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Colonel Jefferson Ryscavage
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Wilmington District
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Attn: Tom Walker
Project Manager
File Number 2001-10096

Subject: COE Regulatory Final Environmental Impact Statement (FEIS) for "PCS Phosphate Mine Continuation"; Aurora, Beaufort County, NC; CEQ# 20080213; ERP# COE-E67005-NC

Dear Colonel Ryscavage:

Pursuant to Section 102(2)(C) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, EPA Region 4 has reviewed the above-referenced U.S. Army Corps of Engineers (COE) regulatory Final Environmental Impact Statement (FEIS). This FEIS evaluates the environmental consequences of the Applicant's (Potash Corporation of Saskatchewan Phosphate Division: PCS) proposed expansion of its phosphate mining operations adjacent to the Pamlico River, South Creek and associated tributaries, north of Aurora in Beaufort County, North Carolina.

EPA has previously provided NEPA comment letters on the Draft EIS (DEIS) and its Draft Supplement (DSEIS). Our December 28, 2007, DSEIS letter continued to describe our environmental objections to this mine continuation project, as proposed. Similarly, from a Clean Water Act (CWA) section 404 permitting standpoint, the EPA Region 4 Wetlands Regulatory Section also objected to this proposal pursuant to CWA Section 404(q), Part IV, paragraphs 3(a) and 3(b), in letters dated February 9 and March 6, 2007, respectively. The Wetlands Regulatory Section also provided pre-FEIS comments in a April 30, 2008, letter regarding the significant natural heritage area on the Bonnerton tract, the scope of the section 404 silviculture exemption, and the economic evaluation/Least Environmentally Damaging Practicable Alternative (LEDPA) determination. We offer the following comments on our current review of the FEIS.

Background

In November 2000, PCS submitted to the COE Wilmington District an application for the mine continuation project in the Aurora area. PCS modified the original permit application in response to public notice comments to further reduce impacts to federal waters of the U.S. This modified application was the subject of the COE's regulatory DEIS (10/2006), which described the No Action Alternative and nine action alternatives. PCS's application evaluated in the DEIS was for mining of the NCPC tract involving 2,408 acres of mining impacts to waters of the U.S. (*i.e.*, Applicant Preferred or AP alternative). Among the alternatives, the DEIS included three basic tracts (NCPC, S33 and Bonnerton tracts) with varying impacts to waters of the U.S. as holistic mining plans, including the Applicant's expanded AP alternative (EAP) with 5,667 acres of mining impacts of waters of the U.S. The public review of the DEIS and further discussions with the Applicant concerning economic practicability lead to the development of the DSEIS (11/2007), which introduced new Alternatives L and M. Alternative L follows the SCR boundary (see section 2.4.1.2) on the NCPC tract and defines a new boundary on the Bonnerton and S33 tracts. Alternative M was developed by the Applicant and consists of a boundary with three more years of mining on the NCPC tract than the L alternative and is identical to the L alternative on the Bonnerton and S33 tracts. In an April 25, 2008, letter, the Applicant requested its application be modified to request a permit for Alternative L.

Impacts & Alternatives

EPA's primary concerns with the proposed continuation of phosphate mining at Aurora are the associated wetland and stream impacts to watersheds supporting the Albemarle Pamlico Estuary system over an extended timeframe, together with the cumulative impacts of ongoing mining. EPA understands the rationale behind the development of the new Alternatives L and M through the NEPA process, but has concerns over the level of impacts to waters of the U.S. associated with these alternatives.

