

**Comment**

**Response**



**Comment 115**

**Section 3.7.1.1, p. 3-79, Pre-mining Aquatic Resources - Freshwater.**

JS.5.145 The second sentence in this section should be revised to include a reference to Figure 3.5-1 as in the preceding sentence, instead of Table 3.7-1. This sentence should read: "A few other streams and drainages also enter Hawk Inlet outside of the project area (Figure 3.5-1)."

**Comment 116**

**Section 3.7.1.1, pp. 3-79 and 3-81, Pre-mining Aquatic Resources - Freshwater.**

JS.5.146 The stream length for Greens Creek is listed as 211,340 ft in the Table 3.7-1, and 10 miles or 52,800 ft in text (p. 3-81). The correct stream length should be accurately reflected in both the table and text. In addition, there are numerous references in the text on pp. 3-81 through 3-103 to figures and tables that are incorrect.

**Comment 117**

**Section 3.7.2.2, p. 3-92, Baseline Conditions – Aquatic Resources - Marine.**

JS.5.148 The last sentence in the first paragraph on p. 3-92 should be deleted as it is not attributable to HGCMC 2011. This sentence should be replaced by the following: "Based on these data, it appears that heavy metals in sediment near the outfall 002 site continue to vary from year to year, and have not increased above the range of area-wide baseline levels during mining years (HGCMC 2010)."

**Comment 118**

**Section 3.7.2.2, p. 3-92, Baseline Conditions – Aquatic Resources - Marine.**

JS.5.149 On p. 3-92, the third sentence in the second paragraph should be revised as follows: "A concentrate spill occurred from the shiploader in 1989 near Site S-5; ..."

The fifth sentence in the second paragraph should be revised to read: "Based on sampling results, a rapid increase in metals concentrations occurred after the spill and sample values have been highly variable, but remain elevated in the immediate vicinity of the shiploader relative to metals concentration in other inlet sampling sites."

**Comment 119**

**Section 3.7.2.2, p. 3-94, Baseline Conditions – Aquatic Resources - Marine.**

JS.5.150 The first sentence on p. 3-94 should be revised to read: "The metals levels in sediments observed through 2002 in the immediate area of the shiploader could be toxic to bivalves, amphipods and burrowing organisms."

**Comment ID: JS.5.145**

The correction has been made.

**Comment ID: JS.5.146**

The text in Section 3.7.1.1 has been revised to indicate that the stream lengths in Table 3.7-1 include tributaries in each watershed.

**Comment ID: JS.5.147**

The references have been reviewed and corrected.

**Comment ID: JS.5.148**

Text has been revised as suggested.

**Comment ID: JS.5.149**

The text has been revised to clarify that the spill was at the shiploader site and elevated metal concentrations are in the immediate vicinity of the site.

**Comment ID: JS.5.150**

The text has been revised as suggested.

Comment	Response
	
<p><b>Comment 120</b></p>	
<p><b>Section 3.7.2.2, p. 3-95, Baseline Conditions – Aquatic Resources - Marine.</b></p>	
<p>JS.5.151</p>	
<p>On p. 3-95, under the "Overall Marine Conditions" heading, the sixth sentence in the first paragraph should be revised to read: "There are no distinct indications of direct effects of metals to this environment although some degradation of the habitat near the shiploader facility is possible."</p>	<p><b>Comment ID: JS.5.151</b> The text has been revised as noted.</p>
<p><b>Comment 121</b></p>	
<p><b>Section 3.7.3.2, p. 3-98, Effects of Alternative A, No Action, Freshwater.</b></p>	
<p>JS.5.152</p>	
<p>The fifth sentence in Section 3.7.3.2 under the "Freshwater" heading should be revised to read: "Potential changes in some metals levels in Greens Creek, if related to mining, may be possible in the short term; however, metals levels have remained relatively consistent in the control and downgradient sites, so short-term changes for the remaining operating period appear unlikely."</p>	<p><b>Comment ID: JS.5.152</b> The text has been revised to the following:</p> <p>Potential changes in some metals levels in Greens Creek, if related to mining, are possible in the short term; however, metals levels have remained relatively consistent in the control and downgradient sites, so short-term changes for the remaining operating period appear unlikely.</p>
<p><b>Comment 122</b></p>	
<p><b>Section 3.7.3.2, p. 3-99, Table 3.7-8, and Summary, p. viii, Table ES-2.</b></p>	
<p>JS.5.153</p>	
<p>The DEIS is not consistent in its characterization of resident fish stream habitat that would be lost in Fowler Creek under Alternatives C and D. Table ES-2, p. viii, states that 34 feet of Class I habitat will be permanently lost in Fowler Creek under Alternatives C and D. However, Table 3.7-8 does not represent that there will be any loss of Class I habitat in Fowler Creek. Also, numbers in the text of the second paragraph on p. 3-103 do not match this table. The text and tables need to be revised to accurately reflect the potential permanent loss of Class I and Class II fish habitat under Alternatives C and D.</p>	<p><b>Comment ID: JS.5.153</b> The DEIS erroneously reported in places that the alternative TDF site would affect 34 feet of Class I streams. This is not correct; the alternative TDF site would not directly affect (by burial) any Class I streams. This has been corrected in the FEIS. The text has been edited to correct inconsistencies.</p>
<p><b>Comment 123</b></p>	
<p><b>Section 3.7.3.5, p. 3-105, Effects of Alternative D, Modified Proposed Action.</b></p>	
<p>JS.5.154</p>	
<p>The third sentence of paragraph one on p. 3-105 states that the "total basin area that would have flow diversion would be 98 acres of Tributary Creek and Zinc Creek basins." Why does this include Zinc Creek?</p>	<p><b>Comment ID: JS.5.154</b> Text has been added to clarify that Tributary Creek is part of the larger Zinc Creek basin.</p>
<p>JS.5.155</p>	
<p>The fifth sentence should be revised as follows to reflect that the construction of the pond would also be in the Tributary Creek drainage: "The design would also require the placement of tailings as well as the construction of a water management pond within the Cannery Creek drainage and the Tributary Creek drainage."</p>	<p><b>Comment ID: JS.5.155</b> Revision made as suggested.</p>
<p><b>Comment 124</b></p>	
<p><b>Section 3.7.4, p. 3-106, Aquatic Resources - Summary.</b></p>	
<p>JS.5.156</p>	
<p>The first sentence at the top of p. 3-106 should be revised as follows: "Monitoring in Hawk Inlet has shown some elevated concentrations of metals in sediments near the shiploader site and also variable metals concentrations in sediments near Outfall 002."</p>	<p><b>Comment ID: JS.5.156</b> Text revised per comment.</p>

**Comment**

**Response**



**Comment 125**

**Section 3.8.3.1, p. 3-109, Effects Common to All Alternatives.**  
 JS.5.157 The third bullet point ("Filter fabric") at the top of p. 3-109 should be deleted.

**Comment 126**

**Section 3.8.3.3, p. 3-111, Mitigated Alternative B.**  
 JS.5.158 The last line of the first paragraph states that mitigation would be the same as that recommended under Alternative B; however, there is no mitigation recommended for Alternative B in this section. Perhaps this should refer to Alternative A instead of Alternative B.

**Comment 127**

**Section 3.8.4, p. 3-112, Soils – Summary.**  
 JS.5.159 The proposed mitigation of developing test plots to "determine the optimum depth of the plant growth layer for the desired plant communities" will not provide enough time to determine rooting depths of mature species. Observations of rooting depths from natural slopes provide an indication of rooting depth as discussed in OSU (2011).

**Comment 128**

**Section 3.9.3.1, p. 3-115, Effects Common to All Alternatives.**  
 JS.5.160 The text box on p. 3-115 should be deleted in its entirety as this does not apply to the HGCMC site.

**Comment 129**

**Section 3.10.3.1, p. 3-127, Table 3.10-3.**  
 JS.5.161 Footnotes should be added to Table 3.10-3 to specify which columns equate to which alternatives.

**Comment 130**

**Section 3.10.3.4, p. 3-136, Effects of Alternative C, New TDF Located Outside Monument.**  
 JS.5.162 Replace "northwest" with "northeast" on line 3 of paragraph 2 and also on line 6 of the second paragraph in Section 3.10.3.5 on p. 3-140.

**Comment 131**

**Section 3.10.3.4, p. 3-140, Effects of Alternative C, New TDF Located Outside Monument.**  
 JS.5.163 On p. 3-140, in the paragraph under Table 3.10-7, it states that impacts to wetlands due to the upgrade of the A Road for Alternative C were not factored in. The same analysis would be applicable to Section



**Comment ID: JS.5.157**  
 Text revised per comment.

**Comment ID: JS.5.158**  
 The sentence has been deleted.

**Comment ID: JS.5.159**  
 As noted in the comments, the Ohio State University study is based on observations of tree rooting depths on natural slopes. These natural slopes typically exhibit shallow soils underlain by bedrock, which plays a role in confining roots near the surface. It is unclear whether the capillary layer will provide the same barrier function as bedrock. The test plot would need to mimic the entire engineered cover and instead should focus specifically on rooting depths and root behavior at the growth media / capillary layer boundary. Since root behavior is the focus of the study, it would not be necessary for trees to reach maturity and a 15- to 20-year time frame may provide substantial insight as to how tree roots may interact with the boundary with different depths of growth media. The text has not been changed.

**Comment ID: JS.5.160**  
 Comment noted. The text box in Section 3.10.3.1 referring to succession was rephrased slightly to present examples of succession. We respectfully disagree that this discussion does not apply to the HGCMC site; the successional process will indeed occur at the site following reclamation and closure.

**Comment ID: JS.5.161**  
 Table 3.10-3 represents current baseline conditions and is not associated with the effects analysis of the alternatives.

**Comment ID: JS.5.162**  
 Text revised per comment.

**Comment ID: JS.5.163**  
 Additional wetland impacts have been included in sections 3.10.3.4 and 3.10.3.5 to address road improvements under alternatives C and D.

Comment	Response
 <p>3.10.3.5, Effects of Alternative D. These impacts will not be minor and should be considered and added to the total wetlands disturbance acreage for Alternatives C and D. The A Road will need to be widened, truck turnouts will need to be constructed, and a pipeline corridor will be needed with two 18" pipelines buried parallel to the road; all of these impacts will involve fill in wetlands.</p> <p><b>Comment 132</b></p> <p style="text-align: center;"><b>Section 3.11, p. 3-142, Wildlife, General Comment.</b></p> <p>Potential water quality impacts to species and/or their prey are not consistently covered. For example, the species descriptions for marbled murrelet and bald eagles state that water quality could impact prey for these species. However, this is not addressed in environmental consequences. In addition, under environmental consequences, for river otter it states that Alternative A would not affect prey species and water quality is not discussed in the other alternatives for river otters.</p> <p><b>Comment 133</b></p> <p style="text-align: center;"><b>Section 3.11, p. 3-142, Wildlife, General Comment.</b></p> <p>It may be important to note that when referencing the wildlife field studies, just because a species or indicators of species were not observed does not mean they are not present.</p> <p><b>Comment 134</b></p> <p style="text-align: center;"><b>Section 3.11, p. 3-142, Wildlife, General Comment.</b></p> <p>In the first sentence on p. 3-142, the acronym "MIS" (Management Indicator Species) should be spelled out and defined (see, e.g., the first sentence of the second paragraph). Also, consider summary tables, where one table could be MIS species and how each species is impacted by each alternative, then a separate table for "Other Species of Concern."</p> <p><b>Comment 135</b></p> <p style="text-align: center;"><b>Section 3.11, Wildlife, General Comments.</b></p> <p>Technical edits by page number:</p> <ul style="list-style-type: none"> <li>• P. 3-155; first line: "KAI Environmental" should be changed to "Kai Environmental."</li> <li>• P. 3-155; fourth paragraph: the reference of "KAI Environmental" should be changed to "Kai Environmental."</li> <li>• P. 3-160; end of first paragraph: consider adding in the time periods that USFWS recommends avoiding vegetation clearing.</li> <li>• P. 3-163; add a period to the end of the first sentence.</li> <li>• P. 3-165; Waterfowl and Shorebirds; fourth line: correct "thus that it."</li> </ul>	<p><b>Comment ID: JS.5.164</b> Additional text regarding potential water quality impacts to the bald eagle, river otter, marbled murrelet, and waterfowl and shorebirds has been added to sections 3.11.3.2, 3.11.3.3, 3.11.3.4, and 3.11.3.5.</p> <p><b>Comment ID: JS.5.165</b> A statement to this effect has been added to Section 3.11.2.</p> <p><b>Comment ID: JS.5.166</b> MIS is defined at its first use in Section 3.7.1.1, Aquatic Resources, and is spelled out. Table 3.11-4, summarizing impacts to MIS and other species of concern, has been added.</p> <p><b>Comment ID: JS.5.167</b> Edit made per comment.</p> <p><b>Comment ID: JS.5.168</b> USFWS-recommended periods for avoiding vegetation clearing to minimize impacts to migratory birds have been added to Section 3.11.3.1.</p> <p><b>Comment ID: JS.5.169</b> Edit made per comment.</p> <p><b>Comment ID: JS.5.170</b> Edit made per comment.</p>

**Comment**

**Response**



- JS.5.167 • P. 3-179; "KAI Environmental" should be changed to "Kai Environmental."
- JS.5.171 • P. 3-183; fourth full paragraph: use of word "documented" twice in the sentence is awkward.
- JS.5.172 • P. 3-183; Queen Charlotte Goshawk: the second sentence states the listing was found to be not warranted twice, but only one year is listed.
- JS.5.173 • P. 3-186; first paragraph, 7th line: "constants speeds" should read "constant speed."
- JS.5.174 • P. 3-189; Section 3.12.4.3; first sentence: change Section 3.12.4.6 to 3.12.4.1. Same comment for section references under each of the "Effects of Alternatives."

**Comment 136**

**Section 3.11.2.1, p. 3-151, Management Indicator Species – Bald Eagle.**

JS.5.175 In Section 3.11.2.1, under the "Bald Eagles" heading, no historical information on bald eagle nests are provided; however, USFWS has GIS data for these. The section does not address eagles that may build nests between the 2011 survey and when construction begins.

**Comment 137**

**Section 3.11.2.1, p. 3-151, Management Indicator Species – Sitka Black-tailed Deer.**

JS.5.176 In Section 3.11.2.1, under the "Sitka Black-tailed Deer" heading, the affected environment section discusses road kill of deer, which is not discussed under the environmental consequences alternatives. For Alternative B, the same number of road kill would remain the same over a longer period. For Alternatives C and D, there would be additional road used for hauling tailings so an increase of road traffic would be expected. Therefore, there is a potential for increased road kill of Sitka Black-tail for Alternatives C and D.

**Comment 138**

**Section 3.11.2.2, p. 3-155, Other Species of Concern.**

JS.5.177 In Section 3.11.3.2, under the "Marbled murrelet" heading, the second sentence states it is unlikely that marbled murrelets use the area, but the environmental consequences for other alternatives state that a marbled murrelet was seen flying through the field study area and mitigation measures were recommended. Either a citation that they are unlikely to use the area should be added, or the statement should be amended to correct the inconsistency.

**Comment 139**

**Section 3.11.2.2, p. 3-157, Other Species of Concern.**

JS.5.178 In Section 3.11.2.2, under the "Migratory Birds" heading, the fourth line of the first paragraph refers to species of concern, and both the state and federal government have lists so this should be defined. Under paragraph 2, it refers to 20 species and then only discusses habitat for 19. In addition, the primary habitat for the "remaining 5" is not defined and it may be worth noting if it is or is not found in any project area.

**Comment ID: JS.5.171**

Edit made per comment.

**Comment ID: JS.5.172**

A clarification of the listing petition history for the goshawk has been added to Section 3.12.3.3.

**Comment ID: JS.5.173**

Edit made per comment.

**Comment ID: JS.5.174**

Edit made per comment.

**Comment ID: JS.5.175**

Bald eagle nest data were obtained from the USFWS in July 2011. Additional text stating that the project would adhere to National Bald Eagle Management Guidelines (USFWS 2007) if nests are found to be active, including new nests, has been added to Section 3.11.3.3 and Section 3.11.3.4.

**Comment ID: JS.5.176**

The EIS has been revised to reflect this. Text has been added to sections 3.11.3.2, 3.11.3.3, 3.11.3.4, and 3.11.3.5, regarding effects related to road kill of deer under each alternative.

**Comment ID: JS.5.177**

Text in Section 3.11.3.2 was clarified to indicate that this statement referred to the existing TDF (under Alternative A), which lacks the forest structural attributes preferred by marbled murrelets for nesting. This is consistent with the conclusion drawn in the 2003 EIS.

**Comment ID: JS.5.178**

Text in Section 3.11.2.2 and corresponding information in Table 3.11-1 have been clarified to indicate habitat preferences for the migratory bird species.

Comment	Response
 <p><b>Comment 140</b></p> <p><b>Section 3.11.3.3, p. 3-163, Effects of Alternative B, Proposed Action – Management Indicator Species – Bald Eagle.</b></p> <p>In Section 3.11.3.3, under the "Bald Eagle" heading, the second sentence should add "inactive in 2011" to remain consistent with other sections regarding activity in the nests in 2011.</p>	<p><b>Comment ID: JS.5.179</b> Text regarding bald eagle nest inactivity in 2011 has been added to Section 3.11.3.3.</p>
<p><b>Comment 141</b></p> <p><b>Section 3.11.3.3, p. 3-163, Effects of Alternative B, Proposed Action.</b></p> <p>On p. 3-163, under the "Management Indicator Species" heading, the text references a 330-ft management zone around eagle nests; however, the text on p. 3-167 states that there should be a 660-ft buffer. Please revise this inconsistency and provide the correct size of the management zone surrounding a bald eagle nest site and provide the appropriate citation.</p>	<p><b>Comment ID: JS.5.180</b> Text in sections 3.11.3.3 and 3.11.3.4 has been clarified to reference the 660-foot bald eagle nest buffer.</p>
<p><b>Comment 142</b></p> <p><b>Section 3.11.3.3, p. 3-164, Table 3-11.3.</b></p> <p>Table 3.11-3 shows the breakdown of POG being removed under each alternative, and it includes a comparison between Alternative B and Mitigated Alternative B. There is no discussion of Mitigated Alternative B by species in the text of Section 11.3, which is confusing and should be provided in the EIS.</p>	<p><b>Comment ID: JS.5.181</b> Text has been added to Section 3.11.3.3 under the species on which Mitigated Alternative B would have different effects than Alternative B.</p>
<p><b>Comment 143</b></p> <p><b>Section 3.11.3.3, p. 3-164, Effects of Alternative B, Proposed Action – Vancouver Canada Goose.</b></p> <p>In Section 3.11.3.3, under the "Vancouver Canada Goose" heading, would habitat loss be minimal compared to the abundant adjacent habitat available? In addition, under the discussion for Alternatives C and D, it does not indicate how many acres of habitat would be disturbed if the new TDF were constructed. If these details are discussed in the Biological Assessment/Biological Evaluation report, please reference the relevant section.</p>	<p><b>Comment ID: JS.5.182</b> Additional text has been added to Section 3.11.3.3, Section 3.11.3.4, and Section 3.11.3.5 related to the effects of wetland habitat loss to Vancouver Canada geese.</p>
<p><b>Comment 144</b></p> <p><b>Section 3.11.3.3, p. 3-164, Effects of Alternative B, Proposed Action – River Otter.</b></p> <p>In Section 3.11.3.3, under the "River Otter" heading, how much habitat loss would result under Alternative B, Alternative C (p. 3-167), and Alternative D (p. 3-170)? If these details are discussed in the Biological Assessment/Biological Evaluation report, please reference the relevant section.</p>	<p><b>Comment ID: JS.5.183</b> Additional text related to acres of habitat loss for the river otter have been added to sections 3.11.3.3, 3.11.3.4, and 3.11.3.5.</p>
<p><b>Comment 145</b></p> <p><b>Section 3.11.3.3, p. 3-164, Effects of Alternative B, Proposed Action – River Otter.</b></p> <p>In Section 3.11.3.3, under the "River Otter" heading, how much habitat loss would result under Alternative B, Alternative C (p. 3-167), and Alternative D (p. 3-170)? If these details are discussed in the Biological Assessment/Biological Evaluation report, please reference the relevant section.</p>	<p><b>Comment ID: JS.5.184</b> Acres of habitat loss have been added to Section 3.11.3.3 under Red-breasted Sapsucker, Hairy Woodpecker, and Brown Creeper.</p>

**Comment**

**Response**



**Comment 145**

**Section 3.11.3.3, pp. 3-164 and 3-165, Effects of Alternative B, Proposed Action – Red-breasted Sapsucker, Hairy Woodpecker, and Brown Creeper.**

JS.5.184

In Section 3.11.3.3, under the "Red-breasted sapsucker, Hairy woodpecker, and Brown creeper" heading, how much habitat loss would result under Alternative B? Similarly, how much habitat would be lost under Alternative C (p. 3-168) or Alternative D (p. 3-170)? If these details are discussed in the Biological Assessment/Biological Evaluation report, please reference the relevant section.

**Comment 146**

**Section 3.11.3.4, p. 3-166, Effects of Alternative C, New TDF Located Outside Monument – Management Indicator Species – Brown Bear.**

JS.5.185

In Section 3.11.3.4, under the "Brown Bear" heading, are there creek impacts that should be discussed?

**Comment 147**

**Section 3.11.3.4, p. 3-167, Effects of Alternative C, New TDF Located Outside Monument – Management Indicator Species – River Otter.**

JS.5.186

In Section 3.11.3.4, under the "River Otter" heading, are there impacts to "unnamed creek" that should be discussed?

**Comment 148**

**Section 3.11.3.4, p. 3-168, Effects of Alternative C, New TDF Located Outside Monument – Management Indicator Species – Red-breasted Sapsucker, Hairy Woodpecker, and Brown Creeper.**

JS.5.187

In Section 3.11.3.4, under the "Red-breasted sapsucker, Hairy woodpecker, and Brown creeper" discussion, is the north-flowing drainage to Hawk Inlet the same as "unnamed creek?"

**Comment 149**

**Section 3.11.3.4, p. 3-168, Effects of Alternative C, New TDF Located Outside Monument – Management Indicator Species – Other Species of Concern.**

JS.5.188

In Section 3.11.3.4, under the "Endemic Species" discussion, how much habitat fragmentation will result under this alternative, or how much fragmentation will result relative to Alternative D?

**Comment 150**

**Section 3.11.3.5, p. 3-170, Effects of Alternative D, Modified Proposed Action – Management Indicator Species – River Otter.**

JS.5.189

In Section 3.11.3.5, under the "River Otter" heading, a discussion of Fowler Creek should be addressed in this section.

**Comment ID: JS.5.185**

Additional text related to creek impacts has been added to Section 3.11.3.4 under Brown Bear, as follows: Effects near the existing TDF would be the same as Alternative A. Development of the north TDF under Alternative C would result in the burial of approximately 1,080 feet of stream determined to be resident fish bearing (see Section 3.7.3.4 for additional discussion) and minor reductions in downstream flow. This would result in the permanent loss of anadromous fish rearing and spawning habitat, though overall stream channel loss would be only a small portion of stream channels within the Fowler Creek drainage. Therefore, effects to brown bear food sources would be minor under Alternative C.

**Comment ID: JS.5.186**

Text related to creek impacts has been added to Section 3.11.3.4 under River Otter. Approximately 1,044 feet of Class II streams, and thus river otter habitat, would be lost due to TDF development along the tributary to Fowler Creek (Table 3.7-8). The unnamed creek draining to Hawk Inlet would not be affected. The text has been corrected and clarified for river otters and for the red-breasted sapsucker, hairy woodpecker, and brown creeper.

**Comment ID: JS.5.187**

No. The "unnamed creek" is the "unnamed drainage to Fowler Creek." The text has been corrected to clarify this issue. There would be no direct effects to these species in the drainage flowing north to Hawk Inlet.

**Comment ID: JS.5.188**

Additional text has been added to Section 3.11.3.4 under Endemic Species related to fragmentation under Alternative C with comparisons to Alternative D.

**Comment ID: JS.5.189**

Text related to creek impacts has been added to Section 3.11.3.5 under River Otter. Approximately 1,044 feet of Class II streams, and thus river otter habitat, would be lost due to TDF development along the tributary to Fowler Creek (Table 3.7-8).

Comment	Response
 <p><b>Comment 151</b></p> <p><b>Section 3.11.3.5, p. 3-171, Effects of Alternative D, Modified Proposed Action – Management Indicator Species – Other Species of Concern – Endemic Species.</b></p> <p>In Section 3.11.3.5, under the "Endemic Species" heading, how much habitat fragmentation will result under this alternative, or how much fragmentation will result relative to Alternative C?</p>	<p><b>Comment ID: JS.5.190</b> Additional text has been added to Section 3.11.3.5 under Endemic Species related to fragmentation under Alternative D.</p>
<p><b>Comment 152</b></p> <p><b>Section 3.12.3, p. 3-182, Threatened, Endangered, Candidate, and Forest Service Alaska Region Sensitive Species – Affected Environment.</b></p> <p>The first sentence in Section 3.12.3 is unclear. Consider striking "This section describes," and instead begin the sentence with, "The status, distribution..."</p>	<p><b>Comment ID: JS.5.191</b> The requested edit to Section 3.12.3 has been made.</p>
<p><b>Comment 153</b></p> <p><b>Section 3.12.3.1, p. 3-182, Threatened, Endangered, Candidate, and Forest Service Alaska Region Sensitive Species – Affected Environment, Humpback whale (Endangered).</b></p> <p>In Section 3.12.3.1, under the "Humpback whale" discussion, consider adding a sentence in the first paragraph clarifying that the Endangered Species Conservation Act preceded the Endangered Species Act of 1973.</p>	<p><b>Comment ID: JS.5.192</b> The requested edit to Section 3.12.3.1 under Humpback Whale has been made.</p>
<p><b>Comment 154</b></p> <p><b>Section 3.12.3.3, p. 3-184, Queen Charlotte Goshawk (Forest Service Sensitive).</b></p> <p>In Section 3.12.3.3, the last sentence in the second paragraph is difficult to follow. Suggest breaking into two sentences between "...more adaptable than once thought" and "When these habitats are not available..." The third paragraph leads off with only 2 goshawks being found on Admiralty Island, then ends with an additional find. Consider clarifying how many goshawk nests have been found in total. Additionally, goshawks are known to build multiple nests and may use different ones each year, which might be worth mentioning because "active nest" is defined.</p>	<p><b>Comment ID: JS.5.193</b> The suggested edits have been made to Section 3.12.3.3.</p>
<p><b>Comment 155</b></p> <p><b>Section 3.12.3.4, p. 3-184, Black Oystercatcher (Forest Service Sensitive).</b></p> <p>The discussion of the Black Oystercatcher in Section 3.12.3.4 appears to be lacking a description regarding whether the species has the potential to be in the project area. For other species in the section, the DEIS states if the species has the potential to be in the project area.</p>	<p><b>Comment ID: JS.5.194</b> Table 3.12-1 indicates that suitable habitat (rocky shorelines along the coast) is present in the project area. Text has been added to section 3.12.3.4 to specify that this includes rocky shorelines in the vicinity of Hawk Inlet. Note that Section 3.12.4.1 states that no large concentrations of oystercatchers have been documented in Hawk Inlet.</p>
<p><b>Comment 156</b></p> <p><b>Section 3.12.3.6, p. 3-185, Sensitive Plants.</b></p> <p>The following is a list of questions regarding the discussion of "Sensitive Plants" in Section 3.12.3.6:</p>	

**Comment**

**Response**



- JS.5.195 • Who conducted botanical studies for the project, and are there reports to cite or reference in an appendix?
- JS.5.196 • What is the "Planning Area," and has that been previously defined?
- JS.5.197 • In the third sentence, the words "adversely affect impact" need to be reworded.

**Comment 157**

**Section 3.12.4.1, p. 3-187, Effects Common to All Alternatives - Goshawks.**

JS.5.198 In Section 3.12.4.1, under the "Queen Charlotte goshawk" heading, it is important to mention that goshawks may be impacted by removal of a nesting tree. In addition, a discussion may be warranted regarding whether there would be a potential reduction or displacement of prey species.

**Comment 158**

**Section 3.12.4.1, p. 3-187, Effects Common to All Alternatives – Lynn Canal Pacific Herring.**

JS.5.199 Section 3.12.4.1 refers to an analysis between salmon/steelhead and herring, but these species are not referenced anywhere else (other than table). Was the information in the Biological Assessment/Biological Evaluation report?

**Comment 159**

**Section 3.12.4.3, p. 3-189, Effects of the Alternative B: Proposed Action.**

JS.5.200 While no goshawks were found in 2010, that does not necessarily preclude them from nesting in the future. In addition, the Tongass survey protocol requires 2 years of survey in an area, to confirm no active nests are currently present and the survey conducted by Kai Environmental was only one season (as approved by USFS). Because habitat is available, it may be that the USFS would recommend nest clearance surveys prior to removal of trees as a mitigation measure for potential affects. This same comment extends to "Mitigated Alternative B," p. 3-189.

**Comment 160**

**Section 3.18.3.1, p. 3-243, Socioeconomics – Environmental Consequences.**

JS.5.201 The final sentence in Section 3.18.3.1 on p.3-243 should be revised to delete reference to the ownership of the cannery by a third party; this property is owned by the Greens Creek Mine Joint Venture. In addition, it is unclear whether this sentence mistakenly refers to "mill" closure as a trigger for reversion instead of "mine" closure. This sentence should read: "Further, were the mine to permanently close, per the Exchange Act and Agreement, the lands owned and occupied by HGCMC would revert to federal ownership and be entirely removed from the local tax base."

**Comment ID: JS.5.195**

Ellen Anderson, a botanist for the Juneau Ranger District, Tongass National Forest, conducted and wrote the botanical studies for the project. The report is included in the administrative/planning record, and cited in the reference list.

**Comment ID: JS.5.196**

Edit made per comment: "planning area" has been replaced with "study area," which is shown in Figure 3.1-1 outlining the study area of sensitive plants in relation to this EIS.

**Comment ID: JS.5.197**

Comment noted. Correction to text made; "affect" deleted

**Comment ID: JS.5.198**

Text has been added to section 3.12.4.1 regarding the removal of goshawk nesting habitat and potential effects to goshawk prey.

**Comment ID: JS.5.199**

The reference to listed salmon/steelhead has been removed from the EIS. These are addressed in the Biological Assessment and Biological Evaluation, prepared under separate cover.

**Comment ID: JS.5.200**

Alternative C or D would require a non-significant Forest Plan Amendment because of the active nest located in 2011 adjacent to the alternative TDF proposed under these alternatives. Currently, Forest Plan Standards and Guidelines will apply to reduce any disturbance during the nesting season.

**Comment ID: JS.5.201**

Text revised per comment. See Section 3.18.3.1.

<b>Comment</b>	<b>Response</b>
 <p><b>Comment 161</b></p> <p style="text-align: center;"><b>Section 3.18.3.3, p. 3-245, Effects of Alternative B, Proposed Action.</b></p> <p>The second paragraph of Section 3.18.3.3 states: "Full build-out for development, construction, and reclamation under this alternative would employ a small number of contractors (about 10) for specialized work, like liner installation, but the current mine work force would do most of the work." This sentence is not entirely accurate because HGCMC hires more than a "small number of contractors" for preparation, field work, and construction. The number of contractors hired and the scope of work covered by contractors is understated in this paragraph and should be revised accordingly to represent the significance of indirect jobs created in the economy as a result of contract work. This is true for all action alternatives.</p> <p><b>Comment 162</b></p> <p style="text-align: center;"><b>Section 3.19.3.1, p. 3-250, Effects Common to All Alternatives.</b></p> <p>The fourth bullet under Section 3.19.3.1 should be revised to read: "Constructing the TDF as described in Section 2.3.6 to contain tailings contact waters."</p> <p>The fifth bullet should be revised to read: "Relocating existing waste rock piles to the TDF to improve containment to reduce potential for oxygen and water infiltration and improve geotechnical stability."</p> <p><b>Comment 163</b></p> <p style="text-align: center;"><b>Section 3.19.3.1, p. 3-251, Effects Common to All Alternatives.</b></p> <p>In the second paragraph under the "Forestry" heading, the second sentence should be revised to clarify that vegetation would be "cleared" under Alternatives C and D, and not just "cleared" under Alternative B. This sentence should read: "Clearing of vegetation associated with Alternative B would be located adjacent to the existing TDF, whereas Alternatives C and D would result in clearing vegetation to the area north of the A Road, which is outside of the Monument."</p> <p><b>Comment 164</b></p> <p style="text-align: center;"><b>Section 3.19.3.1, p. 3-253, Effects Common to All Alternatives.</b></p> <p>On p. 3-253, under the "Fish and Wildlife" heading, the fourth sentence in the first paragraph should be revised to read: "Alternative A would have the least affect to fish and wildlife resources within the Monument because of the limited extent of disturbance of the operations."</p> <p><b>Comment 165</b></p> <p style="text-align: center;"><b>Section 3.20.3.4, p. 3-264, Figure 3.20-2.</b></p> <p>The title for Figure 3.20-2 should be changed to "IRA Affected by Each Alternative," to accurately reflect what the figure represents.</p>	<p><b>Comment ID: JS.5.202</b> The text was revised to read as follows:</p> <p>Full build-out for development, construction, and reclamation under this alternative would employ contractors for site preparation, additional investigations, construction, and specialized work, like liner installation. The current mine work force would also do much of the work.</p> <p><b>Comment ID: JS.5.203</b> Edit made per comment.</p> <p><b>Comment ID: JS.5.204</b> Revised sentence to read as follows:</p> <p>Clearing of vegetation associated with Alternative B would occur adjacent to the existing TDF, whereas alternatives C and D would result in vegetation clearing at the alternative TDF site, which is outside the Monument.</p> <p><b>Comment ID: JS.5.205</b> Revised sentence to read as follows:</p> <p>Alternative A would have the least effect to fish and wildlife resources in the Monument because no further expansion into the Monument would be approved.</p> <p><b>Comment ID: JS.5.206</b> Edit made per comment. The title of Figure 3.20-2 has been changed to read "IRA Affected by Each Alternative."</p>

**Comment**

**Response**



**Comment 166**

**Section 3.22.2, p. 3-276, Descriptions of Selected Relevant Actions.**

JS.5.207 Under the "Geotechnical Drilling" heading on p. 3-276, the acres of ground disturbance listed (1.75 acres) should be clarified to state that the 1.75 acres of disturbance was for the whole drilling program (14 – 17 sites). Only three of these sites were within an IRA. HGCMC estimates that ground disturbance for each drill site in the IRA to be 4800 square feet (0.1 acre) per site. The Greens Creek IRA (two drill sites) resulted in disturbance of approximately 9600 square feet; whereas the disturbance in the Mansfield IRA, with one drill site, is estimated at 4800 square feet. The total ground disturbance for this drill program within an IRA was 0.3 acres.

**Comment 167**

**Section 3.23, p. 3-289, Table 3.23-1, Irreversible and Irretrievable Resource Commitments.**

JS.5.208 On p. 3-289, within the "Land Use and Recreation Resource" row, why does this information only reflect an irreversible commitment of acreage "within the Monument?" Also, it does not appear that this commitment will be "irreversible" because people will be able to use the site after closure. This "loss" may be better characterized as "irretrievable."

**Comment 168**

**Section 5, p. 5-1, References.**

There are numerous items referenced in the DEIS that are not included in Chapter 5, References. The following is a partial list of references that should be added to Chapter 5:

- USFS 2008 (Forest Plan)
- P. 3-97 ADF&G FH11-I-0123 draft 2011
- P. 3-98 Buell, 1981
- P. 3-122 Adamus 2012
- P. 3-146 Caouette et al, 2006
- P. 3-147 Allen & Angliss, 2010
- P. 3-149 ADF&G, 2000
- P. 3-149 AMAP, 2002
- P. 3-153 Dawson et al 2007

**Comment ID: JS.5.207**

The text was revised to clarify total disturbance and disturbance in Inventoried Roadless Areas (IRAs).

**Comment ID: JS.5.208**

A new row for the commitments of Monument lands was added to Table 3.23-1. The text was revised to indicate that the commitment of Monument lands is irretrievable, but not irreversible as previously stated because lands will be returned to near natural condition.

**Comment ID: JS.5.209**

Edits made per comment. Missing references have been identified and added to the reference list and administrative record.

Comment	Response
 <p>JS.5.209</p> <ul style="list-style-type: none"> <li>• Oceanus Alaska, October 2003, Review of Essential Fish Habitat in Hawk Inlet Subsequent to Mining Operations (this report is cited under Ridgeway, but the text cites Oceanus; <i>see, e.g.</i>, p.3-83)</li> <li>• Kanouse 2011 (?) at p. 3-86</li> <li>• HGCMC 2010, 2011 Hawk Inlet 2010 Annual Report, Hawk Inlet 2011 Annual Report</li> </ul> <p>When preparing the Final EIS, please ensure that the reference list is updated, complete, and accurate.</p>	<p><b>Comment ID: JS.5.210</b></p> <p>Edit made per comment.</p>
<p><b>Comment 169</b></p> <p><b>Section 5, p. 5-1, References, and General Comment.</b></p> <p>JS.5.210</p> <p>Not all year citations are correct or consistent when citing to a reference. When referencing a Forest Plan, is it a USFS or USDA document (e.g., p. 3-97). Please correct and revise throughout the DEIS accordingly. Please make sure all references to USFS documents are accurate; for example, should USFS be 2008, 2008a, or 2008c?</p>	<p><b>Comment ID: JS.5.211</b></p> <p>Edit made per comment. Definitions have been revised in glossary.</p>
<p><b>Comment 170</b></p> <p><b>Section 6, p. 6-1, Glossary.</b></p> <p>The following definitions should be revised in the Glossary:</p> <ul style="list-style-type: none"> <li>• <b>Ore</b> (p. 6-8): A naturally occurring solid material from which a metal or valuable mineral can be profitably extracted.</li> <li>• <b>Ore body</b> (p. 6-8): A natural accumulation of a metal, gemstone or other valuable mineral substance, which is rich enough in concentration that it can be mined and processed at a profit.</li> <li>• <b>Ore reserve</b> (p. 6-8): mineral deposits which are valuable and legally, economically and technically feasible to extract.</li> <li>• <b>Precipitation</b> (p. 6-10): [this definition should be revised to remove reference to "flocculation" because this is different from precipitation. The transformation of soluble species to an insoluble species in a liquid is often a precipitation reaction. Flocculation combines insoluble or colloidal species in a liquid so that they can be settled or filtered out more effectively]. Accordingly, the definition of <b>Precipitation</b> should be: "The process of removing solid or liquid particles from a gas or smoke; the process of forming a precipitate from a solution; rain, mist, snow, and the like."</li> <li>• <b>Waste rock</b> (p. 6-14): Also known as development rock or production rock, waste rock is the non-ore rock extracted to gain access into the ore zone. It contains no metal values economic to recover.</li> <li>• <b>Xanthates</b> - A class of chemicals known as "collector" chemicals that attach to floating minerals, making them normally capable of adhering to the froth in a flotation circuit.</li> </ul> <p>JS.5.211</p>	<p><b>Comment ID: JS.5.212</b></p> <p>Comment noted.</p> <p><b>Comment ID: JS.5.213</b></p> <p>Please see the response to Comment JS.5.040.</p> <p>If water quality at closure is better than current predictions, the method of control, treatment, drainage, and discharge, as well as the outfall location, would be evaluated as a part of APDES permitting requirements and as a part of the final reclamation plan at that time.</p>

**Comment**

**Response**



**Comment 171**

**General Technical Comment.**

HGCMC believes a number of technical aspects to the Alternatives were not adequately discussed in the DEIS. Below is a non-exhaustive list of the technically complex issues we believe are part of each alternative:

**Alternative B**

- JS.5.212 • HGCMC will continue to work with both the USFS and the U.S. Army Corps of Engineers to develop and implement various mitigation measures to address and mitigate impacts during subsequent stages of development.

**Alternative C**

- JS.5.213 • Alternative C prevents the ability to have a single no-pump, gravity flow/discharge system following closure of the TDF. Although the DEIS states that discharge without treatment is not anticipated, eliminating the option for no-pump, gravity flow would be short-sighted. Predictions of water quality following closure of the TDF are intentionally pessimistic. If actual closure water quality ends up being better than predicted, options including gravity flow would substantially reduce impacts compared to pump-dependent options. Alternative B is the only alternative that would allow gravity flow to one discharge point.
- JS.5.214 • The east side of the proposed facility footprint on the existing slope will make construction difficult. In order to ensure technical stability, the TDF needs to be on flat ground. The facility boundary may need to be moved 600 feet to the west to accomplish this.
- JS.5.215 • The 2011 drilling at the center of the proposed footprint encountered 17 feet of peat.
- JS.5.216 • Sensitive Species northern goshawk nest was found at the site. Activities would need to be designed around the nest tree and buffer zone.
- JS.5.217 • The reclamation storage area is likely undersized for Alternative C.
- JS.5.218 • Alternatives C and D result in a larger amount of impact than Alternative B, particularly if the mine were to close prior to filling the 30 to 50 year capacity. Construction of infrastructure (roads, pipelines, ponds, quarries, etc.) would have to begin very quickly for Alternative C and shortly thereafter for Alternative D. If the mine were to close earlier than 30 to 50 years, this disturbance and whatever tailings placement had occurred in multiple watersheds in the C and D footprints would be spread over a much larger area than Alternative B at the time of closure.

**Alternative D**

- JS.5.219 • Alternative D prevents the ability to have a single no-pump, gravity flow/discharge system following closure of the TDF. Although the DEIS states that discharge without treatment is not anticipated, eliminating the option for no-pump, gravity flow would be short-sighted. Predictions of water quality following closure of the TDF are intentionally pessimistic. If actual closure

**Comment ID: JS.5.214**

The east side of the expanded TDF under alternatives C and D would be built in an area that would be quarried prior to tailings placement. The process of removing material in developing the quarry would reduce the extent of the slope in that area. The design would be more challenging than shifting the facility to the west; however, the location as proposed reduces the extent of wetland impacts.

**Comment ID: JS.5.215**

The particular technical aspect related to the presence of 17 feet of peat not adequately discussed is unclear from the comment. Text has been added in Section 2.4.3.1 (Tailings) to indicate that peat and other unsuitable materials are stripped from the site prior to the installation of the liner system. This practice is consistent with current operations. Section 2.4.6 (Reclamation Material Stockpiles) has also been included to briefly describe the handling of growth media.

**Comment ID: JS.5.216**

Selection of alternative C or D would require a non-significant Forest Plan Amendment because of the active nest located in 2011 adjacent to the alternative TDF proposed under these alternatives. Currently, Forest Plan Standards and Guidelines will apply to reduce any disturbance during the nesting season.

**Comment ID: JS.5.217**

The size of the reclamation storage areas considers the fact that there would be consolidation of the organic material in the salvaged materials upon placement.

**Comment ID: JS.5.218**

Comment noted.

**Comment ID: JS.5.219**

Please see the response to Comment JS.5.213.

**Comment**



- JS.5.219 water quality ends up being better than predicted, options including gravity flow would substantially reduce impacts compared to pump-dependent options. Alternative B is the only alternative that would allow gravity flow to one discharge point.
- JS.5.220 The east side of the proposed facility footprint on the existing slope will make construction difficult. In order to ensure technical stability, the TDF needs to be on flat ground. The facility boundary may need to be moved 600 feet to the west to accomplish this.
- JS.5.221 The 2011 drilling at the center of the proposed footprint encountered 17 feet of peat.
- JS.5.222 Depth to bedrock in the proposed north end quarry location may not be practical because the drill location nearest this site was not able to verify bedrock. It is possible that bedrock may be considerably greater than ground surface, and the sands encountered may be considered too fine to use as a sand source.
- JS.5.223 The reclamation storage area is likely undersized for Alternative D.
- JS.5.224 Sensitive Species northern goshawk nest was found at the site. Activities would need to be designed around the nest tree and buffer zone.
- JS.5.225 Alternatives C and D result in a larger amount of impact than Alternative B, particularly if the mine were to close prior to filling the 30 to 50 year capacity. Construction of infrastructure (roads, pipelines, ponds, quarries, etc.) would have to begin very quickly for Alternative C and shortly thereafter for Alternative D. If the mine were to close earlier than 30 to 50 years, this disturbance and whatever tailings placement had occurred in multiple watersheds in the C and D footprints would be spread over a much larger area than Alternative B at the time of closure.

**Mitigated B Alternative**

- JS.5.226 Mitigated B alternative prevents the ability to have a single no-pump, gravity flow/discharge system following closure of the TDF. Although the DEIS states that discharge without treatment is not anticipated, eliminating the option for no-pump, gravity flow would be short-sighted. Predictions of water quality following closure of the TDF are intentionally pessimistic. If actual closure water quality ends up being better than predicted, options including gravity flow would substantially reduce impacts compared to pump-dependent options. Alternative B is the only alternative that would allow gravity flow to one discharge point.
- JS.5.227 NE expansion area referenced in Alternative B mitigation; per p. 3-66, the issues with this area include: "The sand source may indirectly discharge to the creek via the peat, and the sand and the peat are in hydraulic communication," so the discharge area if impacted by expansion may impact the public water source on Cannery Creek.
- JS.5.228 Reclamation material stockpile referenced north of the access to the Hawk Inlet Cannery Facility would be beneficial if the site could operate in the same area as the helicopter pad, and if water could be collected from this site.
- JS.5.229 The filling of half of the NE area now, and the other half later, may prevent this portion of the pile from any potential concurrent reclamation.

**Response**

**Comment ID: JS.5.220**

See the response to Comment JS.5.214.

**Comment ID: JS.5.221**

See the response to Comment JS.5.215.

**Comment ID: JS.5.222**

The Forest Service recognizes that the geotechnical drilling for the site is limited. We are confident that a borrow source could be identified within the proposed disturbance footprint. An alternative borrow area could be evaluated in a subsequent NEPA analysis should the need to expand beyond the proposed footprint be necessary.

**Comment ID: JS.5.223**

See the response to Comment JS.5.217.

**Comment ID: JS.5.224**

Selection of alternative C or D would require a non-significant Forest Plan Amendment because of the active nest located in 2011 adjacent to the alternative TDF proposed under these alternatives. Currently, Forest Plan Standards and Guidelines will apply to reduce any disturbance during the nesting season.

**Comment ID: JS.5.225**

Comment noted.

**Comment ID: JS.5.226**

The text has been modified to indicate that Mitigated Alternative B would create an additional underdrain collection area in the northeast corner.

**Comment ID: JS.5.227**

Potential impacts to the public water supply have been added to the text in Section 3.5.3.3.

**Comment ID: JS.5.228**

While it is not necessarily clear from the conceptual-level drawings, the stockpile north of the Hawk Inlet Cannery Facility could be incorporated into operation of the helicopter pad.

**Comment ID: JS.5.229**

Comment noted.

**Comment**

**Response**



Comment 172

**Appendix C, Alternatives Development.**

JS.5.230

Most of the alternatives developed but not carried forward would have greater footprints and therefore greater impacts because they consist of a facility at a new location (Areas 1, 2, 3, 4, 5, and 6). They could impact additional watersheds, and also require additional pipelines and pumping infrastructure to return the collected water at the new facility to the existing water treatment plant.

JS.5.231

Area 7 could impact an additional watershed (Cannery Creek) and is located too close to the Creek, which is a permitted secondary drinking water source for the mine site. Development in the northeast area for Area 7 could not achieve gravity drainage at closure. Area 8 evaluated an expansion of the existing facility to the south and west. The design places tailings in the southwest corner of the area, which is a bedrock knob area.

JS.5.232

This elevated area likely could not be used for tailings placement unless the rock was blasted out and removed.

JS.5.233

Similar to Alternatives C and D, but on a much larger scale, the effects of below-liner and peripheral rock fill may be significant in Area 8. Infiltration and groundwater interaction with this fill could impact water quality. Dilute, acidic waters in the Tributary Creek and Hawk Inlet watersheds may be sensitive to higher pH, higher hardness water that the fill could generate. Changes in reduction/oxidation conditions and water levels under lined areas may change the composition of groundwater (e.g., iron/manganese reduction) in Tributary and Hawk Inlet drainages.

JS.5.234

Section A (Figure 10, p. C-21) shows that more than 50 feet of rock will need to be removed to attain liner grade. This would likely create a material handling/storage problem because this rock may be potentially acid generating and would need to be stockpiled with its drainage collected prior to use within the tailings pile footprint. It does not appear that there is space for the very large stockpile that would be required. Blasting of the rock could influence groundwater by increasing pH, hardness and sulfate in water that infiltrates the disturbed area. Quarrying related to development of Pond 7 and the northwest corner of the existing TDF had this type of influence on groundwater and surface water.

