



# R Script for Uploading NC Assessments to ATTAINS

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# Outline

- Describe an R script used by North Carolina that:
  - reads tables from the NC Integrated Report Database
  - generates csv files to be uploaded to ATTAINS
  - was used in 2018, 2020, and 2022 cycles

# NC Integrated Report Files Website



- 303(d) Lists
- New Listings
- Delistings
- Public Comments / Responses
- Data and Documents
- Maps

<https://www.deq.nc.gov/about/divisions/water-resources/water-planning/modeling-assessment/water-quality-data-assessment/integrated-report-files>



# Integrated Report Map

North Carolina 2022 Integrated Report  
Water Quality Assessment

Filters

Primary Integrated Report Category

- 1 - Meeting Criteria
- 3 - Data Inconclusive
- 4 - Exceeding Criteria, has TMDL/Mgmt. Strategy
- 5 - "303(d) List" - Exceeding Criteria

Integrated Report Subcategory: All

Parameter: All

Parameter Detailed: All

Learn more about the [Integrated Report](#)

Use the select tool below to make a waterbody selection

Integrated Report: Grants Creek

AU ID	1509
AU Number	12-110a
AU Name	Grants Creek
AU Description	From source to SR 1910
Parameter	Fecal Coliform (GM 200/400, REC, FW)
IR Category	4t
Classification	C

Esri, HERE, Garmin, FAO, NOAA, USGS, EPA, NPS | NCDEQ - Division of Water Resources | Esri, USGS | Cam McNutt, Andy Painter

<https://ncdenr.maps.arcgis.com/apps/dashboards/3fcab644130640b4bb80fcbbc91f917d>





# NC Integrated Report Subcategories

A - Data inconclusive  
B - Management strategy in place  
C - Non-pollutant, no TMDL required  
CR - Recreational Monitoring Swimming Advisory Posted by Division of Marine Fisheries  
CS - Shellfish growing area designated as Not Approved. AU has an approved fecal coliform bacteria TMDL  
F - Only statewide mercury advice  
I - Addressed by TMDL for other parameter  
NC - Exceeding criteria due to natural conditions  
R - Part of restoration project  
T - Has approved TMDL  
V - Part of permit variance  
Z1 - Not assessed against NC wq standard

North Carolina 2022 Integrated Report  
Water Quality Assessment

AU ID Search: Enter Number  
AU Name Search: e.g. "Mill Creek-Neuse"

### Filters

Primary Integrated Report Category

- 1 - Meeting Criteria
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**Integrated Report Subcategory**  
All

Parameter: All  
Parameter Detailed: All

Learn more about the [Integrated Report](#)

Use the select tool below to make a waterbody selection

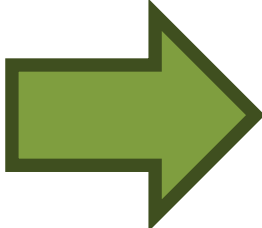
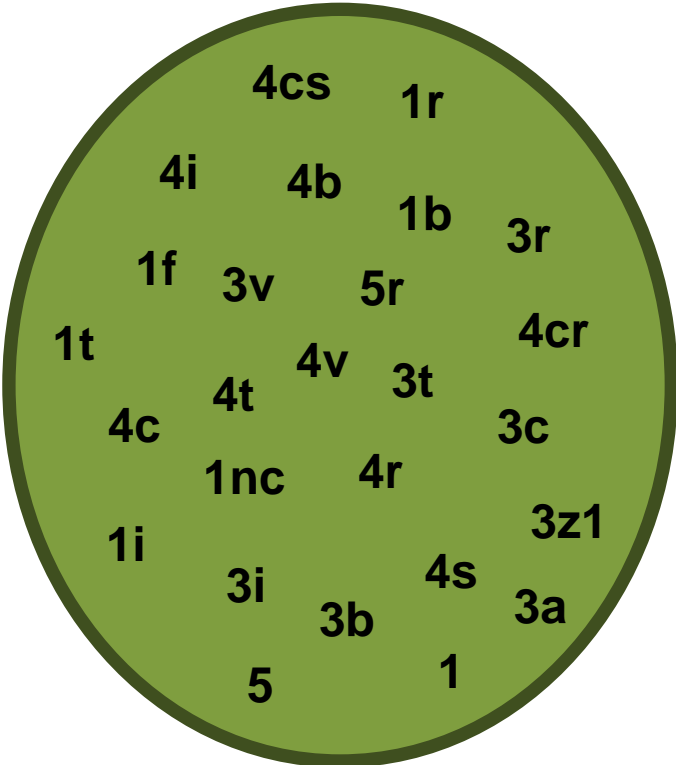
### Integrated Report: Grants Creek