EPA appreciates that several alternatives were considered by the Applicant and COE during the NEPA process and documented in the EIS. In the FEIS, these alternatives were the AP, EAP, SJA, SCR, DL1, S33AP, L and M alternatives. Of these, EPA has identified the S33AP Alternative, which the COE has determined to not be practical (see below), as the NEPA "environmentally preferable alternative," because it substantially reduces the wetland impacts for the proposed mining continuation. Although the acreage of impacted wetlands for S33AP is not insignificant (1,123 acres: ac), this action alternative impacts the fewest wetland acres. We believe that impacts to wetlands north of NC33 will have a potentially greater impact to the watersheds supporting the nationally significant Albemarle Pamlico Estuary system. Moreover, based on EPA's economic evaluation of practicability, we also find that S33AP is economically practicable (see *Economic Considerations* section and *Detailed Comments* enclosure of this letter). We also note that S33AP would nevertheless impact a high number of stream sections (33,486 linear feet: lf). Any implementation of S33AP should further avoid and minimize stream and wetland impacts.

The FEIS (5/2008) provided additional information on Alternatives L and M. The FEIS lists Alternatives SCRA[1], SCRB, SJAB, DL1B, S33AP and the No Action alternative as not being practicable, while finding that Alternatives AP, EAPA, EAPB, SJAA, L and M were practicable. The COE indicates that of the alternatives identified as practicable, the L alternative is the most restrictive and therefore avoids the most aquatic resources. Alternative L would impact approximately 4,135 acres of waters of the U.S. over a 37-year mining span. The 11 community types within the impacted waters of the U.S. include pocosin-bay forests (264 ac), bottomland hardwood forests (73 ac), hardwood forests (1,075 ac) as well as 29,288 linear feet of perennial and intermittent streams. These community types are located within an approximate 11,909-acre mine advance distributed throughout the project area. Impacts of Alternative M include 4,592 acres of waters of the U.S. and 36,990 linear feet of streams over a 41-year mining span.

The COE does not identify a NEPA "preferred alternative" or a LEDPA in the FEIS. However, Alternative L was considered the Applicant's "Proposed Action" in the COE's FEIS and Public Notice (pg. e). PCS's previous mining application was for the AP (NCPC tract only).

"Modified Alternative L"

While we believe that S33AP is the "environmentally preferable alternative", EPA prefers Alternative L (of the alternatives determined to be practicable by the COE in the FEIS) from a NEPA perspective since it avoids valuable wetland habitat, mainly on the NCPC tract. The COE's economic analysis indicates Alternative L is the alternative which would allow the least environmental impacts and still be economically practicable (pg. 2-32). EPA agrees that Alternative L is economically practicable (see *Detailed Comments*); however, we also believe that it could be improved environmentally through further avoidance of waters of the U.S.

Nevertheless, we acknowledge that Alternative L does avoid a large portion of the important tidal creeks and some of their associated watersheds on the NCPC tract and an approximate 58-acre area of biocommunity type 7 ("wetland hardwood forest") on the Bonnerton tract, as shown on Figure 4-7b (Vol. I). This is the eastern portion of an approximate 271-acre plot within the Bonnerton base tract that has been designated as a "nationally significant" Significant Natural Heritage Area (SNHA) by the North Carolina Natural Heritage Program (NHP).

While we appreciate the Applicant's avoidance of this eastern portion of the SNHA, EPA strongly believes that the entire SNHA tract should be avoided. Therefore, in order for Alternative L to be improved environmentally, we recommend that Alternative L be further modified to also exclude the remaining approximate 213-acre component of the SNHA tract from the proposed mining. For convenience of reference, we have designated this modified alternative as "Modified Alternative L". Overall, EPA considers "Modified Alternative L" to be an economically practicable and

[1] The 'A' and 'B' portions of 'SCRA' and 'SCRB' indicate a sequencing for the SCR Alternative. Other sequenced alternatives were also labeled this way.

environmentally reasonable alternative that is more environmentally preferable than Alternative L.

In addition to the exclusion of the remaining 213-acre portion of the SNHA from mining, EPA also recommends that "Modified Alternative L" follow the original SCR boundary on the S33 tract rather than the proposed Alternative L boundary (this would approximately reduce wetland impacts by an additional 38 acres and stream impacts by 10,167 lf). Since we understand that the main purpose for developing the L alternative was to allow 15 years of mining north of NC33, it remains unclear why the SCR avoidance boundary on the S33 tract was decreased for Alternative L. We find no information in the FEIS which would indicate the COE has determined that the use of the original SCR boundary in the S33 tract would fail to make Alternative L economically practicable. In addition, the COE's response to the EPA comment on this issue in our DSEIS letter (Response R6, Appendix J) did not clarify our understanding of the need for this mining expansion on S33.

