
578 moose population decline (MDNR 2013d). The key habitat types which are considered moose
579 habitat include mature upland forest/continuous upland/lowland forest, grassland/brushland/early
580 successional forest, and aquatic environments. A total of 2,775.2 acres of these key habitat types
581 would be directly affected by the NorthMet Project (Table 5.2.5-3). As such, the NorthMet
582 Project will affect moose individuals in the vicinity through habitat loss and fragmentation,
583 though not likely at a population level.

584

585 **5.2.5.3 NorthMet Project No Action Alternative**

586 **5.2.5.3.1 Mine Site**

587 Under the NorthMet Project No Action Alternative, mining would not occur. As described in
588 Section 5.2.4.3.1, forest harvesting would continue to occur in portions of the federal lands,
589 including the Mine Site. While timber harvests would result in the immediate decrease of some
590 habitat types, permanent changes are not expected and conversion from one habitat type to
591 another would benefit some species. Direct and indirect effects of the NorthMet Project No
592 Action Alternative on wildlife and their habitat types are not expected, as the federal lands would
593 continue to be managed as they currently are. Species individuals may still be affected due to
594 existing land use (timber harvest, exploration, vehicle traffic, etc.) but effects are less than those
595 expected under the NorthMet Project Proposed Action. The use of privately owned land at the
596 Mine Site would also determine effects to wildlife under the NorthMet Project No Action
597 Alternative.

598 **5.2.5.3.2 Plant Site**

599 Under the NorthMet Project No Action Alternative, the former LTVSMC processing plant would
600 be reclaimed and areas revegetated in accordance with the Reclamation Plan much sooner than
601 under the NorthMet Project Proposed Action. Revegetation would restore habitat for some
602 species. Species individuals may still be affected due to disturbances related to reclamation, but
603 effects are less than those expected under the NorthMet Project Proposed Action.