JS.5.235

There is very little space available to collect water if necessary from multiple locations between the Area 8 footprint and Tributary Creek and Hawk Inlet. If water from the stabilizing berm ends up requiring collection this may pose significant logistical/design challenges.

JS.5.236

As stated in Appendix C, all of the alternatives except Area 8 developed but not carried forward only considered tailings placement areas; none of the associated facilities were considered (i.e., reclamation storage areas, water collection ponds, etc.). Area 8 did consider a large water management pond; however, p. C-7 states: "The preliminary design presented represents half of the storage capacity anticipated under the proposed action." Water collection ponds are an integral part of the operation and design of an effective and contained facility, and the size and location of these ponds are an important factor in the consideration of a viable alternative.

**Comment ID: JS.5.230**

Comment noted. One aspect of alternatives development was to minimize the footprint of each facility to the extent possible. As noted in Appendix C, the screening process involved looking only at the footprint associated with the tailings. Since each of these alternatives was determined to have flaws compared to the alternatives carried forward, the process did not require laying out ancillary/supporting facilities as part of the design.

**Comment ID: JS.5.231**

Comment noted. Please see the response to Comment JS.5.074.

**Comment ID: JS.5.232**

Comment noted. If this area were to be considered as part of a detailed analysis of alternatives, the bedrock knob in the southwest corner of the area would need to be quarried, as it would under Alternative B.

**Comment ID: JS.5.233**

Comment noted.

**Comment ID: JS.5.234**

Comment noted. Please see the response to Comment JS.5.233.

**Comment ID: JS.5.235**

Comment noted. The Forest Service is aware that this design would present substantial logistical and design challenges, which is part of the reason for not carrying the design forward for detailed analysis.

**Comment ID: JS.5.236**

Comment noted. The Forest Service is aware that most of the alternative designs not carried forward did not consider the various ancillary facilities that would be required should one of those designs have been carried forward in detail. These facilities would have increased the disturbance footprints in all cases. We concur that water collection ponds are an integral part of operations and that the preliminary design of Area 8 as presented does not reflect a viable facility in terms of water management.

**Comment**

**Response**

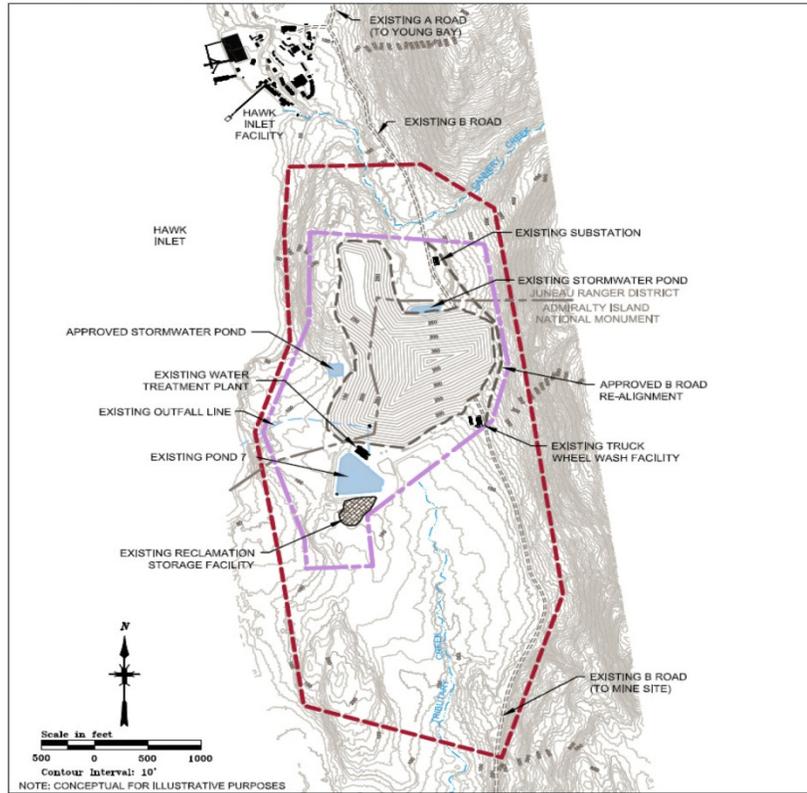


**APPENDIX A**

**MAP DEPICTING ADMIRALTY ISLAND  
NATIONAL MONUMENT BOUNDARY**

Comment

Response



LEGEND

- EXISTING TOPOGRAPHY
- EXISTING DRAINAGE
- EXISTING TAILING FACILITY
- EXISTING HAUL/ACCESS ROADS
- EXISTING BOUNDARY BETWEEN JUNEAU RANGER DISTRICT AND ADMIRALTY ISLAND NATIONAL MONUMENT
- EXISTING LEASE BOUNDARY
- PROPOSED STAGE 3 LEASE BOUNDARY

**Comment**

**Response**

**Comment ID: JW.0.001**  
Comment noted.

**From:** [Jocelyn Webb](#)  
**To:** [FS-comments-alaska-tongass-admiralty-national-monument](#)  
**Subject:** GREENS CREEK TAILING EXPANSION  
**Date:** Tuesday, May 08, 2012 2:10:07 PM

---

JW.0.001

I fully support the expansion of the Greens Creek tailing facility STAGE 3. They have been there for 35 years and it does not seem to have a negative effect on the surrounding area.  
Jocelyn Webb

**Comment**



May 2<sup>nd</sup>, 2012

Admiralty Island National Monument – Tongass National Forest  
 ATTN: Greens Creek Tailings Expansion  
 8510 Mendenhall Loop Road  
 Juneau, Alaska 99801  
[Comments-alaska-tongass-admiralty-national-monument@fs.fed.us](mailto:Comments-alaska-tongass-admiralty-national-monument@fs.fed.us)

To Whom It May Concern;

KA.0.001

Alaska Marine Lines and Alaska Marine Trucking are writing in support of Hecla Greens Creek Mine's efforts to expand their existing tailings facility using "Alternative B" under the draft EIS submitted by the US Forest Service for the following reasons:

- Expansion of their tailings facility is an essential component in their plans to continue operating the Greens Creek Mine now and for the future
- Alternative B minimizes the impacts to the environment by keeping the tailings facility consolidated versus the other alternatives
- Alternative B would continue their tailings disposal in an engineered, contained facility within a single watershed versus the other alternatives that would place tailings in multiple watersheds
- Alternative B would allow them to continue to utilize existing site support facilities including "B" Road versus other alternatives that would require major construction upgrades to "A" Road
- Alternative B using the current location for tailings has no new impacts on area wildlife versus the other alternatives that have an active goshawk nest in the area
- Alternative B is the only option that would not increase Greens Creek's use of fossil fuels in the transportation of tailings to the disposal facilities

KA.0.002

Hecla Greens Creek Mine has been an integral part of our Southeast Alaska Community for the past 25 years by providing high paying jobs, purchasing supplies and services locally, and operating in a safe and environmentally friendly manner. Alternative B gives them the additional capacity for their future and to continue to be a part of our future here in Southeast Alaska.

Sincerely,

Kevin Anderson – President, Alaska Marine Lines

**Response**

**Comment ID: KA.0.001**

Comment noted. Alternatives A and B would impact three watersheds: Cannery Creek, Tributary Creek, and South Hawk Inlet. Alternatives C and D would impact five watersheds: Cannery Creek, Tributary Creek, South Hawk Inlet, Fowler Creek, and North Hawk Inlet (see Section 3.5, figures 3.5-5 and 3.5-6).

Alternatives C and D would add an additional 5.6 miles round-trip for haul trucks to travel from the portal to the new northern TDF.

**Comment ID: KA.0.002**

Comment noted. Please see the Record of Decision for a description of the selected alternative.

**Comment**

**Response**

**Comment ID: KF.0.001**

Comment noted.



JEDC.org  
612 West Willoughby Ave. Suite A  
Juneau, AK 99801  
Phone 907-523-2300  
Fax 907-463-3929

June 4, 2012

Mr. Chad VanOrmer  
Monument Ranger  
Admiralty Island National Monument  
Tongass National Forest  
Attn: Greens Creek Tailing Expansion  
8510 Mendenhall Loop Road  
Juneau, AK 99801

Re: Greens Creek Tailing Expansion

Dear Mr. VanOrmer:

KF.0.001

For the past 25 years, the Juneau Economic Development Council has worked to foster a healthy and sustainable economic climate in Juneau and throughout Southeast Alaska. In collaboration with other organizations, we implement initiatives to maintain, expand, and create economic opportunities.

The Hecla Greens Creek Mining Company (HGCMC) began operations around the same time as our organization, and has proved to be a strong economic force in Northern Southeast Alaska, and a good corporate citizen in the region. The company currently employs 370 people, about 2/3 of them from Juneau, and many others from rural areas of the region. Mining employment paid an average annual wage of about \$96,000 in 2010, more than twice the average annual wage for all industries in Juneau. HGCMC purchased goods and services worth about \$27 million in Juneau, and paid over \$1.2 million in property taxes to the Borough government last year. In a region with past erosion of population and earnings, the contribution of such a vibrant economic player cannot be overstated.

In addition to the very important economic contribution to the region, HGCMC has engaged with the University of Alaska, Southeast, and other organizations in workforce training and development activities that has improved the skill set and earnings ability of all regional residents. The company has developed both public and private infrastructure in the region. As a good corporate citizen, HGCMC also contributes to regional communities through corporate donations to local activities and organizations.

**Comment**

**Response**

**Comment ID: KF.0.002**

Comment noted.

Mr. Chad VanOrmer, Monument Ranger  
Admiralty Island National Monument  
June 4, 2012  
Page 2

KF.0.002

The Greens Creek Mine has operated in an environmentally responsible manner on Admiralty Island for the past 25 years. In order for the company to continue to be successful, and to contribute meaningfully to our regional economy, it needs to expand its dry stack tailings disposal site. The JEDC board believes that Alternative B, the alternative recommended by HGCMC, is the most environmentally sound and economically feasible plan for this expansion. This alternative reduces the size of the potential impact, and keeps all the tailings together in the same location. HGCMC intends to use the same disposal methods and management procedures as they have used in the past, methods and procedures approved by all regulatory agencies with jurisdiction over this mine.

The JEDC board fully supports HGCMC's preferred mine tailings expansion plan, and urges the Monument to approve it. This company has proven a strong economic partner in the region, and a good neighbor. Please keep the Greens Creek Mine thriving by approving this plan.

Warm Regards,

  
Kurt Fredriksson  
Board President

  
Brian Holst  
Executive Director

**Comment**

**Response**

**Comment ID: KG.0.001**  
Comment noted.

**From:** [Ken Gerondale](#)  
**To:** [FS-comments-alaska-tongass-admiralty-national-monument](#)  
**Subject:** Greens Creek Tailings  
**Date:** Thursday, May 31, 2012 12:55:49 PM

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To Whom it May Concern:

KG.0.001

I am the President of Construction Machinery Industrial, LLC. In speaking for myself and many of our employees ..... we are for the approval of the "Greens Creek Tailing Expansion". Our company has been involved with Greens Creek Mine since it opened and find Greens Creek a work class mining company that is environmentally sensitive and at the same time committed to our Juneau community.

Thank you, Ken Gerondale

Ken Gerondale  
C: 907-351-0287  
DD: 907-261-0138  
[k.gerondale@cmiak.com](mailto:k.gerondale@cmiak.com)

**Comment**

**Response**

Friends of Admiralty Island – response to Hecla Greens Creek  
Tailing Expansion DEIS – June 4, 2012

Sent via email: comments-alaska-tongass-admiralty-national-monument@fs.fed.us

Admiralty Island National Monument Tongass National Forest  
ATTN: Greens Creek Tailings Expansion 8510 Mendenhall Loop Road Juneau, AK 99801  
Re: Comments on Greens Creek Mine Tailings Dump Expansion Draft Environmental Impact Statement (DEIS)

Dear Forest Supervisor Cole and Monument Ranger VanOrmer:

KM.0.001

As a preface to our comments it is important to state that we fully acknowledge the right of Hecla Greens Creek to operate their mine and associated milling operations in Hawk Inlet. We have previously gone on record to acknowledge the economic and community benefits that the mine based employment, taxes and secondarily economic benefits contributes to Juneau’s well being. When Congress created Admiralty Island National Monument boundaries they included the actual mine and access in the National Monument non-Wilderness, but excluded the mine tailings and milling. This is a Congressional endorsement of the value of this mine, but also very specific congressional language holds the operation of the mine to a high standard which reflects the value of maintaining the integrity of the National Monument.

KM.0.002

Therefore our response is directed at those compliance requirements and standards that current law establishes for a mine operating in and adjacent to Admiralty Island National Monument.

Friends of Admiralty Island<sup>1</sup> responded to the 2010 Forest Service Scoping Document for the proposed expansion of the Hecla Greens Creek mine tailings expansion. The current Draft Environmental Impact Statement (DEIS) does not adequately address the key issues we identified in our 2010 response.

KM.0.003

The current DEIS falls way short of a full-disclosure and unbiased analysis of impacts by the proposed tailings expansion - whichever of the action alternatives is selected. There are both process and factual flaws that the DEIS is built on.

**Because of these significant deficiencies we urge the Forest Service do a supplemental DEIS. A supplement will provide the public with an opportunity for a more reasoned and informed response. A supplemental will prove a far greater value to decision makers and other responding agencies.**

**Friends of Admiralty Island endorses the response of SEACC (dated June 4, 2012) to this DEIS and requests that their response be considered a part of our response.**

<sup>1</sup> Friends of Admiralty Island (FOAI) was formed in 1997 as a non-profit (501-c-3) educational and advocacy organization to promote and protect the Wilderness and National Monument values of the island as described in the Alaska National Interest Lands Conservation Act (ANILCA) of 1980. FOAI have specifically advocated for the entire island, with consideration of adjacent waters to be managed as a single unit. Such a comprehensive management plan must contain research and educational components.

**Comment ID: KM.0.001**

Comment noted.

**Comment ID: KM.0.002**

Comment noted. Please see detailed responses to individual comments.

**Comment ID: KM.0.003**

Comment noted. The Forest Service respectfully disagrees with the assertion that the EIS contains process and factual flaws. We also disagree about the need for a supplemental DEIS and public review. Some changes were made to the DEIS based on comments, but the changes do not rise to a level of significance that would warrant a supplemental EIS.

Please see responses to specific comments. Comment responses to SEACC’s comments are provided above (see comment ID numbers starting with BL.0).

**Comment**

**Response**

Friends of Admiralty Island – response to Hecla Greens Creek Tailing Expansion DEIS – June 4, 2012

Specific to the current DEIS:

KM.0.004

There is no explanation of how the alternatives relate to the Alaska National Interest Conservation Act (ANILCA) requirements or standards for allowing mining /milling to occur in Admiralty Island National Monument. ANILCA specifies in section 503:

“(A) that milling activities necessary to develop such claims cannot be feasibly carried out on such claims or on other land owned by such holder;  
 (B) that the use of the site to be leased will not cause irreparable harm to the Misty Fjords or the Admiralty Island National Monument; and  
 (C) that the use of such leased area for such purposes will cause less environmental harm than the use of any other reasonably available location.”

ANILC Section 505 (5) recognizes the importance of protecting fish habitat and water quality in relation to mining operations adjacent to National Monuments and is another example of allowing mining, but protecting Monument values, in this case fish habitat and water quality.

KM.0.005

We endorse the statements that the DEIS also lacks any discussion of the short- and long-term costs to HGCMC from implementing any of the action alternatives or utilizing proposed mitigation measures or the effect of these costs on the economic viability of the mining operations as required by agency regulations. See 36 CFR 228.80(b)(2)(ii)(2011). In effect, two of the alternatives (C and D) were developed to minimize the amount of surface disturbance within the Monument and assure that Hecla’s mining operations are compatible to the maximum extent feasible, with the protection of Monument resources. The lack of detailed cost information or an evaluation of the practicability of these alternatives in the DEIS prevents the Forest Service, Corps of Engineers, and public from determining which action alternative is the least environmentally damaging practicable alternative under the Clean Water Act’s 404(b)(1) Guidelines.

**Insufficient analysis of the subsistence use of the area and Hawk Inlet:**

KM.0.006

The Forest Service relied on studies conducted before 1990 to estimate the customary and traditional use of the area by residents of Hoonah and Angoon and concluded that the use was either very limited or restricted to the mouth of Hawk Inlet. It is imperative that the forest Service conduct current community use surveys for the area and develop a compensation package for Hecla to implement in the affected communities for the loss of customary and traditional uses on lands and waters impacted by mineral development at Greens Creek.

KM.0.007

Compensation could include Hecla funding completion of the Thayer Creek hydro project for Angoon or funding the connection of Hoonah to the intertie that was extended to the Greens Creek Mine several years ago. As noted in the DEIS (at p. iv), the Forest Service has the authority to add stipulations or require additional mitigation measures in making a decision relating to Hecla’s proposal to modify its General Operating Plan.

**Comment ID: KM.0.004**

Section 3.19 is dedicated to assessing impacts to the Monument and comparing alternatives. The information presented in the EIS is sufficient to make an informed decision. The rationale for the decision and findings required by ANILCA are further documented in the Record of Decision.

**Comment ID: KM.0.005**

The regulations in 36 CFR 228.80(c)(2)(ii) require the authorized officer to consider the long- and short-term costs of mitigation measures in the context of the economic viability of the operations. The regulation does not indicate that this consideration must be included as part of the NEPA analysis. Based on comments received from HGCMC, the authorized officer has no indication that any of the mitigation measures or alternatives would jeopardize the economic viability of the Greens Creek operation. The NEPA regulations do not require a cost-benefit analysis.

It is important to note that alternatives were developed using information typical for a scoping-level study for mining operations. The result is that each of the alternatives carried forward was economically feasible and therefore “practicable.” The Forest Service, the USACE, and the public are therefore free to base the comparison of alternatives on environmental effects without concern about the costs.

**Comment ID: KM.0.006**

Customary and traditional uses are defined by the ADF&G related to the specific use of various species for subsistence. The subsistence discussions reflect the ADF&G’s current definitions of customary and traditional uses.

**Comment ID: KM.0.007**

The suggested projects would not mitigate any effects identified as a result of any alternative.

**Comment****Response**

Friends of Admiralty Island – response to Hecla Greens Creek  
Tailing Expansion DEIS – June 4, 2012

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KM.0.008

**Destruction of Salmon Habitat:**

ANICLA only allows the Forest Service to issue leases and associated permits for mining purposes on Monument lands if it determines that use of the site “will not cause irreparable harm to the Monument” and requires the Forest Service to maintain the continued productivity of all salmon habitats. All the action alternatives presented in the DEIS irreversibly impact salmon streams. Alternative B calls for the destruction of 4,046 feet of Class 1 and 2 fish habitat in Tributary Creek. Alternatives C and D, call for the destruction of 1,078 feet of Class 1 and 2 habitats in Fowler Creek. Overall, these alternatives would cause permanent loss of habitat for salmon, an essential part of the local food chain for the Monument’s bald eagles and brown bears. The conclusion that this irreparable loss of salmon habitat can be mitigated by improving fish passage in Greens Creek is simply wrongheaded.

KM.0.009

**Cultural Values Underestimated:**

The impacts to cultural values in the DEIS relies only on the recent past. Historically, Hawk Inlet opened up to Young’s Bay. It was an important passage way from Chatham Strait to Stephens Passage. The area was utilized by clans from Juneau, Hoonah, and Angoon. The analysis did not consider any recent ground surveys that would take into account new information on isostatic rebound that shows cultural sites could be located hundreds of feet above the current sea level. We ask that the Forest Service conduct a more thorough ground survey of possible cultural sites. We also urge the Forest Service to consult with the Hoonah Indian Association, and recognized representatives of the Auk Kwaan.

The response of Dr. Daniel Monteith (appended) is especially applicable to the cultural resources of Admiralty Island – a key value supporting the establishment of the Monument. We agree with his conclusions.

Hecla’s proposed expansion would seem to be in an area of high probability to contain ancient cultural evidence. Additional investigations are clearly warranted prior to further disturbance.

KM.0.010

**Cost comparison of the Alternatives:**

The DEIS lacks any discussion about the short- and long-term costs to HGCMC of utilizing proposed mitigation measures or the effect of these costs on the economic viability of the mining operations as required by agency regulations for mining operations within Misty Fiords and Admiralty Island National Monuments. The Forest Service needs to supplement this draft EIS to disclose and analyze these costs.

KM.0.011

**Economic Benefits Analysis Only Considers Juneau:**

The Juneau-centric focus of the analysis prevents the Forest Service from fulfilling its obligation to identify and address the social, health, and environmental effects of this proposal that may be borne disproportionately by the communities of Angoon and Hoonah. We ask that the Forest

**Comment ID: KM.0.008**

Section 3.19.3 address effects to fish and wildlife resources in the Monument. As noted in the EIS, the expansion of the existing tailings, under any alternative, would represent about 1/100th of 1 percent of the total Monument area. Local effects to fish and wildlife (including bears and eagles) are presented in sections 3.7 and 3.11, respectively. As discussed in Section 3.11.3.3, mitigation for loss of salmon spawning and rearing habitat would also mitigate for impacts to brown bears that rely on salmon. This is also true for bald eagles.

Please note that the DEIS erroneously reported that the alternative TDF site would affect 34 feet of Class I streams. This is not correct; the alternative TDF site would not directly affect (by burial) any Class I streams. This has been corrected in the FEIS.

Also see the response to Comment KM.0.004.

**Comment ID: KM.0.009**

The Forest Service conducted cultural resource surveys across areas potentially affected by the proposed action and alternatives, including lands affected by isostatic rebound. Therefore, the effect on archaeological resources for this particular project is minimized.

Additional consultation information has been added to Section 1.6.

**Comment ID: KM.0.010**

The regulations in 36 CFR 228.80(c)(ii) require the authorized officer to “consider” the long- and short-term costs of mitigation measures in terms of the economic viability of the operations. The statute does not require that this consideration be included in the NEPA analysis. Based on comments received from HGCMC, the authorized officer has no indication that any of the mitigation measures would jeopardize the economic viability of the Greens Creek operation.

**Comment ID: KM.0.011**

The socioeconomic analysis appropriately focuses on Juneau, because that is where the majority of socioeconomic effects from the mine occur.

**Comment**

Friends of Admiralty Island – response to Hecla Greens Creek  
Tailing Expansion DEIS – June 4, 2012

Service expand the economic benefits (and impacts) analysis to include Angoon, Hoonah and Tenakee Springs.

**Need for Perpetual Water Treatment:**

KM.0.012

The DEIS states that Hecla will have to actively treat the water from the tailings piles for “hundreds of years if not in perpetuity.” This need raises questions as to whether such mineral development is “environmentally sound” and protects Monument values as required by ANILCA and the Greens Creek Land Exchange Act of 1996. The present reclamation bond for the Greens Creek mine is \$30,455,000 based on the 2003 Solid Waste permit and adjusted for inflation. The 2003 permit assumed water treatment would be needed for approximately 7 years after mine closure. Any lack of adequate funding could place the burden on the public should Hecla declare bankruptcy. We ask that the Forest Service require adequate financial assurances to cover perpetual water treatment.

**Discharges into Hawk Inlet:**

KM.0.013

Greens Creek is allowed to discharge contaminants into Hawk Inlet under a State permit that allows for a toxic mixing zone. The DEIS does not mention that this permit was stayed by DEC pending further review and that 2005 EPA permit still governs discharges from outfall 002 into Hawk Inlet. Unfortunately, neither permit effectively monitors water quality at the edge of the mixing zone. Consequently, the agencies lack adequate monitoring data to support a finding that mining activities have not degraded water quality in Hawk Inlet and protect existing aquatic uses as required by the Clean Water Act. Furthermore, the mixing zone design relies on a physical description of Hawk Inlet over 20 years old that does not account for isostatic rebound or other recent changes to the channel. The Forest Service’s reliance on the State to protect the aquatic habitat of Hawk Inlet with a permit yet to be released is mistaken. The Forest Service needs to update its analysis in the DEIS to reflect existing conditions in Hawk Inlet and develop meaningful compensation for the long-term degradation of Hawk Inlet from the discharge and loading of toxic pollutants into this waterbody.

Sincerely,



K.J. Metcalf, President  
Friends of Admiralty Island  
PO Box 20791  
Juneau, Alaska 99801

**Response**

**Comment ID: KM.0.012**

See the response to DC.0.008.

**Comment ID: KM.0.013**

The EIS has been modified throughout to reflect the current status of the APDES permit (AK0043206). Sections 1.2, 1.8.3.3, 2.4.4, and 3.5.2.1, among others that refer to the discharge permit, have been modified to reflect that the 2005 NPDES permit conditions have been administratively extended until the APDES permit is reissued.

Reissuance of the wastewater discharge permit is a process independent from the proposed action under consideration. As noted in comments and in the EIS in Section 1.8.3.1, the Forest Service is responsible for ensuring that the CWA requirements are met on National Forest System lands. Regulations in 36 CFR 228.8(h) state that “certification of other approval issued by state agencies or other federal agencies of compliance with laws and regulations relating to mining operations will be accepted as compliance ... with these regulations.” For this reason, the Forest Service defers to the USEPA’s and ADEC’s expertise in managing the reissuance of the authorized wastewater discharge permit and assumes for the purposes of this analysis that the permitted discharge complies with the CWA.

The mixing zone is based on specific modeling conducted using an EPA hydrodynamic mixing model and not the 1981 study. However, Motyka et al. (2007) (Post Little Ice Age Rebound in the Glacier Bay Region) indicates that sea levels in Hawk Inlet are affected by approximately 1.0 centimeter (0.4 inch) per year. At this rate, it is not anticipated that tidal flushing behavior would have changed since the 1981 dye dilution study.

The Forest Service recognizes that the discharge is being conducted as a legally permitted activity and with the awareness that the discharge into Hawk Inlet is protective of the receiving water body and its designated beneficial uses, including the propagation of fish, shellfish, and other aquatic life and wildlife.

**Comment**

**Response**

Sent via email: comments-alaska-tongass-admiralty-national-monument@fs.fed.us

To: Admiralty Island National Monument Tongass National Forest  
 ATTN: Greens Creek Tailings Expansion 8510 Mendenhall Loop Road Juneau, AK 99801  
 Re: Comments on Greens Creek Mine Tailings Dump Expansion Draft Environmental Impact Statement (DEIS)

From: K.J. Metcalf  
 PO BOX 20221  
 Juneau AK, 99802

June 4, 2012

Dear Supervisor Forrest,

I would like to add my voice to those calling for a supplemental Draft EIS for this project.

I was the first Monument Manager (Ranger) assigned to Admiralty Island National Monument. I sincerely believe congress intended to accommodate the Greens Creek mine, but with very specific standards to be applied to protecting the Monument.

KM.1.001

Thy DEIS does not give enough analysis or information to be able to comment on the action alternatives. I endorse the comments made by Southeast Alaska Conservation Council and Friends of Admiralty Island in supporting this conclusion.

KM.1.002

I also endorse the comments submitted by Dr. Daniel Monteith relating to the cultural resources and Social Justice.

KM.1.003

The cultural resources of the island was one of the major values that President Carter used to proclaim the Admiralty Island National Monument, followed by Congressional action to include the island in ANILCA. Hawk Inlet could hold ancient cultural sites of international importance. Given the dramatic isostatic rebound of the north end of Admiralty such sites most likely will be well above the current sea level and most likely in the Greens Creek and Tributary area.

This possibility deserves ground truthing before any further disturbance occurs.

KM.1.004

The wording in ANILC seems very clear that no development will occur in the Monument that will cause irreparable harm. Extension of the current tailings deposit (Alt B.) over Tributary Creek will violate this intent. In addition milling (tailings) will not be allowed within the Monument when other locations are available outside of the Monument.

**Comment ID: KM.1.001**

Comment noted. Please see the response to Comment KM.1.004.

**Comment ID: KM.1.002**

Comment noted.

**Comment ID: KM.1.003**

See the response to Comment KM.0.009.

**Comment ID: KM.1.004**

Monument values are identified in Chapter 1 as a significant issue (Issue 4) that led to the formulation of alternatives and mitigation measures. The alternative TDF (alternatives C and D) was specifically developed to minimize disturbed area in the Monument. Section 3.19 is dedicated to assessing impacts to the Monument and comparing alternatives. Additional impacts to the Monument are addressed in Section 3.22, Cumulative Effects. The information presented in the EIS is sufficient to make an informed decision. The rationale for the decision and findings required by ANILCA are further documented in the Record of Decision.

**Comment**

KM.1.005

The water quality is a serious issue. When I was Monument Manager and overseeing the DEIS for the mine's development base-line bio-assays were taken of the benthic organisms in Hawk Inlet. This important base-line data is missing – no one can find it- and constitutes a serious breach of ANILCA direction and the scientific method.

KM.1.008

I believe that Hawk Inlet is currently an "impaired water-body." The barge load of lead concentrate that tipped over adjacent to the cannery site is not benign. The amount of from the current tailings toxins that have been discharged into the inlet is the cause for much debate. The solution to have a mixing zone contained on land (Pogo gold mine model) seems worthy of consideration at Greens Creek.

I appreciate you considering my additional comments to those of SEACC and Friends of Admiralty Island.

Sincerely,



K.J. Metcalf

**Response**

**Comment ID: KM.1.005**

Very intensive water quality and bio-assay data collection has continued for many years and data are used for trend analysis through the Hawk Inlet Monitoring Program. Annual reports are provided to the Forest Service and ADEC. There is adequate information to make a reasonable determination of current project effects.

**Comment ID: KM.1.006**

ADEC's August 2012 Draft Water Quality Monitoring and Assessment Report did propose to list the water in Hawk Inlet in the immediate vicinity of the 1989 ore spill as impaired, but not the entire water body, and not the location of the discharge. The EIS has been modified in Section 3.7.2.2 to reflect this recently proposed listing.

Reissuance of the wastewater discharge permit is a process independent from the proposed action under consideration. As noted in comments and in the EIS in Section 1.8.3.1, the Forest Service is responsible for ensuring that the CWA requirements are met on National Forest System lands. Regulations in 36 CFR 228.8(h) state that "certification of other approval issued by state agencies or other federal agencies of compliance with laws and regulations relating to mining operations will be accepted as compliance ... with these regulations." For this reason, the Forest Service defers to the USEPA's and ADEC's expertise in managing the reissuance of the authorized wastewater discharge permit and assumes for the purposes of this analysis that the permitted discharge complies with the CWA.

The Forest Service has no authority over the permit reissuance process and cannot compel the USEPA or ADEC to require particular treatment technologies, dilution methods, or monitoring requirements associated with the permit. Since the discharge is and will continue to be permitted by agencies with authority for CWA compliance, the Forest Service considers the discharge to be protective of water quality for the purposes of this analysis (36 FCR 228.8(h)). As such, the EIS does not consider alternative treatment or discharge scenarios.

**Comment**

**Response**

**Cox, David**

**From:** Iwamoto, Karen -FS <kiwamoto@fs.fed.us> on behalf of FS-comments-alaska-tongass-admiralty-national-monument <comments-alaska-tongass-admiralty-national-monument@fs.fed.us>  
**Sent:** Monday, June 04, 2012 9:02 AM  
**To:** Weglinski, Gene; Cox, David  
**Cc:** Samuelson, Sarah J -FS  
**Subject:** FW: Greens Creek Alternative B

#2

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 Karen Iwamoto  
 Land Management Planner  
 Tongass National Forest  
 907-747-4230  
[kiwamoto@fs.fed.us](mailto:kiwamoto@fs.fed.us)  
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**From:** Kasen Spickler [[mailto:kasen\\_spickler@hotmail.com](mailto:kasen_spickler@hotmail.com)]  
**Sent:** Sunday, June 03, 2012 9:44 PM  
**To:** FS-comments-alaska-tongass-admiralty-national-monument  
**Subject:** Greens Creek Alternative B

KS.0.001

This letter is to voice my opinion of approval for Alternative B. Greens Creek has proved to southeast citizens that they can responsibly operate this mine in an environmentally safe way. The total amount of temporarily impacted lands is very minimal when you look at the entire size of Admiralty island and the engineering of the tailings disposal plan is constructed in such a way to have minimal impact on the area.

KS.0.002

I have lived in Juneau for 27 years and have seen the positive impacts Greens Creek has made in this community. I have many friends that have worked there as contractors and I also have a brother that has worked underground for the last 8 years. When you give Juneau citizens opportunities to make good wages with benefits it strongly affects everyone here. I've seen first hand how this mine can help Juneau sustain a growing economy and I hope it can continue to grow for years to come.

Thank you,

Kasen Spickler  
 9690 N. Douglas Hwy.  
 Juneau, AK 99801  
 907-723-9330

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**Comment ID: KS.0.001**

Comment noted.

**Comment ID: KS.0.002**

Comment noted.

Comment	Response
<p><b>From:</b> <a href="#">Les Cronk</a>  <b>To:</b> <a href="#">FS-comments-alaska-tongass-admiralty-national-monument</a>  <b>Subject:</b> Greens Creek Tailings Expansion Comments  <b>Date:</b> Wednesday, May 16, 2012 9:47:21 AM</p>	<p><b>Comment ID: LC.0.001</b>            Comment noted.</p>
<p>May 16, 2012</p>	<p><b>Comment ID: LC.0.002</b>            Comment noted.</p>
<p>Good day,</p>	<p><b>Comment ID: LC.0.003</b>            Comment noted.</p>
<p>LC.0.001</p>	<p><b>Comment ID: LC.0.004</b>            Comment noted.</p>
<p>This letter is to support the Hecla Greens Creek Mining Company’s tailings facility expansion plan, Alternative B, and to request the USFS approve the mines proposed plan because it is the most environmentally sound, technically feasible, and economically viable alternative analyzed in the EIS.</p>	<p><b>Comment ID: LC.0.005</b>            Comment noted. Alternatives A and B would impact three watersheds: Cannery Creek, Tributary Creek, and South Hawk Inlet. Alternatives C and D would impact five watersheds: Cannery Creek, Tributary Creek, South Hawk Inlet, Fowler Creek, and North Hawk Inlet (see Section 3.5, figures 3.5-5 and 3.5-6).</p>
<p>LC.0.002</p>	<p><b>Comment ID: LC.0.006</b>            Comment noted.</p>
<p>Since its opening back in 1987, the Greens Creek Mine has operated within the Admiralty Island National Monument in accordance with federal, state and local laws and regulations and continually demonstrated the highest care for the environment. The operation of the Greens Creek Mine has been with minimal disturbance to the environment and they have maintained a small footprint and using the dry-stack method of tailings disposal. This small foot print follows one of the original agreements between Greens Creek and the United States of America by and through the USFS that calls for facilities to be consolidated to the maximum extent practicable. The HGCMC proposed plan allows expansion of the current facility rather than requiring additional road building and development which helps maintain their very limited impact.</p>	
<p>LC.0.003</p>	
<p>HGCMC proposes to use the same tailings disposal techniques, environmental management procedures, and reclamation measures that were reviewed in the 2003 Forest Service environmental impact statement (EIS) for the site and have been approved by the Forest Service, the Alaska Department of Environmental Conservation (ADEC) and the Alaska Department of Natural Resources (ADNR). This system has been proven to work and needs to be continued as proposed and Alternative B is the best because:</p>	
<p>LC.0.004</p>	
<ul style="list-style-type: none"> <li>• Alternative B provides for a logical expansion of the existing facility and consolidates the operations to the maximum extent practicable.</li> <li>• Alternative B allows for an upward extension of the existing facility as well as an expansion to the south which lessens disturbance and reclamation costs.</li> <li>• Alternative B maintains tailings disposal in an engineered, contained facility in a portion of a single watershed, as opposed to other alternatives that would place tailings in multiple watersheds.</li> </ul>	
<p>LC.0.005</p>	
<p>LC.0.006</p>	
<p>The Greens Creek Mine has contributed to the Southeast Alaska economy for the past 25 years providing high-paying jobs, major contributions to the local tax base and significant</p>	

**Comment**

**Response**

**Comment ID: LC.0.007**  
Comment noted.

amounts of money into the Southeast Alaskan economy. Our Company has worked with this mine for these past 25 years and we have the highest regard for the quality of their operation and have seen their commitment to being good stewards of that land. We need this kind of responsible resource development to continue and expand in Alaska and throughout America to build a sustainable economy.

LC.0.007

We ask for your approval of Alternative B in this EIS so the Green Creek Mine operations can continue to benefit our Country well into the future.

Sincerely,

Les Cronk,  
Vice President  
Southeast Stevedoring Corporation  
PO Box 8080  
Ketchikan, AK 99901  
P-907-225-6157  
F-907-225-8254

**Comment**

**Response**

**Comment ID: LG.0.001**  
Comment noted.

**From:** [Lydia Garvey](#)  
**To:** [FS-comments-alaska-tongass-admiralty-national-monument](#)  
**Cc:** [info@seacc.org](#)  
**Subject:** Greens Creek Tailings  
**Date:** Thursday, May 31, 2012 7:29:39 PM

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LG.0.001

Nix: 1. Request for permit to expand toxic tailing dumping! ,and 2. DEIS Alternatives A-D!- All are unacceptable-All kill salmon streams & violate environmental laws, along with being highly inappropriate in National Monument lands/waters!

Do you job- Protect Our Public lands, waters, wildlife & health! You work for citizens, Not industry!

Your attention to this most urgent matter would be much appreciated by all present & future generations of all species.

Thank you

Lydia Garvey Public Health Nurse  
429 S 24th Clinton OK 73601

**Comment**

**Response**

**Comment ID: LH.0.001**  
Comment noted.

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**From:** [Louis C. Harris, Jr.](#)  
**To:** [FS-comments-alaska-tongass-administrty-national-monument](#)  
**Subject:** Green Creek Tailings  
**Date:** Friday, June 01, 2012 8:44:21 AM

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LH.0.001

We are long overdue to have concerns about the impact of mining on our environment. If a mining operation cannot avoid serious further damage to the environment, then the mining operation needs to be terminated.

Thank you for your attention.

Comment	Response
<p><b>From:</b> <a href="#">Lauren Heine</a>  <b>To:</b> <a href="#">FS-comments-alaska-tongass-admiralty-national-monument</a>  <b>Subject:</b> "Greens Creek Tailings Expansion"  <b>Date:</b> Friday, June 01, 2012 7:49:29 PM</p>	<p><b>Comment ID: LH.1.001</b>            Section 1.1 of the EIS explains that the 30- to 50-year duration reflects the request from HGCMC to modify their GPO. This represents the proposed action and is what is carried forward in the analysis of direct and indirect effects in the body of Chapter 3. The disposal of tailings and waste rock for the remaining period of the mining lease is addressed as part of cumulative effects. Sections 1.1 and 1.3 discuss how tailings disposal capacity has been developed.</p>
<p>To Whom It May Concern:</p> <p>Please include the following comments.</p>	<p><b>Comment ID: LH.1.002</b>            Customary and traditional uses are defined by the ADF&amp;G related to the specific use of various species for subsistence. The subsistence discussions reflect the ADF&amp;G's current definitions of customary and traditional uses.</p>
<p>LH.1.001 1. The life of the mine has been underestimated. All the action alternatives proposed in the DEIS, consider a life-of-mine timeline between 30 and 50 years -- but the mine could be active until 2095. The DEIS does not explain why it selected this timeline or demonstrate that the expanded tailings dump can provide the predicted capacity for tailings and waste rock over the selected timeframe.</p>	<p>As the commenter notes, the Forest Service has the authority to add stipulations to the GPO as part of developing mitigation for adverse impacts. However, any stipulations must be related to the execution of the GPO; Forest Service authority does not extend to off-site activities, such as requiring HGCMC to fund all or part of the Thayer Creek hydro project or to extend the intertie to Hoonah.</p>
<p>LH.1.002 2. The Forest Service relied on studies conducted before 1990 to estimate the customary and traditional use of the area by residents of Hoonah and Angoon and concluded that the use was either very limited or restricted to the mouth of Hawk Inlet. It is imperative that the Forest Service conduct current community use surveys for the area and develop a compensation package for Hecla to implement in the affected communities for the loss of customary and traditional uses on lands and waters impacted by mineral development at Greens Creek. Compensation could include Hecla funding completion of the Thayer Creek hydro project for Angoon or funding the connection of Hoonah to the intertie that was extended to the Greens Creek Mine several years ago. As noted in the DEIS (at p. iv), the Forest Service has the authority to add stipulations or require additional mitigation measures in making a decision relating to Hecla's proposal to modify its General Operating Plan.</p>	<p><b>Comment ID: LH.1.003</b>            Please see the response to Comment MH.2.004.</p>
<p>LH.1.003 3. ANICLA only allows the Forest Service to issue leases and associated permits for mining purposes on Monument lands if it determines that use of the site "will not cause irreparable harm to the Monument" and requires the Forest Service to maintain the continued productivity of all salmon habitats. All the action alternatives presented in the DEIS irreversibly impact salmon streams. Alternative B calls for the destruction of 4,046 feet of Class 1 and 2 fish habitat in Tributary Creek. Alternatives C and D, call for the destruction of 1,078 feet of Class 1 and 2 habitats in Fowler Creek. Overall, these alternatives would cause permanent loss of habitat for salmon, an essential part of the local food chain for the Monument's bald eagles and brown bears. The conclusion that this irreparable loss of salmon habitat can be mitigated by improving fish passage in Greens Creek is simply wrongheaded.</p>	<p><b>Comment ID: LH.1.004</b>            The regulations in 36 CFR 228.80(c)(ii) require the authorized officer to consider the long- and short-term costs of mitigation measures in terms of the economic viability of the operations. The regulation does not require that this consideration be included as part of the NEPA analysis. Based on comments received from HGCMC, the authorized officer has no indication that any of the mitigation measures would jeopardize the economic viability of the Greens Creek operation.</p>
<p>LH.1.004 4. The DEIS lacks any discussion about the short- and long-term costs to HGCMC of utilizing proposed mitigation measures or the effect of these costs on the economic viability of the mining operations as required by agency regulations for mining operations within Misty Fjords and Admiralty Island National Monuments. The Forest Service needs to supplement this draft EIS to disclose and analyze these costs.</p>	<p><b>Comment ID: LH.1.005</b>            See the response to DC.0.008.</p>
<p>LH.1.005 5. The DEIS states that Hecla will have to actively treat the water from the tailings piles for "hundreds of years if not in perpetuity." This need raises questions as to whether such mineral development is "environmentally sound" and protects Monument values as required by ANILCA and the Greens Creek Land Exchange Act of 1996. The present reclamation bond for the Greens Creek mine is \$30,455,000 based on the 2003 Solid Waste permit and adjusted for inflation. The 2003 permit assumed water treatment would be needed for approximately 7 years after mine closure. Any lack of adequate funding</p>	<p><b>Comment ID: LH.1.006</b>            The EIS has been modified throughout to reflect the current status of the APDES permit (AK0043206). Sections 1.2, 1.8.3.3, 2.4.4, and 3.5.2.1, among others that refer to the discharge permit, have</p>

**Comment**

**Response**

could place the burden on the public should Hecla declare bankruptcy. We ask that the Forest Service require adequate financial assurances to cover perpetual water treatment.

LH.1.006

6. Greens Creek is allowed to discharge contaminants into Hawk Inlet under a State permit that allows for a toxic mixing zone. The DEIS does not mention that this permit was stayed by DEC pending further review and that 2005 EPA permit still governs discharges from outfall 002 into Hawk Inlet. Unfortunately, neither permit effectively monitors water quality at the edge of the mixing zone. Consequently, the agencies lack adequate monitoring data to support a finding that mining activities have not degraded water quality in Hawk Inlet and protect existing aquatic uses as required by the Clean Water Act. Furthermore, the mixing zone design relies on a physical description of Hawk Inlet over 20 years old that does not account for isostatic rebound or other recent changes to the channel. The Forest Service's reliance on the State to protect the aquatic habitat of Hawk Inlet with a permit yet to be released is mistaken. The Forest Service needs to update its analysis in the DEIS to reflect existing conditions in Hawk Inlet and develop meaningful compensation for the long-term degradation of Hawk Inlet from the discharge and loading of toxic pollutants into this waterbody.

LH.1.007

7. The mine should be required to use best available technology to avoid any acidification from the tailings.

Thank you for your consideration of these points.

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Lauren Heine, Ph.D.  
 Consulting Co-Director, Clean Production Action  
 Director, GreenScreen Program  
 Principal, Lauren Heine Group LLC  
 Clean Production Action  
 Juneau, AK  
 Tel: 360-220-2069  
[lauren@lheinegroup.com](mailto:lauren@lheinegroup.com)

been modified to reflect that the 2005 NPDES permit conditions have been administratively extended until the APDES is reissued.

Reissuance of the wastewater discharge permit is a process independent from the proposed action under consideration. As noted in comments and in the EIS in Section 1.8.3.1, the Forest Service is responsible for ensuring that the CWA requirements are met on National Forest System lands. Regulations in 36 CFR 228.8(h) state that "certification of other approval issued by state agencies or other federal agencies of compliance with laws and regulations relating to mining operations will be accepted as compliance ... with these regulations." For this reason, the Forest Service defers to the USEPA's and ADEC's expertise in managing the reissuance of the authorized wastewater discharge permit and assumes for the purposes of this analysis that the permitted discharge complies with the CWA.

The mixing zone is based on specific modeling conducted using an EPA hydrodynamic mixing model and not the 1981 study. However, Motyka et al. (2007) (Post Little Ice Age Rebound in the Glacier Bay Region) indicates that sea levels in Hawk Inlet are affected by approximately 1.0 centimeter (0.4 inch) per year. At this rate, it is not anticipated that tidal flushing behavior would have changed since the 1981 dye dilution study.

The Forest Service recognizes that the discharge is being conducted as a legally permitted activity and with the awareness that the discharge into Hawk Inlet is protective of the receiving water body and its designated beneficial uses, including the propagation of fish, shellfish, and other aquatic life and wildlife.

**Comment ID: LH.1.007**

Comment noted.

The Forest Service has no authority over the permit reissuance process and cannot compel the USEPA or ADEC to require particular treatment technologies, dilution methods, or monitoring requirements associated with the permit. Since the discharge is and will continue to be permitted by agencies with authority for CWA compliance, the Forest Service considers the discharge to be protective of water quality for the purposes of this analysis (36 FCR 228.8(h)). As such, the EIS does not consider alternative treatment scenarios.

**Comment**

**Response**



**Luke J. Russell**  
Sr. VP EHS, Social Responsibility

June 4, 2012

Admiralty Island National Monument – Tongass National Forest  
ATTN: Ms Sarah Samuelson, Interdisciplinary Team Leader  
8510 Mendenhall Loop road  
Juneau, Alaska 99801

**Re: Greens Creek Tailings Expansion**

Dear Ms Samuelson

On behalf of Coeur d’Alene Mines we appreciate your consideration of the following comments in regard to the proposed Tailings Expansion plan by Helca Mining and the Greens Creek Mine.

LR.0.001

The Greens Creek Mine has been a vital component to the Juneau and Southeast Alaska economy for over 25 years. As presented in the draft Environmental Impact Statement (DEIS) the mine currently provides 493 direct and indirect good paying jobs with \$48 million direct and indirect payroll for the region. Without the proposed tailings expansion most all of these jobs and economic contribution would be lost to the region plus the potential for a net loss of 650 residents in the City and Bureau of Juneau.

LR.0.002

The Greens Creek Mine has been located within the Admiralty Island National Monument since 1987 and operated in accordance with federal, state and locals laws and regulations including Section 503 of the Alaska National Interest Lands Conservation Act (ANILCA). The project provides a tremendous economic impact to the region while affecting only a very small area of land within the Monument.

LR.0.003

As presented in the DEIS the proposed action (Alternative B) would have less land disturbance, less impact to air quality, similar impacts on water resources and less impact to wetlands than the other action alternatives. Alternative B provides for the logical expansion of the existing tailings facility where it has been placed for nearly a quarter century without spreading impacts to other sites or drainages. Maintaining mine facilities within their current context also minimizes new impacts to the Monument.

Coeur d’Alene Mines Corporation  
505 Front Avenue, P.O. Box 1  
Coeur d’Alene, ID 83816  
Telephone 208.665.0996  
Facsimile 208.667.2213  
www.coeur.com

**Comment ID: LR.0.001**

Comment noted.

**Comment ID: LR.0.002**

Comment noted.

**Comment ID: LR.0.003**

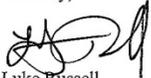
Comment noted.

**Comment**

**Response**

We encourage the Forest Service to select Alternative B and complete the EIS timely so mine operations and significant economic contributions from the mine can continue uninterrupted.

