

RECORD OF DECISION  
ENVIRONMENTAL IMPACT STATEMENT (EIS)

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**Union County Yadkin River Water Supply Project  
Proposed Interbasin Transfer to the Rocky River Basin**

UNION COUNTY, NORTH CAROLINA

PREPARED BY:  
NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY  
DIVISION OF WATER RESOURCES

March 9, 2016

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PREPARED BY

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
DIVISION OF WATER RESOURCES

DATE

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### SUMMARY

An Environmental Impact Statement (EIS) has been prepared for Union County for the proposed Yadkin River Water Supply Project (project). The proposed project will ensure long-term, sustainable water supply to the County's current and projected future service areas in the Rocky River IBT Basin. Under the current legislative and regulatory framework, Union County must obtain an interbasin transfer (IBT) certificate for this project. Union County is pursuing an IBT certificate to transfer a maximum month average daily amount of 23 million gallons per day (mgd) from the Yadkin River IBT Basin to the Rocky River IBT Basin. The requested amount is based on 2050 water demand projections in the County's Rocky River IBT Basin Service Area.

The preferred alternative to meet this water supply demand would include the withdrawal of water from Lake Tillery in the Yadkin River IBT Basin in Stanly County and the transfer of this water to the Rocky River IBT Basin in Union County for treatment and distribution. A significant portion of the transferred water would ultimately be discharged into the Rocky River Basin as treated wastewater, with the remainder lost to consumption on the land within the Rocky River Basin. The water modeling efforts completed for this EIS indicate that withdrawal from Lake Tillery would have less impact on lake aesthetics and other water withdrawal interests, including during drought conditions and hydropower production, than sourcing the water from other locations. The environmental impacts of the preferred alternative are similar, or significantly less, than the other alternatives evaluated for the proposed project.

This Record of Decision also serves as the Adequacy Determination required pursuant to N.C.G.S. §143-215.22L (f). The Environmental Management Commission voted to delegate this function to the Department of Environmental Quality during its January 14, 2016 meeting.

### PURPOSE AND NEED

The purpose of the proposed project is to meet Union County's projected water supply demands through 2050. Water supply demands in the County's Rocky River IBT Basin are projected to increase from a current (2013) maximum month average daily demand of 7.7 mgd to 28.9 mgd by 2050. The projected increase in the County's water demand is a combined result of projected population growth and anticipated Union County water system service area growth. Population is projected to increase from 52,550 in 2013 to 179,450 in 2050 in the Rocky River IBT Basin Service Area. The County's current grandfathered IBT in the amount of 5.0 mgd from the Catawba River Basin and the current water purchase agreement with Anson County are not capable of meeting the projected future demand within the Rocky River IBT Basin; therefore, the County must secure a reliable water supply from other sources to meet its future demand.

### ALTERNATIVES ANALYSIS

A total of twelve alternatives for Union County's Yadkin River Water Supply Project, including the No Action Alternative, were identified for evaluation in the EIS; the EIS provides a full discussion of these alternatives. A brief summary of the alternatives is provided below:

