

Water Quality Update Comprehensive Plan

Growth, Land Use & Environment Committee

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One Water

Support USGS Studies that examine the integrated management of water in regions that can be used to project need for resources in areas of rapid population growth.

One Water

The Wake County Water Partnership and Water Quality staff have developed a scope of work to create a One Water “50 Year Supply Plan” for Wake County.

Comprehensive Plan

Phases Proposed:

1. Snapshot
2. Dynamic Model
3. Integration of Plans

1. Snapshot

This phase is an update of the Groundwater Study from 2003. It includes some of the recommendations from that study including a groundwater monitoring network.

1. Snapshot

- Development of a Groundwater Monitoring Network
- Begin data gathering and analysis from those wells
- Well Yield Distribution and Fracture Map
- Soil and Water Balance
- Develop a model for evaluation of current demand v. recharge

1. Snapshot

Well Network

- The first effort in Year 1 and Year 2 is to develop the monitoring network. Wake County staff have begun identifying wells that will be available for this purpose.

1. Snapshot

- Working with USGS will allow sharing of the cost, since USGS has an interest in refining their planning initiatives nationwide.
- Water Quality proposes that data analysis and building of a model begin in Year 2 and Year 3 of the study.
- Staff will investigate opportunities to reduce the cost of elements of this study on a continuous basis.

2. Dynamic Model

Develop a model of the subsurface hydrology of Wake County that can be used for projections and planning with regard to water demand, recharge, and effects on surface flow.

2. Dynamic Model

- Work with USGS on developing this in MODFLOW.
- Calibrate the model.
- Add scenarios based on population growth, climate changes, and planning.

2. Dynamic Model

- The use of MODFLOW will make all of the data available for updating as trends in water use, population growth, or climate are noticed.
- This will give planners a tool to identify potential challenges and threats to groundwater supply, before problems occur.

3. Integration of Plans

Work with a contractor to compile and integrate plans from Wake County, the City of Raleigh, the Town of Cary, the Town of Garner, and the Town of Fuquay-Varina into a larger model for the whole county.

3. Integration of Plans

1. Review of other plans and integration.
2. Geospatial and Planning analysis of growth.
3. New demand calculations and Modflow update.

3. Integration of Plans

Utilities and Wells Together

Combining the plans of all utilities in Wake County with a Groundwater Model will allow for more accurate projection of potential problems.

Projected service areas for utilities may resolve groundwater problems for residents or may not. These circumstances can be projected and added to the planning process.

Future Planning

Climate models can be integrated into the overall plan once it has reached an integrated model of surface water and groundwater demands.

Timeline

Agency	Federal fiscal year USGS Phase					TOTAL
	FY2019	FY 2020	FY 2021	FY 2022	FY 2023	
Wake County	\$339,000	\$266,000	\$209,000	\$190,000	\$122,000	\$1,126,000
USGS	\$277,000	\$136,000	\$88,000	\$74,000	\$23,000	\$598,000
Project Total	\$616,000	\$402,000	\$297,000	\$264,000	\$145,000	\$1,724,000

Timeline (continued)

Agency	Federal fiscal year Contractor Phase			TOTAL
	FY2024	FY 2025	FY 2026	
Wake County	\$300,000	\$300,000	\$300,000	\$900,000
Contractor	NA	NA	NA	
Project Total	\$300,000	\$300,000	\$300,000	\$900,000

Discussion