

# EnviroAtlas and the Eco-Health Relationship Browser

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NCER Tribal Research Progress Review

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# What is EnviroAtlas?

A free, easy-to-use, online decision support tool to **view, analyze, and download** national geospatial data and other resources. EnviroAtlas is designed to inform decision-making, education, and additional research.

## EnviroAtlas includes:


- Indicators of ecosystem services supply, demand, and drivers of change
- Supplemental data to aid interpretation (e.g., land cover, soils, hydrography, impaired water bodies, wetlands, demographics, roads, boundaries)
- Analytic and interpretive tools



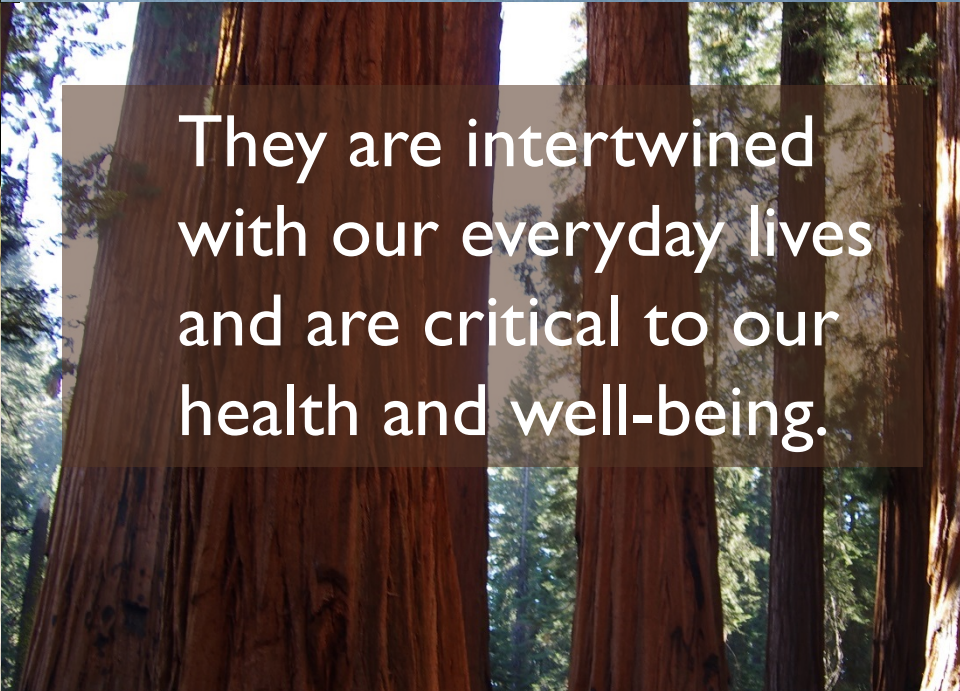
*All Data are Downloadable & Accessible via Web Services  
(incl. fact sheets for general users and technical metadata)*

# Some EnviroAtlas Users & Collaborators





EnviroAtlas is designed around the benefits we receive from nature, also known as ecosystem goods and services.



They are intertwined with our everyday lives and are critical to our health and well-being.

EnviroAtlas data are organized into 7 ecosystem service benefit categories.