Avoidance, Minimization & Mitigation

Even with the exclusion of the SNHA from Alternative L and a return to the SCR boundary on the S33 tract, it is nevertheless clear that significant impacts to wetlands (3,864 ac) and streams (19,121 lf) would still occur by mining the Alternative L area over an extended period of time. Therefore, for any implementation of "Modified Alternative L" to be successful, we strongly believe the following actions would need to occur: 1) the ongoing process of minimization and avoidance of waters of the U.S. and the implementation of acceptable mitigation and reclamation of mined areas would continue to be applied to the remaining acreage; 2) the Wilmington District would continue its commitment to oversight of the reclamation process in a timely manner; and 3) strict compliance with mining Best Management Practices (BMPs) would be used during the permitted mining. In addition, for the excluded SNHA, the permitted mining in the surrounding areas must also not be allowed to indirectly affect the SNHA. Such indirect impacts could include disruption of its hydrology, the routing of mining stormwater runoff into the SNHA area, and degradation of the SNHA connecting areas such that they are no longer providing the connectivity function. To ensure success, the COE should provide a commitment to continue successful implementation of the avoidance, minimization and mitigation processes required under section 404(b)(1) in its prospective Record of Decision (ROD) for this EIS.

Because the SNHA would be wholly excluded from mining under "Modified Alternative L," silvicultural practices should not occur in this area until a final project decision is made. Logging on the SNHA site should be avoided since timbering degrades the SNHA's wetland value and national significance. We provided additional comments on the related section 404 silviculture exemption in the *Detailed Comments* and in EPA's April 30, 2008 letter.

If the S33 tract is mined under the S33AP Alternative or as part of the "Modified Alternative L", EPA recommends the completion of a detailed mitigation plan for impacts to the S33 tract well in advance of any plans to mine this area. The potential economic reopener clause may be an appropriate means to address this issue, if this tract were to be mined under "Modified Alternative L". EPA also recommends that the reopener clause, or other suitable measures, remain an option for future adaptive management needs. We also believe compensation for impacts to mature, high quality wetlands would require greater than the 2:1 mitigation ratio specified in the current mitigation plan. We understand the overall stream mitigation ratio of 1.8:1 is based on the 2003 Stream Mitigation Guidelines ratio determination methodology utilizing stream quality ratings of "poor," "good," and "excellent". We support the use of this methodology to determine appropriate stream compensation, but recommend the stream quality ratings be confirmed by the COE.

Significance of the SNHA Resource

The need to preserve the entire SNHA tract is based on the NHP designation (*i.e.*, nationally significant SNHA), the community types represented, and the contiguous nature of the SNHA. The NHP rates SNHAs by significance as national, state, regional and county. The "nationally significant" rating of the Bonnerton nonriverine wetland hardwood forest SNHA means the NHP considers this area to one of the five best examples of this community type in the nation. The size and maturity of this area are critical to the NHP rating.

Valuable biocommunity types are represented in the nationally significant SNHA. In addition to the eastern portion (58 ac) of the SNHA (within Porter Creek headwaters) already excluded from mining by Alternative L, the remaining 213 acres primarily consist of a western portion (135 ac) and a northwestern portion (45 ac). There are also two secondary connecting sections (totaling approximately 33 ac) for continuity of the wetland hardwood forest community. Of these, the most mature plots are the eastern portion within the Porter Creek headwaters and the western portion across from the Porter Creek area, which both have stands of mature (75-100 years old) "wetland hardwood forest" (biocommunity type 7). The two secondary areas of different biocommunity types serve to connect the main areas. Biocommunity type 5 ("wetland scrub-shrub") is found in the secondary area between Porter Creek and the western area and the biocommunity type 6 ("wetland pine plantation") is found in the portion between the western and northwestern areas. The northwestern area also contains biocommunity type 7, and was added to the SNHA after the recent NHP site visit. Although this area is not as mature as the other areas, the NHP concluded it should be added to the SNHA due to the rarity of the community type. The NHP considers this area to also be highly significant and to have good recovery potential over time. (We also note that if the biocommunity type 8 area ("wetland mixed pine-hardwood forest") located west of the northwestern portion of the SNHA was not mined due to logistical mining restrictions, it would provide an excellent opportunity for mitigation enhancement/rehabilitation, as recommended by the NHP.)

