

Action ID. SAW-2005-20159

Permittee: Western Wake Regional Wastewater Management Facilities Project Partners

Location: Wake and Chatham Counties, North Carolina

Date: July 21, 2010

## **Record of Decision/Statement of Findings**

### **1. Introduction and Project History**

The Western Wake Regional Wastewater Management Facilities Project Partners (Project Partners), which includes the Towns of Apex, Cary, Holly Springs and Morrisville, has applied for a Department of the Army (DA) Section 404 of the Clean Water Act permit to permanently impact 0.82 acres of wetlands and 378 linear feet (lf) of stream (232 lf of perennial and 146 lf intermittent) in order to construct and operate new wastewater management facilities including influent conveyance facilities, a new water reclamation facility (WRF), and new effluent conveyance facilities in western Wake County, North Carolina. The total temporary impact of the proposed project is 1,816 lf of stream (1,014 lf of perennial and 802 lf of intermittent) and 2.95 acres of wetlands.

It is important to note there will be five total DA permit requests for the complete project as described in the Western Wake Regional Wastewater Management Facilities Final Environmental Impact Statement (FEIS). The District Engineer has received a request from the Project Partners to authorize WRF site 14 and associated infrastructure and pipelines as described in the Section 2 "Description of the Proposed Project" of this Record of Decision (ROD). The other permit requests outlined in the Final EIS (FEIS) will be made by each municipality when each is ready to construct its portion of the project. The DA permit request for the WRF project facilities is a stand-alone project and would be functional without the lines from Apex, Cary and Holly Springs. The total permanent impact of the complete project is 1,387 linear feet of perennial and intermittent stream and 5.9 acres of wetlands. Most of these impacts are along the influent transmission lines, and the impacts are described in Section 4 of the FEIS.

#### Project History

The communities in Western Wake County identified wastewater treatment capacity as a crucial need in the mid-1990s. As their communities continued to experience growth, the Towns of Apex, Cary, Morrisville, and Holly Springs all were involved with planning efforts to identify options for expanding capacity or siting new wastewater treatment facilities. In 2000, the North Carolina Division of Water Quality (NCDWQ) met with the Towns' staff, strongly encouraging a cooperative planning effort to identify regional solutions to wastewater needs.

In 1996, the Towns of Apex, Cary, Morrisville, and the Wake County portion of Research Triangle Park (RTP South) began the environmental documentation to increase their transfer of

water from the Haw River Basin to the Neuse River Basin. An environmental impact statement was completed in 2000. In 2001, the North Carolina Environmental Management Commission issued an interbasin transfer (IBT) certificate that required Apex, Cary, Morrisville and Wake County to begin returning water to the Cape Fear River Basin in January 2011. In addition, NCWQ strongly recommended the removal of Holly Springs' wastewater discharge from Utley Creek.

Faced with a need to provide capacity for growth, regulatory encouragement to consider regional solutions, and a requirement to return water to the Cape Fear, the communities and Wake County initiated a regional wastewater planning study in mid-2002. This study examined multiple approaches to addressing wastewater capacity needs as follows:

- Each community providing for its own wastewater treatment needs
- Each community purchasing capacity from local governments outside of Wake County
- Communities sharing facilities in various combinations

With these various management options to addressing wastewater capacity needs, the planning study considered roughly 30 potential sites for locating individual or shared facilities and a range of discharge locations including Jordan Lake, Harris Lake and Cape Fear River above and below Buckhorn Dam. A wide range of sites was required for the planning study so that costs associated with management options could be developed.

As the planning process was occurring, NCDWQ eventually determined that a discharge in the Cape Fear River below Buckhorn Dam was the only feasible discharge alternative for individual or shared facilities due to water quality issues. This determination was factored into the planning study. Based on the planning study and guidance from NCDWQ, the communities' preferred management approach for a regional wastewater management option consisted of the following facilities:

- A new water reclamation facility (WRF) providing treatment capacity to Apex, Cary, Morrisville, and Wake County (RTP South) and associated pump stations and conveyance for raw wastewater;
- An expanded water reclamation facility serving the Town of Holly Springs and an effluent conveyance line to the new WRF location for the other communities;
- Shared pump station and effluent conveyance to the discharge location in the Cape Fear River below Buckhorn Dam.

The proposed project initially was addressed in an Environmental Impact Statement (EIS) prepared in accordance with the NC State Environmental Policy Act (SEPA). Under this effort, a preliminary draft SEPA EIS was developed and reviewed by NCDENR and the USACE. A notice of availability (NOA) for the draft EIS was published on May 28, 2006 and subsequently a public hearing was held in Apex, North Carolina on June 15, 2006. The Project Partners submitted a Section 404 wetlands permit application to the USACE on June 5, 2006 for Department of the Army (DA) authorization to temporarily impact an estimated 22.4 acres of

forested wetlands, 4,300 linear feet of streams and a 60-foot by 400-foot area within the Cape Fear River, and permanently impact an estimated 12.9 acres of wetlands, 1,435 linear feet of perennial streams and an 18-foot by 400-foot area within the Cape Fear River in order to construct the proposed project. Subsequent to the public hearing, the Project Partners asked the USACE to develop an EIS in accordance with National Environmental Policy Act (NEPA). Based upon this request from the applicant, and in consideration of the projected level of impacts of the project, and the confusion potentially caused by duplicate or conflicting State and Federal environmental documents, the USACE decided to develop a Federal EIS that would meet the requirements of both NEPA and SEPA. The Project Partners withdrew their original permit request on December 15, 2006 and the NEPA process was initiated. A notice of intent to prepare a draft EIS was published in the Federal Register on April 9, 2007 with the USACE as lead agency for the Federal process.

The public involvement process for the development of the EIS included a public scoping meeting, communications with the public through various methods, the use of project delivery team (PDT) meetings to provide agency and public input into the scoping process and analytical approaches, other public meetings, two open houses and a public hearing on the draft EIS and permit application.

On March 17, 2009, the Project Partners applied for Department of the Army authorization to permanently impact 1.8 acres of wetlands and 329 lf of perennial stream and 180 lf of intermittent stream for constructing the first part of the project. The total proposed impacts for the complete project were 6.9 acres of wetland impacts and 3,931 lf of stream impacts.

On December 2, 2009, the Project Partners revised their application reducing their permanent impacts to wetlands from 1.8 acres to 0.82 acres; and 329 lf of perennial stream impacts to 232 lf; and intermittent stream impacts from 180 lf to 146 lf. The total complete project permanent impacts were also reduced for wetlands from 6.9 acres to 5.9 acres and for streams from 3,931 lf to 1,387 lf of stream.

As the District Engineer for the Wilmington District, U. S Army Corps of Engineers, it is my decision, based on review of the District's files on this matter and the Final Environmental Impact Statement for the Western Wake Regional Wastewater Management Facilities dated December 2009, that the proposed project should proceed as modified by special conditions. I find the applicant's proposed plan, with special conditions, to be acceptable, in light of my analysis of the available alternatives in relation to applicable factors including engineering, economics, social criteria, and the environment. These findings were made prior to and support my decision to issue Department of the Army authorization pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344) for the proposed project (WRF site 14).

## 2. Description of Applicant's Proposed Project.

The applicant's proposed project, identified herein and in the FEIS as WRF site 14, would allow the Project Partners to meet mandated state regulatory requirements and meet future wastewater treatment capacity needs.

The Project Partners' proposed action is to build a regional wastewater system that includes the construction of influent conveyance facilities, a single WRF, and effluent conveyance facilities in western Wake County and Chatham County, North Carolina to serve the Towns of Apex, Cary, and Morrisville and RTP South. The proposed WRF site is north of US 1 and just south of Old US 1 between New Hill-Holleman and Shearon Harris Roads. The WRF would be constructed in two phases to a proposed treatment capacity of 30-million gallons per day (mgd) and a discharge capacity of 38-mgd. The discharge point will be located on the Cape Fear River downstream of Buckhorn Dam in Chatham County. The Town of Holly Springs Utley Creek Wastewater Treatment Plant (WWTP) has received a Finding of No Significant Impact from the State of North Carolina to expand to 6 mgd and will share the 38-mgd outfall to the Cape Fear River.

The proposed project includes the following infrastructure as illustrated on Figures 1 and 2:

- West Cary Pump Station (WCPS) expansion
- West Cary Force Main (Influent Pipeline) – West Cary Pump Station to West Reedy Branch Gravity Sewer
- West Reedy Branch Gravity Sewer (Influent Pipeline) – West Cary Force Main to Beaver Creek Pump Station
- Western Wake Beaver Creek Gravity Sewer (Influent Pipeline) – Richardson Rd. to Beaver Creek Pump Station
- Beaver Creek Pump Station (BCPS)
- Beaver Creek Force Main (Influent Pipeline) – Beaver Creek Pump Station to the Western Wake WRF Site
- Western Wake WRF
- Water and Electric Utility Lines to the Western Wake WRF Site
- Effluent Pump Station located on WRF site, Force Main, and Outfall

This permit application only applies to the infrastructure elements listed above and shown in Figure 2. The water and electric utility lines are shown on Figure 10.

In addition, there are four projects related to the facilities listed above. The Western Wake WRF proposed project facilities outlined above, would be functional without the following lines from Apex, Cary and Holly Springs.

- Apex Beaver Creek Gravity Sewer
- Cary Green Level Force Main and Gravity Sewer
- Cary Indian Creek Force Main and Gravity Sewer
- Holly Springs Effluent Force Main - Utley Creek WWTP to the

## Western Wake WRF Effluent Pump Station

The connection of the related projects to the Western Wake WRF facilities is depicted on Figure 1. The Apex and Cary sewer line projects are not included as part of this application and will be permitted independently in the future depending on the capacity needs for these lines. The Holly Springs effluent line is being permitted in parallel to this project, but is being done so independently by the Town of Holly Springs.

The following provides a general description of the wastewater flows through the Western Wake Regional Wastewater Management Facilities. Wastewater flows from Cary, Morrisville, and the Wake County portion of Research Triangle Park (RTP South) will enter into the system at the West Cary Pump Station (PS). Wastewater flow from Apex will enter the system along the alignment of the West Reedy Branch Gravity Sewer and at the Beaver Creek PS. Wastewater flow from Holly Springs will enter into the system at the Effluent PS located at the Western Wake WRF. The combined effluent from the Partners will be discharged to the Cape Fear River downstream of Buckhorn Dam. Figure 1 illustrates the location of the proposed Western Wake WRF and supporting infrastructure.

WRF site 14 is a 237-acre site located north of US 1 and south of Old US 1 in western Wake County, close to the community of New Hill. It is located in an area between Shearon Harris Road to the west and New Hill Holleman Road to the east. Approximately 62.1 acres of the 237-acre site would be used for the proposed facilities.

The final site layout has been determined and was used to determine wetland and stream impacts, as seen in Figure 4. The site layout of proposed project WRF site has been developed to avoid impacts to wetland areas; Figure 4 shows the locations of surveyed wetlands on the site and the potential disturbance limits. Several of these wetlands are within the perimeter's 200-foot buffer. The buffer, which has been designed to reduce visual and noise impacts from the site, will also protect environmental resources that occur in these areas. Pursuant to Special Conditions q and r of the Department of the Army (DA) permit, the buffer will not be developed, except to allow access to the site for roads, utilities, and transmission lines.

The WRF entrance road off of Shearon Harris Road crosses two perennial streams and two intermittent streams. These streams will be crossed with open bottom culverts to avoid impacts to them. A schematic of a typical bridge crossing for this project is illustrated in Figure 5. The WRF site construction layout will avoid all other perennial and intermittent streams as shown on Figure 4. By using open bottom culverts and avoiding stream areas on the site, no direct impacts to streams will occur from construction and operation of the WRF.

### Water and Electric Utility Lines

Water and electric utility lines will be constructed and routed to the WRF site as identified on Figure 10. These planned utility lines will not result in any permanent impacts to wetlands or streams.

### West Cary Pump Station

The West Cary Pump Station was previously permitted to provide the Town of Cary with needed service. The Project Partners do not anticipate having to expand the footprint of the West Cary Pump Station site as a part of this project. Figure 6 shows the West Cary Pump Station site layout.

### Beaver Creek Pump Station

The footprint of the Beaver Creek Pump Station has been sited to avoid wetland impacts. There are 40 linear feet of intermittent stream on the Beaver Creek Pump Station site that are within the temporary disturbance area, depicted on Figure 7. No permanent stream impacts occur at the Beaver Creek Pump Station.

### Transmission Infrastructure

Most of the pipelines for the proposed project will be installed adjacent to existing Right of Ways (roads, existing natural gas and electricity utility corridors). Therefore impacts to wetland areas as a direct result of constructing influent wastewater force mains and effluent force mains (which include the discharge/outfall structure and pipeline to the diffuser) will be minimized. Each individual crossing has been evaluated for avoidance and minimization of impact to streams and wetlands, such as removing the need for a permanent access by utilizing roadways or ROWs adjacent to individual streams or wetlands. The influent pipelines will impact 3.08 acres (ac) of wetland (2.34 ac temporarily and 0.74 ac permanently). The effluent pipelines will impact 0.44 acres of wetland (0.36 ac temporarily and 0.08 ac permanently). Existing conditions for the influent and effluent pipelines are displayed on Figure 8 and 9, respectively. The influent pipelines will permanently impact 233 linear feet of stream (150 lf of perennial and 83 lf of intermittent). They will temporarily impact 948 linear feet of stream (592 lf of perennial and 356 lf of intermittent). The effluent force main will permanently impact 145 linear feet of stream (82 lf of perennial and 63 lf of intermittent) and temporarily impact 608 linear feet of stream (398 lf of perennial and 210 lf of intermittent). Temporary impacts will generally consist of the excavation of streams and wetlands (open cut trench) and placement of the pipelines into the trench. The excavated material will then be backfilled into the trench and the site will be returned to grade and be seeded and stabilized using the appropriate best management practices. The stream or wetland will not be changed or permanently impacted.

A discharge to Harris Lake has also been evaluated in 2008 and 2009 through additional monitoring and modeling analyses to determine the ability of the lake to assimilate nutrients resulting from a WRF discharge. This analysis is not yet complete. However, a discharge to Harris Lake has been determined to not meet the purpose and need for the Western Wake WRF discharge because the additional regulatory approvals required would delay the project further by at least three years. As outlined in Section 1.2.1 in the FEIS, the inter-local agreement with Durham County, which facilitates compliance with condition 1 of the IBT Certificate for the Towns of Apex, Cary, and Morrisville and Wake County, terminates on June 30, 2014. The proposed WRF will be needed no later than this date to continue compliance with the IBT certificate. The final result of these investigations might be the finding that Harris Lake is a practicable alternative discharge location. At this time, I find that it is not appropriate to delay issuance of this permit based upon the possibility of another practicable alternative, especially given that NCDWQ has expressed a strong preference for discharge below Buckhorn Dam.

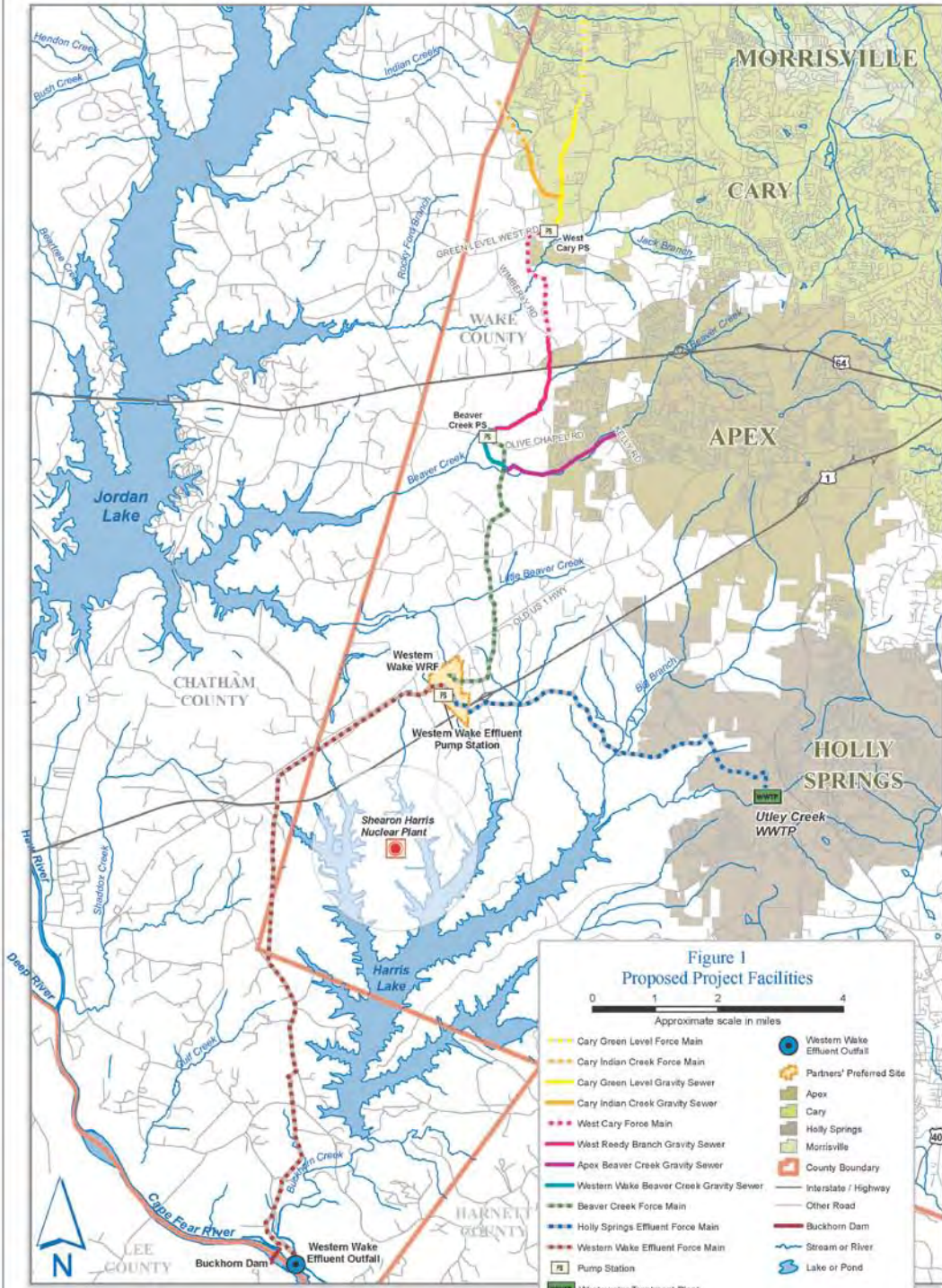
The NC Division of Water Resources (NCDWR) has indicated that a discharge to Harris Lake would require a new IBT Certificate for the Towns being served by the WRF. The NC General Statutes related to IBT (G.S. 143-215.221) were modified during the 2007 legislative session and the time frame to complete the new IBT approval process is three to four years. Communication from NCDWR regarding their interpretation of the IBT requirements is included in Appendix B-4 of the FEIS.

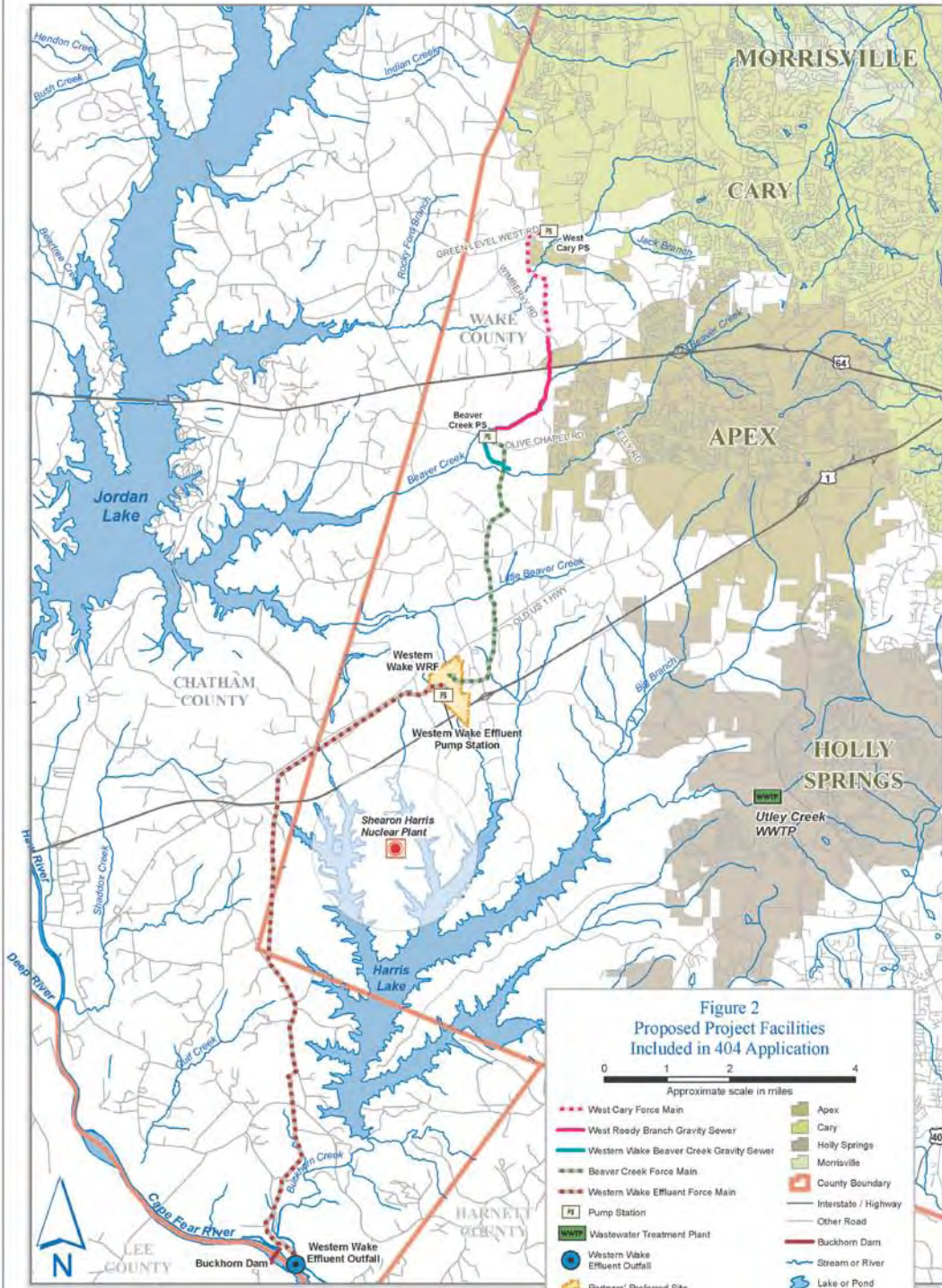
The Town of Holly Springs is participating in the Western Wake project as a result of a condition contained in the FONSI for their WWTP expansion that was completed under SEPA that indicates “any Authorization to Construct or other necessary permits (orders, etc.) for expansion of the Utley Creek WWTP will include a condition stating that the treated effluent must be removed from Utley Creek by the date established in the Certificate authorizing the Towns of Cary, Apex, and Morrisville and Wake County to Increase Their Transfer of Water from the Haw River basin to the Neuse River basin under the Provisions of G.S. 143-215.221” (see Appendix B-2 of the FEIS). NCDWQ has indicated that as long as the Partners are complying with the requirements of the IBT certificate, the Town of Holly Springs will be deemed to be meeting the requirements in the FONSI and that no modification is required (see email correspondence in Appendix B-4 of the FEIS).

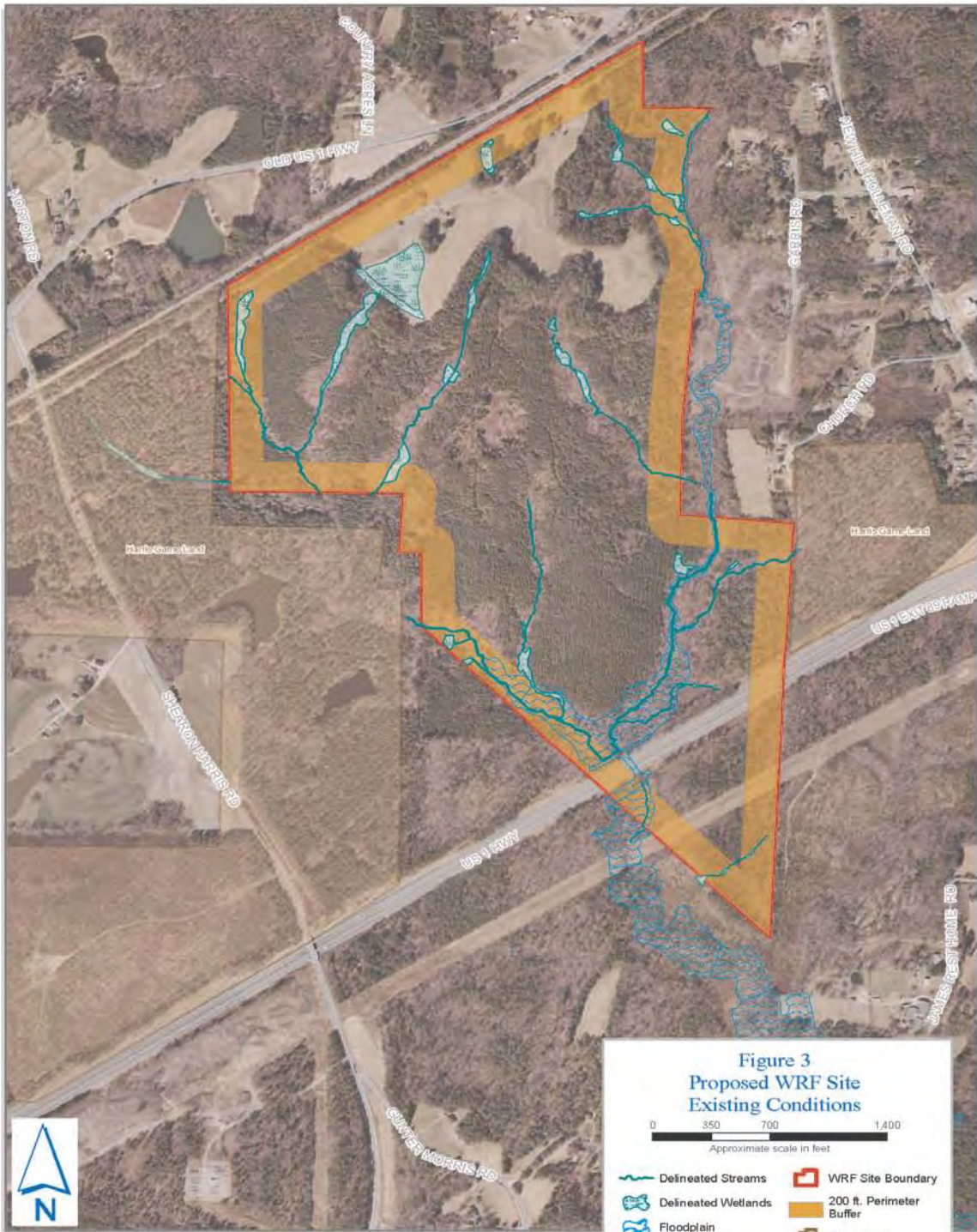
The Town of Holly Springs is not subject to a requirement to obtain an IBT certificate to keep its discharge in the Harris Lake watershed. A recently completed analysis indicates that Harris Lake may be able to assimilate a discharge from the Town of Holly Springs. However, the only option currently supported by NCDWQ (through the issuance of speculative permit limits) for the Town to expand its wastewater treatment capacity is through a discharge to the Cape Fear River. The Town remains a participant in the Western Wake wastewater management facilities through a planned effluent force main from the Town’s Utley Creek WWTP to the Western Wake Effluent Pump Station and then shared conveyance to the Cape Fear River. If the Town receives speculative limits to discharge directly or indirectly to Harris Lake, it may choose to pursue a discharge to the lake. The environmental review for this project could be accomplished as an amendment to the Town’s EA/FONSI or as an amendment to this EIS.