**Clean  
Air**



**Clean &  
Plentiful  
Water**



**Biodiversity  
Conservation**



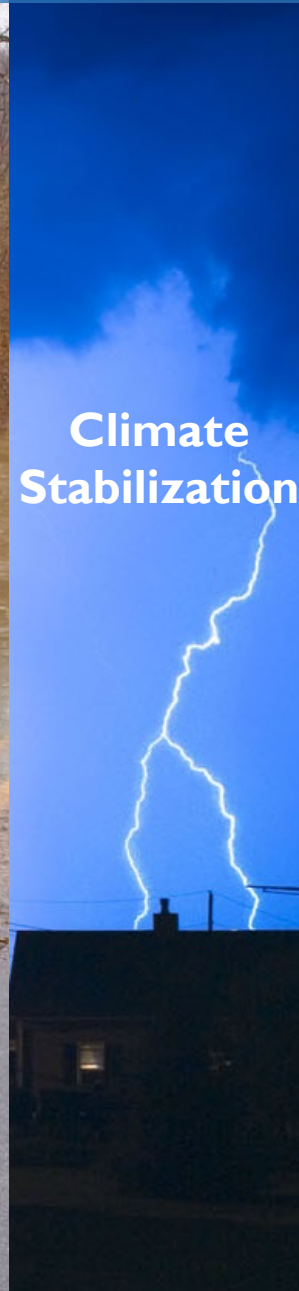
**Food,  
Fuel, &  
Materials**



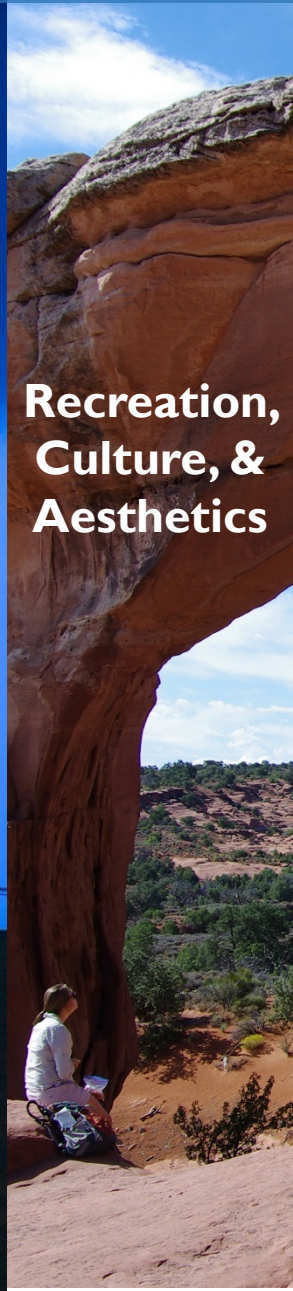
**Natural  
Hazard  
Mitigation**



**Climate  
Stabilization**



**Recreation,  
Culture, &  
Aesthetics**



# Interactive Mapping & Screening Tool

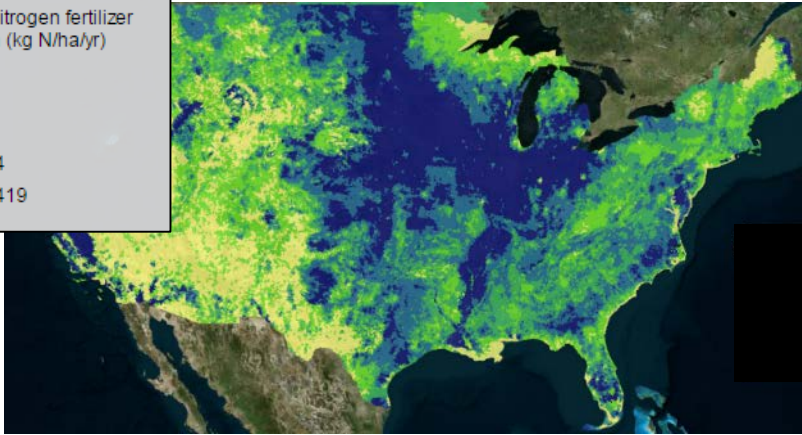
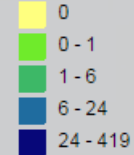
300+ map layers available online

**National: Wall-to-wall coverage for contiguous US; summarized by ~90,000 drainage basins (12-digit HUCs). 160+ data layers**

## Map Legend

### Clean and Plentiful Water

Synthetic nitrogen fertilizer application (kg N/ha/yr)



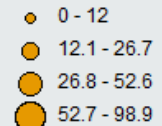
**Community: High-resolution component for Census urban areas; summarized by block group. 100+ data layers.**

*Pictured: Milwaukee, WI & vicinity*

## Map Legend

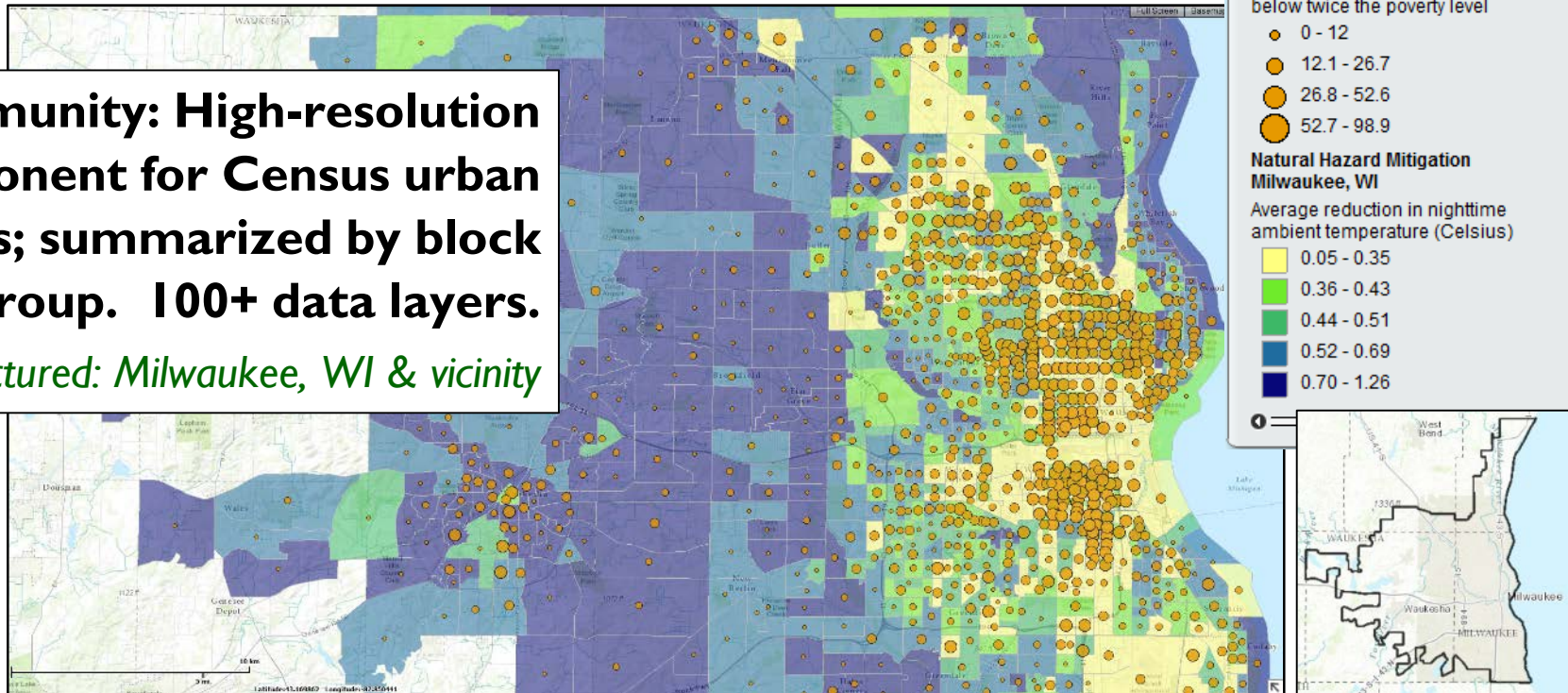
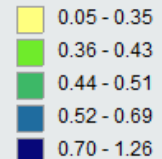
### Milwaukee, WI Demographics

