



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
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ATLANTA, GEORGIA 30303-8960

APR 23 2008

FINDING OF NO SIGNIFICANT IMPACT

Reclaimed Water System, Wake County, Durham County, and Town of Cary
Cary, North Carolina
Grant # XP964529-06

The National Environmental Policy Act requires federal agencies to determine whether a proposed major agency action will significantly affect the environment. One such major action is the Environmental Protection Agency (EPA) provision of special appropriations for water and wastewater infrastructure projects, authorized by the Agency's Fiscal Year Appropriations Acts. Based on a review of the Environmental Information Document submitted by the applicant and other supporting documents, the EPA has determined that the above-referenced project will not have a significant impact on the environment, and is issuing this Finding of No Significant Impact (FONSI).

The 2005 Consolidated Appropriations Act (P.L. 108-447) authorized EPA to grant funds for Wake County, Durham County, and the Town of Cary in the amount of \$1,443,400 for the purpose of developing a system to reclaim and reuse wastewater. The 2006 Department of the Interior, Environment, and Related Agencies Appropriations Act (P.L. 109-54) authorized an additional \$1,433,600 for the project. The EPA awarded a planning grant (XP964529-06) to Wake County in the amount of \$988,644 on August 1, 2006. The grant may be increased by \$1,888,356 for project construction at the conclusion of the environmental review. The proposed project will provide reclaimed water for use in the Durham and Wake County portions of the Research Triangle Park (RTP) and West Cary. The project will be constructed in three phases and will include upgrading the existing reuse facilities and installing approximately 67,500 linear feet of distribution pipe with an estimated total cost of \$14,236,668. The project is located in the Upper Neuse watershed, Hydrologic Unit Code 03020201 and is covered by the 2007 B. Everett Jordan Reservoir, North Carolina Phase 1, Total Maximum Daily Load Report.

Enclosed is an Environmental Assessment containing detailed information supporting this action. It includes the following sections: A) Proposed Project and Funding Status; B) Existing Environment; C) Existing Facilities; D) Need for Proposed Project; E) Analysis of Alternatives; F) Environmental Consequences and Mitigative Measures; and G) Public Participation.

This FONSI will be available for review and comment for thirty (30) calendar days. Written comments supporting or disagreeing with the proposed EPA action should be sent to:

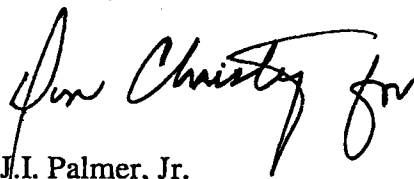
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If no substantive comments are received before the end of the 30 day comment period, the FONSI will become final, and EPA will proceed with the action subject to any mitigation measures as described. If substantive comments are received, EPA will respond to the comments prior to proceeding with the action. If any received comments are significant to the extent that they cannot be adequately mitigated or are otherwise significant in accordance with 40 CFR 1508.27, EPA will no longer support the FONSI and it will be withdrawn. Comments received within 30 days of the date of this FONSI will be evaluated before a final decision is made.

Sincerely,



J.I. Palmer, Jr.
Regional Administrator

Enclosure

ENVIRONMENTAL ASSESSMENT

Reclaimed Water System, Wake County, Durham County, and Town of Cary
Cary, North Carolina
Grant # XP964529-06

A. Proposed Project and Funding Status

The proposed Reclamation and Reuse project is a phased project involving upgrading existing reuse facilities and installing approximately 67,500 linear feet of distribution pipe in three phases. The project is a joint effort between Wake County, Durham County, and the Town of Cary, North Carolina.

The Initial Phase of the project involves upgrading the Triangle Wastewater Treatment Plant (WWTP) operated by Durham County, to provide adequate reclaimed water storage and pumping capacity for the project planning period. This phase includes installation of 33,630 linear feet of various sized (4-inch to 24-inch) distribution pipe and numerous service connections. Service connection will be mandatory in the Town of Cary but not in Durham County. This initial phase is estimated to cost \$8,469,324.

The other two phases can be installed independently of each other. The Future RTP Wake Expansion Phase involves the installation of 16,530 linear feet of various sized (4-inch to 12-inch) distribution pipes. The Future RTP Wake Expansion Phase cost is estimated at \$2,109,168.

The Future West Cary Phase consists of installing 4,700 linear feet of 18-inch and 12,560 linear feet of 16-inch pipe. The transmission mains for the Future West Cary Phase will serve the developers' installed piping. The Future West Cary Phase is estimated to cost \$3,658,176.