Sincerely,



Luke Russell

cc. W. Zigarlick

**Comment**

**Response**

**Comment ID: LW.0.001**  
Comment noted.

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**From:** [Larry Weihs](#)  
**To:** [FS-comments-alaska-tongass-admiralty-national-monument](#)  
**Subject:** Greens Creek Tailings  
**Date:** Friday, June 01, 2012 5:04:07 AM

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To whom this may concern:

LW.0.001

I have witnessed firsthand the environmental stewardship displayed within the the operation of Greens Creek Mine. The mine management and their dedication to Safety, Health and the Environment is evidenced in their track record and the focus on the daily safe operation of this mine. I support their tailings expansion application.

Sincerely,

-Larry Weihs

Larry Weihs  
COO  
ESS Support Services Worldwide  
*A division of Compass Group*  
201 Post Road  
Anchorage, AK 99501  
Telephone Number: 907-865-9825  
Mobile Number: 907-232-2195  
**212<sup>o</sup> in 2012**

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**Comment**

**Response**

**Freeman Bell**  
**10009 Camden Place**  
**Juneau, AK 99801**

5-30-2012

USDA Forest Service  
Admiralty Island National Monument-Tongass National Forest  
ATTN: Greens Creek Tailings Expansion  
8510 Mendenhall Loop Road  
Juneau, Alaska 99801

Dear Sir:

MB.0.001

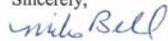
I am writing in support of Alternative B for the Greens Creek Tailings Expansion. I worked for Greens Creek for six years and saw firsthand how conscientious Greens Creek management is about following all environmental guidelines and sometimes exceeding regulations concerning tailings and other aspects of mining.

I also own a business that has benefitted from the local mines. The mining industry has a very positive effect on all Southeast Alaska's economy. The economic impact for Alaska would be devastating if Greens Creek were not able to continue mining once the current tailings facility reached capacity. In Juneau, Hecla supports cultural, sporting, nonprofit events and charities.

Having been to Greens Creek recently and seeing the facility I have no reservations supporting the expansion of the current tailings facility. Alternative B makes the most sense environmentally and economically.

Thank you for the opportunity to comment.

Sincerely,



Mike Bell  
Owner



**Comment ID: MB.0.001**  
Comment noted.

**Comment**

**Response**

**Comment ID: MH.0.001**  
Comment noted.

**Cox, David**

**From:** Iwamoto, Karen -FS <kiwamoto@fs.fed.us> on behalf of FS-comments-alaska-tongass-admiralty-national-monument <comments-alaska-tongass-admiralty-national-monument@fs.fed.us>  
**Sent:** Monday, June 04, 2012 5:05 PM  
**To:** Cox, David; Weglinski, Gene  
**Cc:** Samuelson, Sarah J -FS  
**Subject:** FW: Greens Creek Tailings Expansion

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Karen Iwamoto  
Land Management Planner  
Tongass National Forest  
907-747-4230  
[kiwamoto@fs.fed.us](mailto:kiwamoto@fs.fed.us)  
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**From:** Mike Heatwole [<mailto:mikeheatwole@pebblepartnership.com>]  
**Sent:** Monday, June 04, 2012 2:53 PM  
**To:** FS-comments-alaska-tongass-admiralty-national-monument  
**Subject:** Greens Creek Tailings Expansion

MH.0.001

I write today as a long time Alaskan in support of the Hecla Greens Creek Mining Company's proposed tailings expansion. The mine has provided steady employment for the Juneau area for over 20 years. This is important since there are not many year round jobs left in the private sector in Southeast – especially after the demise of the logging industry. Greens Creek has been a responsible operator and corporate citizen. The proposed alternative B, supported by the company, makes the most sense – especially considering it is informed by the technical experts at the company. I encourage the Forest Service to expeditiously approve the expansion so the company can know their next phase of operation can go forward.

Mike Heatwole  
5200 Huffman Road  
Anchorage, AK 99516

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**Comment**

**Response**



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 Congressman Don Young  
 Governor Sean Parnell

June 1, 2012

Admiralty Island National Monument – Tongass National Forest  
 Attn.: Greens Creek Tailings Expansion  
 8510 Mendenhall Loop Road  
 Juneau, AK 99801

Via email to: [comments-alaska-tongass-admiralty-national-monument@fs.fed.us](mailto:comments-alaska-tongass-admiralty-national-monument@fs.fed.us)

Re: Support of Greens Creek Tailings Facility Expansion EIS Alternative B

To Whom It May Concern:

MH.1.001

The Resource Development Council for Alaska, Inc. (RDC) is writing to express support for the U.S. Forest Service's Environmental Impact Statement (EIS) Alternative B for the expansion of the tailings facility at the Greens Creek Mine.

RDC is a statewide organization made up of all resource sectors, business associations, labor unions, Native corporations, tourism providers, local governments and individuals. RDC's purpose is to encourage a strong, diversified private sector in Alaska and expand the state's economic base through the responsible development of our natural resources.

MH.1.002

The Greens Creek Mine located on Admiralty Island has operated since 1988, and is the largest, year-round, private employer in Southeast Alaska. In addition to providing high paying jobs, the Greens Creek Mine is a major contributor to the local tax base.

MH.1.003

Expansion of the existing dry stack area is a logical step to increasing capacity, while minimizing disturbance and reclamation costs. With approval, Greens Creek will have the opportunity to reclaim areas inside the current facility.

Additionally, Greens Creek will utilize the same sound tailings disposal techniques, reclamation procedures, and environmental protections that have previously been approved and are currently in place.

MH.1.004

In conclusion, RDC supports the EIS Alternative B for the expansion of the tailings facility at Greens Creek, which will allow for 20 to 50 additional years of production. Thank you for the opportunity to comment on this important issue.

Sincerely

Marleanna Hall  
 Projects Coordinator

**Comment ID: MH.1.001**

Comment noted.

**Comment ID: MH.1.002**

Comment noted.

**Comment ID: MH.1.003**

Comment noted.

**Comment ID: MH.1.004**

Comment noted.

Comment

Response

	<p>From: <a href="#">Michael Miles</a>                      To: <a href="#">Comments and Responses, Administrative Document</a>                      Subject: <a href="#">Greens Creek Mine Tailings Disposal</a>                      Date: <a href="#">Friday, June 10, 2011 2:23:36 PM</a></p>
	<p>Before any development option is implemented these concerns should be addressed:</p>
<p>MH.2.001</p>	<p>1. The mine should do more to reduce the toxic releases as mentioned in EPA's TRI inventory <a href="http://aqsgh.epa.gov/html/printmain.cfm?zipcode=99581&amp;agency=EPA&amp;tab=TRI01&amp;sort=VIEW_&amp;sort_fm=1&amp;date=&amp;city=&amp;ap=&amp;apch=year&amp;chemical=All+chemicals&amp;industry=ALL&amp;year=2011&amp;tab_page=1&amp;id=TRID&amp;id=92LLEBY&amp;id=TRFDSP">http://aqsgh.epa.gov/html/printmain.cfm?zipcode=99581&amp;agency=EPA&amp;tab=TRI01&amp;sort=VIEW_&amp;sort_fm=1&amp;date=&amp;city=&amp;ap=&amp;apch=year&amp;chemical=All+chemicals&amp;industry=ALL&amp;year=2011&amp;tab_page=1&amp;id=TRID&amp;id=92LLEBY&amp;id=TRFDSP</a>                      This is a ludicrous amount going into the soil and water of Admiralty Island National Monument.</p>
<p>MH.2.002</p>	<p>2. Any lifetime for a tailings facility should match the least term the mine itself. The proposed tailings facility should plan for the remaining term of the lease until 2095, not just ~50 years.</p>
<p>MH.2.003</p>	<p>3. The DEIS should have estimated the greenhouse gases associated with the expansion options.</p>
<p>MH.2.004</p>	<p>4. The USFS is mandated to require that mining "will not cause irreparable harm to the Monument" and requires the Forest Service to maintain the continued productivity of all salmon habitats. All the action alternatives presented in the DEIS irreversibly impact salmon streams.</p>
<p>MH.2.005</p>	<p>5. We ask that the Forest Service require adequate financial assurances to cover perpetual water treatment.</p>
<p>MH.2.006</p>	<p>6. The agencies lack adequate monitoring data to support a finding that mining activities have not degraded water quality in Hawk Inlet and protect existing aquatic uses as required by the Clean Water Act. Furthermore, the mining zone design refers to a physical description of Hawk Inlet over 20 years old that does not account for tectonic rebound or other recent changes to the channel. The Forest Service's reliance on the State to protect the aquatic habitat of Hawk Inlet with a permit yet to be released is unreliable. The Forest Service needs to update its analysis in the DEIS to reflect changing conditions in Hawk Inlet and develop meaningful compensation for the long-term degradation of Hawk Inlet from the discharge and loading of toxic pollutants into this waterbody.</p>
<p>MH.2.007</p>	<p>Once the above are addressed Option B seems most reasonable since all tailings would be contained in one place.                      Miller Holders                      423 Third St.                      Juneau</p>

**Comment ID: MH.2.001**

As disclosed in Section 3.5.2.1 of the EIS, all water that comes in contact with tailings is controlled, captured, and treated prior to discharge to Hawk Inlet. Because the discharge is and will continue to be permitted by agencies with authority for CWA compliance, the Forest Service considers the discharge to be protective of water quality for the purposes of this analysis (36 FCR 228.8(h)). In addition, non-contact-water is diverted so it can not become contaminated and require treatment (Section 3.5.2.1). Appropriate ambient monitoring programs have also been established through the GPO and by ADEC's Waste Management Permit.

**Comment ID: MH.2.002**

The analysis of the proposed action and alternatives is based on the time frame requested by HGCMC. The Forest Service agrees that this is a reasonable duration for anticipated future activities. Tailings disposal for the duration of the lease (through 2095) is considered as part of cumulative effects.

**Comment ID: MH.2.003**

Comment noted. Greenhouse gas calculations were added for each action alternative in Section 3.2.3. Mobile source greenhouse gas emissions at the Greens Creek Mine for Alternative B would add 707 tons of carbon dioxide per year, or 0.16% of Juneau's total greenhouse gas emissions; Alternative C would add 946 tons of carbon dioxide emissions per year, or 0.21% of Juneau's total greenhouse gas emissions; and Alternative D would add 910 tons of carbon dioxide emissions per year, or 0.21% of Juneau's total greenhouse gas emissions. Alternatives C and D would produce 0.05% more greenhouse gas emissions than alternatives A and B yearly. In comparison, Juneau's yearly highway transportation greenhouse gas emissions equal 29% of the borough's total greenhouse gas emissions.

**Comment ID: MH.2.004**

Monument values are identified in Chapter 1 as a significant issue (Issue 4) that led to the formulation of alternatives and mitigation measures. The alternative TDF (alternatives C and D) was specifically developed to minimize disturbed area in the Monument. Section 3.19 is dedicated to assessing impacts to the Monument and comparing alternatives. The information presented in the EIS is sufficient to make an informed decision. The rationale for the decision and the findings required by ANILCA are further documented in the Record of Decision. Please note that the DEIS

**Comment**

**Response**

erroneously reported that the alternative TDF site would affect 34 feet of Class I streams. This is not correct; the alternative TDF site would not directly affect (by burial) any Class I streams. This has been corrected in the FEIS. The mitigative actions relative to salmon production for all alternatives compensate for losses, resulting in no net loss of salmon production in the Monument.

**Comment ID: MH.2.005**

The reclamation and cost estimate will be revised to reflect the Record of Decision and will include long-term water quality treatment.

**Comment ID: MH.2.006**

The mixing zone is based on specific modeling conducted using an EPA hydrodynamic mixing model and not the 1981 study. However, Motyka et al. (2007) (Post Little Ice Age Rebound in the Glacier Bay Region) indicates that sea levels in Hawk Inlet are affected by approximately 1.0 centimeter (0.4 inch) per year. At this rate, it is not anticipated that tidal flushing behavior would have changed since the 1981 dye dilution study. The EIS has been modified throughout to reflect the current status of the APDES permit (AK0043206). Sections 1.2, 1.8.3.3, 2.4.4, and 3.5.2.1, among others that refer to the discharge permit, have been modified to reflect that the 2005 NPDES permit conditions have been administratively extended until the APDES permit is reissued.

Issuance of the wastewater discharge permit is a process independent from the proposed action under consideration. As noted in comments and in the EIS in Section 1.8.3.1, the Forest Service is responsible for ensuring that the CWA requirements are met on National Forest System lands. Regulations in 36 CFR 228.8(h) state that “certification of other approval issued by state agencies or other federal agencies of compliance with laws and regulations relating to mining operations will be accepted as compliance ... with these regulations.” For this reason, the Forest Service defers to the USEPA’s and ADEC’s expertise in managing the reissuance of the authorized wastewater discharge permit and assumes for the purposes of this analysis that the permitted discharge complies with the CWA. The Forest Service considers the discharge to be protective of water quality for the purposes of this analysis (36 FCR 228.8(h)).

**Comment ID: MH.2.007**

Comment noted.

**Comment**

**Response**



Trout Unlimited Alaska

June 1, 2012

Admiralty Island National Monument  
 Tongass National Forest  
 Attn: Greens Creek Tailings Expansion DEIS  
 8150 Mendenhall Loop Road  
 Juneau, AK 99801

Submitted via email to:  
[comments-alaska-tongass-admiralty-national-monument@fs.fed.us](mailto:comments-alaska-tongass-admiralty-national-monument@fs.fed.us)

Trout Unlimited (TU) is a 501c3 organization with approximately 150,000 members nation wide and 1,500 members in Alaska. Our mission is to protect, conserve, and restore coldwater fisheries and the habitat that supports them.

MK.1.001

We appreciate the consideration of fisheries values and of our scoping comments regarding them in the DEIS, however we are concerned that all of the action alternatives proposed include some level of permanent fish habitat loss. An action alternative which avoids impacts to both Class I and II fish habitat entirely could and should have been developed. We encourage the Forest Service to continue to explore and develop such an alternative.

MK.1.002

Because all of the current action alternatives do propose permanent loss of fish habitat we are unable to support any of them. That said, because Alternative C would avoid Class I fish habitat entirely and would minimize new potential impacts to tributaries of Greens Creek, we see it as a better alternative than the others proposed.

MK.1.003

Given Alternative C would necessitate a new tailings disposal site and water treatment and monitoring

*Trout Unlimited: America's Leading Coldwater Fisheries Conservation Organization*  
 Alaska Office: 419 Sixth Street, Suite 200, Juneau, AK 99801 • (907) 321-3725  
[www.savebristolbay.org](http://www.savebristolbay.org) • [www.tu.org](http://www.tu.org)

**Comment ID: MK.1.001**

Comment noted. The interagency team expended considerable effort to identify a feasible alternative location that would avoid fisheries impacts. Due to the ubiquitous nature of streams and fish habitat in the area and the design and engineering constraints of the TDF, no such site was identified. The alternative TDF site was first identified based in part on previous sampling from the 1980s that did not identify fish in the north site streams. During the course of this analysis, resident fish were identified in the affected streams. Please note that the DEIS erroneously reported that the alternative TDF site would affect 34 feet of Class I streams. This is not correct; the alternative TDF site would not directly affect (by burial) any Class I streams. This has been corrected in the FEIS.

**Comment ID: MK.1.002**

Comment noted. Alternatives A and B would impact three watersheds: Cannery Creek, Tributary Creek, and South Hawk Inlet. Alternatives C and D would impact five watersheds: Cannery Creek, Tributary Creek, South Hawk Inlet, Fowler Creek, and North Hawk Inlet (see Section 3.5, figures 3.5-5 and 3.5-6).

Alternative B would impact 1,646 feet of Class I fish habitat in Tributary Creek.

**Comment ID: MK.1.003**

Comment noted. If selected, the new TDF would be designed to contain and collect all contact-water, which would then be treated and discharged to Hawk Inlet at the existing discharge location.

**Comment**

**Response**

Page 2 of 2

MK.1.003  
cont

facilities, we request that this new infrastructure, associated monitoring protocols, and reclamation bonds be held to the highest standards possible to protect fisheries values in Fowler Creek and its associated tributaries and wetlands to the highest degree possible.

Thank you for the opportunity to comment.

Sincerely,



A handwritten signature in cursive script, appearing to read "Mark Kaelke".

Mark Kaelke  
Southeast Alaska Project Director  
(907) 321-4464

**Comment**

**Response**

**ELGEE REHFELD MERTZ, LLC**

CERTIFIED PUBLIC ACCOUNTANTS

9309 Glacier Highway, Suite B-200 • Juneau, Alaska 99801  
907.789.3178 • FAX 907.789.7128 • www.ermcpa.com

June 2, 2012

Admiralty Island National Monument-Tongass National Forest  
8510 Mendenhall Loop Road  
Juneau, Alaska 99801

RE: Greens Creek Tailings Expansion

Dear Sir/Madam:

MM.0.001

I am a business owner in Juneau, Alaska. My partners and I employ 25 people in Juneau. We have witnessed first hand the direct positive impact that the Greens Creek mine has had on the community:

- We have over 800 clients in Alaska. Many of these are business owners whose business activity has been positively impacted by supplying the Greens Creek mine and by the patronage of the mine's employees.
- Many of our clients are employed by the Greens Creek mine. Our business has been positively impacted by this and would be adversely affected if the mine were to close.
- The non-profit and educational community in Juneau has greatly benefited from the contributions and other support Greens Creek has provided. We have partners and staff who sit on the Boards of Directors of some of these entities, and know what a positive impact this support has had.

MM.0.002

I support Greens Creek Tailings Facility Expansion Plan Alternative B as detailed in the Tailings Expansion draft EIS. This is an ecologically sound, reasonable and logical solution. Alternative B will ensure that Greens Creek is able to operate for many years to come. It is in a single watershed, and as someone who fishes in the waters of both Young Bay outside of Hawk Inlet and hunts that particular area of Admiralty Island, I believe Greens Creek has been an excellent steward of the natural resources in which they operate.

Greens Creek is an excellent community member and asset, and you should do everything in your power to ensure that Southeast Alaska, and especially Juneau, does not lose that.

Sincerely



Max E. Mertz, CPA  
Partner

**Comment ID: MM.0.001**

Comment noted.

**Comment ID: MM.0.002**

Comment noted.



**Comment**

**Response**

**Comment ID: MN.0.001**  
Comment noted.

**From:** [Mike Nadon](#)  
**To:** [FS-comments-alaska-torgass-adminalty-national-monument](#)  
**Subject:** Greens Creek Tailings Expansion  
**Date:** Friday, June 01, 2012 8:29:31 AM

MN.0.001

I wish to lend my support to this project. Hecla is a responsible company and I am sure will adhere to policies and commitments. Mining revenue is critical to Alaska as are the jobs that will be provided by a continuation and expansion of operations at Greens Creek.

Regards,  
**Mike Nadon**

President  
Cementation USA Inc.  
10150 South Centennial Parkway, Suite 110  
Sandy, UT 84070  
Phone: 801-937-4120  
Cell: 801-707-6949  
[mike.nadon@cementation.us](mailto:mike.nadon@cementation.us)  
[www.cementation.us](http://www.cementation.us)



**Comment**

**Response**



**Comments on Greens Creek Tailings Expansion**

June 1, 2012

Sarah Samuelson, Project Leader  
 Greens Creek Tailings Expansion  
 Admiralty Island National Monument – Tongass National Forest  
 8510 Mendenhall Loop Road  
 Juneau, Alaska 99801

Dear Sarah,

The Council of Alaska Producers (CAP) appreciates the opportunity to comment on the proposed tailings facility expansion at the Hecla Greens Creek Mine.

CAP is a non-profit trade association formed in 1992 and serves as a spokesperson for the large metal mines and major metal developmental projects in the state. The Council brings together mining companies with interest in Alaska to represent and inform members on legislative and regulatory issues, to support and advance the mining industry, to provide education to members, the media, and the general public on mining related issues, and to promote economic opportunity and environmentally sound mining practices.

The Hecla Greens Creek Mine (HGCMC) has been in operation since 1987 and the history of mining exploration and development efforts at the site goes back to the early 1970's. Through these many decades of mining and mining related activities, both before and after the establishment of the Admiralty Island National Monument, Greens Creek has proven itself to be a responsible operator as well as a major driver of the Southeast Alaska economy.

MS.0.001

In order to continue its operations into the future, HGCMC is requesting an expansion of its existing tailings facility and this request is being analyzed through the EIS process managed by the United States Forest Service (USFS). HGCMC's proposal is listed as "Alternative B" in the current draft EIS and CAP wholeheartedly supports this alternative for the following reasons:

- Alternative B is a logical expansion of the existing facility and conforms with the requirements of Section 503 of the Alaska National Interest Lands Conservation Act (ANILCA) that state that the mine's facilities be consolidated to the maximum extent practicable. The other expansion alternatives simply do not meet this test.
- The consolidation of facilities proposed by Alternative B requires less acres of disturbance than the other expansion alternatives thereby resulting in a decrease in operating, reclamation and closure costs to the operation. Reduction of costs will help ensure the longest life possible to the mine, thus ensuring its contributions to the local economy are as sustainable as possible.

MS.0.002

**Comment ID: MS.0.001**

Comment noted. The Forest Service has identified its selected alternative in the Record of Decision.

**Comment ID: MS.0.002**

Comment noted.

**Comment**



MS.0.003

- Alternative B will have minimal disruption to wildlife when compared to the other expansion alternatives. There is an active goshawk nest at the new location under proposed alternatives C and D, and the nest and surrounding habitat for this sensitive species would be impacted if development in this area were to occur.

MS.0.004

- Alternative B maintains the existing haul distances to the tailings facility unlike the other expansion alternatives where an additional seven miles would be added to each truck trip to the new facility. The increased fuel required to make this trip could result in an additional 1,000,000 gallons of diesel fuel over the life of the project, resulting in significantly increased greenhouse gas emissions.

MS.0.005

CAP believes that Alternative B is the most environmentally sound, technically feasible, and economically viable alternative detailed in the draft EIS. We urge the USFS to adopt HGCMC's proposal as its preferred alternative and issue the Record of Decision as expeditiously as possible.

Thank you for your consideration in this matter,

Michael Satre  
 Executive Director  
 Council of Alaska Producers  
 PO Box 33499  
 Juneau, Alaska 99803  
 907-957-2149

**Response**

**Comment ID: MS.0.003**

Comment noted. An active goshawk nest was located in 2011 adjacent to the proposed new TDF to the north under alternatives C and D. An appropriate discussion and analysis of this finding was provided in Section 3.12.

**Comment ID: MS.0.004**

Correction: Alternatives C and D would add an additional 5.6 miles round-trip for haul trucks to travel from the portal to the new northern TDF. Fuel usage may vary based on hauling needs.

Mobile source greenhouse gas emissions at the Greens Creek Mine for Alternative B would add 707 tons of carbon dioxide emissions per year, or 0.16% of Juneau's total greenhouse gas emissions; Alternative C would add 946 tons of carbon dioxide emissions per year, or 0.21% of Juneau's total greenhouse gas emissions; and Alternative D would add 910 tons of carbon dioxide emissions per year, or 0.21% of Juneau's total greenhouse gas emissions. Alternatives C and D would produce 0.05% more greenhouse gas emissions than alternatives A and B yearly. In comparison, Juneau's yearly highway transportation greenhouse gas emissions equal 29% of the borough's total greenhouse gas emissions.

**Comment ID: MS.0.005**

Comment noted.

**Comment**

**From:** [Mike Tobin, Jenny Pursell](#)  
**To:** [FS-comments-alaska-tongass-admiralty-national-monument](#)  
**Subject:** Greens Creek Tailings Expansion  
**Date:** Saturday, June 02, 2012 11:27:33 AM

---

Dear Forest Service,

MT.0.001

Of the available alternatives I prefer C in that it would apparently cause less heavy metal run-off into Hawk Inlet and would affect the Monument less than alternative B.

Thank you,

Michael Tobin

PO Box 33578

Juneau, AK 99803

**Response**

**Comment ID: MT.0.001**

Comment noted. Please note that as discussed in Section 3.5.2.1, all contact-water that is or could be contaminated is controlled and not allowed to run off into Hawk Inlet.

Please note that discharge from all proposed action alternatives will still be from the same outfall point in Hawk Inlet. Since the discharge is and will continue to be permitted by agencies (USEPA and ADEC) with authority for CWA compliance, the Forest Service considers the discharge to be protective of water quality for the purposes of this analysis (36 FCR 228.8(h)). The Forest Service recognizes that the discharge is being conducted as a legally permitted activity and is aware that the discharge into Hawk Inlet is protective of the receiving water body and its designated beneficial uses, including the propagation of fish, shellfish, and other aquatic life and wildlife.

**Comment**

**Response**

**Cox, David**

**From:** Iwamoto, Karen -FS <kiwamoto@fs.fed.us> on behalf of FS-comments-alaska-tongass-admiralty-national-monument <comments-alaska-tongass-admiralty-national-monument@fs.fed.us>  
**Sent:** Monday, June 04, 2012 10:43 AM  
**To:** Cox, David; Weglinski, Gene  
**Cc:** Samuelson, Sarah J -FS  
**Subject:** FW: Greens Creek Tailings Expansion

-----  
 Karen Iwamoto  
 Land Management Planner  
 Tongass National Forest  
 907-747-4230  
[kiwamoto@fs.fed.us](mailto:kiwamoto@fs.fed.us)  
 -----

-----Original Message-----

From: Margo Waring [\[mailto:margowaring@ak.net\]](mailto:margowaring@ak.net)  
 Sent: Monday, June 04, 2012 9:33 AM  
 To: FS-comments-alaska-tongass-admiralty-national-monument  
 Subject: Greens Creek Tailings Expansion

Thank you for the opportunity to comment on Hecla Greens Creek Mining Company's proposal to expand its tailings facility at Hawk Inlet.

MW.0.001

I am opposed to granting this permit and favor a "no action" alternative for several reasons.

MW.0.002

The proposed expansion is said to provide for storage for the next 50 years; yet the company's projection for the current storage facility was twice what reality provided. Thus, it is possible that the Stage 3 facility will not meet the needs for the next 50 years. In addition, even if the facility accommodates 50 years worth of material, the mine lease extends an additional 30 years or so, meaning that a Stage 4 request would be likely. All this is important because current water quality management has failed to adequately minimize amounts of toxics and acid into Hawk Inlet.

MW.0.003

Water quality is my chief concern. Even the current tailings pile will require active water treatment for acids for hundreds of years. Heavy metals are daily dumped into Hawk Inlet and later flushed out into Chatham Strait. Mercury, cadmium, cyanide, copper, lead and zinc are all recognized to adversely impact the health of marine organisms, fish and humans. Already 196 pounds of lead, a potent neurotoxin, has been dumped into Hawk Inlet. In 50 years, this number will be 1,400 pounds. These toxic metals do not get flushed out and then disappear. They reappear throughout the environment and threaten human health. We all want to be able to fish and eat our catch of fish caught in Chatham Strait and its connecting waters. Over time the safe area for local fishers and subsistence users will be further and further from their homes.

MW.0.004

The company and DEC claim that contaminants are well treated through the establishment of "mixing zones". As a former employee of DEC, I know that mixing zones are flexible ways in which to accommodate pollution: not only can the zone be expanded, but testing can be done in ways that minimize readings and, thereby, appear to satisfy permits.

While water may "dilute" the load at any given point, it does not change the total amount of toxic heavy metal contamination.

**Comment ID: MW.0.001**

Comment noted.

**Comment ID: MW.0.002**

The Forest Service has evaluated HGCMC's disposal capacity needs for tailings, waste rock, and other approved wastes, including wastewater treatment plant sludge. In reviewing these needs and documented production rates, the Forest Service is confident that the alternatives put forward represent a reasonable maximum design that is adequate to address the 30- to 50-year time frame.

The discharge is and will continue to be permitted by agencies (USEPA and ADEC) with authority for CWA compliance. The Forest Service considers the discharge to be protective of water quality for the purposes of this analysis (36 CFR 228.8(h)). The Forest Service recognizes that the discharge is being conducted as a legally permitted activity and is aware that the discharge into Hawk Inlet is protective of the receiving water body and its designated beneficial uses, including the propagation of fish, shellfish, and other aquatic life and wildlife.

**Comment ID: MW.0.003**

Please see the response to Comment MW.0.002.

To put loading into context, 2010 average flow and monitoring data were used to compare the natural loading of metals from Greens Creek to Hawk Inlet versus the loading of metals discharged through the 002 outfall. Based on this comparison, the average natural loading of dissolved zinc from Greens Creek to Hawk Inlet in 2010 was 1.26 pounds per day. The average 2010 loading of total zinc through the 002 outfall to Hawk Inlet was 0.37 pounds per day, approximately 60% less than the natural rate of loading.

**Comment ID: MW.0.004**

Issuance of the wastewater discharge permit is a process independent from the proposed action under consideration. As noted in comments and in the EIS in Section 1.8.3.1, the Forest Service is responsible for ensuring that the CWA requirements are met on National Forest System lands. Regulations in 36 CFR 228.8(h) state that "certification of other approval issued by state agencies or other federal agencies of compliance with laws and regulations relating to mining operations will be accepted as compliance ... with these regulations." For this reason, the Forest

**Comment**

MW.0.005

Regarding the proposed "mitigation" of extra wetlands through SEAL, this strategy scarcely begins to address the actual damage being done. It neither takes contamination from the water or makes the fish healthier. Specifically, it does not address the problem where it occurs or the damages done where they occur. Subsistence users near Hawk Inlet are not made whole by wetlands hundreds of miles away.

MW.0.006

We must also keep in mind that Greens Creek is not the only mining operation in Southeast Alaska, all of which dump similar amounts of toxins into our inside waters. Recently, BC announced that two "world class" mines are requesting permits to dump toxics into the Stikine River. While we can't control Canada's standards, we can raise our own. Until the day comes when water treatment at the site is more capable of removing toxic heavy metals and truly eliminating acid drainage, the Greens Creek mine should not be permitted to expand.

Margo Waring  
11380 N. Douglas Hwy.  
Juneau, AK 99801

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**Response**

Service defers to the USEPA's and ADEC's expertise in managing the reissuance of the authorized wastewater discharge permit and assumes for the purposes of this analysis that the permitted discharge complies with the CWA.

The Forest Service has no authority over the permit reissuance process and cannot compel the USEPA or ADEC to require particular treatment technologies, dilution methods, or monitoring requirements associated with the permit.

**Comment ID: MW.0.005**

Wetlands mitigation requirements and guidelines are established by the USACE. The focus of mitigation has shifted from a preference for on-site, in-kind mitigation to the in-lieu fee approach discussed in the EIS. Forested lands will be reestablished following closure; however, there will be some long-term reduction in the number of acres of wetlands at the site.

**Comment ID: MW.0.006**

Comment noted. Please see the response to Comment MW.0.005. The Forest Service recognizes that the discharge is being conducted as a legally permitted activity and with the awareness that the discharge into Hawk Inlet is protective of the receiving water body and its designated beneficial uses, including the propagation of fish, shellfish, and other aquatic life and wildlife.

**Comment**

**Response**

Neil MacKinnon  
 1114 Glacier Ave  
 Juneau, Alaska 99801

Admiralty Island National Monument – Tongass National Forest  
 ATTN: Greens Creek Tailings Expansion  
 8510 Mendenhall Loop Road  
 Juneau, Alaska 99801 May 31, 2012  
 RE: Comments on DEIS for GPO of Greens Creek Tailings Facility Expansion

Dear Sir/Madme:

NM.0.001 I write in support of the Alternative B proposal by Hecla Greens Creek Mining Company to expand the present tailings facility in order to allow for the continued operation of the Greens Creek Mine. Over the last twenty five years of operation, HGCMC has been a substantial element of the local economy while being a good steward of the land and a model for modern mining.

NM.0.002 Greens Creeks consumption of surplus power from the Lake Dorthy Hydorelectric Project made possible the financing and construction of this project. Lake Dorthy's hydro electric energy will result in significant savings over the cost of alternative meand of electric generation in the future. Savings that accrue to all electric customers on the Juneau Grid. These savings will only be realized if Greens Creek can continue to operate and consume surplus power.

NM.0.003 Greens Creek's plan alternative B is founded on many years of operating the present facility along with new knowledge of the potential of the Greens Creek deposit. Planning out fifty years is wise in light of the potential of the Greens Creek mineral system. Also keeping operations compact reduces impacts, increases efficiency of operation and monitoring.

NM.0.001 Again I urge the Forest Service to select Alternative B as the logical and environmentally preferred alternative in the FEIS and issue a ROD and approve a General Plan of Opertions based thereon.

Sincerely,  
 Neil MacKinnon

**Comment ID: NM.0.001**

Comment noted. The ROD presents a description of the selected alternative and the rationale for its selection.

**Comment ID: NM.0.002**

Comment noted.

**Comment ID: NM.0.003**

Comment noted.

**Comment**

**Response**

**Comment ID: PB.0.001**  
Comment noted.



**United States Department of the Interior**

OFFICE OF THE SECRETARY  
Office of Environmental Policy and Compliance  
1689 C Street, Room 119  
Anchorage, Alaska 99501-5126



9043.1  
ERI2/261  
PEP/ANC

May 30, 2012

Ms. Sarah Samuelson  
Interdisciplinary Team Leader  
Admiralty Island National Monument  
Tongass National forest  
ATTN: Greens Creek Tailings Expansion  
8510 Mendenhall Loop Road  
Juneau, AK 99801

Dear Ms. Samuelson:

PB.0.001

The U.S. Department of the Interior (DOI) has reviewed the April 2012 Hecla Greens Creek Mine Tailings Disposal Facility Expansion Draft Environmental Impact Statement (EIS). We offer the following comments under provisions of the Fish and Wildlife Coordination Act, the National Environmental Policy Act, and Executive Order 11990 (Protection of Wetlands). Our primary interests for this project include migratory birds and their habitats, anadromous fish, and wetlands affected by the proposed tailings expansion.

**PROJECT DESCRIPTION**

Hecla Greens Creek Mining Company (HGCMC) proposes to expand the Greens Creek Mine tailings disposal facility (TDF) to accommodate approximately 10 million cubic yards of additional tailings and waste rock over a 30- to 50-year period. The mine is located on Admiralty Island, approximately 18 miles southwest of Juneau, Alaska. Major portions of the mine are located on Tongass National Forest lands and most of the TDF is located in the Admiralty Island National Monument (Monument). The mine produces lead and zinc concentrates that also contain silver.

**GENERAL COMMENTS**

The Draft EIS presents one no-action and three action alternatives. The major differences among the alternatives are the location and configuration of the TDFs, and the types and amounts of wetlands and fish streams that would be lost.

The proposed alternative (Alternative B) would extend the footprint of the existing TDF south into the Monument. Approximately 4,000 linear feet of fish habitat in Tributary

**Comment**

**Response**

Creek would be lost under this proposal, including 1,646 feet of anadromous fish stream and 2,400 feet of resident fish stream. A total of 98.4 acres of wetlands would be filled.

Alternative C would expand the existing TDF to hold an additional 3 million cubic yards of tailings and establish a new TDF outside the Monument that would hold an additional 7 million cubic yards of tailings and waste rock. Approximately 1,044 feet of Class II stream and 114.2 acres of wetlands would be lost. No anadromous reaches would be filled.

Alternative D would implement a smaller expansion of the existing TDF to hold an additional 1 million cubic yards of tailings with a larger TDF outside of the Monument that would hold an additional 9 million cubic yards of tailings and waste rock. Approximately 1,044 feet of resident fish stream and 124.9 acres of wetlands would be disturbed.

Minimization of Fish Habitat Loss

PB.0.002

We recommend selection of Alternative C because it would have less impacts to fish habitat than the proposed Alternative B. We believe the selected alternative would help minimize impacts to fish and wildlife habitat through maintenance of fish-bearing streams, minimization of wetland loss, and minimization of disturbance to migratory bird habitats. Under Alternative B, the proposed TDF expansion would result in a loss of 1,600 feet of anadromous fish spawning and rearing habitat and an additional 2,400 feet of resident fish stream habitat in Tributary Creek, representing a 50 percent loss of fish habitat by stream length. Although Alternative C would impact over 1,000 feet of a resident fish stream and would include substantial wetland loss, overall stream loss would be reduced.

PB.0.003

PB.0.004

Mitigation for Impacts to Fish-bearing Streams

PB.0.005

Fish-bearing streams are considered high-quality aquatic features (USACE 2009) and need to be avoided where possible. Where impacts are unavoidable, we recommend that the Final EIS state that fish-bearing streams will be mitigated at a ratio of at least 3:1. If repair of the failed fish passage structure on Greens Creek is selected as mitigation, we believe an adequate monitoring plan with adaptive management should be required by the U.S. Forest Service.

PB.0.006

The joint Environmental Protection Agency and U.S. Army Corps of Engineers Final Rule *Compensatory Mitigation for Losses of Aquatic Resources* (Final Rule) (2008) specifies that because streams are difficult to replace, emphasis should be on preservation, rehabilitation, or enhancement. According to the Final Rule, a monitoring schedule is required, and reports must be submitted to assess development and condition of the compensation project. In addition, mitigation plans must contain performance standards that will be used to assess whether the project is achieving its objectives. These components (none of which are included in the Draft EIS) need to be specified in the Final EIS.

**Comment ID: PB.0.002**

Comment noted. Alternatives A and B would impact three watersheds: Cannery Creek, Tributary Creek, and South Hawk Inlet. Alternatives C and D would impact five watersheds: Cannery Creek, Tributary Creek, South Hawk Inlet, Fowler Creek, and North Hawk Inlet (see Section 3.5, figures 3.5-5 and 3.5-6). Alternative B would impact 1,646 feet of Class I habitat in Tributary Creek.

**Comment ID: PB.0.003**

Comment noted. An active goshawk nest was located in 2011 adjacent to the proposed new TDF to the north under alternatives C and D. Alternative B would impact 1,646 feet of Class I habitat in Tributary Creek. Upgrades to the A road would impact an additional 30 acres of wetlands under alternatives C and D.

**Comment ID: PB.0.004**

Comment noted. Alternatives C and D would not impact any Class I anadromous fish stream and 1,044 feet of Class II resident fish streams in Fowler Creek. The text has been revised accordingly.

**Comment ID: PB.0.005**

Comment noted. Long-term monitoring and maintenance of the fish passage system is required by the ADF&G and will be included in the revised Reclamation Plan and Cost Estimate. Please see the response to Comment PB.0.006.

**Comment ID: PB.0.006**

The USACE has the ultimate authority to establish compensatory mitigation requirements for any given project under Section 404 of the CWA. The USACE has indicated that a mitigation plan is required that includes monitoring requirements to assess whether performance standards are being achieved if the applicant has proposed a permittee responsible mitigation project. However, the mitigation statement that Hecla Greens Creek Mining Company submitted with their CWA Section 404 permit application states that an in-lieu fee will likely be proposed as compensatory mitigation for the unavoidable impacts to aquatic resources.

In addition to any requirements established by the USACE, the fish passage facility will be monitored quarterly under the guidance of the ADF&G. A permit will also be required from the ADF&G for the construction and monitoring. Requirements for the fish passage facility objectives can be included in the permit.

Comment	Response
<p>PB.0.007</p>	<p><b>Comment ID: PB.0.007</b>                      Long-term monitoring and maintenance of the fish passage system is required by the ADF&amp;G and will be included in the revised Reclamation Plan and Cost Estimate. Also, see the response to PB.0.006.</p>
<p>PB.0.007</p>	<p><b>Comment ID: PB.0.008</b>                      The process of developing alternatives to the proposed action involved a consideration of the resources that would be potentially impacted. The USEPA and the USACE have participated in the process from the beginning, including alternatives development. While the Forest Service appreciates the commenter's concern over fen wetlands, we consider the impacts resulting from the alternative designs to be unavoidable.</p>
<p>PB.0.008</p>	<p><b>Comment ID: PB.0.009</b>                      As described in the EIS, storm runoff from the TDF (contact-water) is not allowed to enter Tributary Creek, but is captured and treated. Storm runoff of contact-water from TDFs for alternatives C and D would be similarly controlled and treated. Non-contact-water from undisturbed uplands is captured and diverted around the TDF. As described in sections 3.5.3.2, 3.5.3.3, and 3.5.3.4, potential impacts to the natural creek channels would be mitigated by the use of stormwater detention structures or detention ponds.</p>
<p>PB.0.009</p>	<p><b>Comment ID: PB.0.010</b>                      See the response to Comment PB.0.009.</p>
<p>PB.0.010</p>	<p><b>Comment ID: PB.0.011</b>                      Total Suspended Solids throughout the site are managed by stormwater controls and monitoring is required by the APDES permit at 10 stormwater outfalls. The APDES permit will continue to regulate stormwater and Total Suspended Solids at the site when it is reissued.</p>
<p>PB.0.011</p>	<p>As specified in Section 3.5.3.3, the Forest Service and ADEC will require habitat and geomorphic surveys in Tributary Creek downstream. Aquatic biomonitoring is conducted annually by ADF&amp;G. Monitoring includes fish counts and species identification and whole-body metals tissue testing of Dolly Varden, periphyton biomass, and benthic macro invertebrates. A report is produced annually.</p>
<p>The Draft EIS (page 3-97) includes discussion of a failed fish passage project that was developed as mitigation in 1989. There is a proposal for repair of that fish passage system as new mitigation for loss of 4,000 feet of Tributary Creek that would occur in Alternative B. The fish passage system would allow anadromous fish access to an additional 18,400 feet of stream in Greens Creek. Given the failure of the previously attempted fish pass, if this proposed mitigation is selected, the Final EIS needs to include a monitoring plan that identifies alternative mitigation plans. We recommend adaptive management be incorporated so that if the proposed mitigation project fails to meet objectives, suitable alternative mitigation will be provided. Any fish passage mitigation project will need to be monitored for the full lifetime of the water treatment that will be required, as both water quality and physical access to habitat are necessary to sustain fish populations.</p>	
<p><u>Minimization of Wetland Loss</u></p>	
<p>Forested wetlands, bogs, marshes, and high-functioning fens would be lost under all action alternatives evaluated. Fens are hydrologically supported primarily by groundwater, which is typically high in mineral nutrients. Compared to other wetland types in the project area, and across the Southeast Alaska in general, fens provide particularly high functions for streamflow support, streamwater cooling, aquatic invertebrate habitat, amphibian habitat, and native plant habitat (Draft EIS, pages 3-127 to 3-128). Great volumes of groundwater typically flow through fen wetlands, increasing the potential for transport of contaminants, if toxic materials are deposited upon them. Because these fens flow into fish-bearing streams, avoiding contamination of the fens will provide a measure of protection for the health of the streams and their associated biota. Alternative C avoids further impacts to the fen located to the south of the existing TDF, and impacts the smallest area of fens (25 acres) of any of the action alternatives. As currently configured, however, Alternative C would impact a substantial fen, plus forested wetlands and bogs at the proposed alternative TDF. We recommend that, in the Final EIS, water quality and wildlife habitat be protected by modifying the TDF to avoid fen wetlands entirely.</p>	
<p><u>Stream habitat and aquatic resources monitoring</u></p>	
<p>Although a storm water detention structure is proposed to catch surface runoff from the TDF, additional sediment is likely to be delivered to Tributary Creek and/or Fowler Creek, as typically occurs with these structures. Suspended solids are a primary carrier for metals and other contaminants, which can affect stream productivity. Sediment can also adversely affect aquatic macro-invertebrates and fish by covering stream-bottom gravel, which is used by invertebrates and fish for reproduction/spawning and rearing.</p>	
<p>State law requires that water quality standards for total suspended solids be met. Degradation of salmon stream habitat is not allowed. Therefore, water quality monitoring in Tributary Creek would be required if Alternative B is selected. For monitoring programs to detect significant change, baseline and project operational data sets for</p>	

**Comment**

**Response**

periphyton, invertebrates, and fish should use statistical comparisons of standardized, quantitative metrics to characterize stream health. This needs to be described in the Final EIS.

PB.0.012

Aquatic resource monitoring as described in the Draft EIS (Table 2.6-3) includes: (1) juvenile fish sampled for abundance and distribution; (2) fish subsamples analyzed for chemistry; (3) water samples taken for temperature and toxicity testing; (4) periphyton samples collected for biomass; and (5) invertebrates sampled for abundance and community structure. Details on sample schemes, chemical analyses, and statistical techniques are not included in the Draft EIS; nor does the Draft EIS refer the reader to documentation of such information. As a result, it is difficult to evaluate the adequacy of these monitoring programs. We believe standardized macro-invertebrate metrics, which have been developed for Southeast Alaska, need to be used to characterize stream health (Rinella et al. 2005). Moreover, statistical evaluations, in addition to qualitative review of these metrics, need to be used to detect changes over the life of the project. Furthermore, similar quantitative measures need to be adopted for the other parameters included in the monitoring plans. This information needs to be included in the Final EIS.

PB.0.013

If monitoring detects changes potentially attributable to mine operation, remedial actions will need to be evaluated and implemented as appropriate. Specific triggers for such evaluations need to be included in the operation plans for the mine and described in the Final EIS. We believe monitoring is only meaningful if it provides data and analyses sufficient to initiate and inform adaptive management.

Water Quality Monitoring

PB.0.014

A plan for monitoring water treatment and water quality needs to be evaluated in the Final EIS. Contamination of water and biota from tailings leachate is one of the greatest potential impacts likely to result from the proposed project. Without a robust monitoring plan that includes specific triggers for initiation of remedial action, it will not be possible for the U.S. Forest Service or the public to evaluate any significant potential impacts associated with the project.

PB.0.015

Treatment of tailings contact water from any of the TDF alternatives will be required for at least 100 years and likely longer, based on modeling information included in the Draft EIS. Because treated water goes to marine discharge, any breakdown of the treatment system could adversely affect water quality in Hawk Inlet and affect fish, wildlife, and invertebrates, including many invertebrate species fed upon by migratory birds.

PB.0.016

HGCMC is currently operating under a 2005 Alaska Pollutant Discharge Elimination System (APDES) permit that allows continued discharge to Hawk Inlet. The permit allows a mixing zone in Hawk Inlet for dilution of cadmium, copper, lead, mercury, zinc and pH. Water quality sample sites are over 1,600 feet from the edge of the mixing zone in Hawk Inlet. Various maps in the Draft EIS show the sampling sites at different locations. However, details of the sampling scheme are lacking and need to be included in the Final EIS.

**Comment ID: PB.0.012**

The aquatic biomonitoring program is required by the mine's FWMP in the GPO and the mine's current Waste Management Permit from the ADEC. Freshwater aquatic monitoring has been occurring since 2001 and is carried out and reported by the ADF&G in coordination with the Forest Service and the mine operator.

The current version of the FWMP is a result of a Greens Creek–sponsored interagency regulatory review of the Greens Creek Mine. The Project Team consisted of representatives from KGCMC (the former operator) and several state and federal regulatory agencies, including the USEPA, Forest Service, USFWS, ADNR, ADF&G, ADEC, and the State Attorney General's Office.

The FWMP will be updated to reflect the decision documented in the Record of Decision.

Reports from previous years' biomonitoring work are available in Weber, Scannell, and Paustian (2002); Jacobs et al. (2003); Durst and Townsend (2004); Durst et al. (2005); Durst and Jacobs (2006, 2007, 2008, 2009, 2010); and Kanouse (2011, 2012).

**Comment ID: PB.0.013**

As required by the FWMP, GPO Appendix 1, if a water quality standard exceedance is indicated, HGCMC will notify the Forest Service and ADEC within 14 days and conduct confirmation sampling. If the results are confirmed, HGCMC would prepare and submit a mitigation plan to the Forest Service and ADEC for review and approval. Also see the response to Comment PB.0.012.

**Comment ID: PB.0.014**

See the responses to comments PB.0.12, PB.0.13, PB.016, and PB.0.17.

**Comment ID: PB.0.015**

The effluent limits and permit conditions in the APDES permit were developed to be protective of designated uses. The operator is required to comply with the APDES discharge permit conditions at all times until the effluent meets water quality standards.

NEPA analyses are developed under the premise that authorized activities are conducted in compliance with applicable permits.