Percent population with income below twice the poverty level



### Natural Hazard Mitigation Milwaukee, WI

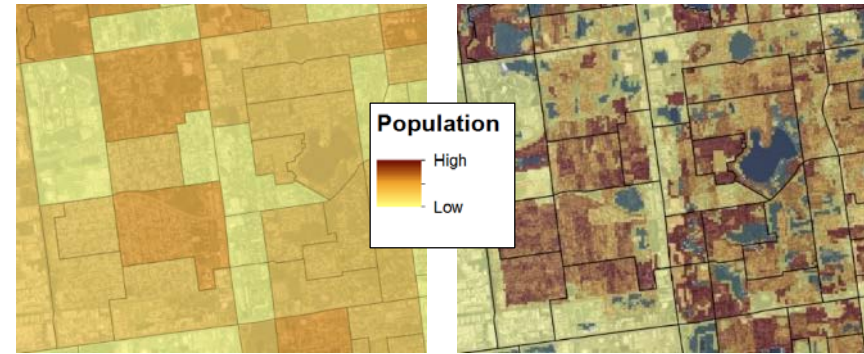
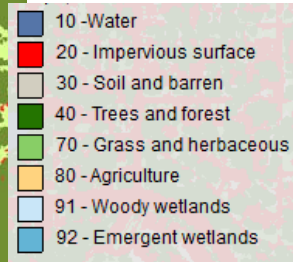
Average reduction in nighttime ambient temperature (Celsius)



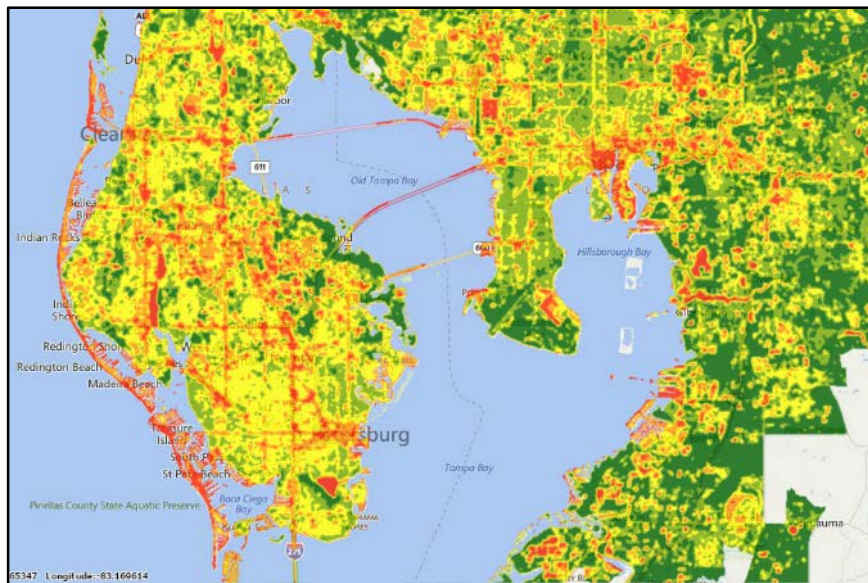
# Many spatially-explicit maps also available



