



Rebecca Fox /R4/USEPA/US
05/05/2009 12:59 PM

To "Pace.Wilber" <Pace.Wilber@noaa.gov>
cc
bcc
Subject Re: acreages 1

Pace,

Could you give me wetland acreages on the Bonnerton area and in the NCPC area between Jacks and Jacobs. Don't worry about the southern NCPC area now. I suppose we could multiply by 47% for a quick and dirty estimate since that is how they have it listed. As you know, most of the Bonnerton area is wet but would still be good to know what you come up with for wetland acreage. Thanks! b

Becky Fox
Wetland Regulatory Section
USEPA
Phone: 828-497-3531
Email: fox.rebecca@epa.gov
"Pace.Wilber" <Pace.Wilber@noaa.gov>



"Pace.Wilber"
<Pace.Wilber@noaa.gov>
05/05/2009 12:40 PM

To Rebecca Fox/R4/USEPA/US@EPA
cc
Subject Re: acreages

Hi Becky.

All acres are total acres. Wetlands acres for Bonnerton would be pretty simple to calculate, but NCPC would be problematic. You probably know the details better than I do, but there apparently are issues with the wetland delineation at NCPC within the southern end--these areas are shaded on your map. To deal with these issues, NCPC and COE estimated a percent wetland then, to get acres, multiplied that percentage by the acres shown as shaded. I think the actual process was a bit more complicated than that. Anyway, I could fudge wetland acreage within these parts of NCPC, but they would be labeled as "ball park" until someone at PCS/CZR had an chance to refine them.

Pace

Fox.Rebecca@epamail.epa.gov wrote:

> Pace,
>
> Is that total acreages or wetland acreages? Thanks! b
>
> Becky Fox
> Wetland Regulatory Section
> USEPA
> Phone: 828-497-3531
> Email: fox.rebecca@epa.gov

> Subject

Re: acreages

> Hi Becky.

> An exact number is proving more difficult than I expected--I'm
> having a
> brain lapse. But I can give answers that are within a few
> percent . .
> . the Bonnerton area is 168 acres, the larger of the NCPC areas is
> about

> 405 acres, and the smaller (southern) area for NCPC is about 99
> acres.
> I'm still working on a more exact answer.

> Pace

> Fox.Rebecca@epamail.epa.gov wrote:

> Hey Pace,

> Just checking to see if you will be able to get me those
> acreage

> amounts

> soon. We are at the wire and need them as soon as
> possible...

> Thanks!

> b

> Becky Fox
> Wetland Regulatory Section
> USEPA
> Phone: 828-497-3531
> Email: fox.rebecca@epa.gov

> "Pace.Wilber"

> in the southern area -- between the ditch right
> below the large
> biocommunity 14 area in Jacobs DB to the avoided
> area at Jack's --
> basically the area between Jacks and jacobs
> also the area to be mined in the southern tip of
> NCPC -- that area is
> hatched as being 47% wetland
>
> Bonnerton
> NW area of SNHA that has WHF and the area to the
> west of there to the
> scarp
>
> this would be very useful for us if it is not
> too much trouble for
>
> you.

> if you have time to do it, we would need both
> total and wetland only
> acreages. Thanks! b

> Becky Fox
> Wetland Regulatory Section
> USEPA
> Phone: 828-497-3531
> Email: fox.rebecca@epa.gov

> --

> -----
> Pace Wilber, Ph.D.
> Atlantic Branch Chief, Charleston (F/SER47)
> Southeast Regional Office, NOAA Fisheries
> PO Box 12559
> Charleston, SC 29422-2559

> 843-953-7200
> FAX 843-953-7205
> pace.wilber@noaa.gov

> <http://sero.nmfs.noaa.gov/dhc/habitat.htm>

> --

> -----
> Pace Wilber, Ph.D.

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Rebecca Fox/R4/USEPA/US
05/06/2009 04:20 PM

To Mike_Wicker@fws.gov
cc
bcc
Subject Re: Fw: Question

We're talking 84 to 86% cumulative drainage basin reduction with Jacks and Porter's Creeks respectively... b

Becky Fox
Wetland Regulatory Section
USEPA
Phone: 828-497-3531
Email: fox.rebecca@epa.gov
Mike_Wicker@fws.gov



Mike_Wicker@fws.gov
05/06/2009 04:11 PM

To PLeonard@entrinx.com
cc Ron Sechler <ron.sechler@noaa.gov>, Rebecca
Fox/R4/USEPA/US@EPA, Pete_Benjamin@fws.gov
Subject Fw: Question

Paul,

Before you were on the conference call at PCS in Aurora EPA, NMFS, FWS had been discussing that tidal creeks were dependent on their watershed to supply flowing water to the portions of the creeks with net flow. We had been discussing that one cannot deprive a stream of 70 percent of its watershed and expect it to function normally (that watershed is important to a creek because it is the source of water flow).

Your name was mentioned and the assertion was made that creeks are not dependent on flow and are thereby independent of watershed impact. Are you comfortable with that representation?

Specifically do you believe that creek productivity is not dependent on flowing water contributed by its watershed?

I copied Becky Fox (EPA) and Ron Sechler (NMFS) who were also at the meeting and Pete Benjamin (FWS) with whom you talked with earlier today.

Thanks in advance for you response.

Mike Wicker



Pace.Wilber@noaa.gov
05/06/2009 11:46 PM

To: Rebecca Fox/R4/USEPA/US@EPA
cc
bcc
Subject: Re: acreages

Hi Becky.

Attached table has the acres by habitat for the additional areas.

Pace

----- Message from "Pace.Wilber" <Pace.Wilber@noaa.gov> on Wed, 06 May 2009 11:29:23 -0400 -----

To: Fox.Rebecca@epamail.epa.gov
v

Subject: Re: acreages
:

Hi Becky.

I'm about to go on travel. I should have this to you later this evening.

Pace

Fox.Rebecca@epamail.epa.gov wrote:

Pace,

Could you give me wetland acreages on the Bonnerton area and in the NCPC area between Jacks and Jacobs. Don't worry about the southern NCPC area now. I suppose we could multiply by 47% for a quick and dirty estimate since that is how they have it listed. As you know, most of the Bonnerton area is wet but would still be good to know what you come up with for wetland acreage. Thanks! b

Becky Fox
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"Pace.Wilber"
<Pace.Wilber@noa

a.gov>
To Rebecca
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05/05/2009 12:40
CC PM
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simple to calculate, but NCPC would be problematic. You probably know the details better than I do, but there apparently are issues with the wetland delineation at NCPC within the southern end--these areas are shaded on your map. To deal with these issues, NCPC and COE estimated a

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Pace,

Is that total acreages or wetland acreages? Thanks! b

Becky Fox
Wetland Regulatory Section
USEPA
Phone: 828-497-3531
Email: fox.rebecca@epa.gov

"Pace.Wilber"

<Pace.Wilber@noa

a.gov>

To

Fox/R4/USEPA/US@EPA

Rebecca

05/05/2009 11:43

cc

AM

Subject

Re: acreages

Hi Becky.

Sorry for the delay.

The addition at Bonnerton is 166.88 acres. At NCPC, the larger (more northern) addition is 407.05 acres and the smaller (more southern) addition is 98.21 acres. Total of the three is 672.14 acres.

Pace

Fox.Rebecca@epamail.epa.gov wrote:

Thanks Pace! Know all about those brain lapses... Just let me

know when you get the final #s. These help to give us a general

idea.

b

Becky Fox
Wetland Regulatory Section
USEPA
Phone: 828-497-3531
Email: fox.rebecca@epa.gov

"Pace.Wilber"

<Pace.Wilber@noa

a.gov>

To

Rebecca

Fox/R4/USEPA/US@EPA

cc

05/04/2009 03:45

PM

Subject

acreages

Re:

Hi Becky.

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. the Bonnerton area is 168 acres, the larger of the NCPC areas

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405 acres, and the smaller (southern) area for NCPC is about 99 acres.

I'm still working on a more exact answer.

Pace

Fox.Rebecca@epamail.epa.gov wrote:

Hey Pace,

Just checking to see if you will be able to
get me those
acreage

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soon. We are at the wire and need them as
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Thanks!

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Becky Fox
Wetland Regulatory Section
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Phone: 828-497-3531
Email: fox.rebecca@epa.gov

"Pace.Wilber"

<Pace.Wilber@noa

a.gov>

To

Rebecca

Fox/R4/USEPA/US@EPA

04/29/2009 08:49

cc

AM

Subject

acreages

Re:

Hi Becky.

I hope to have this done by mid-afternoon.
It's a busy

day,

but the
calculations should only take a few
minutes. Off to the
morning
meetings.

Pace

Fox.Rebecca@epamail.epa.gov wrote:

Thanks mucho Pace! See attached
maps. b

(See attached file: Acreage maps for
NMFS.ppt)

Becky Fox
Wetland Regulatory Section

USEPA
Phone: 828-497-3531
Email: fox.rebecca@epa.gov

"Pace.Wilber"

<Pace.Wilber@noa

a.gov>

To

Rebecca

Fox/R4/USEPA/US@EPA

04/28/2009 11:23

cc

AM

Subject

Re: acreages

Hi Becky.

I'd be happy to do the acreage
calculations. Is

there

anything

you

could draw on to show me the exact

areas?

Pace

Fox.Rebecca@epamail.epa.gov wrote:

Hi Pace,

You missed a fun meeting
yesterday... I was wondering how
difficult

it

would be for you to get us some
acreage #s, specifically

we

would like
to know the following:

NCPC
in the southern area -- between

the ditch

right

below the

large
biocommunity 14 area in Jacobs

DB to the

avoided

area at

Jack's --
basically the area between
also the area to be mined in

Jacks and jacobs

the southern tip

of

NCPC --

that area is
hatched as being 47% wetland

Bonnerton
NW area of SNHA that has WHF

and the area to

the

west of

there to the
scarp

us if it is not
too much

this would be very useful for
trouble for

you.

would need both
total and

if you have time to do it, we
wetland only
acreages. Thanks! b

Becky Fox
Wetland Regulatory Section
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--

Pace Wilber, Ph.D.
Atlantic Branch Chief, Charleston

(F/SER47)

Fisheries

Southeast Regional Office, NOAA

PO Box 12559
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Land Cover	Blotic ID	NCPC	NCPC 47%	Bonnerton
Stream Perennial	1B	0.0	0.0	0.0
Stream Intermittent	1C	0.4	0.0	0.0
Wetland Bottomland Hardwood Forest	3	1.3	0.0	2.9
Wetland Herbaceous Assemblage	4	12.2	18.7	0.0
Wetland Shrub - Scrub Assemblage	5	7.0	49.0	0.0
Wetland Pine Plantation	6	0.9	0.0	48.9
Wetland Hardwood Forest	7	101.3	13.6	55.5
Wetland Mixed Pine - Hardwood Forest	8	48.1	43.3	38.6
Wetland Pine Forest	9	19.0	0.0	0.1
Wetland Pocosin - Bay Forest	10	0.0	0.0	0.0
Wetland Sand Ridge Forest	11	0.0	0.0	0.0
Pond	12	5.3	0.0	0.0
Upland Herbaceous Assemblage	14	59.1	0.0	1.8
Upland Scrub - Shrub Assemblage	15	54.1	0.0	0.4
Upland Pine Plantation	16	3.9	0.0	5.7
Upland Hardwood Forest	17	1.2	0.0	4.8
Upland Mixed Pine - Hardwood Forest	18	14.3	0.0	2.5
Upland Pine Forest	19	15.0	0.0	0.0
Upland Sand Ridge Forest	20	0.0	0.0	0.0
Upland Agricultural Land	21	0.0	0.0	2.7
Upland Non-Vegetated/Maintained Area	22	37.6	0.0	3.0
Total Acres		380.7	124.6	166.9

Notes: 1. Acres for NCPC 47% have NOT been adjusted. Th
2. EPA provided two additions for NCPC, and they tota
The two NCPC columns listed here are similar to, but e
Refer to the CZR maps to see how the NCPC 47% are

Total
0.0
0.4
4.2
30.9
56.0
49.8
170.4
130.0
19.1
0.0
0.0
5.3
60.9
54.5
9.6
6.0
16.8
15.0
0.0
2.7
40.6
672.2

These are shown as shaded in the maps from CZR.
 Total 407.1 acres (northern) and 98.2 acres (southern).
 exactly the same, as those two additions.
 Area is divided among the northern and southern additions.



Linda Rimer/RTP/USEPA/US

05/07/2009 11:06 AM

To gdi2@cdc.gov, Jim Giattina/R4/USEPA/US@EPA, Tom Welborn/R4/USEPA/US@EPA, WilliamL Cox/R4/USEPA/US@EPA, Rebecca

cc

bcc

Subject Corps gives PCS qualified permit victory

You guys must already know this but I just heard about it.

Linda

Corps gives PCS qualified permit victory

Decision primarily backs local draft for mine growth

By TED STRONG

Staff Writer

A Wednesday decision by the U.S. Army Corps of Engineers' was a victory for PCS Phosphate, but not absolute.

A review by the Corps' Washington, D.C., office largely backed a decision by its Wilmington office to permit PCS Phosphate to expand its mine at Aurora by thousands of acres.

"They gave us a few minor to-dos," said Tom Walker, chief of the Corps' Wilmington field office. He described the changes as "nothing that really changes the flavor but just some things that strengthen the decision."

Corps officials must also hold a meeting with officials from the Environmental Protection Agency, the U.S. Fish and Wildlife Service, National Marine Fisheries Service and PCS.

Walker said that meeting could result in changes to the proposed outline of the expansion, but isn't likely to significantly alter it.

The EPA had requested the review by the Corps of Engineers' Washington, D.C., office after deciding the Corps' Wilmington office hadn't paid enough attention to the EPA's concerns.

The EPA has been relatively vocal about those concerns lately and took part in a meeting earlier this year with officials from the Corps, regulatory agencies and PCS in which it pitched a more limited expansion for the mine. The EPA raised similar issues when it asked for the extra review.

PCS has criticized the EPA for raising the concerns so late in a process that has proceeded for more than eight years.

The EPA's concerns echo worries from environmentalists.

They argue that the mine was planning to dig up wetlands it could afford to avoid as it expanded.

Those worries were among concerns environmentalists cited earlier this year when they appealed a key state certification PCS had received for the expansion. That appeal has yet to be decided, but is unlikely to delay mine expansion in the short-term.

Company officials have maintained that existing assessments of the economics of mining or avoiding wetland areas are solid.

The permitting delays worried county officials, who went to Washington, D.C. this week to lobby federal officials and spent \$50,000 in county money to hire a lobbyist. The PCS mine-and-plant complex in Aurora employs more than 1,000 people, and the company is a major part of the county's tax base.

County Manager Paul Spruill praised the Corps' move.



"Walker, William T SAW"
<William.T.Walker@usace.army.mil>

05/07/2009 01:33 PM

To <Roy.Crabtree@noaa.gov>, <Sam_Hamilton@fws.gov>, Stan Meiburg/R4/USEPA/US@EPA, Tom Welborn/R4/USEPA/US@EPA, Rebecca
cc "Ryscavage, Jefferson COL SAW"
<Jefferson.Ryscavage@us.army.mil>, "Jolly, Samuel K SAW" <Samuel.K.Jolly@usace.army.mil>, "Lekson, David M
bcc

Subject

All,

As most of you are probably aware, Mr. Salt (ASA-CW) rendered his decision on EPA's 404(q) elevation request regarding PCS Phosphate, late yesterday evening. I have attached here, the final documents for any of you that may not have received them as of yet. One of Mr. Salt's directives was that the Corps work with EPA Region 4, USFWS, NMFS and PCS over the next 10 days to explore the practicability of further minimization within the headwater areas of Jacks Creek, Jacobs Creek and Porter Creek.

To that end, I believe Mr. Les Dixon (USACE South Atlantic Division) has been in contact with EPA, NMFS and USFWS Regional Directors. Col Ryscavage has asked that I also contact each of you and inquire as to your availability for a meeting next week. We currently propose to meet next Tuesday, 12 May, to discuss minimization opportunities. The meeting will likely take place in Raleigh since that seems to be logistically central. Please let me know as soon as possible, whether you can be available.

Thanks

Tom Walker
(910) 251-4631

<<FINAL Reply to EPA.pdf>> <<FINAL Conditions.pdf>> <<FINAL Staff Assessment.pdf>>



DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
CIVIL WORKS
108 ARMY PENTAGON
WASHINGTON DC 20310-0108

MAY 06 2009

Mr. Michael Shapiro
Acting Assistant Administrator
United States Environmental
Protection Agency
Washington, DC 20460-0002

Dear Mr. Shapiro:

This is in reply to your April 3, 2009, letter requesting that I review the decision of the Army Corps of Engineers Wilmington District Commander to proffer a Department of the Army permit to Potash Corporation of Saskatchewan Phosphate Division, Aurora Operation (PCS Phosphate). Your request was made in accordance with our Clean Water Act Section 404(q) Memorandum of Agreement (MOA) of August 11, 1992.

We have carefully reviewed the concerns raised in your letter, the administrative record, including the Corps draft Record of Decision (ROD) and permit and special conditions, and information provided by the applicant. An important aspect of our review was a visit to the project site where staff from our agencies were able to observe existing mining operations, reclamation areas, completed advance compensatory mitigation projects, existing landscape conditions, and the aquatic resource areas of concern to environmental resource agencies. We found the briefings by the applicant and your staff most informative. A detailed summary of my staff's review is provided at enclosure 1.

The Corps prepared an environmental impact statement (EIS) and a supplemental EIS for public review and comment, disseminated public notices, held public meetings, and established an interagency review team consisting of applicant, State and Federal agency, and environmental advocacy group representatives. The applicant's expanded preferred alternative (EAP) would have affected 5,623 acres of wetlands, 24 acres of open water, and 89,150 linear feet of intermittent and perennial streams over a period of 50 years. As a result of the public involvement process, NEPA work, and identification of considerable avoidance and minimization measures; the project now being proposed for authorization will impact 3,961 acres of wetlands, 11 acres of open water, and 25,727 linear feet of intermittent and perennial streams over a period of 37 years. The Corps successfully worked with the applicant, Federal, and State resource agencies to significantly avoid and minimize impacts associated with the applicant's expanded preferred alternative.

In order to replace the predominantly low quality aquatic functions that would be lost as a result of mining activities, PCS Phosphate will be required to restore 44,043 linear feet of stream and 7,968 acres of wetlands, plus additionally preserve approximately 40,000 linear feet of stream and 3,200 acres of wetlands. A unique

aspect of the PCS Phosphate compensatory mitigation plan is that bottomland hardwood forest and other habitat types have already been constructed and functioning for 10-12 years. Compensatory mitigation will be accomplished prior to or concurrent with impacts for the life of the project. In addition, the mitigation sites selected for restoration and enhancement are part of a targeted watershed plan, and will provide water quality benefits to the watershed due to the reduction of agricultural runoff which has been identified by state water quality agencies to be the greatest contributor of nonpoint source pollution in the lower Tar-Pamlico River.

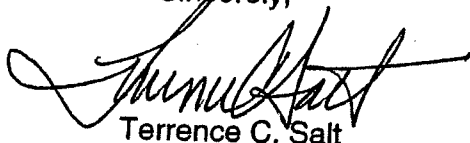
The Corps has added significant, project-specific, special conditions in response to concerns expressed by the U.S. Fish and Wildlife Service and the National Marine Fisheries Service (Enclosure 2). These special conditions to the proposed permit address your agency's concerns regarding adaptive management of the mining operation and compensatory mitigation success; reclamation site timing, capping, and re-vegetation; and indirect impacts to primary nursery areas (PNA). During my review, I considered the overall disturbed condition of the aquatic resources in the permit area, plans to avoid impacts to most of the higher quality areas, the extraordinary success of advance compensatory mitigation activities, and the amount and extent of compensatory mitigation in comparison to impacts. The Corps will require extensive monitoring and independent scientific peer review on an annual basis. Utilization of the monitoring information, which will also be made available to the public, will enable the applicant and resource agencies to manage adaptively. Based on the above, I have concluded that these impacts are neither substantial nor unacceptable.

Notwithstanding the above, I believe that additional measures to avoid impacts in some headwater areas may be possible. Therefore, I am directing the Corps to proceed with final action only after completing additional staff work and coordination. Although the applicant has worked hard to avoid and minimize impacts to aquatic resources, I have asked the Corps to continue to work with PCS Phosphate, your Region 4 staff and regional staff from USFWS and NMFS (if interested and available) over the next 10 days to look at specific opportunities to further reduce impacts to aquatic resources within Modified Alternative L, as generally described in the District's draft Record of Decision. Based on my review and discussions with agency staff, I would like the Corps to limit this effort to the headwater areas of Jacks, Jacobs, and Porter Creeks. These three locations appear to contain increments of headwater stream which are of particular concern to your agency as PNAs. The objective of this focused coordination effort is to quickly explore potential avoidance and minimization opportunities. For those that are practicable or otherwise agreed to by the applicant, the Corps will adopt them and revise their Record of Decision and other permit documentation as appropriate. Corps Headquarters will participate in these discussions as necessary and will keep me informed of the outcome of the focused coordination efforts. Once coordination is complete, the District Commander will proceed in accordance with Part IV, paragraph 3(h) of the 1992 MOA. I am confident I can rely on your support for this approach in order for a permit decision to be finalized by May 29, 2009.

I also am adopting the two recommendations made by Corps headquarters in their assessment (Enclosure 1). The first is a special condition developed to discourage future impacts to jurisdictional wetlands and streams avoided as part of this permit action. The second recommendation requires the Corps headquarters to work with the Wilmington District staff, through the South Atlantic Division office, to ensure that the Record of Decision clearly explains the aquatic resource functions being impacted at each site and how these functions are being replaced within the compensatory mitigation package.

If you have any questions or comments concerning my decision, please do not hesitate to contact me. Your staff may contact Mr. Chip Smith, my Assistant for Environmental, Tribal and Regulatory Affairs at (703) 693-3655.

Sincerely,

A handwritten signature in black ink, appearing to read "Terrence C. Salt", written in a cursive style.

Terrence C. Salt
Acting Assistant Secretary of the Army
(Civil Works)

ATTACHMENT 2 TO RECORD OF DECISION
ACTION ID 200110096—PCS Phosphate
PROPOSED PERMIT SPECIAL CONDITIONS

This Permit authorizes impacts associated with the modified Alternative L mining boundary depicted on the attached figures titled PCS Phosphate Mine Continuation, for the Bonnerton, NCPC and S33 Tracts, dated January 6, 2009. This includes impacts to 3,972 acres of Waters of the US included in the Modified 401 Water Quality Certification No 3771 issued by the NC Division of Water Quality on 15 January 2009.

This Permit also provisionally authorizes impacts to 4.98 acres of Waters of the US associated with the relocation of NC Highway 306 as depicted on the attached figure titled PCS Phosphate Mine Continuation, for NCPC dated January 6, 2009. Authorization of this 4.98 acre impact is provisional upon receipt of a 401 Water Quality Certification from the NC Division of Water Quality and approval from the NC Division of Coastal Management in the form of either a Coastal Zone Consistency Determination or a Coastal Area Management Act Permit.

MINING

- A) This permit authorizes mining and mine related impacts as described fully in the FEIS within the boundary depicted in the attached maps labeled "Modified Alt L - NCPC Proposed Impact Boundary", "Modified Alt L - Bonnerton Proposed Impact Boundary" and "Modified Alt L - South of 33 Proposed Impact Boundary", as presented January 6, 2009. All work authorized by this permit must be performed in strict compliance with these attached plans, which are a part of this permit. Any modification to these plans must be approved by the US Army Corps of Engineers (USACE) prior to implementation.
- B) Within 6-months of the issuance of this permit, the Permittee must demarcate with permanent monuments and establish with GPS coordinates, the outer limits of disturbance on all creeks/drainages, etc. This must be reviewed and approved by the U.S. Army Corps of Engineers. This will facilitate compliance monitoring by establishing long-term reference points.
- C) Except as authorized by this permit or any USACE approved modification to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with this project.
- D) Except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters or wetlands.

