PenderWatch & Conservancy
Issues for USACE regarding Titan Cement Plant & Quarry
July 14, 2008

I. Drawdown of water table from "dewatering" to expose limestone quarry

A. How will Titan remove water from the area to be mined to lower the water table:
    1. Pump the pit?
    2. Dig wells around it?
B. If Titan digs wells to lower the water table,
    1. How many wells will Titan place?
    2. How deep will the wells be?
C. How far away from the quarry area will the overall water table be lowered?
D. Assuming it will be reduced by 70 feet at the center, how much would it be lowered at a distance of
    1. 500 feet?
    2. 1,000 feet?
    3. 5,000 feet?
    4. 10,000 feet?
E. What is the amount of water to be removed per day?
F. What are the cumulative effects of removing this amount of water from the Castle Hayne and other aquifers?
    1. To what extent will dewatering the quarry cause a collapse and compression of the aquifer, resulting in decreased water storage capacity and transmissivity?
    2. To what extent will there be a reduction in natural recharge of the Castle Hayne and other aquifers in the future?
G. What would be the long term impact of pumping this amount of water into the NE Cape Fear River and nearby creeks on:
    1. The salinity of the Cape Fear River system?
    2. The pH of the Cape Fear River system?
    3. The Cape Fear habitat for the existing populations of finfish and shellfish?
H. What would be the impact on these rivers and streams of lowering the water table of their watershed?
I. What is the impact of this lowered water table:
    1. On existing forests?
    2. On wildlife?
    3. On rare and endangered species?
    4. On the ability of plant roots to find groundwater quickly enough to ensure survival?
    5. On wetlands?

J. Describe the extent that lowering and varying the water table would result in the release of chromium from the Elementis Chromium site in the vicinity of the planned quarry.
K. Examine how chromium released from the Elementis Chromium site in this manner could be transported to wells used for drinking water or into the Cape Fear River system.
L. Determine the impact of such chromium release on:
    1. Human health.
    2. Health of marine life, terrestrial animals, and birds.
M. Describe the extent that lowering the water table would result in capture of benzene and other potentially hazardous hydrocarbons from the oil seep into bedrock that occurred at the Holman site in the 1980s.
N. Describe the hydrocarbons that will be produced by blasting operations at the quarry.
O. What measures will be taken to ensure that any such hydrocarbons are not released into the groundwater or water pumped into the Cape Fear River system?

II. Impact of reduction of water table on population

A. Describe how the aquifers will be recharged from the Cape Fear River as implied by Carolinas Cement Company in their June 29 advertisement in the Wilmington Star-News as opposed to whether the water naturally discharges into the river from the aquifers.
B. How many homes, farms and other businesses get their water from wells in the Castle Hayne and other impacted aquifers?
C. What is the projected population of the Castle Hayne aquifer area over the next 30 years?
D. How many homes, farms and other businesses will be affected by a significant drop in the water table from dewatering over the life of the project?
E. What would be the average cost per well to maintain a reliable water supply for these units during dewatering:
    1. For re-drilling wells deeper?
    2. For additional electricity to pump water from greater depths?
    3. For stronger replacement pumps?
F. What would be the added demand for public water resources if homes, farms, and other businesses' wells go dry?
G. How would public entities be able to supply reliable water to these customers in a timely manner?
H. What impact would a lowered water table have on the area's agriculture and landscaping businesses?
I. What impact would a lowered water table have on the area's organic farmers?
J. What will be the impact on any existing and/or proposed municipal wellheads?
K. How will individuals, farmers, other businesses, and water authorities be

compensated for the reduction of the Castle Hayne and other aquifers?

III. Likelihood of salt water intrusion caused by lowered water table

A. What will be the salt water intrusion into the Castle Hayne and other aquifers brought on by water table reduction of this magnitude?
B. What geographical areas are most likely to be affected by salt water intrusion?
C. How many homes, farms and other businesses, and water authority wells will be affected by salt water intrusion?
D. What responsibility would Titan bear if homes, farms and other businesses, and water authority wells become unusable by salt water intrusion?
E. Describe the impact on existing trees and wildlife if the water table drops and salt water contaminates the Castle Hayne and other aquifers?
F. Describe the impact on rare and endangered wildlife species if the water table drops and salt water contaminates the Castle Hayne and other aquifers?

