FINDING OF NO SIGNIFICANT IMPACT AND ENVIRONMENTAL ASSESSMENT

CITY OF SANFORD

BIG BUFFALO WASTEWATER TREATMENT PLANT

RESPONSIBLE AGENCY: NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

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FINDING OF NO SIGNIFICANT IMPACT

Article I, Chapter 113A of the North Carolina General Statutes requires an action to be subject to the requirements of the North Carolina Environmental Policy Act (NCEPA) if it involves the expenditure of public funds and if a potential impact is anticipated to the environment. The project has been evaluated for compliance with the NCEPA and is determined to be a major agency action, which will affect the environment.

Project Applicant:	City of Sanford
Project Description:	The Big Buffalo Wastewater Treatment Plant will be expanded from 6.8 million gallons per day to 12.0 million gallons per day. The proposed expansion includes an upgrade of existing facilities to provide biological nutrient removal and to convert from chlorine to ultraviolet (UV) light for disinfection.
Project Number:	CS370432-04
Project Cost:	$67,300,000
State Revolving Loan Fund:	$17,500,000
Local Funds:	$49,800,000

The review process indicated that significant adverse environmental impacts should not occur if mitigative measures are implemented, and an environmental impact statement will not be required. The decision was based on information in the Engineering Report and reviews by governmental agencies. The attached Environmental Assessment supports this action and outlines mitigative measures that must be followed. This Finding of No Significant Impact (FONSI) completes the environmental review record, which is available for inspection at the State Clearinghouse.

No administrative action will be taken on the proposed project for at least 30 days after notification that the FONSI has been published in the North Carolina Environmental Bulletin.

Sincerely,

Daniel M. Blaisdell

Coleen H. Sullins, Director
Division of Water Quality

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ENVIRONMENTAL ASSESSMENT

A. Proposed Facilities and Actions

The City of Sanford owns and operates the Big Buffalo Wastewater Treatment Plant (WWTP) which serves the City of Sanford and portions of Lee County. The proposed project will expand the capacity of the existing plant from 6.8 million gallons per day (MGD) to 12.0 MGD to meet projected wastewater flows in the service area for the 20-year planning period ending in 2030. The proposed expansion includes an upgrade of existing facilities to provide biological nutrient removal and to convert from chlorine to ultraviolet (UV) light for disinfection.

The proposed expansion will include the following liquid treatment facilities: 1) influent pumping facilities to expand peak flow capability to a of firm capacity of 36 MGD, 2) new screening and grit removal facilities, 3) a parallel influent forcemain, 4) a new 3-million gallon flow equalization tank, 5) two new secondary clarifiers, 6) new RAS pumping facilities, 7) new alum and methanol feed facilities, 8) new denitrification filters, and 9) new UV disinfection facilities. Some modifications to existing equipment will also be made.

The proposed expansion also includes the following additions to the solids treatment facilities: 1) new gravity belt thickeners, 2) two new digester/storage tanks, and 3) new truck loading pumps. Some modifications to existing equipment will also be made.

Funding Status: The estimated total cost is $67,300,000. City of Sanford is applying for a State Revolving Fund loan of $17,500,000. The remaining $49,800,000 will be funded by the City.

B. Existing Environment

Topography and Soils. The project area is located in and serves Lee County. The county is located in two physiographic regions. The northwestern portion of the county, which includes the WWTP, is in the Piedmont Plateau, while the southeastern part of the county is in the upper Coastal Plain. Elevations in the county range from 150 feet to 540 feet. Some of the WWTP facilities lie within the 100-year flood plain and are protected by a dike. The main plant site elevation ranges from 240 feet to 270 feet. The WWTP is located in the Triassic Basin. Soils at the plant site are primarily Mayodan-Urban land complex with slopes of 2 to 8 percent and Pinkston silt loam with slopes of 15 to 40 percent. The soils have moderate permeability, water capacity, and shrink-swell potential. The soils provide poor subgrade support when wet.

Surface Water. The project area is located in the Cape Fear River Basin. The major waterbodies in the county include the Deep River, Cape Fear River, and Upper Little River. The WWTP discharges to the Deep River in Subbasin 03-06-11. At the discharge point, the river is designated Class C and suitable for aquatic life propogation and maintenance of biological integrity, wildlife, secondary recreation, and agriculture. Big Buffalo Creek, a tributary the Deep River, is on the draft 2008 303(d) list and is considered impaired for aquatic life because of a "Fair" fish community rating. A portion of the Deep River is also listed as impaired due to

mercury. The service area also includes Subbasins 03-06-07 and 03-06-13. All waters in these subbasins are considered impaired due to fish consumption advisories because of mercury levels. Lick Creek is also considered impaired for aquatic life due to low dissolved oxygen levels. Turbidity has also been noted as a problem.