Comment	Response
PB.0.017	<p><b>Comment ID: PB.0.016</b>                      Sections 3.5.2.3 and 3.7.1.2 of the EIS describe the Hawk Inlet Monitoring Program, which requires regular monitoring of water quality, sediments, mussels, and worms at various locations in the inlet, not just in the mixing zone. These monitoring requirements are required as a part of the APDES permit. A more detailed description of the Hawk Inlet Monitoring Program is contained in annual reports and referenced in the EIS. Sampling locations for Hawk Inlet are depicted in Figure 3.5-4. Since the sampling locations and protocols would be the same for all alternatives, additional detail would not assist the Forest Service in the decision-making process.</p>
PB.0.018	<p>The selected alternative needs to allow adaptive management to implement improved water treatment methods as they are identified in the future, and to require evaluation of remedial actions, if water quality monitoring detects declines in water quality. This information also needs to be included in the Final EIS.</p> <p><b>Comment ID: PB.0.017</b>                      The mixing zone is based on specific modeling conducted using an USEPA hydrodynamic mixing model. The model incorporates and accounts for tidal action.</p>
PB.0.019	<p><b>SPECIFIC COMMENTS</b></p> <p><b>2.3.2 Alternative B: Proposed Action</b></p> <p><b>Page 2-6:</b> The Draft EIS states that “Similar to Alternative A, it is anticipated that drainage from the TDF would require treatment for hundreds of years after closure.” However, the document does not quantify the time periods, and does not describe the processes that might minimize the period to less than “hundreds of years”. The Final EIS needs to include quantitative estimates of treatment times and descriptions of possible processes that might reduce the need for treatment.</p> <p>As noted in comments and in the EIS in Section 1.8.3.1, the Forest Service is responsible for ensuring that the CWA requirements are met on National Forest System lands. Regulations in 36 CFR 228.8(h) state that “certification of other approval issued by state agencies or other federal agencies of compliance with laws and regulations relating to mining operations will be accepted as compliance ... with these regulations.” For this reason, the Forest Service defers to the USEPA’s and ADEC’s expertise in managing the reissuance of the authorized wastewater discharge permit.</p>
PB.0.020	<p><b>2.3.3 Alternative C: New TDF Located Outside Monument</b></p> <p><b>Page 2-8:</b> The Draft EIS states that “The expansion of the existing TDF and the construction of the new TDF would make use of the existing water treatment plant for approximately 30 years, after which a replacement to the water treatment plant would be necessary (due to normal operational lifetime of the water treatment plant). There would be no water treatment plant at the new TDF site.” The document does not quantify how long the water treatment will be necessary, and does address the issue of post-mining water treatment. The Final EIS needs to quantify the water treatment periods, and if water treatment continues beyond the lifetime of the mine, provide an estimation of the number of treatment plants that will be necessary.</p> <p>Reissuance of the permit is a process independent from the proposed action under consideration.</p>
PB.0.021	<p><b>Page 2-12:</b> The Draft EIS states that: “Under this alternative, portions of the new TDF would be reclaimed in the interim as conditions allowed, until final reclamation occurred. Final reclamation would be conducted at the end of tailings disposal and would include covering, revegetation, and ongoing water management.” The Final EIS needs to describe the scope and duration of the “ongoing water management requirements”.</p> <p>The Forest Service cannot compel the USEPA or ADEC to require particular treatment technologies, dilution methods, or monitoring requirements associated with the permit.</p> <p><b>Comment ID: PB.0.018</b>                      Comment noted. The EIS assumed that water treatment would continue to be required in order to meet water quality standards. The EIS did not look at different water treatment methods, since there would be no benefit to conducting that analysis (the current water treatment plant discharge is in compliance), nor would the conclusions of the EIS differ. Water treatment is required under the APDES permit. If water quality standards or permit limits change in</p>

**Comment**

**Response**

**2.3.4 Alternative D: Modified Proposed Action**

PB.0.022

**Page 2-16:** The Draft EIS states that: “The expansion of the existing TDF and the construction of the new TDF would make use of the existing water treatment plant for approximately 30 years, after which a replacement to the water treatment plant would be necessary (due to normal operational lifetime of the water treatment plant).” The Final EIS needs to describe the scope and duration of the ongoing and future water management requirements.

the future, then different treatment methods may be needed, but prediction of these changes is beyond the scope of this analysis. The Forest Service expects that ADEC and USEPA will continue to require a permit for the discharge that is in compliance with water quality standards and the CWA.

The Forest Service practices an adaptive management approach. As disclosed in Section 3.5.2, annual reports of water quality monitoring include a trend analysis so that mitigation can be implemented if specific "trigger" values are exceeded.

**2.4.8 Reclamation and Closure**

PB.0.023

**Page 2-23:** The Draft EIS states that: “Reclamation growth medium material (consisting of soil and peat) would be removed from the areas disturbed by enlargement or construction of any of the TDF structures and placed into stockpiles. This material would be used for reclamation and site closure.” Organic material stored for 30 years will be subject to diagenesis and will be reduced in volume. The Final EIS needs to include a description of the estimated diagenesis and reduction in volume, and an estimate of how much additional soil material would be needed to bring the volume up to the amount that was originally removed.

**Comment ID: PB.0.019**

The NEPA analysis discloses in Section 3.5.3.1 that, based on current data, leachate from the TDF would need to be controlled, treated, and regulated by a discharge permit both during operations and after closure over the long term. Current leachate quality data are presented in tables 3.5-7 through 3.5-10 and in Technical Support Documents referenced in the EIS. The EIS does not provide a quantifiable estimate of treatment times and processes since these time frames are difficult to predict over the very long term, which is the case for the Greens Creek Mine TDF drainage.

PB.0.024

**Page 2-23:** The Draft EIS states that one of the goals is: “Return the disturbed areas to near-natural conditions to the extent practical;” however, the document does not include a through description of the present natural conditions. The Final EIS needs to include a description of the present environment sufficient to provide reviewers and decision makers with an adequate baseline understanding of the present natural environment.

**Comment ID: PB.0.020**

The NEPA analysis discloses in Section 3.5.3.1 that treatment would be required at least 100 years after closure of the mine, and perhaps in perpetuity. It further discloses in Section 3.5.3.4 that effluent would need to be pumped to the water treatment plant from the northern TDF site.

**3.5.2 Water Resources-Surface Water-Baseline Conditions**

PB.0.025

**Page 3-40:** The Draft EIS discusses results and trends based on data from the Fresh Water Monitoring Program (FWMP) and FWMP annual report, however, the reference information is not provided. The Final EIS needs to provide all references and necessary information so that reviewers can check and document the presented results and trends.

As indicated in the EIS, HGCMC will be required to provide financial assurance. Financial assurance will be required to control and treat water in perpetuity. A description of financial assurance procedures is found in Section 1.8.3.1 and Appendix B.

**3.10.3 Wetlands - Environmental Consequences**

PB.0.026

**Page 3-127/8:** Table 3.10-3, “Wetland Functions and Values,” contains relevant and useful data for those familiar with the WESPAK-SE functional assessment methodology. Its usefulness for most readers would be improved by the addition in the Final EIS of a description of what the values in each column represent. Additionally, the heading for the second major column (“Forested Bog”) appears to be incorrect. We believe the heading should read “Forested Alternative B.”

**Comment ID: PB.0.021**

Section 3.5.2.2 discusses how tailings contact-water would be managed under all alternatives. Sections 3.5.3.1 through 3.5.3.5 disclose how tailings contact-water and effluent would be managed, controlled, and treated for each alternative.

**Section 3**

PB.0.027

Throughout Section 3 there are inconsistencies between the reference citations and the list of references, and the data presented in several tables are not referenced. For example, a quick cross check identified the following errors.

**Comment**

Page 3-40: The document Alaska Department of Environmental Conservation (ADEC) 2009 is not included in the list of references.

Page 3-46: The documents Hecla Greens Creek Mining Company (HGCMC) 2009a, Kennecott Greens Creek Mining Company (KGCMC) 2003, and HGCMC 2009 are not included in the list of references.

The document references needs to be checked and corrected in the Final EIS; and all data presented in tables need to be referenced in the Final EIS.

If you have any questions concerning our general comments, please contact Deborah Rudis at [deborah\\_rudis@fws.gov](mailto:deborah_rudis@fws.gov) or at 907-780-1183 in the Juneau Field Office of the U.S. Fish and Wildlife Service. If you have any questions about our specific comments, please contact Gary LeCain, U.S. Geological Survey Coordinator for Environmental Document Reviews, at 303-236-1475 or at [gdlcain@usgs.gov](mailto:gdlcain@usgs.gov).

Thank you for the opportunity to comments on this Draft EIS.

Sincerely,



Pamela Bergmann  
Regional Environmental Officer – Alaska

**Response**

**Comment ID: PB.0.022**

See responses to the previous comments on this issue. The NEPA analysis discloses in Section 3.5.3.1 that, based on current data, leachate from the TDF would need to be controlled, treated, and regulated by a discharge permit both during operations and after closure. Current leachate quality data are presented in tables 3.5-7 through 3.5-10 and in EIS Technical Support Documents.

**Comment ID: PB.0.023**

Calculating the amount of diagenesis is beyond the scope of the EIS and there is no need to ensure that the volume at closure would be the same as originally removed. The thickness of the growth media layer as proposed in the engineered cover would be 24 to 36 inches. If the amount of plant growth media available at closure was insufficient, the operator would need to import material. Importing material would not be unprecedented; HGCMC currently imports approximately 16,000 cubic yards of rock annually for road construction.

**Comment ID: PB.0.024**

The discussions of the pre-mining environment and baseline conditions throughout the Chapter 3 discuss “natural conditions” and are consistent with the level of detail typically presented in NEPA documents. The commenter does not provide enough detail in describing what aspects of natural conditions descriptions are not adequately discussed for the Forest Service to provide a more specific response.

**Comment ID: PB.0.025**

Comment Noted. The reference has been added.

**Comment ID: PB.0.026**

The presentation of the functions and values in Section 3.8 has been revised based on input from the USACE and USEPA. Table 3.10-3 has also been revised.

**Comment ID: PB.0.027**

Edit made per comment. Reference list has been updated to include missing references listed.

**Comment**

**Response**

**References**

- Rinella, D. J., D. L. Bogan, K. Kishaba, and B. Jessup. 2005. Development of a Macroinvertebrate Biological Assessment Index for Alexander Archipelago Streams – Final Report. For Alaska Department of Environmental Conservation. 52 pp.
- USACE (U.S. Army Corps of Engineers). 2009. Alaska District Regulatory Guidance Letter. RGL ID No. 09-01.
- EPA (Environmental Protection Agency). April 10, 2008. Environmental Protection Agency and Corps of Engineers Final Rule Compensatory Mitigation for Losses of Aquatic Resources. Federal Register. Volume 73. Number 70.

**Comment**

**Response**

**Comment ID: PH.0.001**  
Comment noted.

---

**From:** [Paul Haavig](#)  
**To:** [FS-comments-alaska-tongass-admiralty-national-monument](#)  
**Subject:** Letter of Support  
**Date:** Tuesday, May 08, 2012 1:06:28 PM

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PH.0.001

I'm writing this brief email to add my name of support to Greens Creek request of expansion to their tailings facility. Their proven record of safe environmental practices combined with the good family supporting jobs they provide is very important to our region.

Paul Haavig  
Arrowhead Transfer  
1517 Sawmill Creek Road  
Sitka, Alaska 99835  
907-747-8647 Office  
907-752-5049 Cell  
907-747-6433 Fax  
haavig@ati.lynden.com

**Comment****Response****Comment ID: PL.0.001**

Comment noted.

**Cox, David**

**From:** Iwamoto, Karen -FS <kiwamoto@fs.fed.us> on behalf of FS-comments-alaska-tongass-admiralty-national-monument <comments-alaska-tongass-admiralty-national-monument@fs.fed.us>  
**Sent:** Monday, June 04, 2012 2:14 PM  
**To:** Cox, David; Weglinski, Gene  
**Cc:** Samuelson, Sarah J -FS  
**Subject:** FW: Greens Creek Tailing Expansion

-----  
 Karen Iwamoto  
 Land Management Planner  
 Tongass National Forest  
 907-747-4230  
[kiwamoto@fs.fed.us](mailto:kiwamoto@fs.fed.us)  
 -----

**From:** Paul Larson [<mailto:p.larson@cmiak.com>]  
**Sent:** Monday, June 04, 2012 10:40 AM  
**To:** FS-comments-alaska-tongass-admiralty-national-monument  
**Subject:** Greens Creek Tailing Expansion

My thoughts are that the Forest Service should allow the expansion of the Greens Creek Mine Tailings project. Greens Creek Mine is a very valuable asset to the communities of SE Alaska and the City and Borough of Juneau. Greens Creek has a very extensive environmental, safety and operations procedures in place and works diligently towards safety for all the workers and the environment . Please allow the Greens Creek Mine Tailing Expansion to move forward.

PL.0.001

Thank you,

**Paul Larson**  
 Construction Machinery Industrial  
 5302 Commercial Blvd.  
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**Comment**



June 4, 2012

SENT VIA EMAIL [comments-alaska-tongass-admiralty-national-monument@fs.fed.us](mailto:comments-alaska-tongass-admiralty-national-monument@fs.fed.us)

Admiralty Island National Monument  
Tongass National Forest  
ATTN: Greens Creek Tailings Expansion  
8510 Mendenhall Loop Road  
Juneau, AK 99801

**Re: Greens Creek Tailings Expansion**

PN.0.001

In October 2010, the Forest Service issued a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) for the Greens Creek Mine Tailings Expansion. The Greens Creek Mine and appurtenant infrastructure straddles the Tongass National Forest, Juneau Ranger District and the Admiralty Island National Monument Admiralty Island/Kootznoowoo Wilderness Ranger Districts (collectively "Forest Service"). We stated in our scoping letter of November 19, 2010 that we understand that the action was prompted by requests from the Hecla Greens Creek Mining Company's (Hecla) to change the mine's approved General Plan of Operation (GPO) to accommodate additional tailings which would provide additional mine life by doubling the size of the tailings from approximately 50 acres to 100 acres and increasing the permissible height of the stack from approximately 200 feet to nearly 400 feet. Additional changes include other sites that have not been identified as well as necessary roads and other infrastructure most notably water treatment, waste rock sites, quarries and staging areas. Unlike previous proposals for modification and changes to the GPO the current proposal is intended to extend the GPO 30 to 50 years; or said another way approximately half of the time remaining for Hecla to mine within the Monument under an agreement which governs the rights and responsibilities between Hecla and the Forest Service which Congress approved and ratified in Public Law 104-123, 110 STAT. 879 (1995 Exchange Agreement).

Kootznoowoo, Inc. submits the following comments on the scope of the proposed analysis in its various capacities including as a member of the public, in accord with the government to government consulting authority as well as specific authority under Section 506 of ANILCA.

8585 Old Dairy Road, Suite 104 Juneau, AK 99801 Phone: 907.790.2992 Fax: 907.790.2995

**Response**

**Comment ID: PN.0.001**

Comment noted. The Forest Service respectfully disagrees with the assertion that changes would occur to "other sites have not been identified" since the assessment addresses the need for water treatment, waste rock sites, and quarries associated with each alternative. Staging areas would continue to be used in the future as they are used currently.

**Comment ID: PN.0.002**

The timeline for reaching capacity and implementing closure of the existing TDF under the GPO approved with the 2003 EIS was provided to the Forest Service by Kennecott Greens Creek Mining Company (HGCMC's predecessor). HGCMC revised its estimate for when it will reach approved capacity of the dry stack, pushing back the date until 2016. The Forest Service believes that HGCMC's proposed action to encompass 30 to 50 years worth of tailing disposal capacity represents a reasonable long-term approach to managing their operation and that the alternatives effectively address the issues identified during the scoping process.

**Comment ID: PN.0.003**

Irreparable harm is addressed as part of the discussion on Monument values in Section 3.19. Mining for the duration of the Exchange Agreement is considered as part of cumulative effects, which also address Monument values.

Despite Mr. Hartman's quote, the dry-stack approach to tailings management is actually an effective method for tailings disposal in a wet environment, as evidenced in part by the successes at Greens Creek. The dry-stack approach minimizes the footprint needed for tailings disposal compared to wet or paste disposal methods. Moving tailings off site was not considered for detailed analysis in developing alternatives since shipping tailings would increase disposal cost substantially and is not a practice employed in the lead/zinc mining industry.

The Forest Service has not included an isotherm of the region since defining areas with similar temperatures would not influence our decision-making process.

**Comment**

**Response**

**Specific Comments:**

PN.0.002

The Forest Service has in recent years approved numerous expansions of the facilities located on Monument lands on Admiralty Island. The most recent Record of Decision (2003 ROD) estimated the mine life to be approximately 12 years based on known ore reserves and the current rate of production.

During scoping, Hecla disclosed that the design for the proposed tailings facilities expansion assumes production for an additional 30 to 50 years and that if the proposed changes to the GPO are not approved the mine will need to cease operations in 2014 and commence closure and reclamation. We understand from company statements that alternatives within the current GPO exist to extend operations longer than the 2014 date.

Furthermore and according to a Juneau Chamber of Commerce speech by Hecla's GM, Scott Hartman, on May 3, 2012 *"when it comes to something like tailings we don't want it to be a short sighted 5-10 year exercise, we need a long term strategy and then we will construct it in a responsible manner in increments as needed"* The Draft EIS has failed to provide alternatives that provide for this long term strategy and need. We therefore request that the current document be supplemented with information that does provide for sound long term decision making. The additional information needed is described herein.

PN.0.003

While Kootznoowoo supports responsible mining in this portion of Admiralty Island as has been evidenced by many years of support we do not see any of the action alternatives as providing a responsible long term solution that does not pose irreparable harm to Monument values. In fact what we see at best will extend and provide for tailing and waste rock disposal for approximately half of the period provided under the Exchange Agreement. None of the action alternatives provide the necessary surface area necessary for stacking tailing until the year 2095. We concur with Mr. Hartman that *"running a dry stack tailing is particularly difficult in a rainy area"*; yet, the Forest Service did not look to any locations off the Monument that were in dry or less rainy areas. At a minimum an isotherm of the region should be included in the record of decision looking for areas more suitable for a dry stack or *in the alternative* suitable locations and alternative processes should be examined for tailings processing or disposal.

PN.0.004

While we are delighted with today's high metal prices, demand and beneficial economic outlook for the region based almost entirely on important existing and potential mining activities over the near and midterm we are concerned about several factors that have not been fully disclosed or analyzed in the DEIS:

Underlying assumptions and calculations related to the various proven and probable mineral reserves (including minerals in the existing tailings stack) available to Hecla mining activities' as well as others located on Monument (e.g. Exchange land and the adjacent "Mammoth Claims"). The EIS should disclose fully the Forest Service verification and confirmation of these reserves. Because this mining operation is the only subsurface managed by the Forest Service, qualified independent verification of Hecla's

Page 2

**Comment ID: PN.0.004**

While we appreciate the commenter's interest in mineral resources in the Monument, neither NEPA nor Forest Service regulations require that an EIS validate proven and probable reserves for a proposed expansion of a mine's operation.

**Comment ID: PN.0.005**

Alternatives to the proposed action were developed that would meet the purpose and need of the proposed action, that would provide 30–50 years of disposal capacity, and that would address the significant issues developed during scoping. See Sections 1.2, Purpose and Need; 1.7, Significant Issues; and Section 2.2, Issues and Alternative Development. The Forest Service uses the Forest Plan (2008) to guide management actions throughout the Tongass National Forest. However, the Admiralty Island National Monument Plan (1988) is also applicable.

While the utility corridors and easements are identified in the Forest Plan, their use is not reasonably foreseeable within the context of this EIS and therefore is beyond its scope.

The environmental audit is required under the State Waste Disposal Permit and is not the subject of this analysis; however, recommendations from the analysis were considered as they related to the tailings disposal.

The Young Bay Experimental Forest was disestablished in 2009. Although termination of the mineral withdrawal is consistent with management of the area under the Semi-Remote Recreation LUD, which includes direction providing that "Forest lands within this LUD are open to mineral exploration and development." this has not occurred. In order for the withdrawal to be terminated, the Regional Forester would have to request that the U.S. Department of the Interior revoke the 1963 mineral withdrawal, and a decision whether to approve that request would be made by the Secretary of the Interior. The process would include an environmental analysis under NEPA.

It is not possible to predict an absolute fixed date of closure. The current proposal is to authorize additional disposal capacity to accommodate another 30 to 50 years of operations, though under the terms of Greens Creek Land Exchange Act, mining may not continue past 2095. This is acknowledged in Section 3.22, Cumulative Effects.

Comment	Response
<p>estimates should be considered by the Forest Service as a means of increasing the confidence of the public in the propose purpose and need.</p>	<p><b>Comment ID: PN.0.006</b> The purpose and need for this action is to accommodate tailings disposal associated with mining known resources in addition to resources identified in the future through exploration. The possibility of mining through the time remaining under the Greens Creek Land Exchange Act has been added to the Cumulative Effects discussion in Section 3.22.</p>
<p>PN.0.005 We are appreciative of the longer term perspective that Hecla has taken in their proposal however the action alternatives shown in the DEIS appear unsatisfactory in terms of comparison to Alternative "B". The opportunity to provide for a long term solution was missed by the authors of the DEIS and the opportunity to integrate such alternatives into a Monument/Island Plan was missed with this draft document.</p>	
<p>Accordingly, Kootznoowoo, Inc. again encourages the Forest Service to also consider alternatives that take into consideration this longer increment of time and scale and update disclosures and analysis fully within the Admiralty Island Monument to include changes such as:</p>	
<ul style="list-style-type: none"><li>• Impacts of transportation and utility corridors and easements created by Congress and the Angoon Community Association (IRR route 0025 attached) since the current GPO was originally authorized should be included in the scoping review. The current GPO is insufficient in terms of disclosure in this regard and Kootznoowoo understands that the GPO is in the process of being updated. Highlights of the update should be included in the EIS. For instance the scoping disclosure do not address recent recommendation to the Forest Service on necessary improvements which should occur (e.g. SRK Consulting Environmental Audit (2009))</li><li>• Impacts on transportation and utility corridors necessary to complete the Southeast Intertie and current and future Southeast transportation plans and alternatives. Of particular note should be the impacts of connecting Greens Creek to Juneau power and other communities such as Angoon.</li><li>• Impacts on existing infrastructure authorized under the current GPO on foreseeable impacts of decommissioning the existing experimental forest at Young Bay to any other status than Wilderness /Monument or Monument status. Please see Kootznoowoo's TLMP comments and appeals for additional information. The DEIS does not speak to the status of the former adjacent Experimental Forest, its mining/mineral values and cumulative impacts to Monument values The DEIS should better address the cumulative impacts to Monument values based on the actual lifespan of the mine operation and on an absolute fixed date of closure and should analyze in constant dollars mitigation and other costs and should provide analysis as to how the tailings expansion meets the law and regulation requirement to avoid irreparable harm. This was not sufficiently analyzed.</li></ul>	
<p>PN.0.006 The Forest Service should give careful attention to defining a reasonable prediction for the life of the mine and fully disclose the basis for supporting that determination. If they cannot make such a prediction they should use the average tailing production over the last 23 years for the period of time remaining according on the Exchange Agreement with some adjustment for other valid claims.</p>	

**Comment**

**Response**

The Monument was established for the purpose of protecting objects of ecological, cultural, geological, historical, pre-historical and scientific interest, in particular its fish and wildlife and supporting habitats which create the largest unspoiled island ecosystem in not only the United States but the world and the home of the people of Angoon.

PN.0.007

The EIS should also disclose the response of these resources to adverse environmental change and the potential for irreparable harm to this island ecosystem and National Monument treasure in perpetuity. As stated elsewhere the life of mine is underestimated. Also with regard to the cumulative effects, we have previously recommend the EIS carefully explain what methods it is using to assure that no irreparable harm will occur under the proposal and alternatives. We even offered to participate with the Forest Service and proponent to look at available “tools under several acts of Congress” to assist in determining the proper balance of environmental impacts and preservation of Monument values which should have been a part of the DEIS. Therefore the process to date lacks efforts to design a long term solution that is compatible to the maximum extent feasible, with the purposes for which the Monument was established as is required by Section 503(f)(2)(A) of ANILCA. Until this is done the Forest Service cannot assure that they are compatible with Monument Values. The Forest Service indicated that there were insufficient facts to analyze alternative sites off of Admiralty Island in a consulting meeting which occurred on May 9<sup>th</sup> with Kootznouwo, Inc. This seems remarkable as the Forest Service often acquires or trades properties and is aware of numerous sales and dispositions by virtue of this work and should be aware generally of alternative lands that may be more suitable than Monument lands for further processing and ultimate disposal of tailings.

PN.0.008

In considering other alternatives to the proposed action, including the no action alternative, we recommend the Forest Service applying the following criteria and analysis (including complete cost/benefit in constant and comparable dollars):

- Does the alternative action meet the purpose and need;
- Is the action better addressed through another alternative or combination of alternatives including other locations that the project proponent may own, rent or exchange opportunities proximate to their claims;
- How well will the alternative minimize adverse environmental effects to Monument values and the indigenous people of Angoon, including cumulative effects;
- Will the alternatives better assure that irreparable harm does not comes to Monument values?
- Which alternative maintain the habitats of fish and wildlife, and maintain the present and continued productivity of such habitats, to the maximum extent feasible
- Finally, to what extent will the alternatives expand or contract the footprint of the mining activities on unencumbered Monument lands adjacent to Wilderness?

PN.0.009

Previously we have requested a complete 3-D rendering and in our scoping comments we requested that the height and scale of ultimate planned structure to a commonly known reference point such as the Washington Monument or the Washington, D.C. Mall area as a means of

**Comment ID: PN.0.007**

Effects to components of the ecosystem are described throughout Chapter 3 of the EIS, with Section 3.18 dedicated specifically to Monument values. Numerous alternative sites were considered during alternatives development (see Section 2.2, Issues and Alternative Development, and Section 2.5, Alternatives Considered but Not Carried Forward). The EIS considered alternative TDF sites located outside the Monument. There are no other sites available to HGCMC that are suitable for containing 30–50 years’ worth of waste material disposal that are economically feasible and that would cause less environmental harm.

**Comment ID: PN.0.008**

Comment noted. These questions are analyzed in the EIS. All alternatives carried forward meet the purpose and need. See Chapter 2, sections 2.2 (Issues and Alternative Development), 2.3 (Alternatives), and 2.5 (Alternatives Considered but Not Carried Forward), and Chapter 3, sections 3.7 (Aquatic Resources), 3.11 (Wildlife), 3.16 (Subsistence), 3.18 (Socioeconomics), and 3.22 (Monument Values).

**Comment ID: PN.0.009**

The layout of each alternative is provided in Chapter 2. Section 3.14.3 provides a visual simulation of each alternative. These presentations provide sufficient detail for analysis and comparison of the alternatives in the context of the site itself from the perspective of someone looking from the water in Hawk Inlet. We respectfully disagree that the Washington Monument would be an appropriate reference point or provide any logical basis for comment compared to how the facility appears in its actual setting.

Comment	Response
<p>soliciting public comments and making a better decision. We could not find such a disclosure or analysis in the alternatives presented.</p>	<p><b>Comment ID: PN.0.010</b>                      Designs typically reviewed during the NEPA process are considered “conceptual” rather than “design” drawings at a given percent completion. There is no statutory requirement to generate documents at a 75% complete level.</p>
<p><b>PN.0.010</b> Disclosure document should clearly state the degree of completion of all engineering, drawings and support documents. Documents showing “75% complete” should be made available to the public.</p>	<p><b>Comment ID: PN.0.011</b>                      Effects to Tributary Creek and associated wetlands are described in sections 3.5 (Surface Water), 3.7 (Aquatic Resources), and 3.10 (Wetlands). HGCMC will work with the USACE to determine mitigation for impacts to waters of the United States; the ultimate decision for how compensatory mitigation for wetland impacts would be accomplished lies with the USACE. Mitigation for impacts to fish species would occur in Greens Creek.</p>
<p><b>PN.0.011</b> The extent on impacts related to of Tributary Creek which is shown to be impacted by the proposal should be fully understood and valued yet this was not done. Any mitigation to wetlands and streams should be in the context of Admiralty Island only yet the DEIS indicates that planned mitigations funds will be directed to a Juneau based company. At a minimum, “fee in lieu” or other mitigation measures should be in the same or adjacent drainage to the impacted areas within the Monument and in accordance with an approved up to date “Monument Plan”.</p>	<p><b>Comment ID: PN.0.012</b>                      Current Forest Service regulations and policy do not require the development or disclosure of financial assurance costs in NEPA documents. The Forest Service and State of Alaska cooperate under an Memorandum of Understanding to calculate and secure financial assurance for mines located on National Forest System lands in Alaska outside the NEPA process.</p>
<p><b>PN.0.012</b> A full discussion of mitigation, closure and reclamation should be included in the EIS using a sensitivity analysis on interest rates on necessary bonds. Since a tailings facility will be present possibly in perpetuity, Hecla and the Forest Service should plan for and provide the means to monitor and manage reclamation after the closure considering financial liabilities and ultimate ownership. This was not completed either in terms of constant dollars, or for the full mitigation necessary and certainly among meaningful alternatives including an off Monument disposal.</p>	<p>See EIS Appendix B for a detailed discussion on reclamation bond and financial assurance.</p>
<p><b>PN.0.013</b> Agency regulations and direction are lacking relative to programmatic management direction of adjacent wilderness and non wilderness impacts. Methods of integrating transportations and utility corridors such as through Title 11 of ANILCA in wilderness designation are also not fully described in the DEIS nor is the status of the roads and right of way covered in the context of the 2005 Congressional surface transportation authorization (SAFETEA-LU).</p>	<p><b>Comment ID: PN.0.013</b>                      Management of National Forest System lands affected by the project is guided by the Tongass National Forest Land Use and Management Plan, which includes management direction for Non-Wilderness National Monument and Semi-Remote Recreation, the applicable Land Use Designations in the project area.</p>
<p><b>PN.0.014</b> Adaptive Management is described a mechanism in the DEIS as providing “sufficient flexibility to take preventative or remedial action if environmental concerns arise.” Understanding the importance of a general plan of operation (GPO), the status of the current GPO and the fact that it is not altogether up to date gives little comfort to the concept of adaptive management being an effective tool to change permit conditions or take remedial action necessary to assure that irreparable harm to Monument values does not occur. If adaptive management is to be a requirement of the management of the dry stack, the most affected stakeholders should understand under what conditions changes would occur and what measures would be allowable under what circumstances. Specific examples should be disclosed such as relates to subsistence impacts, environmental justice, economic benefits/provisions, discharges of potentially toxic waters and possible reclamation.</p>	<p>Utility corridors identified in Title 11 of ANILCA are not considered reasonably foreseeable since there are no plans currently under active consideration that would make use of the easements. Likewise we are unaware of any pending projects authorized or appropriated under the SAFETEA-LU (Safe Accountable Flexible Efficient Transportation Equity Act—A Legacy for Users) either through the National Corridor Infrastructure Improvement Program, Section 1702 High Priority Projects, or otherwise, that would be considered reasonably foreseeable in terms of this analysis and decision.</p>
<p><b>PN.0.015</b> Finally, the possibility (“Alternatives C and D”) of moving waters that would otherwise naturally drain into Young Bay into water treatment and then discharge into the mixing zone of Hawk Inlet (some of which is in State waters and some of which is within federal waters located within the Monument Wilderness boundary) is not fully analyzed in the DEIS.</p>	

**Comment**

PN.0.016

We would be happy to meet with the Forest Service, other stakeholders and Hecla to assist in providing necessary information and review the analysis necessary to assure this important mine continues many years into the future as Congress has provided for. Thank you for this opportunity to comment on the DEIS.

Sincerely:

*Peter Naoroz*

Kootznoowoo, Incorporated  
 By: Peter Naoroz  
 General Manager

<sup>1</sup> Hecla Mining activities include activities related to mining claims which are preexisting the designation of ANILCA as well as mining claims post the 1995 Greens Creek Land Exchange Act.

**Response**

**Comment ID: PN.0.014**

Components of the GPO are updated as conditions warrant, such as when new information is gained that requires operational changes or when operational changes are proposed by the mine. Following the Record of Decision for this assessment, the GPO will be updated to reflect the selected alternative and any additional requirements or stipulations included in the ROD.

We understand the commenter's concerns related to adaptive management. However, adaptive management is currently the best method available to respond and react to the changes that are inevitable when monitoring environmental systems. When changes are needed (based on monitoring or changes in site conditions or operations), the Forest Service follows its administrative procedures to respond. Most of these procedures allow for public comment. Adaptive management is discussed in detail in Section 2.6.3. The Forest Service does not anticipate the need to apply adaptive management for potential impacts to subsistence, environmental justice, or socioeconomics since we do not anticipate the results of the analysis to change in regard to these resources over time. Water quality is addressed in Section 2.6.3 and we believe that the mitigation requirements identified for soils and vegetation as they relate to the permanent cover will serve as adaptive management related to reclamation of the TDF.

**Comment ID: PN.0.015**

The proposed new TDF under Alternative C would occupy 15.8 acres, and under Alternative D, 15.5 acres. These footprints are each approximately 0.01% of the 132,719 acre drainage area for Fowler Creek. The effect of capturing runoff and drainage from either of these TDFs would be inconsequential to base or storm flows in Fowler Creek or the amount of water that naturally drains to Young Bay.

**Comment ID: PN.0.016**

Comment noted.



**Comment**

**Response**

**Comment ID: RB.0.001**  
Comment noted

**From:** [Randy Brand](#)  
**To:** [FS-comments-alaska-tongass-admiralty-national-monument](#)  
**Subject:** Greens Creek Tailings Expansion  
**Date:** Thursday, May 31, 2012 2:01:39 PM

---

RB.0.001

I support the Greens Creek Tailings Expansion project.

Randy Brand  
2975 Van Horn Road  
Fairbanks, AK 99709

**Comment**

**Response**

**Comment ID: RC.0.001**  
Comment noted.

**From:** [Rod & Kathi Cleland](#)  
**To:** [FS-comments-alaska-tongass-admiralty-national-monument](#)  
**Subject:** Greens creek tailings expansion.  
**Date:** Wednesday, April 25, 2012 10:48:04 AM

---

RC.0.001

Hello, I agree that Hecla's plan to expand the existing facility is superior to the other options. The tailings disposal plan should be approved. The mine is too important to the local economy to impede its continuing ability to operate.  
Rod Cleland

**Comment****Response****Comment ID: RC.1.001**

Comment noted.

**From:** [Roger Calloway](#)  
**To:** [FS-comments-alaska-tongass-admiralty-national-monument](#)  
**Subject:** Greens Creek Tailings Expansion  
**Date:** Monday, April 30, 2012 4:44:30 PM

To Whom it May Concern;

My Name is L. Roger Calloway Jr., I am Owner and President of Reliable Transfer Corp. in Juneau, Alaska. We are a small business in Juneau and provide employment for 35 people annually. We have been in business since 1914.

RC.1.001

I am in support of Hecla Greens Creek Mining Company tailings facility expansion plan **Alternative B**. If Greens Creek is not allowed to expand its tailings facility and it forced to stand down operations it would have a negative impact on my company. The lost of the direct and indirect business activities would cause the decrease of 2 to 4 Full time position at my company. Whereas the approval of Alternative B would support the addition of 1 to 2 Full Time positions.

Sincerely;  
L. Roger Calloway Jr.,  
President / Owner  
Reliable Transfer Corporation  
8717 Mallard Street  
Juneau, Alaska 99801  
Phone: 907-789-1490  
Fax: 907-789-1272  
Cell Phone: 907-723-2896  
**"Juneau's Only Locally Owned and Operated Moving & Storage Company"**  
**"Servicing Juneau Alaska and Beyond Since 1914"**

**Comment**

**Response**

**From:** [rebacheater58@gmail.com](mailto:rebacheater58@gmail.com)  
**To:** [FS-comments-alaska-tongass-admiralty-national-monument](#)  
**Subject:** destroying salmon streams with Green Creek Mine site  
**Date:** Friday, June 01, 2012 1:53:03 AM

RC.2.001

How can it be possible that we are considering to allow the Green Creek Mine to destroy fish habitat in Tributary Creek? This cannot be allowed to happen. Nor can we allow Alternatives C and D, that call for the destruction of 1,078 feet of Class 1 and 2 habitats in Fowler Creek.

RC.2.002

The Forest Service is relying on studies conducted before 1990. We need to keep our land and subsistence lifestyles alive. What happened to "not causing irreparable harm"? It is important for our Alaska lifestyle to maintain the continued productivity of all salmon habitats!

RC.2.003

We cannot allow anymore destruction, so please rethink this possible decision to all the continued destruction of the Green Creek Mine to our surrounding Salmon Streams.

Kind regards,

a concerned Alaska resident  
Rebecca Chester

**Comment ID: RC.2.001**

Comment noted. Alternatives C and D were developed in response to scoping comments that identified concerns about impacts to aquatic habitat. Because of the physiographic setting, it was not possible to develop an alternative that would avoid all wetlands and aquatic resources. These alternatives meet the purpose and need while minimizing impacts to wetlands and aquatic resources.

Please note that the DEIS erroneously reported that the alternative TDF site would affect 34 feet of Class I streams. This is not correct; the alternative TDF site would not directly affect (by burial) any Class I streams. This has been corrected in the FEIS.

**Comment ID: RC.2.002**

The Forest Service has relied on a range of studies conducted over a specific period of time. Prior to using the reports, we evaluated the relevance and value of the data in each one, regardless of when they were drafted. Irreparable harm is addressed as part of the Monument values discussion presented in Section 3.19.

**Comment ID: RC.2.003**

Comment noted. The Forest Service's decision and the rationale for making that decision are presented in the Record of Decision.

## Comment

## Response

Comment ID: RF.0.001  
 Comment noted.

**Cox, David**

**From:** Iwamoto, Karen -FS <kiwamoto@fs.fed.us> on behalf of FS-comments-alaska-tongass-admiralty-national-monument <comments-alaska-tongass-admiralty-national-monument@fs.fed.us>  
**Sent:** Monday, June 04, 2012 2:16 PM  
**To:** Weglinski, Gene; Cox, David  
**Cc:** Samuelson, Sarah J -FS  
**Subject:** FW: Greens Creek Tailings Expansion Project

-----  
 Karen Iwamoto  
 Land Management Planner  
 Tongass National Forest  
 907-747-4230  
[kiwamoto@fs.fed.us](mailto:kiwamoto@fs.fed.us)  
 -----

**From:** Rick Fredericksen [<mailto:rsfredericksen@gmail.com>]  
**Sent:** Monday, June 04, 2012 12:14 PM  
**To:** FS-comments-alaska-tongass-admiralty-national-monument  
**Subject:** Greens Creek Tailings Expansion Project

RF.0.001

For past twenty-five years, the Greens Creek Mine has contributed to the southeast Alaska economy including high-paying jobs, local purchases of goods and services, and is a major contributor to local tax base. HGCMC is a good steward of the land and has operated the Greens Creek Mine with minimal disturbance to the environment by maintaining a small footprint and using the dry-stack method of tailings disposal. Since its opening back in 1987, the Greens Creek Mine has operated within the Admiralty Island National Monument in accordance with federal, state and local laws and regulations. Congress provided for mining at this site in Section 503 of the Alaska National Interest Lands Conservation Act (ANILCA). One of the original agreements between Greens Creek and the United States of America by and through the USFS calls for facilities to be consolidated to the maximum extent practicable.

I strongly support Greens Creek's proposed tailings facility expansion plan Alternative B:

HGCMC's proposal (Alternative B) provides for a logical expansion of the existing facility where tailings have been placed for nearly a quarter century and abides by the original agreement for the mine's facilities to be consolidated to the maximum extent practicable versus the other action alternatives (Alternatives C and D) that would spread the disturbances, operational and reclamation impacts, and monitoring requirements between two sites separated by over 2 miles. HGCMC's proposal allows for both a southward extension and an upward expansion of the existing facility, which lessen disturbance and closure/reclamation costs versus more acres of disturbance and higher costs for the other action alternatives. Under its proposal, HGCMC will maintain tailings disposal in an engineered, contained facility within a portion of a single watershed (Tributary Creek) versus the other action alternatives that would place tailings in a second facility but in multiple watersheds and create more disturbance. HGCMC's proposal also utilizes existing site support facilities, including the continued use of B Road that has served for tailings delivery since the mine opened versus the need, under the other action alternatives, for a major construction upgrade to approximately 2.5 miles of the A road. And lastly, HGCMC's proposal will have minimal disruption to wildlife versus the other action alternatives. There is an active goshawk nest at the new location under proposed alternatives C and D, and the nest and surrounding habitat for this sensitive species would be impacted if development in this area were to occur. Also, the heavy hauling and

**Comment**

**Response**

increased maintenance over 2.5 miles of the A road necessary for the alternative location would increase impacts to all wildlife in this area.

Thank you for the opportunity to comment.

Rick Fredericksen  
4164 James Drive  
Anchorage, Alaska 99504

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**Comment**

**Response**

**Comment Form**

Greens Creek Mine  
Tailings Disposal Facility Expansion  
Environmental Impact Statement

Name: RICHARD GARD

Date: 5/31/12

Organization  
(if applicable): \_\_\_\_\_

Mailing Address: 2670 Fritz Cove Rd., Juneau, AK 99801

Email Address: \_\_\_\_\_

RG.0.001

Comments: *I have reviewed the options for future Greens Creek Tailings Expansion and recommend alternative C. Although it would be easier and cheaper to dispose of the tailings on the Admiralty Island National Monument, that would not be a wise alternative. National Monuments are set up to protect special areas in perpetuity. The mine is making plenty of money which is good for Juneau and the mine workers and they can well afford to dispose of tailings off the Monument. Thanks for listening.*

RG.0.002

*Richard Gard*



Return written comments at the meeting or send to the Forest Service no later than **June 4, 2012.**

Address:  
Admiralty Island National Monument  
Tongass National Forest  
ATTN: Greens Creek Tailings Expansion  
8510 Mendenhall Loop Road  
Juneau, AK 99801

e-mail:  
[comments-alaska-tongass-admiralty-national-monument@fs.fed.us](mailto:comments-alaska-tongass-admiralty-national-monument@fs.fed.us)  
Subject: Greens Creek Tailings Expansion  
Fax: (907)586-8808

**Comment ID: RG.0.001**

Comment noted.

**Comment ID: RG.0.002**

Comment noted. The decision about whether to expand tailings storage in the Monument is complex and is discussed specifically in the Record of Decision.

**Comment**

**Response**

Steven C. Borell, P.E.  
**Borell Consulting Services LLC**  
6420 Rockridge Drive  
Anchorage, AK 99516

June 3, 2012

Admiralty Island National Monument – Tongass National Forest  
[Comments-alaska-tongass-admiralty-national-monument@fs.fed.us](mailto:Comments-alaska-tongass-admiralty-national-monument@fs.fed.us)  
ATTN: Greens Creek Tailings Expansion  
8510 Mendenhall Loop Road  
Juneau, AK 99801

RE: Greens Creek Tailings Expansion

Dear Sirs,

SB.0.001

I am writing in support of **Alternative B** for expansion of the tailings facility at the Greens Creek Mine.

SB.0.002

**Alternative B** is the best choice for various reasons. **Alternative B** would simply expand the existing tailings facility in the same location and utilize the current water treatment facilities. This would result in the smallest footprint. It would also confine the footprint to the currently affected drainage. At the same time it would result a single area to be managed and would result in the least impact on wildlife.

SB.0.003

Since the Greens Creek Mine began operating in February of 1989 it has done an excellent job of managing the wide variety of environmental issues found at this mine. This is and has always been a showcase operation. Greens Creek has shown how a major mine with high sulfide ores and the associated acid rock potential can be managed without adverse impacts to the fisheries or to the wildlife. All this while providing the best-paying, highly skilled jobs in all of Southeast Alaska and while paying the most property tax of any entity in the Juneau area.

SB.0.004

I urge that **Alternative B** be selected and that a legally defensible Record of Decision be completed at the earliest possible time so the mine can continue operating uninterrupted.

Sincerely,



Steven C. Borell, P.E.  
Principal

**Comment ID: SB.0.001**

Comment noted.

**Comment ID: SB.0.002**

Comment noted.

**Comment ID: SB.0.003**

Comment noted.

**Comment ID: SB.0.004**

Comment noted.

**Comment**

**Response**



**President**  
Sara Chambers

**Vice President**  
Neil MacKinnon

**Treasurer**  
Frank Bergstrom

**Director**  
Scott Spickler

**Director**  
Joe Kahklen

**Director**  
Rosemary Hagevig

**Director**  
Fred Morino

**Director**  
Richard Burns

**Director**  
Corey Baxter

**Director**  
John Sandor

P.O. Box 240605  
Douglas, AK 99824

907.209.1797 phone  
907.500.7336 fax  
fffoundation.org

First Things First  
Alaska Foundation  
is a 501(c)(3)  
nonprofit  
organization  
dedicated to  
preserving the  
economic  
viability and  
future of Alaska  
through  
education

May 31, 2012

Admiralty Island National Monument – Tongass National Forest  
8510 Mendenhall Loop Road  
Juneau, AK 99801  
Attn: Greens Creek Tailings Expansion

RE: Comments on DEIS for GPO of Greens Creek Tailings Facility Expansion

Dear Sir/Madame:

SC.0.001

Please accept the following comments on the DEIS for the Hecla Greens Creek Mining Company Tailings Facility Expansion. First Things First is a non-profit organization dedicated to preserving the economic viability and future of Alaska through education. Natural resource extraction has been and will continue to be the backbone of the Alaskan economy, and in particular that of Southeast Alaska. With the decline of Southeast’s timber industry, mining is the one shining light that promises growth of high paying year-round employment. Greens Creek offers employment opportunities for both urban and rural residents. Economic hardship has hit our villages disproportionately hard, and a camp operation such as Greens Creek facilitates village employment to the maximum extent practicable.

SC.0.002

Greens Creek has proven mining can coexist with the wildlife and wilderness values of rural Admiralty Island and Monument. Copious monitoring data have been collected over the past 40 odd years, which document minimal to un-measurable environmental impacts. Thus the cost/benefit of Greens Creek is exemplary. Greens Creek – including its dry stack tailings facility – is a demonstrably viable long-term economic driver, and every reasonable effort should be made to maintain or enhance its economic vitality for the benefit of its employees, Southeast businesses that supply and service the mine, and Southeast communities, including Juneau, which derive sales and property tax from the company and its employees.

SC.0.003

Alternative B best maintains the economic viability of Greens Creek and protects the island and Monument environment. Consolidating impacts in one facility reduces operating costs, enhances project economic vitality and ability to weather metal price fluctuations, reduces long-term environmental impacts and costs, and perpetuates proven infrastructure. Alternative B minimizes impacts

**Comment ID: SC.0.001**  
Comment noted.

**Comment ID: SC.0.002**  
Comment noted.

**Comment ID: SC.0.003**  
Comment noted.

**Comment**

**Response**

relative to other action alternatives for; fuel costs and handling, road construction and maintenance, watershed impacts, wildlife habitat impacts, closure impacts, capital expenditures, and operating costs. And Alternative B maximizes impacts - relative to other action alternatives - for employment viability, and project life.

The Forest Service has funded the JEDC mining cluster assessment to help explore means to expand mining sector employment. This laudable objective is consistent with making permitting decisions that support ongoing mining operations at Greens Creek - subject to good land stewardship. Based on the analysis in the DEIS and annual monitoring reports submitted by HGCMC, continuation and expansion of the existing dry stack tailings facility is the logical environmental alternative and should be selected as the environmentally preferred alternative in the FEIS and ROD for issuance of a revised General Plan of Operations.

Regards,



Sara Chambers  
President

06/04/2012 19:25 9277582120

**Comment**

ALASKA FLY AN FISH

PAGE 81

**Comment Form**

Greens Creek Mine  
Tailings Disposal Facility Expansion  
Environmental Impact Statement

Name: Sarah Dunlap and Butch Laughlin

Date: 6/4/12

Organization  
(if applicable):

Mailing Address: 9604 Kelly Court, Juneau AK 99801

Email Address: akbyair@gsi.net

SD.0.001

Comments: we would like to support alternative C

in the current DEIS. of the alternatives presented C is the one which seems most likely to minimize damage to the wilderness values of Admiralty National Monument, and the alternative mostly likely to fulfill the requirements for mining & milling under ANILCA. However, we would also like

SD.0.002

to go on record for finding the current DEIS itself inadequate in both its scope, and its lack of detailed information and evaluation. We are disappointed that the Forest Service has done such a cursory job on such an important matter. We believe mining can be done in an environmentally responsible way. However no commercial entity will invest in greater ~~environmental~~ <sup>environmental</sup> mitigation than is required. The system only works properly when the Forest Service does its job well. In this matter, so far, it has not.

Return written comments at the meeting or send to the Forest Service no later than  
June 4, 2012.

Address:

Admiralty Island National Monument  
Tongass National Forest  
ATTN: Greens Creek Tailings Expansion  
8510 Mendenhall Loop Road  
Juneau, AK 99801

e-mail:

[comments-alaska-tongass-admiralty-national-monument@fs.fed.us](mailto:comments-alaska-tongass-admiralty-national-monument@fs.fed.us)  
Subject: Greens Creek Tailings Expansion

Fax: (907)586-8808

**Response**

**Comment ID: SD.0.001**

Comment noted.

**Comment ID: SD.0.002**

Comment noted. The comments have been included as part of the administrative record. However, we are unable to provide a detailed response to the comment about doing a "cursory job" since no details were provided on what aspects of the analysis are considered cursory. Likewise, we cannot consider changes in how we do our work without specific input on what the public believes we are doing wrong.