- E) Figure 1 depicts approximate timing of the requirement for major pre-mining, land manipulation and clearing impacts. These yearly figures are estimates. Actual timing and area may be in part determined by several factors including but not limited to site and equipment constraints, weather, and economics. However, to ensure that temporal losses are minimized to the extent practicable, the applicant shall not undertake major land-clearing and/or land manipulating activities within any area sooner than 1 year prior to the dates indicated on this figure. For example, major landclearing and manipulation activities within the block labeled 2012-2013 may not begin any sooner than January 1, 2011.

RECLAMATION

- F) The applicant will undertake full reclamation of all areas mined under this authorization as described in Section 4.3 of the EIS. This includes reestablishment of varied topography and drainage systems. Figure 2 indicates the required completion date for the capping and successful vegetation of mine reclamation areas. To demonstrate adherence to this schedule, the applicant will submit to the Corps an annual report detailing all reclamation efforts complete within the previous year and indicating the degree of completeness of each reclamation area.
- G) The Permittee shall cap all mined areas that are reclaimed with the gypsum-clay blend process. The goal of the cap will be a minimum 3-foot thick cap of overburden material (similar to background soils from the region) over 100% of the blend areas. Minimal acceptable performance standards in achieving this cap are as follows: 70% of the total surface area with a minimum of 3-foot cap; 25% of the total surface area with a minimum of 2-foot cap; 5% of the total surface area unspecified. Upon completion of capping of any area, the permittee will submit final cap depth and coverage information to the Corps.
- H) Following successful completion of the capping requirements, the permittee will submit as-built topographical surveys for the reclamation areas. This survey shall include an explanation of site development that will minimize erosion, eliminate contaminant transportation from the clay/gypsum blend through the stream channel, and facilitate the development of a mature vegetated riparian buffer. This survey shall also include information on surface water flows within and from the reclamation area.
- I) To minimize temporal impacts and accelerate the return of watershed functions within the reclamation areas, the applicant will to the extent appropriate and practicable apply an average of 1-foot (no less than 6 inches in any location) of topsoil cover to the reclaimed areas utilizing, the topsoil removed prior to site mining. This topsoil addition should be concentrated in areas close to points where surface waters will eventually exit the reclaimed area into the surrounding watershed.
- J) To the extent appropriate and practicable, upland portions of the reclamation area shall be replanted, in longleaf pine (*Pinus palustris*) and wetland areas shall be replanted in bald cypress (*Taxodium distichum*) and/or Atlantic white cedar (*Chamaecyparis thyoides*) if Atlantic white cedar is shown to do well on the reclamation sites. It is suggested that the

applicant work with the Corps, the USFWS and any other interested parties to determine growth and survivability of these and other species utilizing areas currently being reclaimed under the previous permit action

- K) To ensure satisfactory reclamation has occurred PCS shall submit to the Corps a final as-built plan detailing topographic information and vegetation success within the reclaimed areas. Any deviation from the reclamation schedule will be addressed in these reports and the report shall include an explanation for the deviation and proposed remedial action.

MITIGATION

- L) Compensatory mitigation identified in the document entitled "Compensatory Section 404/401 Mitigation Plan: Comprehensive Approach" as presented in Appendix I of the FEIS shall be accomplished pursuant to that Plan and/or any subsequent Corps approved modification or amendment. Construction and monitoring of each site shall be conducted according to the schedule presented in Table 1 of the Record of Decision.
- M) Within one year of the issuance of this permit, the permittee shall cause to be recorded a conservation instrument acceptable to the Corps for the permanent preservation of the area identified for preservation in the "South Creek Corridor" plan.
- N) Table 2 lists the impacts as they would occur during 2-year timeframes. By Nov. 1st of year preceding the impact, PCS shall submit to the Corps a mitigation ledger demonstrating that all mitigation work is complete as described in the mitigation plan and pursuant to identified timetable. This report will be used to determine whether sufficient mitigation is available for impacts occurring over the next 2 year timeframe. For Example, by November 1st 2009, PCS shall submit a ledger demonstrating that sufficient mitigation for impacts occurring during the 2010 - 2011 timeframe (526.56 ac) is available."
- O) The Permittee shall submit yearly monitoring reports for each mitigation site. Monitoring reports will be submitted by January 31 of the year following the monitoring. Monitoring will continue until such time as the Corps deems the mitigation site successful and agrees that monitoring may be discontinued. This will generally occur after sufficient monitoring demonstrating 5 consecutive years of site success.
- P) Once compensatory mitigation sites have been deemed successful and the Corps has agreed in writing that monitoring may cease, the permittee shall, within one year of the date of that correspondence, cause to be recorded an acceptable conservation instrument ensuring the permanent preservation of all mitigation sites.

MONITORING

Q) As required by the State Water Quality Certification, the applicant will work with the Corps and the NC Division of Water Quality to establish a monitoring plan for groundwater in and around mine and reclamation areas. At a minimum, this plan shall include sufficient monitoring within and surrounding the reclamation areas to ensure that heavy metal/toxic pollutants including cadmium are not entering the groundwater. It is suggested that this monitoring commence with weekly samples for a period of 5 years to generate an acceptable baseline. After 5 years, monthly monitoring is acceptable. Yearly results of this monitoring shall be reported to the Corps and NCDWQ no later than January 31 of the year following data collection. The applicant and/or the Corps will make these reports available in whole or in summary to any interested party. If increases in the levels of any sampled substance are observed for more than 1 sampling occurrence in any given year, or for more than 1 year, the applicant shall include in the yearly report, a plan for mitigating the effect or satisfactory justification as to why no action is necessary. If the Corps, in consultation with other agencies, including but not limited to NCDWQ and EPA, determines that the current reclamation practices are causing an unacceptable adverse impact to groundwater, the DE may modify, suspend or revoke the permit.

R) Within 1 year of the issuance of this permit the Permittee will submit to the Corps a remediation strategy in the event heavy metal contamination of groundwater or surface tributaries that drain or are adjacent to mined areas occurs. That strategy will be made available for public review.

S) In concert with the monitoring requirements contained in the Water Quality Certification, PCS shall develop and implement a plan of study to address the effects of the reduction in headwater wetlands on the utilization of Porters Creek, Tooley Creek, Jacobs Creek, Drinkwater Creek, and Jacks Creek as nursery areas by resident fish and appropriate invertebrate species. The applicant shall coordinate with all appropriate resource agencies including but not limited to NMFS, USFWS, NCWRC, NCDMF, and the appropriate permitting agencies including NCDWQ, NCDQM, NCDLR and the Corps in the development of this plan. This plan should be submitted to the Corps and NCDWQ for approval within 6 months of this issuance of this permit. The plan shall identify reference creeks (at least four – the usefulness of Muddy Creek as a reference creek should be reevaluated, not assumed); sampling stations, schedules, and methods; laboratory methods; data management and analysis; and quality control and quality assurance procedures. At a minimum, the plan shall address the following issues:

- 1) Has mining altered the amount or timing of water flows within the creeks? Data collection may include:
 - i) Continuous water level recorders to measure flow
 - ii) Rain gauges to measure local water input
 - iii) Groundwater wells to measure input to the creeks
 - iv) Semi-continuous salinity monitoring

- v) Periodic DO monitoring (continuously monitored for several days at strategic times of year)
- 2) Has mining altered the geomorphic or vegetative character of the creeks? Data collection may include:
- i) Annual aerial photography to determine creek position, length, width, sinuosity
 - ii) Annual cross sectional surveys of each creek at established locations
 - iii) Annual sediment characterization
 - iv) Annual vegetation surveys along creeks
 - v) Spring and fall sediment chlorophylls or organic content in vegetation zone.
 - vi) Spring and fall location of flocculation zones with each creek.
- 3) Has mining altered the forage base of the creeks? Data collection may include:
- i) Spring and fall benthic cores to sample macroinfauna.
 - ii) Spring and fall benthic grabs focused upon bivalves, such as *Rangia* sp.
 - iii) Periodic sampling for pelagic species such as grass shrimp, blue crabs, and small forage fish. Sampling gears would be chosen to reflect ontogenetic shifts in creek usage.
- 4) Has mining altered the use of the creeks by managed fish? Data collection may include periodic sampling for species managed under the Magnuson-Stevens Fishery Conservation Management Act. Sampling would occur during appropriate times of year and gears would be chosen to reflect ontogenetic shifts in creek usage.
- 5) Do creek sediments include contaminants at levels that could impact fish or invertebrates? Data collection may include annual sediment and water column sampling for metals, including cadmium, mercury, silver, copper, and arsenic. If elevated levels are detected, the availability and uptake by appropriate aquatic species (e.g., *Rangia* sp., blue crabs) should be measured using appropriate bioassay techniques (annual)
- T) Monitoring under the plan referenced in condition 18 above shall commence immediately upon the plans approval by the Corps and NCDWQ. Monitoring shall continue for 10 years following the completion of all reclamation work within the headwaters of the subject creeks unless the Corps, in consultation with the appropriate resource agencies agrees that monitoring can be discontinued. Yearly results of this monitoring shall be reported to the Corps and NCDWQ no later than January 31 of the year following data collection. The applicant and/or the Corps will make these reports available in whole or in summary to any interested party.

ADAPTIVE MANAGEMENT

- U) PCS will work with the Corps to establish an independent panel of qualified persons to annually evaluate whether direct and indirect impacts from mining and benefits from the compensatory mitigation are in accordance with expectations at the time of permitting. All monitoring reports mentioned in the above mining, reclamation, mitigation and monitoring conditions will be supplied to the members of this panel at the times specified in the respective conditions. The applicant shall set a date during March of each year to convene this panel and notify the members of this panel no later than January 31 of the meeting date. By March 31, the panel shall provide the Wilmington District and PCS with any input on the collected data and analysis. At five year intervals beginning from the date of permit issuance, the panel shall review the monitoring methods, sampling locations, parameters analyzed, and other elements of monitoring protocol to determine if modifications to the plan are appropriate. The Wilmington District will consider this information and comments from resource agencies to determine if corrective actions or permit modifications are needed. If the panel concludes and the Wilmington District agrees that the mine expansion has caused significant adverse environmental impacts that are not offset by mitigation, then corrective action shall be taken. All data, reports, and presentations reviewed by the panel shall be made available to the public.

MISCELLANEOUS

- V) The permittee shall advise the Corps in writing prior to beginning the work authorized by this permit and again upon completion of the work authorized by this permit.
- W) The permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit. A copy of this permit, including all conditions, shall be available at the project site during construction and maintenance of this project.
- X) The permittee shall employ all sedimentation and erosion control measures necessary to prevent an increase in sedimentation or turbidity within waters and wetlands outside the permit area. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4).
- Y) The permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the work will, without expense to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the water or wetland to its pre-project condition.

Z) Violations of these conditions or violations of Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act must be reported in writing to the Wilmington District U.S. Army Corps of Engineers within 24 hours of the permittee's discovery of the violation.



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET NW
WASHINGTON, D.C. 20314-1000

CECW-CO

APR 28 2009

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY (CIVIL WORKS)

SUBJECT: U.S. Environmental Protection Agency, Elevation Request for Section 404 Permit Decision, Potash Corporation of Saskatchewan Phosphate Division, Aurora Operation (PCS Phosphate), Beaufort County, North Carolina

1. This is in response to your memorandum, dated April 9, 2009, concerning the U.S. Environmental Protection Agency's (EPA) request for elevation of the U.S. Army Corps of Engineers Wilmington District proposal to issue a permit to PCS Phosphate. The permit would authorize a project to enable the continuation of phosphate mining and mine-related activities to directly impact via various forms of discharge into 3,961 acres of wetlands, 11 acres of open water, and 25,727 linear feet of streams over a period of 37 years at a location in the Pamlico-Tar River watershed in Beaufort County, North Carolina.
2. The EPA request contends that the issuance of the proposed permit would cause substantial and unacceptable impacts to an aquatic resource of national importance (ARNI). The EPA alleges that the District did not (1) conduct an unbiased alternatives analysis including all appropriate avoidance and minimization of direct and indirect impacts of the project, (2) require adequate compensatory mitigation for the project's unavoidable impacts including mandating permanent protection of all avoided resources via binding real estate instruments, (3) decrease the indirect effects of the project on avoided resources by improving the quality of the reclamation areas, and (4) include measures to ensure effective monitoring and adaptive management of the mining project and mitigation sites. The EPA offered an alternative to the proposed project on March 24, 2009, and in light of the deficiencies they identified, they recommend withdrawing the proposed permit authorization and initiating further analysis on their proffered alternative to determine if it is practicable.
3. We have reviewed the Environmental Protection Agency's request and relevant District documentation. We do not agree that the aquatic resources on the project site themselves individually or cumulatively qualify as ARNI. The wetlands and streams on site have been impacted for at least the last six decades through extensive agriculture and silviculture practices. While there are areas that are of higher quality, such as primary nursery areas, coastal marsh, and some bottomland hardwood forest, those systems have been avoided. Furthermore, the comprehensive mitigation plan that is proposed will return more than twice the impacted acreage from degraded agricultural/silvicultural lands to wetland with more than 10 miles of associated stream restoration included. In addition to the comprehensive mitigation package, all mined property must be reclaimed to a stable, vegetated state with restored surface hydrology; acreage that is not included in any impact offsets calculated by the District. Special conditions have been included that require mined areas to be reclaimed on a specific schedule, require capping with overburden and then topsoil, specify plant species for revegetation, and establishes an

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SUBJECT: U.S. Environmental Protection Agency, Elevation Request for Section 404 Permit Decision, Potash Corporation of Saskatchewan Phosphate Division, Aurora Operation (PCS Phosphate), Beaufort County, North Carolina

interagency panel for adaptive management of the success of the reclamation areas. Finally, a special condition has been included to establish an independent panel of qualified experts to annually evaluate the direct and indirect impacts of mining and the benefits of the compensatory mitigation in accordance with the expectations at the time of permit issuance. We do not agree that the proposed permit will result in substantial and unacceptable impacts to the aquatic environment or that other alternatives need to be reviewed. The District performed a careful, unbiased economic evaluation of all alternatives during their practicability determination, which was performed through a comprehensive EIS process over an 8 year period. The alternative proposed by the EPA on 24 March 2009, well into the 404(q) process, is less cost effective than several alternatives that were dismissed as not practicable.

4. We support the District's determinations on these issues, including their application of the Section 404(b)(1) Guidelines that resulted in a determination that the applicant's project was the least environmentally damaging, practicable alternative. The District's review and evaluation of this permit application fully comports with all regulation and current policy guidance. Moreover, the decision shows a careful consideration of the quality of the impacted aquatic resources, their contributions to the watershed, and a sound and complete compensatory mitigation package to offset unavoidable impacts to those resources. The overall project purpose was adequately presented and resulted in a fully acceptable alternatives analysis.

5. I recommend that this case not be elevated and that the District Commander proceed with the permit decision with two policy-specific recommendations, as follows:

a. The addition of a special condition regarding avoided aquatic resources to strengthen what is already a firm protective stance on the remaining aquatic resources in the project area, and

b. Revision of the Record of Decision to clearly reflect the aquatic resource functions being impacted and how those functions are being offset by the comprehensive mitigation package.

6. The resources within the Albemarle Pamlico Estuary play an important economic and environmental role and regulatory decisions involving these resources are difficult. We applaud the District for its diligence in completing an exhaustive EIS analysis of alternatives and pursuing mitigation options that would compensate for the losses that would occur as a result of permitting this project.

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SUBJECT: U.S. Environmental Protection Agency, Elevation Request for Section 404 Permit Decision, Potash Corporation of Saskatchewan Phosphate Division, Aurora Operation (PCS Phosphate), Beaufort County, North Carolina

7. Enclosed is a copy of the "HQUSACE Analysis and Options Paper" prepared for this elevation case and, as requested, we are also enclosing a draft reply to the requesting official from the Environmental Protection Agency. If you have any additional questions or disagree with my recommendation, please call me or contact Ms. Jennifer Moyer, Program Manager, Regulatory Community of Practice at (202) 761-7763.

FOR THE COMMANDER:



STEVEN L. STOCKTON, P.E.
Director of Civil Works

Enclosure

HQ ANALYSIS AND OPTIONS PAPER

SUBJECT: U.S. Environmental Protection Agency, Elevation Request for Section 404 Permit Decision, Potash Corporation of Saskatchewan Phosphate Division, Aurora Operation (PCS Phosphate), Beaufort County, North Carolina.

1. PURPOSE: This paper provides the Headquarters, U.S. Army Corps of Engineers (Corps) analysis of the elevation request from the U.S. Environmental Protection Agency (EPA) to the ASA(CW) of a proposed decision by the Corps Wilmington District to issue a Section 404 permit to PCS Phosphate.

2. BACKGROUND: The Corps proposes to issue a Department of Army permit to PCS Phosphate to authorize a project to enable the continuation of phosphate mining and mine-related activities to occur upon 11,454 acres of a 15,100 acre project site. The project area contains 6,380 acres of jurisdictional wetlands and open waters and 115,843 linear feet of jurisdictional streams. The alternative the Corps proposes to authorize will directly impact via various forms of discharge (mechanized land clearing, direct discharge of over burden, construction of ancillary facilities, etc.) 3,961 acres of wetlands, 11 acres of open water, and 25,727 linear feet of streams over a period of 37 years. PCS Phosphate proposes to restore, enhance, and/or preserve a total of 11,196 acres of wetland and 84,888 linear feet of stream to offset direct and indirect impacts to jurisdictional aquatic resources. All compensatory mitigation will be constructed in advance of impacts and will be subject to monitoring requirements to ensure success.

The Wilmington District published a draft Environmental Impact Statement (EIS) for the no-build alternative and nine of the build alternatives considered in October 2006. A supplemental draft EIS with two additional build alternatives was published in November 2007. The final EIS containing the complete analysis for all alternatives was published in May 2008.

3. PROJECT SETTING: PCS Phosphate currently owns and operates an open pit mining operation on the Hickory Point peninsula adjacent to the Pamlico River and South Creek, north of Aurora, in Beaufort County, North Carolina, which has been in operation since 1965. In 1997, PCS Phosphate was issued a Department of Army permit to impact 1,268 acres of waters of the United States to mine phosphate adjacent to its onsite manufacturing facilities which produce sulfuric acid, phosphoric acid, purified acid, liquid fertilizer, superphosphoric acid, diammonium phosphate, deflourinated phosphate, animal feed, and solid fertilizers.

The project area lies on the Atlantic Coastal Plain in the Tidewater Region and has elevations of approximately 10 to 20 feet above sea level. The drainage systems of the area are modified dendritic and empty into tributaries of the Pamlico River, which flows east into the Pamlico Sound, west of Cape Hatteras. Drainage of soils in the project area has been poor, as demonstrated by their hydric nature, and the natural hydrology of the area has been extensively altered by agricultural and silvicultural ditches over at least the past six decades prior to any mining activities commencing in the area (Figures 1 and 2).

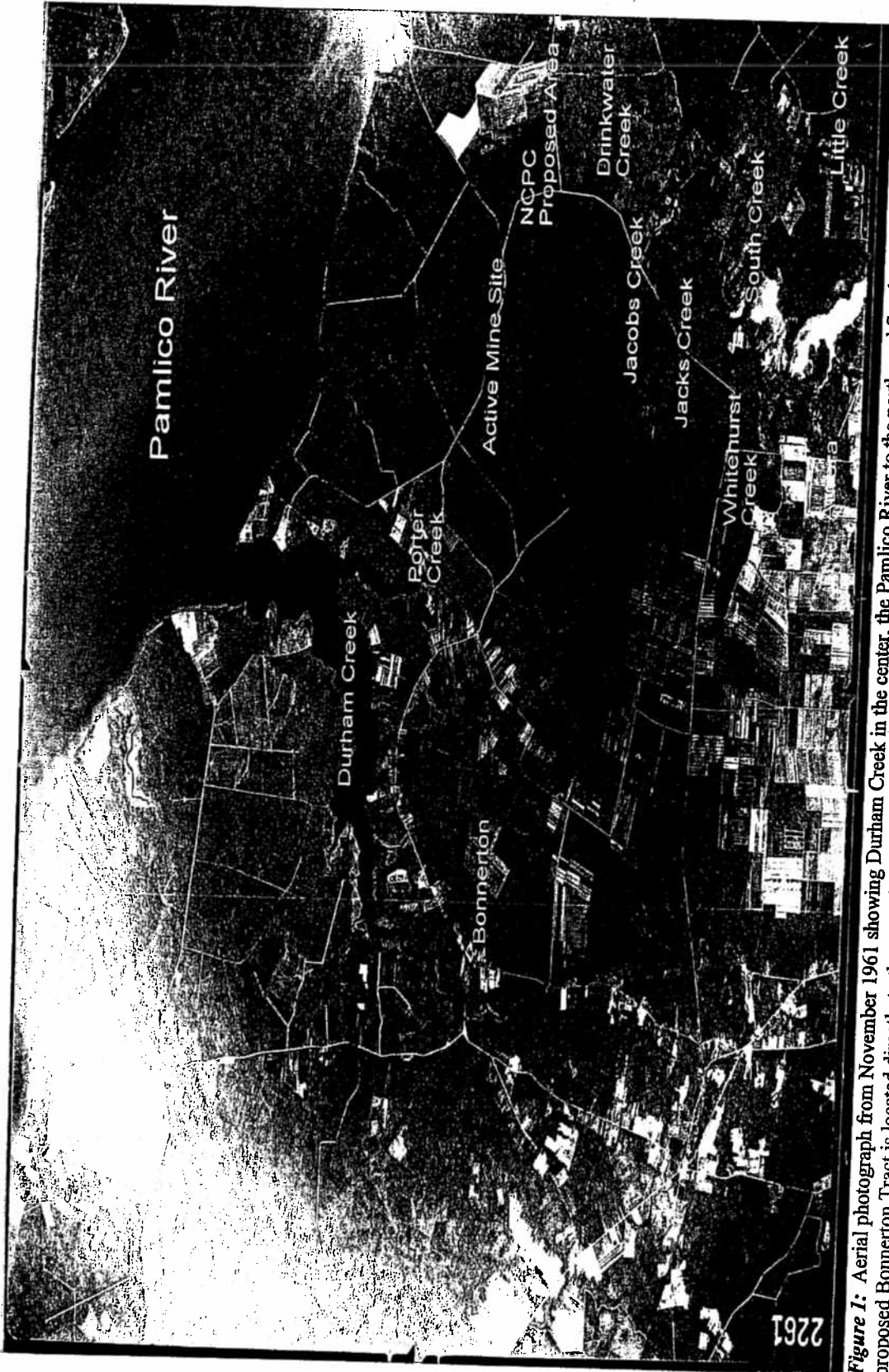


Figure 1: Aerial photograph from November 1961 showing Durham Creek in the center, the Pamlico River to the north, and South Creek to the southeast. The proposed Bonnerton Tract is located directly to the east of Durham Creek, proposed NCPC Tract to the west of South Creek. (Photo credit: USGS, DOI)



Figure 2: Aerial photograph from October 1961 showing South Creek to the northeast and the Suffolk Scarp to the west. The proposed S33 Tract is located in the headwater areas of South Creek, south of Whitehurst Creek. (Photo credit: USGS, DOI) (Photo credit: USGS, DOI)

In total, the project area is comprised of 15,100 acres containing 6,380 acres of wetlands and 115,843 linear feet of streams. The project area consists of three basic tracts; a 3,608 acre area east of the current operation, and adjacent to South Creek, identified as the NCPC Tract; a 2,806 acre area west of the current operation, and adjacent to Durham Creek, identified as the Bonnerton Tract; and a 8,686 acre area south of the current operation, and south of NC Highway 33, identified as the S33 Tract. (Figure 3)



Figure 3: Project Area showing three tracts; NCPC, Bonnerton, and S33.

a. Resources. The terrestrial resources in the project area are typical of herbaceous assemblages in various stages of succession as much of the area not currently being farmed has been in agricultural production in the past. Various other disturbances, such as fire and logging, have also influenced the vegetative communities present on the site. The terrestrial biotic communities identified within the project area include: hardwood forest, mixed pine-hardwood forest, pine plantation, pine forest, sand ridge, forest, pocosin-bay forest, bottomland hardwood forest, brackish marsh complex, agricultural land, herbaceous assemblage, shrub/scrub assemblage, maintained area, and non-vegetated/maintained area. The NCPC Tract contains

2,549 acres of waters of the U.S. and 55,549 linear feet of streams; the Bonnerton Tract contains 2,130 acres of waters of the U.S. and 17,106 linear feet of streams, none of which drain directly into the Pamlico River; and the S33 Tract contains 1,701 acres of waters of the U.S and 43,209 linear feet of stream, with no areas or stream segments draining directly into the Pamlico River.