**One-meter  
landcover  
data**



**Downscaled (30-meter) U.S. Census  
population grid**

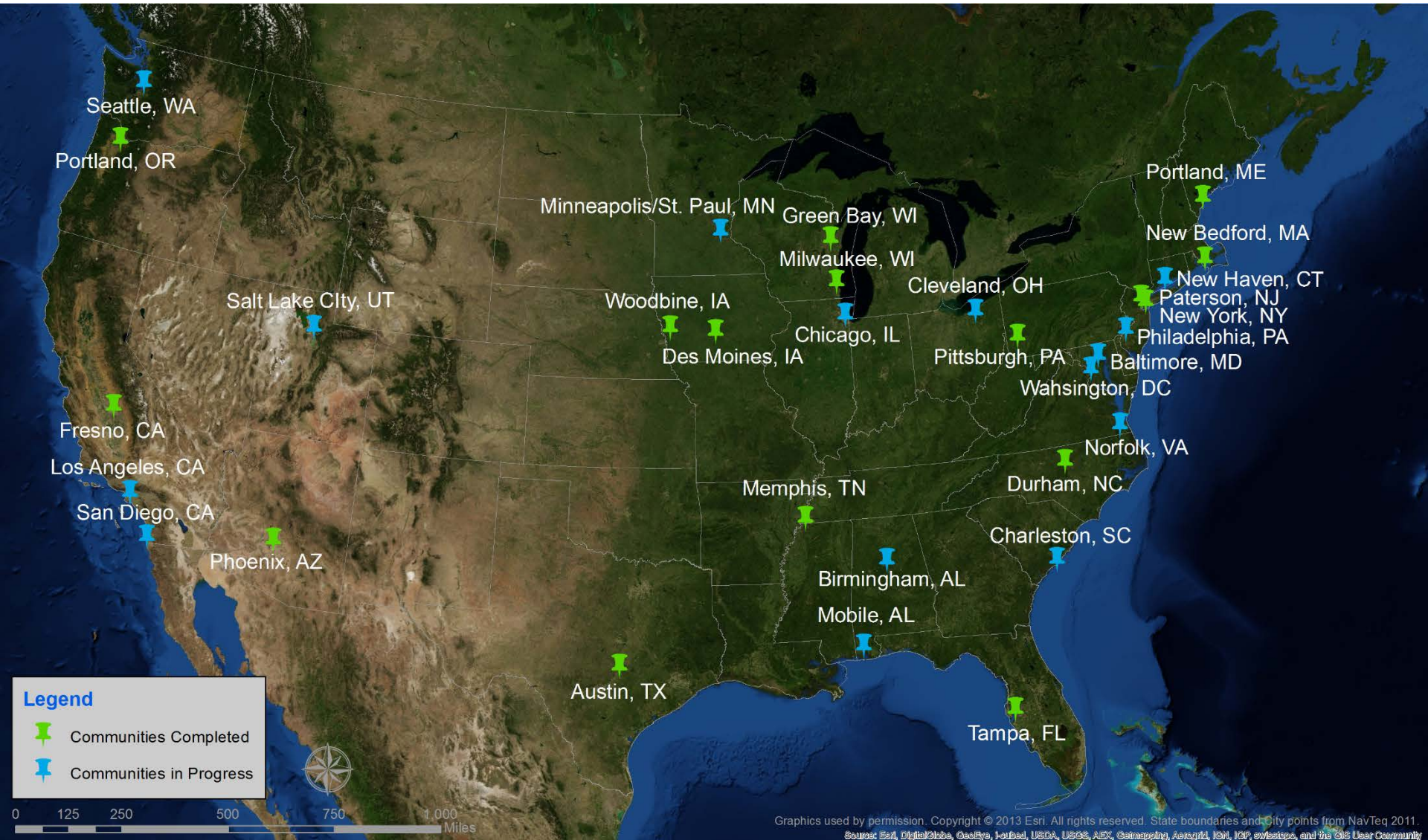


**Green-to-impervious "heat" maps**



**Precise maps of tree cover  
along local roads & streams**

# Comparable Block-Group & Finer-Scale Data for Urban & Suburban Areas across the U.S.



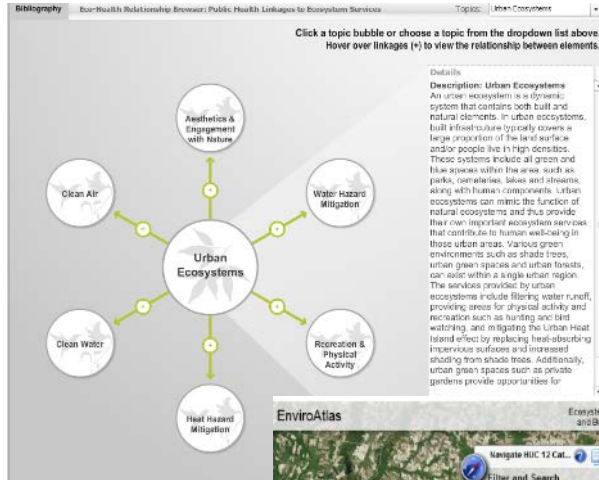
Graphics used by permission. Copyright © 2013 Esri. All rights reserved. State boundaries and City points from NavTeq 2011. Source: Esri, DigitalGlobe, GeoEye, Irbid, USA, USGS, AEX, Geomatics, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community

***Tribal Partners Sought for the Development of Additional Tribal Communities!***



# Also: Analysis Tools, Guides & Data Documentation

- Eco-Health Relationship Browser
- Mapping and analysis tools
- User added data
- Downloadable GIS toolboxes
- Jobs, transportation, built environment maps
- Use cases & guides for classroom and HIAs
- Interpretive fact sheets for every data layer



**EPA** Environmental Protection Agency

**Health Impact Assessment (HIA) & EnviroAtlas**

**Building a Greenway in the Classroom**  
CASE STUDY

**Integrating Ecosystem Services into the Decision Making Process**

**EnviroAtlas**

Ecosystem Services and Biodiversity | People and Built Spaces | Supplemental Maps | Analysis Tools | Mapping Tools | Future Scenarios

Navigate HUC 12 Cat. 1

Filter and Search

Select Up or Down Stream

Distance or Time

Count Stop

Select to Save HUC Shapefile

Personas Profile

**EnviroAtlas**

Analyze Ecosystem Services (Experimental)

Fluviation Profile

Map Legend

Draw a line of points with the tools below to show the location of that area

Clear A Preferred Line

**EPA** EnviroAtlas

**Percent Stream Buffer Zone as Natural Land Cover**

What are natural-vegetated stream buffers?

Why are they important?

How do we measure them?

How do we use the data?

For more information, see the fact sheet at: [http://www.epa.gov/enviroatlas/factsheets/percent-stream-buffer-zone-as-natural-land-cover.pdf](#)

**EPA** EnviroAtlas

**How the data was generated?**

The data for this map was calculated by applying the 2006 National Land Cover Database (NLCD) and the National Hydrography Dataset (NHD) to high resolution (30-meter) data from the National Wetlands Inventory (NWI) and the National Wetlands Inventory (NWI) to the National Wetlands Inventory (NWI).