# WESTERN WAKE

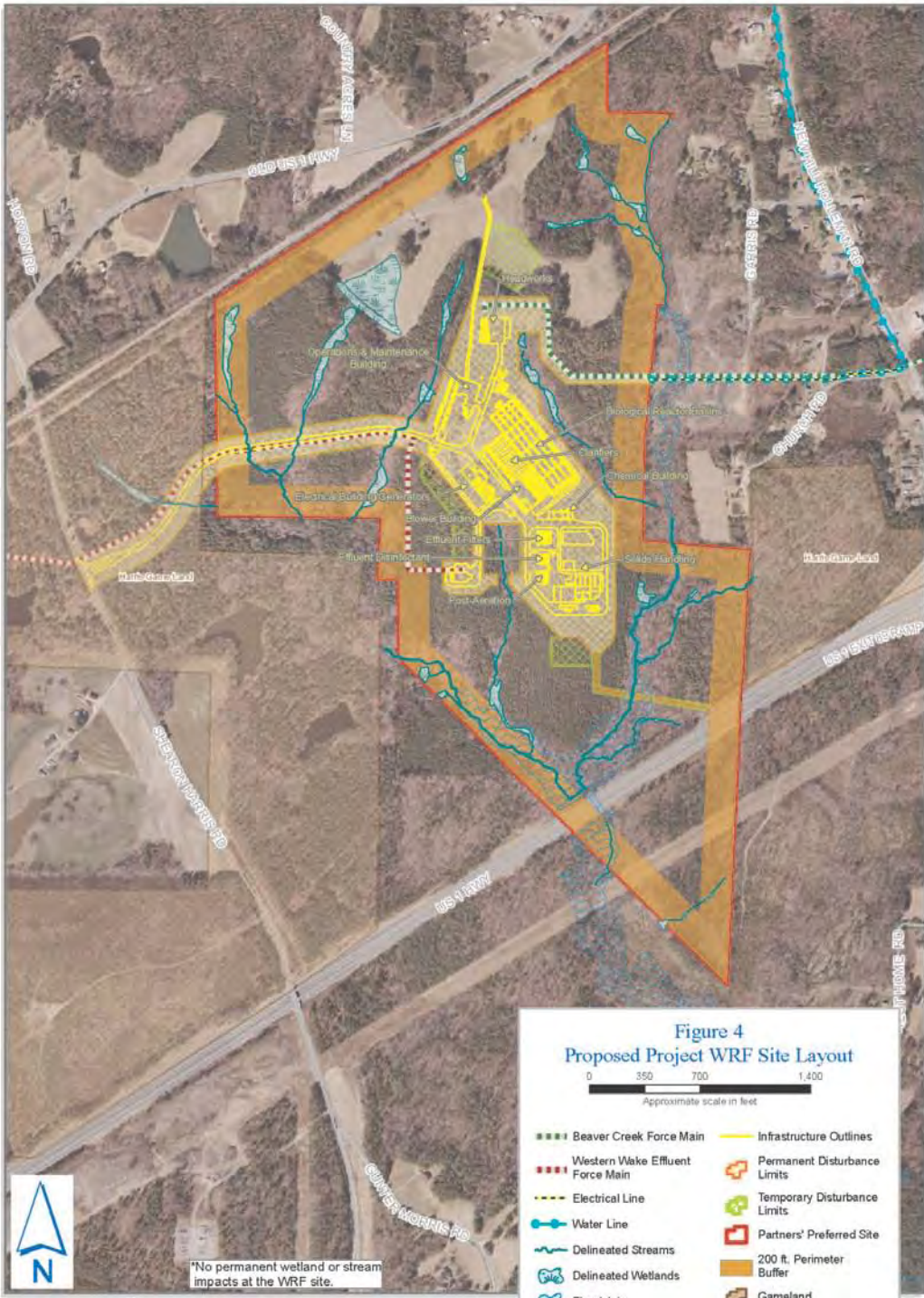
# REGIONAL WASTEWATER MANAGEMENT FACILITIES

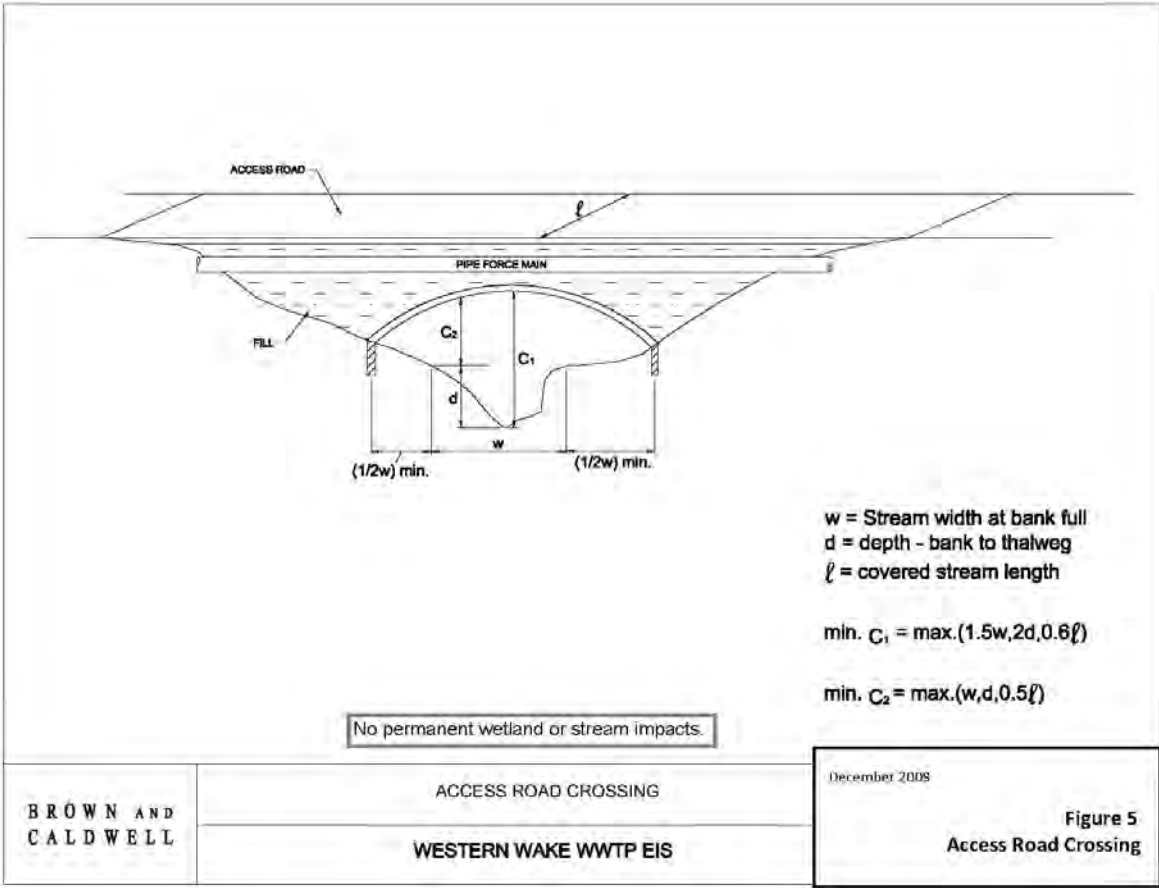






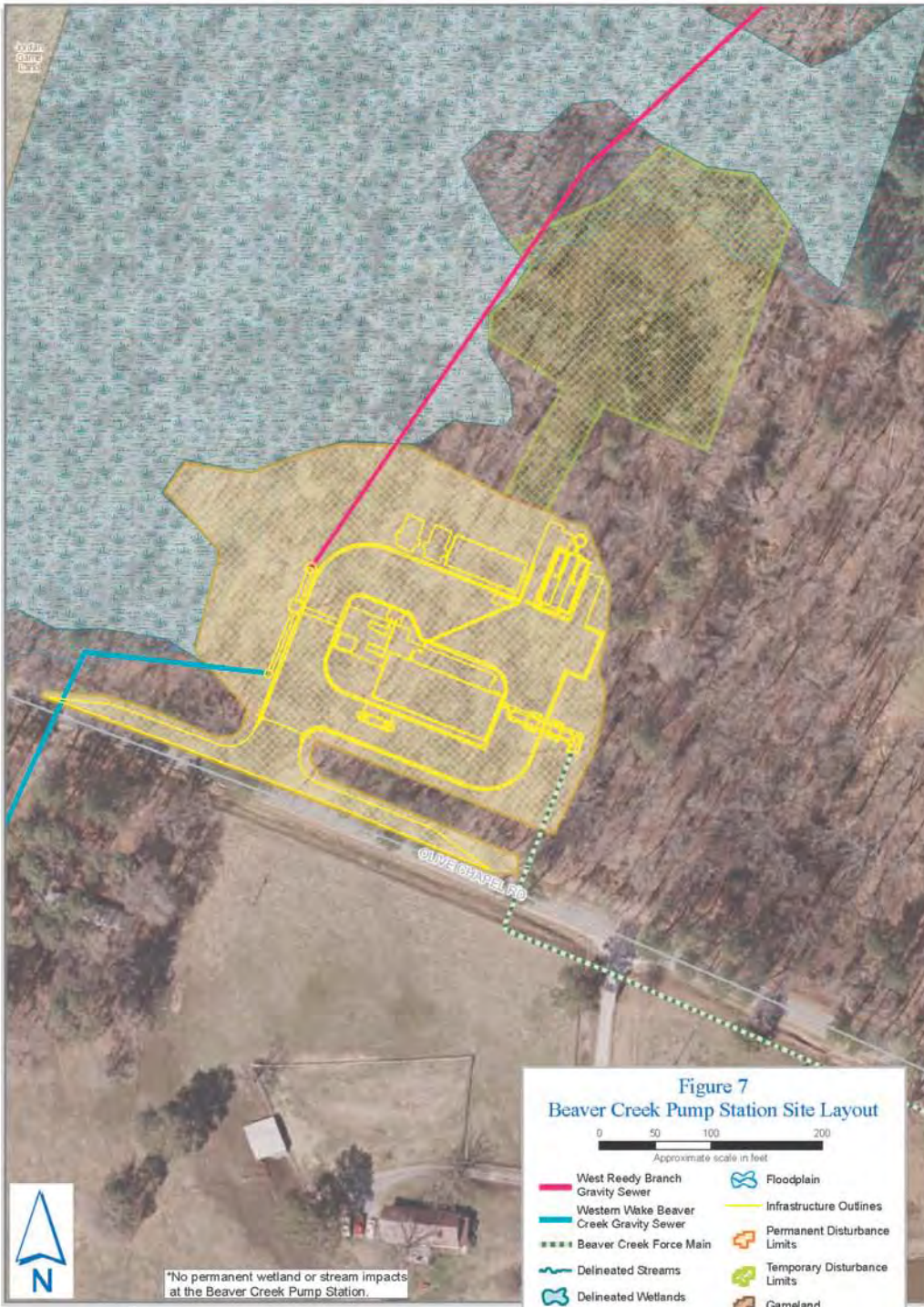
December 2009

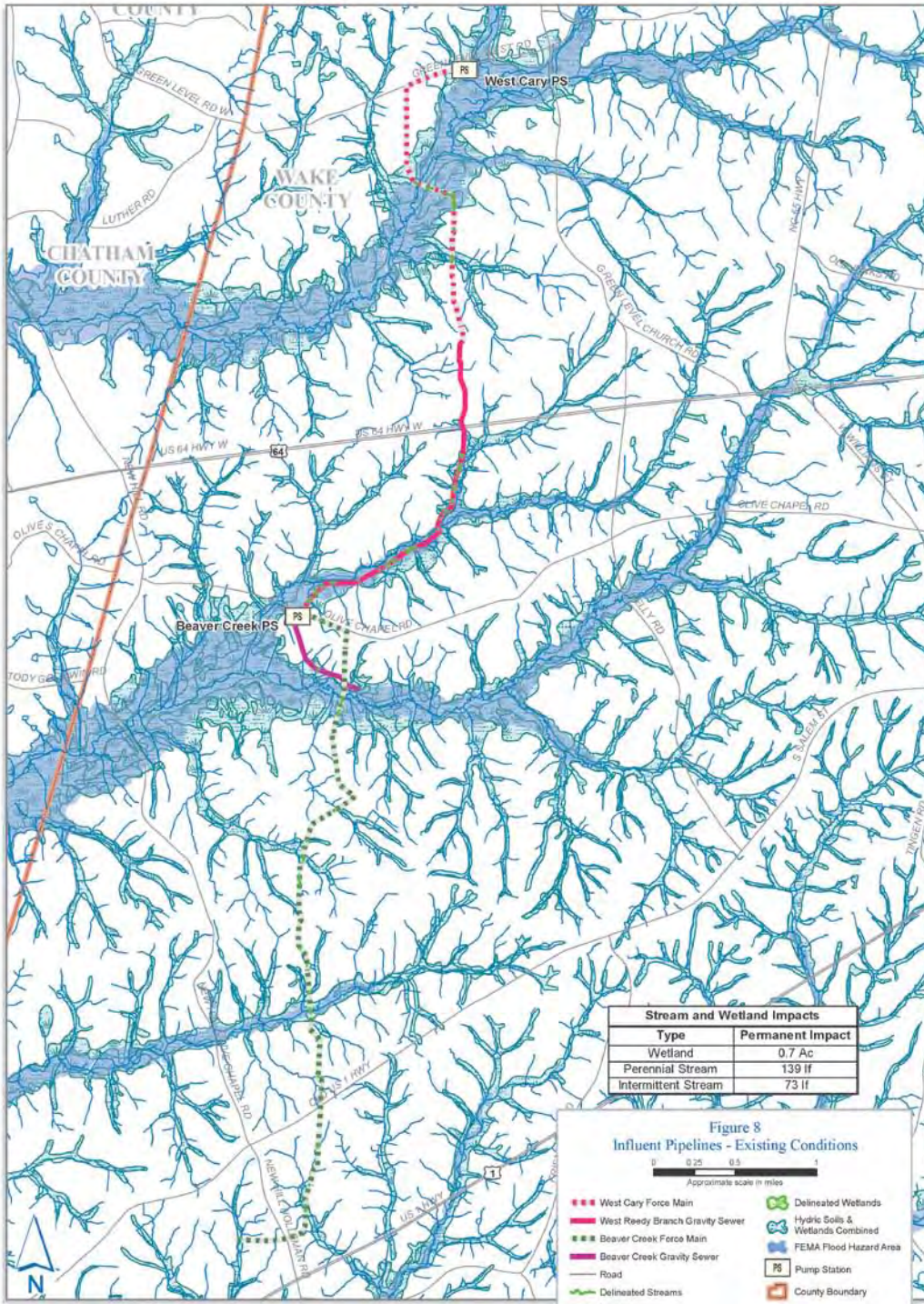




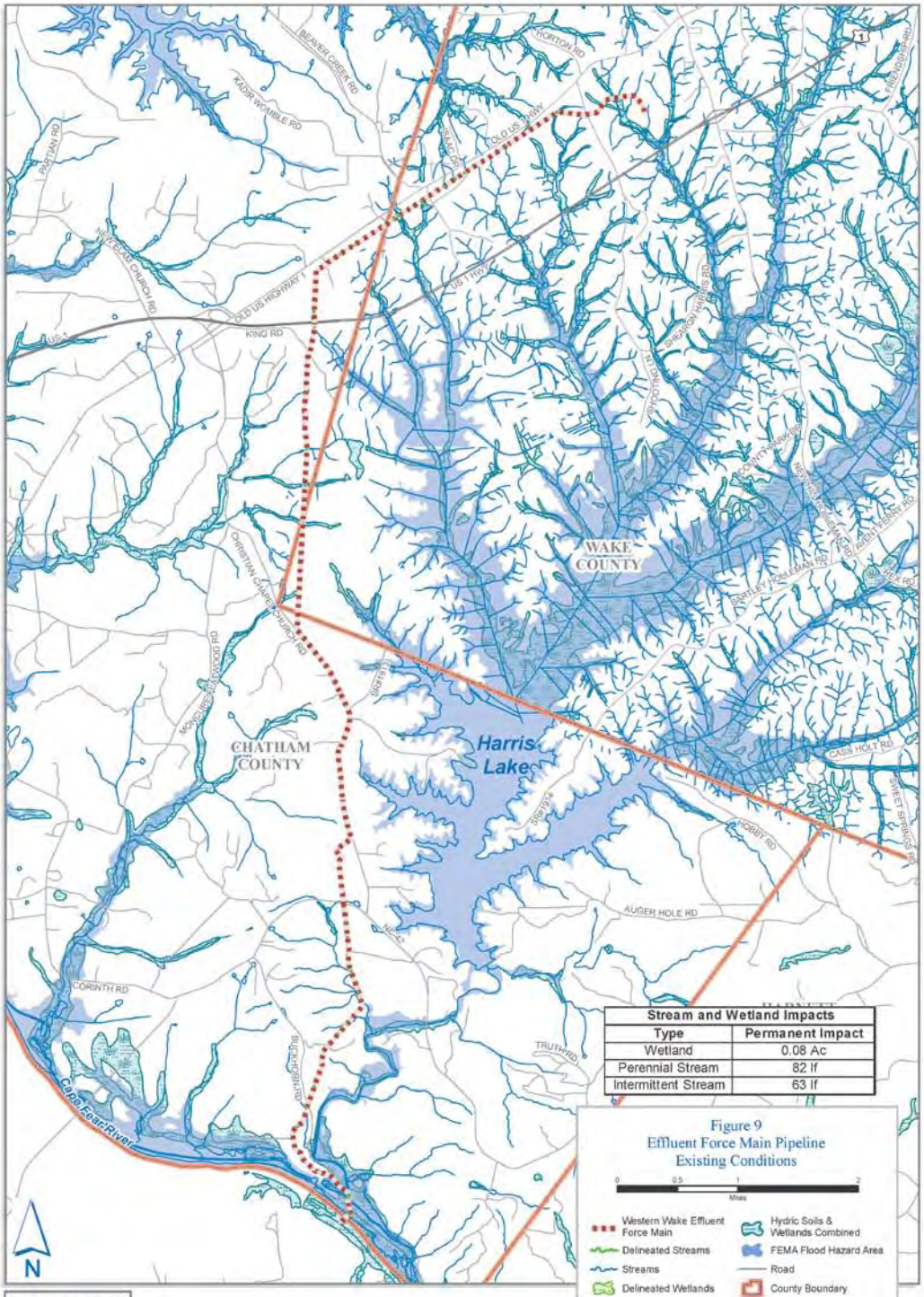


December 2009

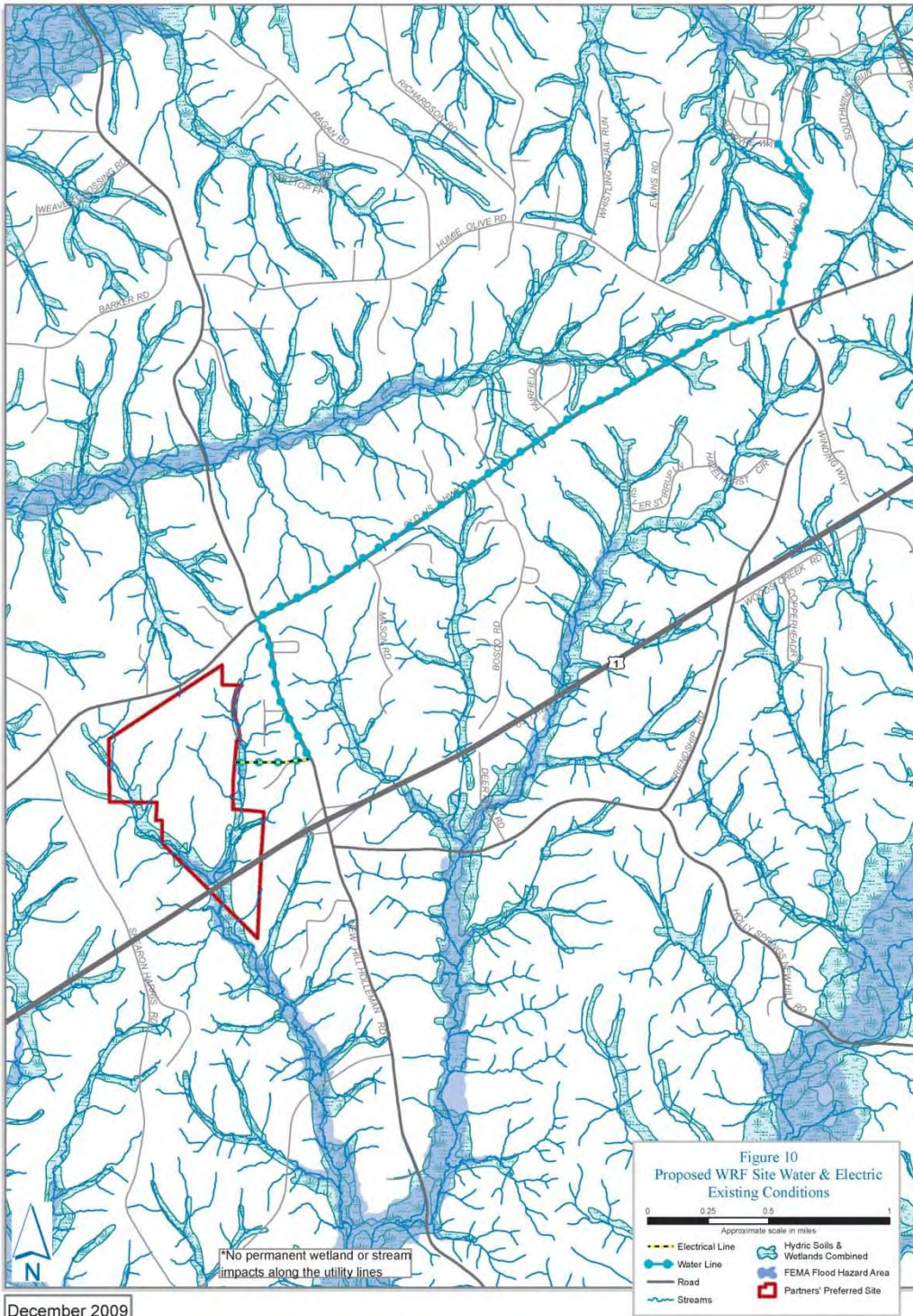




December 2009



December 2009



### **3. Purpose and Need.**

The purpose of the proposed action is to provide the foundation for regional wastewater service capacity to meet existing and forecasted demand in the project service area. The regional wastewater service will also be consistent with the North Carolina Environmental Management Commission's (NC EMC) mandate in the Partner's inter-basin transfer (IBT) certificate to return water to the Haw or Cape Fear River Basin after 2010 and the Town of Holly Springs' commitment to remove its National Pollutant Discharge Elimination System (NPDES) discharge from Utley Creek. The need for the proposed action is to provide wastewater treatment capacity for the projected population growth and the associated increase in land development in western Wake County. The population of the wastewater service area of the Towns of Apex, Cary, Morrisville, and Holly Springs will be approximately 432,250 in 2030. The required maximum monthly wastewater capacity for the towns will be approximately 62 million gallons per day (mgd) – approximately 24 mgd of treated wastewater effluent would be discharged at existing NPDES permitted outfalls, and approximately 38 mgd would be pumped, conveyed, treated and discharged by the Western Wake Regional Wastewater Management Facilities.

More detailed information on the purpose and need for the project can be found in Section 1.3 of the FEIS.

### **3. Public Coordination.**

In compliance with this agency's responsibility under the National Environmental Policy Act (NEPA) of 1969, USACE initially determined that the issuance of a permit pursuant to Section 404 of the Clean Water Act for the Project Partners' proposal to construct and operate new wastewater management facilities including influent conveyance facilities, a new water reclamation facility (WRF at site 14), and new effluent conveyance facilities to serve western Wake County, would constitute a major Federal action significantly affecting the quality of the human environment. Therefore, we have prepared an FEIS in accordance with the requirements of NEPA (40 CFR Parts 1500 – 1508) and USACE regulations (33 CFR Part 325, Appendix B). WRF site 14 is discussed in detail in the FEIS. As further discussed below, the applicant has significantly reduced environmental impacts, particularly aquatic impacts, during the NEPA process. Although we completed the EIS process and I am issuing a Record of Decision, USACE no longer believes that the impacts associated with this proposed project amount to a major Federal action significantly affecting the quality of the human environment. Nonetheless, we have elected to complete our "hard look" at this project, in part because we understand that this effort will satisfy both Federal and State review requirements.

As stated earlier in the introduction this project was initially reviewed in an EIS prepared in accordance with SEPA. Under this effort, a preliminary draft SEPA EIS was developed and reviewed with NCDENR and the USACE. A notice of availability (NOA) for the draft EIS was published on May 28, 2006 and subsequently a public hearing was held in Apex, North Carolina on June 15, 2006. The Project Partners submitted a Section 404 wetlands permit application to the USACE on June 5, 2006 for Department of the Army (DA) authorization to temporarily impact an estimated 22.4 acres of forested wetlands, 4,300 linear feet of streams and a 60-foot by 400-foot area within the Cape Fear River, and permanently impact an estimated 12.9 acres of

wetlands, 1,435 linear feet of perennial streams and an 18-foot by 400-foot area within the Cape Fear River in order to construct the proposed project. Subsequent to the public hearing, the Project Partners asked the USACE to develop an EIS in accordance with National Environmental Policy Act (NEPA). Based upon this request from the applicant, and in consideration of the projected level of impacts of the project, and the confusion potentially caused by duplicate or conflicting State and Federal environmental documents, the USACE decided to develop a Federal EIS that would meet the requirements of both NEPA and SEPA. The Project Partners withdrew their original permit request on December 15, 2006 and the NEPA process was initiated. A notice of intent to prepare a draft EIS was published in the Federal Register on April 9, 2007 with the USACE as lead agency for the Federal process. A local public notice was published on March 30, 2007 advertising the April 19, 2007 scoping meeting and requesting scoping comments on the proposed project.