The Bonnerton and NCPC Tracts contain tidally influenced forested wetlands, streams, and salt marsh designated as Essential Fish Habitat by the South Atlantic Fisheries Management Council (SAFMC) for Federally managed species including peneaid shrimp, gray snapper, summer flounder, and bluefish. A subset of these areas has also been designated by the state of North Carolina as primary nursery areas (PNAs). Pursuant to that designation, the SAFMC designated the PNAs as Habitat Areas of Particular Concern (HAPC).

Table 1: Impact Data for Proposed Project (Modified Alternative L)

	NCPC	Bonnerton	S33	Total
Total Tract Acreage	3,608	2,806	8,686	15,100
Total Mining Area (acres)	2,157	2,559	6,738	11,454
Total Wetland/Open Water Acreage	2,549	2,130	1,701	6,380
Total Streams (lf)	55,528	17,106	43,209	115,843
Wetland/Open Water Impacts (acres)	1,559	1,922	491	3,972
Stream Impacts (lf)—Total	6,093	8,499	11,135	25,727
Perennial		3,050	7,799	10,849
Intermittent	6,093	5,449	3,336	14,878
% Impacts—Wetlands/Open Water	61%	90%	29%	62%
% Impact—Stream	11%	50%	26%	22%
% Impact—Total Site	60%	91%	77%	76%

b. Impacts. The proposed project would authorize impacts allowing PCS Phosphate to mine the NCPC Tract first, impacting a total of 1,559 acres of jurisdictional wetlands and open water and 6,093 linear feet of intermittent streams. The operation would then move to the Bonnerton Tract where 1,922 acres of jurisdictional wetlands, 3,050 linear feet of perennial stream, and 5,449 linear feet of intermittent stream will be impacted. Finally, PCS Phosphate would move south of NC Route 33 to the S33 Tract where 491 acres of wetland and 7,799 linear feet of perennial streams and 3,336 linear feet of intermittent streams will be impacted (Table 1). Pursuant to the conditions of a mandated mining permit from the North Carolina Division of Land Resources, all mined areas will be reclaimed to comply with the following criteria:

- 1) stable condition;
- 2) useful purpose;
- 3) designed to protect adjacent surface resources including preventing/eliminating conditions that may be hazardous to animal or fish life;
- 4) in compliance with state air and water quality laws;
- 5) restoring/reestablishing stream channels and stream banks in a manner that minimizes erosion, siltation, and other pollution; and
- 6) vegetated.

Previously reclaimed areas owned by PCS Phosphate have included extensive stream and wetland restoration (e.g. Whitehurst Creek, see PCS Pamphlet).

4. **AGENCY POSITION:** The EPA's request for elevation cites the criteria of Part IV of the Section 404(q) Memorandum of Agreement (MOA). The primary issues raised, and upon which this analysis focuses, are summarized as follows:

a. Aquatic Resources of National Importance (ARNI). According to the MOA, the elevation of specific individual permit cases will be limited to those cases that involve an ARNI. The EPA contends that the resources involved in this application deserve this designation for the following reasons: 1) collectively, all aquatic resources in the project area perform important ecological functions that support the Albermarle Pamlico Estuary, which has received numerous grants in recent years as part of EPA's National Estuary Program; 2) several tidal creeks on the project site have been designated Primary Nursery Areas by the state of North Carolina; and 3) the Bonneron Tract contains an area of non-riverine, hardwood, forested wetland that has been designated as a Nationally Significant Natural Heritage Area by the North Carolina Natural Heritage Program.

b. Substantial and unacceptable impacts. According to the MOA, elevated cases must propose resource damages of similar magnitude to cases evaluated under section 404(c) of the Clean Water Act. Section 404(c) authorizes EPA to prohibit, restrict, or deny the discharge of dredged or fill material at defined sites in waters of the United States (including wetlands) whenever it determines, after notice and opportunity for public hearing, that use of such sites for disposal would have an unacceptable adverse impact on one or more of various resources, including fisheries, wildlife, municipal water supplies, or recreational areas. The EPA asserts that the impact proposed for authorization will be the single largest impact authorized in North Carolina under the Clean Water Act and the loss of the functions provided by the aquatic and non-aquatic resources on the PCS Phosphate site will contribute to the significant degradation of waters of the United States.

The EPA contends that water quality enhancements are provided by the existing wetlands and streams on the PCS Phosphate site. They go on to assert that these waters function to assist in alleviating the problems of excessive nutrients causing harmful algal blooms, low oxygen levels, increased fish kills, and other symptoms of stress and disease recorded in the Tar-Pamlico River Basin. Should waters be impacted as proposed, EPA argues the benefits of these waters will be permanently eliminated.

c. 404(b)(1) Guidelines Analysis. The analysis of alternatives is part of the CWA's Section 404(b)(1) Guidelines. Part of this analysis is the rebuttable presumption that, for non-water dependent projects such as the one at issue, there are practicable upland alternatives that are less damaging to the environment. In this case, the purpose of the proposed project has been defined as,

"to continue mining PCS Phosphate reserves in an economically viable fashion. More specifically, this is defined as a long-term, systematic and cost-effective mine advance

within the project area for the ongoing PCS Phosphate mine operation near Aurora, North Carolina.”

The evaluation of practicable alternatives which satisfy the project’s primary purpose is a key provision of the 404(b)(1) Guidelines, which further define practicable as “capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.” (40 CFR 230.10(a)(2)). The selection of the least environmentally damaging, practicable alternative (LEDPA) that does not have other, significant environmental consequences, is a requirement of the Guidelines.

The EPA asserts that the proposed project does not represent the LEDPA for three primary reasons:

- 1) The economic analysis performed to determine the practicability of alternatives inappropriately excluded practicable alternatives with fewer impacts from further consideration; therefore, there are less environmentally damaging, practicable alternatives that meet the project purpose; and
- 2) All appropriate and practicable steps have not been taken to avoid, minimize, and compensate for the project’s adverse impacts to waters of the U.S. including requiring permanent protection of avoided areas via binding real estate instruments; and,
- 3) Adequate compensatory mitigation to offset unavoidable direct impacts to mature forested wetlands to account for temporal loss has not been required.

Alternatives Framework. Eleven alternatives, each with sequencing variations, were considered in the evaluation process, which was initiated in November 2000 with the submission of a Department of Army permit application to the Wilmington District. Alternatives reviewed included the following groups:

1. *No Action: No permit would be issued.* No discharge of fill material would be authorized. The current mining operation would continue under its current permit until the limits of authorization were reached. Additional mining could occur on upland areas. This alternative was deemed not practicable as it did not meet the project purpose.

2. *Other project configurations & sequences (smaller, larger, different, etc.).* During the permit review process, the permittee responded to requests to consider reconfiguration to increase avoidance and minimization with incremental reductions in the mining footprint. In addition, the permittee also responded to requests to mine the three tracts (NCPC, Bonnerton, S33) in varying sequences in order to maximize avoidance and minimization while maintaining economically viable ore recovery. These considerations resulted in increased avoidance and minimization to aquatic resources such that a grouping of practicable alternatives was identified that ultimately included a project that was considered permissible. The proposed project represents the smallest area and configuration to meet the stated project purpose and allow mining to occur in a safe and efficient manner.

3. *Other sites available to the applicant.* North Carolina has three phosphate districts, two of which, Frying Pan and Northeast Onslow Bay, lie beneath the Atlantic Ocean. The remaining district is the Aurora District and is the district from which PCS Phosphate proposes to extract ore under this permit. Although technologically possible, the logistics of offshore mining of phosphate make the other sites problematic; additionally, it is likely that production costs and environmental impacts of such mining would be significantly higher than extraction of onshore ore deposits. Therefore, the study area was limited to an approximate 70,000 acre area primarily within the Richlands Township of Beaufort County, North Carolina.

EPA Proposed Alternative. The EPA believes an alternative, which they proposed at a meeting with the applicant on 24 March 2009 after the 404(q) elevation process was well underway and well after the conclusion of the extensive, nine-year integrated, interagency review process and NEPA evaluation, if determined to be practicable, represents a less environmentally damaging alternative. This proposal differs from the proposed project in two primary ways:

- a) Provides additional avoidance of areas of particular concern to the EPA including the areas listed by the state of North Carolina as Natural Heritage Areas and Primary Nursery Areas; and
- b) Requires permanent protection of all avoided areas from future mining via binding real estate instruments.

d. Recommendations. Based on their concerns and understanding of the proposed project, the EPA recommends that the Assistant Secretary of the Army (Civil Works) direct the District Commander to do the following:

- 1) In coordination with (PCS Phosphate), withdraw the NOI letter and initiate further analysis of the new proposed alternative to determine whether such alternative, or a modification of it, would be practicable, and thus the "LEDPA"; or,
- 2) Revise the proposed permit consistent with the following:
 - a) revise its alternatives analysis for the proposed project to address inconsistencies that bias identification of the LEDPA;
 - b) in development of the LEDPA, avoid direct impacts to the Nationally Significant Natural Heritage Area and indirect impacts to the site's tidal creeks, including those identified as Primary Nursery Area, to the maximum extent practicable;
 - c) incorporate all appropriate and practicable measures to minimize the impact of the mining project on avoided aquatic resources by improving the quality of the reclamation areas (i.e., re-using top soil and re-vegetating with target plant species);

d) ensure that all avoided aquatic resources are provided with permanent protection from future mining with the appropriate binding real estate instruments such as conservation easements;

e) revise the compensatory mitigation plan to effectively offset impacts to mature forested wetlands; and

f) include measures to ensure effective monitoring and adaptive management of both the mining and mitigation sites.

5. HOUSACE ANALYSIS: The EPA states that the wetlands and streams contained within the project site collectively represent an ARNI because they perform important ecological functions that support the Albemarle Pamlico Estuary complex. We do not agree that the aquatic resources located on the NCPC, Bonnerton, and S33 Tracts constitute an ARNI individually or cumulatively. We also do not agree that the issuance of a permit for the proposed action will result in substantial and unacceptable adverse impacts on the Albemarle Pamlico Estuary complex. The proposed project's impact area, including uplands, (11,454 acres) represents considerably less than 1% of the 19,200,000 acre Albemarle Pamlico Estuary. Furthermore, we disagree with the EPA's assertion in their 3 April 2009 Detailed Comments in support of this elevation request that the proposed project will result in, "the complete loss of this entire suite of wetland and stream functions" to the extent that this permit action will cause or contribute to significant degradation of waters of the U.S.

a. Aquatic Resources of National Importance (ARNI). There is little doubt regarding the environmental and economic importance of the Albemarle Pamlico Estuary and no argument that as the second largest estuarine complex in the United States. Draining an approximately 19,200,000 acre watershed, it serves an essential role in the life cycles of many species of commercially and recreationally important finfish and shellfish as well as providing good habitat for many species of waterfowl and shorebirds. We are aware that EPA has funded projects in the greater Albemarle Pamlico Estuary aimed at addressing the priority problems facing the watershed, such as non-point source pollution from urban and agricultural run-off, but are not aware of any projects in the near vicinity of the project area that would or could be directly or indirectly impacted by the proposed project.

1. Natural Heritage Area, Bonnerton Tract. The majority of the project area has been extensively timbered and/or under agricultural practices for at least the last six decades (Figures 1 and 2). The Bonnerton Tract contains an approximately 271 acre area that has been designated by the North Carolina Natural Heritage Program (NCNHP) as a Nationally Significant Natural Heritage Area (SNHA). However, the total area includes not only nonriverine wet hardwood forest but also secondary areas that act as connections between patches of higher quality wetlands. The NCNHP has no standard criteria by which wetlands or sites are evaluated and ranked, the process is not peer reviewed within the state, with other states, or with the Federal government to establish its "national" status; the listing as nationally significant is purely a product of the state program and is vetted entirely and only within that state program.

The NCNHP defines nonriverine wet hardwood forests as being dominated by various hardwood trees typical of bottomland situations, such as swamp chestnut oak (*Quercus michauxii*), Laurel Oak (*Q. laurifolia*), Cherrybark Oak (*Q. pagoda falcata var. pagodaefolia*), Tulip Poplar (*Liriodendron tulipifera*), Sweetgum (*Liquidambar styraciflua*), American Elm (*Ulmus Americana*), Red Maple (*Acer rubrum*), and Swamp Tupelo (*Nyssa biflora*), with the key indicator species being the three oaks. PCS Phosphate hired James D. Gregory, Ph.D. to conduct an assessment of the Bonnerton Tract in light of its identification as a nonriverine wet hardwood forest of national significance by the NCNHP and the weight the EPA assigned to that designation in their request for elevation to the ASA(CW). Dr. Gregory determined that the Bonnerton Tract is divided into three units. While there is little argument that the Eastern Unit is an excellent quality area, it did not contain the key indicator species necessary or the requisite number of mature trees (>75 years) or large enough in diameter trees for a high quality nonriverine wet hardwood forest biotic community designation. The Western Unit was determined to be of "poor quality" due to the vegetative community being dominated by species adapted to drained soil conditions (i.e. non-wetland soils). The Northern Unit was found to be of "very poor quality" as its predominant vegetative cover is comprised of saplings and small trees of less desirable species, such as Red Maple (*Acer rubrum*) and Sweetgum (*Liquidambar styraciflua*) interspersed with large canopy gaps. Dr. Gregory further determined that the Eastern and Western Units are not hydrologically interdependent with the Eastern Unit related to the Porter's Creek headwaters and the Western Unit more closely related to the Suffolk Scarp.

Considering the documented logging via aerial photography; an affidavit from Curtis Brown, PCS Land Supervisor, which details logging records from the Bonnerton Tract from 1960 to present; and confirmation from the NCNHP that the areas designated as SNHA received such designation in part due to undesirable species being logged from them, it is clear that the tract has been significantly disturbed and manipulated over at least the past six decades. This makes the overall national significance of this area negligible. Notwithstanding the lack of national significance, it is recognized that the wetlands on the project site and specifically the Bonnerton Tract do perform important functions; therefore, the proposed project avoids impacts to approximately 212 acres (approximately 78%) of the SNHA. All avoided areas of the SNHA on the Bonnerton Tract are being permanently protected from impact via binding real estate instruments (i.e. conservation easements); this acreage is not included in the preservation component of the mitigation package. Additionally, the compensatory mitigation package includes the restoration of over 1,000 acres of nonriverine wet hardwood forest to a higher quality than the impacted area on the Bonnerton Tract and preservation of 34 acres of excellent quality nonriverine wet hardwood forest.

2. Tidal Creeks/Primary Nursery Areas. The North Carolina Wildlife Resources Commission has designated four tidal streams, Jacks, Jacobs, Tooley, and Porter Creeks, within the project area as Primary Nursery Areas (PNAs). These creeks have also been identified as HAPC by the South Atlantic Fisheries Management Council, affording them the highest level of protection under the Magnusen-Stevens Fisheries Management Act (MSFMA).

In recognition of their importance to the continuing health and function of the surrounding fishery and their regional importance to the Albemarle Pamlico Estuary, all impacts to PNAs have been avoided by the proposed project as have all impacts to brackish marsh which are adjacent to and contribute collectively to the overall functioning of these nursery areas. The National Marine Fisheries Service (NMFS), responsible for implementing the MSFMA, concurred with the determination via correspondence indicating their declination to pursue elevation under the provisions of 404(q), dated 17 April 2009, that direct impacts to HAPCs in the project area were unlikely.

In response to concerns over indirect impacts to PNAs via direct impacts to headwater wetlands associated with these tidal streams, the District has proposed a special condition that will require the development of an extensive monitoring plan aimed at adaptive management in the vicinity of these resources, which includes coordination with NMFS and state resource agencies, tied to the direct impacts to ensure the continued health of these important, avoided, aquatic resources. Based on previous mining in the area and the successful preservation of PNA streams in close proximity to active mine areas, we believe that many of the tidal streams in the project area will continue to function as PNAs with the proposed project in place.

b. Substantial and unacceptable impacts. We reviewed the District's record relating to the project proposal to impact 3,972 acres of wetlands/open water and 25,727 linear feet of streams. While the magnitude of the impacts is daunting at first glance, it is important to note that the impacts will occur over approximately 37 years, with nearly 3,481 acres of impact to wetlands occurring in the first 15 years of mining (about 232 acres of impact per year). In the same 15 year timeframe, nearly 14,592 linear feet of streams will be impacted (roughly 973 linear feet of impact per year). As mentioned above, the Albemarle Pamlico Estuary Complex drains a 19,200,000 acre watershed. The lower Pamlico River has a watershed in excess of 800,000 acres; the proposed project would affect substantially less than 1% of this area.

Due to efforts to avoid and minimize impacts to less disturbed and/or higher quality wetlands, many of the impacted wetlands are in extreme headwater and non-riparian landscape positions. Many impacted areas are wet flats and many are either agricultural fields or are currently being manipulated and maintained in an early to mid-successional condition through silvicultural practices. All stream reaches impacted are in the upper headwaters of tributaries to the Pamlico River Estuary in a concerted effort to reduce impacts to higher quality, downstream resources.

Although not required, all compensatory mitigation for the proposed project will be constructed prior to impacts and is designed to restore entire watersheds. A portion of the proposed mitigation has already been constructed by the permittee and has been deemed successful by the District. Moreover, the District has established permit conditions that comprehensively offset the unavoidable impact authorized. A special condition has been added to the permit that will ensure that impacts do not occur on any area until necessary to facilitate mine progression thus reducing temporal loss of vegetative cover and ecological function. An additional special condition has been included that requires reclamation of mined areas be accomplished in accordance with

milestones established in coordination with the North Carolina Division of Land Resources to ensure sequenced revegetation and stream reestablishment. This will ensure the timely start of the biotic processes that will return the impacted watersheds to full ecological productivity.

The compensatory mitigation plan is comprised of 9 sites and will provide a total of 11,196 acres of wetland mitigation, including restoration, enhancement, and preservation; and 84,888 linear feet of stream restoration and preservation (Tables 2 and 3). The plan has been designed to replace the aquatic resource functions being impacted by the mining operation and, when fully successful, will result in higher functioning wetland and stream systems than those impacted. The EPA expressed dissatisfaction with the replacement ratio for impacts to mature forested wetlands due to the temporal loss of these resources to the biotic community for an extended period while the vegetative community matures. Impacts to bottomland hardwood forests have been minimized to 70 acres total. Mitigation for these impacts has already been constructed and has been functioning for 10-12 years, providing a high quality offset for impacts to a disturbed resource. Overall, wetland impacts will be mitigated at a minimum of a 2:1 ratio. This does not include reclamation areas or additional stewardship in the impacted watersheds. The compensatory mitigation package is consistent with the requirements of the joint Corps/EPA Mitigation Rule.

Table 2: Compensatory Mitigation for Stream Impacts by Site

Mitigation Site	Restoration (lf)	Enhancement (lf)	Preservation (lf)	Total (lf)
Bay City	3,000			3,000
Hell Swamp	19,783			19,783
Gum Run				
Parker Farm			3,960	3,960
SC Corridor			26,736	26,736
P Lands				
U Lands				
Upper Back Creek	7,066		1,149	8,215
Rutman	8,793	7,994		16,787
Sage Gut	5,401		1,006	6,407
Total	44,043	7,994	32,851	84,888

Table 3: Compensatory Mitigation for Wetland/Open Water Impacts by Site

Mitigation Site	Restoration (ac)	Enhancement (ac)	Preservation (ac)	Total (ac)
Bay City	565		119	684
Hell Swamp	885	46	41	972
Gum Run	27			27
Parker Farm	245	162	196	603
SC Corridor			1,143	1,143
P Lands	2,075	381	135	2,591
U Lands	608		117	725
Upper Back Creek	116	38	18	172
Rutman	3,342	129	701	4,172
Sage Gut	105		2	107
Total	7,968	756	2,472	11,196

The comprehensive nature of the compensatory mitigation package is expected to provide direct benefits to the South Creek and lower Pamlico River estuary through enhanced flood storage, nursery habitat, nutrient storage, input and cycling, as well as improving overall water quality. Wildlife habitat will be restored and enhanced as well as increasing groundwater recharge opportunity zones in the project area. All mitigation areas will be protected in perpetuity by appropriate real estate instruments.

When viewed in context of the overall watershed, whether the lower Pamlico River or the Albemarle Pamlico Estuary, considering the total avoidance of the PNAs and all coastal marsh, and with the District required extensive and comprehensive mitigation package developed to offset the unavoidable impacts, we disagree with the EPA that the proposed project will result in substantial and unacceptable impacts to the aquatic environment.

c. 404(b)(1) Guidelines Analysis. The 15,100 acre project area contains 262,000,000 tons of recoverable phosphate ore. The permittee has expressed a desire to mine as completely as possible the economically viable phosphate reserves within the project area. Much of this recoverable ore lies beneath aquatic resources, many of which perform functions which contribute to the surrounding ecosystem and for which there is concern among the resource and environmental communities.

We have reviewed the project purpose (see section 4(c) above), which was agreed to by the Interagency Review Team (IRT), which included the EPA, and the permittee during the review process. Although the subject of much discussion after the results were realized, the structure and variables of the economic model used to determine practicability was also agreed to by the IRT. As part of their review, the District required the permittee to evaluate the practicability of the alternatives from a cost standpoint, in addition to logistics and existing technology, based on the framework agreed to by the IRT and according to the 404(b)(1) Guidelines.

What is of particular issue to the EPA is their perception that the cost model used by the District in determining practicability unfairly biased the alternatives analysis by precluding certain alternatives from further consideration. In part, this discomfort results from the fundamental requirement that alternatives must first be screened for practicability prior to being evaluated for environmental considerations. This discomfort has caused the EPA and other resource agencies to suggest revisiting alternatives, and to develop a new alternative, with fewer impacts to aquatic resources without regard for the necessary practicability determination as a first step. The District has undertaken an appropriate level of analysis for evaluating the practicability of the various alternatives in this case.

As a result of discussions with the applicant, it was determined that, from a practicability standpoint, the project area tracts had to be mined in the following order: NCPC-Bonnerton-S33. From the economic modeling, the Corps consistently found that mining S33 alone or first in the sequence was not practicable due to the high annual cost of mining the southern portion of the tract. In addition, the move to S33 would incur a \$103,000,000 cost to the permittee to relocate NC Route 33 and receding face costs, actions that potentially have impacts to the human

environment, which would necessarily be committed at the time a decision was made to move to this tract. However, the phosphate market is also volatile; therefore, predicting future viability of an already uncertain practicability becomes even more difficult.

Therefore, the District determined it was best to take a holistic approach to assessing alternatives to ensure all reasonably foreseeable actions were assessed and, if appropriate, permitted as part of a single and complete action. Based on the permittees initial application and their revised application, which demonstrated a viable mining planning window of 15 years, the District established an approximate 15-year window as what was necessary to fulfill the project purpose.

Currently, S33 is not practicable to mine. It may become so in the future due to technological advances or to changing market conditions; therefore, it is included in the proposed project as the third tract, in series, for impact. However, since it is not practicable now, it is not reasonable to include only portions of the site into overall calculations. Due to the uncertainty that mining all of S33 will become practicable in the future and thus allow the permittee to recoup the investment costs of moving to the site, we agree that the District has not been inconsistent or biased in their approach. The District has been reasonable in determining that a practicable alternative must allow approximately 15 years of mining before requiring a move to S33.

Regardless, the EPA headquarters and regional office introduced an alternative to the proposed project when meeting with the applicant, other resource agencies, and the District on 24 March 2009, suggesting it represented the Least Environmentally Damaging Practicable Alternative. We disagree with this assertion based on our analysis of the alternatives considered by the District, of the limited information provided by the EPA on their proposed alternative, and input from the permittee. The EPA did not provide detailed information on the new alternative. Rather, a boundary line was provided with no supporting information to warrant reopening the NEPA analysis to fully vet the alternative with the public. The EPA proposal appears to allow for significantly less ore extraction than any of the previously examined alternatives based upon its area, many of which were dismissed as not practicable from a cost standpoint. Furthermore, the permittee evaluated the cost of ore that would be lost to them with this alternative at \$442,680,000 (70,000,000 short tons of ore); a cost that was not factored into the cost model for this alternative. Finally, there was no mention by the EPA about a reduction in the overall comprehensive mitigation package commensurate with the decreased impact areas, leading to the supposition that there is an expectation that the current comprehensive compensatory mitigation package for the proposed project would be required for the EPA alternative. We believe this is unreasonable.