Water Supply. The City of Sanford operates a 12 MGD water treatment plant which draws from the Cape Fear River. The Sanford/Lee County water distribution system includes 338 miles of water mains throughout three districts to provide water to customers in the City of Sanford, Lee County, the Town of Broadway, Carolina Trace, and parts of Chatham County. Private wells are also common in the service area. The quantity of groundwater available for development in areas north and west of Sanford is low; however, water supplies in other areas of the county are good. Groundwater quality is good and suitable for household and most industrial use without treatment.

C. Existing Wastewater Facilities

The Big Buffalo WWTP was originally built in 1974 with a design capacity of 5 MGD. A major expansion to increase the capacity to the current 6.8 MGD was completed in 1994 along with upgrades to meet more stringent BOD, TSS, and ammonia limits.

The liquid treatment train at the plant includes influent screening and grit removal, influent pumping, aeration basins, secondary clarifiers, dual media effluent filters, chlorination/dechlorination, and an outfall to the Deep River. A reclaimed water system includes pumps and a forcemain to the City of Sanford Golf Course. The reclaimed water is subject to additional chlorination. Waste-activated sludge is thickened by a gravity belt thickener, aerobically digested, and stored prior to land application.

The WWTP discharges to Deep River and operates under NPDES Permit Number NC0024147. Table 1 shows the current permit limits. Table 2 shows speculative limits for the plant expansion.

Table 1: NPDES Permit Limits

Parameter	Monthly Average	Weekly Average	Other
Flow	6.8 MGD		
$CBOD_5$ (April – October)	8.3 mg/L	12.5 mg/L	
BOD_5 (November - March)	17.0 mg/L	24.0 mg/L	
TSS	30.0 mg/L	45.0 mg/L	
NH_3 as N (April – October)	1.0 mg/L	3.0 mg/L	
NH_3 as N (November – March)	2.0 mg/L	6.0 mg/L	
Fecal Coliform	200/100 mL	400/100 mL	
Total Residual Chlorine			28 μg/L daily max
Cyanide			22 μg/L daily max
Mercury			0.032 μg/L daily max

Table 2: Speculative Permit Limits for Expanded Plant

Parameter	Monthly Average	Weekly Average	Other
Flow	12.0 MGD		
BOD_5 (April - October)	6.0 mg/L	9.0 mg/L	
BOD_5 (November - March)	11.0 mg/L	17.0 mg/L	
TSS	5.0 mg/L	45.0 mg/L	
NH_3 as N (April - October)	0.6 mg/L	1.7 mg/L	
NH_3 as N (November – March)	1.1 mg/L	3.4 mg/L	
Fecal Coliform	200/100 mL	400/100 mL	
Dissolved Oxygen			Minimum 5.0 mg/L
pH			$\geq$6.0 and $\leq$9.0
Total Residual Chlorine			17 μg/L daily max
Cyanide			22 μg/L daily max
Mercury			0.032 μg/L daily max
Total Nitrogen			110,230 pounds/year
Total Phosphorus			34,347 pounds/year

D. Need for Proposed Facilities and Actions

The City of Sanford is planning to expand the WWTP to meet demands related to anticipated growth over the next 20 years. There are no nearby plants with sufficient excess capacity to treat the expected increase in flow to the existing WWTP. The population within the City of Sanford and surrounding area within Lee County is rapidly increasing. Sanford is an employment center for the surrounding area, and growth is also being driven by improved transportation corridors to

other fast growing areas within the state including The Triangle area, Fayetteville and Fort Bragg area, and Southern Pines/Pinehurst.

E. Alternatives Analysis

No-Action Alternative: The no-action alternative would mean that the Big Buffalo WWTP continues to operate at its current capacity with no expansion. At the current capacity, the WWTP will not meet immediate and projected needs for flow capacity. Any future development would require private wastewater treatment facilities or septic tanks. Private treatment is not desirable because it has historically resulted in discharge of poor quality effluent, and septic tanks are not acceptable in urban areas where development is expected due to potentially negative impacts to ground water and surface water. The no-action alternative is not feasible because the plant cannot meet expected demands without expansion and there are no suitable alternatives for wastewater treatment.