The public involvement process for the development of the NEPA/SEPA EIS (for more details see Appendix A in the FEIS) included:

**a. Scoping**

- A public scoping meeting on April 19, 2007, which included a 30 day comment period on the proposed project.
- Individual homeowners proximate to the proposed project WRF site and the alternative WRF sites, as well as landowners immediately surrounding the proposed project WRF site and the alternative WRF sites were interviewed by consultants for the USACE on December 15-16, 2007, and on January 12-13, 2008. During these interviews, the proposed project, the alternatives, and how the landowners could learn more about the proposed project were discussed. A short description of the project, website addresses, and contacts at the USACE and at the Partners were provided. A summary of information collected during these visits, as well as the information provided to landowners, is included in Appendix A-6 of the FEIS. These landowners were informed via letters of all upcoming public meetings. Landowners were also invited to tour the South Cary WRF if they wanted to learn more about treatment processes.
- The USACE and the Partners maintain websites with current information about the Project, found at <http://www.saw.usace.army.mil/WETLANDS/Projects/WW-WTP/index.html> and <http://www.westernwakepartners.com/index.html>.
- The use of twelve project delivery team (PDT) meetings to provide agency and public input into the scoping process and analytical approaches. Appendix F has a list of the PDT participants and meeting summaries.
- Several public meetings were held during the course of developing the EIS:
  - May 21, 2008 – The New Hill Community Association held a meeting attended by local community residents and representatives of the USACE, United States Environmental Protection Agency (USEPA) Region IV, and NCDENR to discuss environmental justice and other aspects of the project. A copy of meeting handouts prepared by the New Hill Community Association and a meeting summary are included in Appendix A-8 of the FEIS.
  - March 31, 2009 – An Open House occurred during the draft EIS comment period. The purpose of the Open House was for the public to learn and ask questions about the proposed project and draft EIS.

April 14, 2009 – A second Open House was held on the day of the public hearing. The public provided formal comments on the EIS during the public hearing. The Open House, which was held prior to the hearing, was an opportunity for the public to have questions answered about the proposed project and draft EIS.

**b. Draft Environmental Impact Statement**

The USACE prepared and filed a draft Environmental Impact Statement (DEIS) with the U.S. Environmental Protection Agency (EPA) and released the document via Federal Register Notice on March 13, 2009. The USACE simultaneously issued a public notice requesting comments on the proposed project, on the DEIS and on the various alternatives described in that document and 404 permit application. Both notices included information on the project, requested comments on the DEIS, and provided advertisement of the public hearing. The Partners also published legal advertisements regarding the availability of the DEIS along with a notice about the open houses and public hearing in seven area news papers. A notice of availability was also published in the North Carolina Environmental Bulletin on March 13, 2009; it appeared earlier that week on the Department of Administration's website.

A public hearing was held on April 14, 2009 during the 45-day public comment period for the draft EIS. The public hearing was attended by 83 people, and 45 provided oral comments. A copy of the transcript of the hearing is included in Appendix A-11 and a summary of the comments received during the hearing and responses to them are included in Appendix A-12 in the FEIS.

The public comment period was open until April 28, 2009. During the comment period, 134 letters or email communications were received from 108 individuals. A copy of the written comments is included in Appendix A-12 of the FEIS along with a summary of the comments and written responses.

**c. Final Environmental Impact Statement**

The USACE filed the Final Environmental Impact Statement for the Western Wake Regional Wastewater Management Facilities, dated December 2009 (FEIS) with the EPA and released the document via Federal Register Notice on December 18, 2009. The USACE simultaneously issued a public notice requesting comment on the proposed activity, the alternatives and the FEIS. On December 24, 2009 it was discovered that there were problems with links to the web version of the FEIS. The problem was corrected and a disclosure statement was placed on the website on December 28, 2009, acknowledging that the comment period would be extended.

On January 19, 2010 a local public notice was published and a notice was put in the Federal Register disclosing the website link problem had been corrected and advertising the comment deadline had been extended from January 19, 2010 to February 9, 2010.

Section 2 of the FEIS describes in detail the development of alternatives and identifies a full range of alternatives for the proposed project. Section 3 describes the existing conditions in the project area and Section 4 thoroughly discusses the potential impacts of each alternative. I have determined that all NEPA requirements for the consideration of DA authorization of the WRF site 14 have been satisfied.

#### **4. Alternatives.**

Five extensive alternatives analysis were performed and presented to the PDT for review and comment. They included the evaluation of:

- Wastewater management options
- Wastewater discharge options
- WRF site alternatives
- Conveyance alternatives
- Wastewater outfall options

The following is a discussion on what options or alternatives were evaluated and which ones were carried forward for more evaluation and analysis.

##### **a. Alternatives Screening Process**

###### **(1) Wastewater Management Options**

The Project Partners evaluated the following wastewater management options that were subsequently reviewed by the USACE in the EIS:

(a) No Action Alternative. The existing facilities already in place would continue to operate as currently permitted. This alternative was eliminated from further detailed study because it does not meet the Partners' purpose and need statement. Specifically, this alternative does not meet the need for additional treatment capacity, the Holly Springs FONSI (EA/permit) requirements, and it also does not meet the regulatory requirements of the IBT certificate for the Towns of Apex, Cary, and Morrisville and RTP South. It would also likely lead to an increased risk of groundwater degradation through greater use of onsite waste treatment systems. Potential impacts of this alternative are provided in Sections 4 and 5 of the FEIS.

(b) Independent systems. This option would consist of no collaboration for wastewater collection and treatment and consists of two new WRFs to serve the western Wake service area. A new Western Cary WRF with an initial capacity of 12 mgd and a future (i.e., year 2030) capacity of 18 mgd would be constructed near Beaver Creek to serve the western Cary service area, part of the North Cary service area, the Haw River portion of the Morrisville service area, and RTP South. This WRF would have an effluent pump station and force mains and would discharge to the Cape Fear River below Buckhorn Dam.

A new Western Apex WRF with an initial capacity of 6 mgd and a future (i.e., year 2030) capacity of approximately 12 mgd would be constructed near Little White Oak Creek to serve

the Cape Fear River portion of the Apex service area and water treatment plant residuals from the Cary/Apex WTP. The Apex Middle Creek WRF would remain in service at its current capacity of 3.6 mgd to treat wastewater flow from the Neuse River portion of the Apex service area. The Western Apex WRF would also discharge to the Cape Fear River below Buckhorn Dam through a separate force main from the Western Cary WRF.

An independent Holly Springs WWTP expansion at the Utley Creek site has an initial capacity 6 mgd and would have a future capacity of 8 mgd (maximum month flow (MMF)). This site would also require a separate force main to the Cape Fear River below Buckhorn Dam since NCDWQ has indicated that they must remove their discharge from Utley Creek in the Harris Lake watershed.

This alternative was eliminated from further detailed study because it would have greater WRF site impacts, longer conveyance lines and more stream crossings and wetland impacts, and higher costs than the proposed Project. In addition, NCDWQ has recommended that the Western Wake communities explore a regional approach to meet future wastewater capacity needs. This recommendation was made in several meetings beginning in spring 2000. This independent systems alternative was not considered practicable given (1) higher costs, (2) higher impacts, and (3) the NCDWQ recommendation, and was eliminated from further study.

(c) Purchase of capacity from other systems. The systems evaluated for providing capacity for the Western Wake County service area included the City of Durham, Durham County, and Harnett County. All of these systems have existing treatment facilities that discharge to waters in the Cape Fear River Basin. Only systems that discharge into the Cape Fear River Basin were considered because of the requirements of the IBT certificate to return water to the Cape Fear River beginning in 2011. Durham County and City of Durham systems were eliminated from further detailed study due to insufficient treatment capacity (build-out capacity of Western Wake WRF is 30 mgd), and this option does not meet the project need. These options also increase costs. Purchasing capacity from Harnett County may negatively impact Jordan Lake operations (Harnett County discharge is below Lillington; USACE operates Jordan Dam to meet flow targets at Lillington). If USACE has to release additional water from the water quality pool to meet downstream flow targets at Lillington, the reliability of the water quality pool and potentially the water supply pool for all local governments withdrawing water from Jordan Lake would decrease. Future growth demands are not met by purchasing capacity from Durham County, City of Durham, or Harnett County systems. Since this alternative does not meet the project purpose and need, it was eliminated from further detailed study.

(d) Optimum operation of existing systems. The optimum operation of existing plants could result in re-rating of them so they could actually discharge higher flows than permitted.

The Town of Apex and the Town of Cary currently operate wastewater treatment facilities that discharge to the Neuse River Basin. These facilities are the North Cary WRF discharging to Crabtree Creek, the South Cary WRF discharging to Middle Creek, and the Apex WWTP discharging to Middle Creek. Optimum operation of these plants could result in a re-rating of them so they could actually discharge higher flows than currently permitted. This effort would

include a technical analysis to demonstrate that higher flows would meet water quality treatment requirements and an amendment to the permit. The currently permitted capacity for these facilities would be reached by approximately 2010 or sooner if alternative facilities/capacity is not provided and would not meet the growth needs of the towns. Optimization of these facilities beyond their currently permitted capacities would increase discharges to the Neuse River Basin, therefore, not meeting the IBT requirement to return wastewater to the Cape Fear River Basin. Therefore, this alternative does not meet the project purpose and need and was eliminated from further detailed study.

(e) Regional land application system. This consists of the construction of secondary-type treatment facilities followed by land application to a dedicated land application site. The land application alternative would involve the construction of secondary-type treatment facilities followed by land application to a dedicated land application site. The land application site would have a cover crop to take up the moisture and nutrients from the wastewater effluent. The land area required for land application of a wastewater volume equal to the 18-mgd capacity of Phase 1 for the proposed Western Wake WRF is estimated at approximately 6,300 acres. This is based on a land application rate of approximately  $\frac{3}{4}$  inches per week through a spray irrigation system. The spray fields would be cultivated with suitable annual crops.

Additional land would be required for buffers around the land application site, for facilities for the treatment of the raw wastewater, and for operation and maintenance buildings. Based on a conventional secondary treatment system, and the requirements for on-site effluent storage, the additional land area required for treatment and storage facilities is estimated at approximately 700 acres, for a total area of approximately 7,000 acres. This land area would only be sufficient for the Project Phase 1 (to year 2020) capacity for the western Wake service area, and a total area of approximately 11,700 acres (i.e., 10,300 acres for land application and 1,400 acres for buffers and other facilities) would be required to meet the 30-mgd capacity needs through the planning period (to year 2030).

Finding a suitable land application site within a reasonable distance of the western Wake service area is unlikely. Use of this land for land application of wastewater would also raise water quality concerns because available land in close proximity to the western Wake service area drains to Jordan Lake, the Cape Fear River upstream of Buckhorn Dam, or Harris Lake. This would mean that suitable land would have to be found in Chatham or Harnett Counties. This would require working with additional local governments and a greater number of property owners, which would make permitting more difficult. In addition, the high cost of the land required, plus the additional facilities for pretreatment and raw wastewater transportation, would make this alternative more costly than the proposed Project. For these reasons, land application was not considered a feasible alternative and was eliminated from further detailed study.

(f) Regional water reuse system. This alternative would involve the disposal of the entire amount of the reclaimed water through a regional water reuse system. Because current reuse treatment requirements are only a little less stringent than the permit requirements to discharge to the Cape Fear River below Buckhorn Dam, this option would require a WRF similar to the WRF required for the proposed Project.

Water reuse systems in the Piedmont region of North Carolina are generally irrigation-based systems that experience high demands during the hot, dry summer season, and little to no demands during the cool, wet winter season. Data collected by the Town of Cary in its Northeast Reclaimed Water Service Area indicated that reclaimed water customers used the same amount of potable water in winter as non-reclaimed water users, and used less in the summer. Because a reclaimed water system in the Piedmont region of North Carolina offers limited disposal capacity in the cool, wet winter season, water reuse is not considered a feasible option. Under this alternative it would still be necessary to construct the same amount of wastewater treatment and disposal capacity to accommodate the year 2030 demand during the cool, wet winter season. In addition, in order to comply with the NCEMC regulatory mandate and NCDWQ requirement, reuse opportunities during the high demand summer months would need to be in the Cape Fear River Basin and the discharge location for effluent disposal during the cool, wet winter season would also need to be in the Cape Fear River downstream of Buckhorn Dam.

Regional water reuse can also include industrial water reuse. Industries can sometimes use effluent to meet some of their non-potable process water requirements, and the Project Partners are committed to providing effluent to industrial users. The largest potential user for the proposed WRF is Progress Energy. Progress Energy has indicated that it cannot directly reuse the effluent from the proposed WRF, but could use it indirectly as additional cooling water for the nuclear power facility located on Harris Lake (Progress Energy, 2003). As described in Sections 2.1 and 2.4.2, the Partners began evaluating a discharge to Harris Lake, but have determined that it does not meet their purpose and need due to schedule delays. The Town of Holly Springs is still evaluating whether it could relocate its Utley Creek WWTP discharge to Harris Lake.

It is important to note that while it is not deemed feasible to achieve 100-percent effluent disposal via a reclaimed water program, the Project Partners have stated that they are committed to reclaimed water programs. The Western Wake WRF will be planned and designed to eventually be able to provide reclaimed water for non-potable uses to residents, businesses, and industries located in close proximity to the facility, with future plant improvements. However, as a full alternative to the proposed action, a regional reuse system was not considered a viable alternative and was eliminated from further detailed study.

(g) Regional wastewater system. This alternative consists of one new WRF to serve Apex, Cary, and Morrisville; Holly Springs continues to operate its WWTP and shares outfall line with other Partners. The Partners propose constructing the wastewater management system described in Section 2.1. The proposed Project would be implemented in two phases. The Project Phase 1 facilities would provide for a discharge capacity of 24 mgd to the Cape Fear River. The Project Phase 2 facilities, which are projected to be online by July 1, 2020, would provide for a discharge capacity of 38 mgd to the Cape Fear River. The Project Phase 1 and Project Phase 2 facilities would accommodate the wastewater service needs of the Partners to the year 2030. While the phases are identified for adequately describing the project, the EIS focuses on all the facilities required for the planning period to 2030. This alternative was determined to meet the project purpose and need.

From this list, the regional wastewater system alternative was selected. All of the other alternatives were determined to not meet the project purpose and need or would result in much higher environmental impacts than the proposed regional wastewater system. These other alternative wastewater management options were thus eliminated from further detailed study. See Section 2.3 of FEIS to review more details on wastewater management alternatives analysis.

## **(2) Discharge Alternatives Options**

Various discharge alternatives were evaluated which included a discharge to Jordan Lake, to the Cape Fear River upstream of Buckhorn Dam, to the Cape Fear River below Buckhorn Dam, and to Harris Lake. NCDWQ had concerns about nutrient enrichment for each of these alternatives as presented to the PDT at its July 26, 2007 meeting. Jordan Lake and the Cape Fear River upstream of Buckhorn Dam are both on the state's 303(d) list because of exceedances of the chlorophyll a standard. Thus, these discharge alternatives were eliminated from further discussion in this EIS. Harris Lake is not impaired, but NCDWQ indicated that it could not permit a new discharge to the lake without detailed water quality modeling. This option was being evaluated using a detailed modeling analysis, but the North Carolina Division of Water Resources (NCDWR) informed the Project Partners that a discharge to Harris Lake would require a new or modified IBT. Based on current legislative processes for IBTs, it would require three to four years to modify the IBT certificate. This would not meet the project purpose and need. The IBT requirement would not apply to Holly Springs, and they are continuing to work with NCDWQ to determine if a discharge to Harris Lake is feasible (through the issuance of speculative permit limits). NCDWQ has provided speculative permit limits for a surface water discharge only for a discharge to Cape Fear River downstream of Buckhorn Dam, and this is currently the proposed discharge location for the proposed WRF and the Town of Holly Springs. See Section 2.4 of FEIS to review more details on wastewater discharge options alternatives analysis. Throughout the process, NCDWQ has strongly encouraged release of the effluent below Buckhorn Dam.

## **(3) Wastewater Reclamation Facility Site Alternatives**

### **(a) Identification of Potential Wastewater Reclamation Facility Sites**

The Western Wake Partners conducted preliminary investigations to identify areas in western Wake County that may be suitable for construction of a new regional WRF which were then reviewed and commented on by the PDT. The site would also accommodate the effluent pump station and portions of the Beaver Creek Force Main and the Holly Springs effluent force main. The Partners defined the land area requirements for the new facility, including a 200-foot forested buffer around the site perimeter to minimize potential impacts to neighboring properties from odor, visual appearance, noise, and light. The Partners identified areas that could be suitable sites for a new WRF, considering physical feature data such as:

- 100-year floodplain location
- Wetland area locations
- Perennial and intermittent stream locations
- Allowance for 100-foot buffers for streams

- Allowance for a 200-foot buffer around site
- Topographic features

In addition to consideration of physical feature data, the Partners considered the information and data from previously prepared reports. As a result of the preliminary investigations, 30 locations in Wake and Chatham Counties were identified as potentially suitable sites for a new WRF. The 30 sites are depicted on Figure 2-7 in the FEIS. Additional detail on the site identification history can be found in Appendix G of the FEIS.

During the screening process, Sites 11 and 12 were combined into one site – Site 11/12. These sites were combined because they are adjacent to each other and the combined site boundary resulted in a more viable potential site based on size and location between an existing road and Jordan Lake. Sites 21 and 23 were combined as well to achieve a more viable potential site (Sites 21 and 23 were also evaluated individually).

#### (b) WRF Site Initial Screening

The initial screening analysis eliminated WRF sites based on one or more of seven factors. These factors were identified and applied to the 30 candidate WRF sites to determine which sites would be eliminated during the initial screening and dismissed from further consideration as a reasonable alternative to the Partners' proposed WRF site. As part of this process, sites that did not have 160 acres remaining after considering these factors were also eliminated. During the initial screening analysis, the amount of land required for the Western Wake WRF was further refined. The Partners determined that 160 acres were needed to accommodate the site facilities with a 200-foot perimeter buffer and to provide space to avoid site-specific features such as streams and wetlands on site.

The initial screening factors were reviewed and commented on by the PDT. Those seven factors are:

- Site Development. Several sites were developed or someone had obtained site-specific development approvals by local towns or counties. These sites were no longer considered practicable because the cost to acquire the property is expected to be much higher than similar undeveloped or sparsely developed property and utilization of these sites would likely involve significant relocations. When developed or approved for development land was removed from the sites, less than 160 acres of land remained for Sites 2, 4, 5, 10, and 27. These sites were eliminated as alternatives.
- Wastewater Management Option. The 30 sites were identified prior to selection of the wastewater management option. Siting a WRF in the lowest elevation of a service area facilitates gravity flow rather than pumping, reduces the length of raw wastewater pipelines which reduces energy use, costs, and environmental impacts. Sites 1, 2, 3, 4, 5, 6, 7, 27, 28, and 29 would require the greatest amount of pumping or are located outside the service area. Each of these sites was eliminated from further analysis.

- Shearon Harris Lake Level. Progress Energy is in the process of applying for permits to build and operate two new reactors at the Shearon Harris Nuclear Plant. The water surface of Harris Lake would need to be raised approximately 20 feet (i.e., to an elevation of 240 feet above mean sea level [MSL]) to support the two additional reactors. In addition, Progress Energy needs to account for a 50-foot buffer around the lake and land needed for mitigation. Progress Energy has indicated that it would not grant utility easements to local governments below an elevation of 260 feet above MSL. Sites 18, 22, 23, 24, and 29 did not contain 160 acres after land below an elevation of 260 feet above MSL was removed. These sites were eliminated from further analysis.
- Sites Not Located in Wake County. Since the service area is located in Wake County, it is appropriate the WRF be located in Wake County. North Carolina General Statutes require Chatham County approval prior to procuring property in that County. Sites 1, 5, 6, and 11/12 are located in Chatham County and were eliminated from further evaluation.
- Floodplain. NCDENR discourages the construction of wastewater treatment facilities in the floodplain. Sites that did not contain at least 160 acres after the 100-year floodplain was removed (Sites 2, 4, 10) were eliminated from further evaluation. Site 9 was also eliminated; it had 170 acres remaining after the floodplain was developed, but 58 acres were already removed due to development, leaving approximately 126 acres on the site.
- Presence of Threatened and Endangered Species. To avoid impacts to Federally endangered and threatened species, sites were evaluated for the presence of protected species. Federally protected species were not located on any of the WRF site alternatives, and no sites were eliminated using this factor.
- Presence of Sensitive Land Uses on Site. Sensitive land uses were defined as cemeteries, schools, daycare facilities, retirement facilities, hospitals and churches. No known sensitive uses were found on any site; no sites were eliminated based on this criterion.

The sites identified for further analysis as potential alternatives to the proposed Project WRF site (Site 14) after the initial screening analysis are Sites 8, 13, 15, 16, 17, 19, 20, 21, 21/23, 25, 26, and 30 (Figure 2-7 in FEIS).

#### (c) WRF Site Intermediate Screening

The intermediate screening was accomplished to identify potential WRF sites considered reasonable alternatives to the proposed Project WRF site for detailed analysis. The intermediate screening was performed for the sites that remained after the initial screening analyses plus the proposed Project WRF site (Site 14). Appendix G of the FEIS summarizes the data compiled for each of the criteria for the 12 candidate sites and the proposed Project WRF site (Site 14).

Based upon an independent analysis, the Project Partners identified the WRF site 14 as their preferred site. The USACE used the following criteria to select alternatives to the proposed Project WRF site to be evaluated in the EIS.

- Number of dwelling units and unique property owners on the site (displacements on site). This was determined by counting the number of dwelling units and number of unique (individual) property owners on WRF site. This included the number of parcels intersecting the WRF site, which refers to all parcels or parts of parcels contained within the WRF site boundary (the total number of parcels that are part of the site).
- Site access, transportation, and other services. The distance measured from site boundary at practicable area access to nearest current or former US/NC highway or interstate (feet).
- Length of influent and effluent pipelines required. Length of influent and effluent pipelines to WRF site boundary (feet).
- Wetlands. Joined features of hydric soils and National Wetland Inventory maps (acres).
- Streams. Perennial and intermittent streams (length).
- Significant Natural Heritage Areas on site. Significant Natural Heritage Areas on WRF site (number).
- Gamelands. Gamelands on WRF site (acres).
- Public lands. Public lands on WRF site (acres).
- Known occurrences of T&E species or species of special concern within 0.5 mile of site boundary. Known occurrences of T&E species or species of special concern within 0.5 mile of site boundary, not including species classified as “known to be destroyed” in Element Occurrence file (number).
- Population within 0.5 mile of site boundary. Population within 0.5 mile of WRF site boundary (number).
- Known occurrences of sensitive land uses within 0.5 mile of site boundary. Sensitive land uses (defined as cemeteries, daycare facilities, retirement facilities, schools, hospitals, and churches) within 0.5 mile of site boundary (number).
- Known cultural resources found on site. National Register and Historic Study List districts and sites found on WRF site (acres/number).

- Known cultural resources within 0.5 mile of site boundary. National Register or Historic Study List districts/sites found within 0.5 mile of WRF site boundary (acres/number)
- Constructability. Practicable area (the area identified by eliminating the perimeter buffer and stream buffers to the extent practicable and then drawn to achieve an area of approximately 50 acres of contiguous area of a reasonable shape while avoiding environmental impacts to the extent practicable).

A simplified scoring was developed that would score a site for each criterion based on whether the criterion for that site was better than or worse than the median. If it was better, the site was given a value of “0” for that criterion and if it was worse it was given a value of “1”. This was done for each of the intermediate screening criteria. The values were totaled for each of the sites and sites with the lowest scores were considered the best alternative sites to analyze as alternatives to the proposed Project WRF site. Based on the scores, the sites were ranked. The site with the lowest score was ranked 1 and the second lowest score received a ranking of 2. If two sites were tied, they were assigned the same ranking.

Other scoring methodologies that were considered included scoring the site minus the 200-foot perimeter buffer or scoring only the practicable area (the area identified by eliminating the perimeter buffer and stream buffers to the extent practicable and then drawn to achieve an area of approximately 50 acres of contiguous area of a reasonable shape while avoiding environmental impacts to the extent practicable) to see how this affected the scoring. Again, the sites were ranked based on the scores. Full results for these analyses are found in Appendix G.

From the intermediate screening process, Sites 19, 21/23, and 30 were identified to be the best alternative sites for additional detailed analysis in the EIS, as reasonable alternatives to the proposed Project WRF site (Site 14). These same sites were also determined to score high if the WRF discharge was to Harris Lake, under the assumption that the Town of Holly Springs would have a separate discharge location into the lake or lake watershed. In addition, these same sites also scored high if Holly Springs discharged into Harris Lake and the Project Partners discharged into the Cape Fear River below the Buckhorn Dam.

The following tables provide two summaries of ranking based on the median value scoring. The first table with Holly Springs force main included in the Western Wake Project and the second table without Holly Springs force main included in the Western Wake Project.

**Table**

**1**

**Western Wake Regional Wastewater Management Facilities  
Summary of Rankings Based on Median Value Scoring**

*With Holly Springs Force Main in Western Wake Project*

Summary														
Scoring	Site Comparison	Partners' Preferred Site (Site 14)	Candidate WRF Sites											
			Site 8	Site 13	Site 15	Site 16	Site 17	Site 19	Site 20	Site 21	Site 21/23	Site 25	Site 26	Site 30
Median Scoring - Better or Equal to Site 14	Full Site	2	13	9	9	9	5	2	5	5	1	12	5	2
	w/o 200' Buffer	3	13	8	11	8	8	2	5	3	1	12	5	5
	Practicable Area	1	13	8	8	3	8	4	4	8	1	12	4	4

	best scoring sites
	second tier sites
	third tier sites

*No Holly Springs Force Main*

Summary														
Scoring	Site Comparison	Partners' Preferred Site	Candidate WRF Sites											
			Site 8	Site 13	Site 15	Site 16	Site 17	Site 19	Site 20	Site 21	Site 21/23	Site 25	Site 26	Site 30
Median Scoring - Better or Equal to Site 14	Full Site	1	13	6	10	6	1	1	6	10	1	12	6	1
	w/o 200' Buffer	3	13	4	11	4	4	1	4	4	1	12	4	4
	Practicable Area	1	13	4	10	1	4	4	4	11	3	12	4	4

	best scoring sites
	second tier sites
	third tier sites

Intermediate WRF Site Selection (Reasonable Alternatives to the Proposed WRF Site)

After reviewing the results of the tables it was determined that the Sites 19, 21/23, and 30 consistently made into the top first and second tiers and would be carried forward for detailed analysis.

**(d) Summary of Sites for More Detailed Analysis**

Based on the intermediate screening, Sites 19, 21/23, and 30 were carried forward for alternatives analysis along with the proposed Project WRF Site (Site 14). A summary of the impacts related to the proposed project site and alternatives is included in Section 2.8 of the FEIS while a detailed analysis of the environmental impacts is in Section 4. Also, Section 2.5 of the FEIS provides more details on wastewater reclamation facility alternative analysis.