The District fully considered alternatives, performed a rigorous and valid economics analysis, and worked diligently with the permittee to avoid and minimize direct impacts to aquatic resources to the maximum extent practicable while still achieving the project purpose.

6. OPTIONS: The MOA with EPA provides three basic options:

a. Proceed with Final Action. ASA(CW) would inform the District Engineer to proceed with final action on the permit decision;

b. Proceed Based on Case Specific Policy Guidance. ASA(CW) would inform the District Engineer to proceed with final action in accordance with case specific policy guidance; or

c. Elevate the Decision. ASA(CW) would elevate the permit decision to the MSC, HQUSACE, or the ASA(CW) to review the case and make the final permit decision in accordance with 33 CFR 325.8 or provide case specific guidance back to the District.

7. HOUSACE DECISION AND RECOMMENDATION: Based on this analysis, the case specific options are as follows:

a. Proceed with Final Action. Selection of this option is contingent on a determination that there are not substantial unacceptable impacts to aquatic resources of national importance as a result of the District's proposed permit decision.

b. Proceed Based on Case Specific Policy Guidance. Selection of this option also requires a determination that there are not substantial unacceptable impacts to aquatic resources of national importance as a result of the District's proposed permit decision, but further recognizes that policy guidance may be necessary to ensure that the decision is appropriate. Our analysis supports selection of this option; therefore, we recommend that the District Commander proceed with the permit decision following the addition of the following special condition to the permit,

"Wetland Avoidance/Minimization Areas: The Permittee shall avoid the remaining ___ acre(s) of onsite wetlands and waters (Attachment ___/as detailed on Drawings through ___ of ___). These natural wetland areas and streams were avoided as part of the permit application review process and therefore will not be disturbed by any dredging, filling, mechanized land clearing, mining, agricultural activities, or other construction work whatsoever. The Corps reserves the right to deny review of any requests for future impacts to these natural wetland and stream areas."

In addition, the draft Record of Decision must be revised to clearly explain the functions being affected at each impact area (wetland/open water and stream) and provide an explanation of where and how, both quantitatively and qualitatively, those functions are being replaced within the comprehensive mitigation package. Using tables within the text of the document to represent this data would be helpful to the reader.

c. Elevate the Decision. This option requires a determination that there would be substantial and unacceptable impacts to aquatic resources of national importance as a result of the proposed permit or that the permit review/decision should be made at a higher level in the organization. Our analysis does not support this determination and therefore do not suggest this action is required.

8. CONCLUSION AND RECOMMENDATION: We do not believe the aquatic resources within the project area, either individually or cumulatively, qualify as an ARNI. Furthermore, we do not believe the proposed project to be permitted would cause substantial and unacceptable

adverse impacts to the aquatic environment. Moreover, we believe the District's decision shows sound application of regulation and existing policy to reach a reasonable decision that is appropriately mitigated. The effort the District put forth to minimize impacts to the maximum extent practicable, and offset unavoidable impacts via compensatory mitigation, is clear. Therefore, following the addition of the special condition included above and revision of the Record of Decision, we recommend the District Engineer proceed with the permit decision.



Geoff Gisler
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05/12/2009 09:40 AM

To Mike Shapiro/DC/USEPA/US@EPA
cc Stan Meiburg/R4/USEPA/US@EPA, Jim
Giattina/R4/USEPA/US@EPA, Gregory
Peck/DC/USEPA/US@EPA, Suzanne
bcc
Subject PCS Phosphate: USACE response to EPA elevation

Mr. Shapiro,
Please accept the attached submitted on behalf of the Pamlico-Tar River Foundation, Environmental Defense Fund, Sierra Club, and North Carolina Coastal Federation. The letter addresses the Army Corps of Engineers' response to EPA's elevation of the Wilmington District's permit decision on the PCS Phosphate mine expansion. As noted in the letter, the Corps's response fails to adequately address the unacceptable adverse effects identified by EPA in its 404(q) action and therefore action under 404(c) is necessary to prevent long-term environmental damage to the Albemarle Pamlico Estuary system.

Thank you for your consideration of these comments,

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May 12, 2009

Michael H. Shapiro
Acting Assistant Administrator
U.S. Environmental Protection Agency
Office of Water (4101M)
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Re: *USACE Response to EPA Elevation of PCS Phosphate Mine Expansion Permit*

Mr. Shapiro,

We submit this letter on behalf of the Pamlico-Tar River Foundation, Environmental Defense Fund, Sierra Club, and North Carolina Coastal Federation to address the Corps's May 6, 2009 response to the request by the Environmental Protection Agency that the Secretary review the Wilmington District's decision to issue a Clean Water Act Section 404 permit to PCS Phosphate to mine and destroy wetlands and streams as part of its mine advance in Beaufort County, North Carolina. The Corps's response fails to rebut EPA's concerns that the proposed project will result in unacceptable adverse impacts to the aquatic environment and fails to rebut the regulatory presumption in the 404(b) guidelines that practicable alternatives exist which have less impact on the aquatic environment. EPA should proceed with a 404(c) veto of this project based on its unacceptable adverse impacts to aquatic resources of national importance.

The proposed project would result in unacceptable adverse effects to Aquatic Resources of National Importance

The Corps states: "We do not believe the aquatic resources within the project area, either individually or cumulatively, qualify as [aquatic resources of national importance]." This statement generally explains why the Corps proceeded to propose issuance of a permit that will result in destruction of 3,961 acres of wetlands and nearly five miles of streams and cause long-term degradation of water quality, fisheries productivity, and economic uses of the Pamlico River and estuary. The Corps simply does not believe the wetlands, streams, tidal creeks, fish nursery areas, and adjacent estuarine waters warrant protection. The Corps and PCS are alone in contending the proposed mining area does not contain aquatic resources of national importance. The Environmental Protection Agency, U.S. Fish and Wildlife Service, National Marine Fisheries Service, North Carolina Marine Fisheries Commission, North Carolina Wildlife Resources Commission, and South Atlantic Fisheries Management Council all have concluded aquatic resources on the tract and those that would be affected by the project are vital

to the estuary system and that greater avoidance of impacts is required to prevent unacceptable adverse impacts.

The Corps attempts to minimize the significance of the aquatic resources by noting the project area is less than 1% of the watershed of the Albemarle Pamlico Estuary, which covers most of eastern North Carolina and much of southern Virginia. The implication of this statement is that it is of no consequence to degrade the aquatic resources of the estuary, so long as it occurs 1% at a time. The Corps fails to consider the proximity of the wetlands and waters that would be destroyed to the estuary, or the significance of the four primary nursery areas that would be degraded.

Further, the analysis crumbles under scrutiny. There are only 80,144 acres of primary nursery area in the entire state of North Carolina. Those primary nursery areas comprise far less than 1% of the State's coastal waters but are essential to the health of North Carolina's fisheries. The Corps could not contend that the loss of all primary nursery areas in the state of North Carolina would not have an adverse impact on fisheries, even though they represent much less than 1% of the overall watershed, yet attempts to marginalize the potentially devastating impacts proposed by PCS by a meaningless referral to the overall watershed size. Even though the impacts are less than 1% of the overall watershed, the nature of the impacts and their landscape location make them critical for the overall health of the Albemarle Pamlico Estuary.

The Corps does note that four of the tidal creeks have been identified as primary nursery areas by the State and Habitat Areas of Particular Concern by the South Atlantic Fisheries Management Council, affording them the highest level of protection under federal fisheries management laws. Yet, by approving the proposed impacts, the Corps fails to recognize that federal and state goals are to restore the water quality, productivity and fisheries of the estuary, not to supervise its incremental degradation.

The Corps notes that all direct impacts to the perennial reaches of the primary nursery areas have been avoided. These direct impacts have been avoided, not at the Corps's insistence, but because the State of North Carolina refused to process a permit that would result in mining the tidal creeks. PCS unsuccessfully sued the State challenging its refusal to permit destruction of the tidal creeks. The Corps, on the other hand, included this "applicant preferred alternative" to mine the tidal creeks as a reasonable alternative through the NEPA process, and continues even in this most recent document to claim avoidance of wetland impacts comparing the current plan to the now abandoned illegal "applicant preferred" plan.

Critically, the Corps has not required PCS to avoid direct impacts to the intermittent headwaters of the primary nursery areas or the wetlands that maintain water quality and nutrient cycling within these systems. There is a strong body of scientific support demonstrating that headwater streams and

their attendant wetlands are critical in maintaining stream health.¹ PCS's efforts to overcome that body of scientific understanding with the Entrix report fails because it: (1) distorts the findings of the studies summarized; (2) fails to account for scale of the proposed impacts; and (3) relies on incomplete data sets assessing the impacts of Jacks Creek drainage basin reduction.

With respect to indirect effects, the wetlands and streams that would be destroyed are proximate and integrally linked to the estuarine waters and primary nursery areas. The Corps's proposed plan would result in irreversible destruction of 55-84% of the entire watersheds of the tidal creeks and primary nursery areas. The Corps concludes "many", but not all, will continue to function as primary nursery areas with the proposed project in place. The Corps proposes to "adaptively manage" this degradation through a permit special condition requiring ten years of monitoring of the impacts of mining most of the watersheds of these creeks. Under the proposed mine plan, the watersheds of Tooley, Jacobs, Drinkwater, and Jacks Creeks will largely be mined within a 3-4 year period (years 2-6). There will be no time to quantify impacts and implement corrective actions. Even if there were time to quantify impacts, the conditions do not require additional avoidance of wetland impacts even if both the scientific panel and the Wilmington District conclude that mining is causing "significant adverse environmental impacts." This monitoring and adaptive management requirement is largely worthless in terms of preventing the water quality and fisheries degradation it anticipates, and will merely serve to require the Corps and PCS to keep a record of the degradation caused.

While it could be considered a tragic scientific study, this special condition monitoring of the degradation of the tidal creeks and primary nursery areas cannot, and does not, relieve the Corps of its obligation to avoid significant degradation to aquatic resources. While the special condition and required monitoring may document the degradation, the Corps's obligation is to prevent the degradation.

Nationally significant nonriverine wet hardwood forests must be protected

PCS proposes to destroy areas of the nationally significant nonriverine wet hardwood forest on the Bonneron Tract. The North Carolina Natural Heritage Program has identified this forest as one of

¹ Meyer J.L. and J.B. Wallace, Lost linkages and lotic ecology: Rediscovering small streams, In *Ecology: Achievement and Challenge*, M.C. Press, N.J. Huntly, and S. Levin (Editors), Blackwell Science, Malden, Massachusetts, pp 295-317 (2001); Gomi, T., Sidle, R.C., and J.S. Richardson, Understanding processes and downstream linkages of headwater systems, *BioScience* 52(10): 905-916 (2002); Alexander, R.B., Boyer, E.W., Smith, R.A., Schwartz, G.E., and R.B. Moore, The role of headwater streams in downstream water quality, *Journal of the American Water Resources Association* 43(1): 41-59 (2002); Meyer, J.L., Strayer, D.L., Wallace, B., Eggert, S.L., Helfman, G.S., and N.E. Leonard, The contribution of headwater streams to biodiversity in river networks, *Journal of the American Water Resources Association* 43(1): 86-103 (2007); Wipfl, M.S., Richardson, J.S., and R.J. Naiman, Ecological linkages between headwaters and downstream ecosystems: Transport of organic matter, invertebrates, and wood down headwater channels, *Journal of the American Water Resources Association* 43(1): 72-85 (2007); Freeman, M.C., Pringle, C.M., and C.R. Jackson, Hydrologic connectivity and the contribution of stream headwaters to ecological integrity at regional scales, *Journal of the American Water Resources Association* 43(1): 5-14 (2007).

the best five remaining examples of this globally imperiled wetland community. Dr. Schafale, community ecologist with the Natural Heritage Program, has examined the site and considers it an outstanding example of a nonriverine wet hardwood forest. He concludes it is of national ecological significance, and his view is supported by Drs. Peet, Weakley, White, and Christlanson, nationally recognized community ecologists in North Carolina.

The Corps concludes the national significance of this tract is "negligible." Although the Corps cites and uses the definition of this natural community developed by staff of the North Carolina Natural Heritage Program, it then questions the ability of Dr. Schafale, the Program's community ecologist and co-author of the definition, to identify the natural community or ascribe significance. Instead, the Corps relies on PCS's hired opinion from its consultant Dr. Gregory, who is a forester and not a community ecologist and unqualified to offer a scientifically credible opinion on natural community ecology or the ecological significance of the tract. Dr. Gregory's opinion of the timber value of the nonriverine wet hardwood forests on the Bonnerton Tract is of no relevance to its ecological significance.

Moreover, the Corps's assessment fails entirely to consider the overall rarity of this natural community. Only a few thousand acres remain, and it is classified as a globally imperiled natural community. Dr. Gregory's failure to account for the rarity of this community type – instead focusing on it in isolation – belies his claimed expertise on this wetland type. There is no evidence that the complex hydrology and vegetation of a nonriverine wet hardwood forest has been restored successfully anywhere. If PCS is permitted to directly destroy much of this forest on the Bonnerton Tract, and indirectly and permanently degrade the remainder, a nationally significant part of the aquatic ecosystem will be lost.

EPA should not take the silence of Dr. Schafale, the expert community ecologist that in part crafted the definition Dr. Gregory applies, as evidence that Dr. Gregory's analysis is valid. On April 15, 2009, PCS filed a lawsuit challenging the very operation of the N.C. Natural Heritage Program, Dr. Schafale's employer, as a result of the Program's identification of the rare wetlands on PCS's site. Although the lawsuit is baseless, its apparent attempt to silence Dr. Schafale and the Natural Heritage Program during the pendency of this permit elevation may be successful.

EPA has the authority under section 404(c) to protect this rare wetland tract. This broad wetland tract is bordered by Durham Creek and Porter Creek – a primary nursery area – and provides buffering functions to those creeks, benefitting fisheries downstream. Further, the open understory that is characteristic of these community types, and rare in the coastal plain, provides wildlife habitat. Finally, PCS has not demonstrated that there are no less environmentally damaging practicable alternatives that would avoid this site. Since EPA can base a 404(c) action on any violation of the 404(b)(1) guidelines, the applicant's failure to establish that these nationally significant wetland sites are unavoidable provides a basis for EPA to protect this area from destruction under 404(c). See James City County v. EPA, 955 F.2d 254, 257 (4th Cir. 1992)(citing 40 C.F.R. § 231.2(e)).

The EPA/USFWS/NMFS alternative is practicable

Perhaps the most important part of the Corps's response is the failure to meet its burden to explain why the mining alternative proposed by EPA, USFWS, and NMFS is not a practicable alternative with less impact on the aquatic environment. The Corps is required under the 404(b) Guidelines to permit only the least environmentally damaging practicable alternative. "[T]he applicant and the [Corps] are obligated to determine the feasibility of the least environmentally damaging alternatives that serve the basic project purpose. If such an alternative exists . . . the CWA compels that the alternative be considered and selected unless proven impracticable." Utahns for Better Transp. v. U.S. Dept. of Transp., 305 F.3d 1152, 1188-1189 (10th Cir. 2002). Since phosphate mining is not water dependent, the burden is on the applicant to demonstrate, and the Corps to verify, that an alternative is not the least environmentally damaging alternative.

The Corps's analysis suffers from a fatal internal inconsistency. In the DEIS and SDEIS, the Corps solely relied on an amortized cost model ("Cost Model A"). The SDEIS introduced a cash-cost model ("Cost Model B"), but did not accept that model. In its response to comments, the Corps states that "no rationale" supports the use of Cost Model B. Yet, it relies on the principal conclusion of Cost Model B – that all costs must be recovered within the 15-year window of analysis – as the basis for the requirement that practicable alternatives provide 15 years of mining north of Hwy 33 at a minimum. In short, the Corps relies on the data from Cost Model A, but accepts the conclusion of Cost Model B. This internal inconsistency improperly excludes reasonable alternatives – like the proposed EPA/FWS/NMFS alternative – that would be practicable if evaluated under Cost Model A.

Rather than addressing this fundamental flaw, the Corps chastises EPA for allegedly failing to raise its proposed alternative earlier. This argument is misleading at best, since EPA raised a substantially similar alternative for mining the NCPC tract in January 2007, a full ten months before Alternative L was introduced in the SDEIS. It was the Corps's introduction of the arbitrary "15-year" requirement in the FEIS released in late May 2008 – not any action by EPA – that prevented earlier analysis of this alternative.

The Corps erroneously states that the "District has been reasonable in determining that a practicable alternative must allow approximately 15 years of mining before requiring a move to S33." This "requirement" is unreasonable, arbitrary, and assures massive wetland destruction. Moreover, it is contrary to conclusions in the Corps's NEPA analysis which found economically practicable an alternative with only 7.5 years of mining north of Hwy 33 before moving to S33. The Corps's conclusion conflicts with its own economic analysis and determinations in the NEPA process.

The Corps defends its approach to the analysis of compliance with the 404(b) guidelines: arbitrarily requiring that a permit provide 15 years of mining in the wetland-rich area north of Hwy 33 as a baseline requirement for any practicable alternative. The Corps wrongly rejects EPA's contention that avoidance of impacts to wetlands and other waters to prevent significant degradation of aquatic resources should precede assessment of practicable alternatives, even though this sequence is precisely

what the 404(b) guidelines require. Under the guidelines, "no discharge of dredged or fill material may be permitted which will cause or contribute to significant degradation of waters of the United States." 40 C.F.R. § 230.10(c). Proposed discharges that would cause or contribute to significant degradation cannot be permitted, even if practicable alternatives to the proposal do not exist. Consequently, avoidance of wetlands and other waters required to prevent significant degradation must precede assessment of practicable alternatives, which may further reduce or eliminate entirely aquatic impacts. Unacceptable adverse environmental effects and significant degradation of waters require denial of a permit even if there are no practicable alternative means to accomplish the project's purposes. James City County v. EPA, 12 F.3d 1330 (4th Cir. 1993).

Here, both the adverse environmental effects and resulting significant degradation of waters and practicable alternatives require greater avoidance of wetlands and streams. The 15 year north of Hwy 33 requirement is simply arbitrary, not required by the project purpose, and based on the company's initial application which cannot be permitted. Under the guidelines, the applicant has the burden of "clearly" demonstrating that no practicable alternative exists, a burden it has failed to carry.

The proposed long-term protection of avoided wetlands is inadequate

The Corps proposes to address concerns about mitigation of avoided wetlands by "reserving the right" to deny a future permit application for mining in avoided areas. The Corps always "reserves a right" to deny a future permit application, if it fails to comply with the 404(b) guidelines or is not in the public interest. We are unaware of any other basis to deny a future permit application, including that the Corps decided in a previous permit to reserve the right to deny a future permit application. The Corps's assurance of reserving the right to deny a future application for avoided wetland areas is meaningless. If the avoided areas are mitigation, these areas must be legally protected by appropriate instruments, as required by Corps and EPA mitigation policy and rules.

The Corps's response has not cured the unacceptable adverse effects described in EPA's elevation of the permit decision under 404(q)

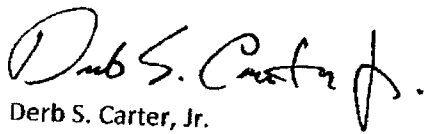
In its elevation decision, EPA identified three ways that the proposed project failed to comply with the 404(b)(1) guidelines:

- (1) There are less environmentally damaging practicable alternatives available;
- (2) Impacts to Nationally Significant Natural Heritage Areas and Primary Nursery Areas would cause or contribute to significant degradation of the Nation's waters; and
- (3) Appropriate steps to minimize and compensate for adverse impacts to waters of the United States have not been taken.

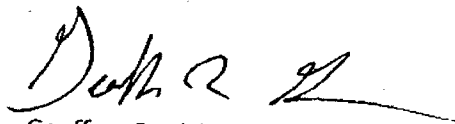
The Corps's response fails to adequately address these issues. Instead, it affirms the Wilmington District's decision as reasonable without explaining its underlying inadequacies and inconsistencies. Those flaws justified elevation of the permit under 404(q) and demand action under 404(c).

We appreciate your consideration of these comments.

Sincerely,



Derb S. Carter, Jr.
Director, NC/SC Office



Geoffrey R. Gisler
Staff Attorney

Rebecca Fox/R4/USEPA/US
05/19/2009 02:59 PM

To: pete_benjamin@fws.gov
cc
bcc
Subject: Fw: Proposal to Modify Alternative L for further Avoidance

Rebecca Fox/R4/USEPA/US
05/19/2009 02:48 PM

To: pace.wilber@noaa.gov, pete_benjamin@fws.gov
cc
Subject: Fw: Proposal to Modify Alternative L for further Avoidance

in case you have not yet seen this. proposal after 5-12 mtg. please share with mike and ron. thanks! b

Becky Fox
Wetland Regulatory Section
USEPA

Phone: 828-497-3531

Email: fox.rebecca@epa.gov

----- Forwarded by Rebecca Fox/R4/USEPA/US on 05/19/2009 02:40 PM -----

Jim Giattina/R4/USEPA/US

05/18/2009 07:09 PM

To: "Stan Meiburg" <meiburg.stan@epa.gov>, "Tom Welborn" <welborn.tom@epa.gov>, "Palmer Hough" <Hough.Palmer@epamail.epa.gov>, "Jennifer Derby" <derby.jennifer@epa.gov>, "Rebecca Fox" <fox.rebecca@epa.gov>
cc

Subject: Fw: Proposal to Modify Alternative L for further Avoidance

fyi...

Sent by EPA Wireless E-Mail Services

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

From: GHOUSE

Sent: 05/18/2009 04:36 PM AST

To: jefferson.ryscavage@usace.army.mil; brooke.lamson@usace.army.mil; william.t.walker@usace.army.mil; Jim Giattina; Philip Mancusi-Ungaro

Subject: Proposal to Modify Alternative L for further Avoidance

Colonel Jefferson M. Ryscavage
District Engineer
Wilmington District
U.S. Army Corps of Engineers
69 Darlington Avenue
Wilmington, NC 28403

Mr. Jim Giattina
Director
Water Protection Division
U. S. Environmental Protection Agency
Region 4
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303-8960

Re: PCS Phosphate Company, Inc.
Mine Continuation Permit

Dear Col. Ryscavage and Mr. Giattina:

Attached is a complete Proposal with graphics to further modify
Alternative L to meet the requests of the ASA and the EPA for further
avoidance:

(See attached file: EPA-ASA Avoidance Description.DOC) (See attached
file: NCPC_Bon_S33 Mod Alt L Conservation Esement and Deed Restriction
(2).pdf) (See attached file: NCPC_BON_S33 MOD ALT L BIOTIC COM
051309.pdf)



George W. House
Brooks, Pierce, McLendon, Humphrey & Leonard
Attorneys and Counsellors at Law
P.O. Box 26000
Greensboro, N.C. 27420
Direct Dial: 336-271-3114
Direct Fax: 336-232-9114

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EPA-ASA Avoidance Description.DOC NCPC_Bon_S33 Mod Alt L Conservation Esement and Deed Restriction (2).pdf


NCPC_BON_S33 MOD ALT L BIOTIC COM 051309.pdf

PROPOSED ADDITIONAL AVOIDANCE TO RESPOND TO EPA AND ASA CONCERNS

Summary of Avoidance (in addition to Modified Alt L)

1. Total additional avoidance 90 acres
2. Total additional linear feet of stream avoided 2,855 LF
 - Including: NCPC..... 1,675 LF
 - Bonnerton.....1,180 LF
3. Total additional mining reserves lost. 104 acres
(0.52 years and 2.58 million tons of phosphate rock concentrate)
4. Permanent conservation easement around Drinkwater Creek and PNA streams Jacks, Jacobs and Tooley Creeks from 100 yards upstream from their mouths on South Creek to the Modified Alternative L Boundary and Porter Creek from 100 yards upstream from its mouth on Durham Creek to the Modified Alternative L Boundary.
 - Total preserved by conservation easement (streams and 100-foot offset described in Specific Areas #4). 500 acres
 - Total linear feet of stream preserved by conservation easement.. 57,316 LF
5. Permanent mining restriction around Cypress Run from its mouth on South Creek to the Modified Alternative L Boundary.
 - Total preserved by mining restriction (streams and 100-foot offset described in Specific Areas # 5) 48 acres
 - Total linear feet of stream preserved by mining restriction 9,659 LF
6. Avoidance of high value PNA headwaters areas in NCPC and Bonnerton.