IV. Likelihood of formation of sinkholes caused by removal of groundwater

A. What are the projections of possible sinkholes forming in dewatered areas?
B. How far from the center would these projected sinkholes occur?
C. Examine the likelihood of sinkholes occurring in populated areas such as Castle Hayne, Rocky Point, Hampstead, Scotts Hill, Porters Neck, or Ogden.
D. Describe the likelihood of the occurrence of sinkholes in future developments such as Lane's Ferry and Sidbury?
E. Describe the likelihood of sinkholes occurring on vital infrastructure such as highways, bridges, rail lines, water lines, power lines, natural gas lines, and sewer lines.

V. Ownership of the Castle Hayne and other aquifer waters.

A. Who owns the water that will be extracted from the Castle Hayne and other aquifers?
B. Does Titan plan to convey to a third party, either in total or by gallon extracted, the water that is pumped from the aquifer?
C. If Titan plans to convey the rights to the water, who will receive the funds?

VI. Impacts of expanded mining beyond current property limits

A. Describe Titan's plans for purchasing, leasing or acquiring mining rights to additional properties over the next 30 years.
B. How much additional mining in the general area is planned for the life of the project?
C. How far below the surface would this additional mining occur?
D. How would these areas be dewatered?

E. What would be the cumulative impact of this additional water table reduction?
F. How would this removed water be disposed?
G. What would be the cumulative impact on salt water intrusion with these expanded mining operations?
H. What would be the cumulative impact on the likelihood of sinkholes forming because of the expansion of the mining operations?
I. What would be the likely impacts of expanded mining on the local population:
1. Impact on the economy?
2. Impact on infrastructure including roads?
3. Impact on agriculture**?**
4. Impact on existing and future homes and businesses?
5. Impact on the availability of electricity and water and other necessities?

J. What would be the likely impacts of expanded mining on:
1. Forests and wildlife?
2. Rare and endangered species?

K. How might expanded mining operations affect regional migratory corridors for wildlife?

VII. Environmental impacts of having a cement plant at this location

A. What pollution would likely occur in the groundwater beneath the industrial site?
B. What are the projected annual volumes of all particles, elements, compounds, and gases to be released into the atmosphere from:
1. The cement kiln, including all of its heat and power sources?
2. The mining equipment and limestone conveyance equipment?
3. The trains, trucks, barges, and other means to move the cement to its US terminal locations?
4. The trains, trucks, barges, and other means to bring coal and other fuel sources to the kiln?
5. The ships and regional ports to bring in coal and other fuel sources?
6. The ships and regional ports that will be involved in the export of cement?

C. What measures will be taken to prevent fly ash from blowing and/or drifting in to the air during:
1. Transportation of the raw material to the plant?
2. Transportation of the finished product to its destination?

D. Describe the expected drift pattern from each of the pollution sources listed in VII.B and VII.C.
E. Define the extent to which dangerous minerals (mercury, chromium, etc.) would be released into the waters of the Cape Fear system.

F. What potentially harmful compounds and materials would accumulate on surfaces at the plant?
    1. How would these harmful compounds be affected by rainfall, wind, and storms, including hurricanes of the magnitude of Fran and Floyd?

G. What would be the effects on the NE Cape Fear River system of the use of barges:
    1. Would dredging of the river be needed to support additional boat traffic?
    2. Would existing bridges need modifications?
    3. What safeguards would be put in place to prevent the escape of product during barge loading?

H. What would be the impact of barge traffic on riverfront properties?

I. If dredging for barge traffic is required:
    1. Examine the salt water contamination upstream that could occur because the riverbed is made deeper.
    2. Examine the impacts that dredging would have on:
        a. Agriculture.
        b. Residential development.
        c. Forests.
        d. Wildlife.
        e. Rare or endangered species.
        f. Humans.
    3. If dredging is needed. where would the dredged material be deposited?

VIII. Effects of fallout from airborne chemicals, particulates, or steam emitting from the cement plant.

A. Describe the effects of polluted materials falling onto:
    1. Homes.
    2. Business.
    3. Farms.
    4. Organic farms.
    5. Forests.
    6. Wildlife.
    7. Fish habitats.
    8. Oysters and clam populations downstream.
    9. Rare and endangered species.
    10. Humans.