One of the main comments and concerns raised at the SEPA public hearing by the New Hill community was the purchasing of the property (WRF site 14) adjacent to New Hill without any of their input. This is addressed in our response to comments in Appendix A-12 of the FEIS and Attachment I of this Record of Decision (ROD). This action took place before the EIS NEPA public involvement process began; the USACE has no control over which alternative an applicant will select as preferred, and cannot prevent an applicant from committing funds toward

a proposed project before permit decisions are made. The applicant's purchase of property had no effect on the alternatives analysis.

#### **(4) Conveyance Alternatives.**

(a) West Cary Pump Station. The location of the West Cary Pump Station is identical for all WRF site alternatives. This pump station currently exists and is being expanded as part of this project.

(b) Beaver Creek Pump Station. The location of the Beaver Creek Pump Station is also identical for all WRF site alternatives. It was selected based on environmental factors (streams and wetlands), social factors (number of property owners/relocations), and cost.

(c) Transmission Lines. Similarly, the transmission lines for each alternative are similar. The transmission lines were selected to minimize impacts to the environment (wetlands and streams), property owners and residents, the American Tobacco Trail, Federal land, and the New Hill Historic District, as well as to minimize conflicts with existing gas lines and power lines.

See Section 2.6 of FEIS to review more details on conveyance alternative analysis.

#### **(5) Wastewater Outfall Options.**

For the Cape Fear River outfall, a bank discharge structure and a diffuser were evaluated. The bank discharge resulted in fewer impacts to recreation and habitat, and resulted in NCDWQ-acceptable dilution. Thus, the diffuser was eliminated from further detailed analysis, and the bank discharge was selected for all project alternatives. See Section 2.7 of FEIS to review more details on the wastewater outfall options alternative analysis.

##### **b. Summary of Alternatives Evaluated in Detail.**

Based on the screening process summarized above, the proposed action (WRF site 14) and three reasonable action alternatives to the proposed action were brought forward for further detailed analysis in this EIS. All are regional wastewater management options that include a WRF that would treat wastewater from Apex, Cary, Morrisville, and RTP South with an outfall line to the Cape Fear River below Buckhorn Dam that would also be sized to accommodate flow from the Holly Springs WWTP. The alternatives all include the same location for the Beaver Creek Pump Station, and large portions of the transmission line alignments are the same. Each option includes a different WRF site and piping around each plant site.

#### **Proposed Project and Final Wastewater Reclamation Facility Site Alternatives**

##### **Proposed Project (Site 14)**

### Water Reclamation Facility

Site 14 is a 237 acre site located north of US 1 and south of Old US 1 in western Wake County, close to the community of New Hill. It is located in an area between Shearon Harris Road to the west and New Hill Hollerman Road to the east. The proposed Project WRF Site (Site 14) construction design avoids impacts to the perennial and intermittent streams onsite. By using open bottom culverts and avoiding stream areas on the site, no fill will occur in streams from construction and operation of the facility. There are no wetland impacts on the WRF 14 site.

### Influent Lines

The construction of the influent lines will permanently impact 964 feet of perennial stream and 243 feet of intermittent stream. The temporary impact involves 2,120 feet of perennial stream and 703 feet of intermittent stream. The construction of the influent lines will also temporarily impact 14.6 acres of wetlands and permanently impact 5.8 acres of wetlands.

### Effluent Force Mains

The construction of the Holly Springs and Western Wake effluent force mains will permanently impact 107 linear feet of perennial stream and 73 feet of intermittent streams and the temporary impact involves approximately 474 feet of perennial stream and 265 feet of intermittent stream. The construction of the effluent force mains will also temporarily impact 0.4 acres of wetlands and permanently impact 0.1 of wetlands.

### Utilities

A portion of the electrical and water lines for all project alternatives follow the same route. When this occurs, the same ROW will be used for both utility lines. Thus, to avoid double-counting, the total impacts due to water and electrical lines are presented in the EIS. There are no permanent stream impacts from the water and electric lines associated with the WRF Site 14. The construction of the utility lines will temporarily impact 24 feet of perennial streams and 196 feet of intermittent streams. The construction of the electric and water lines will temporarily impact 0.2 acres of wetlands and will not have permanent impacts to wetlands.

### Total Permanent Stream and Wetland Impacts

The total permanent impact of WRF Site 14 is 1,387 linear feet of perennial and intermittent stream and 5.9 acres of wetlands. Most of these impacts are along the influent transmission lines, and the impacts are described in Section 4 of the FEIS.

## **Project Alternate A (Site 19)**

### Water Reclamation Facility

Site 19 is a 237 acre site located south of Friendship Road, in western Wake County, near the community of New Hill. There is only one stream that would be impacted by WRF Site 19 construction; this impact is actually from the improvements that would be required at the Friendship Road bridge. This stream is perennial and the permanent impact involves 261 linear feet of stream. The construction of the WRF 19 site will not have any temporary impacts to wetlands and permanently impact 0.2 acres of wetlands.

### Influent Lines

The construction of the influent lines will permanently impact 971 feet of perennial stream and 269 feet of intermittent stream. The construction of the influent lines will also temporarily impact 14.7 acres of wetlands and permanently impact 5.8 acres of wetlands.

### Effluent Force Mains

The construction of the Holly Springs and Western Wake effluent force mains will permanently impact 194 linear feet of perennial stream and 95 feet of intermittent stream and temporarily impact 505 feet of perennial stream and 336 feet of intermittent stream. The construction of the effluent force mains will also temporarily impact 0.5 acres and permanently impact 0.2 acres of wetlands.

### Utilities

There are no permanent stream impacts from the water and electric lines associated with WRF Site 19. The utility lines result in 3 perennial stream crossings and 0 intermittent stream crossings and temporarily impact 41 feet of perennial streams and 0 feet of intermittent streams. The construction of the water and electric lines will temporarily impact 0.8 acres of wetlands and have no permanent impacts to wetlands.

### Total Permanent Stream and Wetland Impacts

The total permanent impact of WRF Site 19 is 1,789 linear feet of perennial and intermittent stream and 6.2 acres of wetlands. Most of these impacts are along the influent transmission lines, and the impacts are described in Section 4 of the FEIS.

## **Project Alternate B (Site 21/23)**

### Water Reclamation Facility

Site 21/23 is a 198 acre site located east of New Hill Hollerman Road in western Wake County near New Hill. There are no streams crossed by construction activities or entrance roads on WRF Site 21/23. The construction of the WRF 21/23 site will have no temporary impacts to wetlands and 0.2 acres of permanent impact to wetlands.

### Influent Lines

The construction of the influent lines will permanently impact 970 feet of perennial stream and 269 feet of intermittent stream. The temporary impacts involve 2,058 feet of perennial stream and 677 feet of intermittent stream. The construction of the influent lines will temporarily impact 15 acres of wetlands and permanently impact 5.9 acres of wetlands.

### Effluent Force Mains

The construction of the Holly Springs and Western Wake effluent force mains will permanently impact 214 linear feet of perennial stream and 105 feet of intermittent stream. The corridor's temporary impact involves 581 feet of perennial stream and 364 feet of intermittent stream. The construction of the effluent force mains will also temporarily impact 0.7 acres of wetlands and permanently impact 0.2 acres of wetlands.

### Utilities

There are no permanent stream impacts from the water and electric lines associated with WRF Site 21/23. The construction of the utility lines will temporarily impact 108 feet of perennial streams and 21 feet of intermittent streams. The construction of the water and electric lines will temporarily impact 1.4 acres of wetlands and will not have any permanent impacts to wetlands.

### Total Permanent Stream and Wetland Impacts

The total permanent impact of WRF Site 21/23 is 1,559 linear feet of perennial and intermittent stream and 6.1 acres of wetlands. Most of these impacts are along the influent transmission lines, and the impacts are described in Section 4 of the FEIS.

## **Project Alternate C (Site 30)**

### Water Reclamation Facility

Site 30 is a 252 acre site located south of Old US 1, in western Wake County, near New Hill. WRF Site 30's entrance road off Shearon Harris Road crosses one perennial stream, which would be crossed with an open bottomed culvert to avoid stream impacts. There are no permanent or temporary stream impacts on the WRF site. The construction of the WRF Site 30 will have no temporary or permanent wetland impacts.

### Influent Lines

The construction of the influent lines will permanently impact 949 feet of perennial stream and 273 feet of intermittent stream. The temporary impact involves 1,988 feet of perennial stream and 695 feet of intermittent stream. The construction of the influent lines will also temporarily impact 14.6 acres of wetlands and permanently impact 5.8 acres of wetlands.

### Effluent Force Mains

The construction of the Holly Springs and Western Wake effluent force mains will permanently impact 131 linear feet of perennial stream and 85 feet of intermittent stream and the temporary impact involves 448 feet of perennial stream and 305 feet of intermittent stream. The construction of the effluent force mains will temporarily impact 0.5 acres of wetlands and permanently impact 0.2 acres of wetlands.

### Utilities

There are no permanent stream impacts from the water and electric lines associated with WRF Site 30. The utility lines result in 2 perennial stream crossings and 12 intermittent stream crossings and temporarily impact 23 feet of perennial streams and 160 feet of intermittent streams. The construction of the water and electric lines will temporarily impact 0.2 acres of wetlands and have no permanent impacts to wetlands.

### Total Permanent Stream and Wetland Impacts

The total permanent impact of WRF Site 30 is 1,438 linear feet of perennial and intermittent stream and 6 acres of wetlands. Most of these impacts are along the influent transmission lines, and the impacts are described in Section 4 of the FEIS.

### No Action Alternative

The No Action Alternative is also brought forward for further analysis. The No Action Alternative assumes that there is no new regional wastewater system and that the area to be served by the proposed Project would continue to be developed primarily as low density residential development served by on-site water and wastewater systems. The No Action Alternative does not meet the project purpose and need because it would not allow Cary, Apex, and Morrisville to meet the mandate in their IBT certificate and it would not provide the necessary capacity for future wastewater treatment demands.

**6. Impacts of the Proposed Action.** Section 4 of the FEIS provides a full discussion of the environmental impacts associated with the proposed project, including WRF Site 14. Comments received on the FEIS and Public Notice for the Section 404 permit focused mainly on; 1) streams and wetlands impacts; 2) environmental justice concerns and construction of the WRF near a minority community; 3) construction of the WRF and potential impacts to the New Hill Historic District; 4) concerns about the disposal of bio-solids; 5) construction of the WRF and the impacts to adjacent landowners, this includes visual/aesthetics impacts, noise, odor, traffic, and property devaluation and; 6) private property impacts related to surface water and groundwater contamination from spills. These impacts and issues are summarized below.

#### **a. Streams and Wetlands Impacts.**

Wetlands perform many important functions, including surface water storage, groundwater discharge and recharge, nutrient accumulation and cycling, organic matter production and export, capture of sediment and other pollutants, and wildlife refuge and habitat. The types of wetland and stream communities within the project area, the functions they perform and the potential impacts that would occur to these as a result of this project, are thoroughly described in Sections 3 and 4 of the FEIS.

The proposed project, WRF Site 14, and the other WRF alternative sites have similar wetland and stream impacts and the impacts have been minimized throughout the PDT process. The Project Partners have designed the facility and lines to minimize the impacts as much as possible. Also, the existing “Secondary and Cumulative Master Mitigation Plans” for Apex, Cary, Holly Springs and Morrisville (see Appendix J “Impacts Master Mitigation Plan”) will help to minimize future cumulative and secondary impacts by enforcing existing local programs such as Riparian Buffer Rules, Floodplain Protection Rules, Erosion and Sedimentation Control Program and the Stormwater Program and Impervious Surface Limitations Program.

Wetlands were delineated at the proposed Project WRF site and the three alternative action WRF sites and along the proposed transmission line routes from the West Cary Pumps Station to the outfall structure. Future planned lines that are included as part of the proposed Project (Cary Indian Creek Force Main and Gravity Sewer, Cary Green Level Force Main and Gravity Sewer, and Apex Beaver Creek Gravity Sewer) were not delineated as no work has been completed on their design. These future planned lines are common to all project alternatives and impacts to wetlands were estimated based on GIS analysis of hydric soils and National Wetland Inventory Maps.

Since the future planned transmission lines are common to all alternatives, the USACE did not require a detailed wetland determination for these lines until a Section 404 permit request is submitted. Detailed wetland delineations will be required with each 404 permit request to refine actual impacts to wetlands and streams. These detailed delineations will be utilized in developing mitigation requirements which includes avoidance, minimization and mitigation for unavoidable wetland and stream impacts as required by Clean Water Act Section 404(b)(1) Guidelines.

#### Streams and Wetlands on the Proposed Project Site (Site 14)

There are a total of 6.5 acres of wetlands at proposed Project WRF Site (Site 14). The primary wetland types at proposed Project WRF Site (Site 14) are forested hardwood wetlands, headwater wetlands, and open water. Forested hardwood wetlands are the dominant wetland type on proposed Project WRF Site (Site 14); these areas are comprised of hardwood tree species such as ironwood (*Carpinus caroliniana*), red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), loblolly pine (*Pinus taeda*), tulip poplar (*Liriodendron tulipifera*), water oak (*Quercus nigra*), and American sycamore (*Platanus occidentalis*). Herbaceous vegetation in these areas includes common rush (*Juncus effusus*), sedge species (*Carex* spp.), roundleaf greenbrier (*Smilax rotundifolia*), poison ivy (*Toxicodendron radicans*), and Japanese honeysuckle (*Lonicera japonica*). Historic agricultural and silviculture practices on this site have altered the hydrology of many of the drainage areas and also created successional forest development along with planted pine areas.

The “Guidance for Rating the Values of Wetlands in North Carolina” (NCDWQ, 1995) was used to qualitatively assess the relative quality of each wetland at the WRF site. Each of the wetland types provides the following primary functions: wildlife habitat and the support of aquatic life. Wetland areas within the northern portion of proposed Project WRF Site (Site 14) provide limited water storage and pollutant removal, due to their small size and location at the top of the watershed. Wetland areas in the southern portion of proposed Project WRF Site (Site 14) receive more drainage and therefore would provide greater amounts of water storage and pollutant removal. However, due to their individual size, location, and the lack of on-site disturbance, the overall opportunity for these wetlands to provide water storage and pollutant removal for the watershed is low. Therefore, using the NCDWQ wetland rating system, these wetlands would not be considered high quality; however, they do provide beneficial hydrologic and biological function within the watershed. There are no wetland impacts on the WRF 14 site.

The WRF entrance road off of Shearon Harris Road crosses two perennial streams and two intermittent streams. These streams would be crossed with open bottomed culverts to avoid impacts to them. The proposed Project WRF Site (Site 14) construction design avoids the other perennial and intermittent streams onsite. By using open bottom culverts and avoiding stream areas on the site, no fill will occur in streams from construction and operation of the facility.

Because there is a potential for the streams that are crossed with bottomless culverts to access the WRF site to degrade over time, the USACE recommended that the Project Partners consider mitigation for these indirect or potential impacts. The Project Partners concurred with this request. Each of the four stream crossings is 58 linear feet (a total of 232 linear feet for all four crossings). This will be added to the 378 linear feet of permanent stream impacts, for a total of

610 linear feet that will be compensated through the NC Ecosystem Enhancement Program (EEP) in-lieu fee program.

The total permanent impact of the proposed Project involves 5.9 acres of wetlands and 1,387 linear feet of perennial and intermittent stream. Most of these impacts are along the influent transmission lines, and the impacts are described in Section 4.1.1.1.4 of the FEIS.

Site 14 is located in the Town of Apex's jurisdiction and would be developed in accordance with its ordinances. The Town of Apex requires stormwater Best Management Practices (BMPs) for any development which exceeds 12 percent imperviousness. The runoff volume must be maintained for the 1-year, 24-hour storm, and the peak runoff must be maintained for the 1-year, 24-hour and 10-year, 24-hour storms. The percent impervious of the site is approximately 8.8 percent. Despite this overall low density, the NPDES permit would require a Storm Water Pollution Prevention Plan for the facility. The Town also requires 100-foot riparian buffers. By using open bottom culverts for the roadway entering the site, avoiding streams through the site layout, and following local riparian buffer rules, stormwater requirements, and erosion and sediment control requirements, impacts to streams on site would be minimized. There would be negligible impacts to streams by the construction and operation of the WRF.

#### Influent Lines

The influent lines would cross 53 perennial streams and 22 intermittent streams and could impact the streams as described in Section 4.1.1.1.4 of the FEIS. The permanent impact involves 964 feet of perennial stream and 243 feet of intermittent stream. The temporary impact involves 2,120 feet of perennial stream and 703 feet of intermittent stream. The Project Partners have stated that all streams would be crossed following methods outlined in NCDWQ General Certification GC3625 (see Appendix B-5 of the FEIS) and there would be a negligible impact on the streams. The construction of the influent lines will temporarily impact 14.6 acres of wetlands and permanently impact 5.8 acres of wetlands.

#### Effluent Force Mains

The Holly Springs and Western Wake effluent force mains would cross 10 perennial and 8 intermittent streams, and the potential impacts are described in Section 4.1.1.1.4 of the FEIS. These effluent force main corridors' permanent impact involves 107 linear feet of perennial stream and 73 feet of intermittent streams and the temporary impact involves approximately 474 feet of perennial stream and 265 feet of intermittent stream. As described above, all streams would be crossed following methods outlined in NCDWQ General Certification Conditions GC3625 (see Appendix B-5 of the FEIS) and there would be a negligible impact on the streams. The construction of the effluent force mains will temporarily impact 0.4 acres of wetlands and permanently impact 0.1 of wetlands.

#### Utilities

A portion of the electrical and water lines for all project alternatives follow the same route. When this occurs, the same ROW will be used for both utility lines. Thus, to avoid double-counting, the total impacts due to water and electrical lines are presented in the EIS. There are no permanent stream impacts from the water and electric lines associated with the WRF Site 14.

The utility lines result in 1 perennial stream crossing and 13 intermittent stream crossings and temporarily impact 24 feet of perennial streams and 196 feet of intermittent streams. The construction of the electric and water lines will temporarily impacts 0.2 acres of wetlands and will not have permanent impacts to wetlands.

#### Conclusion of Stream and Wetland Impacts for the Proposed Project and Alternative Sites

The stream and wetland impacts for the proposed project WRF Site 14 and alternative sites and their associated lines are all similar. The impacts on all the WRF sites and conveyance and utility lines have been minimized to a great extent. It is important to acknowledge that a project of this size with relatively small amounts of wetland and stream impacts does not have a significant impact on the aquatic environment. The stream and wetland impacts were estimated to be greater at the beginning of the EIS process, but during the EIS process the project was modified to minimize the impacts as much as possible. The USACE began the EIS at the request of the Project Partners to address impacts to the aquatic environment that were projected to be significantly larger at the time, to address issues of environmental justice and cumulative and secondary impacts, and to streamline duplicative and possibly conflicting State and Federal processes. Although the wetland and stream impacts have been minimized to a great extent, the USACE decided to continue the EIS process to address the remaining issues thoroughly.

Further discussion about the stream and wetland impacts of the proposed project and alternative sites are discussed in Section 10 of the ROD (404(b)(1) Analysis).

#### **b. Environmental Justice**

Executive Order 12898 titled “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” (February 11, 1994) requires each Federal agency to make achieving environmental justice (EJ) part of its mission “by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations.”

In its *Final Guidance for Incorporating Environmental Justice Concerns in EPA’s NEPA Compliance Analyses*, the US Environmental Protection Agency (USEPA) defines EJ as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” Fair treatment means that “no group of people, including racial, ethnic, or socioeconomic groups should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, local, and tribal programs and policies” (USEPA, April 1998).

As a Federal agency, the US Army Corps of Engineers (USACE) is required by Executive Order 12898 to address EJ concerns in its decision-making process associated with its Section 404 permit authorization authority. The following steps have been used to complete the process of addressing EJ for the Western Wake Regional Wastewater Management Facilities (WWMF) project:

Step 1: Determine whether the potentially affected area includes minority and/or low-income populations.

Step 2: Identify beneficial and adverse changes to existing conditions that may result from the proposed and alternate WRF sites, pump stations, and pipelines.

Step 3: Determine whether any significant and adverse impacts are likely to fall disproportionately on minority and/or low-income populations.

Step 4: If any significant adverse impacts are likely to fall disproportionately on minority and/or low-income populations, develop mitigation measures, or consider modification or denial of the requested Section 404 permit.

Throughout: Provide adequate opportunity for public participation throughout the process.

### **Public Participation**

Public participation in the EIS process has been extensive throughout the period of USACE involvement. Specifically, USACE issued a Public Notice for the project on March 30, 2007, and the Notice appeared in the *Federal Register* on April 9, 2007 (Vol. 72, No. 67) and in the *News & Observer* on April 15, 2007. A public scoping meeting for the project was held at the Apex Town Hall on the evening of April 19, 2007. USACE identified representatives from state, Federal and local agencies and interested parties from the community to participate in a Project Delivery Team (PDT). The PDT met twelve times between May 31, 2007 and June 26, 2008 in an ongoing process to review EIS components such as the Purpose and Need statement, Plan of Study, Scope of Analysis, and an alternatives analysis. The purpose of the PDT process was to insure that all necessary issues were identified, and to solicit the individual opinions and comments of agencies and stakeholders. Members of the New Hill Community were present at all meetings.

In preparation for evaluating the alternate sites and to obtain information for the process, a public outreach effort was initiated. Planners for Environmental Quality, Inc. (PEQ), a company specializing in public outreach, conducted public outreach activities in December 2006 in the vicinity of WRF Site 14 as part of the SEPA process and again in December 2007 and January 2008 for property owners of the alternate WRF sites and parcels adjacent to the sites as part of the NEPA process. PEQ representatives met with residents to inform them of the project and gave them a fact sheet about the project with contact information for more information. The fact sheets used during the public outreach efforts and summaries of the public outreach efforts are included in the EIS as Attachment A to the EJ Appendix. The objective of the public participation program was to determine what, if any, concerns the residents adjacent to the WRF sites may have for the proposed project. The efforts were also used to further identify and characterize minority communities near the candidate WRF sites.

At the request of a New Hill community member, USACE and USEPA met with the New Hill community on May 21, 2008 to discuss the process for addressing environmental justice in the NEPA EIS.

USACE issued a Public Notice for the availability of the Draft EIS on March 13, 2009. In concert with the Notice of Availability for the Draft EIS, a Public Hearing was held on April 14, 2009. Two informal workshops were held on March 31, 2009 and April 14, 2009 to provide the public with an opportunity to ask questions about the project during the public comment period.

The Federal EIS process was adequate to insure all affected citizens, including identified EJ populations, were afforded the opportunity to participate and express concerns. The local community surrounding the proposed WRF, in particular, was invited to attend and comment, and activities, including public hearings, were scheduled so as to allow maximum attendance. Many of the comments USACE received related to public involvement discussed the lack of openness and transparency in the Project Partners' site selection process prior to USACE involvement. The method by which an applicant selects its proposed project is not one that the USACE can exercise control over during its CWA permit review process. Once the permit process began, the USACE assured that a full range of alternatives were considered and that the public was well-informed and encouraged to participate. The USACE also took great care to insure that the Partners' pre-selection of the site 14 alternative did not afford this site any particular advantage in the alternatives evaluation process.

I find that USACE has met or exceeded its obligation to insure that the public, and particularly those members of the public potentially affected by this project, has been adequately engaged throughout the EIS and permitting process.

### **Environmental Justice Process and Findings**

I find that the Environmental Justice (EJ) process was conducted correctly, and that the findings presented in the Final EIS (FEIS) are accurate. Specifically, I make the following findings and determinations.

Step 1: Determine whether the potentially affected area includes minority and/or low-income populations.

The process for determining the presence of minority and low-income communities in the FEIS was appropriate, and conducted thoroughly. This process did identify minority communities in the vicinity of the proposed project, and adequately characterized these communities. This is discussed in detail in Section 3.14.3 of the FEIS. EJ Group 1 is located in Census Block 1053 along New Hill-Holleman Road between Old Highway 1 and US Highway 1 and EJ Group 2 is located along James Rest Home Road south of US Highway 1.

Step 2: Identify beneficial and adverse changes to existing conditions that may result from the proposed and alternate WRF sites, pump stations, and pipelines.

The EJ analysis in the FEIS properly identified potential beneficial and adverse changes to existing conditions that may result from the project. Specifically, relatively minor and brief changes were identified in relation to pipeline and pump stations, none of which amounted to substantial health risks or environmental concerns. While a water reclamation facility (WRF)

has a greater potential to adversely affect communities and the environment than pump stations or pipelines, many of the potential risks and adverse effects have been minimized through the process of project design. Specifically, the treatment process itself has been designed so as to eliminate harsh chemicals as much as possible, and thereby reduce the risks associated with transport and storage of those chemicals. Road access to the facility has been located on the opposite side of the property from EJ (and other) communities, greatly reducing the potential for disruption or accidents associated with construction traffic or transport of chemicals or waste. The size of the proposed WRF property, which is large enough to allow location of facilities several hundred to over a thousand feet from the nearest residences, will further reduce any effects. The proposed 200-foot forested buffer, which will be required by USACE permit condition, will further attenuate impacts related to light, noise, and odor. Benefits or impacts associated with property values are difficult to assess; while the water and sewer extension policy will provide a valuable property upgrade to those who utilize it, there may be negative effects to values associated primarily with odor, or the perception of an odor problem. On balance, benefits and detriments to property values in the EJ community are likely to be roughly equivalent. The benefits of the project to the affected EJ community include sewer and water service offered to be installed at low-to-no cost to residences, and the potential for jobs at, or during the construction of, the facility.

Step 3: Determine whether any significant and adverse impacts are likely to fall disproportionately on minority and/or low-income populations.

I find that the description and findings in the FEIS were adequate and accurate in relation to this factor. The USACE has determined that, when all elements of project are considered, no significant and adverse impacts are likely to fall on the affected EJ population. This is partially due to the fact that the applicant has designed the project to minimize impacts to those that live closest to its WRF facility. The 200-foot buffer, the site design that keeps buildings away from the population, and the installation of sewer and water services for low-to-no-cost (if land use stays the same), all substantially reduce the significance of any adverse impacts. Each of these important elements will be required by USACE permit.

The Water and Sewer Extension Policy (Policy) offered by the applicant will extend to all of the census block occupied by the treatment facility, which includes all of EJ group 1. The major tenet of the policy is that, as long as land use remains the same (i.e., a single-family residence remains a single-family residence), the applicant will provide free installation of water and sewer, up to a cost of \$1500 for water and \$1500 for sewer for each residence. These costs are based on reasonable estimates of the cost to install, and should mean that for the vast majority of residential owners, the installation should be free of charge. As many of the residences in EJ group 1 have problems associated with septic systems, this should prove to be a very useful benefit. The environmental benefits associated with the reduction in septic systems should also have a positive effect on the aquatic environment. The policy does indicate that users who take advantage of the policy would not object to annexation by Apex in the future, with no annexation to occur before 2025. This is a reasonable condition, as Apex will be offering the water and sewer service, annexation can reduce the administrative burden on the municipality, and annexation will not be considered until at least 2025. I find that the water and sewer extension policy has been appropriately tailored to provide a benefit to the members of the census block

and EJ group 1, and has reasonable provisions to make these benefits available to all residents in the identified area, regardless of income.