Specific Areas

1. The attached mine plans provide for the avoidance of an additional 81.7 acres north of Highway 33:
 - a. 6.0 acres on the NCPC Tract at the headwaters of Jacobs Creek (ASA, EPA & modified NMFS exclusion area 1):
 - i. 0.56 acre of bottomland hardwood forest
 - ii. 1.28 acres of shrub-scrub assemblage
 - iii. 1.82 acres of hardwood forest

- iv. 0.09 acre of pine forest
- v. 0.04 acre of pond
- vi. 0.19 acre of stream
- vii. 830 linear feet of stream
- viii. 2.00 acres of associated uplands

b. 14.1 acres on the NCPC Tract at the headwaters of Jacks Creek (ASA & EPA exclusion area):

- i. 0.51 acre of bottomland hardwood forest
- ii. 1.79 acres of herbaceous assemblage
- iii. 1.42 acres of shrub scrub assemblage
- iv. 0.63 acre of mixed pine/hardwood forest
- v. 0.02 acre of pine forest
- vi. 0.26 acre of pond
- vii. 0.02 acre of stream
- viii. 353 linear feet of stream
- ix. 9.46 acres of associated uplands

c. 6.7 acres on the NCPC Tract at the headwaters of Drinkwater Creek (EPA & NMFS exclusion area 2):

- i. 3.87 acres of hardwood forest
- ii. 1.06 acres of pine forest
- iii. 0.32 acre of pond
- iv. 0.04 acre of stream
- v. 492 linear feet of stream
- vi. 1.36 acres of associated uplands

d. 21.2 acres on the NCPC Tract at the headwaters of Tooley Creek (EPA & NMFS exclusion area 5):

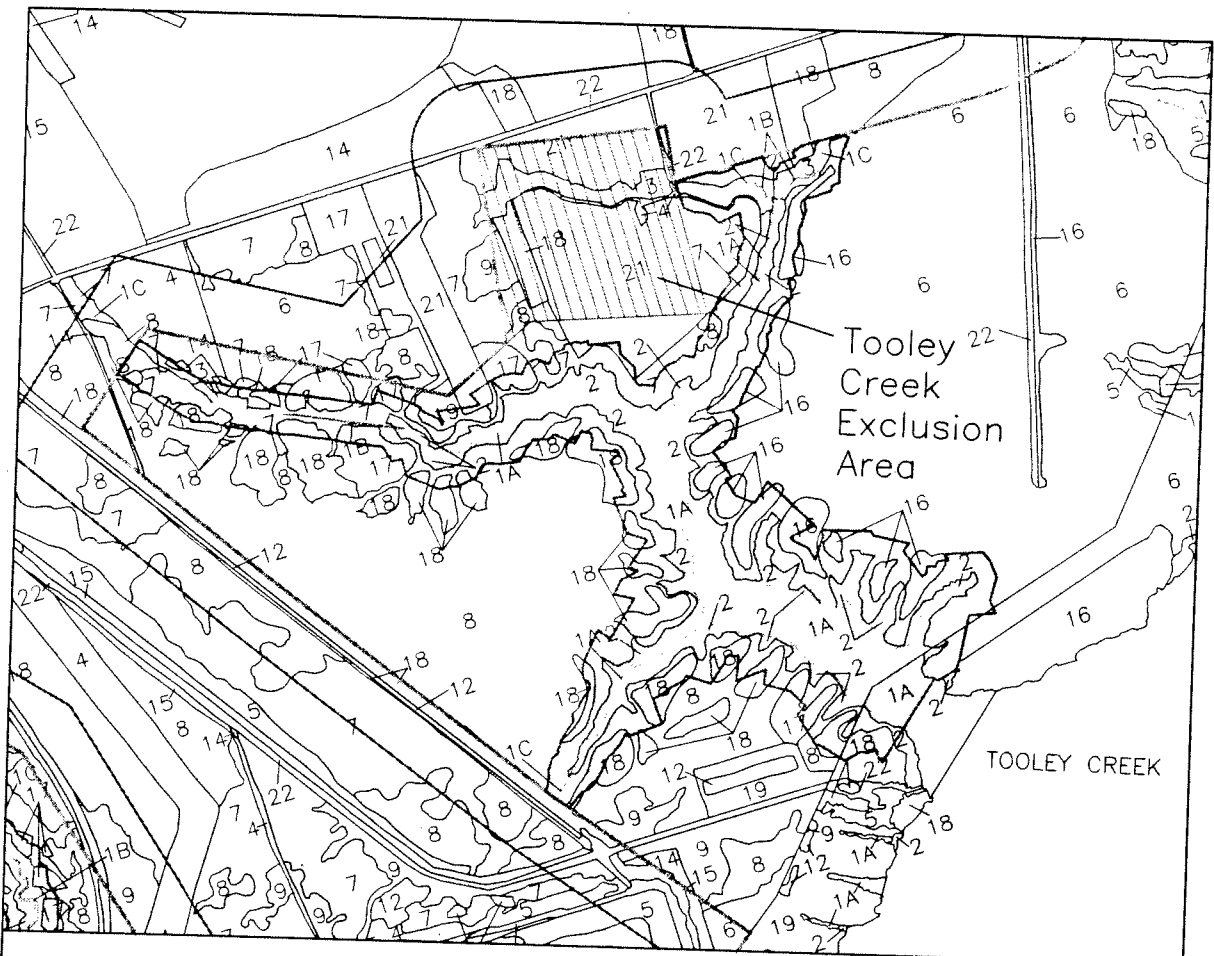
- i. 2.33 acres of bottomland hardwood forest
- ii. 0.40 acre of herbaceous assemblage
- iii. 0.48 acre of hardwood forest
- iv. 0.54 acre of mixed pine/hardwood forest
- v. 0.54 acre of pine forest
- vi. 16.9 acres of associated uplands

e. 33.8 acres on the Bonnerton Tract along Porter Creek (ASA, EPA & NMFS exclusion areas 3 and 6 and associated connector):

- i. 2.68 acres of bottomland hardwood forest
- ii. 9.04 acres of hardwood forest
- iii. 3.22 acres mixed pine/hardwood forest
- iv. 1.33 acres of pine forest
- v. 0.14 acre of stream
- vi. 1,180 linear feet of stream

- vii. 17.38 acres of associated uplands
- viii. In addition to the water quality protective functions of the wetlands, the combination of NMFS exclusion areas 3 and 6 and a connector between them provides for a significant expansion of watershed draining to Porter Creek.

2. The attached mine plans provide for the avoidance of an additional 7.9 acres South of Highway 33 near Cypress Run shown as Cypress Run Creek exclusion area:
 - a. 6.61 acres of hardwood forest
 - b. 1.29 acres of associated uplands
3. To accomplish avoidance of the areas identified in paragraphs 1 and 2, PCS will be prevented from mining 104 acres (2.58 million tons of phosphate rock concentrate) currently available in Modified Alternative L.
4. PCS will further agree to place a conservation easement permanently preserving the following streams on the NCPC and Bonnerton Tracts beginning 100 yards upstream of their mouths running to the Modified Alternative L Boundary (see attached maps) in their current natural state. This restriction will provide a 100 foot buffer from the back edge of the brackish marsh, or from the bank of the stream where no marsh exists, on either side of each of the following streams:
 - a. Jacks Creek 50 acres and 7,467 LF
 - b. Jacobs Creek 78 acres and 9,349 LF
 - c. Tooley Creek 81 acres and 8,953 LF
 - d. Drinkwater Creek 63 acres and 7,939 LF
 - e. Porter Creek 228 acres and 23,608 LF (subject to the limited, temporary surface impacts related to carrying out and supporting mining activities on the Bonnerton Tract and the inability to place restrictions on non-owned properties)
5. PCS will further agree to place a mining restriction on Cypress Run preventing mining of Cypress Run from its mouth running to the Modified Alternative L Boundary (see attached map). This restriction will provided a 100 foot buffer from the bank of the stream on either side of Cypress Run. This will permanently protect 48 acres and 9,659 LF from mining activities (subject to the inability to place restrictions on non-owned properties).
6. The offer above is conditioned upon the COE appropriately revising mitigation requirements for the wetlands and streams avoided.



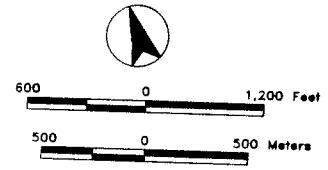
LEGEND	ACRES
NCPC BASE PROJECT AREA	3,608
MODIFIED ALT L - NCPC PROPOSED IMPACT BOUNDARY 05/13/09	2,109
MODIFIED ALT L - NCPC PROPOSED IMPACT BOUNDARY 05/13/09 - EXCAVATION LIMITS RECOVERED CONCENTRATE = 34,878,000 TONS *	1,264

LEGEND	ACRES
EXCLUSION AREAS	21.19
1 CREEKS/OPEN WATER	
PUBLIC TRUST AREAS	0.0 LF
13 PERENNIAL STREAM	0.0 LF
INTERMITTENT STREAM	0.0 LF
2 WETLAND BRACKISH MARSH COMPLEX	0.0
3 WETLAND BOTTOMLAND HARDWOOD FOREST	2.33
4 WETLAND HERBACEOUS ASSEMBLAGE	0.40
5 WETLAND SHRUB - SCRUB ASSEMBLAGE	0.0
6 WETLAND PINE PLANTATION	0.0
7 WETLAND HARDWOOD FOREST	0.48
8 WETLAND MIXED PINE - HARDWOOD FOREST	0.54
9 WETLAND PINE FOREST	0.54
10 WETLAND POCOSIN - BAY FOREST	0.0
11 WETLAND SAND RIDGE FOREST	0.0
12 POND	0.0
13 WETLAND MAINTAINED AREA	0.0
14 UPLAND HERBACEOUS ASSEMBLAGE	0.0
15 UPLAND SHRUB - SCRUB ASSEMBLAGE	0.0
16 UPLAND PINE PLANTATION	0.0
17 UPLAND HARDWOOD FOREST	0.0
18 UPLAND MIXED PINE - HARDWOOD FOREST	1.30
19 UPLAND PINE FOREST	0.0
20 UPLAND SAND RIDGE FOREST	0.0
21 UPLAND AGRICULTURAL LAND	15.44
22 UPLAND NON - VEGETATED/MAINTAINED AREA	0.18

47% WETLAND AREAS (UPLAND/WETLAND ACRES WITHIN THIS AREA HAVE BEEN ACCOUNTED FOR WITHIN COMMUNITIES ACRES LISTED ABOVE.)

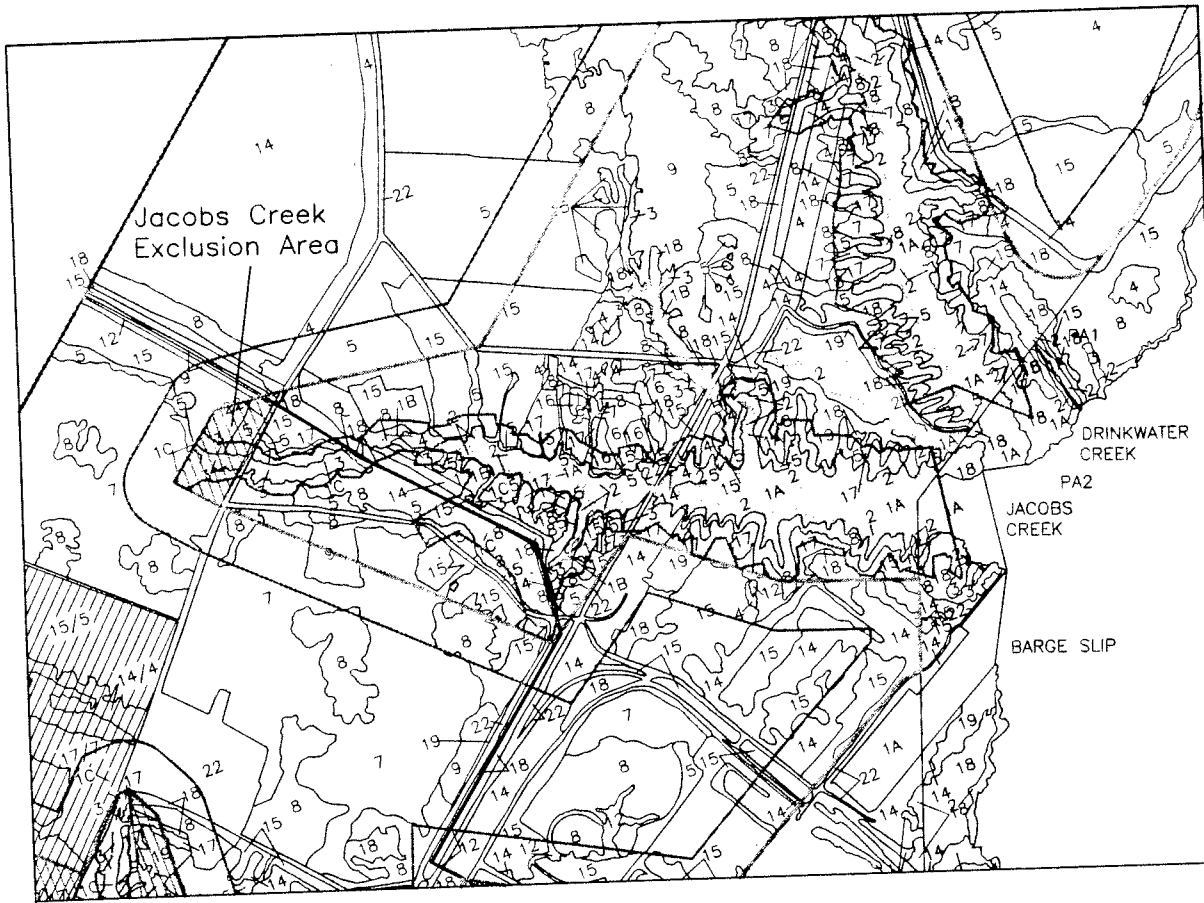
WATERS OF THE US AREAS	4.29
WETLAND AREAS (WITHOUT PONDS AND CREEKS)	4.29
UPLAND AREAS	16.90

CONSERVATION EASEMENT - TOOLEY CREEK (81 ACRES)	
CREEKS/OPEN WATER	
PUBLIC TRUST AREAS	6,541 LF
13 PERENNIAL STREAM	918 LF
INTERMITTENT STREAM	1,494 LF



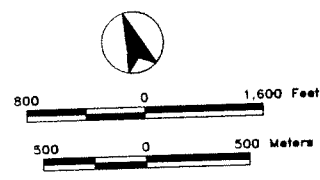
Conservation Easement - Tooley Creek Modified Alternative L - NCPC	
PCS PHOSPHATE MINE CONTINUATION	
Scale: As shown	Drawn by: BFG/TLJ
Date: 5/18/09	File: 17458224/Node_ModAlt_051309_Conser_Easmt(NCPC_MC_051208)
Approved by: JPS 5-13-09	Revision:

* PROVIDED BY PCS PHOSPHATE 05/13/09

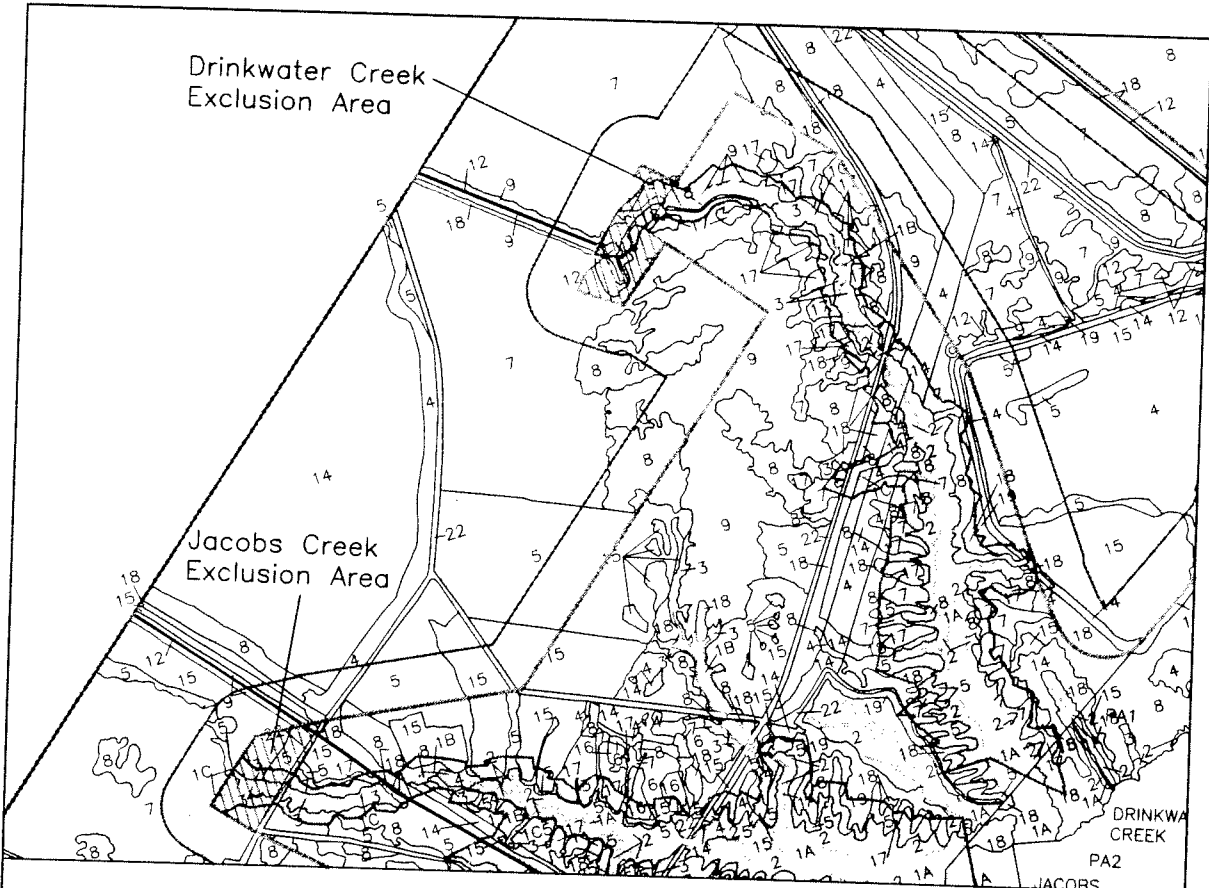


LEGEND	ACRES
NCPC BASE PROJECT AREA	3,608
MODIFIED ALT L - NCPC PROPOSED	2,109
IMPACT BOUNDARY 05/13/09	
MODIFIED ALT L - NCPC PROPOSED IMPACT BOUNDARY 05/13/09 - EXCAVATION LIMITS	1,264
RECOVERED CONCENTRATE = 34,878,000 TONS *	
EXCLUSION AREAS (5.98 ACRES)	
1 CREEKS/OPEN WATER	0.0 LF 0.0
2 PUBLIC TRUST AREAS	0.0 LF 0.0
3 PERENNIAL STREAM	830 LF 0.19
4 INTERMITTENT STREAM	0.0
5 WETLAND BRACKISH MARSH COMPLEX	0.58
6 WETLAND BOTTOMLAND HARDWOOD FOREST	0.0
7 WETLAND HERBACEOUS ASSEMBLAGE	1.28
8 WETLAND SHRUB - SCRUB ASSEMBLAGE	0.0
9 WETLAND PINE PLANTATION	1.82
10 WETLAND HARDWOOD FOREST	0.0
11 WETLAND MIXED PINE - HARDWOOD FOREST	0.09
12 WETLAND PINE FOREST	0.0
13 WETLAND POCOSIN - BAY FOREST	0.0
14 WETLAND SAND RIDGE FOREST	0.04
15 POND	0.0
16 WETLAND MAINTAINED AREA	0.0
17 UPLAND HERBACEOUS ASSEMBLAGE	1.64
18 UPLAND SHRUB - SCRUB ASSEMBLAGE	0.0
19 UPLAND PINE PLANTATION	0.0
20 UPLAND HARDWOOD FOREST	0.01
21 UPLAND MIXED PINE - HARDWOOD FOREST	0.0
22 UPLAND PINE FOREST	0.0
23 UPLAND SAND RIDGE FOREST	0.0
24 UPLAND AGRICULTURAL LAND	0.0
25 UPLAND NON - VEGETATED/MAINTAINED AREA	0.35
47% WETLAND AREAS (UPLAND/WETLAND ACREAGES WITHIN THIS AREA HAVE BEEN ACCOUNTED FOR WITHIN COMMUNITIES ACREAGES LISTED ABOVE.)	0.0
WATERS OF THE US AREAS	3.98
WETLAND AREAS (WITHOUT PONDS AND CREEKS)	3.75
UPLAND AREAS	2.00
CONSERVATION EASEMENT - JACOBS CREEK (78 ACRES)	
CREEKS/OPEN WATER	5,194 LF
PUBLIC TRUST AREAS	565 LF
PERENNIAL STREAM	3,590 LF
INTERMITTENT STREAM	

* PROVIDED BY PCS PHOSPHATE 05/13/09



Conservation Easement - Jacobs Creek Modified Alternative L - NCPC	
PCS PHOSPHATE MINE CONTINUATION	
Scale: As shown	Drawn by: BFG/TLJ
Date: 5/18/09	File: 17458224/Hepp_ModAlt_001309 - Conserv_Easmt(NCPC BC 051208)
Approved by: [Signature]	Revision: JPS 5-13-09



LEGEND

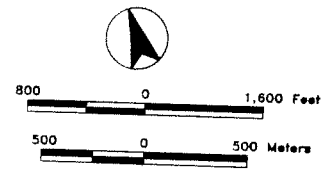
	ACRES
NCPC BASE PROJECT AREA	3,608
MODIFIED ALT L - NCPC PROPOSED	2,109
IMPACT BOUNDARY 05/13/09	
MODIFIED ALT L - NCPC PROPOSED IMPACT BOUNDARY 05/13/09 - EXCAVATION LIMITS	1,264
RECOVERED CONCENTRATE = 34,878,000 TONS *	

			ACRES
EXCLUSION AREAS (6.65 ACRES)			
CREEKS/OPEN WATER			
1	PUBLIC TRUST AREAS	0.0 LF	0.0
	PERENNIAL STREAM	0.0 LF	0.0
	INTERMITTENT STREAM	492 LF	0.04
2	WETLAND BRACKISH MARSH COMPLEX		0.0
3	WETLAND BOTTOMLAND HARDWOOD FOREST		0.0
4	WETLAND HERBACEOUS ASSEMBLAGE		0.0
5	WETLAND SHRUB - SCRUB ASSEMBLAGE		0.0
6	WETLAND PINE PLANTATION		0.0
7	WETLAND HARDWOOD FOREST		3.87
8	WETLAND MIXED PINE - HARDWOOD FOREST		0.0
9	WETLAND PINE FOREST		1.06
10	WETLAND POCOSIN - BAY FOREST		0.0
11	WETLAND SAND RIDGE FOREST		0.0
12	POND		0.32
13	WETLAND MAINTAINED AREA		0.0
14	UPLAND HERBACEOUS ASSEMBLAGE		0.0
15	UPLAND SHRUB - SCRUB ASSEMBLAGE		0.0
16	UPLAND PINE PLANTATION		0.0
17	UPLAND HARDWOOD FOREST		0.0
18	UPLAND MIXED PINE - HARDWOOD FOREST		1.36
19	UPLAND PINE FOREST		0.0
20	UPLAND SAND RIDGE FOREST		0.0
21	UPLAND AGRICULTURAL LAND		0.0
22	UPLAND NON - VEGETATED/MAINTAINED AREA		0.0