- **Alternative 1:** Pee Dee River raw water supply from Lake Tillery (IBT from Yadkin River IBT Basin to Rocky River IBT Basin) with a new water treatment plant in Union County. A new raw water intake and pump station is proposed as part of an agreement between Union County and the Town of Norwood. This alternative also includes the construction of a new water treatment plant; three potential site areas have been identified within the northeastern portion of Union County.
  - **Alternative 1A (preferred alternative):** Raw water transmission alignment from Lake Tillery to new water treatment plant in northern Union County primarily following roadway right-of-way corridors through Stanly County into Union County.
  - **Alternative 1B:** Raw water transmission alignment from Lake Tillery to new water treatment plant in northern Union County primarily following existing power utility easements.
- **Alternative 2A:** Yadkin River raw water supply from Narrows Reservoir (Badin Lake) (IBT from Yadkin River IBT Basin to Rocky River IBT Basin) with a new water treatment plant in Union County. A new intake and pumping station would need to be constructed, adjacent to the City of Albemarle's existing raw water intake facility on Narrows Reservoir (Badin Lake).
- **Alternative 2B:** Yadkin River raw water supply from Tuckertown Reservoir (IBT from Yadkin River IBT Basin to Rocky River IBT Basin) with a new water treatment plant in Union County. A new intake and pumping station would need to be constructed, adjacent to the City of Albemarle's existing raw water intake facility on Tuckertown Reservoir.
- **Alternative 3:** Pee Dee River raw water supply from Blewett Falls Lake (IBT from Yadkin River IBT Basin to Rocky River IBT Basin) with a new water treatment plant in Union County. Major improvements to the existing water supply infrastructure between Anson and Union County would be required to meet projected future water demands for Union County.
  - **Alternative 3A:** Raw water transmission alignment from Blewett Falls Lake to a new water treatment plant in northern Union County primarily following power and natural gas utility easements.
  - **Alternative 3B:** Raw water transmission alignment from Blewett Falls Lake to a new water treatment plant in eastern Union County primarily following US-74 right-of-way.
- **Alternative 4:** Raw water supply from the main stem of the Pee Dee River (IBT from Yadkin River IBT Basin to Rocky River IBT Basin) with a new water treatment plant in Union County. This alternative proposes the installation of a new raw water intake located just downstream of the confluence of the Rocky River with the Pee Dee River, south of Lake Tillery. Reclassification of this section of the Pee Dee River would be required for the proposed intake location for this alternative, in order for it to be used for public water supply.
- **Alternative 5:** Raw water supply from the Rocky River within Union County (non-IBT alternative) with a new water treatment plant in Union County. The Rocky River is currently not classified for water supply by the State of North Carolina and would therefore need to be re-classified before being utilized as a municipal water source.
- **Alternative 6:** Expansion of the Catawba River Water Supply Project (modification to existing grandfathered IBT amount for a larger IBT from the Catawba River Basin to the Rocky River IBT Basin). Increasing the transfer of water from the Catawba River Basin to meet Union County's 2050 demands would exceed the combined IBT limit of 20 mgd, shared between Union County, NC and Lancaster County, SC, as imposed by South Carolina through the surface water withdrawal permit for the Catawba River Water Supply Project.
- **Alternative 7:** Interconnection with Charlotte Water (IBT from Catawba River Basin to the Rocky River IBT Basin). This water sale would require an IBT certificate. The additional water demand from sales to Union County would increase Charlotte Water's projected demand as a

percent of water supply to 97% by 2050. This could require expansion of Charlotte Water’s intake(s), water treatment facilities and distribution system in order to meet the increased system demand by adding Union County as a wholesale customer.

- **Alternative 8:** Raw water supply through groundwater withdrawal within Union County with a new water treatment plant in Union County. Concerns with groundwater yield, groundwater quality, and development costs and logistics for a large-scale well network within the county severely limit the potential viability of this water supply alternative.
- **Alternative 9:** Water demand management/conservation. There are three existing water conservation and demand management ordinances and protocols that are applicable to Union County, including a new Water Use Ordinance adopted in May 2015. Conservation achieved through these measures is not expected to significantly reduce the overall future water demand for Union County, but it is expected to reduce maximum day and maximum month peaking factors that may be experienced during future droughts.
- **Alternative 10:** Direct potable reuse. Currently, direct potable reuse as would be implemented by Union County, is not permitted for potable water supply in North Carolina. Therefore, direct potable reuse is not a viable alternative water source at this time for Union County to serve its current existing and future customers.
- **Alternative 11:** Evaluation of water returns (wastewater) from the Rocky River IBT Basin back to the Yadkin River IBT Basin. Consideration of this alternative would serve as an IBT minimization strategy for Alternative 1. Alternative 11 is based on an assumed new NPDES (National Pollution Discharge Elimination System) discharge into the Pee Dee River at Lake Tillery. It is estimated that the IBT under Alternative 1 could be reduced by approximately 29% to 35% depending on projection year and actual future wastewater flows generated. However, any benefits gained from increased water quantity in Lake Tillery may be outweighed by water quality and environmental impacts associated with a new wastewater discharge and the associated sanitary sewer transmission infrastructure.
- **Alternative 12:** No Action Alternative. This alternative would not involve additional water supply service by Union County to new development in the Rocky River IBT Basin, even though the County’s population within the service area is projected to increase. Without a reliable water supply source, future water supply within this area would have to be supplied either from the existing Catawba River Water Supply Project (will not be possible to meet future demand since County is currently approaching the existing IBT limit), through groundwater wells (would place additional strain on groundwater supply, and some parts of Union County have elevated concentrations of groundwater contaminants), or service connections to other water systems within the Rocky River IBT Basin (current and potential connections have not demonstrated the ability to meet Union County’s projected future demand).