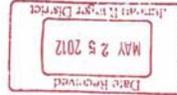
**Comment**

**Response**

**Comment ID: SG.0.001**  
 Comment noted.

**Comment Form**

Greens Creek Mine  
 Tailings Disposal Facility Expansion  
 Environmental Impact Statement



Name: Sylvia S. Gard  
 Date: 5/23/12  
 Organization (if applicable): Sierra Club  
 Mailing Address: 2670 Fritz Cove Rd  
 Email Address: Juneau AK 99801  
 none

SG.0.001

Comments: Please select Alternative C and locate the new ~~Greens~~ Greens Creek Mine tailing dump off the Admiralty Island National Monument. The monument should remain a wilderness not a dump!

Sincerely,

Sylvia S. Gard

PS I've lived in S.E. for over 40 years and watched by ruined. Please don't continue the process.

SSG

Return written comments at the meeting or send to the Forest Service no later than **June 4, 2012.**

Address: Admiralty Island National Monument  
 Tongass National Forest  
 ATTN: Greens Creek Tailings Expansion  
 8510 Mendenhall Loop Road  
 Juneau, AK 99801

e-mail: [comments-alaska-tongass-admiralty-national-monument@fs.fed.us](mailto:comments-alaska-tongass-admiralty-national-monument@fs.fed.us)  
 Subject: Greens Creek Tailings Expansion

Fax: (907)586-8808

**Comment**

**Response**

**Comment Form**

**Greens Creek Mine  
Tailings Disposal Facility Expansion  
Environmental Impact Statement**

Name: Shirley F. Kohls  
 Date: 5/20/12  
 Organization (if applicable): ATTORNEY  
 Mailing Address: POB 20084 JUNEAU AK 99802  
 Email Address: NONE

Comments:

SK.0.001 ① There has been insufficient analysis of the subsistence use of the area and Hawk Inlet

SK.0.002 ② The loss of salmon habitat is unacceptable. Mitigation by improving passage in Greens Creek is not tenable.

SK.0.003 ③ The Agencies lack adequate studies to prove that mining activities have not degraded water quality in Hawk Inlet. The Forest Service needs to update its analysis in the DEIS to reflect existing conditions in Hawk Inlet and develop meaningful compensation for long-term degradation of Hawk Inlet from the discharge & loading of toxic pollutants into the water body.

Return written comments at the meeting or send to the Forest Service no later than **June 4, 2012.**

Address: Admiralty Island National Monument  
 Tongass National Forest  
 ATTN: Greens Creek Tailings Expansion  
 8510 Mendenhall Loop Road  
 Juneau, AK 99801

e-mail: [comments-alaska-tongass-admiralty-national-monument@fs.fed.us](mailto:comments-alaska-tongass-admiralty-national-monument@fs.fed.us)  
 Subject: Greens Creek Tailings Expansion

Fax: (907)586-8808

Date received  
**JUN 04 2012**  
 Juneau Ranger District

**Comment ID: SK.0.001**

The commenter has not provided the Forest Service with sufficient detail to allow us to determine what aspect of the analysis the commenter believes is insufficient.

**Comment ID: SK.0.002**

Comment noted. The proposed mitigation for salmon habitat in Greens Creek came about through discussion with biologists with the Forest Service and ADF&G.

**Comment ID: SK.0.003**

The Forest Service is responsible for ensuring that the CWA requirements are met on National Forest System lands. Regulations in 36 CFR 228.8(h) state that "certification of other approval issued by state agencies or other federal agencies of compliance with laws and regulations relating to mining operations will be accepted as compliance ... with these regulations." For this reason, the Forest Service defers to the USEPA's and ADEC's expertise in managing the authorized wastewater discharge permit and assumes for the purposes of this analysis that the permitted discharge complies with the CWA.

The Forest Service does not have authority over how ADEC and the USEPA conduct permitting, establish monitoring, or implement mitigation through their respective authorities under the CWA or under State solid waste regulations. Appropriate monitoring programs are established in conjunction with permitting. Currently, water quality and sediment quality are monitored at several locations, and bioassays of resident mussels and sediment worms take place in accordance with the APDES permit (see Section 3.5.2.3).

**Comment**

**Response**

**Cox, David**

**From:** Iwamoto, Karen -FS <kiwamoto@fs.fed.us> on behalf of FS-comments-alaska-tongass-admiralty-national-monument <comments-alaska-tongass-admiralty-national-monument@fs.fed.us>  
**Sent:** Monday, June 04, 2012 9:01 AM  
**To:** Weglinski, Gene; Cox, David  
**Cc:** Samuelson, Sarah J -FS  
**Subject:** FW: Greens Creek Tailings Expansion

First of 5 or 6 comments received in our comments mail-in database

Karen Iwamoto  
 Land Management Planner  
 Tongass National Forest  
 907-747-4230  
[kiwamoto@fs.fed.us](mailto:kiwamoto@fs.fed.us)

**From:** Scott & Pat Hartman [<mailto:noneimporta@gci.net>]  
**Sent:** Sunday, June 03, 2012 7:08 PM  
**To:** FS-comments-alaska-tongass-admiralty-national-monument  
**Subject:** Greens Creek Tailings Expansion

June 3, 2012

We, Scott and Patricia Hartman of Juneau, Alaska submit the following comments regarding the Hecla Greens Creek Tailings Expansion.

SPH.0.001

We have lived in several western states over the last several decades, but have decided to make Juneau and S.E. Alaska our home because of the natural beauty and special character of the region and its people. Our living has been dependent on the natural resources industry for the past 34 years and we are very familiar with the question of benefit vs. impact and how society's view on this question has changed during our lifetime. We believe that with the consumption of natural resources, comes the responsibility of responsibly developing and producing those resources as practical, rather than just exporting the impacts of our consumption as a nation. We also believe in conservation and efficiency in both consumption and production of resources as an important means to best mitigate the overall impact. Hecla Greens Creek has been and can continue to be a responsible domestic producer of mineral products of zinc, silver, gold, and lead contained in items we use every day; but this will require a tailings expansion.

SPH.0.002

Besides the direct economic impact of a good job to us personally and to many others in the region, Greens Creek is an important private sector economic engine and tax payer in Juneau and S.E. Alaska. The type of jobs, compensation, and benefits provided by Hecla Greens Creek characteristic of the natural resources industry and manufacturing are critical to rebuilding and sustaining the economy of our nation and region. There must be a balance between producing something tangible of value vs. services or intellectual property, and there also must be a balance between incomes and benefits that support a healthy middle class.

SPH.0.003

We believe that alternative "B" which provides for an incremental expansion of the existing facility will best balance impact with whatever ultimate capacity is required. We believe that alternative "B" would have less overall impact than alternatives "C" or "D", specifically; less disturbance to land and wildlife, less consumption of energy and materials, and less hauling and impact to air during construction, operation, and especially long-term closure. Alternative "B" may preclude long-term pumping; whereas, alternatives "C" or "D" guarantee long-term pumping and associated impacts (disturbance, energy, materials). We recommend alternative "B" be selected in the Record of Decision.

**Comment ID: SPH.0.001**

Comment noted.

**Comment ID: SPH.0.002**

Comment noted.

**Comment ID: SPH.0.003**

Comment noted. Mobile source greenhouse gas emissions at the Greens Creek Mine for Alternative B would add 707 tons of carbon dioxide emissions per year, or 0.16% of Juneau's total greenhouse gas emissions; Alternative C would add 946 tons of carbon dioxide emissions per year, or 0.21% of Juneau's total greenhouse gas emissions; and Alternative D would add 910 tons of carbon dioxide emissions per year, or 0.21% of Juneau's total greenhouse gas emissions. Alternatives C and D would produce 0.05% more greenhouse gas emissions than alternatives A and B yearly. In comparison, Juneau's yearly highway transportation greenhouse gas emissions equal 29% of the borough's total greenhouse gas emissions.

***Comment***

***Response***

Scott Hartman & Patricia Hartman  
17060 Island View Drive  
Juneau, Alaska 99801

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Comment	Response
<p><b>From:</b> <a href="#">Scott Spickler</a> <b>To:</b> <a href="#">FS-comments-alaska-tongass-admiralty-national-monument</a> <b>Subject:</b> Greens Creek/Alternative B <b>Date:</b> Friday, June 01, 2012 8:42:33 AM</p>	<p><b>Comment ID: SS.0.001</b> Comment noted.</p>
<p><b>SS.0.001</b> I would encourage you to expedite the approval of alternative B as the future tailings disposal option for the best long term solution for continued mining operations at Greens Creek Mine.</p>	<p><b>Comment ID: SS.0.002</b> Comment noted.</p>
<p><b>SS.0.002</b> I am a 51 year resident of Juneau and business owner for the past 33 years. The jobs that Greens Creek have provided for our region this past 25 plus years has been such a stabilizing and terrific factor that Juneau has largely avoided much of the ups and downs that the rest of the USA has endured due to the slumping economy and declining property values. The wages and benefits to the workforce are great and the trickle down effect of those dollars circulating here is evident in Juneau. The mining careers and training programs that have developed in Juneau over the years have provided many of our born and raised children here an excellent opportunity for high paying jobs and home ownership.</p>	<p><b>Comment ID: SS.0.003</b> Comment noted.</p>
<p><b>SS.0.003</b> The Greens Creek employees and management have proven to be great neighbors and contributors for SE Alaska. I have been to the mine site and came away totally impressed with all the environmental safeguards in place, not to mention the fact that worker safety is paramount in their daily activities.</p> <p>When you add up the total square miles of the mine's proposed expansion plans and compare that with the entire mine operation to the total square miles of Admiralty Island, it has to be a very minimal amount of space temporarily impacted by Greens Creek...the benefits of this type of responsible resource development is a model of how industry can co-exist in our region, without detriment to the environment.</p> <p>Thank you,</p> <p>Scott and Sandy Spickler 10754 Horizon Dr. Juneau, AK. 99801</p> <p>907-789-3780</p>	

**Comment****Response**

**STATE OF ALASKA**  
**DEPARTMENT OF NATURAL RESOURCES**  
**OFFICE OF PROJECT MANAGEMENT AND PERMITTING**

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Admiralty Island National Monument  
 Tongass National Forest  
 ATTN: Greens Creek Tailings Expansion  
 8510 Mendenhall Loop Road  
 Juneau, AK 99801  
 VIA EMAIL

June 19, 2012

To: Sarah Samuelson, USFS Interdisciplinary Team Leader  
 Forrest Cole, USFS Tongass Forest Supervisor

The State of Alaska, through an Memorandum of Understanding (MOU) with the US Forest Service (USFS), has participated as a cooperating agency on the Hecla Greens Creek Mine ("the mine" or "Hecla") Tailings Disposal Facility Expansion Draft Environmental Impact Statement (DEIS) released in April 2012. The state resource agencies submitted comments and technical information to the USFS and met with the USFS, its contractor, and other cooperating agencies during the development of the DEIS.

These comments are supplemental to the cooperating agency comments submitted prior to release of the DEIS. Along with additional technical comments on the draft, the State of Alaska's comments on the tailings expansion alternatives are included.

The Alaska Department of Environmental Conservation (ADEC) issues a state waste management permit that authorizes placement of tailings and waste rock at the mine and requires monitoring of groundwater at the facility. ADEC has particular interest in long-term water quality at the site. ADEC also issues certifications under the Clean Water Act that ensure that any new wetlands disturbance does not impair water quality. The Alaska Department of Fish and Game (ADF&G) is directed to protect fish habitat and aquatic resources, especially anadromous fish such as salmon. The Alaska Department of Natural Resources (ADNR) is the state's lead agency for mining. ADNR approves reclamation and closure and makes certain that financial assurances to accomplish the approved plans are in place. ADNR must approve reclamation plans regardless of land ownership, and thus works cooperatively with the USFS on the Greens Creek mine plan approvals.

*"To responsibly develop Alaska's resources by making them available for maximum use and benefit consistent with the public interest."*

**Comment**

**Response**

Comments to USFS Greens Creek Mine 2012 Tailings Expansion DEIS April 2012  
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The State of Alaska (“the State”) has reviewed the alternatives proposed in the DEIS. The DEIS analyzes a no-action alternative, Alternative A, and four action alternatives to continue mining for 30-50 years; Alternative B, expansion of the existing pile into the Tributary Creek drainage and Admiralty National Monument, mitigated Alternative B which would provide less impact to Tributary Creek and the Monument but would require expansion into Cannery Creek, and two remote disposal sites off the “A” road, Alternatives C and D.

Under Alternative A, tailings disposal would continue at the approved TDF until the facility reached capacity, expected in 2014. Alternative B affords expansion of the existing TDF, similar in footprint to the wet TDF approved in 1983 but never developed, which would fill about 4,000 feet of Class I and II streams in Tributary Creek. Hecla’s existing fish pass in Greens Creek, originally mitigation for the undeveloped wet TDF, would mitigate the loss of fish habitat in Tributary Creek.

SS.1.001

Mitigated Alternative B would avoid high value wetlands at the headwaters of Tributary Creek by moving reclamation material storage areas to a site north of the camp and port facilities and placing some of the tailings into the Cannery Creek watershed. Alternatives C and D both include development of a second TDF, which would require maintenance and treatment in perpetuity, and expand the overall footprint of the mine. The new TDF would be located north on the A Road, in watersheds draining to the north end of Hawk Inlet and to Young Bay. The fish pass would also serve as mitigation for impacts to Class II streams documented at the proposed new TDF site.

Tributary Creek is included in ADF&G’s *Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes* and provides habitat for coho salmon *Oncorhynchus kisutch*, pink salmon *O. gorbuscha*, and Dolly Varden char *Salvelinus malma* (Johnson and Blanche 2011). Cutthroat trout *O. clarki*, rainbow trout *O. mykiss*, and scuplin *Cottus* sp. also have been observed in the creek (Kanouse 2012).

Discussion of alternatives:

The National Environmental Policy Act (NEPA) requires the USFS, as the lead federal agency, to identify both an environmentally preferable alternative and a preferred alternative in a Record of Decision (ROD) issued after the public comment period.

SS.1.002

Aside from the No Action alternative, which would allow no further expansion of the mine, the State considers either Alternative B or mitigated Alternative B as having the least potential for environmental impacts given proper planning.

**Comment ID: SS.1.001**

Comment noted.

**Comment ID: SS.1.002**

Comment noted.

Comment	Response
<p>Comments to USFS Greens Creek Mine 2012 Tailings Expansion DEIS April 2012 6/19/12 Page 3 of 9</p>	<p><b>Comment ID: SS.1.003</b> Comment noted.</p>
<p>engineering, construction, operation, closure and monitoring of the expansion site.</p>	<p><b>Comment ID: SS.1.004</b> Comment noted.</p>
<p>SS.1.003</p>	<p><b>Comment ID: SS.1.005</b> Comment noted. Estimated maximum fugitive dust emissions (PM<sub>10</sub>) for each alternative in Table 3.2-4: Alternative A: 159 tons per year Alternative B: 192 tons per year Alternative C: 259 tons per year Alternative D: 260 tons per year</p>
<p>Both Alternatives C and D require construction of a new Tailings Disposal Facility (TDF) outside of the Monument. The state appreciates the USFS consideration of resource and other values associated with managing the Admiralty National Monument (ANM) within the Tongass National Forest. A 1994 land exchange agreement with the mine and the USFS encouraged continued consolidation of facilities and operations associated with the mine to the maximum extent possible within the Monument designation established through the Alaska National Interest Lands Conservation Act (ANILCA) in 1980.</p>	<p>Under alternatives C and D, upgrades to the A road would impact an additional 13.8 acres of wetlands.</p>
<p>SS.1.004</p>	<p><b>Comment ID: SS.1.006</b> Comment noted.</p>
<p>Least to greatest new disturbance are with Mitigated Alternative B at 136.3 acres (Table 2.6-1). Alternative B at 142.8 acres, Alternative C at 156.8 acres, and Alternative D at 177.9 acres (Table ES-1). For Alternatives B and Mitigated B, environmental impact would be limited to a single receiving environment, whereas for Alternatives C and D there would be multiple sites of disturbance. Additionally, for Alternatives C and D, the "A" road would require upgrades and widening for haul truck traffic. Impacts from hauling along the A road route could include increased dust and the potential for more impacts at stream crossings and wetlands.</p>	<p><b>Comment ID: SS.1.007</b> NEPA does not require an assessment of worst-case scenarios (e.g., failures). The Forest Service does not pursue permitting actions under the assumption that a facility would be improperly designed, built, operated, or closed. The design of the TDF does not involve new or unproven technology; therefore, the Forest Service would not expect a failure of the bottom liner or collection system to be reasonably foreseeable. Likewise, the soil cover system will need to be tested as part of the mitigation measures; based on the ongoing cover studies at Site 23 and the mitigation to be required to demonstrate performance of the cover, a failure of that system is not reasonably foreseeable. A failure of run-on diversion is reasonably foreseeable since it could occur as a result of a storm in excess of the design capacity of the facility. These cases are addressed as part of the APDES permit and would need to be remedied as soon as possible after the event.</p>
<p>SS.1.005</p>	<p>This type of failure is considered in the analysis of water resources (Section 3.5) and aquatic resources (Section 3.7).</p>
<p>The mitigated version of Alternative B is quite similar to the original "Alternative B Final". The mitigated version moves some of the tailings from the south end of the TDF and moves then into the northeast corner.</p>	
<p>Mitigated Alternative B has both positive and negative consequences. It moves some tailings away from the headwaters of Tributary Creek, and affects less area of that watershed. However, it moves those tailings into the Cannery Creek watershed. The newly proposed area appears to have steeper slopes and will require more contact water to be pumped a longer distance for treatment and discharge.</p>	
<p>SS.1.006</p>	
<p>While both the Alternative B Final, and Mitigated Alternative B have potential advantages over Alternatives C and D, the original Alternative B (Alternative B Final) affects less acreage than Alternatives C and D, and has fewer long-term stability and treatment issues. Alternatives C and D both require that tailings are placed into steep areas that have may have stability issues. A slope failure in this area could cause deposition of tailings into, or the blockage of nearby streams. The disposal of tailings at an area away from the current TDF also necessitates contact water to be pumped back to the current facility for treatment and/or discharge. The extra pumps, pipes and power that are needed to transfer the water back to the treatment/discharge point provides an</p>	

Comment	Response
<p style="text-align: right;">Comments to USFS Greens Creek Mine 2012 Tailings Expansion DEIS April 2012 6/19/12 Page 4 of 9</p>	
<p>SS.1.006 cont increased potential for failure of those elements of the design and operation and possible impacts to wetlands along the pipeline transportation route. The most stable placement of tailings would be on a flat surface. ADEC regulations do allow for an application for a waiver for monofills constructed on slopes greater than 10% grade (see 18 AAC 60.410).</p>	<p><b>Comment ID: SS.1.008</b> Comment noted. The Forest Service is aware that the State has concerns with multiple disposal facilities beyond those discussed in the EIS. The EIS focuses on the environmental effects related to the siting, construction, operation, and closure of the tailings facility expansion.</p>
<p><u>Additional technical comments:</u></p>	
<p>SS.1.007 The document could be strengthened by discussing potential environmental risks of each Alternative in the event of failures. Failures could result from improper design, construction, operation and closure of facilities. These failures could include failures of containment, the bottom liner, the leachate collection system, run-on diversions, or soil cover systems.</p>	<p><b>Comment ID: SS.1.009</b> Comment noted. We believe that the EIS presents some of these issues, but acknowledge that the State has a different perspective as well as different statutes and standards that need to be considered. The Record of Decision provides the rationale involved in identifying the selected alternative.</p>
<p>SS.1.008 The Department of Environmental Conservation (ADEC) has highlighted in previous comments to the USFS that there are net disadvantages to planning, designing, constructing, operating and closing multiple landfills, and those disadvantages extend to monofills of tailings as well. Alternatives C and D would require multiple landfills. Not all of these factors are examined in a NEPA review.</p>	<p><b>Comment ID: SS.1.010</b> While the NEPA decision does not necessarily consider nuances in costs (we must consider measures that could be cost prohibitive), the document has addressed the issue of multiple locations versus a single location in terms of environmental effects.</p>
<p>SS.1.009 However, ADEC has outlined the following as disadvantages to multiple facilities: duplication of effort for the company and the regulating agencies; increased operational costs; increased monitoring and monitoring costs; increased closure costs; potential contamination into multiple receiving areas; and increased effort for long-term closure care, monitoring, water treatment and maintenance. These disadvantages could tie in to long-term environmental effects that are described in the DEIS.</p>	<p><b>Comment ID: SS.1.011</b> Table ES-1 has a line item showing new tailings disturbance by alternative: Alternative A: 0 Alternative B: 54.3 acres Mitigated Alternative B: 43.5 acres Alternative C: 101.7 acres Alternative D: 103.1 acres</p>
<p>SS.1.010 ADEC understands that most of the issues described above are not typically addressed in a NEPA analysis that focuses on the environmental effects of a project and that the USFS does not directly include cost considerations into the environmental review process. These comments are made to emphasize that it is environmentally more acceptable to have one large managed landfill than several small ones. There could, however, be direct and indirect environmental impacts related to the costs associated with multiple landfills/disposal sites.</p>	<p>Reclamation and closure are discussed in Section 2.4-9: Upon permanent cessation of operations, an engineered soil cover will be placed over the TDF, with the overall purpose to stabilize the disturbed area and ensure long-term protection of land and water resources in the area and to obtain near-natural conditions.</p>
<p><u>Section-specific comments:</u></p>	
<p>SS.1.011 <u>Summary, page vi, Table ES-1</u> . To better comprehend overall impacts post-closure for the acreage(s) covered by tailings alone it would be helpful to add a line that shows total post-closure disturbance after reclamation for all tailings for the mine project. Similarly it would be helpful to add a line showing the</p>	<p>Total new wetlands removed by alternative can be found in Section 3.10, Wetlands, tables 3.10-4, 3.10-6, 3.10-7, and 3.10-8: Alternative A: 0 Alternative B: 89 acres Mitigated Alternative B: 70 acres Alternative C: 128 acres Alternative D: 139 acres</p>

Comment	Response	
<p style="text-align: right;">Comments to USFS Greens Creek Mine 2012 Tailings Expansion DEIS April 2012 6/19/12 Page 5 of 9</p>		
<p>SS.1.011 cont</p>	<p>total wetlands removed from productive use after reclamation. Alternative B differs from C and D in that the Alternative B enables the existing TDF to be constructed considerably higher as well as extended laterally, resulting in an overall smaller footprint for tailings disposal. This table could better reflect tailings already disposed of at the existing TDF and what would be added through continued operations.</p>	<p><b>Comment ID: SS.1.012</b> Comment noted. The possibility that the pipeline between the new TDF and the existing treatment plant could be ruptured is addressed in sections 3.7.3.4 and 3.7.3.5 (Aquatic Resources—Freshwater, alternatives C and D, respectively). The information was added to Section 3.5, Water Resources.</p>
<p>SS.1.012</p>	<p><u>Summary, page viii, Table ES-2.</u> Risk of chemical or mining product spill. For Alternatives C and D, there may be greater potential for tailings trucks to spill product due to longer haul distances and the need to cross additional waterbodies and wetlands. Assuming the pipeline carrying tailings seepage water from the tailings disposal areas to the treatment plant is laid adjacent to the road, and based on historic damage to pipelines adjacent to the B-road and associated spills, a new pipeline from Alternatives C and D would provide the potential for additional spills to surface waters and wetlands. The existing pipeline from the mill to the treatment plant does not have secondary containment and leaks have occurred due to punctures from graders. New pipelines in Alternatives C and D could have similar risks.</p>	<p><b>Comment ID: SS.1.013</b> Comment noted.</p> <p><b>Comment ID: SS.1.014</b> The requested information has been added to Section 1.8.4, State and Local Governments.</p>
<p>SS.1.013</p>	<p><u>Summary, page x, Table ES-2:</u> Scenic resources. Visual impacts could be greater with the additional height to the existing tailings facility under Alternative B.</p>	<p><b>Comment ID: SS.1.015</b> Text revised per comment.</p>
<p>SS.1.014</p>	<p><u>Section 1.8.2, page 1-14:</u> Pursuant to Alaska Statute 16.05.841 and 16.05.871, a fish habitat permit will be required for expansion of the TDF for any of the alternatives selected. Please include this permit in the list of permits and decisions required.</p>	<p><b>Comment ID: SS.1.016</b> The FWMP was established using the 25th percentile of sitewide hardness values. Besides being used to establish a conservative regulatory value, this low value was also used to calculate Method Limits (ML) and Method Detection Limits (MDL) for analytical quality control objectives for the program (i.e., ML = 0.9*AWQS and MDL = ML/3.18). This lower hardness value assured that analytical detection goals in the Quality Assurance Program Plan were established that were sensitive enough for comparison to the water quality standards.</p>
<p>SS.1.015</p>	<p><u>Section 2.6.5, page 2-41:</u> ADF&amp;G requires quarterly inspections of the fish pass, not annually as described in Table 2.6-3.</p>	<p>While the Forest Service understands that the hardness value used is always arguable, the standards presented in the EIS are not used to establish regulatory criteria. For the purposes of the EIS, an average hardness of 46 mg/L for Tributary Creek was used to show how hardness-based metal criteria are calculated and for data comparison purposes. Tributary Creek was chosen because it is an important stream in the impacts analysis.</p>
<p>SS.1.016</p>	<p><u>Section 3-4, page 3-41:</u> The freshwater monitoring program plan (Appendix 1 of the mine General Plan of Operations) states that the hardness of the surface water is 37 mg/L as CaCO<sub>3</sub>, not 46 mg/L. There should be data to show why 46 mg/L (stated as the long-term average hardness) can be used for Tributary Creek in order to set water quality standards for metals at this hardness.</p>	<p><b>Comment ID: SS.1.017</b> Edit made per comment: Extra decimal places removed.</p>
<p>SS.1.017</p>	<p><u>Section 3.4.2, page 3-24:</u> All but the first four values listed in the third column, percent by weight, appear to have one extra decimal place.</p>	<p><b>Comment ID: SS.1.018</b> Figure 3.5-3 was developed from HGCMC's 2010 Site Water Balance report, prepared by EDE. The purpose of the figure was primarily to support the discussion of sitewide water management in</p>
<p>SS.1.018</p>	<p><u>Figure 3.5.3, page 3-48:</u> Water balance model. Since Wet Well A collects tailings drainage water, the diagram gives a false impression that the average flow from the tailings is 12 gallons per minute (gpm), whereas it should be 29</p>	

Comment	Response
<p style="text-align: right;">Comments to USFS Greens Creek Mine 2012 Tailings Expansion DEIS April 2012 6/19/12 Page 6 of 9</p>	<p>Sections 3.5.3.1 and 3.5.3.2 rather than to present a detailed water balance for the TDF. The EDE report used estimates to determine drainage in the TDF from 2003 that are different than the observed data used by Petros (2011). The figure has been removed based on this and other comments in order to avoid confusion.</p>
<p>SS.1.018 cont gpm. Either the wet well should be shown as located within the tailings facility or it should be called "Tailings Wet Well A". The water balance could be clarified to show whether all underdrain water goes to Wet Well A, and if so, what would be the resulting flow or range of flows. The flows for the existing facility should concur with those determined from the percolation rates and acreages in Hecla's document "'GCM Stage III Tailings Expansion Drainage Geochem Final 8-22-11.pdf'" by Petros Consulting Inc., dated August 22, 2011.</p>	<p><b>Comment ID: SS.1.019</b> The EIS has been modified throughout to reflect that ADEC stayed the effective date of reissuance of the APDES permit (AK0043206) and administratively extended the 2005 NPDES permit conditions until the permit is reissued.</p>
<p>SS.1.019 <u>Section 3.5.3.1, page 3-52. APDES discharge.</u> This section references an Alaska Pollutant Discharge Elimination System (APDES) permit not yet in effect for the discharge of process water to Hawk Inlet. The permit finalized by ADEC was remanded for changes during the public appeals period for the APDES permit. The Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) permit, effective July 2005 before the transfer of those permits to the State of Alaska, is still in effect. The discharge limits are the same in both permits, but the flow rates in Table 3.5.6 differ. While this may factor into long-term water quality and quantity predictions and management, the industrial discharge from the mill is less a factor in evaluating the tailings expansion than are water quality and quantity factors at the site of the selected tailings disposal alternative. Note that the final APDES permit could have conditions different from both the EPA NPDES and the permit previously issued by ADEC.</p>	<p><b>Comment ID: SS.1.020</b> Comment noted. The EIS defines closure as "the final stage of mining, which involves closing all mine openings, regrading and reclaiming disturbed areas." We are satisfied with this definition for closure as it is used throughout the document.</p>
<p>SS.1.020 <u>Section 3.5.3.1, pages 3-54 to 3-57. Tables:</u> ADEC would not consider the facility "closed" if the discharge does not meet Alaska water quality standards. Rather than say "closure", use the term "termination", or "termination of mining".</p>	<p><b>Comment ID: SS.1.021</b> Statements indicating discharge without treatment have been eliminated from all alternatives. The Forest Service does not view the evaluation of water treatment technologies or potential discharge scenarios as consequential to this analysis since both currently are and will continue to be conducted within regulatory standards (i.e., protective of beneficial uses) as managed by ADEC and USEPA.</p>
<p>SS.1.021 <u>Section 3.5.3.3, page 3-59: Effects of Alternative B.</u> This section could include a discussion of the ultimate fate of water that drains within the tailings pile and whether it would be possible to discharge water by gravity to a passive treatment system then to the diffuser in Hawk Inlet. This is one of the possible long-term disposal options for contact water once active pumping and water treatment cease.</p>	<p>Identifying passive treatment as a potential mechanism would be presumptive without treatability studies being conducted to evaluate effectiveness and to determine a design for a system. If water quality at closure or some time after closure is better than current predictions, the method of control, treatment, and discharge, as well as the outfall location, would be evaluated as a part of future APDES permitting requirements.</p>
<p>SS.1.022 <u>Section 3.6.2, pages 3-68, 3-69, 3-72 and 3-73.</u> Tables 3.6-1, 3.6.2, 3.6.3 and 3.6.4: A footnote stating that the Alaska water quality standards are hardness dependent for some metals and that a default hardness of 25 mg/L as CaCO<sub>3</sub> is used.</p>	<p><b>Comment ID: SS.1.022</b> For consistency, the water quality standards for hardness-based metals in this section were made consistent with the standards presented in Section 3.5. Please see the response to Comment SS.1.016.</p>
<p>SS.1.023 <u>Section 3.5.2, pages 3-43-3-45:</u> Please provide the dates data were collected at each site for the surface water quality data presented in Table 3.5-3. It is the</p>	<p>A footnote was added to these tables explaining the hardness used.</p>

**Comment**

**Response**

Comments to USFS Greens Creek Mine 2012 Tailings Expansion DEIS April 2012  
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State's understanding that the Lower Tributary site was sampled earlier in mine life, whereas sampling at the Upper Tributary site began more recently.

SS.1.024

Section 3.6.3.3, page 3-76: Paragraph 2 refers to estimates (from Condon 2011) of drainage from the post-closure TDF to be between 107 and 163 gpm. The water balance does not allow an easy comparison with these numbers. By deduction it would appear the flow rate for tailings seepage water and upwelling water would be the underdrain water at 12 gpm, the Wet Well A water at 17 gpm and the Pit 5/East & West Ditch water at (192-28) gpm for a total of 164 gpm. This is for the existing tailings area of 62 acres. The tailings area in year 2062 for Alternate B would be the existing 62 acres per the permitted acreage in the 2003 Waste management permit, plus the 64.2 acre expansion (Table 2.3-1), for a total area of 126.2 acres. The facility doubles in size, however the seepage flow does not increase substantially. A better explanation of the various flows and flow estimates would be useful, as would a water balance for each tailings facility.

SS.1.025

Section 3.7.2.1, page 3-86-3-89: The long-term aquatic studies dataset for Greens Creek Mine is occasionally reviewed to ensure accuracy. Errors are corrected and reported whenever they are found. The most recent technical report (Kanouse 2012) presents the current dataset and should be used to analyze data from previous years.

SS.1.026

Benthic macroinvertebrate density is measured by the number of insects per square meter of substrate, not number of insects per cubic meter of water. Also, the percentage of *Ephemeroptera*, *Plecoptera*, and *Trichoptera* is not compared against the percentage of *Chironomidae*, those percentages are presented separately and compared together for each sample site.

SS.1.027

Much of the discussion on benthic macroinvertebrates focuses on comparing results from samples collected in 2009 with results from previous years. It would be best to present trend data for each site in the analysis, rather than comparing data from one year against previous years. Additional data was collected in 2010 and 2011 and should be included in the analysis as well.

SS.1.028

High flows may scour the streambed and reduce benthic macroinvertebrate taxa richness within a few weeks after the high flow event. However the general statement that lower taxa richness in samples from Greens Creek sites is attributable to greater flows in Greens Creek, is incorrect. In reviewing the 2001-2011 dataset, more taxa were observed in Greens Creek samples than Tributary Creek samples in seven of the eleven years (2001-2002, 2004, 2007-2008, and 2010-2011) when flow was moderate to high three weeks prior to sampling.

**Comment ID: SS.1.023**

Comment noted. The purpose of the table is to help present baseline conditions for the site in as simple a manner as possible. The dates for sampling at all the stations vary. The dates were not inserted because the Forest Service feels that it complicates the table further without adding to the outcome of the analysis.

**Comment ID: SS.1.024**

Comment noted. Please see the response to Comment SS.1.018.

A more detailed explanation of how water flows through the pile, including the discharges at the facility boundary (i.e., in the wet wells) is presented in more detail in Condon (2011). The commenter (or reader) is referred to that report. In addition, the Forest Service will require HGCMC to update the TDF water quality model in conjunction with required environmental audits. The flow calculations could be evaluated further at that time.

**Comment ID: SS.1.025**

The FEIS has been updated to include information from Kanouse 2012.

**Comment ID: SS.1.026**

Text revised per comment.

**Comment ID: SS.1.027**

The discussion of benthic macroinvertebrates in Section 3.7.2.1 was revised. Data were added and differences among years relative to significance were noted.

**Comment ID: SS.1.028**

The reference to flow in Greens Creek was removed.

Comment	Response
<p style="text-align: right;">Comments to USFS Greens Creek Mine 2012 Tailings Expansion DEIS April 2012 6/19/12 Page 8 of 9</p>	<p><b>Comment ID: SS.1.029</b> Text revised per comment. Added “Juvenile Dolly Varden (2–3 years old) are used for the sampling to ensure metal concentrations are based on resident fish populations.”</p>
<p><b>SS.1.029</b> Methods for monitoring whole body metals concentrations include only sampling 2-3 year old juvenile Dolly Varden char, in an attempt to sample only resident fish and avoid sampling anadromous Dolly Varden char that may be present in Tributary Creek. Adult Dolly Varden char are not sampled. Please clarify this in the narrative.</p>	<p><b>Comment ID: SS.1.030</b> Text was revised for clarity.</p>
<p><b>SS.1.030</b> Juvenile fish populations are estimated using a modification of a depletion minnow trapping method developed by the USFS (Bryant 2000). Sampling methods presented under the “Fish Monitoring” section leads the reader to believe a catch-per-unit-effort trapping method is used, which is incorrect.</p>	<p><b>Comment ID: SS.1.031</b> Text revised per comment. The reference to Tongass National Forest densities has been removed. More recent information from 2011 has been added.</p>
<p><b>SS.1.031</b> Comparison of the juvenile Dolly Varden char density data includes both 2009 and 2010 data. In writing the report summarizing data collected in 2010, ADF&amp;G found an error made in calculating the 2009 Dolly Varden char density at Site 48 the previous year. Densities of juvenile Dolly Varden char at sites 48 and 54 were equal (0.36 fish/m<sup>2</sup>) in 2009. Therefore, the statements regarding 2009 fish densities compared to average forest values are incorrect.</p>	<p><b>Comment ID: SS.1.032</b> Text has been added to section 3.7.2.1 to note the influence of stream geomorphology on aquatic life.</p>
<p><b>SS.1.032</b> When comparing Dolly Varden char densities between Tributary Creek and Greens Creek sample sites, it is important to include in the analysis that those systems are geomorphically different and each support different aquatic species, including fish, which directly influence juvenile Dolly Varden char populations.</p>	<p><b>Comment ID: SS.1.034</b> Text revised per comment. The sentence was revised to “Monitoring data show that mine operations have not affected aquatic organisms, including periphyton, benthic macroinvertebrates, or fish, since monitoring began in 2001.”</p>
<p><b>SS.1.033</b> Section 3.7.3.1, page 3-97: ADF&amp;G issued Fish Habitat Permit FH11-I-0123 to Hecla Greens Creek Mining Company on March 22, 2012 authorizing repair and maintenance of the fish pass in perpetuity. Success of the fish pass will be documented by juvenile coho salmon captured at Site 54 during the annual biomonitoring sampling. If juvenile coho salmon are not captured within three years after fish pass repair, Hecla will be required to investigate adult coho salmon passage through the fish pass.</p>	
<p><b>SS.1.034</b> Section 3.7.3.3, page 3-100: Monitoring results suggest mine operations have not adversely affected aquatic life since monitoring began in 2001, not since mining began as the first sentence presumes.</p>	

**Comment**

**Response**

Comments to USFS Greens Creek Mine 2012 Tailings Expansion DEIS April 2012  
6/19/12  
Page 9 of 9

References Cited:

Alaska National Interest Lands Conservation Act, 1980. Public Law 96.487.

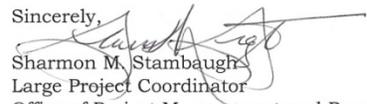
Bryant, M.D. 2000. Estimating fish populations by removal methods with minnow traps in Southeast Alaska streams. North American Journal of Fisheries Management 20:923–930.

Johnson, J. and P. Blanche. 2011. Catalog of waters important for spawning, rearing, or migration of anadromous fishes–Southeast Region, effective June 1, 2011. Special Publication No. 11-06. Alaska Department of Fish and Game, Anchorage, Alaska.

Kanouse, K.M. 2012. Aquatic biomonitoring at Greens Creek Mine, 2011. Technical Report 12-03. Alaska Department of Fish and Game, Division of Habitat, Douglas, Alaska.

USFS, 1994. Agreement between Kennecott Greens Creek Mining Company and USDA Forest Service . December 14, 1994.

Please do not hesitate to contact me at 907.269.0880 or [sharmon.stambaugh@alaska.gov](mailto:sharmon.stambaugh@alaska.gov) if there are any questions or concerns regarding these comments.

Sincerely,  
  
Sharmon M. Stambaugh  
Large Project Coordinator  
Office of Project Management and Permitting

cc. (VIA EMAIL)

Joe Manning (USFS/Minerals)  
Brent Martellaro, (DNR/DMLW/Mining)  
David Wilfong (DNR/DMLW/Mining)  
Ted Deats (DNR/MLW/Water)  
Kate Kanouse (DF&G/Habitat)  
Kenwyn George (DEC/Water)  
Ed Emswiler (DEC/Solid Waste)  
Tom Crafford (DNR, Director, OPMP)  
Sue Magee (DNR/OPMP/ANILCA coordination)  
Kyle Moselle (DNR/OPMP/Project coordination)

**Comment**



May 25, 2012

Tongass National Forest  
ATTN: Greens Creek Tailings Expansion  
8510 Mendenhall Loop Road  
Juneau, AK 99801

RE: "Greens Creek Tailings Expansion"

Dear Ms. Firstencel,

SW.0.001

Southeast Conference would like to express support for the Hecla Greens Creek Mine Tailings Proposed Expansion (EIS Alternative B). The EIS that has been released details Alternative B, the plan for storing future tailings, expanding the existing facility. Approval of Alternative B will allow the tailings to be stored in an area that already serves as a storage area for past tailings, thus utilizing one storage area as opposed to multiple storage locations.

Southeast Conference is a non-profit membership organization that works to advance the collective interests of the people, communities, and businesses of Southeast Alaska. Members include municipalities, native corporations and village councils, regional and local businesses, civic organizations and individuals from throughout the region. We are the Alaska Regional Development Organization (ARDOR), and the Federal Economic Development District (EDD) for the region. Each of these designations requires Southeast Conference to take an active role in regional resource management and economic development planning.

SW.0.002

This proposed mine tailings expansion will allow for consolidation, which will lessen the reclamation costs and total impact on the area as opposed to using another method. The mine has expended significant efforts in researching other alternatives to store the mine tailings and believes this method titled Alternative B is the best method in which to do so.

SW.0.003

The Greens Creek Mine promotes core values that will allow Southeast Alaska to grow positively. As the project continues in the coming years, it will provide numerous job opportunities for our children. These jobs will be near Juneau so the workers will not be far from home. As well as giving local people the option to stay in their hometown and raise a family, the resources yielded from this mine can be used while responsibly maintaining the integrity of the area. Therefore, we believe that the efforts of the Greens Creek Mine are valuable to support.

P.O. Box 21989 612 W. Willoughby Avenue, Suite B, Juneau Alaska 99802  
(907) 523-4351 (907) 463-5670 Fax: hshellyw@seconference.org  
[www.seconference.org](http://www.seconference.org)

~ 1 ~

**Response**

**Comment ID: SW.0.001**

Comment noted. The Forest Service's selected alternative and the rationale for the selection are presented in the Record of Decision. The USACE will issue its own Record of Decision as well.

**Comment ID: SW.0.002**

Comment noted.

**Comment ID: SW.0.003**

Comment noted. Socioeconomic effects of the mine are discussed in Section 3.18, Socioeconomics.

**Comment**

**Response**

**Comment ID: SW.0.004**  
Comment noted.



SW.0.004

Hecla has made efforts to follow safety precautions and to continually maintain the resources made available in a responsible manner. Our goal is to support economic development projects that promote strong economies, healthy communities, and a quality environment for Southeast Alaska. We believe that the efforts of the mine are valuable to our region. The Greens Creek Mine promotes core values that contribute to the growth of Southeast Alaska. For these reasons we support the Greens Creek Tailings Expansion Alternative B proposed project.

Sincerely,

A handwritten signature in cursive script that reads "Shelly Wright".

Shelly Wright  
Executive Director

Cc:

Greens Creek Mine  
&  
U.S. Army Corps of Engineers  
Alaska District, Regulatory Division  
ATTN: Heidi Firstencel  
Juneau Field Office  
8800 Glacier Highway, Suite 106  
Juneau, AK 99801

[heidi.x.firstencel@usace.army.mil](mailto:heidi.x.firstencel@usace.army.mil)

**Comment**

**Response**

**Comment ID: TS.0.001**  
Comment noted.

**From:** [Tim Shockley](#)  
**To:** [FS-comments-alaska-topass-administrative-national-monument](#)  
**Subject:** Hecla Greens Creek Mine Tailings Expansion  
**Date:** Thursday, May 10, 2012 12:42:05 PM

---

05/10/2012

Hello,

TS.0.001

As a lifelong resident of SE Alaska, I fully support Greens Creek Mining in our home. I've seen their operations firsthand both as an avid outdoorsman as well as a contractor working at their location. I have read through their proposed expansion and see it as a good thing both for our economy and our environment. I would appreciate your approval of their proposed expansion.

Thank you,  
-Tim Shockley  
ALPG

**Comment**

**Response**

**Comment ID: TW.0.001**  
Comment noted.

**From:** [Theresa Williams](#)  
**To:** [EIS-comments-alaska-tongass-adminalty-national-monument](#)  
**Subject:** Greens Creek Tailings Expansion  
**Date:** Friday, June 01, 2012 3:39:59 PM

TW.0.001

I support the tailings expansion

Theresa Williams

**Comment**

**Response**

**Comment ID: WB.0.001**  
Comment noted.

From: [wayne.browning](mailto:wayne.browning)  
To: [ES-comments@alea-ctongass-admin@bly-national-monument](mailto:ES-comments@alea-ctongass-admin@bly-national-monument)  
Subject: greens creek tailings expansion  
Date: Thursday, May 31, 2012 11:00:36 PM

WB.0.001

I strongly urge the permit application be accepted. Properly constructed and managed it can and will be safe for our environment. Sincerely,  
Wayne Browning

## Comment

06/04/2012 16:40 FAX 9077899585

COPY WORKS

002/002

WB.1.001

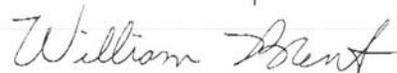
June 3, 2012

My name is William Brent. I have been an Alaska resident since 1973. I have owned my Wheeler Creek property since 1976. I have lived and subsisted off Wheeler Creek for the last 35 years.

I have noticed that the pink neck clams on minus tides at the mouth of Wheeler Creek are gone. My Wheeler Creek neighbors and I have all used this resource for decades. Now you can barely find a pink neck clam. I talked to Fish and Game about this last year, and they said they were going to do a survey Sept. 1 or 2 of last year (2011), but I did not see them out there. Also, I have never seen a sea otter around Wheeler Creek.

I usually harvest the pink neck in March or early April. I suspect the run-off at the mouth of Hawk Inlet has depleted this resource. I'm concerned about what will go next.

Sincerely,



## Response

## Comment ID: WB.1.001

Testing was previously conducted on waters collected in Hawk Inlet near the mine's permitted discharge point to assess chronic and acute toxicity of effluent to shellfish, as required by the NPDES permit at the time. Testing was discontinued in 2005 with the reissuance of the permit when the USEPA determined that the data showed that the effluent from Outfall 002 has no reasonable potential to contribute to an exceedance of the (Alaska) water quality standards for toxicity and there was no reason to believe that the characteristics of the discharge would change over the term of the permit (USEPA 2005). Thus, the Forest Service does not have a reason to believe that the treated water discharged from the mine into Hawk Inlet is affecting pink neck clams near Wheeler Creek.

**Comment**

**Response**

**Comment ID: WC.0.001**  
Comment noted.

5810 Thane Road  
Juneau, AK 99801  
May 1, 2012

Admiralty Island National Monument  
ATTN: Greens Creek Tailings Expansion  
8510 Mendenhall Loop Road  
Juneau, AK 99801

Dear Sir:

WC.0.001

I am the owner of 5 acres of patented land on the west side of Admiralty Island located at an area generally known as Lizard Head (or specifically Lots 1, 2 and 3 of Chatham Subdivision). The property is approximately 6 miles northwest of the Greens Creek Mine. On this land I have constructed a small cabin and frequently stay there to hunt blacktail deer as well as fish for salmon and halibut. I have owned the property since 1984 and have found the Greens Creek Mine to be a good neighbor. I also believe the Mine to be an important component of the economy of the City and Borough of Juneau.

I support the expansion the Greens Creek tailing facility in order that the Mine may continue to operate for many years. Specifically I favor the Alternative B proposal for enlarging the existing tailing facility. Moving the tailing facility to the north under Alternative C or D will bring it nearer to my cabin and may adversely impact the area where I do most of my hunting.

Thank you for offering me the opportunity to comment.

Sincerely,



William A. Corbus

**Comment**

**Response**

**ALASKA ENERGY AND RESOURCES COMPANY**

5601 Tongard Court Juneau AK 99801-7201

907-780-2222

May 1, 2012

Admiralty Island National Monument  
 ATTN: Greens Creek Tailings Expansion  
 8510 Mendenhall Loop Road  
 Juneau, AK 99801

Dear Sir:

The Alaska Energy and Resources Company (AERC) is a Juneau based corporation that is the owner of the Alaska Electric Light and Power Company (AELP) and AJT Mining Properties, Inc. AELP is an electric utility that has been serving Juneau and environs since 1896 and under normal circumstances satisfies its annual energy requirements with hydroelectric energy.

WC.1.001

This letter represents the views of AERC. It has read most parts of the Draft Environmental Impact Statement prepared to assess the impacts of the expansion of the Greens Creek tailing disposal facility. AERC is in support of the continued operation of the Greens Green Mine for the long run. It believes that an expanded tailings facility that will allow the Mine to operate for the foreseeable future is essential. In AERC's view the Greens Creek Mine is a very important ingredient of the CBJ economy for several reasons:

WC.1.002

1. It is a very important component of the City and Borough of Juneau (CBJ) employment base. It employees approximately 390. The jobs are comparatively high paying compared to other employment opportunities in Juneau and help balance employment base that is overly dependent on government sector.
2. Greens Creek is the CBJ's largest tax payer. The tax revenue from Greens Creek tax base more than offsets the cost of additional CBJ services required for the Mine and its Juneau based employees.
3. AERC's affiliate, AELP recently completed construction of the Lake Dorothy Hydroelectric Project. Lake Dorothy and AELP's other hydroelectric projects produce electric energy in excess of AELP's firm electric customer needs. This excess is sold as interruptible energy to Greens Creek. AELP revenues, received from Greens Creek

**Comment ID: WC.1.001**  
 Comment noted.

**Comment ID: WC.1.002**  
 Comment noted.

**Comment**

electric purchases, minimizes the rates for AELP's firm CBJ rate payers. As the CBJ firm loads grow, less energy will be sold to Greens Creek. This is a win-win situation for AELP's customers as well as Greens Creek.