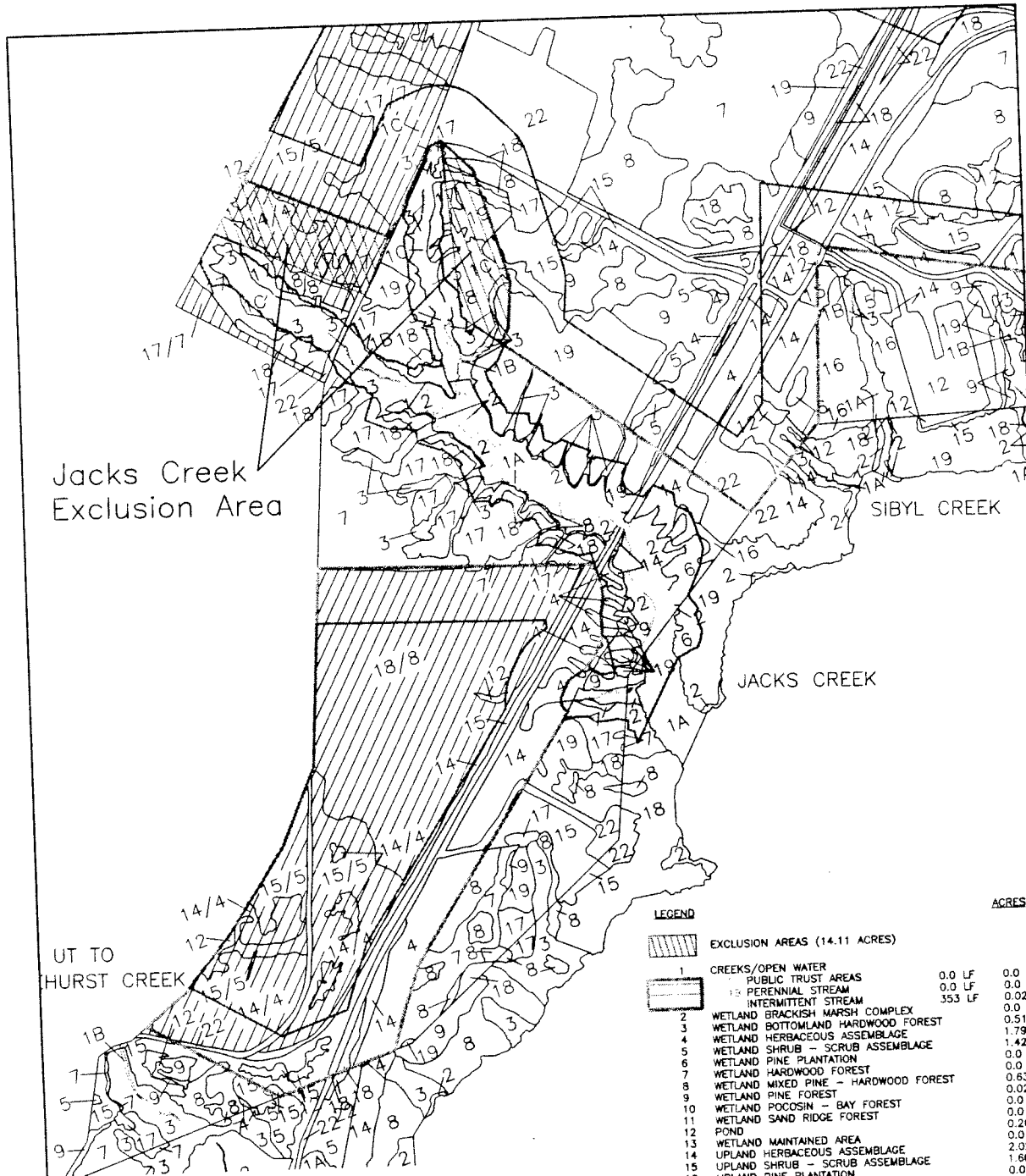
47% WETLAND AREAS			
(UPLAND/WETLAND ACREAGES WITHIN THIS AREA HAVE BEEN ACCOUNTED FOR WITHIN COMMUNITIES ACREAGES LISTED ABOVE.)			
	WATERS OF THE US AREAS		5.29
	WETLAND AREAS (WITHOUT PONDS AND CREEKS)		4.93
	UPLAND AREAS		1.36
	CONSERVATION EASEMENT - DRINKWATER CREEK (63 ACRES)		

			ACRES
CREEKS/OPEN WATER			
	PUBLIC TRUST AREAS	5,318 LF	
	PERENNIAL STREAM	508 LF	
	INTERMITTENT STREAM	2,113 LF	

* PROVIDED BY PCS PHOSPHATE 05/13/09



Conservation Easement - Drinkwater Creek Modified Alternative L - NCPC	
PCS PHOSPHATE MINE CONTINUATION	
Scale: As shown	Drawn by: BFG/TLJ
Date: 5/18/09	File: 17456224/Nepa_ModAltL_051308_Conser_Easmt(NCPC_BC_051208)
Approved by:	Revision: JPS 5-13-09



Jacks Creek Exclusion Area

SIBYL CREEK

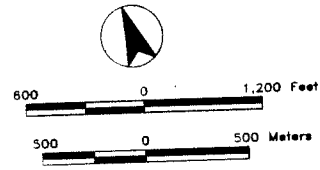
JACKS CREEK

UT TO HURST CREEK

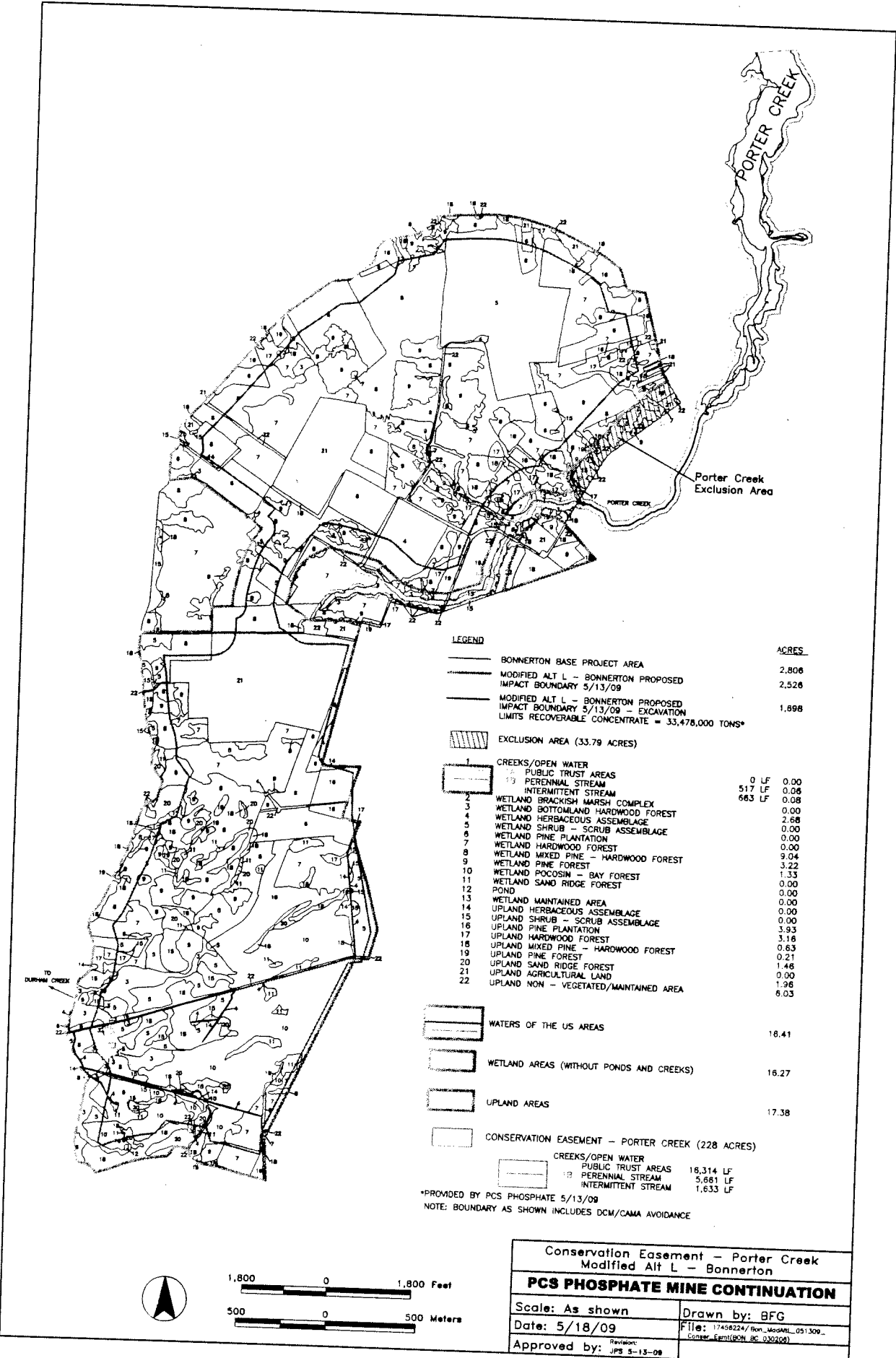
LEGEND	ACRES
NCPC BASE PROJECT AREA	3,608
MODIFIED ALT L - NCPC PROPOSED	2,109
IMPACT BOUNDARY 05/13/09	
MODIFIED ALT L - NCPC PROPOSED IMPACT BOUNDARY 05/13/09 - EXCAVATION LIMITS	1,264
RECOVERED CONCENTRATE = 34,878,000 TONS *	
CONSERVATION EASEMENT - JACKS CREEK (50 ACRES)	
CREEKS/OPEN WATER	3,902 LF
PUBLIC TRUST AREAS	1,197 LF
PERENNIAL STREAM	2,368 LF
INTERMITTENT STREAM	

* PROVIDED BY PCS PHOSPHATE 05/13/09

LEGEND	ACRES
EXCLUSION AREAS (14.11 ACRES)	
1 CREEKS/OPEN WATER	0.0 LF 0.0
13 PUBLIC TRUST AREAS	0.0 LF 0.0
15 PERENNIAL STREAM	353 LF 0.02
INTERMITTENT STREAM	
2 WETLAND BRACKISH MARSH COMPLEX	0.51
3 WETLAND BOTTOMLAND HARDWOOD FOREST	1.79
4 WETLAND HERBACEOUS ASSEMBLAGE	1.42
5 WETLAND SHRUB - SCRUB ASSEMBLAGE	0.0
6 WETLAND PINE PLANTATION	0.0
7 WETLAND HARDWOOD FOREST	0.63
8 WETLAND MIXED PINE - HARDWOOD FOREST	0.02
9 WETLAND PINE FOREST	0.0
10 WETLAND POCOSIN - BAY FOREST	0.0
11 WETLAND SAND RIDGE FOREST	0.26
POND	0.0
12 WETLAND MAINTAINED AREA	2.02
14 UPLAND HERBACEOUS ASSEMBLAGE	1.60
15 UPLAND SHRUB - SCRUB ASSEMBLAGE	0.0
16 UPLAND PINE PLANTATION	0.79
17 UPLAND HARDWOOD FOREST	2.96
18 UPLAND MIXED PINE - HARDWOOD FOREST	1.83
19 UPLAND PINE FOREST	0.0
20 UPLAND SAND RIDGE FOREST	0.0
21 UPLAND AGRICULTURAL LAND	0.26
22 UPLAND NON - VEGETATED/MAINTAINED AREA	
47% WETLAND AREAS (UPLAND/WETLAND ACREAGES WITHIN THIS AREA HAVE BEEN ACCOUNTED FOR WITHIN COMMUNITIES ACREAGES LISTED ABOVE.)	3.35
WATERS OF THE US AREAS	4.65
WETLAND AREAS (WITHOUT PONDS AND CREEKS)	4.37
UPLAND AREAS	9.46



Conservation Easement - Jacks Creek Modified Alternative L - NCPC	
PCS PHOSPHATE MINE CONTINUATION	
Scale: As shown	Drawn by: BFG/TLJ
Date: 5/18/09	File: 17450224/ Ncpa_VocAHL_051309_Conser_Easmt(NCPC) 051208
Approved by: [Signature]	Revision: JPS 5-13-09

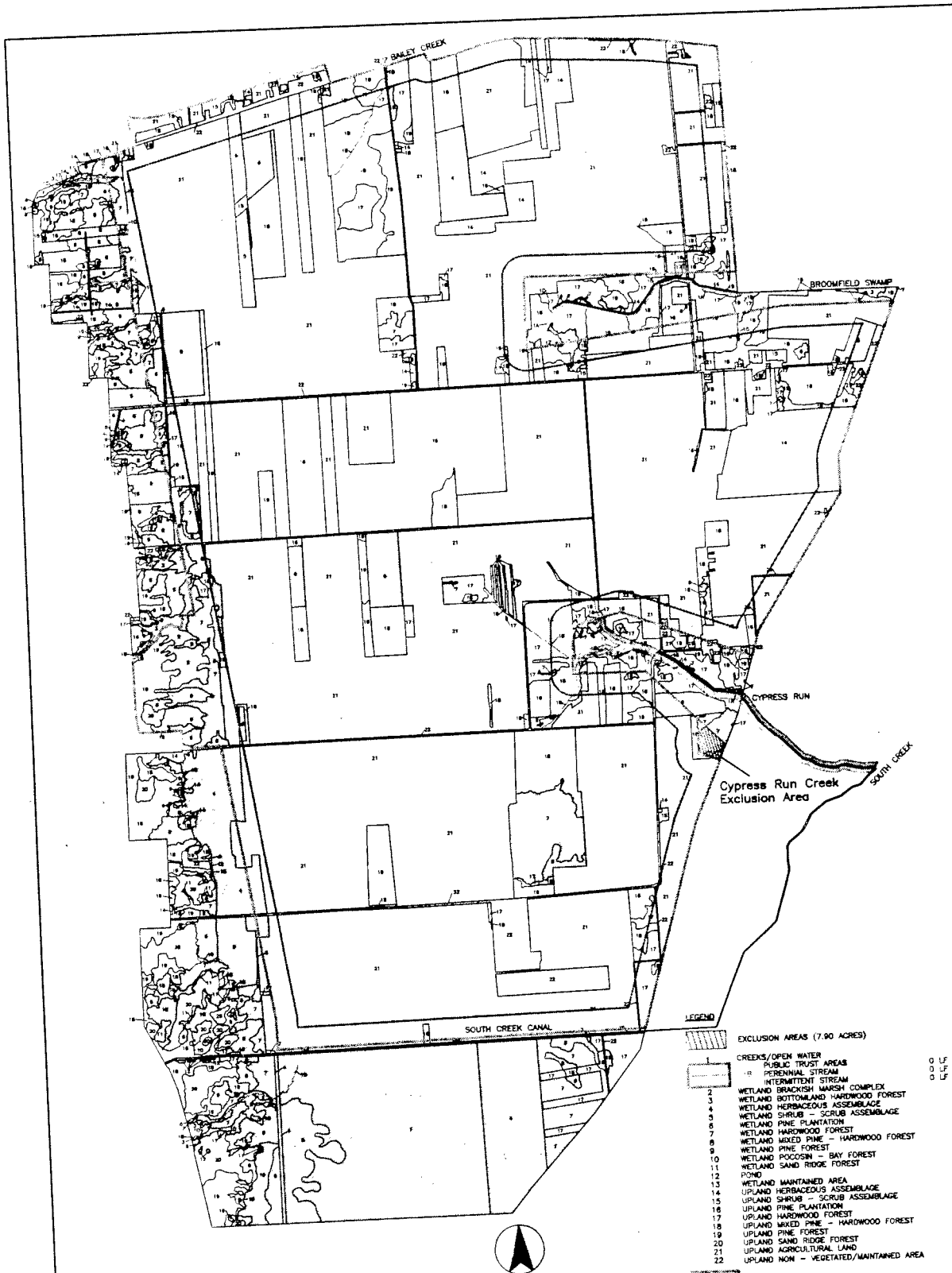


LEGEND

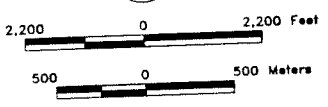
	ACRES
— BONNERTON BASE PROJECT AREA	2,806
— MODIFIED ALT L - BONNERTON PROPOSED IMPACT BOUNDARY 5/13/09	2,526
— MODIFIED ALT L - BONNERTON PROPOSED IMPACT BOUNDARY 5/13/09 - EXCAVATION LIMITS RECOVERABLE CONCENTRATE = 33,478,000 TONS*	1,898
▨ EXCLUSION AREA (33.79 ACRES)	
1 CREEKS/OPEN WATER	
2 PUBLIC TRUST AREAS	0 LF 0.00
3 PERENNIAL STREAM	517 LF 0.08
4 INTERMITTENT STREAM	663 LF 0.08
5 WETLAND BRACKISH MARSH COMPLEX	
6 WETLAND BOTTOMLAND HARDWOOD FOREST	0.00
7 WETLAND HERBACEOUS ASSEMBLAGE	2.68
8 WETLAND SHRUB - SCRUB ASSEMBLAGE	0.00
9 WETLAND PINE PLANTATION	0.00
10 WETLAND HARDWOOD FOREST	0.00
11 WETLAND MIXED PINE - HARDWOOD FOREST	9.04
12 WETLAND PINE FOREST	3.22
13 WETLAND POCOSIN - BAY FOREST	1.33
14 WETLAND SAND RIDGE FOREST	0.00
15 POND	0.00
16 WETLAND MAINTAINED AREA	0.00
17 UPLAND HERBACEOUS ASSEMBLAGE	0.00
18 UPLAND SHRUB - SCRUB ASSEMBLAGE	0.00
19 UPLAND PINE PLANTATION	3.93
20 UPLAND HARDWOOD FOREST	3.18
21 UPLAND MIXED PINE - HARDWOOD FOREST	0.63
22 UPLAND PINE FOREST	0.21
23 UPLAND SAND RIDGE FOREST	1.48
24 UPLAND AGRICULTURAL LAND	0.00
25 UPLAND NON - VEGETATED/MAINTAINED AREA	1.98
26 UPLAND NON - VEGETATED/MAINTAINED AREA	6.03
▨ WATERS OF THE US AREAS	18.41
▨ WETLAND AREAS (WITHOUT PONDS AND CREEKS)	16.27
▨ UPLAND AREAS	17.38
▨ CONSERVATION EASEMENT - PORTER CREEK (228 ACRES)	
1 CREEKS/OPEN WATER	
2 PUBLIC TRUST AREAS	18,314 LF
3 PERENNIAL STREAM	5,681 LF
4 INTERMITTENT STREAM	1,633 LF

*PROVIDED BY PCS PHOSPHATE 5/13/09
 NOTE: BOUNDARY AS SHOWN INCLUDES DCM/CAMA AVOIDANCE

Conservation Easement - Porter Creek Modified Alt L - Bonnerton	
PCS PHOSPHATE MINE CONTINUATION	
Scale: As shown	Drawn by: BFG
Date: 5/18/09	File: 17458224/Bon_ModAltL_051309_Contour_Easmt(BON_BC_030208)
Approved by:	Revision: JPS 5-13-08



LEGEND	ACRES
SOUTH OF 33 BASE PROJECT AREA	8,688
MODIFIED ALT L - SOUTH OF 33 PROPOSED	6,730
IMPACT BOUNDARY 5/13/09	
MODIFIED ALT L - SOUTH OF 33 PROPOSED	5,189
IMPACT BOUNDARY 5/13/09 - EXCAVATION	
LIMITS RECOVERABLE CONCENTRATE = 104,717,000 TONS*	
PERMANENT DEED RESTRICTION PROHIBITING MINING - CYPRESS RUN (48 ACRES)	
CREEKS/OPEN WATER	7,331 LF
PUBLIC TRUST AREAS	2,328 LF
PERENNIAL STREAM	0 LF
INTERMITTENT STREAM	0 LF

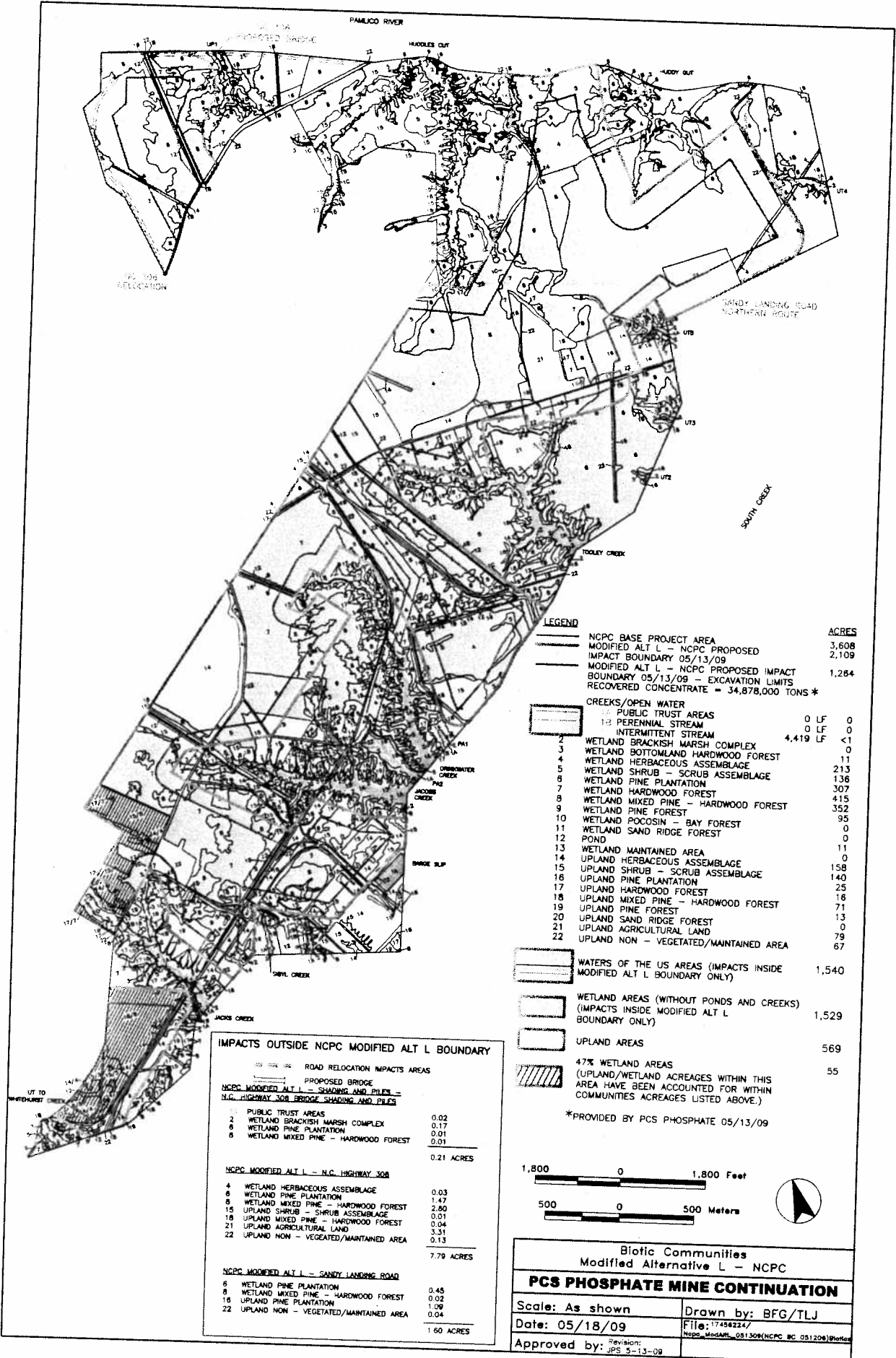


LEGEND	ACRES
EXCLUSION AREAS (7.90 ACRES)	
CREEKS/OPEN WATER	0 LF 0.0
PUBLIC TRUST AREAS	0 LF 0.0
PERENNIAL STREAM	0 LF 0.0
INTERMITTENT STREAM	0 LF 0.0
2 WETLAND BRACKISH MARSH COMPLEX	0.0
3 WETLAND BOTTOMLAND HARDWOOD FOREST	0.0
4 WETLAND HERBACEOUS ASSEMBLAGE	0.0
5 WETLAND SHRUB - SCRUB ASSEMBLAGE	0.0
6 WETLAND PINE PLANTATION	6.61
7 WETLAND HARDWOOD FOREST	0.0
8 WETLAND MIXED PINE - HARDWOOD FOREST	0.0
9 WETLAND PINE FOREST	0.0
10 WETLAND POCOSIN - BAY FOREST	0.0
11 WETLAND SAND RIDGE FOREST	0.0
12 POND	0.0
13 WETLAND MAINTAINED AREA	0.0
14 UPLAND HERBACEOUS ASSEMBLAGE	0.0
15 UPLAND SHRUB - SCRUB ASSEMBLAGE	0.0
16 UPLAND PINE PLANTATION	0.04
17 UPLAND HARDWOOD FOREST	1.15
18 UPLAND MIXED PINE - HARDWOOD FOREST	0.0
19 UPLAND PINE FOREST	0.0
20 UPLAND SAND RIDGE FOREST	0.10
21 UPLAND AGRICULTURAL LAND	0.0
22 UPLAND NON - VEGETATED/MAINTAINED AREA	0.0
WATERS OF THE US AREAS	6.61
WETLAND AREAS (WITHOUT PONDS AND CREEKS)	6.61
UPLAND AREAS	1.29