#### PREFERRED ALTERNATIVE

Alternative 1A was selected as the preferred alternative to meet the project’s purpose and need of delivering a safe, sustainable water supply to meet the County’s current and future water demands in their Rocky River IBT Basin service area. Alternative 1A involves the withdrawal of water from Lake Tillery in the Yadkin River IBT Basin and the transfer of water via roadway right-of-ways through southern Stanly County to the Rocky River IBT Basin in Union County for treatment, distribution, and ultimately treated discharge. The direct impacts to resources from the subsequent water transmission line have been estimated based upon existing data sources that were used to evaluate the subsequent infrastructure

associated with all of the alternatives. The water line alignment may change, based upon the field verified size and location of resources, if an IBT Certificate is granted allowing for the basin transfer.

The environmental impacts of Alternative 1A are similar, or significantly less, than the other alternatives evaluated. The water modeling efforts completed for this EIS indicate that withdrawal from Lake Tillery has fewer impacts than withdrawal of water from other locations. Stringent measures are in place throughout the existing and proposed service areas to mitigate potential environmental impacts that may result from the proposed project. Additionally, Alternative 1A represents one of the lowest cost project alternatives and has been determined to be a financially feasible option for this water supply.

### ENVIRONMENTAL IMPACTS

All means of avoiding or minimizing environmental and cultural impacts outlined in the EIS will be incorporated into the proposed project. Summaries of potential impacts and mitigative actions for the preferred alternative are presented below.

No direct impacts, except for the potential water quantity/quality issues, are expected to occur as a result of the selection of the source of water related to the transfer of water from one river basin to another. However, direct impacts to other resources may occur with the associated water transmission line. All water line impacts from the various alternatives are conceptual; therefore, no field studies have been conducted for the actual infrastructure alignment. Direct impacts associated with the proposed water lines will be evaluated in subsequent environmental documentation and/or permitting. Per the Clean Water Act, these impacts will be avoided, minimized, and mitigated, in that order, to the maximum extent practicable.

Topography and soils: The construction-related effects will be minimized to the extent practicable via the implementation of an Erosion and Sediment Control Plan, which requires approval by DEQ prior to the commencement of work.

Land Cover and Land Use: No rezoning is required for implementation of the proposed project.

Wetlands and Floodplains: Steps will be taken to minimize any impacts to the 100-year floodplain during construction, and upon completion the disturbed area will be graded to match the existing elevation and surface contours to eliminate a permanent modification of the 100-year floodplain.

Water Quality and Quantity: No field studies were conducted for this EIS; therefore, impacts to resources are estimated. Once the preferred alternative is agreed upon, further investigation into the exact location of jurisdictional surface waters will be conducted and the design will be adjusted as needed to avoid and minimize impacts to these resources. Compliance with Sections 401 and 404 of the Clean Water Act will require authorizations from DWR and the U.S. Army Corps of Engineers, respectively, for potential impacts to jurisdictional surface waters. Riparian buffers are protected along the proposed corridor; activities in riparian buffers are restricted by ordinances that are applicable to the unincorporated areas of Union County that are in a water supply watershed. The preferred alternative represents negligible impacts to current and future water quality of waters within the Yadkin River Basin, including Lake Tillery, and the Rocky River Basin. Treated wastewater discharges into the Rocky River Basin will be permitted through the National Pollutant Discharge Elimination System (NPDES).

The Yadkin River Basin CHEOPS™ model was used to evaluate the impacts of the proposed 23 mgd withdrawal for the Union County Yadkin River Water Supply Plan from various locations in the Yadkin Basin. Direct impacts on water quantity for the preferred alternative were evaluated for impacts to lake levels (for both lake aesthetics and water withdrawals), reservoir discharges, water quantity management, and hydropower generation. Results reflect negligible impacts to the baseline scenario (year 2012) due to the proposed Union County IBT. The primary differences in metrics observed were between the 2050 and 2012 evaluations from projected basin-wide water demand increases in the future, not the proposed Union County IBT.

Groundwater: No direct impacts to groundwater are expected to occur.

Wildlife and Aquatic Resource Habitats: An Erosion and Sediment Control Plan will be developed and implemented during construction to minimize temporary impacts to aquatic resources.

Rare and Protected Species: Habitat is potentially present within the conceptual water line corridor and pump station areas for one endangered species and two candidate species. The endangered species is Michaux's sumac (*Rhus michauxii*) and the candidate species are Georgia aster (*Symphyotrichum georgianum*) and Yadkin River goldenrod (*Solidago plumosa*). No federally protected species (threatened or endangered) are known to exist within the conceptual water line corridor; however, the presence or absence of federally protected species will be determined during subsequent field studies once the preferred water source alternative is agreed upon. If a population of a federally protected species is found to be present, the United States Fish and Wildlife Service (USFWS) and North Carolina Wildlife Resources Commission will be contacted to confirm the species identification and extent of the population. Union County will coordinate with the agencies to identify measures to avoid impacting the species.