Funding Status: The estimated total cost of the project is \$14,236,668. Projected funding for the project is as follows:

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EPA Special Appropriations Funds	\$2,877,000
Capital Funds from Wake County, Durham County, Town of Cary	\$11,359,668

B. Existing Environment

The project area is located in the Piedmont of North Carolina. Elevations within the project area range from approximately 270 to 360 feet above mean sea level (MSL). Portions of the project cross floodplains, where streams are located. The predominant soils in the area are classified

mainly as Creedmoor, White Store, and Chewacla associations. Creedmoor soils are very deep, moderately to somewhat poorly drained, slowly permeable soils. White Store soils are deep, moderately well drained soils that have very slow permeability. This leads to rapid runoff. Chewacla soils are very deep, somewhat poorly drained soils with moderate permeability. Streams within the project area are part of Subbasin 03-06-05 of the Cape Fear River Basin. Major streams in the project area include Kit Creek and its tributaries east of the Wake/Chatham County boundary, Nancy Branch, Morris Branch, Panther Creek and its tributaries, and Burden Creek and its tributaries. All of these streams drain into Jordan Lake. Jordan Lake has a use support rating of impaired, and is rated as a Water Supply IV Nutrient Sensitive Water (WS-IV: NSW), meaning that these waters may be used as a source of potable water if more stringently-classified waters are not available. Nutrient Sensitive Waters mean that the waters potentially could experience water problems associated with excessive nutrients from runoff and wastewater discharges. It is also listed in the final 2006 303(d) listing. The streams within the project area have the WS-IV:NSW classification.

A final Total Maximum Daily Load (TMDL) report was issued for Jordan Lake by the North Carolina Department of Environment and Natural Resources (NC DENR) in September 2007, and was approved by EPA on September 20, 2007. The TMDL report divided the lake into the Upper New Hope Arm, Lower New Hope Arm, and Haw River Arm. The area served by this project is located in the Upper New Hope Arm drainage portion of the Lake. That portion of Jordan Lake was identified as having the greatest adverse impact from nutrient loadings, primarily nitrogen. The wastewater treatment plant point sources of nitrogen were also identified as significant source of that load. NC DENR identified several strategies to reduce the nitrogen load into Lake Jordan including reduction in wastewater treatment plant effluent discharge limitations for nitrogen and increased reuse of wastewater effluent, which would eliminate the discharge of nitrogen for the portion of the effluent reused.

C. Existing Facilities

Durham County operates the Triangle WWTP, which provides wastewater treatment for the southeastern portion of Durham County, including the part of the project that is located in the Research Triangle Park (RTP) in Durham County. Wake County does not operate any wastewater systems. The Town of Cary operates two water reclamation facilities (WRFs) for wastewater treatment in its service area. The North Cary WRF serves the northern portion of Cary, the part of RTP in Wake County, the Raleigh-Durham International Airport, and the Town of Morrisville. The South Cary WRF serves southern Cary.

Durham County has upgraded the Triangle WWTP to expand both its capacity and to produce reclaimed water. The influent pump station has been sized to 12 million gallons per day (MGD) and fine screens and grit removal systems have been added to remove inert materials, prior to the beginning of the biological treatment process. The five-stage biological treatment process provides nitrogen and phosphorus removal. Also, the clarifiers have been upgraded, and the wastewater undergoes tertiary treatment before being sent through the ultraviolet disinfection unit. These upgrades have allowed the plant to meet reclaimed water standards. Currently, the Triangle WWTP supplies reclaimed water for internal plant uses such as toilet flushing, pump seal water, and washdown water. It does not distribute reclaimed water to outside users. Wake

County does not operate any reclaimed water facilities. In 2001, the Town of Cary installed its reclaimed water systems. The North Cary WRF supplies an average of 58 million gallons of reclaimed water per year to approximately 300 residential and commercial customers for cooling water and residential irrigation. The South Cary WRF supplies an average of 6.5 million gallons per year to a park, a school, and to residences for irrigation.

The City of Durham provides potable water to RTP Durham County jointly from the Williams Water Treatment Plant (WTP) located in the south central portion of Durham and the Brown WTP located to the north of Durham. Wake County does not operate any drinking water systems. The Town of Cary jointly owns a WTP with the Town of Apex, and distributes potable water to RTP – Wake County and the Towns of Apex, Cary, and Morrisville.