Permanent Deed Restriction Prohibiting Mining
Cypress Run
Modified Alt L - South of 33
PCS PHOSPHATE MINE CONTINUATION

Scale: As shown	Drawn by: BFG/TLJ
Date: 5/18/09	File: 17458224/ S33_MODAL_TL_051309_DEED_RESTRI(533 BC 0205)
Approved by: JPS 5-13-09	Revision: JPS 5-13-09

*PROVIDED BY PCS PHOSPHATE 05/13/09



LEGEND

NCPC BASE PROJECT AREA	ACRES
MODIFIED ALT L - NCPC PROPOSED	3,608
IMPACT BOUNDARY 05/13/09	2,109
MODIFIED ALT L - NCPC PROPOSED IMPACT BOUNDARY 05/13/09 - EXCAVATION LIMITS	1,284
RECOVERED CONCENTRATE = 34,878,000 TONS *	

CREEKS/OPEN WATER

1/2 PUBLIC TRUST AREAS	0 LF	0
1/2 PERENNIAL STREAM	0 LF	0
1/2 INTERMITTENT STREAM	4,419 LF	<1
2 WETLAND BRACKISH MARSH COMPLEX		0
3 WETLAND BOTTOMLAND HARDWOOD FOREST		213
4 WETLAND HERBACEOUS ASSEMBLAGE		138
5 WETLAND SHRUB - SCRUB ASSEMBLAGE		307
6 WETLAND PINE PLANTATION		415
7 WETLAND HARDWOOD FOREST		352
8 WETLAND MIXED PINE - HARDWOOD FOREST		95
9 WETLAND PINE FOREST		0
10 WETLAND POCOSIN - BAY FOREST		0
11 WETLAND SAND RIDGE FOREST		11
12 POND		0
13 WETLAND MAINTAINED AREA		158
14 UPLAND HERBACEOUS ASSEMBLAGE		140
15 UPLAND SHRUB - SCRUB ASSEMBLAGE		25
16 UPLAND PINE PLANTATION		71
17 UPLAND HARDWOOD FOREST		13
18 UPLAND MIXED PINE - HARDWOOD FOREST		0
19 UPLAND PINE FOREST		79
20 UPLAND SAND RIDGE FOREST		67
21 UPLAND AGRICULTURAL LAND		
22 UPLAND NON - VEGETATED/MAINTAINED AREA		

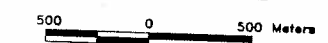
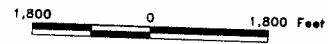
WATERS OF THE US AREAS (IMPACTS INSIDE MODIFIED ALT L BOUNDARY ONLY) 1,540

WETLAND AREAS (WITHOUT PONDS AND CREEKS) (IMPACTS INSIDE MODIFIED ALT L BOUNDARY ONLY) 1,529

UPLAND AREAS 569

47% WETLAND AREAS (UPLAND/WETLAND ACRES WITHIN THIS AREA HAVE BEEN ACCOUNTED FOR WITHIN COMMUNITIES ACRES LISTED ABOVE.) 55

*PROVIDED BY PCS PHOSPHATE 05/13/09



IMPACTS OUTSIDE NCPC MODIFIED ALT L BOUNDARY

ROAD RELOCATION IMPACTS AREAS

PROPOSED BRIDGE
 NCPC MODIFIED ALT L - SHADING AND PILES -
 N.C. HIGHWAY 308 BRIDGE SHADING AND PILES

1 PUBLIC TRUST AREAS	0.02
2 WETLAND BRACKISH MARSH COMPLEX	0.17
6 WETLAND PINE PLANTATION	0.01
8 WETLAND MIXED PINE - HARDWOOD FOREST	0.01
	0.21 ACRES

NCPC MODIFIED ALT L - N.C. HIGHWAY 308

4 WETLAND HERBACEOUS ASSEMBLAGE	0.03
6 WETLAND PINE PLANTATION	1.47
8 WETLAND MIXED PINE - HARDWOOD FOREST	2.80
15 UPLAND SHRUB - SCRUB ASSEMBLAGE	0.01
18 UPLAND MIXED PINE - HARDWOOD FOREST	0.04
21 UPLAND AGRICULTURAL LAND	3.31
22 UPLAND NON - VEGETATED/MAINTAINED AREA	0.13
	7.79 ACRES

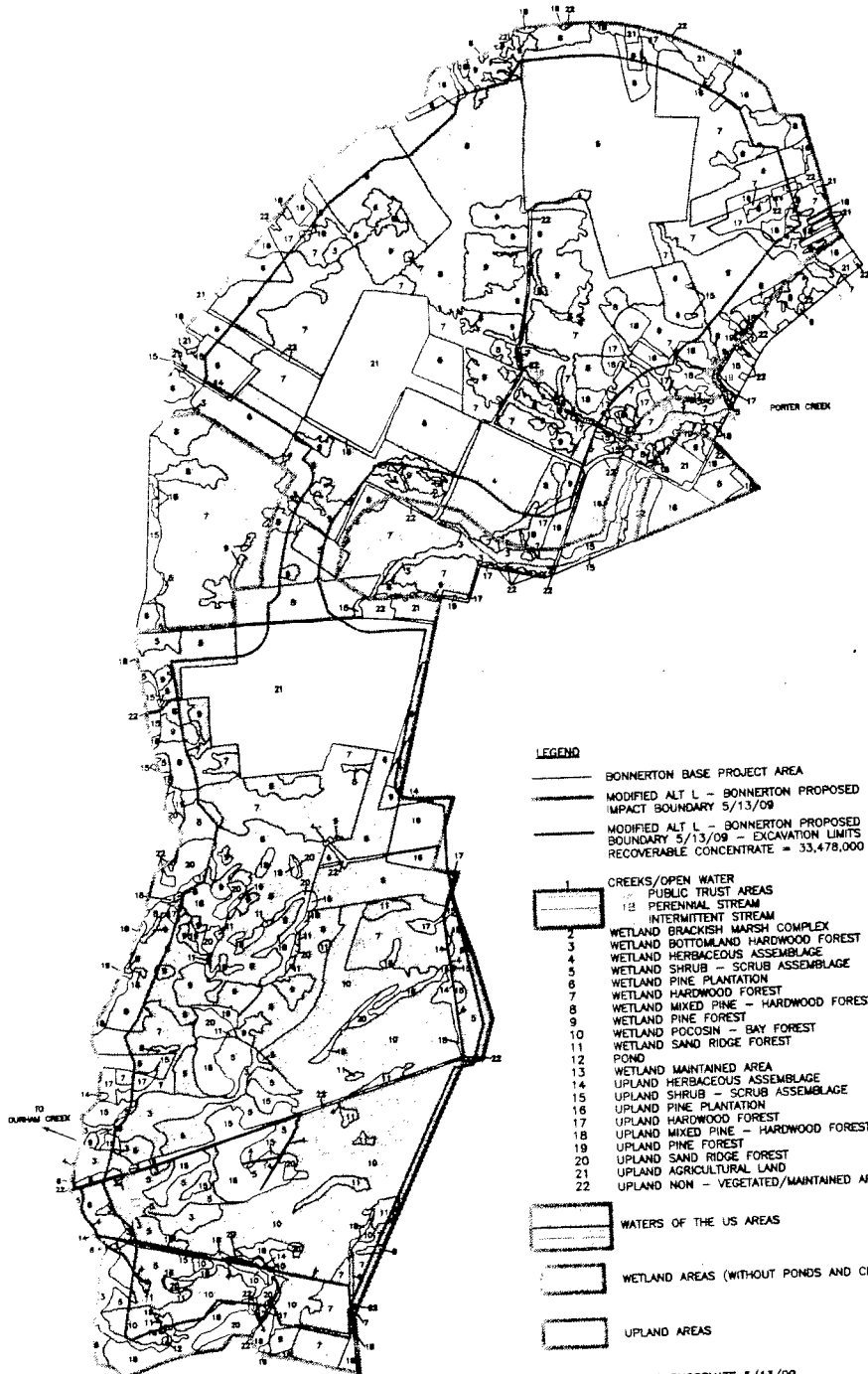
NCPC MODIFIED ALT L - SANDY LANDING ROAD

6 WETLAND PINE PLANTATION	0.45
8 WETLAND MIXED PINE - HARDWOOD FOREST	0.02
18 UPLAND MIXED PINE - HARDWOOD FOREST	1.09
22 UPLAND NON - VEGETATED/MAINTAINED AREA	0.04
	1.60 ACRES

Biotic Communities
 Modified Alternative L - NCPC

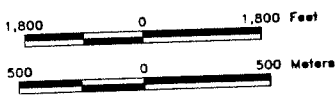
PCS PHOSPHATE MINE CONTINUATION

Scale: As shown	Drawn by: BFG/TLJ
Date: 05/18/09	File: 17454224/
Approved by: JPS 5-13-09	Revision: Ncpc_ModAltL_051309/NCPC BC 051208/10/09

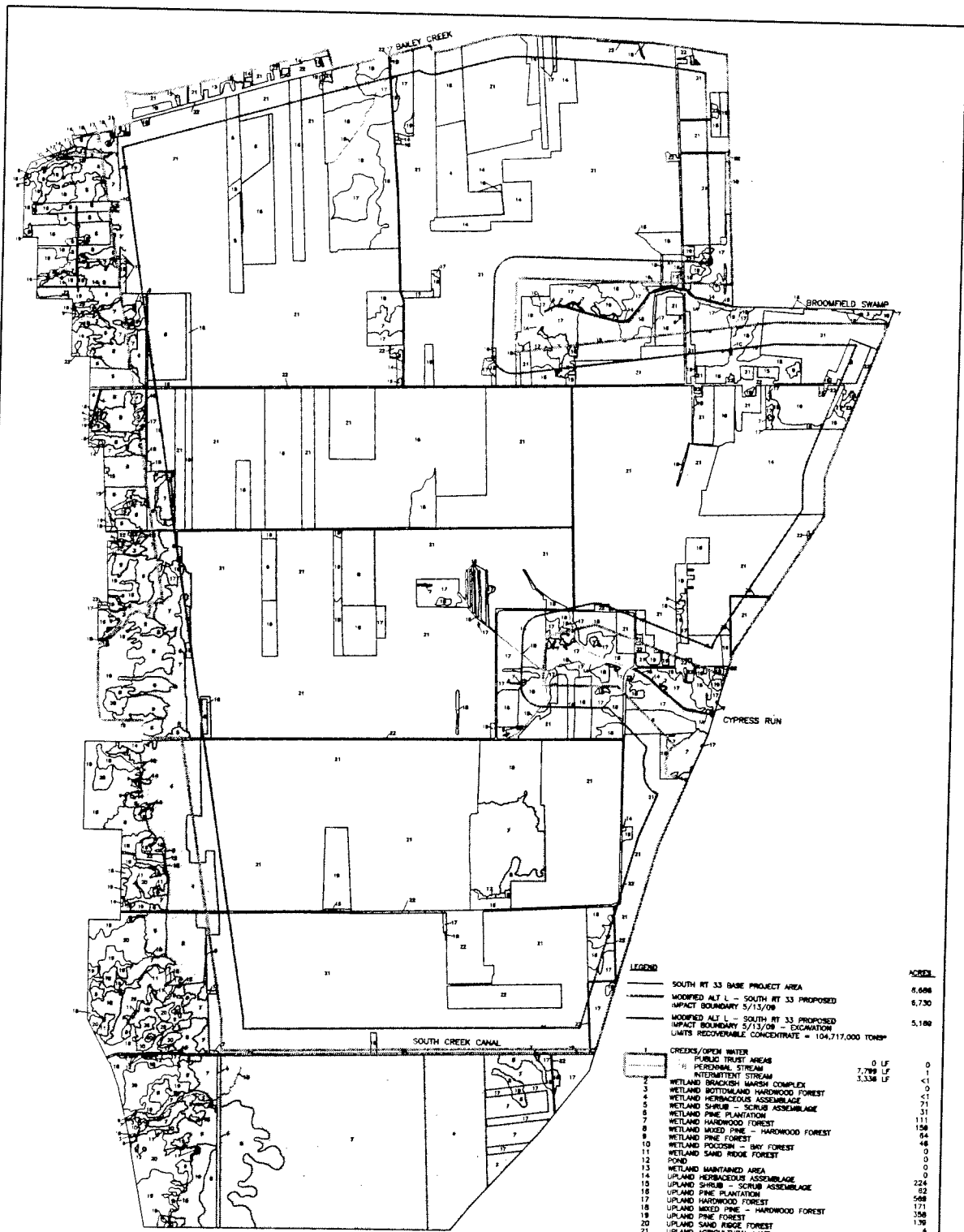


LEGEND		ACRES	
BONNERTON BASE PROJECT AREA			2,806
MODIFIED ALT L - BONNERTON PROPOSED IMPACT BOUNDARY 5/13/09			2,526
MODIFIED ALT L - BONNERTON PROPOSED IMPACT BOUNDARY 5/13/09 - EXCAVATION LIMITS RECOVERABLE CONCENTRATE = 33,478,000 TONS*			1,698
CREEKS/OPEN WATER			
1	PUBLIC TRUST AREAS	0 LF	0
12	PERENNIAL STREAM	2,533 LF	<1
	INTERMITTENT STREAM	4,786 LF	4
2	WETLAND BRACKISH MARSH COMPLEX		0
3	WETLAND BOTTOMLAND HARDWOOD FOREST		51
4	WETLAND HERBACEOUS ASSEMBLAGE		45
5	WETLAND SHRUB - SCRUB ASSEMBLAGE		274
6	WETLAND PINE PLANTATION		236
7	WETLAND HARDWOOD FOREST		369
8	WETLAND MIXED PINE - HARDWOOD FOREST		463
9	WETLAND PINE FOREST		208
10	WETLAND POCOSIN - BAY FOREST		264
11	WETLAND SAND RIDGE FOREST		22
12	POND		<1
13	WETLAND MAINTAINED AREA		0
14	UPLAND HERBACEOUS ASSEMBLAGE		5
15	UPLAND SHRUB - SCRUB ASSEMBLAGE		64
16	UPLAND PINE PLANTATION		58
17	UPLAND HARDWOOD FOREST		39
18	UPLAND MIXED PINE - HARDWOOD FOREST		117
19	UPLAND PINE FOREST		13
20	UPLAND SAND RIDGE FOREST		42
21	UPLAND AGRICULTURAL LAND		243
22	UPLAND NON - VEGETATED/MAINTAINED AREA		39
WATERS OF THE US AREAS			1,906
WETLAND AREAS (WITHOUT PONDS AND CREEKS)			1,902
UPLAND AREAS			620

*PROVIDED BY PCS PHOSPHATE 5/13/09
 NOTE: BOUNDARY AS SHOWN INCLUDES DCM/CAMA AVOIDANCE

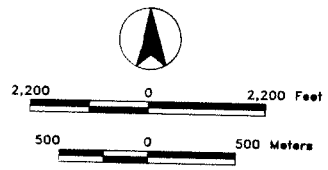


Biotic Communities Modified Alternative L - Bonnerton	
PCS PHOSPHATE MINE CONTINUATION	
Scale: As shown	Drawn by: BFG/TLJ
Date: 5/18/09	File: 7456224/ BON_MCDALT_051509(BON BC 030206)_B01CS
Approved by: JPS 5-13-09	Revised by:



LEGEND		ACRES
SOUTH RT 33 BASE PROJECT AREA		6,606
MODIFIED ALT L - SOUTH RT 33 PROPOSED IMPACT BOUNDARY 5/13/09		6,730
MODIFIED ALT L - SOUTH RT 33 PROPOSED IMPACT BOUNDARY 5/13/08 - EXCAVATION LIMITS RECOVERABLE CONCENTRATE = 104,717,000 TONS*		5,180
1	CREEDS/OPEN WATER	
2	PUBLIC TRUST AREAS	0 LF
3	PERMANENT STREAM	0
4	INTERMITTENT STREAM	7,799 LF
5	WETLAND BRACKISH MARSH COMPLEX	3,336 LF
6	WETLAND BOTTLAND HARDWOOD FOREST	<1
7	WETLAND HERCYNICUS ASSEMBLAGE	71
8	WETLAND SHRUB - SCRUB ASSEMBLAGE	31
9	WETLAND PINE PLANTATION	111
10	WETLAND HARDWOOD FOREST	158
11	WETLAND MIXED PINE - HARDWOOD FOREST	64
12	WETLAND PINE FOREST	46
13	WETLAND POCCOSIN - BAY FOREST	0
14	WETLAND SAND RIDGE FOREST	0
15	POND	0
16	WETLAND MAINTAINED AREA	0
17	UPLAND HERCYNICUS ASSEMBLAGE	224
18	UPLAND SHRUB - SCRUB ASSEMBLAGE	52
19	UPLAND PINE PLANTATION	568
20	UPLAND HARDWOOD FOREST	171
21	UPLAND MIXED PINE - HARDWOOD FOREST	358
22	UPLAND PINE FOREST	139
23	UPLAND SAND RIDGE FOREST	4
24	UPLAND AGRICULTURAL LAND	4535
25	UPLAND NON - VEGETATED/MAINTAINED AREA	185
WATERS OF THE US AREAS		484
WETLAND AREAS (WITHOUT PONDS AND CREEDS)		483
UPLAND AREAS		6,246

*PROVIDED BY PCS PHOSPHATE 5/13/09
NOTE: BOUNDARY AS SHOWN INCLUDES OCM/CAMA AVOIDANCE



Biotic Communities Modified Alt L - South of 33 PCS PHOSPHATE MINE CONTINUATION	
Scale: As shown	Drawn by: BFG/TLJ
Date: 5/18/09	File: 17458224/ 533.MCDALT_051308\533 BC (206).DWG
Approved by: JPS 5-15-09	Revised:



"Walker, William T SAW"
<William.T.Walker@usace.army.mil>

05/20/2009 09:56 AM

To <Mike_Wicker@fws.gov>, Rebecca Fox/R4/USEPA/US@EPA
cc <pete_benjamin@fws.gov>, <pace.wilber@noaa.gov>, "smtp-Sechler, Ron" <ron.sechler@noaa.gov>, <Tom_Augspurger@fws.gov>, "Jolly, Samuel K SAW"
bcc

Subject Re:

History:

➡ This message has been forwarded.

All,

I am currently working on all required revisions. I intend to revisit the reclamation and monitoring/management conditions based on recent discussions and Mikes info below. If you are willing and available, I would like to forward you a final draft of these conditions and then meet by phone next Tuesday to discuss the final wording. Please let me know if you are available. Call time can be adjusted to meet schedules.

Thanks
Tom

Message sent via my BlackBerry Wireless Device

From: Mike_Wicker@fws.gov
To: Fox.Rebecca@epamail.epa.gov
Cc: Walker, William T SAW; pete_benjamin@fws.gov ; pace.wilber@noaa.gov ; smtp-Sechler, Ron; Tom_Augspurger@fws.gov
Sent: Wed May 20 08:13:39 2009
Subject:

Becky,

Here is the verbage on the condition that we were talking about relating to reclamation and adaptive management. Pete is working on some additional comments that relate more comprehensively to adaptive management and we will send you that when it is ready. The bold is used to indicate the verbage that could be included as a condition to the permit. **I do not think this would require much effort since the basic system for doing this is already planned. It amounts to perhaps better water control and a willingness to use adaptive management to improve reclamation in the NCPC tract.** Please call if this is confusing. My thoughts are clear on what is necessary and hopefully it is written in a way that is clear.. Any suggestion by anyone to make it clearer would be welcome. I think this would provide for substantially better reclamation in the NCPC tract although it still would be a very altered environment as far as appearance (big berm around it, unnatural topography). It would allow for less longterm effect to the estuary by allowing the management of nitrogen and organic carbon in the watershed. Ultimately the goal would be to have a stable site where active management of water is not necessary. Until that time water management on the reclamation site would be critical in my opinion to maximize offsite drainage water quality. I talked with Tom Augspurger and he thinks this is a good idea as well. We have been working on restoring the old peat methanol mining site that was cleared and drained at Pocosin Lakes NWR and I can tell you that without water management capabilities during restoration accomplishing good restoration with good water quality is nearly impossible. I

am not referring to regulated parameters such as turbidity and erosion but instead to parameters such as the carbon cycle and nitrogen (which are important parameters to the estuary). Water control will also give us better control of potential erosive process until the site has a stable vegetative cover and no longer requires active management.

Sorry about talking a little longer getting this to you and I hope it is helpful to everyone.

Mike

Adaptive management / reclamation suggestion:

It appears that the drainage network within the reclamation areas is designed for sediment retention. We suggest that **the discharge points from the NCPC tract as shown in figure 4-9, page 5-60 in the FEIS be built so as to easily allow the manipulation of water in the different cells (to allow for the flooding of the bottom contour in each of these cells)**. By monitoring nitrogen and organic carbon draining from each of these sites post-reclamation, the water level within cells could be adjusted to maximize water quality exiting the site. The goal would be have nitrogen and organic carbon exiting the site as close to reference wetlands as possible. There are no State water quality standards for nitrogen or carbon, so these important parameters would not trigger any action otherwise. Although it is very difficult to know the degree of wetness that will maximize water quality in the discharge, we are very confident that the degree of wetness and retention time will have a large impact.

The bottom contour is the 15 foot contour in three of the cells, 35 foot in one and 45 foot in three others. **The water control should be capable of flooding to those levels (15, 35, or 45 foot contour depending on the cell) and draining to the lowest elevation in each NCPC cell.** It is very possible that the best level for discharge water quality will change over time and having this control over water level will allow the area's hydrology to be easily managed. **The lower contours and the discharge channels would also be priority sites for topsoil cap** since those areas if managed as wetlands could develop good vegetative cover and enhance water quality before discharging from the site to the estuary. We believe the establishment of a headwater fringe wetland and pond area in each of these cells could be easily accomplished if water management was possible and a topsoil cap was provided that should provide better water to the estuary. The management of cell water would also allow for a greater ability for cypress, and Atlantic white cedar to become established on the wetland fringe with emergent and submerged aquatics in the shallow pond edge. Drier areas uphill of the wetland fringe with a topsoil cover could be planted in hardwoods and upland areas without topsoil could be planted in longleaf pine. Over time using the tools of water management and different plant cover types we believe adaptive management could result in better reclamation.

By building this capability, PCS and natural resource agencies can best use the monitoring data to manage offsite water discharge to the estuary in an adaptive management, "learn as we go" approach. Since this approach requires little change from what is proposed we hope it will be

acceptable. We recognize it requires some effort on the part of the applicant but we think the effort is reasonable and may be a significant way to improve watershed contribution after reclamation.



Pete_Benjamin@fws.gov
05/22/2009 02:30 PM

To Rebecca Fox/R4/USEPA/US@EPA
cc mike_wicker@fws.gov
bcc
Subject Re: PCS permit conditions

History: This message has been forwarded.