In summary, there are some adverse impacts – primarily noise, light, and odor – associated with this project that will be felt by neighboring communities. The applicant’s efforts to reduce these impacts in the planning of its project, including the siting of roads, the distancing of facilities from residences, the permanent maintenance of a forested buffer, and the water and sewer extension policy, have, in my opinion, reduced these impacts to a level at which they are not significant.

Some comments indicate that, in evaluating the significance of the adverse impacts on the EJ community, we should not consider the water and sewer extension policy, but instead evaluate the significance of the impacts of the project without the policy in place, and view the policy as a mitigation measure under Step 4. We disagree with this approach; the policy was part of the project proposed to us originally, and just as on-site redesign and buffers help to reduce the light, odor, and noise generated by the facility, the water and sewer extension policy helps to offset any economic detriment that the facility siting might cause, and allows the benefit of the facility to be enjoyed by those who are situated closest to it. These are all measures to minimize the effect that the facility may have on its neighbors, and should be viewed as such.

If we were to conduct the Step 2 analysis and view the facility without considering the water and sewer extension policy, we would still find that the impacts did not rise to the level of being significantly adverse. The other minimization measures outlined above are substantial, and as a result of the facility’s design, there are no measurable environmental, safety, or health impacts that are expected to result from the construction of this facility. Although we do not believe that the impacts from the project rise to the level of significance envisioned by the Executive Order, even if we did find that such impacts were significant, our decision would be to require the applicant to undertake measures to minimize light, odor, and noise, and to offer a benefit (exactly like the water and sewer extension policy) to further mitigate adverse effects on EJ group 1. These minimization efforts are already part of this facility’s design.

Step 4: If any significant adverse impacts are likely to fall disproportionately on minority and/or low-income populations, develop mitigation measures, or consider modification or denial of the requested Section 404 permit.

As described above, Step 4 was not reached. I find that, were we to reach Step 4, the Water and Sewer Extension Policy would be adequate mitigation to allow issuance of a DA permit.

I note that it is also important for the Federal agency, when reviewing any permit application for impacts to jurisdictional waters, to keep in mind the overall degree of Federal jurisdiction and control over the action. In this case, where the WRF facility is to be constructed with no direct impacts to any jurisdictional waters, the Federal control and responsibility by virtue of our Clean Water Act permit over this project is not large, especially with respect for siting of this facility. I believe the EJ issues enumerated above do not rise to a level of significance that would suggest further mitigation measures or a denial of the applicant’s request.

In summary, I find that the applicant's proposed project, including all the minimization measures outlined above, will not have any significant and adverse impacts that fall disproportionately on minority and/or low income communities.

**c. Construction of the WRF at Site 14 and Impacts to the New Hill Historic District**

Appendix C to 33 CFR Part 325 establishes the procedures to be followed by the USACE in its regulatory program in order to comply with the National Historic Preservation Act and other laws dealing with historic properties. During the development of the EIS the USACE did a review of the alternatives to determine if the proposed project would impact any cultural resources. Several sites were identified for more investigation. The New Hill Historic District is located adjacent to the proposed WRF Site 14. There are also three structures nearby that were on the state Study List for potential eligibility for nomination to the National Register of Historic Places. They are Allie Lawrence House, New Hill Baptist Church and the New Hill First Missionary Baptist Church. The following is a result of our investigations and correspondence with the North Carolina Department of Cultural Resources, State Preservation Office (SHPO).

On May 16, 2008 the SHPO sent a letter to the USACE stating that it did not recommend doing any further archaeological work around the Site 14 or the alternative sites because the sites had either been surveyed or cleared or had a low probability for intact or significant archaeological remains.

SHPO also stated that in terms of historic buildings, districts, and/or landscapes, Sites 19 and 21/23 are unlikely to affect any historic properties. Site 30 is closer to Bonsal, which has some buildings that are included in the statewide survey, but have not been evaluated in terms of their national Register of historic Places eligibility. SHPO stated that the construction of the WRF on site 14 would adversely affect the New Hill National Register Historic District.

On June 18, 2008, the USACE met with the SHPO and discussed design features to minimize the impacts to the New Hill Historic District if the WRF was constructed at Site 14.

In a letter dated June 24, 2008, the SHPO stated that the construction of the WRF at Site 14 would not adversely affect any historic properties if the following conditions were met:

- No lines, including force mains, will run through the New Hill Historic District. The exception to this is a proposed connection site on the Beaver Creek force main, which allow a future connection for the New Hill Community.
- Access to the site will be from Shearon Harris Road.
- A 200' vegetated buffer will be established and maintained along the entire boundary of the entire site. The area along the CSX rail right-of-way, which is currently very thinly vegetated, shall be planted with native plants, especially evergreens, to provide a 200' buffer.
- Lighting on the site will be kept at a minimum for operational purposes and all lighting shall be directional to reduce the effects of the light pollution on the historic district.

- Operational procedures shall to the maximum extent possible prevent and/or control noxious odors from the facility.
- The SHPO shall review all proposed future lines to the facility to ensure that historic properties and archaeological sites are not adversely affected.

In a letter dated November 25, 2008, the SHPO stated that it was commenting on the Preliminary Draft EIS and noted that the June 24, 2008 letter in Appendix A of the EIS outlined the conditions necessary to avoid an adverse effect to the historic properties around Site 14. SHPO further stated that as long as these conditions are implemented the SHPO would be satisfied that the historic resources have been adequately addressed in project planning.

The Project Partners have agreed to these conditions and they will be included as conditions of this permit. By including the SHPO's recommendations as permit conditions the USACE has fulfilled its responsibilities as required by Appendix C.

#### **d. Disposal of Bio-solids**

During the FEIS comment period several commenters stated they had concerns about the disposal of bio-solids generated from the Western Wake Wastewater Facility. In general they were concerned that the Project Partners had not yet selected a final option for disposing of bio-solids and one option would involve incinerating the bio-solids. Commenters were concerned that the emissions would pose a health risk to the adjacent communities. The Project Partners provided the following information in response to those comments and have stated that the method of disposal will not include conventional incineration of bio-solids.

The Western Wake WRF includes a new bio-solids management facility. The Project Partners will take alternate bids for two different approaches to bio-solids management at this new plant. Both bio-solids options are described in the FEIS, and the impacts of each are included in Section 4.

The base bid will be for aerated holding tanks, a dewatering facility and off-site composting. The alternate bid is for a dewatering facility and thermal drying system, similar to their approach at the South Cary WRF. A final decision on which bio-solids management option to implement will be made once the bid results are known and the full life-cycle cost can be projected more clearly. The alternate dryer also includes an energy recovery system that will use the dried solids as fuel to provide about 80% of the heat for the drying process. This means that the facility will use about 80% less natural gas to dry the bio-solids than if natural gas alone was used for fuel. This energy recovery system will greatly reduce their reliance on outside fuel sources by combusting dried pellets to generate heat for the drying process. This energy recovery system is not a conventional incinerator and the purpose and performance of this proposed system differs considerably from conventional incineration.

The Project Partners are currently in final design of the Western Wake dryer facility. The dryer and energy recovery system will include state-of-the art controls, including field performance testing. Based on this and the system's capacity, the facility will be classified as a "synthetic

minor" emission source. This means that the state regulators do not consider this to be a major source of emissions.

The FEIS was never intended to provide an exhaustive description of the dryer system. Its focus was on the environmental impacts of the overall project, of which the dryer is potentially one part. The Project Partners still have to obtain an air quality permit for the dryer and will be held to compliance with all relevant air quality regulations. The air quality permitting process has its own public comment process and the potential dryer emissions will be evaluated further in this and other processes.

#### **e. Construction of the WRF and the impacts to Adjacent Landowners**

One of the main comments and concerns the USACE received about the FEIS, and throughout the PDT meetings, was about the construction of the conveyance pipelines and the WRF at Site 14 and the potential impacts to adjacent landowners, this includes visual/aesthetics impacts, noise, odor, traffic, and property devaluation. This concern is addressed in more detail in Section 4 of the FEIS.

##### **Visual/Aesthetics**

Visual/aesthetic impacts are expected to be minor. The facility will be centrally located on the site 14 to maximize the distance from the preliminary treatment facility to the nearest residence. The closest residence to the WRF site 14 is approximately 1,550 feet.

The 200-foot mostly-forested perimeter buffer provides a vegetated separation between the WRF facilities and the property boundary, which also helps minimize impacts. The buffer will be cleared for approximately 40 feet where the pipelines cross it for pipeline inspection and maintenance. In addition, all building heights will conform to local ordinances.

The Proposed Project WRF Site (Site 14) is located across Old US Highway 1 from the New Hill Historic District. The Town of Apex's ordinance requires that no building on the WRF site be greater than 36 feet in height. Because of the building height requirements, 200-foot mostly-forested perimeter buffer (not in the pipeline corridor), and the raised railway bed between the New Hill Historic District and the Proposed Project WRF Site (Site 14), the proposed WRF should not be visible from the New Hill Historic District when viewed from ground level.

Another potential aesthetic impact is that of lights at the WRF site on the night sky. Because construction would be primarily limited to daylight hours, virtually no temporary impacts to light are anticipated. Permanent light impacts to the communities near the WRF site include possible light-spill on adjacent properties due to street and task lighting installed at the WRF. Task lighting at specific WRF components would be directed toward the task and limited in the span of illumination. The lights would be configured to minimize light spill and conform to local government ordinances. Only lights required for safety and security would remain on all night. The central location of the facilities on the site and the 200-foot perimeter buffer also prevent light spill. Light-spill impacts to the community are expected to be negligible because of these proposed features of the WRF. No permanent lights are planned along the transmission line corridors.

With these proposed mitigation measures, there would be a negligible aesthetic/visual impact from all project alternatives.

**Noise.**

Noise levels would temporarily increase during construction, but would comply with local noise ordinances. Increased noise levels could result from commonly used mechanical equipment that would be utilized to grade the site and construct the WRF and related facilities. Construction will normally be limited to daylight hours when loud noises are more tolerable. Trucks and other construction equipment are furnished with noise control devices that would minimize off site noise impacts, keeping such noises within acceptable levels. When final design and permitting are complete, the construction techniques would be defined. The Project Partners would execute the construction in accordance with final permits and in full compliance with Federal and state safety requirements and Apex noise standards which allow a maximum noise level of 60 dBA at the property line during daytime hours (7:00 AM to 10:00 PM) and a maximum noise level of 55 dBA during nighttime hours. These levels are in the range of normal conversation which is 50 to 65 dBA. The Town’s ordinances do allow for exceptions during construction; thus during construction there may be increases beyond the noise levels allowed in the ordinance. Apex’s noise ordinance does not allow construction after 8:30 PM or before 7:00 AM.

Construction noise is naturally attenuated over distance. Forested areas, like the tree buffers proposed at the WRF site and the areas surrounding much of the pipeline corridors and pump stations, would further muffle the construction sounds. Typical peak noise levels associated with construction equipment relative to distance from the equipment are shown in Table 2 from the FEIS.

TABLE 2  
*Peak Construction Noise Levels Near a Typical Construction Site*

<b>Distance from Construction Equipment (feet)</b>	<b>Line-of-Sight Noise Level (dBA)</b>	<b>Noise Level with Tree Attenuation (dBA)</b>
50	93	93
100	87	75
200	81	69
400	75	61
800	69	55
1,600	63	49
3,200	57	43
6,400	51	37

Source: EPA, 1971 and Harrison, 1980

The pipeline corridor alignments are near enough to some residences for peak construction noises to reach 93 dBA. Peak construction noise, which would be intermittent, would be irritating, but would not cause any deleterious health effects. The continuous construction noise

would be lower. These noise effects would be limited to annoyance for the duration of construction. These noise impacts would be moderate and temporary. Following construction, noise levels would largely return to existing levels along the pipeline corridors and be considered negligible.

Operation of pump stations generates noise. As noted in Section 3.9, noise levels at the West Cary Pump Station (WCPS) are less than 55 dBA and this level is expected to continue with expansion of the WCPS and is also representative of predicted noise at the Beaver Creek Pump Station (BCPS). To address noise, the Partners would install sound-attenuated enclosures for equipment and use dB-rated equipment at both pump stations. Noise impacts should not generally occur. During power outages, the stand-by power generator at the WCPS or BCPS would increase noise levels, but these events should occur infrequently and are of short duration. All operations will comply with local noise ordinances. The noise generated at each WRF site, which would be less than 60 dBA at the property boundary during the daytime and less than 55 dBA at the property boundary at night, would be similar since each alternative contains the same project components. Operation of the WRF would generate noise associated with mechanical operations. Blowers for the aeration processes would be the loudest pieces of equipment on site, and they would run continuously. Therefore they would be fitted with sound reduction devices and would be placed inside buildings constructed with sound-attenuating features. The generators would also produce noise during power failures, peak shaving operation, and during regular equipment exercising. The emergency generators would be equipped with exhaust mufflers and housed in sound-attenuating enclosures. The blower building and generators would be oriented on site to prevent outward projection of noise to the neighbors. These potential sources of operational noise would be located a minimum of 300 feet from the property boundary. The property buffer and preserved open space on the property would help reduce this noise to surrounding areas.

Peak shaving would typically occur 3 to 4 times per month between the hours of 5:00 PM and 7:00 PM during the summer. Peak-shaving is a technique used to minimize electricity demand from a power provider during peak demand periods by providing some or all of the necessary power from generators. Since the generators are required to provide a back-up source of power for the WRF during potential power outages and should be tested weekly as part of proper operation and maintenance, peak-shaving can accomplish the dual purpose of reducing peak demands and meeting the required testing of the generators, when the requirements coincide. If not, the testing of emergency equipment would occur on a weekly basis during periods when the generators are not used for peak-shaving and there has not been a power outage. The combination of testing and peak-shaving would occur a total of 7 to 8 times per month.

The Project Partners have committed to meet with the neighbors during construction and operation of the WRF to discuss any noise complaints, identify the noise source, and address it.

With these proposed noise-reducing measures, there would be a negligible impact from the WRF and its facilities to noise levels offsite. During power outages, there would be short-term moderate impacts to properties in close proximity to the pump stations and WRF.

The New Hill Historic District is located adjacent to the proposed Project WRF Site (Site 14). However, the distance from the preliminary treatment facility which is most likely to produce noise to the nearest residence is approximately 1,500 feet. The distance from the nearest structure on the WRF site to a residence is approximately 1000 feet. In addition to the separation distance, the 200-foot perimeter buffer provides a vegetated separation between the WRF facilities and the property boundary. Using the typical peak construction noise levels in Table 4-11, the noise heard at the closest existing residence should be 49 to 55 dBA, which is comparable to a typical suburban noise level of 55 dBA. The Partners will comply with the Town of Apex noise ordinance which allows a maximum noise of 60 dBA during the daytime (7:00 AM to 10:00 PM) and 55 dBA during the nighttime. The Town's ordinances do allow for exceptions during construction; thus during construction there may be increases beyond the noise levels allowed in the ordinance. Apex's noise ordinance does not allow construction after 8:30 PM or before 7:00 AM. The elevated bed of the railroad along Old US 1 also contributes to a sound buffer from the WRF and its facilities, complementing the noise-reducing design at the WRF. With these proposed noise-reducing measures, there would be a negligible impact from the WRF and its facilities to noise levels offsite.

### **Odor**

A detailed discussion of impacts from odors and steps to minimize these impacts is discussed in Section 4.8.3 in the FEIS. The best means of controlling odors is by preventing their formation through proper design and operation of the facilities. Process units and odor control devices are designed to anticipate, prevent, and thoroughly address the conditions that could lead to formation and release of odors. The Project Partners are providing the best available odor control technology for treatment units with the greatest potential to produce odors – the head-works structure and portions of the bio-solids management facilities. The WRF would feature aerobic bio-solids treatment processes to avoid odor formation found in other types of bio-solids treatment. Bio-solids would be stored in aerated holding tanks for a short time until they are removed from the site as liquid, dewatered cake, dried pellets to be used as fertilizer in agricultural operations, or as ash when used as fuel for the bio-solids dryer furnace (if a dryer is included in the project). Aerated bio-solids processing does not produce methane gas. Bio-solids processing units and holding tanks would be enclosed. Odor containment and ventilation systems would capture odors at their sources. Technology such as scrubbers or bio-filters would remove odorous compounds from this captured air before the cleaned air is released to the atmosphere. More detailed design information about these devices would be provided in the Partners' Engineering Report for the WRF (Brown and Caldwell, 2009).

The Project Partners will minimize the formation of odors by ensuring proper operation of the WRF and its odor control facilities. WRF facilities would be staffed 24 hours per day, 7 days per week, year-round. WRF staff would be trained to detect and prevent odors and would monitor the WRF for odors using human observations around the clock supplemented with handheld devices. WRF operating and control parameters would be continually monitored and adjusted as needed to prevent conditions that could produce odors.

In addition, the Project Partners had a selection criteria which included approximately 200 acres for the WRF site and are including a 200-foot forested buffer around the site to prevent the urban encroachment that occurred at the South Cary WRF site.

The Project Partners' goal is to design and operate the WRF in a manner that does not adversely affect the ability of its neighbors to enjoy the regular use of their property. It is expected that the adjacent community would not notice any odor from the WRF the majority of the time, but occasionally odors may be detected beyond the property line of the facility. The prevailing winds in Wake County are from the west-southwest, and thus properties to the east and northeast of the WRF sites would be most likely to detect odors. There would be negligible impacts from odor in general over the area of impact. Impacts may be moderate on rare occasions around the area surrounding the WRF sites for short time periods depending on plant and meteorological conditions.

To be proactive, the Western Wake WRF is being designed with state-of-the-art odor control systems. Redundant equipment would also equip the Partners to handle a wide variety of operating conditions and process disruptions without producing odors that are detectable off site. History has shown that once processes are optimized and odor control systems are installed, complaints of offsite odor detection become almost non-existent. Complaints that are received are localized and have been readily addressed by making mechanical or process adjustments. The Project Partners have expressed a commitment to working with the surrounding community to address any odor issues that may arise. The Project Partners promise to meet with the community as needed to hear complaints, identify the odor source, and address it. As indicated above, the Partners have found that working with local residents at other treatment facilities has enabled them to address odor issues.

As previously stated, the Project Partners are installing state-of-the-art design features and odor control technology at the WRF site, but it is not possible to guarantee that there will never be any odors detectable off-site. Odors will not be noticeable most of the time. Impacts may be moderate on occasion around the area surrounding the WRF site for short periods depending on WRF and meteorological conditions. Odor impacts are similar for all project alternatives.

### **Traffic**

During the estimated 3-year WRF construction period, the Project Partners estimate that the average number of trips per day for personnel vehicles, work trucks, and other light vehicles would range from 40 to 90. Larger vehicles such as heavy equipment, materials deliveries, and concrete would make an average of up to 20 trips per day to the site. During operation, it is estimated that 4 to 12 trucks per month would visit the WRF site depending on effluent flow volume to deliver chemicals (metal salts, sodium hypochlorite, and polymer). Trucks would also visit the WRF site occasionally to deliver diesel fuel. Grit and screenings dumpsters would be emptied approximately once or twice per week during Phase 1 and four times per week during Phase 2.

The Project Partners are considering two options for handling bio-solids at the Western Wake WRF site: offsite composting and drying in conjunction with energy recovery. Estimates of truck loads of bio-solids hauled off site range from 0.5 to 29 loads per week, depending on year and the selected option.

During operation, the Project Partners expect additional traffic from UPS/FedEx deliveries (2 per day), Uniform Service (1 truck per week), US Mail (1 trip per work day), miscellaneous deliveries (1 truck per week), and Town of Cary staff interoffice traffic (1 trip per work day). Operation of the WRF would require approximately 25 employees to work at the site initially and 35 employees during Phase 2.

To minimize the impact of traffic on WRF neighbors, the Project Partners have stated that all contractors would be directed to use preferred routes that avoid higher traffic areas and areas that are more populated to the extent practicable. These preferred routes are outlined for each site below. On-site parking would be provided at the WRF, and parking would not cause traffic interference.

During construction of the pipelines, traffic levels are expected to increase temporarily due to truck traffic. Traffic may be temporarily rerouted in some transmission line corridors. The only permanent impacts anticipated along the transmission line routes are occasional trucks accessing the pipeline easements for inspection, cleaning, and maintenance.

The New Hill Historic District lies directly north of proposed Project WRF Site (Site 14). The Project Partners have developed traffic routes that would have trucks avoid using the portion of Old US 1 that lies adjacent to the WRF site and the historic district. Traffic from US 1 would exit at Old US 1 and travel east to Shearon Harris Road to the WRF access road. Alternatively, traffic from US 1 would access WRF Site 14 by traveling south on New Hill Holleman Road, west on Shearon Harris Road, and north on Shearon Harris Road to the WRF access road. Accessing the WRF site from Shearon Harris Road also avoids trucks crossing the railroad which runs parallel to Old US 1 north of the site. There would be negligible traffic impacts on the surrounding areas from the WRF and its facilities.

In general, there would be a temporary moderate traffic impacts on the surrounding areas from all project alternatives during construction, and a long-term negligible impact on traffic.

#### River Navigation

The selection of the bank discharge was made, in part, to minimize impacts to recreational boating. The nearby boat ramp would not be compromised. There would be a negligible impact from the bank discharge, which is common to all project alternatives.

#### **Property Devaluation**

One public concern of building a new WRF is a change in property values around the WRF site. To evaluate whether a new WRF would result in decreased property values, Wake County Revenue Department data were examined to determine if the Partners' other WRFs and WWTPs have negatively impacted property values. Residential properties within ½ mile of the following facilities were analyzed:

- North Cary WRF (constructed in approximately 1984)
- South Cary WRF (constructed in approximately 1988)
- Utley Creek WWTP (constructed in approximately 1990)

- Middle Creek WWTP (constructed in approximately 1986; no residential properties are located within 0.5 mile of this WWTP so the analysis focused on other treatment facilities)

Due to limitations with the Wake County data, a comparison of individual homes prior to/after WRF and WWTP construction was not possible. Table 3 summarizes the results of the analysis in 2008 tax values.

Table 3. Residential Property Value Analysis Around Western Wake County Wastewater Treatment Facilities

<i>Residential Properties within One-Half Mile of the North Cary Water Reclamation Facility</i>				
Status	Number	Average assessed value of land and building:	Average assessed value of building/SF of heated space:	Average assessed value of land per acre:
Properties developed before 1984	11	\$308,824	\$42	\$192,724
Properties developed after 1984	145	\$613,710	\$116	\$290,232
All developed properties	156	\$592,212	\$110	\$283,357
<i>All Residential Properties in the Southwest Quadrant of Wake County</i>				
Status	Number	Average assessed value of land and building:	Average assessed value of building/SF of heated space:	Average assessed value of land per acre:
Properties developed before 1984	24,475	\$277,006	\$71	\$407,790
Properties developed after 1984	53,777	\$289,595	\$91	\$331,039

<i>Residential Properties within One-Half Mile of the South Cary Water Reclamation Facility</i>				
Status	Number	Average assessed value of land and building:	Average assessed value of building/SF of heated space:	Average assessed value of land per acre:
Properties developed before 1988	34	\$208,071	\$73	\$79,431
Properties developed after 1988	504	\$345,747	\$104	\$202,753
All developed properties	538	\$337,046	\$102	\$194,960
<i>All Residential Properties in the Southwest Quadrant of Wake County</i>				
Status	Number	Average assessed value of land and building:	Average assessed value of building/SF of heated space:	Average assessed value of land per acre:
Properties developed before 1988	31,517	\$267,428	\$73	\$395,217
Properties developed after 1988	46,735	\$297,951	\$93	\$327,947

<i>Residential Properties within One-Half Mile of the Utley Creek Wastewater Treatment Facility</i>				
Status	Number	Average assessed value of land and building:	Average assessed value of building/SF of heated space:	Average assessed value of land per acre:
Properties developed before 1990	10	\$395,464	\$71	\$64,291
Properties developed after 1990	312	\$202,521	\$85	\$182,429
All developed properties	322	\$208,513	\$81	\$178,193
<i>All Residential Properties in the Southwest Quadrant of Wake County</i>				
Status	Number	Average assessed value of land and building:	Average assessed value of building/SF of heated space:	Average assessed value of land per acre:
Properties developed before 1990	34,192	\$268,555	\$74	\$392,341
Properties developed after 1990	44,060	\$298,930	\$93	\$326,088

(Source: Wake County Revenue and GIS Department. Data current as of April 30, 2008)

The data shown in Table 3 support the following observations:

- Around the North Cary, South Cary, and Utley Creek facilities, residential development increased significantly in the years since the facilities were built. The rates of development around these facilities have exceeded the rates of development in southwest Wake County.
- The homes and land that have been developed around the North Cary WRF and South Cary WRF have an average assessed value above that of the average assessed value in southwest

Wake County. Subdivisions built around these two facilities are composed of larger and higher priced homes than are typical in southwest Wake County.

- The homes and land that have been developed around the Utley Creek WWTP have an average assessed value below that of the average assessed value in southwest Wake County. Subdivisions built around this facility are composed of smaller and lower priced homes than are typical in southwest Wake County.

Based on these observations, impacts on property values appear to be negligible. Property owners in the service area could be provided water and sewer service. All property owners with the exception of those located in the area covered by the Water and Sewer Extension Policy (see FEIS EJ section 4.14.4.2.1 and Appendix H) would need to be annexed prior to receiving water and sewer services. The timing of annexation would depend on the rate of growth. Residents could request annexation to expedite the process if they desired, and there would be costs to connect.

#### **f. Private Property Impacts Related to Surface Water and Groundwater Contamination**

Sections 4.1.1 and 4.1.2 of the FEIS address in detail the environmental consequences to surface water and groundwater if the proposed project is constructed. One of the main concerns that adjacent property owners had about the construction of the proposed project was how will the Project Partners monitor the associated lines and infrastructure and respond to leaks and spills. The following information, provided by the Project Partners, addresses their concerns:

##### **Surface Waters Preventive Measures**

Portions of western Morrisville, Cary, and Apex drain to Jordan Lake which is on the 303(d) list for nutrient enrichment. The influent pipelines cross tributaries to Jordan Lake, and any potential leaks from those pipes, if they occurred near, or where the pipes crossed the tributaries would result in increased nutrient loading to the Lake. Construction in accordance with regulatory requirements would reduce the potential for leaking transmission lines.

The Project Partners have a fats, oils, and grease (FOG) program to prevent blockages and subsequent overflows from this source. The programs include educational materials, curbside pickup of holiday cooking oils (Cary), and ordinances requiring restaurants to have a grease trap to prevent fats from entering the collection system.

To ensure transmission lines are open, they would be monitored annually to determine if leaks occur; critical lines would be monitored at least twice per year. The monitoring would include pressure testing, closed-circuit television and smoke testing. Monitoring may also include a series of permanent and/or portable flow meters installed throughout the system in order to perform a flow balance. A supervisory control and data acquisition (SCADA) system to

continuously monitor flow is planned; the flow balance would be checked daily. If the flow balance indicates leaks are occurring, further monitoring would be performed to identify the

problem area and repair it. Increased stormwater runoff from the local governments is an indirect or secondary impact and is addressed in Section 5.

