



Consolidating Water Use Data in North Carolina

2019 Water Information Management Workshop/USGS National Water Use Data Collaboration

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Consolidating Water Use Data in North Carolina

- Purpose
- Background
- Water Use Data Collection Regulations
- Database Types
- Water Use Data Consolidation: Water Use Web Services Query Tool
- Recommendations
- Challenges
- Q&A



Purpose

NCDWR Objective was twofold:

1. Expand and improve its data collection efforts to better align with USGS
2. Create a web service to establish a single location for easier access to DWR's water use data
 - This web service does not replace or modify existing databases; it will query data from them into a single location
 - Originally, we had to query 7 different databases



Background

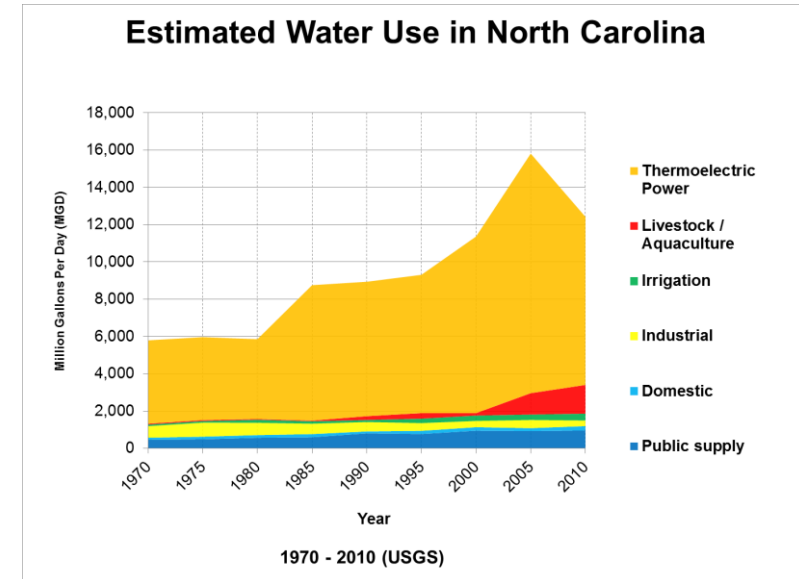
NC Water Law – Riparian Rights State

- No state-wide water use permitting program
- Limited regional permitting
 - Central Coastal Plain Capacity Use Area (CCPCUA)
 - Eno River Management (Voluntary)
- Only State-wide Water Use Registration
 - Local Water Supply Plan (LWSP)
 - Water Withdrawal Registration (WWR)
 - Agricultural Water Use Survey



Water Use Data Collection Regulations

- Local Water Supply Planning (LWSP)
 - NC General Statute § 143-355(I)
- Central Coastal Plain Capacity Use Area (CCPCUA)
 - NC General Statute § 143-215.11-215.22B
- Water Withdrawal and Transfer Registration (WWATR)
 - NC General Statute § 143.215.22H22F
- Interbasin Transfer Program (IBT)
 - NC General Statute § 143-215.22L(n)(6)



Water Use Data Collection Regulations (Cont'd)

- Safe Drinking Water Information System (SDWIS)
 - NC Administrative Code 15A NCAC 18C .0100-.2200
- BasinWide Information Management System (BIMS)/NPDES Program
 - NC Administrative Code 15A NCAC 02B .0101 – 02H .1201



Database Types

- Local Water Supply Planning – **MySQL**
 - Interbasin Transfer Program – Excel Spreadsheet
- Central Coastal Plain Capacity Use Area – **MySQL**
- Water Withdrawal and Transfer Registration – **MySQL**
 - Agricultural Water Use Survey – Excel Spreadsheet
- Safe Drinking Water Information System – **Oracle**
- BasinWide Information Management System – **DB2**



Water Use Web Services Query Tool

- Dataset Information & Overview:
 - <https://ws.ncwater.org/WaterUse/dataset-overview.php>
 - Provides background on program, regulations, FAQs, etc.
- Web Service Information:
 - <https://ws.ncwater.org/WaterUse/ws-overview.php>
 - Description of the web service
 - The output is standard JSON (JavaScript Object Notation)
 - Well-supported, universal industry standard
 - Can be utilized by a wide variety of tools
 - URL Parameters (i.e. dataset, id, year, county, limit, date, basin, etc.)




Water Use Web Services Query Tool

URL: <https://ws.ncwater.org/WaterUse/?uid=07f3a386d7225b52bed48c9dcdb7f3dc>

Water Use Data Query Builder

Dataset (Required)

Please select... 

Parameters (Optional)

Filter by date: Do not filter
 Range
 Year(s)

Filter by county: Do not filter (all)
 Select from drop-down
 Multiple

Limit # of Results: 100

Generate Query

RESET FORM

Web Service Structure and Parameter Information



Water Use Web Services Query Tool

Water Use Data Query Builder

Dataset (Required)

Please select... ?