Beyond the functional significance of these biocommunities in terms of water quality and habitat value, the contiguous nature of the SNHA enhances its value. While not all of the SNHA acreage consists of wetland hardwood forested wetlands (*e.g.*, the western portion includes 20 acres of Suffolk scarp and the two secondary connection areas include biocommunity types 5 and 6), the interconnection of the three primary plots by the secondary areas makes the SNHA a functional unit of sufficient size to be sustainable. As a contiguous unit, this refuge "island" surrounded by permitted mining impacts, would allow for wildlife movement, foraging, and reproduction. In order to ensure this continuity, we recommend that the two secondary connection areas be maintained (if used as temporary crossing sites for mining equipment) so as to allow them to retain their connectivity functions for the wetland hardwood forest areas. The mast-producing stands of this "island" could also serve as a future seed source for the surrounding areas during post-mining reclamation. We commend the Applicant for its appreciation of the importance of SNHAs as supported by the statements in its mitigation plan encouraging preservation that will protect or extend SNHA(s) along the South Creek corridor.

Economic Considerations

We appreciate the COE's considerable efforts to evaluate the economic practicability component of the LEDPA requirement. However, we continue to have concerns with some aspects of the approach discussed in Section 2.7 of the FEIS. As we have stated on numerous occasions, the decision by the COE to incorporate the Applicant's position on how to average the cost of the mine relocation to a new tract, has made it very difficult to avoid some of the important project wetland areas in the LEDPA process. We acknowledge that the avoidance of an additional 213 acres on the Bonnerton tract under the "Modified L Alternative" would reduce the Applicant's mining north of NC33 to less than 15 years. However, our review of the dragline plan layout map for Alternative L (Vol. II, App. D) indicates this would only reduce part of years 11 and 12 for a likely overall reduction of approximately one year of mining. We understand this would not satisfy the COE's LEDPA requirement of 15 years north of NC33, but we believe such a reduction would not be an unreasonable alternative modification – especially considering the remaining concerns we have over the economic evaluation approach used to determine the LEDPA (see below). With the adjustments in mining on Bonnerton and S33 incorporated in "Modified Alternative L," the overall timeframe for mining would likely still exceed 35 years (instead of 37 years for Alternative L).

EPA's review of the FEIS included our National Center for Environmental Economics (NCEE) in Washington, DC. NCEE and other EPA staff have been involved extensively in economic practicability discussions with the COE, including the most recent meeting (1/30/08) with the COE and the Pamlico Tar River Foundation and its economist, to further discuss PCS economic practicability issues. In general, EPA does not believe considering costs in isolation, *i.e.*, without considering revenues, is a useful means to evaluate the economic practicability of the project alternatives. Comparing costs to revenues does not consider an applicant's financial standing or market share any

more than looking only at costs. As is pointed out numerous times in the FEIS, phosphate prices are determined by the global and national market (and not influenced by the Applicant's production levels). Comparing estimated costs (which the Applicant can control) to expected market prices (which the firm does not control) simply adds context to the cost numbers and allows for better decision making.