B. Describe how fallout from airborne pollution will affect the migratory flight paths of birds and butterflies.

C. Describe the environmental impact of a cement plant’s heat and steam.

D. Describe any hazardous materials that may be burned in this kiln.

E. If hazardous materials are incinerated in the kiln, what are the potential impacts of this hazardous material falling on:

1. Homes?
2. Businesses?
3. Farms?
4. Organic farms?
5. Forests?
6. Wildlife?
7. Fish habitats?
8. Oysters and clam populations downstream?
9. Rare and endangered species?
10. Humans?

IX. Effects on area when hurricanes occur

A. Based on the highest flood levels for both Hurricane Fran and Hurricane Floyd, what would be the depth of the water at the cement plant and in the area of the quarry operations?

B. Describe the amount of floodwaters that would enter the quarry under both the Fran and Floyd highest flood conditions.

C. Describe the environmental impact of pumping flood waters from the flooded quarry into the Cape Fear River systems.

D. If the Cape Fear River system floods due to a hurricane or other storms, describe the environmental impact of the stormwater discharges from the plant and quarry operations.

E. Describe the preventive measures that will be in place to lessen the chance of toxic discharges.

F. Describe what measures that will be in place to mitigate the damage ensuing from any toxic discharges.

X. Air and water quality testing

A. Describe the testing protocol, including frequency, of all air, surface water, Cape Fear River system water, and groundwater impacts.

B. Who will perform each of the testing protocols described under X.A?

C. How and under what time schedule will each of the test results described under X.A be made available to the public?

XI. Fuel planned to be burned at the plant.

A. What are the fuel types, e.g., coal, tires, toxic waste, petroleum products, that Titan plans to burn at the Castle Hayne Plant. Describe fully using scientific terms.

B. What are the planned annual volumes for each of the fuel types listed under XI.A?

C. If coal, what major, minor and trace inorganic elements will be present in the coals burned?
D. Can and will Titan be limited to using only one source of fuel?
    1. What is that fuel?
E. Describe the regulatory and public reporting on the types and volumes of fuels consumed.

XII. Destruction of wetlands

A. State the number of acres of wetlands to be destroyed over the next 30 years.
B. Describe the replacement, including location, of wetlands that will be destroyed over those 30 years.
C. Describe, fully, including the location and timing, all wetlands, air quality, and Cape Fear River system mitigation projects and systems.
D. On the assumption that wetlands help ensure the area's water quality, once the wetlands are destroyed, what specific measures will be taken to ensure that the water quality of the Northeast Cape Fear River remains intact?
E. Describe the plan for modifying or expanding the mitigation program if:
    1. The mitigation project or system is found not to be functioning as planned.
    2. The adverse cumulative environmental impact of the mining and kiln activity exceeds the standards under which the mitigation project or system was designed.
F. Describe the independent oversight and public reporting of the mitigation projects and matters related to XII.E.

XIII. Plans for stormwater runoff

A. What are the specific plans to capture stormwater runoff?
B. How would stormwater retention and disposal take place?
C. How would collected solid stormwater residue be disposed of?

XIV. Corporate form of the Castle Hayne operation

A. Is it a limited liability corporation?
B. Is it a subsidiary of Titan America?
C. Describe any partners in the venture outside the Titan group of entities.
D. Who has ultimate liability responsibility for any damages ensuing from the Castle Hayne operation?
E. Describe Titan's bonding for any damage that may ensue to:
    1. Homes?
    2. Businesses.
    3. Farms.
    4. Organic farms.

5. Forests.
6. Wildlife.
7. Fish Habitats.
8. Oysters and clam populations.
9. Rare and endangered species.
10. Humans.

XV. Financing of the Castle Hayne operation

A. Describe the financing resources to be used in the project.
B. Describe all public funds and public/governmental loan guarantees to be used to finance:
    1. The kiln and quarry projects.
    2. Regional supporting infrastructure.

XVI. Describe the safeguards, including financial performance, that are in place to restore the site to its present state after Titan ceases operations