For more information, see the fact sheet at: [http://www.epa.gov/enviroatlas/factsheets/how-the-data-was-generated.pdf](#)

# Coming Soon: Climate Scenarios

You are here: EPA Home » Research » Ecosystem Research » EnviroAtlas » Interactive Map

## Climate Change Scenarios

Timeline: Years (2006-2099)  
2075



### Choose Options

Scenario IV

Precipitation

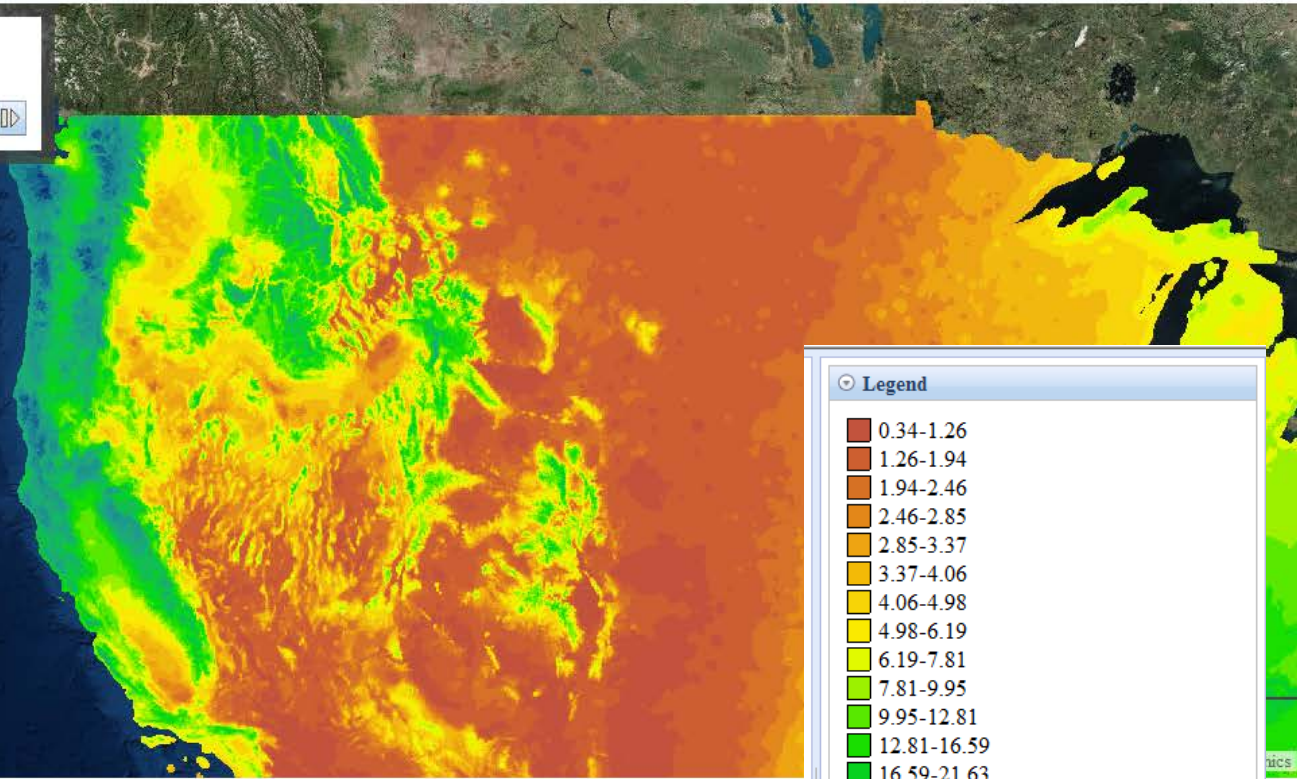
Winter

Or, select specific year to display

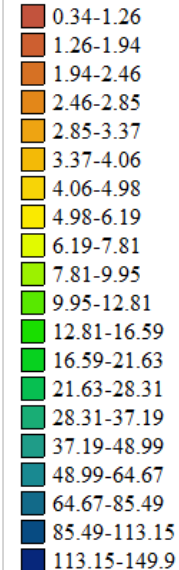
Show scenario

Show single year

Clear Map



### Legend



### Model Summary/Metadata

EnviroAtlas image service of  
RCP85WinterPrecip for time slider

- CMIP5 Ensemble Model, RCPs 2.6, 4.5, 6.0 and 8.5
- Min/Max Temperature
- Precipitation
- Potential Evapotranspiration
- Water Supply
- Domestic Water Demand

A large, faint watermark of the United States Environmental Protection Agency (EPA) logo is centered in the background. The logo features a stylized flower with three leaves and a sun-like center, surrounded by the text "UNITED STATES" at the top and "ENVIRONMENTAL PROTECTION AGENCY" at the bottom.

## **Online Demonstration:**

- ❖ **Navigating the EnviroAtlas Website**
- ❖ **The Eco-Health Relationship Browser**

# Thank You!

[www.epa.gov/enviroatlas](http://www.epa.gov/enviroatlas)

Contact us:

[enviroatlas@epa.gov](mailto:enviroatlas@epa.gov)

[jackson.laura@epa.gov](mailto:jackson.laura@epa.gov)



A large, faint watermark of the Environmental Protection Agency (EPA) logo is centered in the background. The logo consists of a circular border containing the text "UNITED STATES" at the top and "ENVIRONMENTAL PROTECTION AGENCY" at the bottom. In the center of the circle is a stylized flower with a circular head and three leaves.