As lead Partner, the Town of Cary will modify its System-Wide Wastewater Collection System Permit (WQCS00013) to include the new influent transmission infrastructure. As part of this permit, the Partners will be required to report any Sanitary Sewer Overflow (SSO) or spill which is over 1000 gallons or any spill regardless of size which reaches surface waters.

Proper construction, operation and maintenance of the proposed Project should adequately protect surface waters and would not further degrade or create any new areas of impaired water to the 303(d) list. Therefore, the proposed Project would have a negligible impact on the 303(d) listed section of the Cape Fear River and on Jordan Lake.

#### WRF Site 14

Chemicals will be stored on the WRF site, and spills could occur. The Partners are designing the WRF facilities to prevent spills and minimize the impacts from any that may occur. Chemical storage tanks will be installed inside buildings and within containment structures that will contain the full contents of the tank. Tank filling stations will be similarly contained to prevent spills from entering the storm drainage system. Standard operating procedures would be developed for filling chemical storage tanks to prevent spills and manage them if they occur.

If a large storm such as a hurricane occurred within the region, the major conveyance system pump stations' capacities could be exceeded; this would result in raw wastewater being discharged into Jordan Lake or Harris Lake which would eventually travel to the Cape Fear River after dilution and some assimilation within the lakes. At any of the WRF sites, a portion of the treatment process could stop working, but there are backup systems included in the plant design to minimize any potential impacts. If a portion of the treatment process was compromised, the WRF may not meet its NPDES permit limits and could impact the Cape Fear River but this would be for a very short period of time. The likelihood of these events is extremely low and the facilities are required to meet the State of North Carolina's design criteria specifically developed to minimize the potential for these types of events. The redundancy built into the plant design and permit limits based on protecting the river during low flow minimize any potential water quality impacts. During power outages that may occur during a thunderstorm or ice storm, the emergency generators would be used to ensure the plant continues operating.

By protecting riparian buffers, implementing stormwater controls, following proper erosion and sediment control practices, and including redundancy in the plant design, the proposed Project would have a negligible impact on surface water resources around any of the candidate WRF site alternatives.

#### Groundwater

This section identifies potential impacts to groundwater quality and quantity. Chemicals will be stored on the WRF site and without proper storage, leaks could occur which could impact groundwater quality. The Partners are designing the WRF to minimize risks to groundwater. Chemical storage tanks will be installed inside buildings and within containment structures that

will hold the full contents of the tank. Tank filling stations will be similarly contained to prevent spills from entering the storm drainage system. Standard operating procedures would be developed for filling chemical storage tanks to prevent spills and manage them if they occur. Monitoring and control of the chemical storage facilities would occur including ultrasonic liquid level monitoring and a flow meter to monitor chemical feed.

Bio-solids can contain a wide range of toxic substances and chemical compounds. The bio-solids will either be incinerated onsite (potential air impacts outlined in Section 4.8 of the FEIS) or they will be trucked offsite outside the study area and disposed of at a previously permitted facility and not impact the groundwater in the surrounding community. All bio-solids processes will meet the requirements of 40 CFR Section 503 to minimize potential health impacts (both onsite and offsite).

A number of septic tank/ground absorption systems serving residences in the service area may be eliminated. These are beneficial impacts to the groundwater resources of the project area by reducing the public health risk of groundwater contamination in the project area from leaking or failing septic tanks.

Groundwater withdrawal and recharge impacts which could impact quantity would be limited. The Western Wake WRF would not withdraw groundwater but obtain the required potable water from the Cary/Apex Water Treatment Plant (for Sites 14 and 30) or from the Town of Holly Springs (for Sites 19 and 21/23). The Partners would use the final treated effluent to serve non-potable water demands throughout the site including water hose bibs and wash down hoses used for basin cleaning and equipment washdown.

The WRF is being designed to produce the quality of effluent such that a formal reuse program can occur with subsequent additions to plant facilities. Built-upon area for the WRF site would be below the typical low density development imperviousness. Despite this overall low density, the NPDES permit would require a Storm Water Pollution Prevention Plan for the facility and meeting stormwater requirements in accordance with local government ordinances.

Impacts to the groundwater resources of the project area due to groundwater contamination from leaking or failing transmission lines are unlikely. Due to the subsurface conditions, the potential for significant infiltration or exfiltration is reduced. As discussed, construction in accordance with regulatory and building code requirements would reduce the potential for the leaking transmission lines. Lines would be monitored annually to determine if leaks occur; critical lines would be monitored at least twice per year. The monitoring would include pressure testing, closed-circuit television and smoke testing. Monitoring may also include a series of permanent and/or potable flow meters installed throughout the system in order to perform a flow balance. A SCADA system to continuously monitor flow is planned; the flow balance would be checked daily. If the flow balance indicates leaks are occurring, further monitoring would be performed to identify the problem area and repair it.

The BCPS would be monitored using programmable logic controllers (PLCs) and be monitored on a real-time basis. The PLCs will notify staff if any pumps are not turning on as they should. By notifying staff of potential pump failure, the PLCs will minimize the chance of a spill which

could impact surface or groundwater. In addition, the pump stations would be visited daily by staff trained in operation and maintenance of them. In order to meet reliability requirements, a standby power source would be installed.

The Project Partners do not have a written policy addressing the provision of potable water to residents who obtain water from wells that become contaminated or for livestock that use surface water (ponds) that become contaminated. The reason for this lack of policy is that the likelihood of wells being contaminated as a result of spills is very small and the Project Partners have not previously encountered this issue. However, the Project Partners have in the past provided potable water to individuals (mostly outside the town limits but nearby) whose wells were contaminated by wastewater (from failing septic systems). Even though no previous spills have resulted in well contamination, the Project Partners have indicated they would extend this practice to address incidents where contamination was caused by sewer spills.

With proper construction and operation procedures, impacts to groundwater quality and quantity would be negligible. Depending on the number of onsite systems (septic systems) taken offline (or avoided), there may be moderate beneficial impacts to groundwater quality. Groundwater impacts from all project alternatives would be similar.

#### **Project Partners Spill Response Plan**

In the event of a spill Appendix L of the FEIS has copies of the Town of Cary's spill response plan, and local government sanitary sewer overflows plans and procedures.

#### **Project Partners Outreach Plan to Adjacent Landowners**

The Project Partners have developed a Western Wake Wastewater Management Facilities Outreach Plan to take into consideration changing needs and input from neighbors during the project implementation as well as during facility operations after construction is complete. The Project Partners will submit annual reports to the USACE December 31 of each year starting in 2010 and ending one year after the project startup, documenting the implementation of the Outreach Plan.

This is also addressed in response III.28 in Appendix A-12 of the FEIS. As noted in that response, the Town of Cary, as the lead town for the Partners, will modify its System-Wide Wastewater Collection System permit to include the new influent transmission system infrastructure. This permit is designed to minimize the risk of a spill occurring and the impacts from spills which do occur.

### **7. Proposed Compensatory Mitigation Plan**

#### **Impacts and Avoidance and Minimization**

As a result of the construction activities related to the Western Wake Regional Wastewater Management Facilities there will be temporary and permanent impacts to wetlands and streams as summarized in Table 4. The total permanent impact of this permit application is 378 linear feet (lf) of stream (232 lf of perennial and 146 lf intermittent) and 0.82 acres of wetlands. The total temporary impact of this permit application is 1,816 lf of stream (1,014 lf of perennial and

802 lf of intermittent) and 2.95 acres of wetlands. Most of these impacts are along the influent transmission lines.

**TABLE 4**  
Temporary and Permanent Stream and Wetland Impacts within the Western Wake Proposed Project Area (this permit application).

**TABLE 4**  
Temporary and Permanent Stream and Wetland Impacts within the Western Wake Proposed Project Area

	Type	Temporary Impact	Permanent Impact	Total Impacts
Western Wake WRF	Wetland	0 ac	0 ac	0 ac
	Perennial Stream	0 lf	0 lf	0 lf
	Intermittent Stream	0 lf	0 lf	0 lf
Water and Electric Utility Lines	Wetland	0.25 ac	0 ac	0.25 ac
	Perennial Stream	24 lf	0 lf	24 lf
	Intermittent Stream	196 lf	0 lf	196 lf
West Cary PS	Wetland	0 ac	0 ac	0 ac
	Perennial Stream	0 lf	0 lf	0 lf
	Intermittent Stream	0 lf	0 lf	0 lf
Beaver Creek PS	Wetland	0 ac	0 ac	0 ac
	Perennial Stream	0 lf	0 lf	0 lf
	Intermittent Stream	40 lf	0 lf	40 lf
Influent Wastewater Pipelines	Wetland	2.34 ac	0.74 ac	3.08 ac
	Perennial Stream	592 lf	150 lf	742 lf
	Intermittent Stream	356 lf	83 lf	439 lf
Effluent Force Main/ Outfall	Wetland	0.36 ac	0.08 ac	0.44 ac
	Perennial Stream	398 lf	82 lf	480 lf
	Intermittent Stream	210 lf	63 lf	273 lf
Total	Wetland	2.95 ac	0.82 ac	3.77 ac
	Perennial Stream	1,014 lf	232 lf	1,246 lf
	Intermittent Stream	802 lf	146 lf	948 lf

Data Source: Final EIS for the Western Wake Regional Wastewater Management Facility, 2009  
ac=acre; lf = linear foot

Note: Wetland and Stream impact evaluations were performed using GIS analysis for proposed infrastructure and field data collected during wetland delineation efforts, excluding the water and electric utility lines.

\*\*Numbers may not add due to rounding.

The impacts outlined in Table 4 are for the proposed project infrastructure only (this permit application). Table 5 presents the impacts for this permit application, the total stream and wetland impacts for each of the four related projects and the total impacts for the proposed project as they appear in the FEIS.

TABLE 5

Temporary and Permanent Stream and Wetland Impacts presented by each sub-element consistent with the 2009 Final EIS for the Western Wake Regional Wastewater Management Facility. **Bold items are included as part of this permit application.**

	Type	Temporary Impact	Permanent Impact	Total Impacts
<b>Western Wake Proposed Project</b>	<b>Wetland</b>	<b>2.95 ac</b>	<b>0.82 ac</b>	<b>3.77 ac</b>
	<b>Stream</b>	<b>1,816 lf</b>	<b>378 lf</b>	<b>2,194 lf</b>
Apex Beaver Creek Gravity Sewer	Wetland	6.75	2.25	9.00
	Stream	423	122	545
Cary Green Level Force Main	Wetland	0.20	0.10	0.30
	Stream	87	46	133
Cary Indian Creek Force Main	Wetland	0.16	0.08	0.24
	Stream	138	67	205
Cary Green Level and Indian Creek Gravity Sewer	Wetland	5.17	2.60	7.77
	Stream	1,229	738	1,967
Holly Springs Effluent Force Main	Wetland	0.01	0.01	0.02
	Stream	131	35	166
Total	Wetland	15.24	5.86	21.10
	Stream	3,823	1,387	5,210

<sup>a</sup> Data Source: Final EIS for the Western Wake Regional Wastewater Management Facility, 2009

ac=acre; lf = linear foot

Note: For the Western Wake Proposed Project the wetland and stream impact evaluation was performed using GIS analysis for proposed infrastructure and field data collected during wetland delineation efforts, excluding the water and electric utility lines.

\*\*Numbers may not add due to rounding.

\*\*\*Note: It is expected that the Cary Indian Creek Force Main and the Cary Green Level and Indian Creek Gravity Sewer Sections will be a single permit request from the Town of Cary.

### WRF Site Impacts

The site layout of proposed project WRF site has been developed to avoid impacts to wetland areas; Figure 4 shows the locations of surveyed wetlands on the site and the potential disturbance limits. As shown on Table 2, site development of the WRF site is expected to avoid impacts to all jurisdictional wetlands. Several of these wetlands are within the perimeter's 200-foot buffer. The buffer, which has been designed to reduce visual and noise impacts from the site, will also protect environmental resources that occur in these areas. Pursuant to Special Conditions q and r, the buffer will not be developed, except to allow access to the site for roads, utilities, and transmission lines.

The WRF entrance road off of Shearon Harris Road crosses two perennial streams and two intermittent streams. These streams will be crossed with open bottom culverts to avoid impacts to them. A schematic of a typical bridge crossing for this project is illustrated in Figure 5. The WRF site construction layout will avoid all other perennial and intermittent streams as shown on Figure 4. By using open bottom culverts and avoiding stream areas on the site, no direct impacts to streams will occur from construction and operation of the WRF.

The Project Partners plan on utilizing trenchless technology for the influent and effluent pipelines that enter and exit the WRF site; therefore, avoiding any stream impacts from these lines within the WRF site boundary.

#### Water and Electric Utility Lines

Water and electric utility lines will be constructed and routed to the WRF site as identified on Figure 10. These planned utility lines will not result in any permanent impacts to wetlands or streams. Estimates of temporary stream and wetland impacts were based on a GIS analysis of digital data including hydric soils and National Wetland Inventory data. Digital data was used due to the fact that there will be no permanent wetland or stream impacts related to the construction of the water or electric utility, as they will be constructed within or adjacent to existing ROW's and no permanent access across wetlands or streams will be required.

#### West Cary Pump Station

The West Cary Pump Station was previously permitted to provide the Town of Cary with needed service. The Project Partners do not anticipate having to expand the footprint of the West Cary Pump Station site as a part of this project. As shown in Table 2, there are no stream or wetland impacts at the West Cary Pump Station. Figure 6 shows the West Cary Pump Station site layout.

#### Beaver Creek Pump Station

The footprint of the Beaver Creek Pump Station has been sited to avoid wetland impacts. Wetland and stream delineation were completed at the same time as the pipelines, and followed the same methodology as the WRF site delineations.

There are 40 linear feet of intermittent stream on the Beaver Creek Pump Station site that are within the temporary disturbance area, depicted on Figure 7. No permanent stream impacts are expected to occur at the Beaver Creek Pump Station.

#### Transmission Infrastructure

Impacts to wetland and streams were determined based on a total pipeline easement width of 40 feet, and a permanent access corridor of 10 feet. Appendix D in the permit application contains two summary tables identifying all permanent and temporary stream and wetland impacts related to the transmission infrastructure.

Most of the pipelines for the proposed project will be installed adjacent to existing ROWs (roads, existing natural gas and electricity utility corridors). Therefore impacts to wetland areas as a direct result of constructing influent wastewater force mains and effluent force mains (which include the discharge/outfall structure and pipeline to the diffuser) will be minimized. Each

individual crossing has been evaluated for avoidance and minimization of impact to streams and wetlands, such as removing the need for a permanent access by utilizing roadways or ROWs adjacent to individual streams or wetlands. These special considerations for avoiding and minimizing permanent impacts have been noted in Table D-1 and D-2 in Appendix D of the permit application.

The influent pipelines will impact 3.08 acres (ac) of wetland (2.34 ac temporarily and 0.74 ac permanently). The effluent pipelines will impact 0.44 acres of wetland (0.36 ac temporarily and 0.08 ac permanently). Existing conditions for the influent and effluent pipelines are displayed on Figure 8 and 9, respectively.

The influent pipelines will permanently impact 233 linear feet of stream (150 lf of perennial and 83 lf of intermittent). They will temporarily impact 948 linear feet of stream (592 lf of perennial and 356 lf of intermittent). The effluent force main will permanently impact 145 linear feet of stream (82 lf of perennial and 63 lf of intermittent) and temporarily impact 608 linear feet of stream (398 lf of perennial and 210 lf of intermittent).

The Project Partners are also including design and construction techniques to minimize impacts to stream and wetlands at the transmission line crossings. All transmission lines will cross each stream at approximately a 90-degree angle to enhance stability of the line and reduce erosion. Stream crossings are considered high priority lines and would be inspected at least every six months in accordance with a State issued wastewater collection system permit. A typical stream crossing will have a minimum depth below the bed of the stream of 36 inches or greater depending on the crossing methodology used and the geotechnical analysis of the stream bed. The Project Partners have stated that all streams will be crossed following methods outlined in NC DWQ General Certification Conditions GC3625. These efforts include the use of silt fencing and temporary sediment traps. These plans will be detailed in the required Sediment and Erosion Control Plan submitted to NC Division of Land Resources (DLR).

The Project Partners will use trenchless technology where practicable. Trenchless technology is currently being considered at two stream crossings: White Oak Creek, and Beaver Creek. These crossings are known to be perennial and have high water quality and value for wildlife use. The evaluation for trenchless technology will consist of several factors including, but not limited to, USACE stream quality score, stream geomorphology, cost, engineering requirements, substrate material, and impacts to instream fauna.

When trenchless technology will not be utilized or is not practicable, appropriate BMPs will be in place following guidance from Nationwide Permit 12 on utility line crossings of streams. Following construction of stream crossings existing topography will be restored and the areas replanted with native vegetation. Water quality will be protected at stream locations by the installation of filter fabric beneath any riprap at stream crossings. These impacts will be temporary and will be minimized with proper control techniques.

## Compensatory Mitigation

During the development of the compensatory mitigation plan for this project the Project Partners investigated all options of mitigation for wetland and stream impacts. Options included the

Project Partners developing and constructing onsite and offsite mitigation, the use of existing mitigation banks and using NC Ecosystem Enhancement Program (EEP) in-lieu fee program. At the time they were considering their mitigation options there were no mitigation banks available in their area to purchase mitigation credits from. After considering these options they determined the development and construction of onsite and offsite mitigation would take too long and possibly be more expensive than purchasing credits from EEP. At the time of submitting their application the Project Partners determined that the EEP in-lieu fee program was their best option to mitigate for impacts to aquatic resources and the USACE concurred with their compensatory mitigation proposal.

33 CFR Part 332 provides guidance on Compensatory Mitigation for losses of Aquatic Resources. This guidance states that it is preferable to secure compensatory mitigation first from mitigation banks, next, in-lieu fee programs and third, permittee-responsible mitigation. At the time the Project Partners applied for their permit there was not a mitigation bank that covered the project area. On February 3, 2010, Cripple Creek Mitigation Bank became available to the public for purchasing credits to mitigate for impacts to aquatic resources in the 03030002 HUC. The proposed project will have aquatic impacts in 03030002 and 03030004 HUCs. Since the Project Partners had already started the process of purchasing mitigation credits from EEP, with USACE approval, the USACE determined that it would not be appropriate to require them to cancel their agreement with EEP and purchase mitigation credits from a mitigation bank at this time. Later permit requests will be reviewed under our guidance and a mitigation bank may be the preferred mitigation option for these future permit requests.

The proposed project (this permit application) will permanently impact approximately 0.82 acres of wetland and 378 linear feet of stream. Because there is a potential for the streams that are crossed with bottomless culverts to access WRF site to degrade over time the USACE recommended that the Project Partners consider mitigation for these potential impacts during this permit request. The Project Partners concurred with this recommendation. Each of the four stream crossings is 58 linear feet, which is a total of 232 linear feet for all four crossings. This will be added to the 378 linear feet of permanent stream impacts, for a total of 610 linear feet that will be mitigated.

As stated earlier, the Project Partners are proposing to use EEP in-lieu fee program for all mitigation requirements, this includes all future permit request. The Project Partner's compensatory mitigation plan is documented in Section 6 "Mitigation" and Appendix K of the FEIS (the EEP letters in the Appendix K have expired and new acceptance letters from EEP have been issued with an expiration date of March 17, 2011). After reviewing the quality of the stream and wetland impacts of the proposed project it has been determined that the mitigation ratios for the wetland and stream impacts will be 2:1. The Project Partners have requested 11.8 credits from NCEEP for 5.9 acres of permanent wetland impacts and 2,322 credits from EEP for 621 lf of perennial stream and 540 lf of intermittent stream impacts. For this permit requests the

USACE will accept 1.64 riparian credits for 0.82 acres of wetland impacts and 1,220 warm stream credits for 610 LF from EEP to mitigate for adverse impacts to the aquatic environment.

## **8. Other Required Coordination and Authorizations**

### **a. Cultural Resources**

See Section 6.c of the ROD for a detailed discussion on cultural resources.

### **b. Endangered Species**

In a letter dated April 9, 2010, the USFWS stated that in accordance with the Endangered Species Act (ESA) after reviewing our biological assessment (BA), and other information, they concurred with our determination that the proposed project is not likely to adversely affect Federally listed species or their habitat as defined by the ESA. See Appendix I of the FEIS for more detailed information about the BA and ESA species and their habitat.

### **c. Essential Fish Habitat**

There is no Essential Fish Habitat within the project area.

### **d. Clean Air Act.**

The project will require appropriate air quality permits from the NC Division of Air Quality. These permits will assure that the emissions from the proposed project fall below de minimis levels, so that a Clean Air Act conformity determination is not required. USACE has not received any information from regulatory authorities suggesting that air quality permits will be problematic to obtain for the project as proposed.

### **e. Clean Water Act Water Quality Certification.**

The Clean Water Act provides that the applicant must obtain from the North Carolina Division of Water Quality (NCDWQ) Section 401 water quality certification stating that the proposed project will comply with approved water quality standards. The NC DWQ issued a Section 401 water quality certification on July 16, 2010.

### **f. Coastal Zone Management Act Consistency Determination**

A CZM consistency determination is not required (project is not in a coastal county).

## **9. Consideration of Agency and Public Comments**

The USACE received numerous comments on the DEIS on the proposed action. These were fully addressed in Appendix A of the FEIS. Additional comments were received on the FEIS. My response to those comments can be found at Attachment 1 to this document. I have considered all comments prior to making my decision on this permit application.

## **10. 404(b)(1) Analysis; 40 CFR Part 230**

### **a. Factual Determinations.**

Pursuant to 40 CFR 230.11, the USACE must determine the potential short- term or long-term effects of a proposed discharge on the physical, chemical and biological components of the aquatic environment. These factual determinations shall be used in making a determination of compliance or non-compliance with the restrictions on discharge. My evaluation and factual determinations follow.

(1) Physical Substrate Determinations. Impacts to geology, mineral resources, soils and primed farm land are discussed in Section 4.7 of the FEIS. Cumulative and other impacts to soils are discussed in Section 5.2.6 in the FEIS.

All areas in the transmission line and water line easements would be disturbed to some degree during construction. Most pipelines for the proposed Project would be adjacent to existing public right-of-ways (roads and existing natural gas and electricity utility corridors). Many of the soils in these corridors were disturbed previously during construction activities for those projects.

With the exception of land that must be disturbed for pipeline corridors, and the land disturbed at the WRF site, the remainder of the land being acquired for the WRF site would remain undeveloped and the environmental resources would not be impacted.

Soils will be disturbed during construction of the Beaver Creek Pump Station and the clearing and grading for the WRF site. During grading some soil will be moved into some areas and will be removed from other areas. Thus, the location of soil types may change. During clearing and grading, some soils would be eroded, but the impacts from this would be minimized by following an approved sedimentation and erosion control plan that conforms to the requirements of the North Carolina Sedimentation Pollution Control Act of 1973 and mulching and seeding with native grasses after grading is completed. Finally, by using heavy equipment on the site, soils would be compacted.

There will be moderate impacts to soils from grading and construction activities, but these impacts will be short term and minimized through existing sedimentation and erosion control requirements.

(2) Water Circulation, Fluctuation and Salinity Determinations.

This is addressed in Sections 4.1, 4.17 and 5 of the FEIS. It is also discussed in detail in Section 6.a. of the ROD. The construction of the WRF, the Beaver Creek Pump Station, and the transmission lines and Cape Fear River outfall will temporarily impact the water circulation of streams and the Cape Fear River. The impacts may be moderate during construction, but will be minimal after each site is stabilized by implementation of existing programs. The Project Partners have designed the facility and lines to minimize the impacts as much as possible. Also, the existing “Secondary and Cumulative Master Mitigation Plans” for Apex, Cary, Holly Springs and Morrisville (see Appendix J “Impacts Master Mitigation Plan”) will help to minimize future cumulative and secondary impacts by enforcing existing local programs such as Riparian Buffer Rules, Floodplain Protection Rules, Erosion and Sedimentation Control Program and the Stormwater Program and Impervious Surface Limitations Program.

(3) Suspended Particulate/Turbidity Determinations. This is addressed in Section 4.1 of the FEIS. The construction of the proposed project will temporarily increase sediment and turbidity in adjacent waters. The Project Partners have designed the facility and lines to minimize the impacts as much as possible. Also, the existing “Secondary and Cumulative Master Mitigation Plans” for Apex, Cary, Holly Springs and Morrisville (see Appendix J “Impacts Master Mitigation Plan”) will help to minimize future cumulative and secondary impacts by enforcing existing local programs such as Riparian Buffer Rules, Floodplain Protection Rules, Erosion and Sedimentation Control Program and the Stormwater Program and Impervious Surface Limitations Program.

The impacts from the construction activities may be moderate during construction, but will be minimal after each site is stabilized by implementation of the existing programs.

(4) Contaminant Determinations. The presence and potential for release of contaminants is discussed in Section 4.10 of the FEIS and 6.f of the ROD. The potential for toxic substances impacts is similar for all project alternatives. Potential sources of toxic substances during construction activities at the WRF sites, West Cary Pump Station, Beaver Creek Pump Station site, and the transmission infrastructure include hydrocarbons from fueling operations for heavy equipment. Refueling would occur in a designated upland area to minimize the impacts to surface water from any spills that may occur in accordance with a Spill Response Action Plan. Sediment and erosion controls would aid in the control of the movement of contaminants from the construction site to surface waters.

Throughout the course of operation of the WRF, sodium hypochlorite will be stored on site for treating reclaimed water. All material safety data sheets will be maintained on site. In addition, spill containment would be used for the storage of any toxic substance. A spill prevention plan will also be in place in order to prevent and minimize the effects of a spill. In addition, a Stormwater Pollution Prevention Plan will be required by the NPDES permit.

Three regulatory programs address toxic substance release:

- NPDES Permit
- Industrial Pretreatment Program Requirements
- System-Wide Wastewater Collection System Permit

#### NPDES Permit

The NPDES permit for the new WRF will include chemical-specific water quality monitoring of influent and effluent characteristics, as well as chemical-specific toxic limits to protect water quality standards. In addition, the NPDES permit will include whole effluent toxicity standards to ensure that the treated effluent is not toxic to aquatic species or that toxicity identification and reduction plans are implemented if persistent unacceptable toxicity is exhibited.

#### Industrial Pretreatment Program Requirements

To eliminate the introduction of toxic substances into the wastewater conveyance system, the Town of Cary and the Town of Apex maintain industrial pretreatment programs in accordance with the National Pretreatment Program requirements. The National Pretreatment Program,

established by USEPA, requires local governments to apply and enforce discharge standards, issue permits to industrial wastewater dischargers and inspect and monitor the characteristics of raw wastewater and industrial wastewater discharges on a regularly-scheduled basis.