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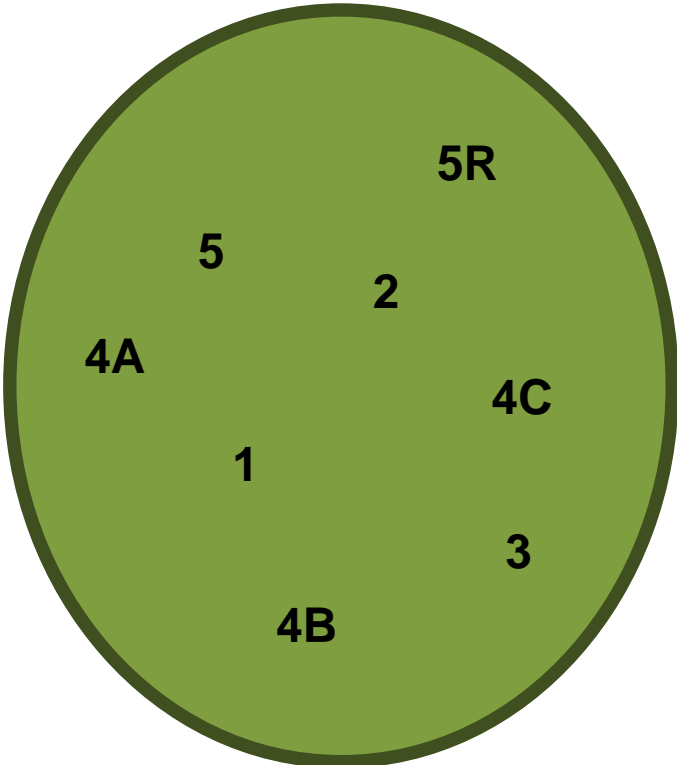
Map showing water bodies in North Carolina with various colors (red, green, blue) indicating different report categories. Major cities like Charlotte, Raleigh, and Durham are labeled. The map is powered by Esri, HERE, Garmin, etc.

# State Assessments to ATTAINS

NC Integrated Report Database



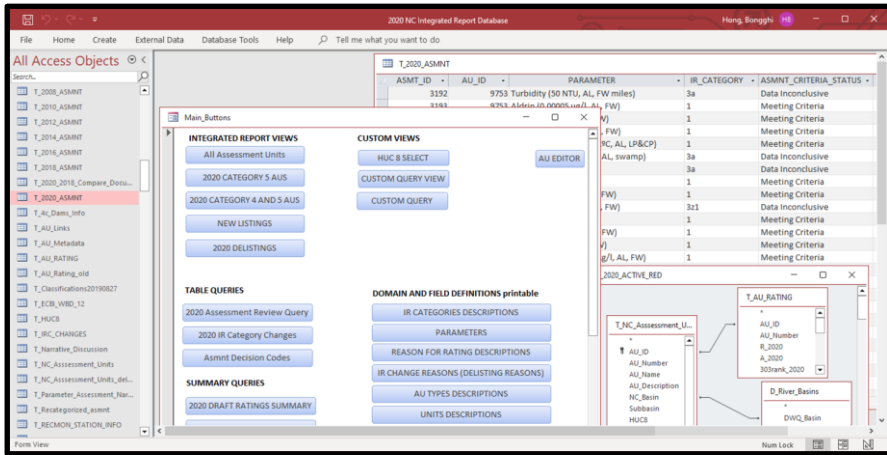
ATTAINS



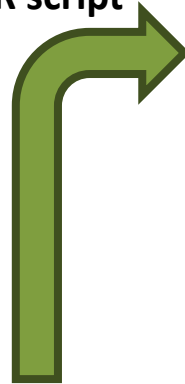


# Processing Steps

## NC Integrated Report Database



Run R script



- assessments.csv
- uses.csv
- parameters.csv
- associated-actions.csv

Upload to ATTAINS



Export tables



- |                            |                      |
|----------------------------|----------------------|
| assessment units           | assessment decisions |
| parameter information      | IR categories        |
| IR category changes        | IR change reasons    |
| assessment criteria status | actions lookup table |

The screenshot shows the 'ATTAINS Client' web interface. The page title is 'ATTAINS - N.C. Dept. of Environmental Quality (21NC01WQ)'. The main content area is titled 'Assessments 2024 (Organization Draft)'. It contains a table with the following columns: Assessment Unit ID, Assessment Unit Name, Water Type, EPA IR Category, Overall Status, Organization IR Category, Multi-IR Category, Cycle Last Assessed, Last Modified, Cycle Last Modified, Validation, and Status.

Assessment Unit ID	Assessment Unit Name	Water Type	EPA IR Category	Overall Status	Organization IR Category	Multi-IR Category	Cycle Last Assessed	Last Modified	Cycle Last Modified	Validation	Status
NC1-(1)	HIWASSEE RIVER (Chattuge Lake below elevation 1928)	RESERVOIR	1	Fully Supporting		2	2022	2022-06-23	2022	OK	No Change
NC1-(15)	HIWASSEE RIVER	STREAM								No Information	Never Assessed
NC1-(16.5)a	HIWASSEE RIVER	STREAM								No Information	Never Assessed
NC1-(16.5)b	HIWASSEE RIVER (Mission)	STREAM	5	Not Supporting		5	2022	2022-06-23	2022	OK	No Change