Regional System: The regional system alternative would involve connecting to another existing wastewater treatment plant in the area. The nearest treatment facility is an industrial treatment facility for a poultry processing plant approximately 1.5 miles north of the Big Buffalo WWTP. That facility does not have adequate capacity to handle the anticipated excess flow for the Big Buffalo WWTP. There are smaller municipal facilities in the vicinity located at the Town of Siler City (4.0 MGD) in Chatham County and the Town of Broadway (0.16 MGD) in Lee County. Neither facility has the capacity to handle the projected flows from Big Buffalo WWTP. The long distance to the Siler City's WWTP is also prohibitive. This alternative is not feasible because there are no facilities in the region with sufficient capacity to handle the projected flow from the Big Buffalo WWTP.

Land Application: This alternative would consist of secondary treatment using a lagoon system followed by land application of lagoon effluent. The total acreage that would be required for land application of the projected future flow is approximately 2,400 acres. The estimated total present worth cost for such a system is $114 million, and estimated total capital cost is $107 million. This alternative is not feasible because of the high cost and the difficulty of finding a suitable land application site within reasonable proximity to the WWTP.

Upgrade and/or Expansion of Existing Facilities with Conjunctive Reuse of Reclaimed Water: This alternative would involve expanding the city's reclaimed water system to industries to reduce the amount of water usage and subsequent wastewater discharge to the Deep River. It would also extend the life of the WWTP. The city currently has a reuse program that provides irrigation water to a municipal golf course and has asked local industries to consider the feasibility of incorporating reclaimed water into their operations. However, additional reuse is not feasible at this time because water would still require treatment at the Big Buffalo WWTP prior to reuse, and the existing WWTP does not have sufficient capacity to treat the projected flows .

Combination of Alternatives: An alternative combining water conservation, additional wastewater reuse, and growth management was also considered. The city has a conservation

program that includes public education information on the website and applying the N.C. Plumbing Code which requires low-flow toilets to new development. Retrofitting with low-flow toilets in existing homes has not been required. The impact that water conservation will have on future wastewater flow cannot be quantified; therefore, this alternative is not considered feasible because the existing plant cannot treat the predicted wastewater flow without expansion. However, existing and future conservation measures may extend the time period before any future expansion is required.

Optimum Operation of Existing Facilities: This alternative would consist of continuing to operate the existing WWTP with a treatment capacity of 6.8 MGD. With this alternative, nitrification would be provided but nutrient removal would not. Also, this alternative would not meet immediate and projected capacity need. Additional influent pumping station capacity would be required as well as upgrades to the existing aeration basins to provide nutrient removal. This alternative is not considered feasible because of the capacity and nutrient removal issues.

Proposed Project – Expansion of the Existing WWTP: This alternative consists of expanding the existing Big Buffalo WWTP from the current capacity of 6.8 MGD to 12 MGD. The expansion includes upgrade of existing treatment facilities to provide biological nutrient removal, conversion from chlorine to UV light disinfection, a parallel influent force main for increased reliability, a new flow equalization tank, and additional stand-by generators. All of these changes will be made at the existing treatment plant site. This alternative is preferred because it is economically feasible, it will meet required discharge limits, and it meets the anticipated capacity needs for the service area.

F. Environmental Consequences and Mitigative Measures

Topography and Soils: Impacts to topography and soil will be minimal. Some grading and soil excavation will be required for facility construction. Approximately 17,600 square yards of soil will be disturbed. The soil will be used for grading on the plant site. Some offsite fill may be required during grading work in wetter winter months to provide subgrade support. Construction will be in accordance with NC Department of Environment and Natural Resources (DENR)-approved Erosion and Sedimentation Control Plan and other provisions of the Sedimentation Pollution Control Act of 1973. A portion of the planned improvements will take place below the 100-year flood plain elevation. However, this area of the existing plant is protected by an existing dike. The existing dike will remain in place for the proposed WWTP expansion.

Land Use: The WWTP expansion will take place entirely within the existing plant property boundaries; thus no land use changes will occur.

Wetlands: No direct impacts to wetlands are anticipated. There no wetlands on the WWTP site. A sediment and erosion control plan will be followed to minimize construction impacts to downstream wetlands. The increased effluent flow to the Deep River that will result from the expansion is not expected to impact downstream wetlands because the increased flow is not significant relative to the normal and peak flows of the river.