D. Need for Proposed Project

The rapid growth of the cities and towns in the Research Triangle area has placed a strain on the area's natural resources and infrastructure. As a result of this population boom, the demand for additional water and wastewater services has increased. Durham County, Wake County, the Town of Cary, and the Research Triangle Foundation, which is responsible for building and maintaining the physical aspects of RTP, have come together to propose a water reclamation distribution system for portions of Wake and Durham Counties, as a way to alleviate the strain on water resources within the Triangle area.

Additionally, in 2000, the Town of Cary adopted a Water Conservation and Peak Demand Management Plan. This plan recommends a reduction of the Town's average per capita water usage by 20 percent by 2015. Part of this management plan includes utilizing reclaimed water because it is a safe, cost-effective, and beneficial alternative to using valuable water resources for some non-potable water purposes. Using reclaimed water would extend the service life of the drinking water plant and the water supply. Furthermore, using reclaimed water would recycle a valuable resource and reduce the nutrient loading into Northwest Creek, which is a tributary of Jordan Lake. Lastly, customers using reclaimed water would not have to abide by the Town's water restrictions.

Also, Durham County sends its treated effluent to Northeast Creek, which is a tributary to Jordan Lake. Jordan Lake has a use support rating of impaired, and is classified as a nutrient-sensitive water. Since it provides wastewater services to RTP Durham County, the County has undertaken this project as a way of reducing nutrient loads to Jordan Lake.

Increasing the reuse of wastewater treatment plant effluent will eliminate the nutrient load to Lake Jordan for the portion of the effluent that is reused. The 2007 TMDL report prepared by the state identified effluent reuse as one of the strategies that will contribute to reducing the nutrient load to Lake Jordan and help to restore and maintain the water quality of the Lake.

E. Alternatives Analysis

The alternatives analysis occurred in two phases: the reclaimed water supply alternatives and the reclaimed water transmission piping alternatives.

Reclaimed Water Supply Alternatives

No Action Alternative: The No Action Alternative consists of not constructing a reclaimed water system. As a result, the customers in the existing service area would continue to utilize potable water for non-potable purposes such as irrigation and cooling water. More potable water supplies would be used to fulfill this purpose. Also, Durham County would not be able to reduce its discharge into Jordan Lake and, likewise, its nutrient loading. Because this alternative would not conserve potable water resources or reduce effluent flow and nutrient loading to Jordan Lake, it was rejected.

Triangle WWTP Alternative: This alternative would consist of utilizing the recently completed expansions and upgrades at the Triangle WWTP and implementing a reclaimed water distribution system. This distribution system would require the construction of an expanded pumping station; the conversion of an abandoned clarifier to store reclaimed water, and the installation of a sodium hypochlorite feed system. A total of 75,000 feet of piping would be installed to serve customers in the initial and future phases. Utilizing reclaimed water from the Triangle WWTP would also reduce the discharge into Jordan Lake and the nutrient loading as well. Because of its proximity to reclaimed water demands, the potential effluent nutrient reduction into Jordan Lake, and the cost, this alternative was selected as the preferred alternative.

North Cary WRF Alternative: This alternative would consist of treating reclaimed water at the North Cary WRF and piping it from the existing reclaimed water system in North Cary to the service areas for this project. No upgrade of the WRF would be required since the North Cary WRF already supplies reclaimed water. Piping the reclaimed water from the North Cary WRF to the project area would require 104,000 feet of pipe to serve the proposed customers in the initial and future phases. The use of reclaimed water from this facility would reduce the effluent from the North Cary WRF into Crabtree Creek and the Neuse River as well as the nutrient loading. This alternative was rejected because of the remote location of the North Cary WRF from the project area and the higher cost of this alternative.

Satellite WRF Alternative: The Satellite WRF Alternative would consist of a new treatment facility located near the project area and adjacent to the Kit Creek Pumping Station, which would supply wastewater to the Satellite WRF. It would utilize membrane bioreactor technology to produce high quality reclaimed water. Solids from the process would be discharged back into the sewer system, which would minimize the facilities required to be constructed and operated. Reclaimed water would be stored in a 0.6 million gallon tank. The capacity of the facility would be limited by the available wastewater supply in the collection system serving the pumping station. This alternative would require the installation of 73,000 feet of piping. Since the Kit Creek Pumping Station sends effluent to the Triangle WWTP for treatment, effluent from the Triangle WWTP and nutrient loadings into Jordan Lake would decrease; however, the effluent from the Kit Creek Pump Station will eventually be sent to the proposed Western Wake Regional WRF, which will reduce nutrient loadings further downstream than Jordan Lake. This alternative was rejected because it would require a new facility to be built and, thus, would be the most costly to construct and operate. Furthermore, the construction of the Satellite WRF would not allow for future phases of expansion.