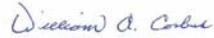
WC.1.003

AERC has examined the four tailings disposal Alternatives. Alternative A will result in the Mine closing down in about 2014. Alternative B expands the existing foot print and Alternatives C and D envision opening a new site to the north, but on the west side of Hawk Inlet. AERC finds it difficult to understand why Alternatives C or D would be acceptable as it will require an access road and new tailings disposal facility, both of which will impact undisturbed habitat. Therefore, AERC supports Alternative B which will have the least impact on the area surrounding the Mine and the area to the north.

As previously stated the Greens Creeks Mine is one of the keys to the CBJ's long term economic future. AERC supports Alternative B, enlarging the existing tailings facility.

\* Thank you for offering AERC to comment on this important issue.

Very truly yours,



William A. Corbus  
President

**Response**

**Comment ID: WC.1.003**

Comment noted.

**Comment**

**Response**

**From:** [wrcason](#)  
**To:** [FS-comments-alaska-forest-admiralty-national-monument](#)  
**Subject:** Support of Hecla Greens Creek Mining application for expansion of tailings disposal area  
**Date:** Friday, June 01, 2012 4:30:17 AM

**To whom it may concern:**

WN.0.001

I urge the Forest Service to grant HGCMC permission to extend its tailing area.

- f For past 25 years, the Greens Creek Mine has contributed to the southeast Alaska economy where private sector resource jobs are needed:
  - ✓ High-paying jobs
  - ✓ Local purchases of goods and services
  - ✓ Major contributor to local tax base
- f HGCMC has been a good steward of the land and has operated the Greens Creek Mine with minimal disturbance to the environment by maintaining a small footprint and using the dry-stack method of tailings disposal.

WN.0.002

- f Since its opening in 1987, the Greens Creek Mine has operated within the Admiralty Island National Monument in accordance with federal, state and local laws and regulations. Congress provided for mining at this site in Section 503 of the Alaska National Interest Lands Conservation Act (ANILCA). One of the original agreements between Greens Creek and the United States of America by and through the USFS calls for facilities to be consolidated to the maximum extent practicable.

**Support for Greens Creek's proposed tailings facility expansion plan:**

WN.0.003

- f HGCMC's proposal (Alternative B) provides for a logical expansion of the existing facility where tailings have been placed for nearly a quarter century and abides by the original agreement for the mine's facilities to be consolidated to the maximum extent practicable **VERSUS** the other action alternatives (Alternatives C and D) that would spread the disturbances, operational and reclamation impacts, and monitoring requirements between two sites separated by over 2 miles.
- f HGCMC's proposal allows for both a southward extension and an upward expansion of the existing facility, which lessen disturbance and closure/reclamation costs **VERSUS** more acres of disturbance and higher costs for the other action alternatives.
- f Under its proposal, HGCMC will maintain tailings disposal in an engineered, contained facility within a portion of a single watershed (Tributary Creek) **VERSUS** the other action alternatives that would place tailings in a second facility but in multiple watersheds and create more disturbance.
- f HGCMC's proposal utilizes existing site support facilities, including the continued use of B Road that has served for tailings delivery since the mine opened **VERSUS** the need, under the other action alternatives, for a major construction upgrade to approximately 2.5 miles of the A road.

**Comment ID: WN.0.001**

Comment noted.

**Comment ID: WN.0.002**

Comment noted.

**Comment ID: WN.0.003**

Comment noted. Alternatives A and B would impact three watersheds: Cannery Creek, Tributary Creek, and South Hawk Inlet. Alternatives C and D would impact five watersheds: Cannery Creek, Tributary Creek, South Hawk Inlet, Fowler Creek, and North Hawk Inlet (see Section 3.5, figures 3.5-5 and 3.5-6).

**Comment**

WN.0.004

f HGCMC's proposal will have minimal disruption to wildlife **VERSUS** the other action alternatives. There is an active goshawk nest at the new location under proposed alternatives C and D, and the nest and surrounding habitat for this sensitive species would be impacted if development in this area were to occur. Also, the heavy hauling and increased maintenance over 2.5 miles of the A road necessary for the alternative location would increase impacts to all wildlife in this area.

WN.0.005

f Under its proposal, HGCMC maintains the existing haul distances to the tailings facility **VERSUS** the other action alternatives where an additional 7 miles of haulage would be added to each truck trip, resulting in an extra 20,000 to 30,000 gallons of diesel fuel being burned every year. That amounts to burning an extra 1,000,000 gallons of diesel fuel over the life of the project. This higher fuel use means more fuel transport to Admiralty Island and more greenhouse gas emissions. More energy will be consumed pumping contact water from the alternate site to the water treatment plant as well.

Wes Nason  
2175 Arcadia Drive  
Anchorage, AK 99517

**Response**

**Comment ID: WN.0.004**

Comment noted. An active goshawk nest was located in 2011 adjacent to the proposed new TDF to the north under alternatives C and D. Impacts to the goshawk and other wildlife species are presented in sections 3.11 (Wildlife) and 3.12 (Threatened, Endangered, Candidate, and Forest Service Alaska Region Sensitive Species).

**Comment ID: WN.0.005**

Correction: Alternatives C and D would add an additional 5.6 miles round-trip for haul trucks to travel from the portal to the new northern TDF. Fuel usage may vary.

Mobile source greenhouse gas emissions at the Greens Creek Mine for Alternative B would add 707 tons of carbon dioxide emissions per year, or 0.16% of Juneau's total greenhouse gas emissions; Alternative C would add 946 tons of carbon dioxide emissions per year, or 0.21%, of Juneau's total greenhouse gas emissions; and Alternative D would add 910 tons of carbon dioxide emissions per year, or 0.21% of Juneau's total greenhouse gas emissions. Alternatives C and D would produce 0.05% more greenhouse gas emissions than alternatives A and B yearly. In comparison, Juneau's yearly highway transportation greenhouse gas emissions equal 29% of the borough's total greenhouse gas emissions.

**Comment**

Section 3.7.3.1, page 3-97: ADF&G issued Fish Habitat Permit FH11-I-0123 to Hecla Greens Creek Mining Company on March 22, 2012 authorizing repair and maintenance of the fish pass in perpetuity. Success of the fish pass will be documented by juvenile coho salmon captured at Site 54 during the annual biomonitoring sampling. If juvenile coho salmon are not captured within three years after fish pass repair, Hecla will be required to investigate adult coho salmon passage through the fish pass.

**Response**

**Comment ID: SS.1.033**

Comment noted. This information has been added to the Final EIS.



**Appendix A, Part 2**  
**U.S. Army Corps of Engineers**  
**Responses to Comments**



**Part 2: U.S. Army Corps of Engineers Responses to Comments – List of Commenters**

Bill Hanson, Field Supervisor, United States Department of the Interior, Fish and Wildlife Service,  
Juneau Fish & Wildlife Field Office .....A-1

Buck Lindekugel, Grassroots Attorney, Southeast Alaska Conservation Council .....A-49

David M. Chambers, Ph.D., Center for Science in Public Participation.....A-53

John and Kyle Rust .....A-58

Jennifer Saran, Environmental Manager, Hecla Greens Creek Mining Company .....A-59

Kate Kelley, Director, Office of Ecosystem, Tribal and Public Affairs,  
United States Environmental Protection Agency, Region 10.....A-61

Wayne A. Stevens.....A-67



**Comment**

**Response**



United States Department of the Interior  
 FISH AND WILDLIFE SERVICE  
 Juneau Fish & Wildlife Field Office  
 3000 Vintage Blvd., Suite 201  
 Juneau, Alaska 99801-7100  
 (907) 780-1160



**Comment ID: BH.0.001**

Comment noted. Please see the responses to detailed comments below.

**Comment ID: BH.0.002**

See the responses to detailed comments below.

June 1, 2012

Heidi Firstencel  
 US Army Corps of Engineers  
 Juneau Field Office  
 8800 Glacier Highway, Suite 106  
 Juneau, AK, 99801-8079

Re: POA 1988-0269-2 Greens Creek Mine Tailings Expansion

Dear Ms. Firstencel,

BH.0.001

The U. S. Fish and Wildlife Service (Service) has reviewed the Public Notice of Application for Permit for the Greens Creek Tailings Expansion and the Draft Environmental Impact Statement (DEIS). Our comments are intended to assist your office in identifying environmental concerns related to fish, wildlife and their habitats associated with a Department of the Army permit for this project.

BH.0.002

We offer these comments under provisions of the Fish and Wildlife Coordination Act, the National Environmental Policy Act, and Executive Order 11990, which directs agencies to minimize "destruction, loss, or degradation of wetlands" in carrying out their responsibilities. We have concerns for migratory birds and their habitats and food sources, anadromous fish, and wetlands that would be affected by the proposed tailings expansion. We also offer recommendations to improve your evaluation of significant potential impacts to wetlands and fish and wildlife resources, and to help identify the least damaging practicable alternative.

Project Description

The Hecla Greens Creek Mining Company (HGCMC) proposes expansion of their Greens Creek Mine tailings disposal facility (TDF) to accommodate approximately 10 million cubic yards of additional tailings and waste rock over a 30 to 50 year period. The mine is located on Admiralty Island approximately 18 miles southwest of Juneau, Alaska. The mine produces lead and zinc concentrates that also contain silver. Major portions of

**Comment**

the mine are located on Tongass National Forest lands and most of the TDF is located in the Admiralty Island National Monument (Monument)

The DEIS presents one no-action and three action alternatives. The major differences among the action alternatives, as presented in the DEIS, are location and configuration of the TDFs, and the types and amounts of wetlands and fish streams that would be lost.

The proposed alternative (Alternative B) would cause the loss of approximately 4,000 linear feet of fish habitat in Tributary Creek, including 1,646 feet of anadromous fish stream and 2,400 feet of resident fish stream. A total of 98.4 acres of wetlands would be filled.

Alternative C would cause the loss of approximately 1,044 feet of resident fish stream and 114.2 acres of wetlands would be lost. No anadromous reaches would be filled.

Alternative D would eliminate approximately 1,044 feet of resident fish stream and 124.9 acres of wetlands would be disturbed.

BH.0.003

We recommend that the Corps permit an alternative that minimizes environmental impact through maintenance of fish-bearing streams, avoidance of the most productive wetlands, and effective monitoring of project impacts with specific triggers for remedial action. These topics are discussed in more detail below.

Minimizing Impacts to Fish Habitat

BH.0.004

Fish-bearing streams typically support a diversity of wildlife species, such as kingfishers, mergansers, mink, and otters that are usually not found along streams that lack fish. Streams that support anadromous fish (primarily salmon) are particularly productive because they tend to support a community of larger predators, such as bald eagles and bears; salmon eggs and fry are preyed upon by many additional species, such as dippers and resident trout. Carcasses of spawned and predated salmon provide a significant input of nutrients, such as nitrogen, calcium, and phosphorous to both the stream system and the surrounding landscape (Gende et al. 2002). Fish-bearing streams would be lost under all action alternatives considered in the DEIS, but the alternatives vary in the level of impacts.

Streams are considered high-quality aquatic features (USACE 2009) that should be avoided where possible. The 2008 Final Rule on *Compensatory Mitigation for Losses of Aquatic Resources* (33 CFR 325 and 332) (2008 Rule) specifies that because streams are difficult to replace, emphasis should be on preservation, rehabilitation, or enhancement. Guidance from the Alaska District of the Corps recommends that all streams be considered high value, with a suggested mitigation ratio of 2:1 for restoration or enhancement efforts and 3:1 for preservation (ACOE 2009, Appendix B). We recommend a mitigation ratio of at least 3:1 for restoration or enhancement of fish-bearing streams, because of their higher value for a broad diversity of other species and functions, as compared to non-fish-bearing streams. Impacts to salmon streams should be

**Response**

**Comment ID: BH.0.003**

Comment noted. See the responses to detailed comments below.

**Comment ID: BH.0.004**

Project impacts to fish habitat are an important consideration in the district engineer's analysis of potential beneficial and detrimental impacts to the environment, as well as the overall public interest, when evaluating a proposal under the NEPA review process.

The decision by the district engineer on whether to issue a permit for the proposed work will be based on consideration of all factors that may be relevant to the proposal, including conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and the general needs and welfare of the people.

**Comment**

compensated at higher ratios than impacts to resident fish streams because they provide more ecological benefits.

BH.0.005

Under Alternative B, the proposed TDF expansion would destroy 1,600 feet of anadromous fish spawning and rearing habitat and an additional 2,400 feet of resident fish stream habitat in Tributary Creek, representing a 50 percent loss of fish habitat by stream length. Alternative C would result in loss of 1,044 feet of Fowler Creek, which supports resident fish in the reach that would be lost. This loss is clearly lower than would be realized under Alternative B. We therefore recommend Alternative C as the least-damaging alternative because it has lower impacts to fish habitat than the proposed alternative.

Mitigation for Impacts to Fish-bearing Streams

BH.0.006

The DEIS (p 3-97) includes discussion of a failed fish passage project that was developed as mitigation in 1989. The HGCMC proposes to repair the fish pass as new mitigation for loss of 4,000 feet of Tributary Creek that would occur in Alternative B. The fish passage system would provide anadromous fish access to an additional 18,400 feet of stream in Greens Creek.

The 2008 Rule specifies that mitigation plans must contain performance standards that will be used to assess whether the project is achieving its objectives. A monitoring schedule and reporting are required. None of these components are included in the DEIS or the Corps' public notice.

Given the failure of the previously attempted fish pass, if this proposed mitigation is approved, the Corps should require a monitoring plan that includes adaptive management. If the proposed project fails to meet objectives, remedial action or suitable alternative mitigation should be provided. Any fish passage mitigation project should be monitored for the full lifetime of the water treatment that will be required, as both water quality and physical access to habitat are necessary to sustain fish populations.

Minimization of Wetland Loss

BH.0.007

High-functioning fens would be lost under all action alternatives evaluated. Fens are hydrologically supported primarily by groundwater, which is typically high in mineral nutrients. Their plant communities are dominated by sedges and grasses, rather than sphagnum moss. These characteristics distinguish them from lower-productivity bogs, which are abundant in the region. Compared to other wetland types in the project area, and across Southeast Alaska generally, fens provide particularly high functions for streamflow support, streamwater cooling, aquatic invertebrate habitat, amphibian habitat, and native plant habitat (DEIS, pp. 3-127 to 3-128). Great volumes of groundwater typically flow through fen wetlands, increasing potential for transport of contaminants if toxic materials are deposited upon them. Because fens in the project area flow into fish-bearing streams, avoiding contamination of the fens will provide a measure of protection for health of the streams and their associated biota.

**Response****Comment ID: BH.0.005**

Project impacts to anadromous fish habitat are an important consideration in the district engineer's analysis of potential beneficial and detrimental impacts to the environment, as well as the overall public interest, when evaluating a proposal under the NEPA review process.

The decision by the district engineer on whether to issue a permit for the proposed work will be based on consideration of all factors that may be relevant to the proposal, including conservation, economics, aesthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, flood hazards, floodplain values, land use, navigation, shore erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, considerations of property ownership, and the general needs and welfare of the people.

**Comment ID: BH.0.006**

Please note that repair of the fish passage project would provide anadromous fish access to an additional 10,600 feet of stream in Greens Creek. Following the Forest Service Record of Decision, the financial assurance and reclamation and closure plan will be updated. The Forest Service will require bonding for maintenance of the fish passage facility in perpetuity. Additionally, the Forest Service and ADF&G will require quarterly inspection of the fish passage structure (see Table 2.6-2).

**Comment ID: BH.0.007**

Contamination of fen wetlands would be in violation of the GPO and the APDES permit. The facility as designed is lined, and water in contact with tailings (contact water) would be collected and pumped to the wastewater treatment plant prior to being discharged into Hawk Inlet.

The alternatives were each developed to minimize the extent of wetlands impacted while remaining practicable in their design. Therefore, impacts to fen wetlands could not be avoided entirely. The EIS discloses this situation and mitigation will take all wetland impacts into account.

**Comment**

**Response**

**BH.0.007 cont** Alternative C avoids further impacts to the fen located to the south of the existing TDF, and impacts the smallest area of fens (25 acres) of any of the action alternatives. Alternative C, as currently configured, however, would impact a substantial fen, plus forested wetlands and bogs at the proposed alternative TDF. We recommend that water quality and wildlife habitat be protected by modifying the TDF to avoid fen wetlands entirely. This might be accomplished by modifying the proposed location or reducing the size and tailings capacity of the TDF.

Water Treatment Monitoring

**BH.0.008** Contamination of water and biota from tailings leachate is one of the greatest potential impacts from the proposed project. Treatment of tailings contact water from any of the TDF alternatives will be required for at least 100 years and likely longer, based on modeling information included in the DEIS. Because treated water goes to marine discharge, any breakdown of the treatment system could adversely affect water quality in Hawk Inlet and affect fish, wildlife, and invertebrates (including many invertebrate species fed upon by migratory birds). A robust monitoring plan is necessary to expeditiously detect and correct any such failings.

**BH.0.009** The HGCMC is currently operating under a 2005 Alaska Pollutant Discharge Elimination System (APDES) permit that allows continued discharge to Hawk Inlet. Some of the water quality sample sites are over 1,600 feet from the edge of the mixing zone in Hawk Inlet. We recommend that samples intended to monitor effectiveness of water treatment be taken at the edges of the mixing zone, rather than far from it.

**BH.0.010** We also recommend that the model used to evaluate the subtidal mixing zone account for tidal action which is likely to repeatedly expose biota to toxins. Monitoring samples, for example, should be taken during phases of the tidal cycle that put the outfall plume upstream of the sampling sites rather than the reverse. Timing is likely to vary, therefore, for individual sample points depending on their location. Averaging samples taken upstream and downstream of the outfall plume is likely to mask effects and should not be allowed. Samples should also be taken at the same depth as the outfall release.

**BH.0.011** The selected alternative should specifically allow adaptive management to implement improved water treatment methods as they are identified in the future, and should require evaluation and implementation of remedial action if water quality monitoring detects declines in water quality.

Stream habitat and aquatic resources monitoring

**BH.0.012** Suspended solids in storm water runoff are a primary carrier for metals and other contaminants, which can affect stream productivity. Sediment can also adversely affect aquatic macro-invertebrates and fish by covering stream-bottom gravel, which is used by invertebrates and fish for reproduction/spawning and rearing. Although a storm water detention structure is proposed to catch surface runoff from the TDF, additional sediment

**Comment ID: BH.0.008**

Monitoring would continue to be required by the General Plan of Operations (GPO), Freshwater Monitoring Program (FWMP), Waste Management Permit, and the APDES permit. The FWMP was developed during an interagency regulatory review. The FWMP requires surface water, groundwater, and biological monitoring.

If an exceedance of Alaska Water Quality Standards is identified, the operator is required to identify and explain the cause of the exceedance in a written notice to the Forest Service and ADEC within 30 days of identifying the exceedance. This notice must contain a plan to mitigate the cause of the exceedance. The agencies will either approve the mitigation plan, or recommend changes to the plan that will help alleviate potential impacts to the designated uses of the receiving waters.

Under the FWMP, an annual report is produced as a part of the operations plan. This report documents trends in water quality in all project drainage features and creeks. This annual FWMP report is sent to the Forest Service and ADEC for review and presented at a meeting that is open to the public.

Additionally, the Waste Management Permit requires a facility-wide environmental audit to be completed every five years.

**Comment ID: BH.0.009**

Monitoring requirements are established in the 2005 APDES Permit (AK0043206). Under this permit, effluent is monitored prior to discharge, as well as in Hawk Inlet. As required by the APDES permit, HGCMC conducts its Hawk Inlet Monitoring Program and prepares an annual report summarizing the findings. The terms and monitoring conditions established by the permit are outside the scope of this decision.

**Comment ID: BH.0.010**

Monitoring requirements are established by the APDES Permit (AK0043206). As required by the permit, HGCMC conducts its Hawk Inlet Monitoring Program and prepares an annual report summarizing the findings. The terms and monitoring conditions established by the permit are outside the scope of this decision.

**Comment ID: BH.0.011**

See response to Comment BH.0.008.

Comment	Response
BH.0.012 cont	<p><b>Comment ID: BH.0.012</b> Comment noted. Aquatic monitoring would continue under all alternatives.</p>
BH.0.013	<p><b>Comment ID: BH.0.013</b> Monitoring would continue to be required by the GPO, FWMP, and Waste Management Permit. The FWMP was developed during an interagency regulatory review. The FWMP requires surface water, groundwater, and biological monitoring using quantitative metrics.</p>
BH.0.014	<p><b>Comment ID: BH.0.014</b> References to the cited monitoring reports have been added. Please note that the FWMP, Hawk Inlet Monitoring Program, and recent annual reports are available to the public online at <a href="http://dnr.alaska.gov/mlw/mining/largemine/greenscreek/">http://dnr.alaska.gov/mlw/mining/largemine/greenscreek/</a>.</p>
BH.0.015	<p><b>Comment ID: BH.0.015</b> Aquatic monitoring is performed as required by the GPO and Waste Management Permit. The FWMP states that macroinvertebrate community assessment should follow the techniques described in Major and Barbour (1999). "Standard Operating Procedures for the Alaska Stream Condition Index: A Modification of the U.S. EPA Rapid Bioassessment Protocols" (Kanouse 2012, p. 8) provides the basis for using riffles:</p> <p>"We collected five benthic macroinvertebrate samples from each site using a Hess sampler in riffles where we observe the greatest amount of taxonomic density and richness (Barbour et al. 1999). This sample design reduces the variability that arises from sampling other habitats, such as pools, where pollution-sensitive taxa are less likely to be present."</p>
BH.0.016	<p>Kanouse, K.M. 2012. <i>Aquatic Biomonitoring at Greens Creek Mine, 2011</i>. Technical Report 12-03. Alaska Department of Fish and Game, Division of Habitat, Douglas, Alaska.</p>
BH.0.012 cont	<p><b>Comment ID: BH.0.016</b> Comment noted. Please note that areas that were previously wetland habitat and that would be buried by the TDF would be reclaimed as upland forest.</p>
<p>is likely to be delivered to Tributary Creek and/or Fowler Creek, as typically occurs with these structures. Aquatic resources in Tributary Creek will be monitored to ensure that degradation does not occur (DEIS, pp. 3-97).</p>	
<p>For monitoring programs to detect significant change, baseline and project operational data sets for periphyton, invertebrates, and fish should use statistical comparisons of standardized, quantitative metrics, in addition to qualitative descriptions, to characterize stream health.</p>	
<p>Aquatic resource monitoring as described in the DEIS (Table 2.6-3) includes (1) juvenile fish sampled for abundance and distribution, (2) fish subsamples analyzed for chemistry, (3) water samples taken for temperature and toxicity testing, (4) periphyton samples collected for biomass, and (5) invertebrates sampled for abundance and community structure. Details on sample schemes, chemical analyses, and statistical techniques are not included. References to such information are either not cited in the text, or are cited but not listed in the references section (e.g., Durst and Jacobs 2010, cited on p. 3-86). As a result, it is difficult to evaluate the adequacy of these monitoring programs.</p>	
<p>Standardized macro-invertebrate metrics have been developed for Southeast Alaska that rely on sampling from a diversity of stream habitats (Rinella et al. 2005), rather than just riffles, as done at Greens Creek (Kanouse 2012, p. 8). We recommend that the more robust indices developed by Rinella et al. (2005) be used to characterize stream health. Statistical evaluations, in addition to qualitative review of these metrics, should be used to detect changes over the life of the project. An example mine monitoring report that incorporates such metrics (FDEP 2006) is enclosed separately. Similar quantitative measures should be adopted for the other parameters included in the monitoring plans.</p> <p>If monitoring detects changes potentially attributable to mine operation, remedial actions should be evaluated and implemented as appropriate. Specific triggers for such evaluations should be included in operation plans, and referenced in any Corps permit issued for the project.</p> <p><u>Reclamation and Mine Closure</u></p>	
<p>The DEIS (p. 2-23) states that one of the objectives is to "Return the disturbed areas to near-natural conditions to the extent practical." Natural habitats provide food and cover for native wildlife, so restoration of near-natural habitats is an important goal.</p> <p>Successful reclamation should restore species diversity and structural complexity of the plant communities, with an emphasis on native plants, and on flowering plants that support native pollinators. We recommend that specific criteria for species and structural diversity be established for reclaimed areas, and that monitoring be done to ensure that the criteria are met. These criteria should be based on pre-existing conditions in the area selected for the TDF.</p>	

**Comment**

**BH.0.017** We find neither quantitative reclamation goals nor descriptions of the present natural conditions at the TDF sites that quantitative reclamation goals might be based upon. We therefore recommend a quantitative vegetation survey to document present baseline conditions, followed by development of a monitoring plan with specific reclamation goals based on the results of the vegetation survey. As with other monitoring plans, remedial actions should be evaluated and implemented if success criteria are not attained.

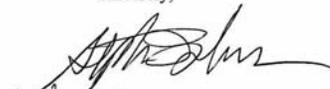
Summary

In summary, we recommend the following actions to reduce adverse effects to fish and wildlife:

- BH.0.018** • Fish-bearing streams are considered high-quality aquatic features that should be avoided where possible. Alternative C is less damaging than Alternative B, in this regard.
- BH.0.019** • Impacts to fish streams should be mitigated at a ratio of at least 3:1.
- BH.0.020** • If repair of a failed fish ladder is selected as mitigation, a robust monitoring plan with appropriate adaptive management should be included.
- BH.0.021** • Fen wetlands are particularly productive and produce large quantities of flowing water that discharge to fish streams in the project area. These fens should be avoided through modification of Alternative C.
- BH.0.022** • Plans for monitoring water treatment, water quality, aquatic biota, and reclamation of disturbed areas should be included as a part of the project plans. These plans should rely on quantitative measures and include specific triggers for initiation of remedial action.

**BH.0.023** We recommend Alternative C with modifications to avoid damage to fens as the least environmentally damaging, practicable alternative.

We appreciate the opportunity to provide comments on this permit application. If you have any questions about our comments, please contact Deborah Rudis of the U.S. Fish and Wildlife Service at [Deborah\\_rudis@fws.gov](mailto:Deborah_rudis@fws.gov) or at 907-780-1183. Thank you for your consideration.

Sincerely,  
  
 for Bill Hanson  
 Field Supervisor

**Response**

**Comment ID: BH.0.017**

Chapter 3, sections 3.x.2 discuss the baseline (present natural) conditions for each of the resources analyzed in the document. Neither the Forest Service nor the State of Alaska requires an operator to establish quantitative reclamation goals as part of a closure plan.

**Comment ID: BH.0.018**

Comment noted.

**Comment ID: BH.0.019**

Comment noted.

**Comment ID: BH.0.020**

Following the Forest Service Record of Decision, the financial assurance and reclamation and closure plan will be updated. The Forest Service will require bonding for maintenance of the fish passage facility in perpetuity. Additionally, the Forest Service and ADF&G will require quarterly inspection of the fish passage structure (see Table 2.6-2). As required by the FWMP, annual aquatic biomonitoring is conducted above the fish passage structure. As part of this program, State biologists use a three-pass depletion method to sample fish abundance.

**Comment ID: BH.0.021**

The footprint of Alternative C was developed to minimize impacts to aquatic systems, including wetlands, subject to geotechnical requirements.

**Comment ID: BH.0.022**

Discharge and receiving water quality monitoring is required by the APDES permit. Freshwater and aquatic biomonitoring are established by the FWMP and the GPO.

Please note that the FWMP, Hawk Inlet Monitoring Program, and recent annual reports are available to the public online at <http://dnr.alaska.gov/mlw/mining/largemine/greencreek/>.

Also, see the response to Comment BH.0.008.

**Comment ID: BH.0.023**

Comment noted.

**Comment**

**Response**

References Cited

- ACOE (Army Corps of Engineers). 2009. Alaska District Implementation of the Federal Rule on Compensatory Mitigation: Compensatory Mitigation for Losses of Aquatic Resources. Alaska District Regulatory Guidance Letter RGL ID No. 09-01.
- Gende, S. M., R. T. Edwards, M. F. Willson, and M. S. Wipfli. 2002. Pacific salmon in aquatic and terrestrial ecosystems. *BioScience* 52(10):917-928.
- Kanouse, K. M. 2012. Aquatic biomonitoring at Greens Creek mine, 2011. Alaska Dept of Fish and Game, Division of Habitat. 20 pp.
- Rinella, D. J., D. L. Bogan, K. Kishaba, and B. Jessup. 2005. Development of a macroinvertebrate biological assessment index for Alexander Archipelago streams – final report. For Alaska Department of Environmental Conservation, Division of Air and Water Quality, Anchorage, AK. 52 pp.

Attachment

- FDEP (Florida Department of Environmental Protection). 2006. Biological assessment of E.I. DuPont – Trailridge Mine, January 2006. FDEP Biology Section, Bureau of Laboratories, Division of Resource Assessment and Management. 40 pp.

cc:

Cindi Godsey, EPA  
Jeanne Hanson, NMFS  
Teri Camery, CBJ  
Carrie Bohan, ADNDR, DCOM  
Jackie Timothy, ADF&G  
Forest Cole, USFS

**Comment**

**Response**



Biological Assessment of  
**E. I. DuPont – Trailridge Mine**  
Bradford County  
NPDES #FL0000051  
Sampled July 2005

January 2006

Biology Section  
Bureau of Laboratories  
Division of Resource Assessment and Management

Quality Manual No. 870346G  
NELAC Certification No. E31780

**Comment**

**Response**

Florida Department of Environmental Protection  
Fifth Year Inspection Summary

Discharger: E. I. Dupont – Trailridge Mine  
Physical Address: State Road 230, Starke County: Bradford  
NPDES Number: FL0000051 Permit Expiration: May 9, 2006

**Toxics Sampling Inspection (XSI)**

**Date Sampled:** July 18, 2005  
**Results:** All metals complied with Class III Criteria and permit limits. No organic priority pollutants were detected in the effluent sample.

**Compliance Biomonitoring Inspection (CBI)**

**Date Sampled:** July 18, 2005  
**Results:** The effluent sample was not acutely toxic to the fish, *Pimephales promelas*, or to the water flea, *Ceriodaphnia dubia*, during the 96-hour acute screening bioassays.

**Water Quality Inspection (WQI)**

**Date Sampled:** July 18, 2005  
**Results:** With the exception of nitrate+nitrite, all nutrients, were lower at the Test Site compared to the Control Site. Conductivity and temperature were higher at the Test Site (458 µmhos/cm, 30.8 °C) relative to the Control Site (248 µmhos/cm, 25.8 °C) and virtually identical to effluent values (458 µmhos/cm, 31 °C).

**Impact Bioassessment Inspection (IBI)**

**Date Sampled:** July 18, 2005  
**Results:** AGP was less than the Method Detection Limit in the effluent and in the receiving water samples. Qualitative periphyton taxa richness was 66% lower at the Test Site compared to the Control Site and there was greater percentage of blue-green algae at the Test Site (68.7%) compared to the Control Site (6.4%).

There were several indications that the macroinvertebrate community at the Test Site was impaired relative to the Control Site. Diversity was 57% lower at the Test Site (1.24) compared to the Control Site (2.87) in the quantitative Hester-Dendy samples, which is a violation of the Biological Integrity Criterion 62-302.530 (11) F.A.C. There were relatively few individuals in the Control and Test Site samples which can result in a negative bias in Shannon-Weaver Diversity calculations; however, there were additional indications of an impaired macroinvertebrate community downstream of the outfall. Taxa richness was 63% lower, EPT taxa 80% lower, and the percent dominant taxon was 44% higher at the Test Site compared to the Control Site. In the qualitative macroinvertebrate samples, the Test Site received a SCI score of 16, which placed it in the "Very Poor" category compared to the Control Site SCI score of 44, which was considered "Poor".

Biological assessments prepared by FDEP staff, provide information for NPDES permit renewal applications and in conjunction with other information concerning the subject facility and its receiving-water body, aid in determining appropriate permit conditions.

## Comment

## Response

January 2006

Bioassessment: E. I. DuPont Trailridge Mine

2

## Introduction

The E. I. DuPont – Trailridge Mine is located in Bradford County, Florida (Appendix 1). This facility dredges heavy mineral sands to obtain ilmenite, zircon, and staurolite. Activities at this facility include acidification of mining wastewater with ferric chloride, sulfuric acid or ferric sulfate to a pH between 3.0 and 3.5 standard units. Flocculation of colloidal material is followed by settling in a series of diked ponds. The wastewater is then neutralized with hydrated lime to a pH between 6.0 and 8.5, with additional settling prior to final discharge into the Class III fresh waters of Alligator Creek. Upon Department approval, polymer addition may be provided after neutralization for aluminum reduction prior to final discharge to Alligator Creek. Storm water and rainfall runoff from mined areas are also collected and treated as described above. The treatment train consists of the addition of barium chloride to the wastewater at the location where ferric chloride and/or ferric sulfate is added (prior to the humate settling ponds). A substantial revision was made on April 4, 005 to redirect a portion of the effluent to the Southwest Quadrant Pond. Approximately 400 gallons per minute will be routed to an existing ditch with discharges into the Southwest Quadrant Pond and eventually into Blue Pond. This rerouting is part of an effort to improve lake water levels in the Keystone Heights area (see Facility Summary in Appendix 2).

The maximum design flow of the wastewater system is 30.0 million gallons per day (MGD). The actual mean flow during this survey was 7.58 MGD and the facility has an annual average permitted flow of 8.5 MGD (Appendix 2).

According to the facility's monthly discharge monitoring reports, the rou-

tine chronic *C. dubia* test in November 2004 failed acute and chronic endpoints; however, the follow-up test passed both acute and chronic endpoints (Appendix 2). In July 2004, the facility experienced an abnormal event when an estimated 5,000 gallons of turbid water exited the property boundary. An investigation determined that the transfer ditch that carries stormwater from the active mining area to the water treatment facilities had become restricted at a culvert which resulted in a portion of the water in the transfer ditch to back-up and flow outside of the water treatment transfer ditch. Immediate actions were taken to contain the turbid water remaining on site. Gypsum was used to reduce the turbidity of the impacted water on the site. During September and October 2004, the facility had exceedances of flow, pH, and length of longest pH excursion due to hurricanes Frances and Jeanne (Appendix 2). Surface Water Quality Criteria and facility permit limits are listed in Table 1.

## Methods

The purpose of this investigation was to determine the potential effects of the facility's effluent on the biota of the receiving waters. Chemical and biological comparisons were made between a Control Site (below County Road 230 in a branch of Alligator Creek) and a Test Site (located in a separate branch of Alligator Creek approximately 60 meters downstream of the discharge), see Map in Appendix 1. Detailed methods and their relationship to Florida Administrative Code are given in Appendix 3.

All field and laboratory biological methods followed Biology Section Standard Operating Procedures (SOPs, see <http://www.floridadep.org/labs/>

[qa/2002sops.htm](#) for details) and met FDEP quality assurance/quality control standards (see <http://www.floridadep.org/labs/qa/index.htm>).

The following were involved in this investigation: Tom Kallemeyn, Jeremy Parrish, Eesa Ali, Lacey Smith, and Joe Jordan (FDEP Northeast District), and FDEP Central Laboratory in Tallahassee. The report was reviewed by District representatives and the Point Source Studies Review Committee (Wayne Magley, Shannan Bogdanov, and Michael Tanski).

## Results &amp; Discussion

- Specific chemical results are reported in Table 1 and a complete list of chemical analytes can be reviewed in Appendix 4. The iron concentration in the Control Site sample (1,490 mg/L) exceeded the Class III Water Quality Criteria (62-302.530 (39) F.A.C.). It is not clear from this study what is contributing to the elevated levels of iron at the Control Site.
- The metals nickel, selenium, and zinc were found in the effluent and Test Site samples at levels above the method detection limit (MDL) and below the practical quantitation limit (PQL). Aluminum and iron were detected in the effluent and Test Site samples at levels that complied with Class III Fresh Water Quality Criteria.
- Radium 226 and 228 were detected in the effluent at a level that complied with the facility's permit limit.
- No priority organic pollutants were detected in the effluent.
- Effluent conductivity, pH and dissolved oxygen complied with Class III Water Quality Criteria (62-302 F.A.C.) and facility permit limits.

Comment

Response

January 2006 Bioassessment: E. I. DuPont Trailridge Mine 3

Table 1. Effluent limits, Class III Freshwater Criteria and chemical, and toxicological data.

DuPont Trailridge Mine	Class III Stds	Effluent Limits	Effluent Samples	Control Site	Test Site
<b>Organic Constituents (µg/L)</b>					
None Detected	-	-	-	-	-
<b>Metals (µg/L unless otherwise noted)</b>					
Aluminum	-	-	391	331	428 A
Arsenic	≤ 50	-	4 U	4 U	4 U
Cadmium	≤ 1.5 b	-	0.5 U	0.5 U	0.5 U
Calcium (mg/L)	-	-	52.6	14.6	51.4 A
Chromium-III	≤ 114.9 b	-	2 U	2 U	2 U
Copper	≤ 12.6 b	-	0.5 U	0.5 U	0.5 U
Iron	≤ 1000	≤ 1000	78	1490	91 A
Lead	≤ 5 b	-	2.1 U	2.1 U	0.075 U
Magnesium (mg/L)	-	-	2.6	2.3	2.5 A
Nickel	≤ 70.2 b	-	7.5 I	2 U	7.2 I
Selenium	≤ 5	-	0.66 I	0.5 U	0.79 I
Silver	≤ 0.07	-	0.025 U	0.025 U	0.025 U
Zinc	≤ 161.3 b	-	4.2 I	5.1 I	4.9 I
<b>Nutrients (mg/L)</b>					
Ortho-phosphate	-	-	0.004 U	0.004 U	0.004 U
Total Phosphorus	-	-	0.035 I	0.045 I	0.032 I
Ammonia	-	-	0.028	0.051	0.028
Unionized Ammonia	≤ 0.02	-	≤ 0.02 c	≤ 0.02 c	≤ 0.02 c
Nitrate+Nitrite	-	-	0.005 I	0.004 U	0.006 I
Total Kjeldahl Nitrogen	-	-	0.06 U	0.71	0.06 U
Organic Nitrogen	-	-	0.03 c	0.66 c	0.03 c
Total Nitrogen	-	-	0.07 c	0.71 c	0.07 c
<b>General Physical and Chemical Parameters</b>					
Radium 226 (pCi/L)	-	-	0.9	-	-
Radium 226-Counting Error (pCi/L)	-	-	0.2	-	-
Radium 228 (pCi/L)	-	-	1.4	-	-
Radium 228-Counting Error (pCi/L)	-	-	0.8	-	-
Combined Radium 226 and 228 (pCi/L)	-	≤ 5	1.3	-	-
Habitat Assessment	-	-	-	98	78
Dissolved Oxygen (mg/L)	≥ 5.0	-	7	7.2	6.7
pH (S.U.)	-	6.0-8.5	6.9	4.4	7.5
Conductivity (µmhos/cm)	≤ 1275	-	458	248	458
Temperature (C)	-	-	31	25.8	30.8
Phytoplankton Chlorophyll a (µg/L)	-	-	0.85 U	2.4 I	0.85 U
Phytoplankton Phaeophytin (µg/L)	-	-	-	0.77 J	0.85 U
Flow (MGD)	-	≤ 30.0	7.4	-	-
Hardness (mg/L)	-	-	142 c	45.9 c	138.6 c
TSS (mg/L)	-	≤ 30.0	4 U	-	-
<b>Toxicology Bioassays (96 hour Acute Screen Bioassays; % mortality in 100% effluent)</b>					
Fish ( <i>Pimephales promelas</i> )	-	NOEC	0%	-	-
Water flea ( <i>Ceriodaphnia dubia</i> )	-	NOEC	0%	-	-

Value exceeds the Class III Water Quality Criteria

b - Value is calculated based on hardness

c - Value is calculated

A - Value reported is the mean of two or more determinations

I - The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

J - Estimated value

U - Material analyzed for but not detected, value reported is the minimum detection limit

NOEC - A no observed effect concentration less than 100% effluent will constitute a violation of this permit

Comment

Response

January 2006 Bioassessment: E. I. DuPont Trailridge Mine 4

Table 2. Measured and predicted algal growth potential (AGP) for total soluble nitrogen (TSIN) and ortho phosphate (OP) limitation for *Pseudokirchneriella subcapitata*.

Location	AGP (measured)	Predicted AGP (TSIN) ± 20%	Predicted AGP (OP) ± 20%	Predicted AGP (TN) ± 20%	Predicted AGP (TP) ± 20%	Inorganic N:P ratio	Total N:P ratio
Effluent Sample	0.300 U	1.25 ± 0.25	0 ± 0 *	0.19 ± 0.038	15.05 ± 3.01	0.03	0.14
Control Site	0.300 U	1.94 ± 0.388	0 ± 0 *	26.98 ± 5.396	19.35 ± 3.87	0.05	15.78
Test Site	0.300 AU	1.29 ± 0.258	0 ± 0 *	0.23 ± 0.046	13.76 ± 2.752	0.03	0.19

A - Value reported is the mean of two or more determinations  
 U - Material analyzed for but not detected; value reported is the method detection limit  
 \* - AGP could not be predicted due to undetected levels of ortho-phosphate

- Dissolved oxygen, pH and conductivity complied with Class III Water Quality Criteria (Table 1, 62-302.530 F.A.C.) at the receiving water sites, however, Test Site conductivity and temperature (458 µmhos/cm, 30.8 °C) were higher compared to the Control Site (248 µmhos/cm, 25.8 °C).
- The effluent sample was not acutely toxic to the fish, *Pimephales promelas*, or to the water flea, *Ceriodaphnia dubia*, during 96-hour acute screening bioassays (See Table 1 for percent mortality and Appendix 6 for bioassay bench sheets).
- The effluent total nitrogen concentration was 0.07 mg/L (Table 1). Effluent total phosphorus (0.035 mg/L), ortho-phosphate (0.004 mg/L), and total ammonia concentrations (0.028 mg/L, Table 1) did not contribute to Test Site levels. Nutrient levels at the Control Site were higher than

those at the Test Site with the exception of nitrate+ nitrite. Total ammonia at the Test Site ranked above the 10th percentile of typical values for Florida streams while all other nutrients were undetected or below the practical quantitation limits (Appendix 5). Concentrations of total Kjeldahl nitrogen (TKN) and total ammonia at the Control Site ranked in the 20th and 30th percentiles of typical values for Florida streams, respectively.

- Algal growth potential (AGP) is a measure of nutrients available for algal growth (Miller *et al.* 1978). Raschke and Shultz (1987) found that AGP above 5.0 mg dry wt/L represent a "problem" threshold for fresh receiving waters, implying nutrient enrichment. The AGP values at the Control and Test Sites were below the MDL indicating no nutrient enrichment related to the Trailridge discharge in this portion of Alligator Creek.

- There was no evidence of growth inhibition in the Class III AGP data (Table 2).
- Chlorophyll-a was below the MDL in the effluent and in the sample from the Test Site and below the practical quantitation limit in the Control Site sample (Table 1). We note that nutrients in the water column may or may not fuel algal production immediately, depending upon the sum of environmental conditions that limit algal growth at the site (e.g. pH, shading, turbidity). Thus, it is not necessarily contradictory for ambient nutrient levels to be high and for no chlorophyll to be detected in water samples.
  - There were differences in periphyton algal community composition between the Control and Test Sites (Table 3, Appendix 8). There were 32 taxa at the Control Site compared to 11 taxa at the Test Site and a shift away from a community dominated by diatoms at the Control Site (92.3%) to one dominated by blue-green algae at the Test Site (68.7%). Diatoms are indicative of a healthy flowing stream, while blue-green algae can be indicative of disturbance. Standard Operating Procedures call for 300 algal units to be identified per sample (SOP AB03), however, only 67 units were identified in the Test Site periphyton

Table 3. Periphyton composition

DuPont Trailridge Mine	Control Site	Test Site
Number of Taxa	32	11
Percent Dominant Taxon	43.6	20.9
Dominant Taxon (name)	<i>Eunotia</i> sp.	<i>Planctothrix</i> sp.
Number of Algal Units Identified	310	67
<b>Percentage Composition</b>		
Blue-green algae	6.4	68.7
Diatoms	92.3	31.3
Green algae	1.3	0

Comment

Response

January 2006 Bioassessment: E. I. DuPont Trailridge Mine 5

Table 4. Macroinvertebrate Hester-Dendy Samples - Quantitative

DuPont Trailridge Mine	Control Site	Test Site
<b>Summary Statistics</b>		
Shannon-Weaver Diversity	2.87	1.24
Number of Taxa	16	6
Florida Index	5	1
Number of EPT Taxa	0	0
Percent Dominant Taxon	33.5	77.4
Dominant Taxon (name)	<i>Thienemannimyia</i> <i>grp.</i>	<i>Polypedilum</i> <i>illinoense</i> <i>grp.</i>
Dominant Taxon (group)	Diptera	Diptera
Total Number of Individuals	116	80
<b>Community Composition: Percent of total</b>		
Acariformes	0	1.3
Coleoptera	25	0
Diptera	66.4	98.7
Ephemeroptera	0	0
Odonata	6.9	0
Oligochaeta	0.9	0
Plecoptera	0	0
Trichoptera	0	0
Other	0.8	0
<b>Functional Feeding Groups: Percent of total</b>		
Burrowing Deposit Feeders	0.9	0
Predators	50	2.5
Surface Deposit Feeders	29.3	53.1
Suspension Feeders	0.5	0
Scrapers	12.4	0
Shredders	6.9	44.3

communication with T. Kallemeyn (DEP Northeast District), suggest that large amounts of iron-sulfur bacteria may be responsible for the reduction in the algal communities at the Test Site.

- A habitat assessment score of 98 placed the Control Site in the "Sub-optimal" category while a score of 78 placed the Test Site in the "Marginal" category (Table 1, data sheets in Appendix 7). There were differences among all primary and secondary habitat parameters between the Control and Test sites. Tom Kallemeyn (personal communication) noted that stream banks at the Test Site were covered by 0.3-0.6 meters of iron-sulfur bacteria. Large amounts of the bacteria had sloughed off resulting in severe habitat smothering and little productive habitat at the Test Site.

Large amounts of the bacteria were also seen at County Road 230, approximately 1.6 kilometers (1.0 mile) downstream of the outfall. The Trailridge treatment process involves the addition of ferric chloride and/or ferric sulfate, which may explain the excessive growth of iron-sulfur bacteria at the Test Site.

- Quantitative measures of benthic macroinvertebrate assemblages from Hester-Dendy samplers showed a 57% reduction in diversity from the Control Site (2.87) to the Test Site (1.24), a violation of the Biological Integrity Criterion 62-302.530 (11) F.A.C. (Table 4, Appendix 9). It should be noted that depending on the overall number of taxa present at a site, Shannon-Weaver Diversity does not become an unbiased estimator until +/-300 individuals

have been identified. Therefore, diversity results at the Control and Test Site (with 116 and 80 individuals, respectively) may have been negatively biased by the small number of individuals and should be viewed with caution. There was, however, further evidence of degradation in the quantitative samples as seen in the reduction of taxa richness and the increase in the dominant taxa at the Test Site compared to the Control Site.

- Qualitative measures of benthic macroinvertebrate assemblages from dipnet samples are summarized in Tables 5 and 6 and in Appendix 10. The Control Site SCI score of 44 and the Test Site SCI score of 16 placed them in the "Poor" and "Very Poor" categories, respectively. Also, a larger portion of material was sorted at the Test Site in order to obtain the target number of individuals compared to the Control Site suggesting a less productive community at the Test Site. Very tolerant organisms, mostly dipterans, made up a majority of the Test Site community (88.5%) compared to the Control Site (21%).