Important Farmlands: Important farmlands will not be directly impacted.

Public Lands and Scenic, Recreational, and State Natural Areas: No public lands or scenic, recreational, or state natural areas will be impacted by the project. The WWTP expansion is entirely on City-owned land.

Cultural Resources: In a memorandum dated August 20, 2008 (No. ER 07-2287), the North Carolina State Historic Preservation Office (SHPO) stated that no historic resources would be impacted by the proposed project.

Air Quality: Air quality impacts are expected to be minor. Some open burning of vegetation may be required, and if so, will be carried out in accordance with air pollution control requirements of the City of Sanford, the Lee County Fire Marshall, and the North Carolina Division of Air Quality. Dust control measures including watering, reseeding, and covering disturbed areas will be utilized to minimize impacts from dust. Construction vehicles and equipment will be properly maintained to minimize air emissions. Operational impacts are not expected. The current facility has not experienced any odor control problems, and no increases in odor levels are expected as a result of the plant expansion.

Noise Levels: Direct noise impacts are expected to be minor. Noise levels will temporarily increase during construction but will be limited to normal daytime working hours. Noise-attenuating enclosures for some outdoor equipment and provisions for noise control from blower and generator buildings will be utilized to minimize operational noise.

Water Resources: Impacts to water resources from construction activities will be short term and will be minimized by implementing erosion control practices in compliance with the Sedimentation Pollution Control Act. The WWTP expansion will result in increased impervious surface from 7 percent to 20 percent; however, on-site stormwater controls will minimize impacts from stormwater runoff. New standby power facilities will have positive impacts on water resources by reducing the potential for overflows during power outages.

Forest Resources: Approximately 4.3 acres of forest resources will be lost by clearing to accommodate the plant expansion. Contractors will take precautions to protect trees outside of the construction area.

Shellfish or Fish and Their Habitats: Minor temporary impacts to shellfish or fish and their habitats may occur due to increases in sedimentation during construction activities. Impacts will be minimized by strict adherence to erosion and sedimentation control measures including the Erosion and Sedimentation Control Plan. The increased wastewater flow is not expected to have detrimental impacts because the nutrient loading will be reduced. The switch from chlorine to ultraviolet light disinfection will be beneficial to aquatic species.

Wildlife and Natural Vegetation: Direct impacts to wildlife and natural vegetation will be minimal and temporary during construction. There is not expected to be significant displacement of wildlife or loss of habitat in the 4.3 acres that will be cleared. Proper construction techniques will be used to minimize construction-related impacts.

Introduction of Toxic Substances: No significant introduction of toxic substances is expected. There is an effective industrial pretreatment program in place, and effluent monitoring for toxicity is also required. Appropriate standard operating procedures will be followed to minimize impacts from spills. The change from chlorine to ultraviolet light disinfection will reduce the potential for introduction of chlorine from the WWTP.

U.S. Fish and Wildlife Service reviewed the proposed project and concluded that the requirements of Section 7(a)(2) of the Endangered Species Act have been fulfilled. The North Carolina Wildlife Resources Commission, Natural Heritage Program, and Division of Water Quality Raleigh Regional office concur with the proposed project. The North Carolina Department of Cultural Resources is not aware of any properties of architectural, historical, or archaeological significance that would be affected by the project.

G. Public Participation, Sources Consulted

A public hearing was held on June 9, 2010 on the proposed project. The current user charge for residents served by the City of Sanford is $27.80 per month for 5,000 gallons. The proposed project is expected to result in an increased charge of $6.28 per month for a total of $34.08 for 5,000 gallons. During the public hearing, three citizens commented on the proposed project: one in support of the proposed project and two expressed concerns with the proposed project. City representatives responded to the comments during the hearing and plan to move forward with the project. A summary of the public hearing is included in Attachment A of this FONSI/EA.