According to the USFWS, an existing population of the federally endangered freshwater mussel Carolina heelsplitter (*Lasmigona decorata*) is known to exist in three watersheds of Union County's Yadkin River Basin service area (Rocky River IBT Basin): Goose Creek, Duck Creek, and Waxhaw Creek. Concerns over indirect and cumulative impacts to this protected species have led Union County to enact stringent stormwater controls and other mitigation measures to reduce sediment pollution into these waters. Additionally, a *Site Specific Water Quality Management Plan for the Goose Creek Watershed* was created and implemented to reduce surface water impacts within the Goose Creek watershed from development pressures. Though there are long-term concerns over continued development throughout the service area, these mitigation measures have been deemed sufficient protection measures by resource agencies including the United States Fish and Wildlife Service, North Carolina Wildlife Resources Commission, and North Carolina Division of Water Resources to allow for continued development activities within the watersheds.

Public, Scenic, and Recreational Areas: Impacts associated with the permanent easement from the conceptual water transmission line include conversion of forest to herbaceous and scrub-shrub land covers.

Archeological or Historical Resources: State Historic Preservation Office correspondence states that it is extremely unlikely that they will request an archaeological survey if the preferred alternative is confined to existing, previously disturbed right-of-way. Coordination with the Office of State Archaeology will

occur to determine if potential areas of concern are present and whether an archaeological survey is required within the project area. No direct or indirect, permanent or temporary impacts to historic structures or districts are anticipated to occur from the preferred alternative.

Prime Agricultural Lands: Any direct impacts to prime agricultural lands are expected to be temporary from implementation of the preferred alternative.

Air Quality: All direct impacts to air quality are expected to be temporary and minor during construction. All construction activities will follow requirements outlined in construction permits and best management practices.

Noise Levels: In order to reduce disturbances to adjacent properties, construction will be limited to daylight hours in accordance with local noise ordinances. In emergency situations, a generator may be required to provide power to the pump station and water treatment plant, which will result in a short-term increase in noise levels.

Hazardous and Toxic Substances: A short-term increase in the storage, use, and disposal of hazardous and toxic waste will occur during construction activities associated with the preferred alternative. Long-term operation of the proposed water treatment plant, pump stations, and transmission lines is expected to result in the negligible generation of hazardous or toxic substances.

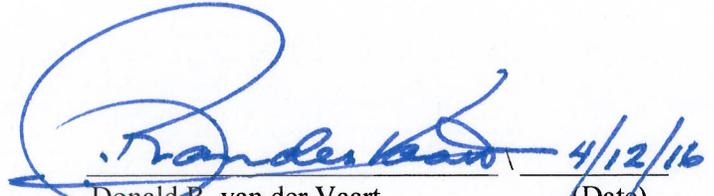
## SECONDARY AND CUMULATIVE IMPACTS

Within the receiving basin, the potential secondary and cumulative impacts associated with the preferred alternative would primarily be attributed to Union County's projected urban growth and land use changes associated with population increases in the service area, entirely within the receiving basin. Due to the current growth patterns observed in Union County it is anticipated that population increases and the associated secondary and cumulative impacts will occur regardless of whether or not the proposed transfer is granted. Mitigation for secondary and cumulative impacts related to stormwater, floodplains, riparian buffers, surface waters, wetlands, open spaces and parks, water usage, land management, historic preservation, tree preservation, endangered species protection, wastewater treatment, and regional transportation planning measures will be provided, as directed by the state and federal programs and local ordinances for each community impacted by the proposed project, where applicable.

Within the source basin, the potential secondary and cumulative impacts associated with the preferred alternative would primarily be attributed to withdrawals from Lake Tillery, potentially reducing flows in the Pee Dee River downstream. Hydrologic modeling has shown that any downstream flow impacts would be minimal due to the management of the lake and inputs from the Rocky River, which empties into the Pee Dee River approximately 5.0 miles downstream of the Lake Tillery Dam. A majority of the water transferred will be discharged into the Rocky River through treated wastewater returns. Thereby, further reducing any potential impacts to water users and aquatic wildlife and habitat in the Pee Dee River.

EIS REVIEW AND COMMENT

The EIS has been properly advertised and reviewed by State and Federal agencies. Extensive public input has been considered in the planning process. Comments from agencies and citizens have been incorporated into the proposed project. A copy of this *Record of Decision* will be sent to the Clearinghouse, all review agencies, and a notice of its availability will be published in the Environmental Bulletin.

  
Donald R. van der Vaart      4/12/16  
Secretary, Department of Environmental Quality      (Date)