Summary

The Shannon-Weaver Diversity Index was 57% lower at the Test Site compared to the Control Site, a violation of the Biological Integrity Criterion (62-302.530 (11) F.A.C.). As was noted earlier, this should be viewed with caution as the small numbers of individuals in the Control and Test Site samples may have resulted in a negative bias in the Shannon-Weaver Diversity calculations. There were, however, additional indications of impairment in the Test Site biological communities in both the quantitative and qualitative macroinvertebrate

Comment

Response

January 2006 Bioassessment: E. I. DuPont Trailridge Mine 6

Table 5. Macroinvertebrate Dipnet Samples - Qualitative

DuPont Trailridge Mine	Control Site	Test Site
Stream Condition Index (value)	44	16
Stream Condition Index (word)	Poor	Very Poor
<b>Stream Condition Index Metrics</b>		
Number of Total Taxa	28	11
Number of Ephemeroptera Taxa	1	1
Number of Trichoptera Taxa	4	2
Number of Clinger Taxa	4	2
Number of Long-lived Taxa	0	1
Number of Sensitive Taxa	4	3
Percent Dominant Taxon	16	84.62
Percent Suspension Feeders and Filterers	25	1.92
Percent Tanytarsini Individuals	0	0
Percent of Very Tolerant Individuals	21	88.46
Dominant Taxon (name)	<i>Stenelmis sp.</i>	<i>Cricotopus albiforceps</i>
Dominant Taxon (group)	Coleoptera	Diptera
Total Number of Individuals	100	104
<b>Community Composition: Percent of total</b>		
Amphipoda	9	0
Coleoptera	18	0
Diptera	19	94.2
Ephemeroptera	1	1
Odonata	11	0
Oligochaeta	17	1
Plecoptera	0	0
Trichoptera	24	2.9
Other	1	0.9
<b>Functional Feeding Groups: Percent of total</b>		
Burrowing Deposit Feeders	16	1
Predators	28.5	3.4
Surface Deposit Feeders	18	48.6
Suspension Feeders and Filterers	25	1.9
Scrapers	9	0.5
Shredders	2.5	44.7
Unknown	1	0

samples and the qualitative periphyton samples. Elevated conductivity, temperature and habitat smothering from silt and iron-sulfur bacteria, may have contributed to degraded biological communities at the Test Site. Re-evaluation of the monitoring frequency for these parameters and additional monitoring stations to assess impacts of the newly permitted discharge into Blue Pond may be warranted.

It should also be noted that the Test and Control Sites were located in separate branches of Alligator Creek and although a thorough attempt was made to find comparable water bodies, some of the differences seen between the sampling stations may be due to natural variation.

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**Comment**

**Response**

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Table 6a. Stream Condition Index Metrics - Northeast

DuPont Trailridge Mine Control Site			
Metric:	Value	Raw Metric Score	Fixed Score 0 -10
Total Number of Taxa	28	4.6	4.6
Number of Ephemeroptera Taxa	1	2.9	2.9
Number of Trichoptera Taxa	4	6.2	6.2
Number of Clinger Taxa	4	4.4	4.4
Number of Long-lived Taxa	0	0.0	0.0
Number of Sensitive Taxa	4	3.6	3.6
Percent Contribution of Dominant Taxon	16	8.6	8.6
Percent Suspension Feeders and Filterers	25	5.9	5.9
Percent of Tanytarsini individuals	0	0.0	0.0
Percent of Very Tolerant individuals	21	3.0	3.0
<b>Total Score</b>		<b>Poor</b>	<b>44</b>
<b>Interpretation of Scores</b>		Good	73-100
		Fair	46-72
		Poor	19-45
		Very Poor	0-18

Table 6b. Stream Condition Index Metrics - Northeast

DuPont Trailridge Mine Test Site			
Metric:	Value	Raw Metric Score	Fixed Score 0 -10
Total Number of Taxa	11	-1.9	0.0
Number of Ephemeroptera Taxa	1	2.9	2.9
Number of Trichoptera Taxa	2	3.1	3.1
Number of Clinger Taxa	2	2.2	2.2
Number of Long-lived Taxa	1	3.3	3.3
Number of Sensitive Taxa	3	2.7	2.7
Percent Contribution of Dominant Taxon	84.62	-7.0	0.0
Percent Suspension Feeders and Filterers	1.92	0.2	0.2
Percent of Tanytarsini individuals	0	0.0	0.0
Percent of Very Tolerant individuals	88.46	-0.2	0.0
<b>Total Score</b>		<b>Very Poor</b>	<b>16</b>
<b>Interpretation of Scores</b>		Good	73-100
		Fair	46-72
		Poor	19-45
		Very Poor	0-18

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**Comment**

**Response**

**Appendices**

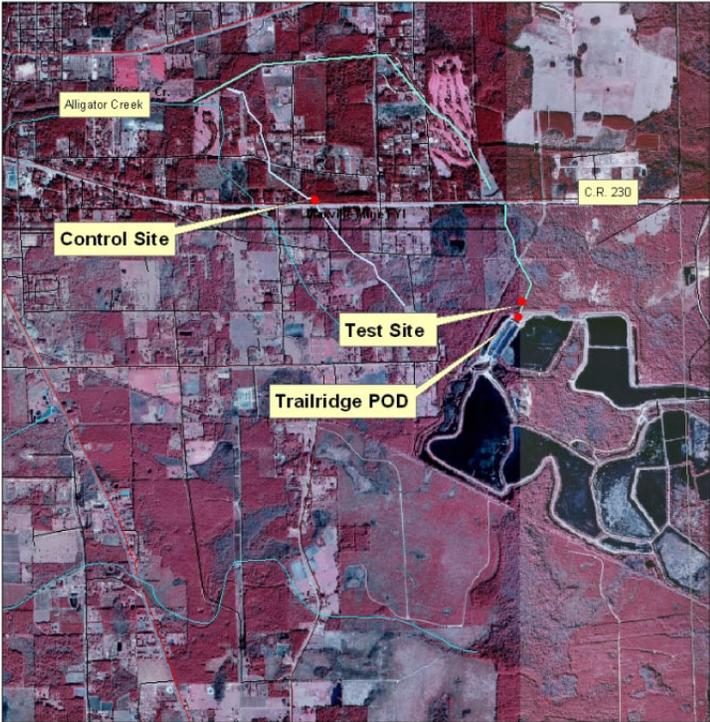
- Appendix 1. Map of facility
- Appendix 2. Facility summary and DMR data
- Appendix 3. Explanation of measurements
- Appendix 4. Chemical analyses of effluent and receiving water.
- Appendix 5. Typical values for selected parameters in Florida waters
- Appendix 6. Additional physical, chemical, toxicological and microbiological results
- Appendix 7. Habitat Assessment field sheets
- Appendix 8. Periphyton: Taxa list and number of individuals counted
- Appendix 9a. Hester-Dendy multi-plate samplers: Taxa list and macroinvertebrate density (average number of individuals per m<sup>2</sup>)
- Appendix 9b. Hester-Dendy multi-plate samplers: Taxa list and total number of macroinvertebrates counted
- Appendix 10a. Dipnet samples: Taxa list and number of macroinvertebrates counted (collapsed)
- Appendix 10b. Dipnet samples: Taxa list and number of macroinvertebrates counted

**Comment**

**Response**

Appendix 1  
Map of Facility

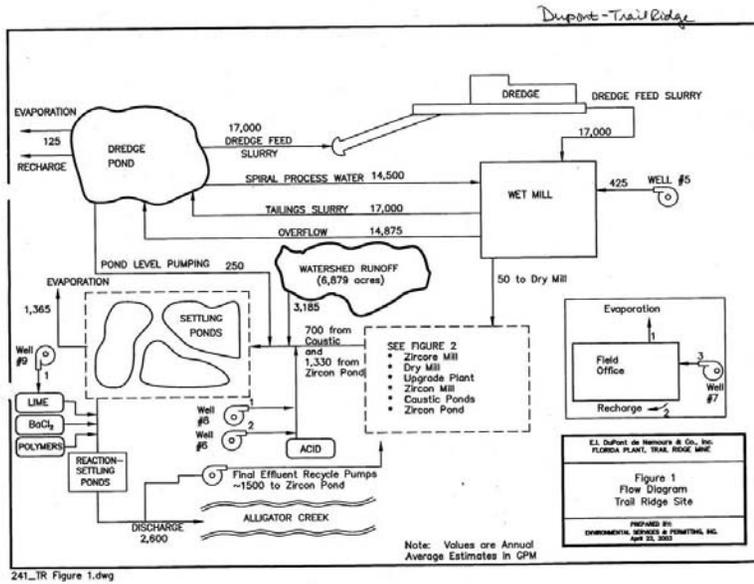
**Trailridge FYI**



0 265 570 1,140 1,710 2,280 Meters

Comment

Response



**Comment**

**Response**

**Appendix 2  
Facility Summary and DMR data**

**State of Florida  
Department of Environmental Protection  
Facility Introduction**

**E.I. Dupont de Nemours & Company  
Trailridge Mine  
FL0000051**

The Trailridge Mine is a heavy minerals mining wastewater treatment system providing acidification with ferric chloride, sulfuric acid or ferric sulfate to a pH between 3.0 to 3.5 standard units, for flocculation of colloidal material, followed by settling in a series of diked ponds, neutralization with hydrated lime to a pH of between 6.0 to 8.5, and additional settling with final discharge to Alligator Creek. Upon Department approval, polymer addition may be provided after neutralization for aluminum reduction prior to final discharge to Alligator Creek. Storm water and rainfall runoff from mined areas are also collected and treated as described above. The treatment train consists of the addition of barium chloride to the wastewater at the location where ferric chloride and or ferric sulfate is added (prior to the humate settling ponds).

The facility is an existing 8.5 MGD annual average (30.0 MGD maximum) permitted discharge at Outfall D-001, to Alligator Creek, a Class III fresh surface water. The point of discharge is located approximately at latitude 29°55'25"N, longitude 82°03'43"W.

A new permitted discharge at Outfall D-002 to the Southwest Quadrant Pond then Blue Pond, a Class III fresh surface water. The point of discharge is located approximately at latitude 29°54'46"N, longitude 82°02'03"W.

A substantial revision was made on April 4, 2005 to redirect a portion of the effluent to the Southwest Quadrant Pond. The existing recycle line from D-001 will be tapped and a pipeline will be constructed to route approximately 400 gallons per minute (gpm) of the wastewater to an existing ditch which then discharges into the Southwest Quadrant Pond with eventual discharge into Blue Pond. This rerouting of final effluent is part of an effort of The Keystone Stakeholders Committee to help improve lake water levels in the Keystone Heights area.

The substantial revision also consists of providing additional treatment of the wastewater for the removal of combined radium 226 and 228 to below the water quality standard of 5.0 picocuries per liter [FAC Rule 62-302.530(58)(a)].

Land Application: Some percolation occurs through the wastewater treatment settling ponds. All discharges are to Class GII ground waters of the state. Ground water monitoring is required by Part III of the permit.

**Comment**

**Response**

Facility Name (as it appears on permit): E.I. Dupont – Trailridge Mine		Former Names:
Physical Address: State Road 230 Starke, Florida	NPDES Permit No.: FL0000051 Expiration Date: May 9, 2006	Prepared By: Reza Shayan
County: Bradford	District: NE	Facility Type: Major
Function of Facility: Dredge mining of heavy mineral sands to separate ilmenite, zircon, and staurolite.		
Sampling Location (actual permit designation of permitted sampling point): Outfall D-001 ⇒ Latitude 29°55'25"N      Longitude 82°03'43"W Outfall D-002 ⇒ Latitude 29°54'46"N      Longitude 82°02'03"W		
Description of permitted outfall: The existing 8.5 MGD annual average (30.0 MGD Maximum) Permitted discharge at Outfall D-001, to Alligator Creek, a Class III fresh surface water. A new permitted discharge at Outfall D-002 to the Southwest Quadrant Pond then Blue Pond, a Class III fresh surface water.		
Description of treatment process (if multiple discharge points, include a map or diagram of facility): The facility is a heavy minerals mining wastewater treatment system providing acidification with ferric chloride, sulfuric acid or ferric sulfate to a pH between 3.0 to 3.5 standard units, for flocculation of colloidal material, followed by settling in a series of diked ponds, neutralization with hydrated lime to a pH of between 6.0 to 8.5, and additional settling with final discharge to Alligator Creek. Upon Department approval, Polymer addition may be provided after neutralization for aluminum reduction prior to final discharge to Alligator Creek. Storm water and rainfall runoff from mined areas are also collected and treated as described above. The treatment train consists of the addition of barium chloride to the wastewater at the location where ferric chloride and or ferric sulfate is added (prior to the humate settling ponds).		
Receiving Waters: Alligator Creek and Blue Pond.	Classification (indicate whether fresh or marine): Class III fresh surface waters.	
Temperature (C):	Design Flow: 8.5 MGD annual average (30.0 MGD maximum).	
pH (SU):	Mean Flow: 7.58 MGD from April 2004 through March 2005.	
Conductivity (umhos/cm):	Flow During Survey:	
Method of Chlorination	Method of Dechlorination	
Dissolved Oxygen (mg/L):	Total Residual Chlorine (mg/L) (after disinfection):	
Discharge is: Rainfall Dependent		
Toxicity Test Requirements (routine and/or additional test language test species, salinity adjustment, etc.): D-001 ⇒ Requires chronic screening tests with 24-hr composite samples using freshwater species conducted quarterly. If NOEC < 100% effluent in any routine test, facility needs "up to 3" additional definitive tests. If 1 <sup>st</sup> definitive passes, the remaining two tests are not required. When 5 consecutive discharge days have not occurred, the permittee shall conduct acute toxicity testing in accordance with Part I.C.2 of this permit in lieu of the chronic testing. Acute tests will be 96-hr screens, also with <i>C.dubia</i> and <i>P.promelas</i> , using one 24-hr composite sample. If mortality > 20% in 100% effluent, then "a minimum of 3" valid additional acute definitives are required.		
Administrative or Consent Orders: None		

**Comment**

**Response**

<p>Facility Mixing Zone Details:</p>
<p>List permit violations (DMR data) and plant upsets that occurred at the plant within the last year:</p> <p>(1) The routine chronic <i>C. dubia</i> test reported in November 2004 failed acute and chronic endpoints; however, the follow-up test passed both acute and chronic endpoints.</p> <p>(2) On July 4, 2004, the facility experienced an abnormal event when an estimated 5,000 gallons of turbid water exited the property boundary. It was investigated that the transfer ditch that carries stormwater from the active mining area to the water treatment facilities had become restricted at a tube crossing and a portion of the turbid water in the transfer ditch had backed-up and sheetflowed outside of the water treatment transfer ditch. Immediate actions were taken to contain the turbid water remaining on site. Gypsum was used to reduce the turbidity of the impacted water on the site.</p> <p>(3) During September and October 2004, the facility had the following exceedances due to Hurricane Frances and Jean: Flow, pH, and Length of Longest pH Excursion.</p>
<p>Describe previous impact bioassessments, WQBEL's, and previous or current enforcement actions: FDEP has not conducted a 5<sup>th</sup>-year bioassessment at the Trailridge mine. Two 3<sup>rd</sup>-year sampling events were made in January 1983 and April 1995. The effluent was not toxic to any of the 4 test species in 1983. No chemical analyses were reported. Nor was the effluent toxic to either test species in 1995. No organics were detected and the metals were in compliance at that time.</p>
<p>Discuss MOR trends to prior data; is trend improving or declining: No noticeable trend.</p>
<p>List Effluent Limits (include additional sheets as necessary):</p>

**Comment**

**Response**

Parameter and Units	Limit	Describe special permit conditions and permit modifications:
<p><u>Outfall D-001 and D-002</u>  <u>Alligator Creek and Blue</u>  <u>Pond</u></p>		
Flow (MGD)	<p>Monthly Average: Report</p> <p>Daily Maximum: 30.0</p> <p>Annual Average: 8.5</p>	
TSS (mg/L)	<p>Monthly Average: 20.0</p> <p>Daily Maximum: 30.0</p>	
Total Recoverable Iron (mg/L)	<p>Monthly Average: 1.0</p> <p>Daily Maximum: 1.0</p>	
Acute Whole Effluent Toxicity, (%)	The LC50 shall not be less than 100%.	
Chronic Whole Effluent Toxicity, (%)	NOEC ≥ 100%.	
Combined radium 226 and 228, Picocuries/L	Daily Maximum: 5.0	
pH, standard units	<p>Daily Minimum: 6.0</p> <p>Daily Maximum: 8.5</p> <p>See comments</p>	<p>The pH at EFF-1 shall be monitored continuously via a recorder. The pH at EFF-2 shall be monitored weekly on a grab sample of the effluent. The pH values shall not deviate outside the range of 6.0 standard units to 8.5 standard units more than 1% of the time in any calendar month and no individual excursion shall exceed 60 minutes. An "excursion" is an unintentional and temporary incident in which the pH value of discharged wastewater exceeds the range set forth in the permit.</p> <p>Samples shall be taken at the monitoring site locations EFF-1 and EFF-2 at the nearest accessible point after final treatment but prior to the actual discharge with the receiving water:</p> <p>EFF-1: The nearest accessible point after final treatment but prior to actual discharge into Alligator Creek.</p> <p>EFF-2: At the discharge point into the unnamed ditch which discharges into the Southwest Quadrant Pond.</p>

**Comment****Response****Appendix 3****Explanation of Measurements****(1) Quality Assurance and Quality Control**

FDEP's quality assurance requirements for analytical laboratories and field activities are codified in Chapter 62-160, F.A.C., Quality Assurance (QA Rule) and in internal Standard Operating Procedures (FDEP SOPs). Methods for all analyses are on file at the FDEP Central Laboratory in Tallahassee and may be viewed on the web at <http://www.floridadep.org/labs/sop/index.htm> and/or <http://www.floridadep.org/labs/qa/index.htm>.

**(2) Chemical Analyses of the Effluent**

The effluent was analyzed for nutrients, metals, organic constituents (base, neutral, and acid extractables) and pesticides following FDEP SOPs. A list of the analytes tested for, results, data qualifiers, the minimum detection limit and the practical quantitation limit are given in Appendix 4. The results from these analyses were compared with Water Quality Criteria (62-302 F.A.C.) and facility permit limits (Table 1, Appendix 2). Exceedances of Water Quality Criteria may be violations of specific provisions of Chapter 62-302 (F.A.C.) and/or facility permit limits.

**(3) Toxicity Bioassays**

Acute screening toxicity bioassays were performed on the effluent sample using the water flea, *Ceriodaphnia dubia*, and the fish, *Pimephales promelas* following FDEP SOPs TA07\_01 and TA07\_02. Failure of toxicity testing may constitute a violation of 62-302.520(21), 62-302.530(62) and/or facility permit limits.

**(4) Bacteriological Testing**

The effluent and water from control and test sites were not analyzed for the presence and concentration of total and fecal coliform bacteria for this study.

**(5) Habitat Assessment**

Habitat assessment is used to evaluate the physical structure and extent of disturbance in a waterbody. Eight aspects are ranked, with 20 possible points for each aspect (QA Rule SOP FT 3100). The Habitat Assessment score includes types and amounts of benthic substrates, water velocity, amount of sand or silt accumulation, extent of artificial channelization, bank stability, and riparian zone width and vegetation type. All scores are summed to yield an overall Habitat Assessment score. Habitat Assessment score ranges from 11-160 and overall habitat quality is assigned to one of four categories: Optimal (120-160 points), Suboptimal (80-119 points), Marginal (40-79 points), and Poor (11-39 points).

**(6) Algal Growth Potential (AGP)**

The effluent and water from control and test sites are autoclaved, filtered (0.45µm), inoculated with the unicellular green alga, *Pseudokirchneriella subcapitata* (formerly *Selenastrum capricornutum*, USEPA 2002), and incubated for 14 days (FDEP SOP TA08\_05). The algal growth potential (AGP) value is the peak growth of the alga within that 14-day period, recorded as mg dry weight/L. Raschke and Shultz (1987) found that an AGP above 5.0 mg dry weight/L represents a "problem" threshold for fresh receiving waters, implying nutrient enrichment. High AGP values may constitute one line of evidence for violation of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(b) F.A.C.

The concentration of nutrients in a water sample may be used to calculate the expected yield of AGP under the assumption that other required nutrients (e.g. silicon, micronutrients) are present in excess (Miller *et al.* 1978). The expected amount of production is calculated as 38 times the total soluble inorganic nitrogen (nitrate and nitrite plus ammonia) under nitrogen limitation or 430 times the ortho-phosphate (OP) concentration under phosphorus limitation with an error of ± 20%. When the ratio of nitrogen to phosphorus (N: P) is less than 10:1, nitrogen limitation of algal production is likely. When the N: P ratio is 20:1 or greater, phosphorus limitation is likely (USEPA 2000). For ratios in-between, co-limitation may occur. Production of lower biomass than expected may be evidence of growth inhibition related to toxic compounds present in the water sample tested and may be a violation of 62-302.530(62) F.A.C..

**(7) Algal Phytoplankton and Periphyton Assemblages**

**Methods: Qualitative** periphyton were sampled at both control and test sites by taking subsamples of algae from natural substrates throughout the sample reach. Phytoplankton were sampled using a 1 L grab sample (QA Rule SOP FS7100). Periphyton were subsampled and identified to the lowest practical level, usually species (FDEP SOPs AB03, AB03\_1 and AB05).

**Chlorophyll a Content:** Chlorophyll a content is measured in both phytoplankton and periphyton samples to estimate algal biomass (FDEP SOP BB05). High algal biomass implies nutrient stress (Stevenson and Bahls 1999) and may be a violation of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(b) F.A.C..

## Comment

## Response

**Algal Density:** Algal density is estimated as number of natural units/ml for phytoplankton samples and number of natural units/cm<sup>2</sup> for periphyton samples. Although algal density of a single site is highly variable and depends on a number of factors, comparison of algal density at a control site to algal density at a related test site gives a partial comparison of algal biomass at the two sites (Stevenson and Smol 2003).

**Taxa richness:** Taxa richness is the number of distinct algal taxa present in a sample. Extreme nutrient enrichment tends to reduce the number of different types of algae present in a sample because a few tolerant taxa tend to reproduce rapidly and constitute the majority of the cells present. However, moderate nutrient enrichment of nutrient poor waters may sometimes be correlated with increased algal taxa richness (Stevenson and Bahls 1999) as the algal community begins to respond to the increased input of nutrients.

**Community Composition:** Shifts in relative proportions of major groups of algae downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Stevenson and Bahls 1999) and may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

**Shannon-Weaver Diversity Index:** This index is specified in the Florida Administrative Code 62-302 as a measure of biological integrity. Low diversity scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present with more equitable abundance among taxa (Magurran 1988). Low diversity scores related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

#### (8) Benthic Macroinvertebrate Assemblages

**Methods:** Benthic macroinvertebrates were collected using two methods. Quantitative samples were collected from Hester-Dendy multi-plate samplers incubated for 28 days (QA Rule SOP FS7430). Qualitative collections are made using 20 dipnet sweeps (QA Rule SOP FS7420). Benthic macroinvertebrates were sorted and identified to the lowest practical taxonomic level, usually species (FDEP SOP IZ06).

**Taxa richness:** Taxa richness is the number of distinct macroinvertebrate taxa present in a sample. Stress, habitat destruction and pollution tend to reduce the number of different types of organisms present (Karr and Chu 1998). Decreases in taxa richness related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

**Percent Contribution of Dominant Taxon:** Percent contribution of the dominant taxon is calculated by dividing the number of individuals in the most abundant taxa by the total number of individuals counted. Percent contribution of the dominant taxon tends to increase with increasing perturbation (Plafkin *et al.*, 1989). Increases in the percent contribution of the dominant taxon related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C. and/or 62-302.530(48)(b) F.A.C..

**Shannon-Weaver Diversity Index:** This index is specified in the Florida Administrative Code 62-302 as a measure of biological integrity. Low diversity scores are undesirable. Where diversity is low, only a few taxa are abundant as compared to an area where many taxa are present in equitable abundance among taxa (Magurran 1988). A difference of 25% in Shannon-Weaver diversity between results from Hester-Dendy multiplate samplers incubated for 28 days at test and control sites constitutes a violation of 62-302.530(11) F.A.C..

**Community Composition:** Shifts in proportions of major groups of organisms downstream of a point source, compared to upstream, control conditions, may indicate negative effects of a discharge (Karr and Chu 1998). Shifts in community composition related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

**Functional Feeding Groups:** Environmental degradation may differentially affect groups of invertebrates based on how the group feeds (e.g. predators, deposit feeders, etc.). In Florida, pollution may be responsible for reducing the numbers of filter feeders (FDEP 1994) and shredders (EA Engineering 1994). Changes in the proportions of functional feeding groups related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

**The Stream Condition Index (SCI):** The SCI is a composite macroinvertebrate metric developed for Florida. This Index was revised in 2004 using data from qualitative dipnet samples. The SCI now assigns points to ten parameters; depending on how closely each parameter approaches an expected value (QA Rule SOP LT 7200). Points are assigned depending on which bioregion (Panhandle, Northeast, or Peninsula) the sampling location exists in and summed to yield a final SCI score (range 0-100). Included in the calculation of SCI are taxa richness, number of Ephemeroptera taxa, number of Trichoptera taxa, percent contribution of the dominant taxon, number of sensitive taxa, number of clinger taxa, number of long-lived taxa, percent contribution of Tanytarsini, percent contribution of very tolerant, and the percent contribution of suspension and filter feeders. Scores are broken into four ordinal groups: Good, Fair, Poor, and Very Poor. A decrease in ordinal SCI score from the Control to the Test site may be evidence of degradation related to a facility's effluent. An SCI score of "Poor" or "Very Poor" related to a facility's effluent may constitute violations of 62-302.530(47) F.A.C., 62-302.530(48)(a) F.A.C., 62-302.530(48)(b) F.A.C. and/or 62-302.530(62) F.A.C..

Comment

Response

Appendix 4  
Chemical analysis of effluent and receiving water

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	POL
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Bio-AGP/LimNut	Algal Growth Potential	0.3	mg DryWt/L	U	0.3	0.9
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	2.4	ug/L	I	2.1	6.4
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	0.77	ug/L	J	2.1	6.4
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Bio-Invertebrates	Macronvert-FW-Quan-ArSubstr-# Taxa	30	# Taxa			
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Bio-Invertebrates	Macronvert-FW-Quan-ArSubstr-# Taxa	9	# Taxa			
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Bio-Peri/Phylo	Periphyton-Qualitative-# Diatom Taxa	27	# Taxa			
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Bio-Peri/Phylo	Periphyton-Qualitative-# Wet Taxa	6	# Taxa			
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Metals-Water	Aluminum	331	ug/L	U	5	20
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Metals-Water	Arsenic	4	ug/L	U	4	16
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Metals-Water	Cadmium	0.5	ug/L	U	0.05	2
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Metals-Water	Calcium	14.6	mg/L	U	0.05	0.2
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Metals-Water	Chromium	6.5	ug/L	U	0.5	2
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Metals-Water	Copper	6.5	ug/L	U	0.5	2
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Metals-Water	Iron	1.48E+03	ug/L	U	10	40
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Metals-Water	Lead	2.1	ug/L	U	2.1	8.4
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Metals-Water	Magnesium	2.3	mg/L	U	0.01	0.04
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Metals-Water	Nickel	2	ug/L	U	2	8
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Metals-Water	Selenium	0.5	ug/L	U	0.5	2
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Metals-Water	Silver	0.025	ug/L	I	0.025	0.1
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Nutrients-Liquid	Zinc	0.051	mg N/L	I	0.01	0.2
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Nutrients-Liquid	Ammonia-N	0.71	mg N/L	I	0.12	0.4
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Nutrients-Liquid	Kjeldahl Nitrogen	0.004	mg N/L	U	0.004	0.01
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	U	0.004	0.01
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Nutrients-Liquid	O-Phosphate-P	0.045	mg P/L	I	0.004	0.01
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Nutrients-Liquid	Total-P	0.045	mg P/L	I	0.02	0.06
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230	Bio-Invertebrates	Macronvert-FW-Quan-ArSubstr-# Taxa	13	# Taxa			
7/18/2005 9:45	ALLIGATOR CR BELOW CR 230 REP 2	Bio-Invertebrates	Macronvert-FW-Quan-ArSubstr-# Taxa	10	# Taxa			
7/18/2005 9:45	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Bio-AGP/LimNut	Algal Growth Potential	0.3	mg DryWt/L	AU	0.3	0.9
7/18/2005 9:45	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	0.35	ug/L	U	0.35	0.9
7/18/2005 9:45	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Bio-Chl-a	Chlorophyll-A, Monochromatic, Water	0.85	ug/L	U	0.85	2.8
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Bio-Invertebrates	Macronvert-FW-Quan-ArSubstr-# Taxa	12	# Taxa			
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Bio-Invertebrates	Macronvert-FW-Quan-ArSubstr-# Taxa	2	# Taxa			
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Bio-Peri/Phylo	Periphyton-Qualitative-# Diatom Taxa	7	# Taxa			
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Bio-Peri/Phylo	Periphyton-Qualitative-# Wet Taxa	4	# Taxa			
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Metals-Water	Aluminum	428	ug/L	A	5	20
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Metals-Water	Arsenic	4	ug/L	U	4	16
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Metals-Water	Cadmium	0.5	ug/L	U	0.5	2
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Metals-Water	Calcium	1.4	mg/L	A	2.05	8
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Metals-Water	Chromium	0.5	ug/L	U	0.5	2
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Metals-Water	Copper	91	ug/L	U	10	40
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Metals-Water	Iron	0.075	ug/L	A	0.075	0.3
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Metals-Water	Lead	2.5	ug/L	A	0.01	0.04
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Metals-Water	Magnesium	7.2	mg/L	A	0.01	0.04
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Metals-Water	Nickel	0.79	ug/L	I	0.5	2
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Metals-Water	Selenium	4.9	ug/L	I	0.025	0.1
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Metals-Water	Zinc	0.028	mg N/L	I	0.01	0.02
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Nutrients-Liquid	Ammonia-N	0.06	mg N/L	U	0.06	0.2
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Nutrients-Liquid	Kjeldahl Nitrogen					

Comment

Response

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	POL
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Nutrients-Liquid	NO2NO3-N	0.006	mg N/L		0.004	0.01
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L		0.004	0.01
7/18/2005 12:15	ALLIGATOR CR 100M BELOW TRAIL RIDGE POD	Nutrients-Liquid	Tota1-P	0.032	mg P/L		0.02	0.06
7/18/2005 12:50	EQUIPMENT BLANK	Bio-invertebrates	Macroinvert-FW-Quan-ArSubstr-# Taxa	4	# Taxa			
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Macroinvert-FW-Quan-ArSubstr-# Taxa	0	# Taxa			
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	1,2-Dichlorobenzene	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	1,3-Dichlorobenzene	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	1,4-Dichlorobenzene	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	2,4,6-Trichlorophenol	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	2,4-Dichlorophenol	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	2,4-Dimethylphenol	48	ug/L		48	190
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	2,4-Dinitrophenol	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	2,6-Dinitrophenol	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	2-Chloronaphthalene	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	2-Chlorophenol	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L		2.9	12
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	2-Nitrophenol	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	3,3'-Dichlorobenzidine	38	ug/L		38	150
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	4,4'-DDD	1.4	ug/L		1.4	5.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	4,4'-DDE	1.4	ug/L		1.4	5.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	4,4'-DDE	1.4	ug/L		1.4	5.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	4-Bromophenyl phenyl ether	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	4-Chloro-3-methylphenol	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L		1.9	7.7
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	4-Nitrophenol	14	ug/L		14	58
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Acenaphthylene	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Aldrin	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Benzo(a)anthracene	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Benzo(a)anthracene	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Benzo(a)pyrene	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Benzo(b)fluoranthene	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Benzo(g,h,i)perylene	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Benzo(k)fluoranthene	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Bis(2-chloroethoxy)methane	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Bis(2-chloroethyl)ether	2.9	ug/L		2.9	12
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Bis(2-ethylhexyl)phthalate	14	ug/L		14	58
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Butyl benzyl phthalate	4.8	ug/L		4.8	19
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Chrysene	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Di-n-butyl phthalate	4.8	ug/L		4.8	19
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Di-n-octyl phthalate	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Dibenz(a,h)anthracene	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Dieldrin	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Dimethyl phthalate	0.96	ug/L		0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Endosulfan I	48	ug/L		48	190
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Endosulfan II	3.8	ug/L		3.8	15
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Endosulfan sulfate	1.4	ug/L		1.4	5.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Endrin	1.4	ug/L		1.4	5.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Endrin aldehyde	3.8	ug/L		3.8	15

Comment

Response

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	POL
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Fluoranthene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Fluorene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Heptachlor	1.4	ug/L	U	1.4	5.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Heptachlor epoxide	1.4	ug/L	U	1.4	5.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Hexachlorobenzene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Hexachlorocyclopentadiene	2.9	ug/L	U	2.9	12
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Hexachloroethane	2.9	ug/L	U	2.9	12
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Indeno[1,2,3-cd]pyrene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Isophorone	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	N-Nitrosod-n-propylamine	1.9	ug/L	U	1.9	7.7
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	N-Nitrosodimethylamine	1.9	ug/L	U	1.9	7.7
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Nitrobenzene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Nitroethane	1.9	ug/L	U	1.9	7.7
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Pentachloroethend	2.9	ug/L	U	2.9	12
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Phenanthrene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Phenol	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Pyrene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	alpha-BHC	1.4	ug/L	U	1.4	5.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	beta-BHC	1.4	ug/L	U	1.4	5.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	delta-BHC	1.4	ug/L	U	1.4	5.8
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Acetyl	0.58	ug/L	U	0.58	2.3
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Ameltyl	0.048	ug/L	U	0.048	0.19
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Atrazine	0.048	ug/L	U	0.048	0.19
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Azinphos Methyl	0.19	ug/L	U	0.19	0.76
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Bromacil	0.19	ug/L	U	0.19	0.76
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Butylate	0.19	ug/L	U	0.19	0.76
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Chlorpyrifos Ethyl	0.048	ug/L	U	0.048	0.19
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Chlorpyrifos Methyl	0.048	ug/L	U	0.048	0.19
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Diazin	0.048	ug/L	U	0.048	0.19
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Ethion	0.048	ug/L	U	0.048	0.19
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Ethioprop	0.096	ug/L	U	0.096	0.38
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Fenamiphos	0.19	ug/L	U	0.19	0.76
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Fenofos	0.096	ug/L	U	0.096	0.38
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Hexazinone	0.096	ug/L	U	0.096	0.38
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Malathion	0.14	ug/L	U	0.14	0.56
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Methoxy	0.27	ug/L	U	0.27	1.06
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Methidathion	0.096	ug/L	U	0.096	0.38
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Methidathion	0.096	ug/L	U	0.096	0.38
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Mevinphos	0.19	ug/L	U	0.19	0.76
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Naled	0.77	ug/L	U	0.77	3.1
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Norflureazon	0.14	ug/L	U	0.14	0.56
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Parathion Ethyl	0.14	ug/L	U	0.14	0.56
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Parathion Methyl	0.096	ug/L	U	0.096	0.38
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Phorate	0.048	ug/L	U	0.048	0.19
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Spinetoram	0.048	ug/L	U	0.048	0.19
7/18/2005 12:50	EQUIPMENT BLANK	BNA-Water	Symazine	5	ug/L	U	5	20
7/18/2005 12:50	EQUIPMENT BLANK	Metals-Water	Aluminum	4	ug/L	U	4	16
7/18/2005 12:50	EQUIPMENT BLANK	Metals-Water	Arsenic	0.5	ug/L	U	0.5	2
7/18/2005 12:50	EQUIPMENT BLANK	Metals-Water	Cadmium	0.05	ug/L	U	0.05	0.2
7/18/2005 12:50	EQUIPMENT BLANK	Metals-Water	Calcium	2	ug/L	U	2	8
7/18/2005 12:50	EQUIPMENT BLANK	Metals-Water	Chromium	2	ug/L	U	2	8

DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	POL
7/18/2005 12:50	EQUIPMENT BLANK	Metals-Water	Copper	0.5	ug/L	U	0.5	2
7/18/2005 12:50	EQUIPMENT BLANK	Metals-Water	Iron	10	ug/L	U	10	40
7/18/2005 12:50	EQUIPMENT BLANK	Metals-Water	Lead	0.075	ug/L	U	0.075	0.3
7/18/2005 12:50	EQUIPMENT BLANK	Metals-Water	Magnesium	0.01	mg/L	U	0.01	0.04
7/18/2005 12:50	EQUIPMENT BLANK	Metals-Water	Nickel	6	ug/L	U	6	9
7/18/2005 12:50	EQUIPMENT BLANK	Metals-Water	Selenium	0.5	ug/L	U	0.5	2
7/18/2005 12:50	EQUIPMENT BLANK	Metals-Water	Silver	0.025	ug/L	U	0.025	0.1
7/18/2005 12:50	EQUIPMENT BLANK	Metals-Water	Zinc	3	ug/L	U	3	12
7/18/2005 12:50	EQUIPMENT BLANK	Nutrients-Liquid	Ammonia-N	0.01	mg N/L	U	0.01	0.02
7/18/2005 12:50	EQUIPMENT BLANK	Nutrients-Liquid	Kjeldahl Nitrogen	0.12	mg N/L	U	0.12	0.4
7/18/2005 12:50	EQUIPMENT BLANK	Nutrients-Liquid	NO2NO3-N	0.004	mg N/L	U	0.004	0.01
7/18/2005 12:50	EQUIPMENT BLANK	Nutrients-Liquid	O-Phosphate-P	0.004	mg P/L	U	0.004	0.01
7/18/2005 12:50	EQUIPMENT BLANK	Nutrients-Liquid	Total-P	0.02	mg P/L	U	0.02	0.06
7/18/2005 12:50	Overflow	Radon	Radon 222	0.1	pCi/L	U	0.1	
7/18/2005 12:50	Overflow	Radon	Radon 226-Counting Error	1	pCi/L	U		
7/18/2005 12:50	Overflow	Radon	Radon 228-Counting Error	0.7	pCi/L	U		
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	1,2,4-Trichlorobenzene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	1,3-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	1,4-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	2,4-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	2,4-Dinitrophenol	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	2,4-Dinitrotoluene	14	ug/L	U	14	190
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	2,4-Dinitrotoluene	48	ug/L	U	48	588
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	2,6-Dinitrotoluene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	2-Chloronaphthalene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	2-Chlorophenol	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	2-Methyl-4,6-dinitrophenol	2.9	ug/L	U	2.9	12
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	2,3-Dichlorobenzene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	3,3'-Dichlorobenzidine	38	ug/L	U	38	150
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	4,4'-DDD	1.4	ug/L	U	1.4	5.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	4,4'-DDE	1.4	ug/L	U	1.4	5.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	4,4'-DDT	1.4	ug/L	U	1.4	5.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	4-Bromophenyl phenyl ether	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	4-Chloro-3-methylphenol	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	4-Chlorophenyl phenyl ether	1.9	ug/L	U	1.9	7.7
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	4-Nitrophenol	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	Acenaphthene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	Acenaphthylene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	Aldrin	1.4	ug/L	U	1.4	5.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	Anthracene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	Benadine	96	ug/L	U	96	390
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	Benzo(a)anthracene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	Benzo(b)fluoranthene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	Benzo(k)fluoranthene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	Benzo(l)pyrene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	Benzo(m)pyrene	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	Bis(2-chloroethoxy)methane	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	Bis(2-chloroethyl)ether	0.96	ug/L	U	0.96	3.8
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	Bis(2-chloroisopropyl)ether	2.9	ug/L	U	2.9	12
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	Bis(2-ethoxyethyl)phthalate	14	ug/L	U	14	58
7/18/2005 12:50	FINAL EFFLUENT	BNA-Water	Butyl benzy phthalate	4.8	ug/L	U	4.8	19

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DATE SAMPLED	FIELD ID	ANALYSIS GROUP	COMPONENT	RESULT	UNITS	REMARK	MDL	POL
7/18/2005 12:50	FINAL EFFLUENT	GC-Water	Malathion	0.14	ug/L	U	0.14	0.56
7/18/2005 12:50	FINAL EFFLUENT	GC-Water	Metolaxyl	0.24	ug/L	U	0.24	0.96
7/18/2005 12:50	FINAL EFFLUENT	GC-Water	Metolachlor	0.48	ug/L	U	0.48	1.9
7/18/2005 12:50	FINAL EFFLUENT	GC-Water	Metribuzin	0.096	ug/L	U	0.096	0.38
7/18/2005 12:50	FINAL EFFLUENT	GC-Water	Neopribos	0.19	ug/L	U	0.19	0.76
7/18/2005 12:50	FINAL EFFLUENT	GC-Water	Permethrin	0.14	ug/L	U	0.14	0.56
7/18/2005 12:50	FINAL EFFLUENT	GC-Water	Perflurazon	0.14	ug/L	U	0.14	0.56
7/18/2005 12:50	FINAL EFFLUENT	GC-Water	Parathion Ethyl	0.096	ug/L	U	0.096	0.38
7/18/2005 12:50	FINAL EFFLUENT	GC-Water	Phorate	0.048	ug/L	U	0.048	0.19
7/18/2005 12:50	FINAL EFFLUENT	GC-Water	Promethyn	0.14	ug/L	U	0.14	0.56
7/18/2005 12:50	FINAL EFFLUENT	GC-Water	Simazine	0.048	ug/L	U	0.048	0.19
7/18/2005 12:50	Metals-Water	Aluminum		391	ug/L	U	3	20
7/18/2005 12:50	Metals-Water	Barium		4	ug/L	U	0.5	2
7/18/2005 12:50	Metals-Water	Cadmium		0.5	ug/L	U	0.05	0.2
7/18/2005 12:50	Metals-Water	Calcium		52.6	mg/L	U	2	8
7/18/2005 12:50	Metals-Water	Copper		2	ug/L	U	0.5	2
7/18/2005 12:50	Metals-Water	Chromium		0.5	ug/L	U	10	40
7/18/2005 12:50	Metals-Water	Iron		78	ug/L	U	2.1	8.4
7/18/2005 12:50	Metals-Water	Lead		2.8	mg/L	U	0.01	0.04
7/18/2005 12:50	Metals-Water	Magnesium		2.8	mg/L	U	0.01	0.04
7/18/2005 12:50	Metals-Water	Nickel		0.66	ug/L	I	0.5	2
7/18/2005 12:50	Metals-Water	Selenium		0.025	ug/L	I	0.025	0.1
7/18/2005 12:50	Metals-Water	Silver		4.2	ug/L	I	3	12
7/18/2005 12:50	Metals-Water	Zinc		0.028	ug/L	I	0.01	0.02
7/18/2005 12:50	Nutrients-Liquid	Ammonia-N		0.028	mg N/L	U	0.06	0.2
7/18/2005 12:50	Nutrients-Liquid	Kjeldahl Nitrogen		0.06	mg N/L	U	0.004	0.01
7/18/2005 12:50	Nutrients-Liquid	NO2NO3-N		0.005	mg N/L	I	0.004	0.01
7/18/2005 12:50	Nutrients-Liquid	O-Phosphate-P		0.004	mg P/L	U	0.004	0.01
7/18/2005 12:50	Nutrients-Liquid	TSS		4	mg/L	U	4	16
7/18/2005 12:50	Overflow	Radium 226		0.935	pCi/L	U	0.02	0.06
7/18/2005 12:50	Overflow	Radium 228		0.2	pCi/L	U		
7/18/2005 12:50	Overflow	Radium 226-Counting Error		1.4	pCi/L	U		
7/18/2005 12:50	Overflow	Radium 228-Counting Error		0.8	pCi/L	U		

Comment

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Appendix 5  
 Typical Values for Selected Parameters in Florida Waters  
 Percentile Distribution (1617 stations)

CONTROL SITE

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	Measured
Periphyton Chlorophyll <i>a</i> (mg/m <sup>2</sup> )	0.31	0.43	0.77	1.04	2.16	2.94	6.45	10.51	17.00	39.51	60.85	ND
Hester-Dendy Diversity	0.84	2.12	2.48	2.74	<b>2.88</b>	3.09	3.25	3.40	3.52	3.76	3.90	<b>2.87</b>
Hester-Dendy Taxa Richness	6	6.5	9	11.5	13	<b>15</b>	17	21.5	26	29	32	<b>16</b>
Dipnet Taxa Richness	9	12	17	20	22	24.5	26	<b>28</b>	31	37	53	<b>28</b>
Total Kjeldahl Nitrogen	0.30	0.39	<b>0.56</b>	0.73	0.87	1.00	1.11	1.26	1.49	1.93	2.80	<b>0.71</b>
Total Ammonia	0.02	0.02	0.04	<b>0.05</b>	0.06	0.08	0.11	0.14	0.20	0.34	0.60	<b>0.051</b>
Nitrate plus Nitrite	<b>0.01</b>	0.01	0.03	0.05	0.07	0.10	0.14	0.20	0.32	0.64	1.05	<b>0.004 U</b>
Total Phosphorus	0.02	<b>0.03</b>	0.05	0.06	0.10	0.13	0.18	0.25	0.39	0.74	1.51	<b>0.045 I</b>
Orthophosphate	<b>0.01</b>	0.01	0.03	0.04	0.05	0.08	0.11	0.17	0.27	0.59	1.37	<b>0.004 U</b>
Turbidity (NTU)	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30	ND

TEST SITE

Parameter	5%	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	Measured
Periphyton Chlorophyll <i>a</i> (mg/m <sup>2</sup> )	0.31	0.43	0.77	1.04	2.16	2.94	6.45	10.51	17.00	39.51	60.85	ND
Hester-Dendy Diversity	<b>0.84</b>	2.12	2.48	2.74	2.88	3.09	3.25	3.40	3.52	3.76	3.90	<b>1.24</b>
Hester-Dendy Taxa Richness	<b>6</b>	6.5	9	11.5	13	15	17	21.5	26	29	32	<b>6</b>
Dipnet Taxa Richness	<b>9</b>	12	17	20	22	24.5	26	28	31	37	53	<b>11</b>
Total Kjeldahl Nitrogen	<b>0.30</b>	0.39	0.56	0.73	0.87	1.00	1.11	1.26	1.49	1.93	2.80	<b>0.06 U</b>
Total Ammonia	0.02	<b>0.02</b>	0.04	0.05	0.06	0.08	0.11	0.14	0.20	0.34	0.60	<b>0.028</b>
Nitrate plus Nitrite	<b>0.01</b>	0.01	0.03	0.05	0.07	0.10	0.14	0.20	0.32	0.64	1.05	<b>0.006 I</b>
Total Phosphorus	0.02	<b>0.03</b>	0.05	0.06	0.10	0.13	0.18	0.25	0.39	0.74	1.51	<b>0.032 I</b>
Orthophosphate	<b>0.01</b>	0.01	0.03	0.04	0.05	0.08	0.11	0.17	0.27	0.59	1.37	<b>0.004 U</b>
Turbidity (NTU)	0.60	0.90	1.20	1.45	2.10	2.80	3.60	4.50	6.65	10.45	16.30	ND

Taxa richness and diversity values are for benthic macroinvertebrates. Hester-Dendy sample= benthic macroinvertebrates collected from a standardized multi-plate sampler. Dipnet taxa richness = number of taxa collected in standardized dipnet sweep samples. Diversity = Shannon-Weaver H'. NTU = Nephelometric turbidity units. Adapted from Joe Hand, FDER, personal communication, 1991 (data collected 1980-1989). ND = No data.