Transmission Piping Alternatives

Road Right-of-Way Alternative: The Road Right-of-Way Alternative would consist of installing the transmission piping for the initial phase of the project along the existing road right-of-way in the RTP Wake County section only. The Durham RTP section of the initial phase and future phases of the project would be in or near the road right-of-way. One of the pipes will cross under a new lake currently being constructed. This alternative will require the installation of approximately 20,600 feet of piping, which would be a portion of the 75,000 feet of piping installed for the whole project, during the initial phase of the project. This is the preferred alternative because of the lower initial cost of the project and better access to the distribution system.

Existing Sewer Easements Alternative: This alternative would utilize a combination of existing road right-of-way and available sewer easements to avoid crossing the lake into the RTP Wake portion of the project. Instead, it would cross one of the streams that feed the lake. The Durham RTP section of the initial phase and future phases of the project would be in or near the road right-of-way. This alternative would require 26,300 feet of piping, which would be a portion of the 75,000 feet of piping installed for the whole project, during the initial phase. This alternative was rejected because of the higher initial costs.

F. Environmental Consequences and Mitigative Measures

Historical and Archaeological Features: The North Carolina State Historic Preservation Office (SHPO) has reviewed the subject project and assigned the Project File No. ER 07-0148. In a letter dated January 30, 2007, SHPO stated that a review of the project had been conducted and that it was not aware of any historic resources that would be affected by the project.

Endangered Species and Critical Habitat: A copy of the subject project was sent to the U.S. Fish and Wildlife Service (FWS). However, the FWS has not responded as to whether the project would adversely affect any federally listed, proposed, endangered or threatened species, or their formally designated critical habitat, or species currently proposed for listing under the Endangered Species Act.

Floodplain, or Wetlands and Streams Issues: Portions of the project will cross floodplains; however, no impacts will occur because areas in the floodplains will be stabilized immediately following construction to minimize flood risk. The United States Army Corps of Engineers (USACE) has reviewed the subject project. In a letter dated September 13, 2007, the USACE indicated that the project may impact jurisdictional waters and their associated wetlands. Quantification of wetland and stream impacts and a Department of the Army permit authorization will be required to construct the project.

Noise and Other Pollution from Construction Activities: There will be an increase in noise levels during construction activities due to the use of heavy equipment. This should not have an

adverse effect because construction activities will be limited to the hours of 7:00 a.m. to 7:00 p.m. on Monday through Thursday. No work will be allowed on Sundays or on legal holidays.

Air Quality: Air quality within the project area may be temporarily impacted during construction because of construction equipment operation and dust generation. During construction, contractors will not be allowed to conduct open burning. Proper vehicle maintenance, frequent wetting of exposed soil, and prompt soil stabilization will minimize air quality impacts. Operation of the reclaimed water system will not cause any air quality impacts.

Miscellaneous Considerations: There are no known prime or unique agricultural lands, scenic, recreational, and state natural areas in or near the project area. Proper measures will be taken to prevent the introduction of toxic substances into the environment during the maintenance and refueling of construction equipment. Erosion and sedimentation controls will be implemented to alleviate impacts to soils, streams, and water resources.

Environmental Justice Issues: The proposed project is located in portions of Durham and Wake Counties. The portion of the project within Durham County does not include any residential property. According to data from Census 2000, 91.8 percent of the people in the Wake County and West Cary portions of the project area are white, and the average median household income of the two Block Groups within the Wake County and West Cary portions of the project area is \$89,895. The population will share the project benefits, and no adverse impacts to any segment of the population are anticipated. There have been no environmental justice issues identified with this project.

G. Public Participation

A public hearing was advertised on January 23, 2007, January 21, 2007, and January 24, 2007, in the Durham Herald-Sun, Raleigh News & Observer, and Cary News, respectively, and was subsequently held on February 6, 2007. The EPA is aware of no unresolved public objections that may have been voiced before or after the meeting, in relation to the proposed project. The project will have a user charge of \$3.28 per 1,000 gallons for residential users.