Hi Becky,

I haven't heard from Tom yet either. I wrote up the attached to expand on my thoughts regarding Adaptive Management that I offered during last week's meeting. I'd be interested in your feedback before I share it with the COE, as I'm thinking it may also be of some help with regard to your agency's on-going deliberations. Let me know what you think. Thanks,

Pete Benjamin
Field Supervisor
Raleigh Field Office
U.S. Fish and Wildlife Service
(919) 856-4520 x 11

Fox.Rebecca@epamail.epa.gov

05/19/2009 12:08 PM

To william.t.walker@usace.army.mil
cc mike_wicker@fws.gov, pete_benjamin@fws.gov, pace.wilber@noaa.gov,
ron.sechler@noaa.gov
Subjec PCS permit conditions
t

Hi Tom,

At the 5-12 mtg, we discussed the COE working with FWS, NMFS and EPA on further revisions to the reclamation, monitoring and adaptive management conditions. Jim Giattina asked me to contact you to see how the COE would like for the agencies to coordinate with you on these suggested revisions.

Thanks,

Becky Fox
Wetland Regulatory Section
USEPA
Phone: 828-497-3531
Email: fox.rebecca@epa.gov



"Walker, William T SAW"
<William.T.Walker@usace.army.mil>

05/22/2009 02:40 PM

To <Mike_Wicker@fws.gov>, Rebecca Fox/R4/USEPA/US@EPA, <pace.wilbur@noaa.gov>, <pete_benjamin@fws.gov>
cc "smtp-Sechler, Ron" <ron.sechler@noaa.gov>, "Jolly, Samuel K SAW" <Samuel.K.Jolly@usace.army.mil>, "Lekson, David M SAW" <David.M.Lekson@usace.army.mil>
bcc

Subject Re: conditions

History:

➡ This message has been forwarded.

All,
Looks like Tuesday works for everyone so let's plan on starting our call at 1300. I will set up a conference line and send you the call in information Tuesday morning. I am TDY this week and am having extreme difficulty connection to our exchange with my laptop (ie can't do it) so am not able to send attachments. I will send out the permit conditions when I get back to NC this weekend. I believe you all have copies of the draft conditions though and few changes have been made so they should provide a good base for discussion. Four of the main issues I would like to discuss are 1) better clarification of where and when to best use the topsoil augmentation (around water courses, constructed "wetlands" around water exit points, etc); 2) addition of the monitoring/management Mike discusses below (which I believe will require both pre disturbance monitoring for baseline info as well as post disturbance monitoring for management); 3) Due dates for monitoring reports (both mitigation and data collection); and 4) role and composition of the review panel. Look forward to talking with you.

Thanks

Tom

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

To: Mike_Wicker@fws.gov
To: Fox.Rebecca@epamail.epa.gov
Cc: pete_benjamin@fws.gov
Cc: pace.wilbur@noaa.gov
Cc: smtp-Sechler, Ron
Cc: Tom_Augspurger@fws.gov
Cc: Ken Jolly
Cc: David M SAW Lekson
Cc: Jennifer.A.Moyer@usace.army.mil
Sent: May 20, 2009 9:57 AM
Subject: Re:

All,

I am currently working on all required revisions. I intend to revisit the reclamation and monitoring/management conditions based on recent discussions and Mike's info below. If you are willing and available, I would like to forward you a final draft of these conditions and then meet by phone next Tuesday to discuss the final wording. Please let me know if you are available. Call time can be adjusted to meet schedules.

Thanks

Tom

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

From: Mike_Wicker@fws.gov
To: Fox.Rebecca@epamail.epa.gov
Cc: Walker, William T SAW
Cc: pete_benjamin@fws.gov
Cc: pace.wilbur@noaa.gov

Cc: smtp-Sechler, Ron
Cc: Tom_Augspurger@fws.gov
Sent: May 20, 2009 9:13 AM
Subject:

Becky,

Here is the verbage on the condition that we were talking about relating to reclamation and adaptive management. Pete is working on some additional comments that relate more comprehensively to adaptive management and we will send you that when it is ready. The bold is used to indicate the verbage that could be included as a condition to the permit. I do not think this would require much effort since the basic system for doing this is already planned. It amounts to perhaps better water control and a willingness to use adaptive management to improve reclamation in the NCPC tract. Please call if this is confusing. My thoughts are clear on what is necessary and hopefully it is written in a way that is clear.. Any suggestion by anyone to make it clearer would be welcome. I think this would provide for substantially better reclamation in the NCPC tract although it still would be a very altered environment as far as appearance (big berm around it, unnatural topography). It would allow for less longterm effect to the estuary by allowing the management of nitrogen and organic carbon in the watershed. Ultimately the goal would be to have a stable site where active management of water is not necessary. Until that time water management on the reclamation site would be critical in my opinion to maximize offsite drainage water quality. I talked with Tom Augspurger and he thinks this is a good idea as well. We have been working on restoring the old peat methanol mining site that was cleared and drained at Pocosin Lakes NWR and I can tell you that without water management capabilities during restoration accomplishing good restoration with good water quality is nearly impossible. I am not referring to regulated parameters such as turbidity and erosion but instead to paramters such as the carbon cycle and nitrogen (which are important parameters to the estuary). Water control will also give us better control of potential erosive process until the site has a stable vegetative cover and no longer requires active mangement.

Sorry about talking a little longer getting this to you and I hope it is helpful to everyone.

Mike

Adaptive management / reclamation suggestion:

It appears that the drainage network within the reclamation areas is designed for sediment retention. We suggest that the discharge points from the NCPC tract as shown in figure 4-9, page 5-60 in the FEIS be built so as to easily allow the manipulation of water in the different cells (to allow for the flooding of the bottom contour in each of these cells). By monitoring nitrogen and organic carbon draining from each of these sites post-reclamation, the water level within cells could be adjusted to maximize water quality exiting the site. The goal would be have nitrogen and organic carbon exiting the site as close to reference wetlands as possible. There are no State water quality standards for nitrogen or carbon, so these important parameters would not trigger any action otherwise. Although it is very difficult to know the degree of wetness that will maximize water quality in the discharge, we are very confident that the degree of wetness and retention time will have a large impact.

The bottom contour is the 15 foot contour in three of the cells, 35 foot in one and 45 foot in three others. The water control should be capable of flooding to those levels (15, 35, or 45 foot contour depending on the cell) and draining to the lowest elevation in each NCPC cell. It is very possible that the best level for discharge water quality will change over time and having this control over water level will allow the area's hydrology to be easily managed. The lower contours and the discharge channels would also be priority sites for topsoil cap since those areas if managed as wetlands could develop good vegetative cover and enhance water quality before discharging from the site to the estuary. We believe the establishment of a headwater fringe wetland and pond area in each of these cells could be easily accomplished if water management was possible and a topsoil cap was provided that should provide better water to the estuary. The management of cell water would also allow for a greater ability for cypress, and Atlantic white cedar to become established on the wetland fringe with emergergent and submerged aquatics in the shallow pond edge. Drier areas uphill of the wetland fringe with a topsoil cover could be planted in hardwoods and upland

areas without topsoil could be planted in longleaf pine. Over time using the tools of water management and different plant cover types we believe adaptive management could result in better reclamation.

By building this capability, PCS and natural resource agencies can best use the monitoring data to manage offsite water discharge to the estuary in an adaptive management, "learn as we go" approach. Since this approach requires little change from what is proposed we hope it will be acceptable. We recognize it requires some effort on the part of the applicant but we think the effort is reasonable and may be a significant way to improve watershed contribution after reclamation.

Message sent via my BlackBerry Wireless Device



"Walker, William T SAW"
<William.T.Walker@usace.army.mil>

05/28/2009 04:59 PM

To <Pete_Benjamin@fws.gov>, "Mike Wicker"
<Mike_Wicker@fws.gov>, Rebecca
Fox/R4/USEPA/US@EPA, "Pace.Wilber"

cc

bcc

Subject PCS Conditions

History:

📧 This message has been forwarded.

MINING

- A) This permit authorizes mining and mine related impacts as described fully in the FEIS within the boundary depicted in the attached maps labeled "Modified Alt L – NCPC Proposed Impact Boundary", "Modified Alt L – Bonnerton Proposed Impact Boundary" and "Modified Alt L – South of 33 Proposed Impact Boundary", as presented January 6, 2009. All work authorized by this permit must be performed in strict compliance with these attached plans, which are a part of this permit. Any modification to these plans must be approved by the US Army Corps of Engineers (USACE) prior to implementation.
- B) Within 6-months of the issuance of this permit, the Permittee must demarcate with permanent monuments and establish with GPS coordinates, the outer limits of disturbance on all creeks/drainages, etc. This must be reviewed and approved by the U.S. Army Corps of Engineers. This will facilitate compliance monitoring by establishing long-term reference points.
- C) Except as authorized by this permit or any USACE approved modification to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands. This permit does not authorize temporary placement or double handling of excavated or fill material within waters or wetlands outside the permitted area. This prohibition applies to all borrow and fill activities connected with this project.
- D) Except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters or wetlands.
- E) Figure 1 depicts approximate timing of the requirement for major pre-mining, land manipulation and clearing impacts. These yearly figures are estimates. Actual timing and area may be in part determined by several factors including but not limited to site and equipment constraints, weather, and economics. However, to ensure that temporal losses are minimized to the extent practicable, the Permittee shall not undertake major land-clearing and/or land manipulating activities within any area sooner than 1 year prior to the dates indicated on this figure. For example, major landclearing and manipulation activities within the block labeled 2012-2013 may not begin any sooner than January 1, 2011.
- F) The Permittee will undertake full reclamation of all areas mined under this authorization as described in Section 4.3 of the EIS. This includes reestablishment of varied topography and drainage ways. Figure 2 indicates the required completion date for the capping and successful vegetation of mine reclamation areas. To demonstrate adherence to this schedule, the applicant will submit to the Corps an annual summary detailing all reclamation efforts complete within the previous year

and indicating the degree of completeness of each reclamation area. Any deviation from the reclamation schedule will be addressed in these reports and the report shall include an explanation for the deviation and proposed remedial action.

- G) The Permittee shall cap all mined areas that are reclaimed with the gypsum-clay blend process materials. The goal of the cap will be a minimum 3-foot thick cap of overburden material (similar to background soils from the region) over 100% of the blend areas. Minimal acceptable performance standards in achieving this cap are as follows: 70% of the total surface area with a minimum of 3-foot cap; 25% of the total surface area with a minimum of 2-foot cap; 5% of the total surface area unspecified.
- H) Following successful completion of the capping requirements, the permittee will submit an as-built report including final topographical surveys for the reclamation areas. This report shall contain final cap depth and coverage information. This report shall further include an explanation of site development that will minimize erosion, eliminate contaminant transportation from the clay/gypsum blend through the stream channel, and facilitate the development of a mature vegetated riparian buffer. Finally, this report shall include information on surface water retention within the reclamation area and flows within and from the reclamation area.
- I) To minimize temporal impacts and accelerate the return of watershed functions within the reclamation areas, the permittee will to the extent appropriate and practicable apply an average of 1-foot (no less than 6 inches in any location) of topsoil cover to the reclaimed areas utilizing the topsoil removed prior to site mining. This topsoil addition should be concentrated within and around areas of surface water flow and/or retention with a goal of providing a minimum 100 ft. buffer around all open waters.
- J) To the extent appropriate and practicable, upland portions of the reclamation area shall be replanted, in longleaf pine (*Pinus palustris*) and wetland areas shall be replanted in bald cypress (*Taxodium distichum*) and/or Atlantic white cedar (*Chamaecyparis thyoides*) if Atlantic white cedar is shown to do well on the reclamation sites. It is suggested that the permittee work with the Corps, the USFWS and any other interested parties to determine growth and survivability of these and other species utilizing areas currently being reclaimed under the previous permit action.
- K) Prior to initiating mining activities within any area authorized by this permit, PCS will work with the Corps, EPA, USFWS, NFMS and NCDWQ to develop a plan to monitor the quality of water discharged from the reclamation areas into the surrounding watersheds. This will include monitoring of nitrate nitrogen, ammonia nitrogen, particulate nitrogen, dissolved Kjeldahl nitrogen, and dissolved and particulate organic carbon. Data collected will be used to manage water within the reclamation areas to optimize both the amount and quality of those waters being released. It is suggested that the applicant initiate pilot study in the areas currently being reclaimed.

- L) Compensatory mitigation identified in the document entitled "Compensatory Section 404/401 Mitigation Plan: Comprehensive Approach" as presented in Appendix I of the FEIS shall be accomplished pursuant to that Plan and/or any subsequent Corps approved modification or amendment. Construction and monitoring of each site shall be conducted according to the schedule presented in Table 1 of the Record of Decision.
- M) Within one year of the issuance of this permit, the Permittee shall cause to be recorded a conservation instrument acceptable to the Corps for the permanent preservation of the area identified for preservation in the "South Creek Corridor" plan.
- N) Table 2 lists the impacts as they would occur during 2-year timeframes. By Nov. 1st of year preceding the impact, PCS shall submit to the Corps a mitigation ledger demonstrating that all mitigation work is complete as described in the mitigation plan and pursuant to identified timetable. This report will be used to determine whether sufficient mitigation is available for impacts occurring over the next 2 year timeframe. For Example, by November 1st 2009, PCS shall submit a ledger demonstrating that sufficient mitigation for impacts occurring during the 2010 – 2011 timeframe (526.56 ac) is available."
- O) The Permittee shall submit yearly monitoring reports for each mitigation site. Monitoring reports will be submitted by January 31 of the year following the monitoring. Monitoring will continue until such time as the Corps deems the mitigation site successful and agrees that monitoring may be discontinued. This will generally occur after sufficient monitoring demonstrating 5 consecutive years of site success.
- P) Once compensatory mitigation sites have been deemed successful and the Corps has agreed in writing that monitoring may cease, the Permittee shall, within one year of the date of that correspondence, cause to be recorded an acceptable conservation instrument ensuring the permanent preservation of all mitigation sites.
- Q) As required by the State Water Quality Certification, the Permittee will work with the Corps and the NC Division of Water Quality to establish a monitoring plan for groundwater in and around mine and reclamation areas. At a minimum, this plan shall include sufficient monitoring within and surrounding the reclamation areas to ensure that heavy metal/toxic pollutants including cadmium are not entering the groundwater. It is suggested that this monitoring commence with weekly samples for a period of 5 years to generate an acceptable baseline. After 5 years, monthly monitoring is acceptable. Yearly results of this monitoring shall be reported to the Corps and NCDWQ no later than January 31 of the year following data collection. the Permittee and/or the Corps will make these reports available in whole or in summary to any interested party. If increases in the levels of any sampled substance are observed for more than 1 sampling occurrence in any given year, or for more than

1 year, the Permittee shall include in the yearly report, a plan for mitigating the effect or satisfactory justification as to why no action is necessary. If the Corps, in consultation with other agencies, including but not limited to NCDWQ and EPA, determines that the current reclamation practices are causing an unacceptable adverse impact to groundwater, the DE may modify, suspend or revoke the permit.

- R) Within 1 year of the issuance of this permit the Permittee will submit to the Corps a remediation strategy to be implemented in the event heavy metal contamination of groundwater or surface tributaries that drain or are adjacent to mined areas occurs. That strategy will be made available for public review.
- S) In concert with the monitoring requirements contained in the Water Quality Certification, The Permittee shall develop a Plan of Study to address the effects of the reduction in headwater wetlands on the utilization of Porters Creek, Tooley Creek, Jacobs Creek, Drinkwater Creek, and Jacks Creek as nursery areas by resident fish and appropriate invertebrate species. This plan should be submitted to the Corps and NCDWQ for approval within 1 year of this issuance of this permit. At a minimum, the plan shall address the following issues:
- 1) Has mining altered the amount or timing of water flows within the creeks? Data collection may include:
 - i) Continuous water level recorders to measure flow
 - ii) Rain gauges to measure local water input
 - iii) Groundwater wells to measure input to the creeks
 - iv) Semi-continuous salinity monitoring
 - v) Periodic DO monitoring (continuously monitored for several days at strategic times of year)
 - 2) Has mining altered the geomorphic or vegetative character of the creeks? Data collection may include:
 - i) Annual aerial photography to determine creek position, length, width, sinuosity
 - ii) Annual cross sectional surveys of each creek at established locations
 - iii) Annual sediment characterization
 - iv) Annual vegetation surveys along creeks
 - v) Spring and fall sediment chlorophylls or organic content in vegetation zone.
 - vi) Spring and fall location of flocculation zones with each creek.
 - 3) Has mining altered the forage base of the creeks? Data collection may include:
 - i) Spring and fall benthic cores to sample macroinfauna.
 - ii) Spring and fall benthic grabs focused upon bivalves, such as *Rangia* sp.

- iii) Periodic sampling for pelagic species such as grass shrimp, blue crabs, and small forage fish. Sampling gears would be chosen to reflect ontogenetic shifts in creek usage.
- 4) Has mining altered the use of the creeks by managed fish? Data collection may include periodic sampling for species managed under the Magnuson-Stevens Fishery Conservation Management Act. Sampling would occur during appropriate times of year and gears would be chosen to reflect ontogenetic shifts in creek usage.
- 5) Has mining increased contaminate levels within creek sediments to levels that could impact fish or invertebrates? Data collection may include annual sediment and water column sampling for metals, including cadmium, mercury, silver, copper, and arsenic. If elevated levels are detected, the availability and uptake by appropriate aquatic species (e.g., *Rangia* sp., blue crabs) should be measured using appropriate bioassay techniques.
- 6) Has mining altered overall water quality within creeks? Water quality parameters analyzed will include: Salinity, Temperature, Dissolved Oxygen, pH, Secchi depth, Turbidity, Chlorophyll a, Dissolved orthophosphate phosphorus, Total dissolved phosphorus, Particulate phosphorus, Nitrate nitrogen, Ammonia nitrogen, particulate nitrogen, and Dissolved Kjeldahl nitrogen.
- T) Monitoring under the plan referenced in condition "S" above shall commence immediately upon the plan approval by the Corps and NCDWQ. Monitoring shall continue for 10 years following the completion of all reclamation work within the headwaters of the subject creeks unless the Corps, in consultation with the appropriate resource agencies agrees that monitoring can be discontinued. Yearly results of this monitoring shall be reported to the Corps and NCDWQ no later than May 1 of the year following data collection. The permittee and/or the Corps will make these reports available in whole or in summary to any interested party.
- U) The Permittee will work with the Corps, EPA and all interested and appropriate resource agencies including but not limited to NMFS, USFWS, NCWRC, NCDMF, and the appropriate permitting agencies including NCDWQ, NCDCM, NCDLR to establish an independent panel of qualified researchers (Science Panel). This panel will provide input and direction on the monitoring required by conditions "K" and "S" above including research design, study methods and data analysis. The input of this panel will be incorporated in the preparation of the Plan of Study referenced in condition "S". This panel will also oversee all research conducted toward fulfillment of conditions "K" and "S".

- V) The Permittee will be responsible for fully implementing the approved Plan of Study referenced in conditions "S" and "U" above. Annual summaries of all data collected in compliance with conditions "K" and "S" shall be presented to the Corps, NCDWQ and all members of the Science Panel on or before May 1 of the year following collection.
- W) The Permittee shall coordinate and facilitate an annual meeting of the Science Panel, the Corps, NCDWQ, and all other interested state and federal agencies including but not limited to NMFS, USFWS, NCWRC, NCDMF, NCDLDR, NCDLR. This meeting shall occur during June of each year. The purpose of this meeting will be to allow the Science Panel to provide input to the agencies on any observed trends in parameters measured and general discussions on whether direct and indirect impacts from mining and benefits from the compensatory mitigation appear to be in accordance with expectations at the time of permitting. The Science Panel will also provide any recommendations for management or further study. The proceedings of this meeting including data summaries, reports, presentations and any conclusions of the group will be made available in whole or in summary to any interested party.
- X) At appropriate intervals to be decided by the Corps after input from the Science Panel (eg. 3 to 5 years) beginning from the date of permit issuance, the Panel shall review the monitoring methods, sampling locations, parameters analyzed, and other elements of monitoring protocol to determine if modifications to the plan are appropriate. All data reviewed by the panel shall be made available to the public.
- Y) The Corps will fully consider all information presented by the Science Panel as well as comments from state and federal agencies and all other parties supplying input to determine if corrective actions or permit modifications are needed. If substantive changes to the mine plan, compensatory mitigation plan or monitoring plan are made, the Corps will announce such change by Public Notice and allow for public comment.
- Z) The Permittee shall advise the Corps in writing prior to beginning the work authorized by this permit and again upon completion of the work authorized by this permit.
- AA) The Permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit. A copy of this permit, including all conditions, shall be available at the project site during construction and maintenance of this project.

- BB) The Permittee shall employ all sedimentation and erosion control measures necessary to prevent an increase in sedimentation or turbidity within waters and wetlands outside the permit area. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project must remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4).
- CC) The Permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the work will, without expense to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the water or wetland to its pre-project condition.
- DD) Violations of these conditions or violations of Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbor Act must be reported in writing to the Wilmington District U.S. Army Corps of Engineers within 24 hours of the Permittee's discovery of the violation.
- EE) Wetland Avoidance/Minimization Areas: The Permittee shall avoid the remaining 2,445 acres of waters of the US within the 15,100 acre project area. These natural wetland areas were avoided as part of the permit application review process and therefore will not be disturbed by any dredging, filling, mechanized land clearing, agricultural activities, or other construction work whatsoever. The Corps reserves the right to deny review of any requests for future impacts to these natural wetland areas.



"Walker, William T SAW"
<William.T.Walker@usace.army.mil>

05/26/2009 08:47 AM

To Rebecca Fox/R4/USEPA/US@EPA, Tom
Welborn/R4/USEPA/US@EPA, <Pete_Benjamin@fws.gov>,
"Mike Wicker" <Mike_Wicker@fws.gov>, "Ron Sechler"
cc
bcc
Subject PCS conditions

All,

Following is the information for this afternoon's conference call. # 1-866-717-3308, Passcode:
1227026

Also, as we discussed at the May 12th meeting calculation of the "historic drainage basin" for project area creeks was complicated by the fact that many basins were "re-arranged" by previous ag and silviculture ditching. The calculations were also complicated by the fact that there were areas of drainage basin not included in the original project area (i.e. avoided from the onset). Following recent discussion and the recent avoidance efforts, the Corps worked with CZR to ensure all numbers were correct using the best possible information we could locate. Attached is a spreadsheet containing updated drainage basin info. We can discuss this thisafternoon as well.

Thanks

Tom <<Watershedsfinal_czr.xls>>

		historic	mine 1	(%) reduction mine 1		Current post mine 1
Pamlico River						
A	Huddles	946	352	37.2		594
A	Huddy	470	0	0.0		470
B	UP1	334	224	67.1		110
C	South Cree	49700	3330	6.7		46370
All Uts		427	0	0.0		427
South Creek Proper						
	UT 1	0	0	0.0		0
A	UT 2	49	0	0.0		49
A	UT 3	72	0	0.0		72
A	UT 4	111	0	0.0		111
A	UT 5	195	0	0.0		195
A	Toolys	536	32	6.0		504
A	DW	605	109	18.0		496
A	Jacobs	751	215	28.6		536
A	Jacks	633	346	54.7		287
B	Baily	4510	1375	30.5		3135
B	Whitehurst	2168	1253	57.8		915
B	Broomfield	2518	0	0.0		2518
B	Cypress R	2584	0	0.0		2584
C	Durham Cr	37550	1135	3.0		36415
Durham Creek Proper						
D	Porter Cree	3728	1135	30.4		2593

For column A

A = used historic topo maps as reported by CZR on 9/18/08 Graphic

B = used Drainage System Graphic from 96 FEIS (Figure 4-3)

C = LIDAR estimation USACE

D = Planimeter estimation from Bath quad 1951 and Aurora quad 1950 as revised '74) by CZR/USACE

For column J

used CZR graphics dated 5/18/09 for modified alt L drainage basins

mod alt L	remaining	(%) Current post mine 1	(%) reduction total historic
141			
446	148.0	75	84
142	328.0	30	30
50	110.0	0	67
8149	38221.0	18	23
194	233	45	45
1491			
0	0.0	#DIV/0!	#DIV/0!
0	49.0	0	0
7	65.0	10	10
44	67.0	40	40
143	52.0	73	73
180	324.0	36	40
254	242.0	51	60
221	315.0	41	58
205	82.0	71	87
1254	1881.0	40	58
29	886.0	3	59
1966	552.0	78	78
2347	229.0	91	91
751	35664.0	2	5
1694	899.8	65	76