#### **System-Wide Wastewater Collection System Permit**

Sanitary sewer overflows (SSOs) are discharges of untreated sewage from wastewater collection systems. SSOs can result from a variety of causes including, but not limited to, excessive infiltration and inflow, pumping station failures, insufficient system capacity, and hydraulic restrictions caused by tree roots, debris accumulation, collapsed pipes, and excessive grease. In July 1999, the North Carolina General Assembly ratified House Bill 1160 (1999 N.C. Session Law 329) Section 11.2 of Part XI which required NCDENR to develop and implement a permit program for municipal and domestic wastewater collection systems on a system-wide basis beginning July 2000. NCDENR initiated the System-Wide Wastewater Collection System Permit program (15A NCAC 2H .0227) and the Town of Cary (Lead Agency for the Partners) has been issued a system-wide wastewater collection permit which defines requirements for system performance standards; design and construction criteria; capital improvements planning; inspection, operations and maintenance requirements; and annual reporting requirements. In accordance with the System-Wide Wastewater Collection System Permit, the Partners would be required to inspect high-priority pipelines at least every six months and pumping stations would need to be inspected at least weekly. In addition, the Partners are required to have a contingency plan for pump failure at each pump station. Appendix L-2 includes the Town of Cary's Standard Procedure for Sanitary Sewer Overflow Cleanup and Pumping Procedures and an example Pump Station Catastrophic Failure Plan for its Kit Creek Pump Station. Examples of Apex and Holly Springs plans and procedures are also included.

#### **Additional Measures**

Adverse environmental impacts from leaking or failing transmission lines are unlikely. Due to the subsurface conditions, the potential for significant infiltration or exfiltration is reduced. Construction in accordance with regulatory and building code requirements would reduce the potential for the leaking transmission lines. Lines would also be monitored annually to determine if leaks occur; critical lines would be monitored at least twice per year. The monitoring would include pressure testing, closed-circuit television and smoke testing. Monitoring may also include a series of permanent and/or potable flow meters installed throughout the system in order to perform a flow balance. SCADA systems are planned to continuously monitor flow; the flow balance would be checked daily. If the flow balance indicates leaks are occurring, further monitoring would be performed to identify the problem area and repair it.

#### **Project Partners Spill Response Plan**

In the event of a spill Appendix K of the FEIS has copies of the Town of Cary's spill response plan, and local government sanitary sewer overflows plans and procedures.

#### **Project Partners Outreach Plan to Adjacent Landowners**

The Project Partners have developed a Western Wake Wastewater Management Facilities Outreach Plan to take into consideration changing needs and input from neighbors during the project implementation as well as during facility operations after construction is complete. The

Project Partners will submit annual reports to the USACE December 31 of each year starting in 2010 and ending one year after the project startup, documenting the implementation of the Outreach Plan. This plan will give adjacent land owners the ability to quickly report any leaks or spills that could potentially contaminate the environment and minimize their impacts.

With these requirements, additional measures, spill response plan, and outreach plan to adjacent landowners there should be a negligible impact from all project alternatives in introducing toxic substances to the surrounding areas.

(5) Aquatic Ecosystem and Organism Determinations. This is addressed in Section 4.1 of the FEIS; and Sections 6.a (Streams and Wetlands Impacts) and Section 7 ((Proposed Compensatory Mitigation Plan) in the ROD. The activities associated with this permit application and the construction of the WWF, transmission lines, pump stations, and outfall to the Cape Fear River will result in direct impacts to 0.82 acres of wetlands; and 232 lf of perennial streams; and 146 lf of intermittent streams. The total compete project permanent impacts (including future permit request from municipalities) is 5.9 acres of wetland and 1,387 lf of impacts.

As discussed in the previous sections of the ROD the proposed project impacts to the aquatic ecosystem has been greatly minimized. The proposed construction of the WWF will have no direct impact to streams or wetlands with the majority of impacts wetlands and streams will occur along the transmission lines and the outfall at the Cape Fear River.

Most of the pipelines for the proposed project will be installed adjacent to existing ROWs (roads, existing natural gas and electricity utility corridors). Therefore impacts to wetland areas as a direct result of constructing influent wastewater force mains and effluent force mains (which include the discharge/outfall structure and pipeline to the diffuser) will be minimized. Each individual crossing has been evaluated for avoidance and minimization of impact to streams and wetlands, such as removing the need for a permanent access by utilizing roadways or ROWs adjacent to individual streams or wetlands. These special considerations for avoiding and minimizing permanent impacts have been noted in Table D-1 and D-2 in Appendix D of the permit application.

The influent pipelines will impact 3.08 acres (ac) of wetland (2.34 ac temporarily and 0.74 ac permanently). The effluent pipelines will impact 0.44 acres of wetland (0.36 ac temporarily and 0.08 ac permanently). Existing conditions for the influent and effluent pipelines are displayed on Figure 8 and 9, respectively.

The influent pipelines will permanently impact 233 linear feet of stream (150 lf of perennial and 83 lf of intermittent). They will temporarily impact 948 linear feet of stream (592 lf of perennial and 356 lf of intermittent). The effluent force main will permanently impact 145 linear feet of stream (82 lf of perennial and 63 lf of intermittent) and temporarily impact 608 linear feet of stream (398 lf of perennial and 210 lf of intermittent).

The proposed Project also includes design and construction techniques to minimize impacts to stream and wetlands at the transmission line crossings. All transmission lines will cross each

stream at approximately a 90-degree angle to enhance stability of the line and reduce erosion. Stream crossings are considered high priority lines and would be inspected at least every six months in accordance with a State issued wastewater collection system permit. A typical stream crossing will have a minimum depth below the bed of the stream of 36 inches or greater depending on the crossing methodology used and the geotechnical analysis of the stream bed. All streams will be crossed following methods outlined in NC DWQ General Certification Conditions GC3625. These efforts include the use of silt fencing and temporary sediment traps. These plans will be detailed in the required Sediment and Erosion Control Plan submitted to NC Division of Land Resources (DLR).

The USACE will require the use trenchless technology where practicable. Trenchless technology is currently being considered at two stream crossings: White Oak Creek, and Beaver Creek. These crossings are known to be perennial and have high water quality and value for wildlife use. The evaluation for trenchless technology will consist of several factors including, but not limited to, USACE stream quality score, stream geomorphology, cost, engineering requirements, substrate material, and impacts to in-stream fauna.

When trenchless technology will not be utilized or is not practicable, appropriate BMPs will be in place following conditions of this permit for utility line crossings of streams and wetlands. Following construction of stream crossings existing topography will be restored and the areas replanted with native vegetation. Water quality will be protected at stream locations by the installation of filter fabric beneath any riprap at stream crossings. These impacts will be temporary and will be minimized with proper control techniques.

As stated earlier, the Project Partners are proposing to use EEP in-lieu fee program for all mitigation requirements, including future permit requests. The Project Partners' compensatory mitigation plan is documented in Section 6 "Mitigation" and Appendix K of the FEIS (the EEP letters in the Appendix K have expired and new acceptance letters from EEP have been issued with an expiration date of March 17, 2011). After reviewing the quality of the stream and wetland impacts of the proposed project it has been determined that the mitigation ratios for the wetland and stream impacts will be 2:1. The Project Partners have requested 11.8 credits from NCEEP for 5.9 acres of permanent wetland impacts and 2,322 credits from EEP for 621 lf of perennial stream and 540 lf of intermittent stream impacts. For this permit requests the USACE will accept 1.64 riparian credits for 0.82 acres of wetland impacts and 1,220 warm stream credits for 610 LF from EEP to mitigate for adverse impacts to the aquatic environment. Future permit requests may require mitigation from local mitigation banks if they are available and have the appropriate credits.

I have reviewed all of the information available to me on the likely adverse effects of this action and have considered the benefits of the proposed compensatory mitigation plan as discussed above. I find that with the implementation of the compensatory mitigation plan, the construction of the WWF at site 14 and associated infrastructure (transmission lines, pump stations, and outfall on the Cape Fear River) the proposed project will have minimal adverse effect on and will not significantly degrade the aquatic ecosystem or the organisms that depend upon it.

(6) Proposed Disposal Site Determinations. Section 4 of the FEIS discusses the impacts of the construction of the proposed project. The majority of the impacts from the proposed project will be temporary. Permanent fill and mechanized land clearing impacts to streams and wetlands will be mitigated for through the NC EEP. Existing “Secondary and Cumulative Master Mitigation Plans” for Apex, Cary, Holly Springs and Morrisville (see Appendix J “Impacts Master Mitigation Plan”) will help to minimize future cumulative and secondary impacts by enforcing existing local programs such as Riparian Buffer Rules, Floodplain Protection Rules, Erosion and Sedimentation Control Program and the Stormwater Program and Impervious Surface Limitations Program. Additionally, the Section 401 Water Quality Certification contains conditions for maintaining appropriate sediment and erosion control measures. These conditions will be incorporated into any permit I issue.

(7) Determination of Cumulative Effects. Cumulative effects are discussed in Section 5 of the FEIS. Prior to colonization, the North Carolina Piedmont has been described as a mix of bottomland hardwood forests, swamps, and prairies. The few bodies of open water were most likely beaver impoundments. During colonization, mass deforestation occurred to support the transition to agriculture’s cropland and pasture. Mills and their mill ponds and races were built along creeks and rivers to support new industries. Roads and railroads crisscrossed the Piedmont to connect the growing towns and cities. For much of the Piedmont, the heavy focus on agriculture shifted towards urbanized development. As rail development occurred in the area, towns grew. The first train along the Chatham Railroad arrived in Apex in 1869, and Cary was incorporated after the Seaboard and North Carolina Railroads formed a junction there in 1871. In the early 1900s, rail service was provided to the community of New Hill by the New Hope Valley Railroad and its successors. Today’s CSX Railroad which passes through New Hill began as the Seaboard Air Line Railway in 1917.

Western Wake County remained relatively rural, particularly in the area around the proposed WRF site and its alternative locations. With the development of Research Triangle Park and the influx of new businesses to the region, the population of Wake County has steadily increased. The communities in western Wake County began to experience rapid population increases in the mid-1980s and 1990s. As this growth has occurred, more land has been converted from agricultural and rural land uses to urban and low density residential development.

Past major projects that were developed in the area include Jordan Lake, Harris Lake and the Shearon Harris Nuclear Power Plant, the CSX railroad, the widening of US 1, the completion of the I-440 beltline, construction of NC I 540 from I-40 to US 55, and Dixie Pipeline (Figure 5-2). In addition, the South Wake Sanitary Landfill and construction and demolition landfill were recently built in Apex and Holly Springs along US 55.

Jordan Lake was created by the USACE for flood control, recreation, protection of downstream water quality, water supply, and fish and wildlife habitat. The USACE began filling the lake in late 1981. The creation of the lake displaced people who either lived near, owned, or farmed land within the lake footprint. The alteration of land use to open water also facilitated the creation of an open water habit and new fringe wetlands and other habitat types which replaced streams and riparian and bottomland forests. The western portion of Wake County including

portions of Morrisville, Cary, and Apex drains to Jordan Lake. Jordan Lake supplies each of these communities with drinking water.

Harris Lake was impounded in 1983 to provide cooling water for the Shearon Harris Nuclear Power Plant and to provide public recreation. The lake and surrounding lands are owned by Progress Energy. Progress Energy leases much of its land to the Wildlife Resources Commission as gamelands; land is also leased to Wake County for the Harris Lake County Park. Progress Energy has developed power-line corridors to transmit energy to its customers. The creation of Harris Lake also displaced people from their homes and farms. The impacts are similar to those described for Jordan Lake above.

Dixie Pipeline transports propane from Texas to Georgia and North Carolina. One of its pipelines parallels CSX railroad tracks in the vicinity of the proposed Project and alternative WRF sites. Construction and upkeep of the pipeline corridors has caused a land use change from forested lands to maintained grass vegetation.

The North Carolina Department of Transportation (NCDOT) widened US Highway 1 in the early 1980s. US Highway 1 lies just to the south of WRF Sites 14 and 30 and north of WRF Sites 19 and 21/23. The widening of US Highway 1 has facilitated commercial and residential development along its corridor. The NCDOT completed I-440 in 1984. This highway starts at the junction of US Highway 64 (US 64), US Highway 1, and I-440 and continues north along the eastern boundary of the study area. In 2007, the NC 540 section of the I-540 outer loop from NC-55 to I-40 was completed. This roadway is located in the northeastern portion of the study area. There are plans to extend the roadway throughout the study area; the planned route was included in the local governments' land use plans and in their SCI Plans, and future growth impacts of that roadway are addressed in those documents.

Table 6 shows the quantities of impacted and mitigated wetlands and streams associated with permitted projects between 2000 and 2006 timeframe.

TABLE 6  
*Impacted and Mitigated Wetlands and Streams – 2000 to 2006*

Permit Year	Impacted		Mitigated	
	Wetland (Acres)	Stream (Feet)	Wetland (Acres)	Stream (Feet)
2000	2.28	465	0.00	0
2001	1.24	793	1.59	544
2002	0.45	982	0.11	0
2003	0.49	7,731	0.12	1,956
2004	0.89	774	0.01	259
2005	1.29	566	1.99	0
2006	2.35	577	2.93	904
<b>Total</b>	<b>8.99</b>	<b>11,888</b>	<b>6.75</b>	<b>3,663</b>

The Project Partners have designed the facility and lines to minimize the impacts to the aquatic environment as much as possible. Also, by implementing the existing “Secondary and Cumulative Master Mitigation Plans” for Apex, Cary, Holly Springs and Morrisville (see Appendix J “Impacts Master Mitigation Plan”) the Partners will minimize future cumulative and secondary impacts by enforcing existing local programs such as Riparian Buffer Rules, Floodplain Protection Rules, Erosion and Sedimentation Control Program and the Stormwater Program and Impervious Surface Limitations Program.

(8) Determination of Secondary Effects. Secondary effects are discussed in 5.1.7.2.1 in the FEIS. Growth related impacts of future planned infrastructure projects were described in Section 5 of the SCI Master Mitigation Plans (Appendix J). These Plans included the construction of the proposed WRF and other infrastructure such as I-540 in the service area; the Towns’ Land Use Plans identified the corridor and located higher density development around its interchanges. In addition to the secondary impacts on environmental resources there will also be secondary impacts to the human environment. Higher density development could occur that would not be supported without the provision of water and sewer. This higher density development would impact the rural character of the community; larger plats could be subdivided. With the addition of water and sewer availability, the value of land would likely increase. Commercial businesses may be built to support the residential development; services such as additional schools and churches could also be planned in the area. Higher density development may result in higher traffic volumes in this portion of the County and noise levels may increase. However, any increase in noise would need to comply with local ordinances.

The Project Partners have designed the facility and lines to minimize the impacts to the aquatic environment as much as possible. By implementing the existing “Secondary and Cumulative Master Mitigation Plans” for Apex, Cary, Holly Springs and Morrisville (see Appendix J “Impacts Master Mitigation Plan”) the Partners will minimize future cumulative and secondary impacts by enforcing existing local programs such as Riparian Buffer Rules, Floodplain Protection Rules, Erosion and Sedimentation Control Program and the Stormwater Program and Impervious Surface Limitations Program.

b. Restrictions On Discharge

(1) Least Environmentally Damaging Practicable Alternative (LEDPA).

The 404(b) (1) Guidelines Restrictions on Discharge (40 CFR Part 230.10) specify that no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem. Part 230.10(a)(2) defines practicable as “available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall project purpose.” The determination of the LEDPA must be made without considering compensatory mitigation.

The agreed upon purpose and need for this action is “To provide the foundation for regional wastewater management service capacity to meet existing and forecasted demand in the project service area and to comply with the requirements of the IBT certificate and the Town of Holly Springs’ commitment to relocate its NPDES discharge from Utley Creek.” It is noteworthy that

the NEPA EIS process has taken over three years of evaluation and review before reaching this decision point. Additional permitting time may be required if this or any future permit is elevated pursuant to 33 U.S.C.A. Section 404(q) or vetoed pursuant to 33 U.S.C.A. Section 404 (c).

(2) Practicability Evaluation. Section 2 of the FEIS Section 5.b of the ROD discusses the process of alternative selection and my practicability determinations. All of the alternatives carried forward for detailed study were determined to be logistically and technologically practicable. The No Action Alternative was also brought forward for further analysis for comparison purposes only. The No Action Alternative assumes that there is no new regional wastewater system and that the area to be served by the proposed Project would continue to be developed primarily as low density residential development served by on-site water and wastewater systems. The No Action Alternative does not meet the project purpose and need because it would not allow Cary, Apex, and Morrisville to meet the mandate in their IBT certificate and it would not provide the necessary capacity for future wastewater treatment demands.

The proposed project WRF site 14, and Project Alternative A (WRF 19), Project Alternative B (WRF 21/23) and Project Alternative C (WRF 30) were all evaluated in detail and none of them have any major impacts on the resources evaluated. Each alternative has some aquatic impacts that are minor to moderate. Overall, the direct impacts from each project alternative are similar. The temporary and permanent direct impacts include all aspects of the project including the pump stations, transmission lines, utility lines, WRF, and outfall. The majority of the transmission line infrastructure is identical for each project alternative; the main difference between the various alternatives is the WRF site itself and the transmission and utility lines in close proximity to an individual WRF site. The impacts to streams, wetlands, and floodplains at each WRF site are similar since the layouts were designed to avoid and minimize impacts to these resources. Bottomless culverts are planned to be used for any road crossings into the alternative WRF sites. Section 4 of the FEIS and Section 5.b. of the ROD discloses the impacts of each alternative. While the impacts to waters of the US are similar for all alternatives WRF Site 14 has the least amount of impacts to waters of the US.

The proposed project and all of the alternatives have similar, relatively minor impacts to the aquatic environment. The applicant's proposed WRF at site 14 has no direct permanent impacts to the wetlands and streams, and I find the Partners' proposed project to be the Least Environmentally Damaging Practicable Alternative.

Based on the record before me, considering the amount of impacts to the aquatic environment for WRF site 14, along with the proposed mitigation and conservation measures I find that the project, as proposed, complies with the Clean Water Act 404(b)(1) Guidelines.

c. Degradation of Waters of the United States

The 404(b)(1) guidelines state that the USACE may not issue a permit if it will result in significant degradation to the waters of the US. In making this decision, my key focus is on the effect of the impacts on human health and welfare; life-stages of aquatic life such as plankton,

fish and shellfish and other wildlife dependant on the aquatic ecosystem; special aquatic sites; aquatic ecosystem diversity, productivity and stability; and recreational, aesthetic and economic values (40 CFR § 230.10(c)).

The affected environment and the potential impacts, both direct and indirect, have been thoroughly examined in the FEIS. The likelihood and magnitude of these impacts are further discussed above. Indeed this authorization will affect both upland and wetland habitats as well as streams. The proposed project WRF site 14, and Project Alternative A (WRF 19), Project Alternative B (WRF 21/23) and Project Alternative C (WRF 30) were all evaluated in detail and none of them have any major impacts on the aquatic resources evaluated. Each alternative has some impacts that were moderate. Overall, the direct impacts from each project alternative are similar. The temporary and permanent direct impacts include all aspects of the project including the pump stations, transmission lines, utility lines, WRF, and outfall. The majority of the transmission line infrastructure is identical for each project alternative; the main difference between the various alternatives is the WRF site itself and the transmission and utility lines in close proximity to an individual WRF site. The impacts to streams, wetlands, and floodplains at each WRF site are similar since the layouts were designed to avoid and minimize impacts to these resources. Bottomless culverts are planned to be used for any road crossings into the alternative WRF sites. Section 4 of the FEIS and Section 5.b. of the ROD discloses the impacts of each alternative to waters of the US. While the impacts are similar for all alternatives, WRF Site 14 has the least amount of impacts to waters of the US.

The Project Partners have designed the facility and lines to minimize the impacts to the aquatic environment as much as possible. By implementing the existing “Secondary and Cumulative Master Mitigation Plans” for Apex, Cary, Holly Springs and Morrisville (see Appendix J “Impacts Master Mitigation Plan”) the Partners will minimize future cumulative and secondary impacts by enforcing existing local programs such as Riparian Buffer Rules, Floodplain Protection Rules, Erosion and Sedimentation Control Program and the Stormwater Program and Impervious Surface Limitations Program.

The Project Partners are proposing to use EEP in-lieu fee program for all mitigation requirements, this includes all future permit request. The Project Partners’ compensatory mitigation plan is documented in Section 6 “Mitigation” and Appendix K of the FEIS (the EEP letters in the Appendix K have expired and new acceptance letters from EEP have been issued with an expiration date of March 17, 2011). After reviewing the quality of the stream and wetland impacts of the proposed project it has been determined that the mitigation ratios for the wetland and stream impacts will be 2:1. The Project Partners have requested 11.8 credits from NCEEP for 5.9 acres of permanent wetland impacts and 2,322 credits from EEP for 621 lf of perennial stream and 540 lf of intermittent stream impacts. For this permit requests the USACE will accept 1.64 riparian credits for 0.82 acres of wetland impacts and 1,220 warm stream credits for 610 LF from EEP to mitigate for adverse impacts to the aquatic environment. Future permit requests may require mitigation from local mitigation banks if they are available and have the appropriate credits.

Again, it is important to acknowledge that a project of this size with relatively small amounts of wetland and stream impacts would not have a significant impact to the aquatic environment. As

stated earlier the stream and wetland impacts were estimated to be greater at the beginning of the EIS process, but during the EIS process the project was modified to minimize the impacts as much as possible.

I have reviewed all of the information available to me on the likely adverse effects of this action and have considered the benefits of the proposed compensatory mitigation plan as discussed above. I find that with the implementation of the compensatory mitigation plan, the construction of the WRF at site 14 and associated infrastructure (transmission lines, pump stations, and outfall on the Cape Fear River) the proposed project will have minimal adverse effect on and will not significantly degrade the aquatic ecosystem or the organisms that depend upon it.

After consideration of the above factual determinations in light of the information contained in the FEIS and the overall record for this case, it is my determination that with the implementation of the attached Special Conditions, including full and successful completion of the compensatory mitigation plan, authorization of the proposed project WRF Site 14 will not cause or contribute to significant degradation of the waters of the US.

d. Avoidance and Minimization of Impact. The alternative selection process is thoroughly described in Section 2 of the FEIS.

Pursuant to 40CFR Part 230.10(d) I have considered whether all appropriate and practicable steps have been taken to minimize potential adverse effects to the aquatic ecosystem and in accordance with the 1990 Memorandum of Agreement between EPA and the USACE regarding the determination of mitigation under the Clean Water Act 404(b)(1) guidelines, I have first considered avoidance through the determination of the least environmentally damaging practicable alternative and then considered further steps to minimize impacts including further reduction of direct impacts as well as temporal minimization of impacts through permit conditions.

As discussed in the previous sections of the ROD the proposed project impacts to the aquatic ecosystem has been greatly minimized. The proposed construction of the WWF will have no direct impact to streams or wetlands with the majority of impacts wetlands and streams will occur along the transmission lines and the outfall at the Cape Fear River.

Most of the pipelines for the proposed project will be installed adjacent to existing ROWs (roads, existing natural gas and electricity utility corridors). Therefore impacts to wetland areas as a direct result of constructing influent wastewater force mains and effluent force mains (which include the discharge/outfall structure and pipeline to the diffuser) will be minimized. Each individual crossing has been evaluated for avoidance and minimization of impact to streams and wetlands, such as removing the need for a permanent access by utilizing roadways or ROWs adjacent to individual streams or wetlands. These special considerations for avoiding and minimizing permanent impacts have been noted in Table D-1 and D-2 in Appendix D of the permit application.

The influent pipelines will impact 3.08 acres (ac) of wetland (2.34 ac temporarily and 0.74 ac permanently). The effluent pipelines will impact 0.44 acres of wetland (0.36 ac temporarily and

0.08 ac permanently). Existing conditions for the influent and effluent pipelines are displayed on Figure 8 and 9, respectively.

The influent pipelines will permanently impact 233 linear feet of stream (150 lf of perennial and 83 lf of intermittent). They will temporarily impact 948 linear feet of stream (592 lf of perennial and 356 lf of intermittent). The effluent force main will permanently impact 145 linear feet of stream (82 lf of perennial and 63 lf of intermittent) and temporarily impact 608 linear feet of stream (398 lf of perennial and 210 lf of intermittent).

The proposed Project also includes design and construction techniques to minimize impacts to stream and wetlands at the transmission line crossings. All transmission lines will cross each stream at approximately a 90-degree angle to enhance stability of the line and reduce erosion. Stream crossings are considered high priority lines and would be inspected at least every six months in accordance with a State issued wastewater collection system permit. A typical stream crossing will have a minimum depth below the bed of the stream of 36 inches or greater depending on the crossing methodology used and the geotechnical analysis of the stream bed. All streams will be crossed following methods outlined in NC DWQ General Certification Conditions GC3625. These efforts include the use of silt fencing and temporary sediment traps. These plans will be detailed in the required Sediment and Erosion Control Plan submitted to NC Division of Land Resources (DLR).

The Project Partners will use trenchless technology where practicable. Trenchless technology is currently being considered at two stream crossings: White Oak Creek, and Beaver Creek. These crossings are known to be perennial and have high water quality and value for wildlife use. The evaluation for trenchless technology will consist of several factors including, but not limited to, USACE stream quality score, stream geomorphology, cost, engineering requirements, substrate material, and impacts to instream fauna.

When trenchless technology will not be utilized or is not practicable, appropriate BMPs will be in place following guidance from Nationwide Permit 12 on utility line crossings of streams. Following construction of stream crossings existing topography will be restored and the areas replanted with native vegetation. Water quality will be protected at stream locations by the installation of filter fabric beneath any riprap at stream crossings. These impacts will be temporary and will be minimized with proper control techniques.

I find that, with the minimization measures discussed above, the Project Partners have taken all appropriate and practicable steps to minimize adverse impacts to the aquatic ecosystem.

## **11. Public Interest Review**

a. Conservation. Avoidance and minimization efforts, as discussed above and in Section 4 of the FEIS, have resulted in a project that minimizes impacts to the aquatic environment to the maximum extent practicable. The authorization of the construction of WWF Site 14 with the appropriate conditions allows for the construction of the wastewater facility and associated infrastructure resulting in only minimal environmental impacts.

b. Economics. This is discussed in Section 4.14.1 and 4.14.2 of the FEIS. Landowners adjacent to the WWF had concerns that the construction of the WRF could potentially lower the property values of homes and land around the WRF site. To evaluate whether a new WRF would result in decreased property values, Wake County Revenue Department data was examined to determine if the Partners' other WRFs and WWTPs have negatively impacted property values. After analyzing this data it was determined that the impacts were negligible and maybe beneficial (public has opportunity to hook up to sewer and no longer use a septic system). An economical benefit to the construction of the WWF and associated infrastructure will be job opportunities for local and regional construction companies.

c. Aesthetics. This addressed in Section 4.11 of the FEIS and 6.e. of the ROD. Visual/aesthetic impacts are expected to be minor. The facility is centrally located on the site 14 to maximize the distance from the preliminary treatment facility to the nearest residence. The closest residence to the WRF site 14 is approximately 1,550 feet.