# **Extra Slides: Uses of EnviroAtlas**

# Uses (that we know about) of EnviroAtlas to Date

- Education – university classroom use, research projects; high-school class exercises
- US Forest Service – ecosystem services property valuation research
- Potentially restorable wetlands data used in Gulf Coast Plains conservation & restoration efforts
- Dasymetric population data used by a state government to prioritize cell tower placement
- Eco-Health Relationship Browser used in health dept. staff HIA training and HIA graduate course, data used in Tampa Bay Health Impact Assessment
- Data layers used to inform development of South Atlantic Landscape Conservation Cooperative Conservation Blueprint
- Data layers under consideration by FWS for tool to help inform land conservation decisions
- Office of Water, States – Addressing impaired waters, watershed recovery potential
- EPA Office of Enforcement, leaking barrels, wetlands restoration, greenway planning, etc.
- EPA Region 4 Watershed Integrity Index
- Transportation planning
- Durham, NC, tree planting prioritization and “Citizens’ Compass” public website
- NYC Parks Dept. report on urban ecosystem services by neighborhood
- Greenway development in Colorado
- Multiple studies by USFS, Harvard School of Public Health, Oregon State U, ORD, & others investigating linkages between eco and human health.
- Emergency response
- Contaminated sites remediation



**Jackson Heights, Queens – 1101 acres**

**Flatbush, Brooklyn – 1039 acres**

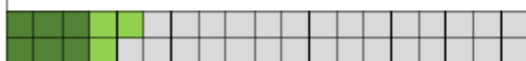
**Lower East Side, Manhattan – 536 acres**



For every acre in Jackson Heights, there are **98 residents**  
1 box = 5 people, full rectangle = 1 acre

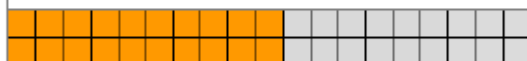


Jackson Heights is 17% **tree canopy** and 24% **green space**



Summer temp reduction	<b>0.70 °F</b>
Runoff avoided (per acre)	<b>1395 gallons</b>
Respiratory health savings (per 10,000 residents)	<b>\$1421</b>
Schools with adequate green space (% of total)	<b>50%</b>
Green streets (% of total acreage)	<b>1.4%</b>
Community gardens	<b>0</b>

For every acre in Flatbush, there are **102 residents**  
1 box = 5 people, full rectangle = 1 acre



Flatbush is 23% **tree canopy** and 28% **green space**



Summer temp reduction	<b>0.82 °F</b>
Runoff avoided (per acre)	<b>1623 gallons</b>
Respiratory health savings (per 10,000 residents)	<b>\$3305</b>
Schools with adequate green space (% of total)	<b>33%</b>
Green streets (% of total acreage)	<b>1.2%</b>
Community gardens	<b>1</b>

For every acre in Lower East Side, there are **136 residents**  
1 box = 5 people, full rectangle = 1 acre



Lower East Side is 27% **tree canopy** and 34% **green space**

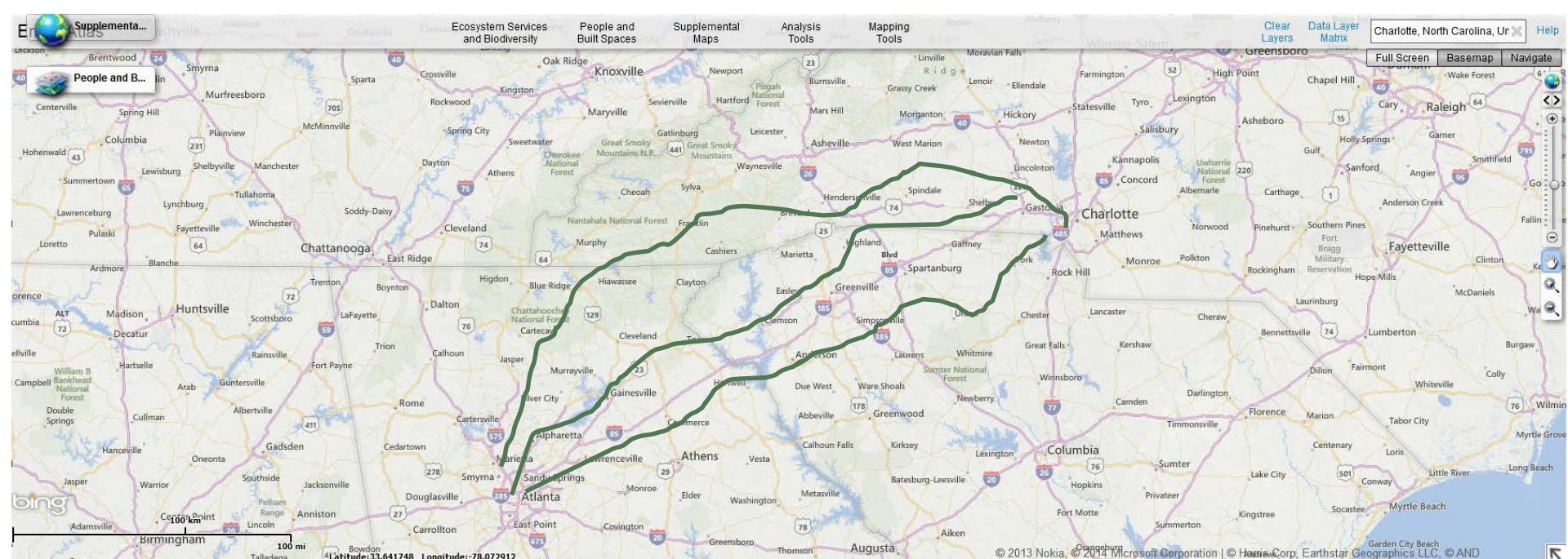


Summer temp reduction	<b>1.01 °F</b>
Runoff avoided (per acre)	<b>1558 gallons</b>
Respiratory health savings (per 10,000 residents)	<b>\$4071</b>
Schools with adequate green space (% of total)	<b>79%</b>
Green streets (% of total acreage)	<b>4.9%</b>
Community gardens	<b>29</b>