- Please select...
- Agricultural Use Data (Summarized)
- Basinwide Information Management System
- Capacity Use Area Permitted Facilities
- Central Coastal Plain Registered Facilities
- Interbasin Transfer Program
- Local Water Supply Plan
- Water Withdrawal and Transfer Registration

Filter by d

Filter by cou

Select from drop-down

Multiple

Limit # of Results: 100

Generate Query

RESET FORM

Web Service Structure and Parameter Information



Water Use Web Services Query Tool

Water Use Data Query Builder

Dataset (Required)

Local Water Supply Plan ?

Parameters (Optional)

Search by PWSID: 03-92-010

Filter by date: Do not filter
 Range
 Year(s)

Year: 2015 or 2015, 2016, 2017, or 2015 - 2017

Filter by county: Do not filter (all)
 Select from drop-down
 Multiple

By name: Wake, Durham, Johnston, etc.

Limit # of Results: 100

Generate Query

RESET FORM



JSON	Raw Data	Headers
Save	Copy	
Neuse River:		
▼ Basin_Info:		
ID:	"10-1"	
▼ Water_Systems:		
▶ 03-92-045:	{...}	
▶ 03-92-373:	{...}	
▶ 03-92-020:	{...}	
▶ 03-92-055:	{...}	
▶ 03-92-050:	{...}	
▼ 03-92-010:		
▼ System_Info:		
Name:	"Raleigh"	
County:	"Wake"	
Ownership:	"Municipality"	
IBT:	"< 0.100 MGD"	
▶ WSRP:	{...}	
▶ Projections:	{...}	
▼ System_Data:		
▼ 2017:		
▶ connections:	{...}	
▶ distribution_lines:	{...}	
future_sales:	null	
▶ future_supplies:	{...}	
ground:	null	
▶ interconnections:	{...}	
▶ monthly_discharge:	{...}	
▶ monthly_withdrawal:	{...}	
▶ permits:	{...}	
▶ purchases:	{...}	
▶ questions:	{...}	
▶ sales:	{...}	
▶ surface:	{...}	
▶ treatment_plants:	{...}	

Output

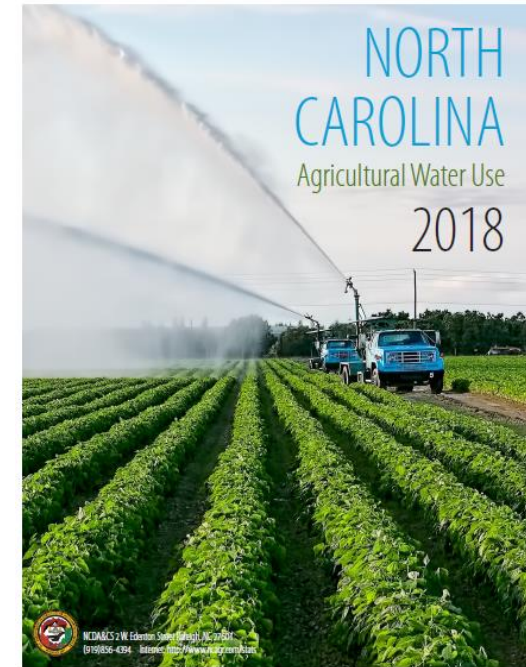
▼ monthly_withdrawal:	
▶ 0:	{...}
▶ 1:	{...}
▶ 2:	{...}
▶ 3:	{...}
▶ 4:	{...}
▶ 5:	{...}
▼ 6:	
avg_daily:	"57.4900"
max_day:	"66.7700"
month:	"7"
▶ 7:	{...}
▶ 8:	{...}
▶ 9:	{...}
▶ 10:	{...}
▶ 11:	{...}
▶ permits:	{...}
▶ purchases:	{...}
▶ questions:	{...}
▶ sales:	{...}
▼ surface:	
▶ 0:	{...}
▶ 1:	{...}
▶ treatment_plants:	{...}

{JSON}



Recommendations

- Request for more locational agricultural data
- Need additional water use information not currently required
 - Agriculture water use at lower limits (<1 MGD)
 - Public water systems water use at lower limits
 - Need estimates of domestic water use
- Need more monitoring of ground and surface water sources
- Need to know how much ground and surface water is available



Recommendations

- Combine State required water use data into a singular database
 - WWTR
 - LWSP
 - CCPCUA
 - IBT
 - Ag Survey
- Utilize water use data to auto-populate other water use programs
- Replace several tables to track site-specific monthly & annual withdrawals



Challenges

NC Water Law – Riparian Rights State

- No comprehensive plan for water quantity management in NC
- No federal oversight of / nor federal requirements for water quantity management
- No statewide permitting program
- Lack the ability to require all water users to report
- Lack the ability to plan and manage for all water uses
- Need for all water use reported (especially large users) on same time scale
- Need better agricultural data (especially locational data)
- Need more regulatory authority to enforce registration of all water use
- Need for QC/QA – Data is self reported and may have errors





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