Sources consulted about this project for information or concurrence included

1) City of Sanford
2) North Carolina Department of Environment and Natural Resources
   - Wildlife Resources Commission
   - DWQ Raleigh Regional Office
   - DWQ PERCS Unit
   - DWQ NPDES Unit
   - Division of Air Quality
   - Division of Environmental Health
   - Division of Water Resources
   - Division of Forest Resources
   - Office of Legislative and Intergovernmental Affairs
3) North Carolina Department of Cultural Resources
4) North Carolina State Clearinghouse
5) U.S. Fish and Wildlife Service
6) U.S. Army Corps of Engineers

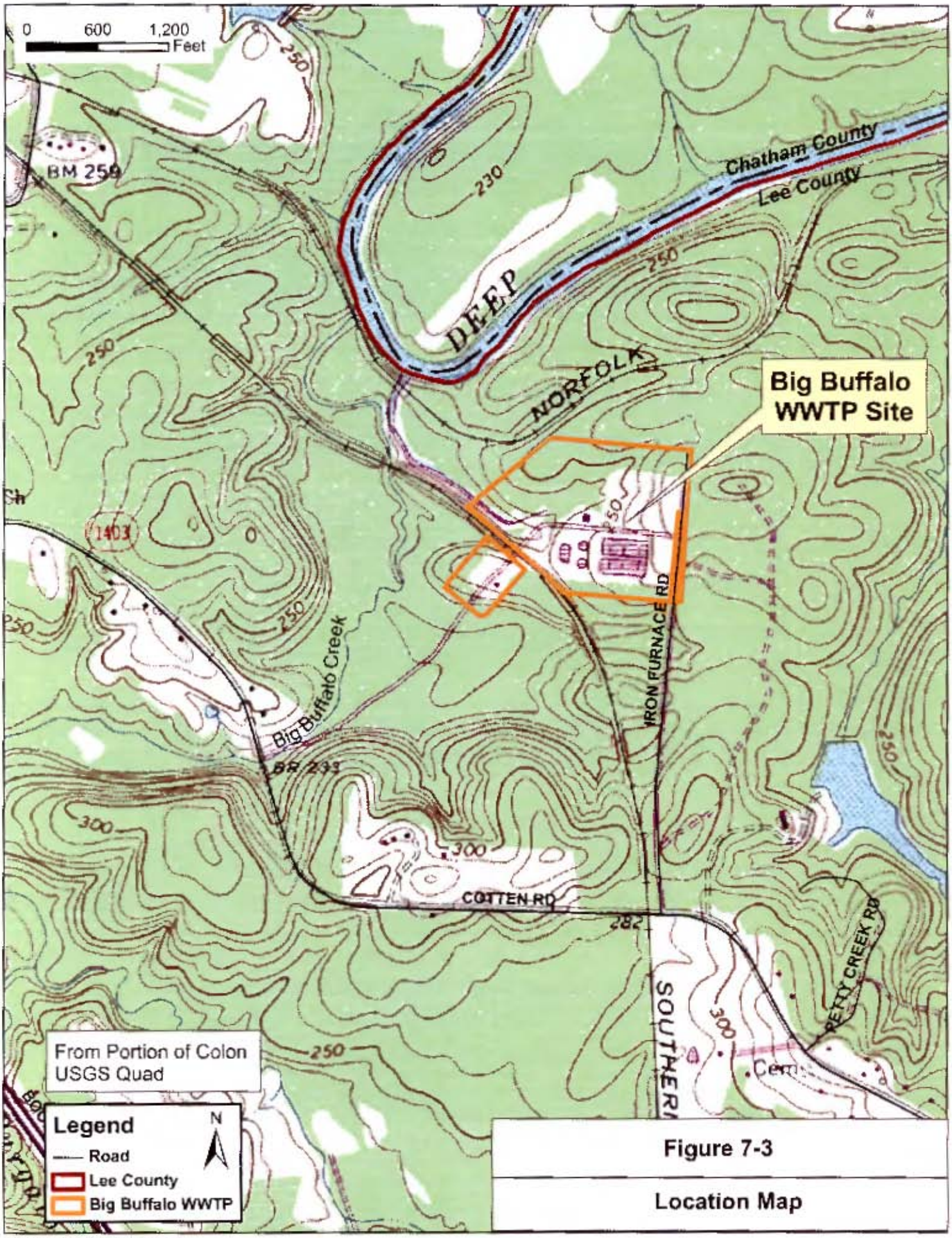

Figure 7-3

Location Map

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ATTACHMENT A

Public Hearing Summary

City of Sanford, North Carolina
Big Buffalo WWTP Expansion
Engineering Report
Summary of Public Hearing Held on June 9, 2010, 1:00 pm

The public hearing was held before the City Council in the Council Chambers. Mayor Cornelia Olive opened the public hearing and asked the Public Works Director, Mr. Vic Czar, to state the purpose of the hearing. Mr. Czar indicated that the hearing was a requirement of the Construction Grants and Loans Section of the N.C. Division of Water Quality (CG&L) for approval of the Engineering Report for the proposed expansion of the Big Buffalo WWTP, and that there would be no decisions made at the hearing. He stated that the record of the hearing would be a part of the Engineering Report and would be submitted to CG&L. He then introduced Chris Belk of Hazen and Sawyer (H&S) to make the presentation.