Comment

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Appendix 6

Additional physical, chemical, toxicological and microbiological results

FDEP Biology Section - Acute Bioassay Bench Sheets

Facility: El Dugout de Noveus - Trailing Mine  
 Address: State Road 230  
 City: Starke County: Florida  
 Contact/District: Reja Steven / No. H. East  
 NPDES Permit #: FL 0000051  
 LIMS Job #: TU4-2005-07-19-99 LIMS Sample #: 050115  
 LIMS Data Entry: 2/26/07 Data Entry Verification: 7/2/05

Sample Collection: Date: 7-16-05 Time: 12:50  
 Hold Time Start: Date: 7-16-05 Time: 12:50  
 Comments:

Instructions for LIMS: Circle appropriate wording. If yes is circled complete blanks.  
 Test 1 validation: OK Test 1: SOP TAB7, 01  
 Control recovery: OK Control recovery: OK  
 Test 2 validation: OK Test 2: SOP TAB7, 02  
 Control recovery: OK Control recovery: OK  
 Photoperiod: 16 hours light 8 hours dark  
 Initial sample handling: Temperature Range: 20 to 25 No  
 pH adjustment: yes OK Initial pH: 7.2 Final pH: 7.2 Duration: 16 hours  
 Aeration: yes OK Initial DO: 6.5 Final DO: 6.5 Salts: None Inoculation Inoc: None  
 Salinity adjusted (Test 1): yes OK Initial Salinity: 0 Final Salinity: 0 Inoculation Inoc: None  
 Salinity adjusted (Test 2): yes OK Initial Salinity: 0 Final Salinity: 0 Inoculation Inoc: None  
 Decarbonation: yes OK Decarbonation: None Salts: None Inoculation Inoc: None  
 Sample Validation: OK Sample Validation: None Salts: None Inoculation Inoc: None  
 Temperature: Shipped: 20 No. In-bid Delivered: 20 Cooling (received): 20 Collector: 0 Yes No  
 Holding Time: 48 hours (48) No (Composite-end of collection; grab-when collector, 4 in 24 - also last sample collected)

Temperature Range: 20 to 25  
 Incubator #: 3 Room: 334-247  
 Room ID#: 334-243  
 Worksheet: 20/11

Investigator: Reja Steven  
 Date: 7/2/05  
 Reviewer: Reja Steven

Water Quality Parameters	20% DMW	Wet Water	Soil Water Test 1	Soil Water Test 2	Heckersley Inert Water	Heckersley Original Sample	Method	Measured by	Verified by
Field Total Residual Cl <sup>-</sup> (mg/L)	N/A	N/A	N/A	N/A	N/A	KOP #105122	HACH	SP	DF
Lab Total Residual Cl <sup>-</sup> (mg/L)	<0.03	45					HACH	SP/DM	DF
Alkalinity (mg/L as CaCO <sub>3</sub> )	103	103					HACH	SP/DM	DF
Hardness (mg/L as CaCO <sub>3</sub> )	103	103					DENVER	DF	DF
Total Ammonia (mg/L as N)	<0.017	<0.017					YSI	DF	DF
Salinity (ppt)	<1	<1					Mettler	DF	DF

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Bioassay Parameters

LIMS Sample #: 850145 Test #: 1 of 2  
 TEST SOP: TA07\_01 Test Species: Ceriodaphnia dubia Oryzella heidsi Pimephales promelas  
Ameletus batia Mesella beryllina Other:

v11 2/24/04

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	B	B	B	C
pH (S.U.)	8.2	7.6	7.5	7.5	7.5	7.7
Temperature °C	24.3	24.7	24.5	24.4	24.5	24.6
Dissolved Oxygen mg/L	7.7	7.8	7.8	7.7	7.8	7.6
Conductivity $\mu$ mhos/cm	180	195	195	175	175	200
(initials) Measured by:	TA	TA	TA	TA	TA	TA
(initials) Recorded by:	TA	TA	TA	TA	TA	TA

Comments: Acidification over 8P  
18hr before, after renewal pH 8.1

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	B	B	B	C
pH (S.U.)	7.5	7.5	7.5	7.5	7.5	7.7
Temperature °C	24.5	24.5	24.4	24.5	24.5	24.6
Dissolved Oxygen mg/L	7.8	7.8	7.7	7.8	7.8	7.6
Conductivity $\mu$ mhos/cm	445	445	535	450	450	520
(initials) Measured by:	TA	TA	TA	TA	TA	TA
(initials) Recorded by:	TA	TA	TA	TA	TA	TA

Comments: Acidification over 8P  
18hr before renewal pH 7.5

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity $\mu$ mhos/cm						
(initials) Measured by:						
(initials) Recorded by:						

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.U.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity $\mu$ mhos/cm						
(initials) Measured by:						
(initials) Recorded by:						

Comments:

v11 2/24/04

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Comment

Response

Bioassay Parameters

LIMS Sample #: 850145 Test #: 2 of 2

TEST SOP: TA07\_02 Test Species: Ceriodaphnia dubia Cyprinella todsi Pemphigales promelas  
Ameletus beryllus Mendilia beryllus Other:

V.1 22454

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.L.)	8.0	8.1	7.9	8.1	8.0	7.9
Temperature °C	25.4	25.8	24.1	24.0	24.7	25.1
Dissolved Oxygen mg/L	7.9	7.5	7.8	7.7	6.6	7.2
Conductivity $\mu$ mhos	332	331	360	330	345	350
(inits) Measured by:	SP	DN/SP	SP	SP	SP	MF
(inits) Recorded by:	SP	SP	SP	SP	SP	MF

Comments: correct conductivity 335  $\mu$ mhos  
 (A) taken from wrong cell SP

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate	A	B	C	C	D	A
pH (S.L.)	7.0	7.4	7.4	7.4	7.3	7.3
Temperature °C	25.1	24.3	24.8	24.4	25.5	25.1
Dissolved Oxygen mg/L	8.1	7.9	7.7	7.3	6.8	7.0
Conductivity $\mu$ mhos	460	476	443	455	470	475
(inits) Measured by:	SP	SP/SP	SP	SP	SP	MF
(inits) Recorded by:	SP	SP	SP	SP	SP	MF

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.L.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity $\mu$ mhos						
(inits) Measured by:						
(inits) Recorded by:						

Comments:

Concentration	0 Hr.	24 Hr.	48 Hr. before renewal	48 Hr. after renewal	72 Hr.	96 Hr.
Replicate						
pH (S.L.)						
Temperature °C						
Dissolved Oxygen mg/L						
Conductivity $\mu$ mhos						
(inits) Measured by:						
(inits) Recorded by:						

Comments:

V.1 22454

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Appendix 7  
Habitat Assessment Field Sheets

DEP-SOP-001/01: Form FD 9000-3 (December 11, 2001)  
PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: \_\_\_\_\_ STORET STATION NUMBER: \_\_\_\_\_ DATE (M/D/Y): 7-19-05 TIME: 10.00 RECEIVING BODY OF WATER: Lake Rowel

REMARKS: \_\_\_\_\_ COUNTY: Bradford LOCATION: Alligator Cr Below CR230 FIELD ID/NAME: Control Site

RIPARIAN ZONE/STREAM FEATURES  
PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):  
 FOREST/NATURAL: 35 SILVICULTURE: 10 FIELD/PASTURE: 5 AGRICULTURAL: \_\_\_\_\_ RESIDENTIAL: 50 COMMERCIAL: \_\_\_\_\_ INDUSTRIAL: \_\_\_\_\_ OTHER (SPECIFY): \_\_\_\_\_

LOCAL WATERSHED EROSION (check box): None  Slight  Moderate  Heavy   
 LOCAL WATERSHED NPS POLLUTION (check box): No evidence  Slight  Moderate potential  Obvious sources

WIDTH OF RIPARIAN VEGETATION (m) On least buffered side: 21.9 LIST & MAP DOMINANT VEGETATION ON BANK: \_\_\_\_\_ TYPICAL WIDTH (M) DEPTH (M)/VELOCITY (M/SEC) TRANSECT: 20 m wide

ARTIFICIALLY CHANNELIZED  severe  some recovery  mostly recovered   
 ARTIFICIALLY IMPOUNDED  yes  no

High Water Mark: 0.75 + 0.5 = 1.25  
 (m above present water level) (present depth in m) (m above bed)

CANOPY COVER %: OPEN  LIGHTLY SHADED (11-45%):  MODERATELY SHADED (46-80%):  HEAVILY SHADED:

SEDIMENT/SUBSTRATE  
 SEDIMENT ODOR: NORMAL  SWIRLY:  PETROLEUM:  CHEMICAL:  AMBER/BLACK:  OTHER:   
 SEDIMENT OIL: ABSENT:  SLIGHT:  MODERATE:  PROFUSE:   
 SEDIMENT DEPOSITION: SLUDGE:  SAND SMOTHERING: NONE  SLIGHT  SEVERE  SILT SMOTHERING: NONE  SLIGHT  MODERATE  OTHER: \_\_\_\_\_

SUBSTRATE TYPE	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)	7.5	5	dip net	SAND	71	5	dip net
LEAF PACKS OF MATS	3.5	5	dip net	MUD/MUCK/SILT	20		
AQUATIC VEGETATION				OTHER:			
ROCK OR SHELL RUBBLE				OTHER:			
UNDERCUT BANKS/ROOTS							

UNDERCUT BANKS/ROOTS: 2 5 dip net DRAW AERIAL VIEW SKETCH OF HABITATS FOUND IN 100 M SECTION

WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (MG/L):	COND. (UMH/CM) OR SALINITY (PPT):	SEDS (M):
TOP						
MID-DEPTH	0.75	25.9	4.93	7.23	248	88.9%
BOTTOM	1.5					0.7

SYSTEM TYPE: STREAM (1<sup>st</sup>-2<sup>nd</sup> ORDER) 3<sup>rd</sup>-4<sup>th</sup> ORDER 5<sup>th</sup>-6<sup>th</sup> ORDER 7<sup>th</sup> ORDER OR GREATER LAKE:  WETLAND:  ESTUARY:  OTHER:

WATER ODORS (CHECK BOX): NORMAL:  SEWAGE:  PETROLEUM:  CHEMICAL:  OTHER:   
 WATER SURFACE OILS (CHECK BOX): NONE:  SHEEN:  GLOSS:  SLICK:   
 CLARITY (CHECK BOX): CLEAR:  SLIGHTLY TURBID:  TURBID:  OPAQUE:   
 COLOR (CHECK BOX): TANNIC:  GREEN (ALGAE):  CLEAR:  OTHER:

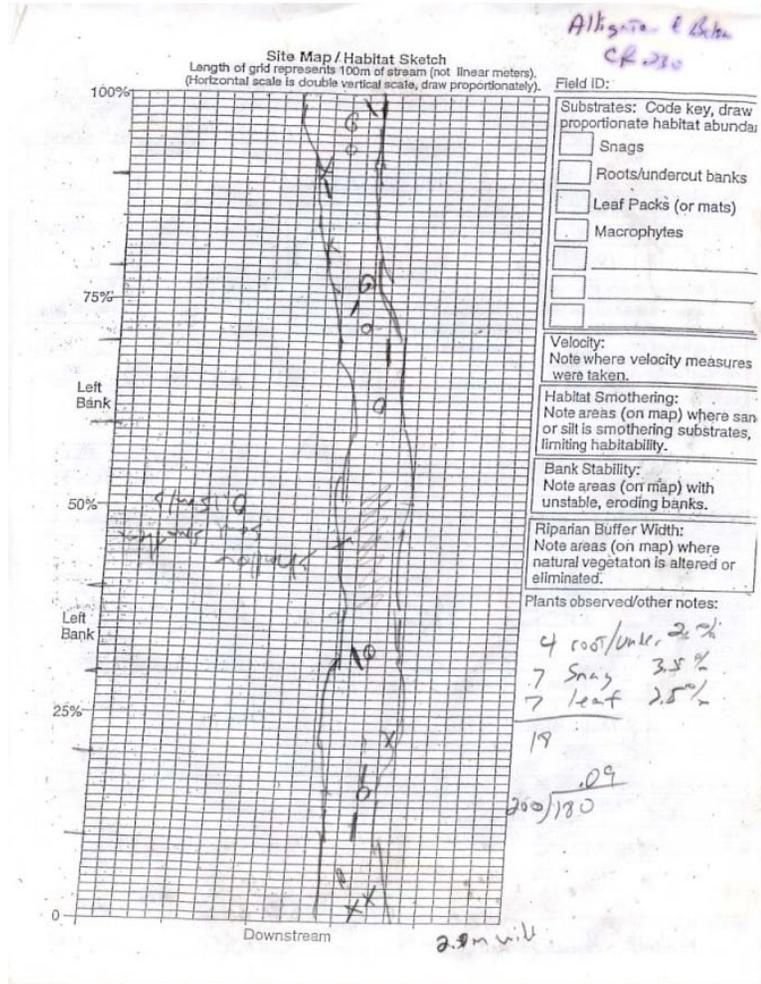
WEATHER CONDITIONS/NOTES: \_\_\_\_\_

	ABUNDANCE	ASSENT	RARE	COMMON	ABUNDANT
PERIOPHYTON	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
FISH	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
AQUATIC MACROPHYTES	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
IRON/SULFUR BACTERIA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SAMPLING TEAM: Kathleen, Povich, Jordan SIGNATURE: K. C. Jordan DATE: 7-19-05

Comment

Response



Comment

Response

DEP-SOP-001/01: Form FD 9000-5 (December 11, 2001)

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION  
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE:	STORET STATION NUMBER:	DATE (mm/dd/yy):	RECEIVING BODY OF WATER:
SUBMITTING AGENCY NAME:		7-19-05	Lake Rowell
REMARKS:	COUNTY:	LOCATION:	FIELD ID/NAME:
	Alachua	Alligator Below CR200	Control

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present (snags, tree roots/undercut banks, aquatic vegetation, leaf packs (partially decayed), rock)	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat obvious, substrates unst or smothered
Substrate Diversity	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Substrate Availability	Greater than 30% productive habitat present at site	16% to 30% productive habitat, by aerial extent	6% to 15% productive habitat	Less than 5% productive habitat
Water Velocity	Max. observed at typical transect: > 0.25 m/sec. But < 1 m/sec	Max. observed at typical transect: 0.1 to 0.25 m/sec	Max. observed at typical transect: 0.05 to 0.1 m/sec	Max. observed at typical transect: < 0.05 m/sec; or spate occurring: > 1 m/sec
Habitat Smothering	Less than 20% of habitats affected by sand or silt accumulation	20%-50% of habitats affected by sand or silt accumulation	Smothering of 50%-80% of the habitats with sand or silt, pools shallow, frequent sediment movement	Smothering of >80% of habitats with sand or silt, a severe problem, pools also
Primary Score	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Secondary Habitat Components	No artificial channelization or dredging. Stream with normal, sinuous pattern	May have been channelized in the past (<20 yrs), but mostly recovered, fairly good sinuous pattern	Channelized, somewhat recovered, but > 80% of area affected	Artificially channelized, box cut banks, straight, instream habitat highly altered
Artificial Channelization	20 19 18 17 16	15 14 13 12 11	10 9 8 7 6	5 4 3 2 1
Bank Stability	Stable. No evidence of erosion or bank failure. Little potential for future problems.	Moderately stable. Infrequent or small areas of erosion, mostly healed over.	Moderately unstable. Moderate areas of erosion, high erosion potential during floods.	Unstable. Many (60%-80%) raw, eroded areas. Obvious bank sloughing.
Right Bank Left Bank	10 9	8 7 6	5 4	3 2 1
Riparian Buffer Zone Width	Width of native vegetation (least buffered side) greater than 18 m	Width of native vegetation (least buffered side) 12 to 18 m	Width of native vegetation 6 to 12 m. human activities still close to system	Less than 6 m of native buffer zone due to intensive human activities
Right Bank Left Bank	10 9	8 7 6	5 4	3 2 1
Riparian Zone Vegetation Quality	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident.	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious.	Less than 25% of stream bank surfaces are vegetated and/or poor plant community (e.g. grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less
Right Bank Left Bank	10 9	8 7 6	5 4	3 2 1
Secondary Score	10 9	8 7 6	5 4	3 2 1
<b>98 TOTAL SCORE</b>				
ANALYSIS DATE:	ANALYST:	SIGNATURE:		
7-19-05	Kallmer	[Signature]		

Comment

Response

DEF-SOP-001/01: Form FD 9000-3 (December 11, 2001)  
 PHYSICAL/CHEMICAL CHARACTERIZATION FIELD SHEET

SUBMITTING AGENCY CODE: SUBMITTING AGENCY NAME:	STORET STATION NUMBER:	DATE (MO/Y): 7-18-05	TIME 12:30	RECEIVING BODY OF WATER: Lake Powell
REMARKS: D. Hall ID	COUNTY: DeWolfe	LOCATION: Alluvia Cr 60m below pool	FIELD ID NAME: TEST SITE	

RIPIARIAN ZONE/STREAM FEATURES  
 PREDOMINANT LAND-USE IN WATERSHED (specify relative percent in each category):

FOREST/NATURAL	SILVICULTURE	FIELD/PASTURE	AGRICULTURAL	RESIDENTIAL	COMMERCIAL	INDUSTRIAL	OTHER (SPECIFY)
	20					50	30 Wetland

LOCAL WATERSHED EROSION (check box): None  Slight  Moderate  Heavy

LOCAL WATERSHED NPS POLLUTION (check box): No evidence  Slight  Moderate potential  Obvious sources

WIDTH OF RIPIARIAN VEGETATION (m)  
 On least buffered side: > 12

LIST & MAP DOMINANT VEGETATION ON BANK

TYPICAL WIDTH (M) DEPTH (M) VELOCITY (M/SEC) TRANSECT

ARTIFICIALLY CHANNELLED  no recent, severe  some recovery  more serious

ARTIFICIALLY IMPOUNDED  yes

High Water Mark: 1.0 + 1.2 = 2.2  
 (m above present water level) (present depth in m) (m above bed)

CANOPY COVER %: OPEN  LIGHTLY SHADED (11-45%):  MODERATELY SHADED (46-80%):  HEAVILY SHADED:

SEDIMENT/SUBSTRATE

SEDIMENT ODORS: NORMAL  SEWAGE  PETROLEUM  CHEMICAL  ANAEROBIC  OTHER

SEDIMENT ODS: ABSENT  SLIGHT  MODERATE  PROUSE

SEDIMENT DEPOSITION: SLUDGE  SAND SMOTHERING: NONE  MODERATE  SEVERE  SILT SMOTHERING: NONE  SLIGHT  SEVERE  OTHER: *bottom growth*

SUBSTRATE TYPE	% COVERAGE	# TIMES SAMPLED	METHOD	SUBSTRATE TYPES	% COVERAGE	# TIMES SAMPLED	METHOD
WOODY DEBRIS (SNAGS)	30	7	dip net	SAND	10	6	dip net
LEAF PACKS OF MATS				MUD/MUCK/SILT			
AQUATIC VEGETATION	25	7	dip net	OTHER: <i>bottom</i>	84.5		
ROCK OR SHELL RUBBLE				OTHER: <i>grass</i>			
UNDERCUT BANKS/ROOTS							

DRAW AERIAL VIEW SKETCH OF HABITATS FOUND IN 100 M SECTION

WATER QUALITY	DEPTH (M):	TEMP. (°C):	PH (SU):	D.O. (mg/L):	COND. (µMHO/CM) OR SALINITY (PPT):	SECCHI (M):
TOP						
MID-DEPTH						
BOTTOM						

SYSTEM TYPE: STREAM  3<sup>rd</sup>-4<sup>th</sup> ORDER  5<sup>th</sup>-6<sup>th</sup> ORDER  7<sup>th</sup> ORDER OR GREATER  LAKE  WETLAND  ESTUARY  OTHER

WATER ODORS (CHECK BOX): NORMAL  SEWAGE  PETROLEUM  CHEMICAL  OTHER

WATER SURFACE OILS (CHECK BOX): NONE  SHEEN  GLOBE  SLICK

CLARITY (CHECK BOX): CLEAR  SLIGHTLY TURBID  TURBID  OPAQUE

COLOR (CHECK BOX): TANNIC  GREEN (ALGAE)  CLEAR  OTHER

WEATHER CONDITIONS/NOTES:  
 (Dr. Hall ID) *websites found in long strands*

ABUNDANCE:	ABSENT	RARE	COMMON	ABUNDANT
PERIOPHYTON	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
FISH	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
AQUATIC MACROPHYTES	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
IRON/SULFUR BACTERIA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

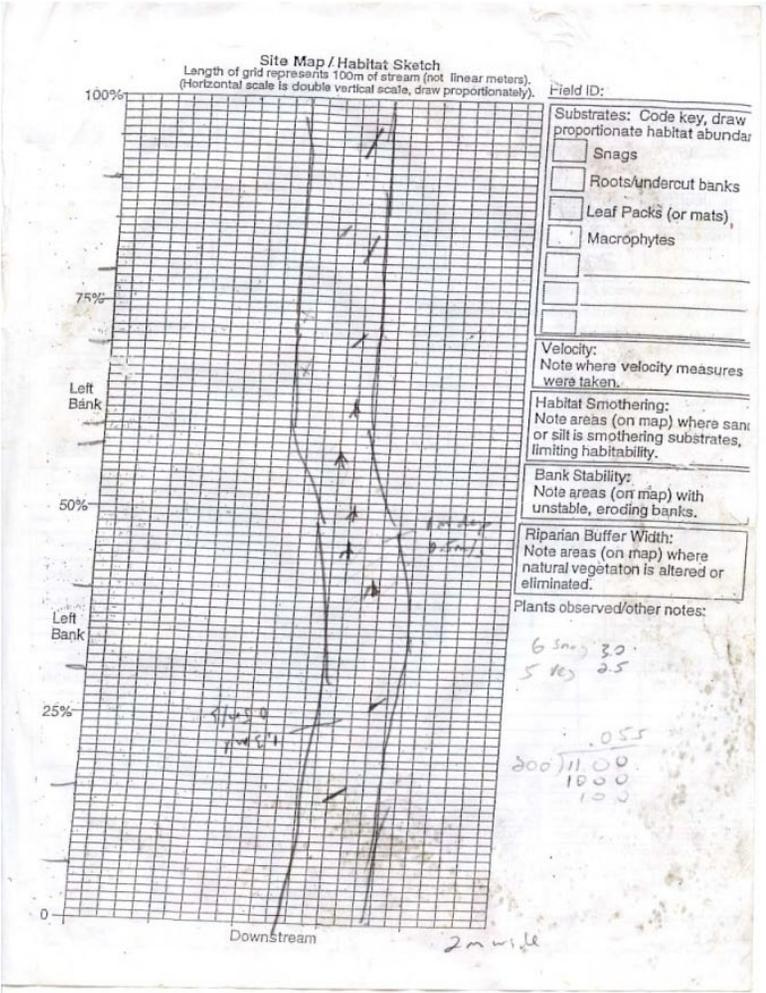
SAMPLING TEAM: *Kallenberg, Parish, Jordan*

SIGNATURE: *[Signature]*

DATE: 7-18-05

Comment

Response



Comment

Response

DEP-SOP-001/01: Form FD 9000-5 (December 11, 2001)

STATE OF FLORIDA, DEPARTMENT OF ENVIRONMENTAL PROTECTION  
STREAM/RIVER HABITAT ASSESSMENT FIELD SHEET

SUBMITTING AGENCY CODE: \_\_\_\_\_ STORET STATION NUMBER: \_\_\_\_\_ DATE (MM/DD/YY): 7/18/05 RECEIVING BODY OF WATER: Lake Powell  
 SUBMITTING AGENCY NAME: \_\_\_\_\_  
 REMARKS: \_\_\_\_\_ COUNTY: \_\_\_\_\_ LOCATION: R. by below P.O. FIELD ID/NAME: Test Site

Habitat Parameter	Optimal	Suboptimal	Marginal	Poor
Primary Habitat Components	Four or more productive habitats present (snags, tree roots/undercut banks, aquatic vegetation, leaf packs [partially decayed], rock)	Three productive habitats present. Adequate habitat. Some substrates may be new fall (fresh leaves or snags)	Two productive habitats present. Less than desirable habitat, frequently disturbed or removed	One or less productive habitat. Lack of habitat obvious, substrates unst or smothered
Substrate Diversity	6			
Substrate Availability	4			
Water Velocity	18			
Habitat Smothering	3			
Primary Score	31			
Secondary Habitat Components	No artificial channelization or dredging. Stream with normal, sinuous pattern	May have been channelized in the past (>20 yrs), but mostly recovered, fairly good sinuous pattern	Channelized, somewhat recovered, but > 80% of area affected	Artificially channelized, box cut banks, straight, instream habitat highly altered
Artificial Channelization	3			
Bank Stability	Stable. No evidence of erosion or bank failure. Little potential for future problems.	Moderately stable. Infrequent or small areas of erosion, mostly healed over.	Moderately unstable. Moderate areas of erosion, high erosion potential during floods.	Unstable. Many 80%-90% raw, eroded areas. Obvious bank sloughing.
Right Bank	5			
Left Bank	2			
Riparian Buffer Zone Width	Width of native vegetation (least buffered side) greater than 18 m	Width of native vegetation (least buffered side) 12 to 18 m	Width of native vegetation 6 to 12 m, human activities still close to system	Less than 6 m of native buffer zone due to intensive human activities
Right Bank	9			
Left Bank	10			
Riparian Zone Vegetation Quality	Over 80% of riparian surfaces consist of native plants, including trees, understory shrubs, or non-woody macrophytes. Normal, expected plant community for given sunlight & habitat conditions	50% to 80% of riparian zone is vegetated, and/or one class of plants normally expected for the sunlight & habitat conditions is not represented. Some disruption in community evident.	25% to 50% of riparian zone is vegetated, and/or one or two expected classes of plants are not represented. Patches of bare soil or closely cropped vegetation, disruption obvious.	Less than 25% of stream bank surfaces are vegetated and/or poor plant community (e.g. grass monoculture or exotics) present. Vegetation removed to stubble height of 2 inches or less
Right Bank	8			
Left Bank	7			
Secondary Score	48			
TOTAL SCORE	77			
ANALYSIS DATE: 7/18-05	ANALYST: Kallema	SIGNATURE: [Signature]		

## Comment

## Response

## Appendix 8

Taxa list and number counted for periphyton collected from natural substrates upstream and downstream of E. I. Dupont – Trailridge Mine discharge, July 18, 2005.

	Control Site	Test Site
<b>Bacillariophyta</b>		
<i>Achnanthes exigua</i>	2	-
<i>Brachysira</i> sp.	-	2
<i>Brachysira vitrea</i>	-	9
<i>Diademsis confervacea</i>	1	-
<i>Encyonema</i> sp.	1	-
<i>Encyonopsis microcephala</i>	-	4
<i>Eunotia</i> sp.	135	-
<i>Eunotia femoriformis</i>	9	-
<i>Eunotia flexuosa</i>	4	-
<i>Eunotia incisa</i>	2	-
<i>Eunotia pectinalis</i>	4	-
<i>Eunotia zygodon</i>	1	-
<i>Frustulia</i> sp.	6	1
<i>Frustulia rhomboides</i>	12	-
<i>Frustulia saxonica</i>	8	1
<i>Hippodonta</i> sp.	2	-
<i>Hippodonta hungarica</i>	2	-
<i>Luticola</i> sp.	1	-
<i>Navicula</i> sp.	6	-
<i>Navicula exigua</i>	1	-
<i>Navicula kotschyi</i>	2	-
Naviculaceae	7	-
<i>Nitzschia</i> sp.	17	1
<i>Nitzschia palea</i>	41	3
<i>Nitzschia prolongata</i>	2	-
<i>Pinnularia</i> sp.	11	-
<i>Stauroneis</i> sp.	2	-
<i>Suriella</i> sp.	6	-
<i>Suriella minuta</i>	1	-
<b>Chlorophycota</b>		
<i>Chlorococcum</i> sp.	3	-
<i>Cosmarium</i> sp.	1	-
<b>Cyanophycota</b>		
<i>Jaaginema</i> sp.	-	8
<i>Planktolyngbya</i> sp.	6	12
<i>Planktothrix</i> sp.	1	14
<i>Pseudanabaena</i> sp.	10	12
<i>Synechocystis</i> sp.	3	-

...

**Comment**

**Response**

**Appendix 9a**

Benthic macroinvertebrates collapsed taxa list and density (average number of individuals/m<sup>2</sup> rounded to the nearest individual, n = 3 samples) from Hester-Dendy artificial substrates incubated for 28 days upstream and downstream of the E. I. Dupont – Trailridge Mine and collected July 18, 2005. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
<b>Annelida</b>		
Oligochaeta		
Naididae	3	-
<b>Arthropoda</b>		
Arachnida		
Acariformes		
<i>Hygrobatas</i> sp.	-	3
Crustacea		
Amphipoda		
<i>Crangonyx</i> sp.	3	-
Insecta		
Coleoptera		
<i>Stenelmis</i> sp.	77	-
Diptera		
<i>Ablabesmyia mallochi</i>	3	-
Ceratopogonidae	3	5
<i>Chironomus</i> sp.	-	16
<i>Cricotopus albiforceps</i>	-	16
<i>Cryptochironomus</i> sp.	20	-
<i>Dicrotendipes modestus</i>	3	-
<i>Hemerodromia</i> sp.	5	-
<i>Kiefferulus</i> sp.	3	-
<i>Larsia</i> sp.	3	-
<i>Polypedilum illinoense</i> grp.	11	164
<i>Polypedilum scalaenum</i> grp.	25	-
<i>Polypedilum tritum</i>	6	8
<i>Thienemannimyia</i> grp.	103	-
<i>Tribelos jucundum</i>	20	-
Odonata		
<i>Argia tibialis</i>	21	-

## Comment

## Response

## Appendix 9b

Benthic macroinvertebrates taxa list and counts (number of individuals counted) collected from Hester-Dendy artificial substrates (n= 3 samples) incubated upstream and downstream of the E. I. Dupont – Trailridge Mine and collected July 18, 2005

	Control Site	Test Site
<b>Annelida</b>		
Oligochaeta		
Naididae	1	-
<b>Arthropoda</b>		
Arachnida		
Acariformes		
<i>Hygrobatas</i> sp.	-	1
Crustacea		
Amphipoda		
<i>Crangonyx</i> sp.	1	-
Insecta		
Coleoptera		
<i>Stenelmis</i> sp.	29	-
Diptera		
<i>Ablabesmyia mallochi</i>	1	-
Ceratopogonidae	1	2
<i>Chironomus</i> sp.	-	6
<i>Cricotopus albiforceps</i>	-	6
<i>Cryptochironomus</i> sp.	7	-
<i>Dicrotendipes modestus</i>	1	-
<i>Hemerodromia</i> sp.	2	-
<i>Kiefferulus</i> sp.	1	-
<i>Larsia</i> sp.	1	-
<i>Polypedilum illinoense</i> grp.	4	62
<i>Polypedilum scalaenum</i> grp.	10	-
<i>Polypedilum tritum</i>	2	3
<i>Thienemannimyia</i> grp.	40	-
<i>Tribelos jucundum</i>	7	-
Odonata		
<i>Argia tibialis</i>	8	-

**Comment**

**Response**

**Appendix 10a**

Qualitative benthic macroinvertebrate collapsed taxa list and number of individuals counted from 20-discrete-dipnet sweeps upstream and downstream of E. I. Dupont – Trailridge Mine and collected July 18, 2005. See SOP LT 7100 sect. 4.2.1 for method on collapsing taxa.

	Control Site	Test Site
<b>Annelida</b>		
Oligochaeta		
<i>Eclidrilus</i> sp.	3	1
<i>Limnodrilus hoffmeisteri</i>	11	-
<i>Pristina aequiseta</i>	1	-
<i>Pristinella longidentata</i>	1	-
<i>Pristinella osborni</i>	1	-
<b>Arthropoda</b>		
Crustacea		
Amphipoda		
<i>Crangonyx</i> sp.	9	-
Insecta		
Coleoptera		
Carabidae	1	-
<i>Dubiraphia vittata</i>	1	-
<i>Stenelmis</i> sp.	16	-
Diptera		
Ceratopogonidae	1	2
<i>Chlorotabanus</i> sp.	1	-
<i>Cricotopus albiforceps</i>	-	88
<i>Cryptochironomus</i> sp.	-	1
<i>Hemerodromia</i> sp.	1	-
<i>Labrundinia pilosella</i>	1	-
<i>Nikothauma</i> sp.	-	3
<i>Orthocladus annectens</i>	1	-
<i>Polypedilum halterale</i> grp.	1	-
<i>Polypedilum illinoense</i> grp.	2	3
<i>Rheocricotopus robacki</i>	-	1
<i>Simulium</i> sp.	2	-
<i>Stenochironomus</i> sp.	1	-
<i>Thienemannimyia</i> grp.	8	-
Ephemeroptera		
<i>Maccaffertium</i> sp.	-	1
<i>Pseudocloeon</i> sp.	1	-
Megaloptera		
<i>Corydalus cornutus</i>	-	1
Odonata		
<i>Argia sedula</i>	8	-
<i>Hetaerina</i> sp.	2	-
Libellulidae	1	-
Trichoptera		
<i>Cheumatopsyche</i> sp.	11	-
<i>Chimarra</i> sp.	-	2
<i>Hydropsyche</i> sp.	11	-
<i>Oecetis</i> sp.	1	1
<i>Oxyethira</i> sp.	1	-
<b>Mollusca</b>		
Bivalvia		
Undetermined Bivalvia	1	-
	38	

**Comment**

**Response**

**Appendix 10b**

Qualitative benthic macroinvertebrate taxa list and number of individuals counted from 20-discrete-dipnet sweeps upstream and downstream of E. I. Dupont – Trailridge Mine and collected July 18, 2005.

	Control Site	Test Site
<b>Annelida</b>		
Oligochaeta		
<i>Eclidrilus</i> sp.	3	1
<i>Limnodrilus hoffmeisteri</i>	1	-
<i>Pristina aequiseta</i>	1	-
<i>Pristinella longidentata</i>	1	-
<i>Pristinella osborni</i>	1	-
Tubificidae	10	-
<b>Arthropoda</b>		
Crustacea		
Amphipoda		
<i>Crangonyx</i> sp.	9	-
Insecta		
Coleoptera		
Carabidae	1	-
<i>Dubiraphia vittata</i>	1	-
Elmidae	1	-
<i>Stenelmis</i> sp.	15	-
Diptera		
Ceratopogonidae	1	2
Chironomidae	2	4
<i>Chlorotabanus</i> sp.	1	-
<i>Cricotopus albiforceps</i>	-	84
<i>Cryptochironomus</i> sp.	-	1
<i>Hemerodromia</i> sp.	1	-
<i>Labrundinia pilosella</i>	1	-
<i>Nitthauma</i> sp.	-	3
<i>Orthocladus annectens</i>	1	-
<i>Polypedilum halterale</i> grp.	1	-
<i>Polypedilum illinoense</i> grp.	2	3
<i>Rheocricotopus robacki</i>	-	1
<i>Simulium</i> sp.	2	-
<i>Stenochironomus</i> sp.	1	-
<i>Thienemannimyia</i> grp.	6	-
Ephemeroptera		
<i>Maccaffertium</i> sp.	-	1
<i>Pseudocloeon</i> sp.	1	-
Megaloptera		
<i>Corydalus cornutus</i>	-	1
Odonata		
<i>Argia sedula</i>	2	-
Coenagrionidae	6	-
<i>Hetaerina</i> sp.	2	-
Libellulidae	1	-
Trichoptera		
<i>Cheumatopsyche</i> sp.	11	-
<i>Chimarra</i> sp.	-	2
<i>Hydropsyche</i> sp.	11	-
<i>Oecetis</i> sp.	1	1
<i>Oxyethira</i> sp.	1	-
<b>Mollusca</b>		
Bivalvia		
Undetermined Bivalvia	1	-

**Comment**

**Response**

**The Bioassay of the E. I. DuPont Trailridge Mine effluent sampled on July 18, 2005, NPDES #FL0000051.**

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5 3 F L 0 0 0 0 0 5 1 # # 0 5 0 7 1 8			# B	# S	# 2

Remarks

#

**The Priority Pollutants Analysis for Bioassay of the E. I. DuPont Trailridge Mine effluent sampled on July 18, 2005, NPDES #FL0000051.**

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5 3 F L 0 0 0 0 0 5 1 # # 0 5 0 7 1 8			# X	# S	# 2

Remarks

#

**Biological Analyses of the E. I. DuPont Trailridge Mine effluent sampled on July 18, 2005, NPDES #FL0000051.**

Fill Out This Section For All Surface Water Discharger Inspections(CEI, CSI, CBI, PAI, XSI-RI Optional)

Transaction Code	NPDES NUMBER	YR/MO/DA	Insp Type	Inspector	Fac Type
1 N 2 5 3 F L 0 0 0 0 0 5 1 # # 0 5 0 7 1 8			# S	# S	# 2

Remarks

#

**Comment**



June 4, 2012

Sent via email: [heidi.x.firstencel@usace.army.mil](mailto:heidi.x.firstencel@usace.army.mil)

U.S. Army Corps of Engineers  
Alaska District, Regulatory Division  
ATTN: Heidi Firstencel  
Juneau Field Office  
8800 Glacier Highway, Suite 106  
Juneau, AK 99801

Re: POA-1988-0269-2 Hawk Inlet

Dear Ms. Firstencel:

Please accept the following comments on the above-referenced fill permit application submitted by Hecla Greens Creek Mining Company (Hecla) for the "Stage 3 Tailings Dump Expansion" located within the Admiralty Island National Monument and Tongass National Forest. Below are the Southeast Alaska Conservation Council's (SEACC) comments on this project.

BL.1.001

According to the Draft Environmental Impact Statement (DEIS) prepared by the Forest Service for the expansion of Hecla's tailings dump, the Corps of Engineers is a cooperating agency on this project and responsible for deciding whether to issue the 404 permit necessary for expansion of Hecla's tailings dump. DEIS at 1-19, 1-20. Like the Forest Service, the Corps of Engineers needs to comply with federal law, as well as orders requiring tribal consultation, environmental justice considerations, and minimization of impacts to aquatic resources.

BL.1.002

The DEIS also informs us that the Corps of Engineers will be relying on the Forest Service's NEPA analysis to support its decisions. Unfortunately, because of the inadequacy of the DEIS, we don't believe the Corps of Engineers can do so. As we write in our comments to the Forest Service (at p.2):

The DEIS lacks any discussion, as required by agency regulations, of the short- and long-term costs to Hecla from implementing any of the action alternatives and proposed mitigation measures or an evaluation of the effect of these costs on the economic viability of the mining operations as required by agency regulations. See 36 CFR 228.80(b)(2)((ii)(2011)). In effect, two of the action alternatives (C and D) were developed to minimize the amount of surface disturbance within the Monument and assure that Hecla's mining operations are compatible to the maximum extent feasible, with the protection of Monument resources. The lack of detailed cost information or an evaluation of the practicability of these alternatives in the DEIS prevents the Forest Service, Corps of Engineers and

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**Response**

**Comment ID: BL.1.001**

Comment noted.

**Comment ID: BL.1.002**

The regulations in 36 CFR 228.80(c)(2)(ii) require the authorized officer to consider the long- and short-term costs of mitigation measures in the context of the economic viability of the operations. The regulation does not indicate that this consideration must be included as part of the NEPA analysis. Based on comments received from HGCMC, the authorized officer has no indication that any of the mitigation measures or alternatives would jeopardize the economic viability of the Greens Creek operation. NEPA regulations do not require a cost-benefit analysis.

It is important to note that alternatives were developed using information typical for a scoping-level study for mining operations. The result is that each of the alternatives carried forward was economically feasible and therefore "practicable." The Forest Service, the USACE, and the public are therefore free to base the comparison of alternatives on environmental effects without concern about the costs.

**Comment ID: BL.1.003**

The EIS has been modified throughout to reflect the current status of the APDES permit (AK0043206). Sections 1.2, 1.8.3.3, 2.4.4, and 3.5.2.1, among others that refer to the discharge permit, have been modified to reflect that the 2005 NPDES permit conditions have been administratively extended until the permit is reissued.

The Forest Service and USACE have reviewed all the letters cited in this comment. They are included as a part of the public record.

The USACE has no authority over the permit reissuance process and cannot compel the USEPA or ADEC to require particular treatment technologies, dilution methods, or monitoring requirements associated with the permit. Since the discharge is and will continue to be permitted by agencies with authority for CWA Section 402 compliance, we consider the discharge to be protective of water quality in Hawk Inlet and its designated beneficial uses, including the propagation of fish, shellfish, and other aquatic life and wildlife, for the purposes of this analysis. As such, the EIS does not consider alternative discharge or treatment scenarios.

**Comment**

**Response**

BL.1.002  
cont.

public from determining which action alternative is the least environmentally damaging practicable alternative.

BL.1.003

In December of last year, SEACC notified the Forest Service that direct discharge of toxic pollutants into a mixing zone in Hawk Inlet was no longer necessary and supplemented our earlier scoping comments with information regarding the potential mitigation measure. See Letter from SEACC to Monument Ranger VanOrmer (Dec. 9, 2011). With this letter we attached a PDF Portfolio that included SEACC’s Informal Request for Review of APDES AK0043206 and Statement in Support of Request; Director Bonnet’s response, which stayed the permit’s effective date and extended the EPA- issued permit AK00432006 (2005); our follow up letter to the Director; and, a letter from Dr. David M. Chambers of the Center for Science in Public Participation that identified demonstrated treatment technology, approved by ADEC and EPA, that eliminate the necessity for mixing zones containing toxic levels of pollutants in Hawk Inlet.

BL.1.004

The DEIS did not identify or evaluate this “flow augmentation” alternative to direct discharges from the tailings dump, with associated mixing zone, into Hawk Inlet, or the potential for this alternative treatment approach to mitigate adverse environmental consequences from the continuous discharge and loading of pollutants into Hawk Inlet. In addition, because the discussion in the DEIS at 3.5.2 with regard to current regulation of wastewater discharged into Hawk Inlet is inaccurate, we submit all of the above-referenced documents and request they be incorporated into the Corps of Engineers project planning record for this permit.

BL.1.005

Another inadequacy of the Forest Service’s DEIS is its discussion of mitigation when defining the scope of the proposed action, discussing alternatives to the proposed action, as well as consequences of those alternatives. See 40 C.F.R. §§ 1508.25(b), 1502.14(f), and 1502.16(h). The lack of a reasonably complete discussion of possible mitigation measures or mitigation alternatives to prevent or minimize adverse impacts on Monument values, particularly the irreparable loss of customary and traditional uses by Angoon and Hoonah residents and the Auk Kwaan of Juneau of Hawk Inlet/Greens Creek in this DEIS undermines the “action-forcing” function of NEPA.

BL.1.006

CEQ regulations implementing NEPA define “mitigation” as including “[c]ompensating for the impact by replacing or providing substitute resources or environments.” 40 C.F.R. § 1508.20(e). As the Corps of Engineers recognizes, mitigation is an important aspect of its review and balancing process during its public interest review of the draft permit. See 33 C.F.R. § 320.4(r). We urge the Corps of Engineers to consult directly with the federally recognized Tribal governments in Angoon and Hoonah about reasonable and justified compensation packages for the irreversible impacts to their customary and traditional uses of Hawk Inlet and the surrounding lands from past, present, and reasonably foreseeable future development of the Greens Creek Mine. Because two of the action alternatives (C and D) could also adversely affect the land surrounding Young Bay, the Forest Service should also consult with the Auk Kwaan, the original occupants in Juneau.<sup>1</sup> These packages should be disclosed and evaluated in a

<sup>1</sup> While the DEIS references Goldschmidt and Haas (1998), a reprint of the authors’ 1946 Report by the Sealaska Heritage Institute and University of Washington Press as *Haa Aani, Our Land: Tlingit and Haida Land Rights and Use. Possessory Rights of the Natives of Southeastern Alaska*, Tetra Tech apparently didn’t read the report. According to this study, “The natives of Juneau . . . include in their territory Hawk Inlet and the whole of SEACC Comments & Attachments  
On POA-1988-0269-2 June 4, 2012

**Comment ID: BL.1.004**

Please see the response to Comment BL.1.003 and the Forest Service responses to comments BL.0.007 and BL.0.008.

The referenced documents have been incorporated into the project record.

**Comment ID: BL.1.005**

The EIS discusses mitigation measures in compliance with the regulations. A summary of the mitigation measures is provided in Table 2.6.2, which also identifies the sections of the EIS where more detailed discussions of the mitigation measures can be found. This comment does not provide specific information regarding why the commenter believes that the mitigation discussions are not reasonably complete.

The EIS clearly discloses the area that would be lost to subsistence activities for each alternative. Because the area lost is a small percentage of similar available land and mitigation will protect against further loss, the EIS concluded that impacts on subsistence would be minimal. The Forest Service does not consider mining activities to be an irreparable loss of traditional uses in Hawk Inlet. The EIS acknowledges the loss of traditional use in the mine area during operations and has included mitigation in the form of requiring the proponent to conduct additional research into traditional uses in the area.

**Comment ID: BL.1.006**

We do not find that replacement or substitute resources are necessary or warranted, based on consultation with the local tribal and non-tribal entities conducted by the Forest Service.

HGCMC’s funding the completion of the Thayer Creek hydro project for Angoon or funding the connection of Hoonah to the intertie would not replace or substitute “resources or environments” impacted and is unrelated to HGCMC’s GPO.

Additional cleanup of the 1989 concentrate spill at the ore loading facility is under the jurisdiction of the State of Alaska and, if warranted, would need to be addressed through their contaminated sites program.

**Comment**

**BL.1.006 cont** supplemental DEIS. Appropriate compensation could include Hecla funding completion of the Thayer Creek hydro project for Angoon, funding the connection of Hoonah to the intertie that was extended to the Greens Creek Mine several years ago, and additional cleanup of the 1989 concentrate spill at the ore loading facility.

**BL.1.007** Compounding the problems noted above is the Juneau-centric focus of the so-called socioeconomic analysis in the DEIS.<sup>2</sup> This constricted analysis prevents the Forest Service from fulfilling its obligation to identify and address the social, health, and environmental effects of this proposal borne disproportionately by both the Angoon and Hoonah communities.

**BL.1.008** Another example of the inadequacy of the DEIS analysis is the lack of an accurate description of the physical characteristics and stream habitat conditions for Tributary Creek. The DEIS does not disclose the significant influence of this stream's riffle and pool complexes on its habitat values. See DEIS at 3-81, 3-82.<sup>3</sup> This is critical information because, under the Section 404(b)(1) guidelines, the Corps of Engineers should attempt to avoid damaging special aquatic sites, including riffle and pool complexes. See 40 CFR §§ 230.3(q-1), 230.10(a)(3), 230.45. The failure to disclose and evaluate the effects of the alternatives on Tributary Creek's riffle and pool complexes violates NEPA and the Clean Water Act's Section 404(b)(1) guidelines. Again, preparation of a supplemental DEIS for public comment is required that contains this vital information and analysis.

**BL.1.009** Given its responsibilities under NEPA as a cooperating agency, we would have hoped that the information disclosed and analyzed in the DEIS would be sufficient to support the Corps of Engineer's decisionmaking processes. Given the inadequacies of the DEIS, we urge the Corps of Engineers to inform the Forest Service of the need to supplement the DEIS.

Thank you for your attention to these comments.

Best Regards



Buck Lindekugel  
Grassroots Attorney

Mansfield Peninsula." *Id.* at 37. The section describing the territory of the Auk (Juneau) and Taku (Douglas) also cites a map by Krause that identifies "the only villages in Auk territory besides the city of Juneau are on Young Bay on Admiralty Island and on the mainland at Swanson Harbor." *Id.*

<sup>2</sup> SEACC's submitis for the record Power, The Role of Metal Mining in the Alaskan Economy (2002).

<sup>3</sup> See 2008 Aquatic Biomonitoring Report

([http://www.adfg.alaska.gov/static/home/library/pdfs/habitat/09\\_02.pdf](http://www.adfg.alaska.gov/static/home/library/pdfs/habitat/09_02.pdf)). The most recent version of this report also mentions that samples were collected from riffle areas

(<http://dnr.alaska.gov/mlw/mining/largemine/greencreek/pdf/gc2011bio.pdf>).

SEACC Comments & Attachments

On POA-1988-0269-2 June 4, 2012

**Response**

We encourage the tribes to work directly with HGCMC and the State on the issues raised in these comments. The Forest Service has had several consultation meetings and we are willing to have additional meetings to further explain actions that are and are not within our authority.

**Comment ID: BL.1.007**

The socioeconomic effects discussion focuses on where the effects of the operation occur, which is primarily Juneau. The socioeconomic section discloses that the majority of the workers employed at the mine reside in Juneau and presents current unemployment rates and poverty levels both in the City and Borough of Juneau and in the Hoonah–Angoon Census Area (see Section 3.18.2). Additional socioeconomic data and recognition of community concerns over unemployment, poverty levels, and population decline in Angoon, as well as the fact that Angoon realizes little benefit from the mine, have been added to Section 3.18.2.

**Comment ID: BL.1.008**

Pool and riffle features have been added to the description of Tributary Creek in Section 3.7.1.1. The quality of the habitat that could be lost is considered in the estimate of coho salmon smolt production, which is quantitative in its assessment.

**Comment ID: BL.1.009**

The USACE respectfully disagrees with the assertion that the EIS contains process and factual flaws. We also disagree about the need for a supplemental DEIS and public review. Some changes were made to the DEIS based on comments, but the changes do not rise to a level of significance that would warrant a supplemental EIS.

**Comment**

**Response**

**ATTACHMENTS TO SEACC'S COMMENTS  
ON POA-1988-0269-2 Hawk Inlet  
JUNE 4, 2012**

The documents listed below were combined into a PDF Portfolio and submitted with our comments on POA-1988-0269-2.

1. Power, The Role of Metal Mining in the Alaskan Economy (2002)
2. Letter from SEACC to Monument Ranger VanOrmer (Dec. 9, 2011).
3. SEACC's Informal Request for Review of APDES AK0043206 (Oct. 13, 2011)
4. SEACC's Statement in Support of Request for Informal Review (Oct. 13, 2011)
5. Director Bonnet's response to SEACC (Oct. 28, 2011)
6. Letter from Dr. David M. Chambers of the Center for Science in Public Participation to SEACC (Nov. 18, 2011)
7. Letter from SEACC to ADEC APDES WWP Manager Morgan (Dec. 8, 2011)
8. Memo from Timothy, ADF&G Southeast Regional Supervisor (Sept. 26, 2011)(detailing observed leaching from legacy production rock at Site C into Greens Creek)
9. Letter from Archibald, SEACC to Grant, ADEC (Sept. 14, 2011)(SEACC's Nominations for 303d Listing)
10. ADEC's 11-11-11 Response to CORMIX Modeling PRR at 19; *see also* ADEC's 12-23-11 Response to 2<sup>nd</sup> CORMIX Modeling PRR
11. ADEC's 12-23-11 Response to 2<sup>nd</sup> CORMIX Modeling PRR