An appropriate method to evaluate practicability is by calculating the annual discounted net present value (NPV) of the stream of costs and revenues over the lifespan of each alternative. The NPV analysis is theoretically and empirically sound and EPA is legally required to use such analysis when evaluating all new regulations. Using the discounted NPV, projects of different lengths can be compared on equal terms. EPA (NCEE) has prepared an NPV table using OMB mandated discounted rates of 3 percent and 7 percent comparing the project alternatives. This summary table, with additional discussion on the economic practicability of the alternatives, is included in EPA's comments on the COE's responses to our DEIS comment letter provided in the enclosed *Detailed Comments*. We are available to discuss information concerning this summary table and how it was prepared.

Based on these calculations and as shown in our summary table, EPA believes that more alternatives appear to be practicable than those determined by the COE (*i.e.*, the COE believes that Alternatives AP, EAPA, EAPB, SJAA, L and M are practicable), including SCRA and SCRB, S33AP, SJAB and DL1. In fact, we find that all alternatives considered in the FEIS, except the No Action Alternative (*i.e.*, all the action alternatives), are economically practicable. Based on this analysis, the "Modified Alternative L" would also be an economically practicable alternative, despite its slightly shorter mining term. Since "Modified Alternative L" allows more mining than the SCR alternative (but less than the original Alternative L), we strongly believe that "Modified Alternative L" will be economically practicable and will have a positive NPV greater than the SCRA and SCRB Alternatives, but slightly less than the original Alternative L. With detailed cost and annual production estimates, it would be relatively straightforward to calculate a more precise value.

Other Comments

In addition to these primary concerns, EPA has also reviewed the COE's responses in the FEIS to our EPA NEPA letter on the DEIS (pg. J-111.A.1) and DSEIS (pg. J-111.B.1), as well as the EPA Wetlands Regulatory Section's letter pursuant to CWA Section 404(q), Part IV, paragraph 3(a) (pg. J-111.A.2) and the EPA Regional Administrator's letter pursuant to CWA Section 404(q), Part IV, paragraph 3(b) (pg. J-111.A.3). Copies of these letters and the COE's responses to comments are found in Appendix J of Volume IV. Our follow-up comments on selected responses, as well as other project topics, are provided in the enclosed *Detailed Comments*.

Summary

EPA finds that the proposed continuation of PCS mining at Aurora would have significant and long-term, direct and cumulative impacts to biocommunities in various waters of the U.S. which support the nationally significant Albemarle Pamlico Estuary System. Accordingly, we continue to have environmental objections to this project, as proposed, under Alternative L (Applicant's Proposed Action). However, we believe that S33AP is the NEPA "environmentally preferable alternative" and that Alternative L could be improved environmentally as "Modified Alternative L". EPA finds both to be economically practicable and, from an industry standpoint, both would allow the continuance of phosphate mining at Aurora for many years.

"Modified Alternative L" would avoid not only the eastern portion (58 ac) of the SNHA (Alternative L) but would also avoid the remaining acreage (approximately 213 ac) of the entire SNHA tract (approximately 271 ac). This alternative would also use the original SCR boundary for S33, as opposed to the additional wetland (38 ac) and stream (10,167 lf) impacts to this area proposed in Alternative L. EPA believes the SNHA to be an aquatic resource of national importance. The NHP-designated "nationally significant" SNHA includes nonriverine wetland hardwood forest and other functional community types and, if excluded from mining, would continue to be a contiguous and sustainable refuge "island" of one of the most threatened of North Carolina's natural communities. EPA considers "Modified Alternative L" to be an economically practicable and environmentally reasonable alternative that is more environmentally preferable than new Alternative L. However, for any implementation of "Modified Alternative L" to be successful, it should be understood that the ongoing processes, such as avoidance and minimization of impacts to waters of the U.S., implementation of acceptable mitigation and reclamation, and use of mining BMPs would need to continue for the permitted mining. The COE should commit to such process continuance with appropriate monitoring in its ROD.

Overall, EPA believes that our remaining project issues with the proposed mining continuation at Aurora can be successfully resolved within the brackets of these comments and the S33 and "Modified Alternative L" alternatives. We stand ready to further discuss these comments and alternatives. However, if our remaining issues are not adequately resolved, EPA reserves the right to take further action on this project in accordance with its authority under Section 404 of the CWA.