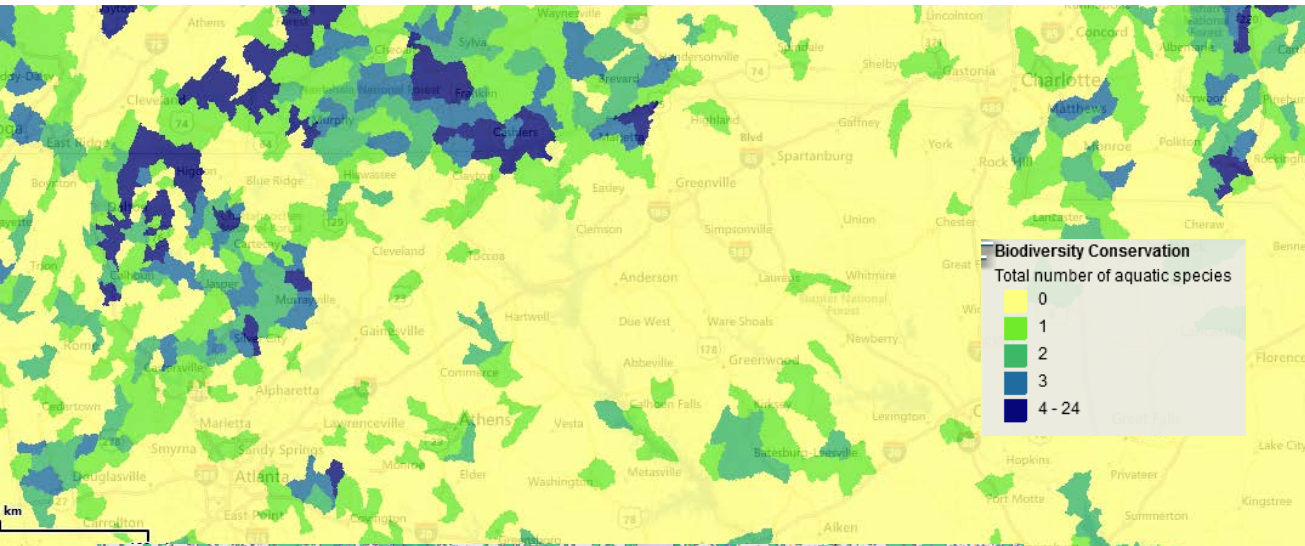
# Hypothetical Use Case

Six routes have been proposed for a high speed rail between Charlotte, NC and Atlanta, GA. Public meetings have been arranged to discuss alternate routes, representation from several interest groups.