The 200-foot mostly-forested perimeter buffer provides a vegetated separation between the WRF facilities and the property boundary, which also helps minimize impacts. The buffer will be cleared for approximately 40 feet where the pipelines cross it for pipeline inspection and maintenance. In addition, all building heights will conform to local ordinances.

The Proposed Project WRF Site (Site 14) is located across Old US Highway 1 from the New Hill Historic District. The Town of Apex's ordinance requires that no building on the WRF site be greater than 36 feet in height. Because of the building height requirements, 200-foot mostly-forested perimeter buffer (not in the pipeline corridor), and the raised railway bed between the New Hill Historic District and the Proposed Project WRF Site (Site 14), the proposed WRF should not be visible from the New Hill Historic District when viewed from ground level.

Another potential aesthetic impact is that of lights at the WRF site on the night sky. Because construction would be primarily limited to daylight hours, virtually no temporary impacts to light are anticipated. Permanent light impacts to the communities near the WRF site include possible light-spill on adjacent properties due to street and task lighting installed at the WRF. Task lighting at specific WRF components would be directed toward the task and limited in the span of illumination. The lights would be configured to minimize light spill and conform to local government ordinances. Only lights required for safety and security would remain on all night. The central location of the facilities on the site and the 200-foot perimeter buffer also prevent light spill. Light-spill impacts to the community are expected to be negligible because of these proposed features of the WRF. No permanent lights are planned along the transmission line corridors.

With these proposed mitigation measures, there would be a negligible aesthetic/visual impact from all project alternatives.

d. General environmental concerns. Sections 4.1; 4.2; 4.3; and 4.4 of the FEIS discuss the likely affects of the project on environmental resources. The environmental impacts from the proposed project have been minimized through design, and existing programs. The majority of the impacts from the proposed project will be temporary. Existing "Secondary and

Cumulative Master Mitigation Plans” for Apex, Cary, Holly Springs and Morrisville (see Appendix J “Impacts Master Mitigation Plan”) will help to minimize future cumulative and secondary impacts by enforcing existing local programs such as Riparian Buffer Rules, Floodplain Protection Rules, Erosion and Sedimentation Control Program and the Stormwater Program and Impervious Surface Limitations Program. Permanent fill and mechanized land clearing impacts to streams and wetlands will be mitigated for through the NC EEP. The implementation of the compensatory mitigation plan will ensure that any permanent environmental impacts are adequately offset.

e. Wetlands. This is discussed in Sections 3 and 4 of the FEIS. See Section 6.a. on “Streams and Wetlands” in the ROD for a detailed discussion on this issue. Permanent fill and mechanized land clearing impacts to streams and wetlands will be mitigated for through the NC EEP. The implementation of the compensatory mitigation plan will ensure that any permanent environmental impacts are adequately offset.

f. Historic properties. This is discussed in Section 4.13 of the FEIS. See Section 6.c. in the ROD on the “Construction of the WRF at Site 14 and Impacts to the New Hill Historic District” for a detailed discussion on this issue. The USACE will include SHPO’s conditions in the permit so the proposed project will not adversely affect the New Hill Historic District.

g. Fish and wildlife values. This is discussed in Sections 4.2 and 4.3 of the FEIS. There will be temporary impacts to fisheries and wildlife resources during the construction of the project. The implementation of proper construction techniques and the existing “Secondary and Cumulative Master Mitigation Plans” for Apex, Cary, Holly Springs and Morrisville (see Appendix J “Impacts Master Mitigation Plan”) will minimize future cumulative and secondary impacts to these resources. This includes existing local programs such as Riparian Buffer Rules, Floodplain Protection Rules, Erosion and Sedimentation Control Program and the Stormwater Program and Impervious Surface Limitations Program.

In October, 2009, the USACE sent a biological assessment with a determination that the proposed project may affect/not likely to adversely affect Federally protected species and their habitat pursuant to the Endangered Species Act. In a letter dated April 9, 2010, the USFWS concurred with the USACE assessment that the proposed project is not likely to adversely impact any Endangered Species Act listed species or their critical habitat.

h. Flood hazards and Floodplain values. This is addressed in Section 4.13 of the FEIS. Installation of the pipelines would involve temporary disturbances within FEMA regulated 100-year floodplains, with post-construction grades returned to pre-construction conditions. Floodplain function would not be permanently impacted by construction and operation of the influent wastewater pipelines and effluent force mains. The influent wastewater pipelines and effluent force mains of the proposed Project and three alternative projects have differing amounts of temporary floodplain disturbances due to slight variations in their proposed corridors.

The effluent outfall structure would be located within FEMA regulated 100-year floodplains, and be designed to withstand a 100-year flood event. The structure would be a headwall discharge

with riprap stabilization along the bank of the Cape Fear River. Topographic and floodplain disturbance would be temporary during installation of the pipeline with post-construction grades restored to pre-construction conditions. The temporary disturbance associated with the discharge structure and related facilities (gravel parking lot) are included in the acreage of the effluent force mains. There is potential for the outfall structure and related facilities to cause a permanent change to topography due to grading.

There would be negligible impacts to floodplains from all project alternatives. There would be moderate impacts to topography from grading for all project alternatives. Temporary disturbances to the 100-year floodplain have been estimated for the four project alternatives. For Site 19, the bridge improvements on Friendship Road would permanently impact 0.1 acres of floodplain. At the Beaver Creek pump station, 0.2 acres of permanent impacts to floodplains would occur. FEMA would issue a Conditional Letter of Map Revision or a Letter of Map Revision for the project; flooding impacts to downstream properties would not occur. No other structures would be placed in the floodplain for any alternative, and floodplain function would be restored. Floodplain function would not be permanently impacted by construction and operation of the WRF. There would be negligible impacts to floodplains for all project alternatives.

i. Land use. This addressed in Section 4.5 of the FEIS. There would be a negligible impact on land use zoning from all project alternatives.

The total land area being acquired for the WRF varies according to the selected project alternative. Less than half of the land area at any of the WRF sites would be built upon. The balance of the land being acquired for any WRF site would remain undeveloped and the environmental resources would not be impacted. Existing land cover would be modified from predominantly forested land to a utility use on the portion that would be developed. Any current food or fiber production activities would cease on the WRF site. There are active agricultural operations on WRF Site 30. In the recent past, agricultural activity has occurred on WRF Sites 14 and 19, but there are no current agricultural activities on either site. There was no evidence of recent agriculture on WRF Site 21/23 during site visits.

It is assumed that all areas in the pipeline easements, which range from 188 acres to 215 acres, depending on the project alternative, have the potential for disturbance. Most pipelines associated with the proposed Project would be adjacent to existing public ROWs (roads and existing natural gas and electricity utility corridors), which should minimize impacts on land cover.

Upon completion of pipeline installation, a permanent easement would be required along all pipeline alignments to allow for unobstructed access to the pipelines for routine inspection and maintenance. The utility line easements have also been sited to minimize impacts. In general, existing land uses would continue along the utility line easements. The exception to this is where they are along forested land; impacts to forested land would be permanent.

The West Cary Pump Station currently exists so impacts to land cover will be minimal. The entire site including the existing developed portion of the site will impact 2 acres consisting mainly of scrub/shrub.

The total land area being disturbed for the Beaver Creek Pump Station is 3.6 acres, with 2.5 acres being built upon for new facilities. Land cover data shows the existing land use is primarily forest. The BCPS project area would be modified to a utility use. The remainder of the site would continue to be forested.

There would be a moderate impact on the forested land cover from all project alternatives at the WRF sites; since Sites 19 and 21/23 have been recently cleared, impacts to forest resources on those sites would be lower than for the other two sites. In the context of the entire project area, there would be a negligible impact to food and fiber production.

In general, existing land uses would continue along the utility line easements. The exception to this is where they are along forested land; impacts to forested land would be permanent.

j. Navigation. This discussed in Section 4.12.1.2 of the FEIS. The proposed bank discharge structure will have a negligible impact to navigation in the Cape Fear River.

k. Shore erosion and accretion. This is discussed in Section 4.17 of the FEIS. All project alternatives discharge to the Cape Fear River through a bank discharge. The hydraulics of the Cape Fear River would change in the vicinity of the discharge pipe, and there is potential for erosion in the vicinity of the outfall. By following proper construction and maintenance procedures, there would be a negligible impact to the Cape Fear River bank from the bank discharge.

l. Recreation. This is discussed in Section 4.6 of the FEIS. Impacts to hunting opportunities would occur during construction and operation of the transmission infrastructure. Installation of the pipelines would temporarily displace several game species and likely reduce the hunting success in the area surrounding the pipeline easement. The influent wastewater pipelines would temporarily disturb some areas of Jordan Gamelands (and Harris Gamelands in the case of Site 30), and also Federally (USACE) owned land. The effluent force mains for the project alternatives, which vary in alignment slightly, may temporarily affect some areas of the Harris and Chatham Gamelands.

A permanent easement along all pipeline alignments would be required to allow for unobstructed access to the pipelines for routine inspection and maintenance. After construction, gameland areas would be restored to their full functionality as a recreational resource. Easement maintenance may improve hunting opportunities as species use these clearings along the pipeline easements for movement and forage activities.

All project alternatives would impact federal lands around Jordan Lake where the influent transmission line crosses Beaver Creek. No other Federal land impacts are anticipated in other project areas.

During construction, the influent wastewater pipelines would also temporarily impact parks and open space. These impacts are along the boundaries of these parks and, after construction, the parks would be restored to their full functionality as a recreational resource. A permanent

easement along all pipeline alignments would be required to allow for unobstructed access to the pipelines for routine inspection and maintenance; permanent impacts to the parks and open space amount to 4.2 acres along the influent pipelines. The parks that may be impacted include: West Cary Park, ATT Park, a greenway, Apex Nature Park, Apex greenway, and Kelly Road Park. During final design, some of these park impacts may be avoided. The proposed utility lines would not impact parks for any of the project alternatives.

The discharge structure would likely not permanently affect recreation on the Cape Fear River. One reason a bank discharge was selected over a diffuser was to minimize impacts to recreational boating. The NCWRC leases gamelands from Progress Energy, and have a parking area and recreational access near the outfall.

Construction of the outfall structure could also temporarily impact fishing. Once construction is completed, recreational fishing should not be impacted.

Raven Rock State Park is located approximately 5 miles downstream of the proposed outfall and is used for fishing and canoeing. The effluent limits that would be included in the NPDES permit will protect fishable and swimmable uses within the Cape Fear River, and recreation in Raven Rock State Park will not be impacted. None of the project alternatives would impact land use within the park, and thus there would be not impacts to the public enjoyment of the park or its plant and animal populations.

There are no instances of Federal lands, parks, open space, gamelands, or Significant Natural Heritage Areas (SNHAs) at the Beaver Creek Pump Station. There are no permanent impacts to Federal lands, parks, open space, gamelands, or SNHAs along the utility corridors for any of the project alternatives.

There would be temporary impacts to parks, open space, Federal lands, and gamelands from all project alternatives. In the context of the entire project area, there would be a negligible impact to parks and open space.

The access road from Shearon Harris Road to WRF Site 14 will cross Harris Gamelands, which are owned by Progress Energy. It is anticipated that the Partners will exchange a section of the Progress Energy parcel for the access road (or obtain an easement) and convert it to non-gamelands thus removing approximately 5.6 acres of gamelands. These gamelands would be moderately impacted by the WRF and its facilities. There are no instances of Federal lands, parks, open space, gamelands, or Significant Natural Heritage Areas along the water and electric line corridors.

Noise from construction activities would likely cause temporary displacement of game species. The remaining gamelands may have negligibly beneficial impacts due to improved hunting opportunities along maintained pipeline easements and along the fringe of disturbance limits.

WRF Site 19 is partially on the Shearon Harris Longleaf Pine Forest SNHA. However, the SNHA is outside of the WRF layout's limits of disturbance. Most of the overlap occurs in the 200-foot buffer. The WRF layout for Site 19 avoids the SNHA, resulting in negligible impacts

to the SNHA from the WRF and its facilities. Utility lines will temporarily impact a small area of the gamelands and SNHAs.

There are no instances of Federal lands, parks, open space, gamelands, or SNHAs at WRF Site 21/23. Therefore, construction and operation of the WRF on this site would have no impacts on these types of public land. Utility lines will temporarily impact a small area of the gamelands and of SNHAs.

WRF Site 30 is partially on Harris Gamelands. There will be temporary impacts to gamelands due to utility lines. The WRF layout for Site 30 avoids all but 1 acre of permanent impact to the gamelands. The maintenance of this corridor may improve hunting opportunities as species use these clearings along the pipeline easements for movement and forage activities. Therefore, the impacts from the WRF and its facilities may be moderately beneficial to the gamelands.

Under the previous SEPA documentation, NCWRC indicated that construction at Site 30 would lead to greater habitat fragmentation (Bryant, 2006). Specifically, their comments indicated that there would be a greater loss of connectivity between the Jordan and Harris Lake gamelands for Site 30 than for Site 14. The proposed layout at WRF Site 30 avoids impacts to gamelands; however, the use of the area as gamelands will be lost.

Noise from construction activities would likely cause temporary displacement of game species. Current NCWRC regulations should protect workers on the WRF site, and no special measures would need to be enacted (Wilson, 2005). The WRF and its facilities would have a negligible impact on the remaining gamelands.

#### Significant Natural Heritage Areas

The Shearon Harris Longleaf Pine Forest SNHA, which is adjacent to the Holly Springs Effluent Force Main for all project alternatives, would have 0.3 acres of direct impact from Project Alternate B's (Site 19) Holly Springs Effluent Force Main. Although the SNHA lies partially within the boundaries of the Project Alternate B WRF Site (Site 19), the site layout for Site 19 (Figure 4-2) avoids the SNHA. The utility lines also impact 0.4 acres of SNHA associated with building the WRF at Site 19 or Site 21/23. There likely would be negligible impacts to the SNHA from the Holly Springs Effluent Force Main and utility lines.

Two SNHAs would be directly impacted at the downstream end of the Western Wake Effluent Force Main and at the outfall structure. The discharge pipeline easement area would result in the permanent impact of 2.2 acres of the Cape Fear River/Buckhorn Levees and the Upper Cape Fear Aquatic Habitat SNHAs. By following proper construction procedures and building a state of the art treatment plant with low NPDES permit limits, the impacts to these SNHAs would be negligible.

m. Water supply and conservation. This is discussed in Section 4.1.1.1.1 of the FEIS. The Partners are working collaboratively to collect, treat, and discharge wastewater from their communities and the Wake County portion of Research Triangle Park (RTP South). As part of this collaborative effort, the Partners are also addressing both a regulatory mandate and recommendation. The regulatory mandate that has been issued by the North Carolina

Environmental Management Commission (NCEMC) addresses an inter-basin transfer (IBT) by the Towns of Apex, Cary, and Morrisville. This mandate requires the towns to return water to the Haw or Cape Fear River Basin after 2010 and includes a maximum day transfer of 24 mgd. The Partners are currently meeting the conditions of the IBT through an Inter-local Agreement with Durham County in which they transfer a portion of the wastewater that will eventually be treated by the proposed WRF to the Durham County Triangle WWTP which discharges to Northeast Creek in the Haw River sub-basin. The Inter-local Agreement allows for this transfer until June 30, 2014 at which time, a new WRF will be required to meet the conditions of the IBT. In addition, the NCDENR Division of Water Quality (NCDWQ) strongly recommended the removal of Holly Springs' wastewater discharge from Utley Creek.

The WRF may be beneficial to downstream drinking water supplies based on the way Jordan Lake is managed with a water quality pool and a water supply pool. Flow that is released from Jordan Lake for downstream purposes is released from the water quality pool of the reservoir. During low flow conditions, the amount of water released is based on meeting a low flow target at the USGS gage at Lillington, downstream of the proposed discharge location. The source of water for several of the Partners is the water supply pool of Jordan Lake. The discharge from the proposed facility will actually result in an augmentation of the water quality pool from the water supply pool by reducing the amount of water that needs to be released from the water quality pool to meet the flow target. This will increase the reliability (based on percentage of time) for meeting the flow target at Lillington, a benefit for downstream drinking water supplies. This benefit has been demonstrated by the North Carolina Division of Water Resources (NCDWR) Cape Fear River Basin Hydrologic Model. NCDWR is updating the model and has based the model on 75 years of data (1930 – 2004). They ran scenarios for 2003, 2030, and 2050. The model shows that the USACE would operate the lake at stage 0 (water quality pool at 80 to 100 percent) the majority of the time for all scenarios. Of the water use scenarios evaluated, the 2003 scenario showed the highest overall percent time (81.8 percent) that the water quality pool at stage 0, and the 2050 water use scenario showed the lowest (77.2 percent). Severe droughts where the USACE will operate the lake under stage 3 (water quality pool is 20-40 percent full) occur 2.1 percent of the time under the 2003 scenario, 2.4 percent of the time under 2030 demands, and 4.4 percent of the time under 2050 demands. The model also shows that on occasion the largest draw-downs in Jordan Lake's water quality pool occur under the 2003 demands. NCDWR indicates that this is likely because the Western Wake WRF discharge helps meet the target flow at Lillington so less water needs to be released from Jordan Dam under these conditions (NCDWR, 2009).

The proposed Project would have a negligible impact on the Cape Fear River. There are no distinctions between the project alternatives in regard to impacts upon the Cape Fear River.

n. Water quality. The Clean Water Act provides that the applicant must obtain from the North Carolina Division of Water Quality (NCDWQ) Section 401 water quality certification stating that the proposed project will comply with approved water quality standards. The NC DWQ issued a Section 401 water quality certification on July 16, 2010.

o. Energy needs. This discussed in Section 4.15 of the FEIS. Each project alternative would have similar energy needs. Alternatives with longer force main routes would

require slightly more energy for pumping. Electric, gas, and water utilities will need to be extended to the proposed Western Wake WRF facilities for operational purposes. The Town of Apex plans to run a water pipeline to the proposed WRF; this pipeline will generally be constructed along road ROWs or as close as feasibly possible to the ROW. Impacts as a result of the water pipeline installation will be minimized because the pipeline will be installed in areas that have been previously disturbed. Power lines will be installed to the proposed WRF and pump stations for operational purposes. Overhead lines will reduce the environmental impact as they can be placed in such a manner to avoid impacts and any substation required would be small and placed in such a way to avoid or minimize environmental disturbances. A natural gas pipeline will also need to be installed to serve the new WRF. This line would be installed as close as possible to ROWs. The Partners plan to install the gas pipeline in the electric or water corridor into the WRF site.

For the proposed Project (Site 14), the Project Partners have agreed to provide water and wastewater service to the adjacent EJ group as described in Section 4.14. These lines will be extended along existing ROW. A separate wetlands permit will be required for this portion of the project.

There would be a negligible impact from all the project alternatives.

p. Safety. This is discussed in Section 4.16 of the FEIS. All project alternatives have the same safety issues. The Partners have emergency response plans and procedures in place for their existing utility operations and will modify them to include the new Western Wake Regional Wastewater Management Facilities. All alternatives would have the same impact on police, fire, and emergency medical response times. All alternatives are in the vicinity of the Shearon Harris Nuclear Power Plant. Progress Energy has planned evacuation routes for the community.

During power outages, the emergency generators will be used to ensure the plant continues operating. There would be a negligible impact to safety from all the project alternatives.

q. Food and fiber production. This is discussed in Section 4.52 of the FEIS. The total land area being acquired for the WRF varies according to the selected project alternative. Less than half of the land area at any of the WRF sites would be built upon. The balance of the land being acquired for any WRF site would remain undeveloped and the environmental resources would not be impacted. Existing land cover would be modified from predominantly forested land to a utility use on the portion that would be developed. Any current food or fiber production activities would cease on the WRF site. There are active agricultural operations on WRF Site 30. In the recent past, agricultural activity has occurred on WRF Sites 14 and 19, but there are no current agricultural activities on either site. There was no evidence of recent agriculture on WRF Site 21/23 during site visits.

It is assumed that all areas in the pipeline easements, which range from 188 acres to 215 acres, depending on the project alternative, have the potential for disturbance. Most pipelines associated with the proposed Project would be adjacent to existing public ROWs (roads and

existing natural gas and electricity utility corridors), which should minimize impacts on land cover.

Upon completion of pipeline installation, a permanent easement would be required along all pipeline alignments to allow for unobstructed access to the pipelines for routine inspection and maintenance. The utility line easements have also been sited to minimize impacts. In general, existing land uses would continue along the utility line easements. The exception to this is where they are along forested land; impacts to forested land would be permanent.

The West Cary Pump Station currently exists so impacts to land cover will be minimal. The entire site including the existing developed portion of the site will impact 2 acres consisting mainly of scrub/shrub.

The total land area being disturbed for the Beaver Creek Pump Station is 3.6 acres, with 2.5 acres being built upon for new facilities. Land cover data shows the existing land use is primarily forest. The BCPS project area would be modified to a utility use. The remainder of the site would continue to be forested.

There would be a moderate impact on the forested land cover from all project alternatives at the WRF sites; since Sites 19 and 21/23 have been recently cleared, impacts to forest resources on those sites would be lower than for the other two sites. In the context of the entire project area, there would be a negligible impact to food and fiber production.

In general, existing land uses would continue along the utility line easements. The exception to this is where they are along forested land; impacts to forested land would be permanent.

r. Mineral needs. This is discussed in Section 4.7 of the FEIS. There are no mining operations that would be impacted by any of the project alternatives.

s. Considerations of property ownership. This is discussed in Section 4.14.1 of the FEIS. It is also discussed in detail in Sections 6.e. and f. of the ROD. The main concerns of adjacent property owners to the proposed WRF and transmission lines were visual/aesthetics, noise, odor, traffic, and property devaluation. As discussed in Sections 6.e. and f. of the ROD. The Project Partners are designing the WRF so it will not be seen from the adjacent community of New Hill. The implementation of the local town ordinances will minimize noise concerns. The use of state of the art technology will minimize odors from the WRF. Construction and normal maintenance traffic will be required to use Shearon Harris Road to minimize traffic impacts to the New Hill community. To address the concerns that the construction of the WRF could potentially decrease property values of homes and land around the proposed WRF site Wake County Revenue Department data was examined to determine if the Project Partners' other WRFs and WWTPs have negatively impacted property values. After analyzing this data it was determined that the impacts were negligible and maybe beneficial (public has opportunity hook up to sewer and no longer use a septic system). While the adjacent property owners have legitimate concerns, the Project Partners have minimized the potential impacts as much as possible.

**12. Territorial sea, activities affecting coastal zones, activities in Marine Sanctuaries.**

This project will have no effect on the limits of the territorial sea or on Marine Sanctuaries and is not located in the 20 coastal counties of North Carolina.

**13. Other Federal, state or local requirements**

My issuance of any authorization for this activity does not remove the responsibility of the Project Partners to obtain any other required Federal, state or local authorizations.

**14. Findings and Conclusions.**

I have reviewed the proposed project pursuant to the 404(b)(1) guidelines (40 CFR Part 230). On the basis of my analysis, discussed in greater detail in the FEIS and Section 10, above, I find that WRF Site 14 Alternative is the least damaging practicable alternative, and that WRF Site 14, as modified, avoids and/or minimizes impacts to wetlands and other waters to the maximum extent practicable. I have also found that the Project Partners' proposed work would eliminate or degrade waters of the United States, specifically, the wetlands and other waters that will be permanently filled. I find, however, that the implementation of the proposed compensatory mitigation plan will adequately compensate for the wetland losses associated with WRF Site 14 Alternative, as modified, so that the proposed plan, including the mitigation, does not cause or contribute to significant degradation of the waters of the United States.

I have reviewed and evaluated the impacts of this application, considering all relevant public interest factors as discussed in Section 11 of this document, the impacts of this application described in the FEIS, and the comments of Federal and non-Federal agencies, environmental groups and other members of the public.

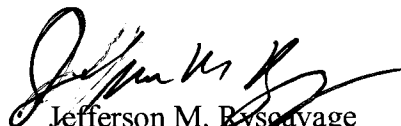
I find that the work can be permitted in accordance with regulations published in 33 CFR Parts 320-327. My decision to issue this permit is based on my evaluation of the probable impacts, including cumulative impacts, as described in the FEIS, and anticipated effects on the public interest. Evaluation of the probable impacts that the proposal could have on the public interest included a careful weighing of all relevant factors. The benefits that reasonably could be expected to accrue from the proposal, including the public's need for sewage treatment and wastewater disposal for present and future growth needs in western Wake County, were balanced against reasonably foreseeable detriments, including the loss of wetlands and other waters. I have considered the overall impacts to wetlands, both individually and cumulatively, and find that the benefits gained by these impacts outweigh the overall impacts. My decision reflects the national concern for both protection and utilization of important resources, as well as the relative extent of public and private need for the proposed work.

I have also evaluated the extent and permanence of the beneficial and/or detrimental effects of the proposed work, and on the public and private uses to which the area is suited. The proposed work (this permit request) will permanently impact 0.82 acres of wetlands; and 232 lf of perennial stream impacts to; and 146 lf intermittent stream impacts. The total complete project permanent impacts are 5.9 acres of wetlands and 1,387 lf of stream. These impacts will be offset by the compensatory mitigation required as a condition of this permit.

I have evaluated the proposed project to determine whether any significant and adverse impacts are likely to fall disproportionately on minority and/or low-income populations and have found that the description and findings in the FEIS were adequate and accurate in relation to this factor. The USACE has determined that, when all elements of project are considered, no significant and adverse impacts are likely to fall on the affected EJ population.

On balance, the total public interest would best be served by the issuance of a Department of the Army permit for WRF Site 14 Alternative. I find that the proposed project is not contrary to the public interest, and that there are no practicable alternatives that meet the Project Partners' purpose and need that have less environmental, including wetland, impacts.

I have considered the comments of these Federal agencies, as well as State and local agencies, environmental groups, and other interested members of the public. I find that the project complies with the 404(b)(1) guidelines, 33 CFR Parts 320-327, and is not contrary to the public interest. I am therefore issuing the permit for the proposed WRF Site 14 and associated infrastructure, which includes the attached Special Conditions.

  
Jefferson M. Bysoyave  
Colonel, U. S. Army  
District Commander

ATTACHMENT 1 TO RECORD OF DECISION  
ACTION ID 2005-20159  
RESPONSE TO COMMENTS

ATTACHMENT 2 TO RECORD OF DECISION  
ACTION ID 2005-20159  
PERMIT SPECIAL CONDITIONS

ATTACHMENT 3 TO RECORD OF DECISION  
ACTION ID 2005-20159  
WESTERN WAKE WATER RECLAMATION FACILITY SITE 14 PERIMETER BUFFER

ATTACHMENT 4 TO RECORD OF DECISION  
ACTION ID 2005-20159  
TOWN OF APEX SITE 14 WATER AND SEWER EXTENSION POLICY

ATTACHMENT 5 TO RECORD OF DECISION  
ACTION ID 2005-20159  
CONSTRUCTION DRAWINGS AND PLANS

ATTACHMENT 6 TO RECORD OF DECISION  
ACTION ID 2005-20159  
Water Quality Certification