Mr. Belk provided his name and address for the record and then made a presentation that included the need for the project, a summary of the components of the proposed project, an estimate of the total project cost, the amount of State Revolving Fund (SRF) loan funds for the project, and the projected impact of the project on the monthly user charges for a typical inside City residential customer using 5,000 gallons of water per month. A copy of the presentation is attached. Mayor Olive asked Mr. Belk about the proposed alternate bid item for the flow equalization tank for the project. Mr. Belk indicated that this was to allow construction of this tank to be deferred if the bid costs are too high. This concluded the presentation.

Mayor Olive then opened the hearing for comments. Council Member Charles Taylor asked if the Council members would be given a copy of the presentation. Mr. Czar indicated that they would be provided copies.

Mayor Olive asked if there were members of the public who would like to provide comments. Three members of the public spoke. Mr. Albert Adcock indicated that he was in support of the project and that he strongly encouraged that the project be built now while construction costs are low. Mr. Keith Clark commented that he was opposed to the project and said that the project should be put to a vote by the voters. He said that the report is flawed and does not significantly reflect the current flows. He added that there has been a loss of industries in Sanford, as well as changes in the work force, and that no new plants will be built that use large amounts of energy and water. He said that Lee County does not have the infrastructure to support growth that Hamett County has, and that taking in all of the Extraterritorial Jurisdiction (ETJ) will become an incentive to annexation. He said that there are other loan funds that are available, and that SRF loan funds are not the best source of funding for the project. He said that the population growth estimates are based on old thinking about competitiveness for growth and the nature of growth in the County. Ms. Montrose Williams Simmons said that she agreed with the previous speaker, and doesn't believe that the population will increase to the amount projected. She said that she doesn't think the proposed project is the right thing to do.

Council Member Taylor asked the staff to address some of the points that had been made. Mr. Czar noted that the flows at the Big Buffalo WWTP are currently around 4 million gallons per day (mgd), and that permits are in the works for projects that would produce around 2 mgd of additional flow. He indicated that with the currently approved projects flows will approach the current treatment capacity of 6.8 mgd. He said that this expansion project is a 7-year process,

and that the projections are for the year 2030. He added that an expansion project is not something that you can do quickly. City Manager Hal Hegwer noted that the public hearing is for the SRF loan funding, and that there is also a possibility of other loan funding. Mr. Czar indicated that the City needs to continue to pursue the option of SRF loan funding.

Council Member Samuel Gaskins asked if the City is required to take some action toward expansion when flows reach 90 percent of the current treatment capacity, and asked when the City will reach that capacity. Mr. Czar said that such guidelines exist, but that the City also needs to start earlier because it's a long-term process. Council Member Leopold Cohen said that people had far ranging vision in the past and that the City has to look forward. Council Member Gaskins added that other counties are farther ahead than Lee County and that the City needs to move forward. Council Member James Williams said that the City started this process in 2007, that there was a requirement that paperwork be started at 80 percent of capacity, and that the City was at 79 percent of capacity at that time. He said that the City started this process because of the State mandate at that time.

Ms. Simmons commented that since the City hasn't provided any information on the current flows as a percent of plant capacity, how can the City say it needs the project. Mr. Adcock commented that the City has to plan for the future, and that if you don't start now capacity will not be available when you need it. He urged the City to go ahead with the project. Council Member Williams said that it is a good thing for the City to support the concept of regional treatment, and that the City should be prepared to handle that with additional capacity.

Council Member Taylor said that the presentation did not include any information on surcharges for the City's neighbors. He said that he had yet to see any projections for increased costs for outside users. Council Member Williams indicated that the Council had previously received information on projected rates for inside City and outside City customers. Council Member Linwood Mann and Mr. Hegwer said that the Council has talked about those rates in the past. Mr. Hegwer suggested that the Council resume the discussion of rates at a future Council meeting and continue with the public hearing on the project. Council Member Michael Stone said that he supports the proposed expansion and that the discussion of rates can come later.

There were no further comments and Mayor Olive adjourned the public hearing.