ATTAINS





# Finding Output Column Values

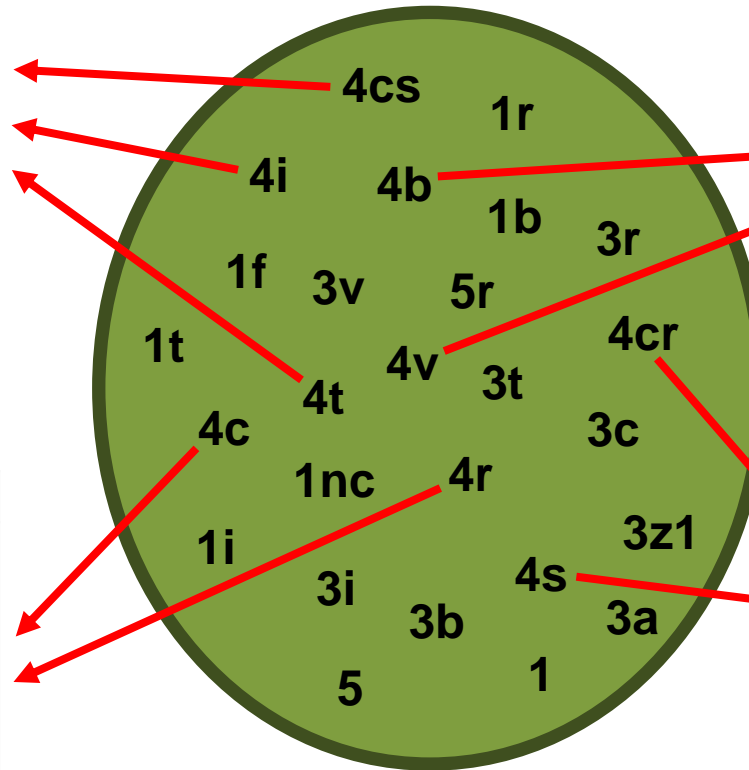
## NC Integrated Report Database

Column	Value
PARAM_STATUS_NAME	Cause
PARAM_POLLUTANT_INDICATOR	Y
PARAM_YEAR_LISTED	(year number)
PARAM_EXPECTED_TO_ATTAIN	N/A
PARAM_PRIORITY_RANKING	High / Medium / Low
ACTION_TYPE	TMDL
...	...

Column	Value
PARAM_STATUS_NAME	Cause
PARAM_POLLUTANT_INDICATOR	Y
PARAM_YEAR_LISTED	(year number)
PARAM_EXPECTED_TO_ATTAIN	(year number)
PARAM_PRIORITY_RANKING	High / Medium / Low
ACTION_TYPE	4B Restoration Approach
...	...

Column	Value
PARAM_STATUS_NAME	Cause
PARAM_POLLUTANT_INDICATOR	N
PARAM_YEAR_LISTED	(year number)
PARAM_EXPECTED_TO_ATTAIN	N/A
PARAM_PRIORITY_RANKING	High / Medium / Low
ACTION_TYPE	N/A
...	...

Column	Value
PARAM_STATUS_NAME	Observed effect
PARAM_POLLUTANT_INDICATOR	N/A
PARAM_YEAR_LISTED	N/A
PARAM_EXPECTED_TO_ATTAIN	N/A
PARAM_PRIORITY_RANKING	N/A
ACTION_TYPE	N/A
...	...



# Finding Output Column Values

North Carolina 2022 Integrated Report  
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Integrated Report Subcategory

All

Parameter

Arsenic

Parameter Detailed

All

River Basin

Learn more about the Integrated Report

Use the select tool below to make a waterbody selection

Integrated Report: UT to Uwharrie River

AU ID	13832
AU Number	13-2-(1.3)ut6
AU Name	UT to Uwharrie River
AU Description	From Source to Uwharrie
Parameter	Arsenic (10 µg/l, HH, NC)
IR Category	5
Classification	

Integrated Report: UT to Uwharrie River

AU ID	13832
AU Number	13-2-(1.3)ut6
AU Name	UT to Uwharrie River
AU Description	From Source to Uwharrie
Parameter	Arsenic (50 µg/l, AL, NC)
IR Category	1
Classification	

190 Filtered/Selected Assessments

Column	Value
ASSESSMENT_UNIT_ID	NC13-2-(1.3)ut6
PARAM_NAME	Arsenic
PARAM_USE_NAME	Human Health
PARAM_ATTAINMENT_CODE	Not meeting criteria
PARAM_STATUS_NAME	Cause
...	...

Column	Value
ASSESSMENT_UNIT_ID	NC13-2-(1.3)ut6
PARAM_NAME	Arsenic
PARAM_USE_NAME	Aquatic Life
PARAM_ATTAINMENT_CODE	Meeting criteria
PARAM_STATUS_NAME	Cause
...	...

# Closing Thoughts

- ❑ Not a "tool" yet:
  - user choices are hard-coded
  - needs manual checking
  
- ❑ Revisited and revised each cycle
  
- ❑ Scripting a task:
  - serves as a reminder
  - prevents processing errors

# Thank you!

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