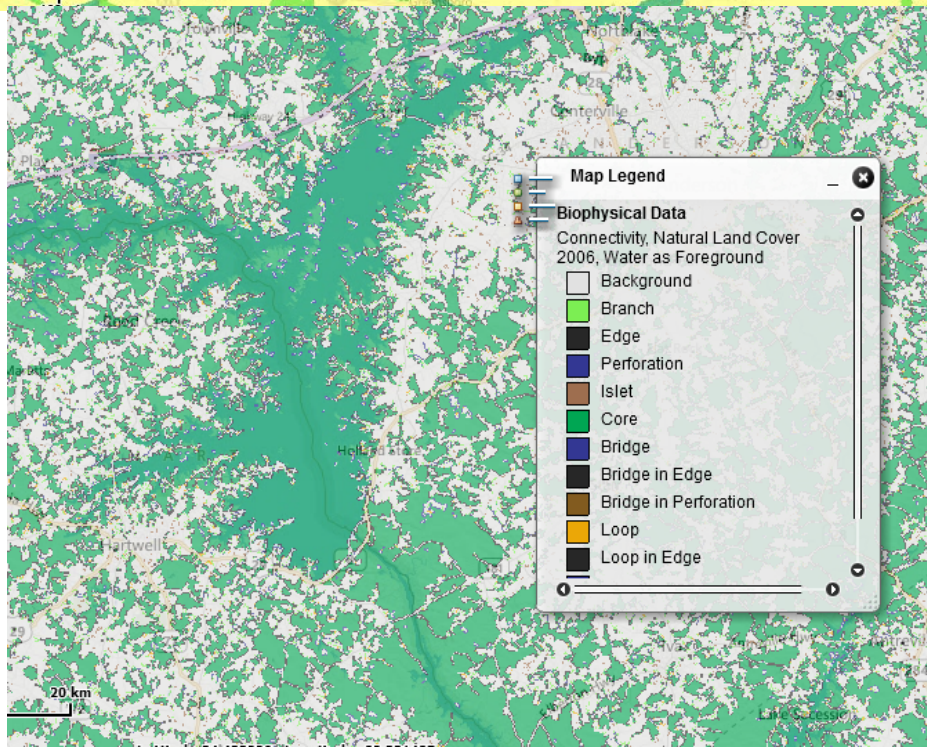




# Hypothetical Use Case

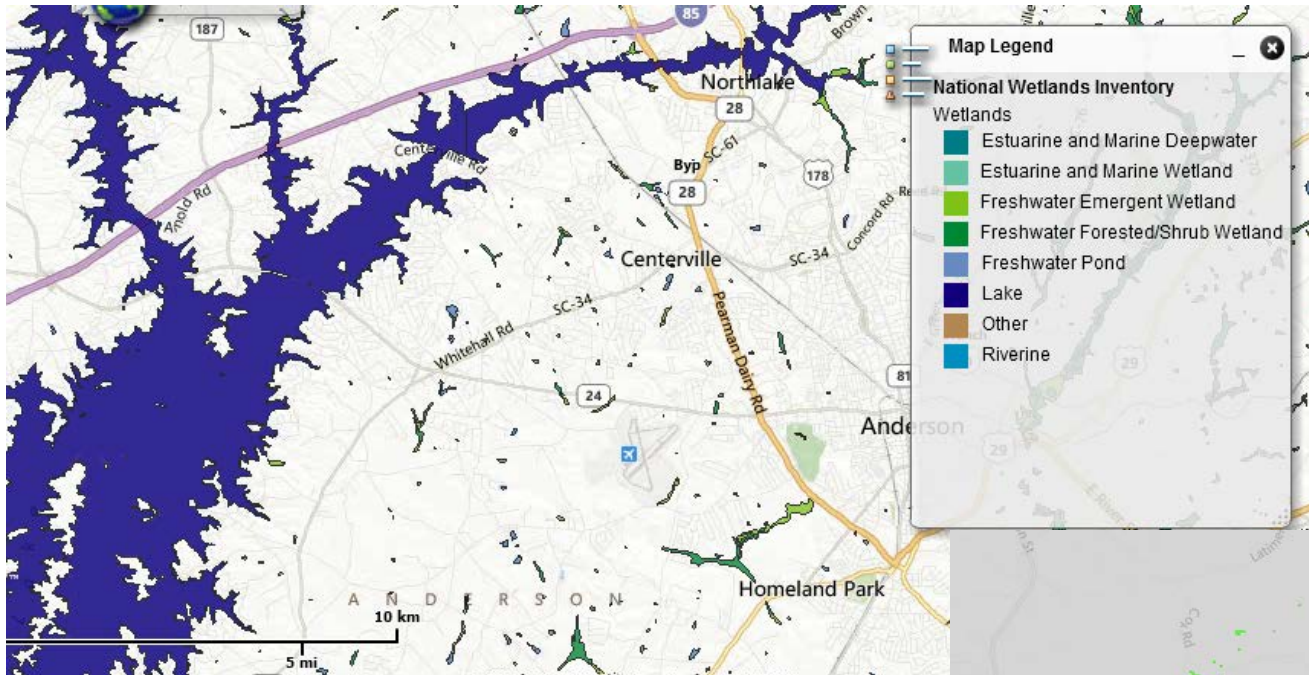


One group highlights presence Threatened & Endangered Species



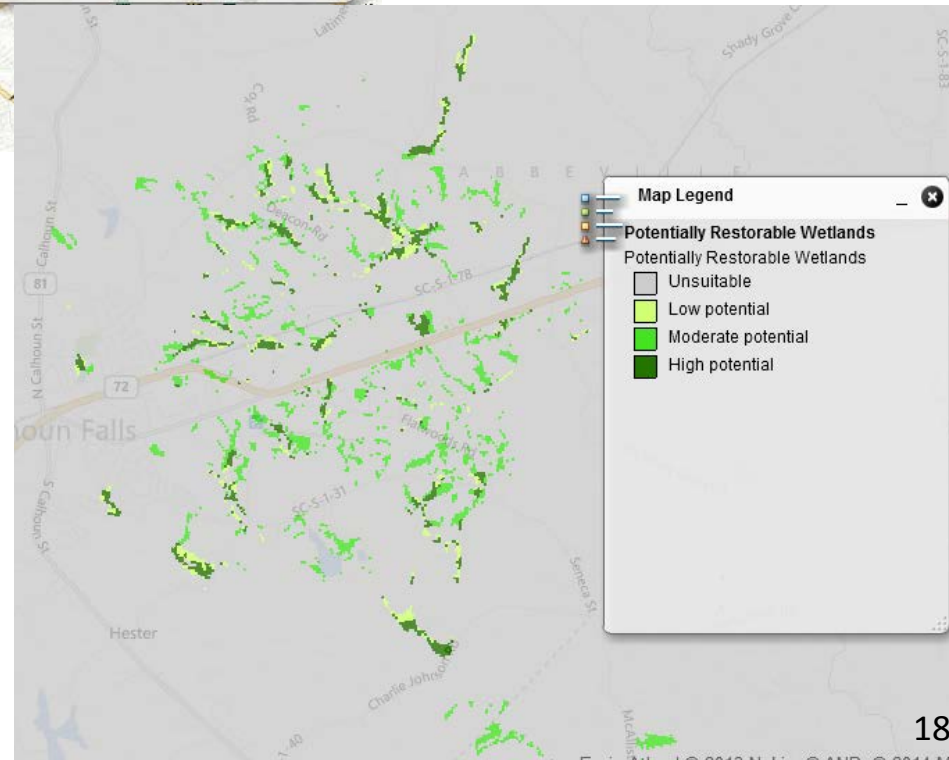
Another group illustrates how the landscape will be further fragmented depending on the route selected

# Hypothetical Use Case



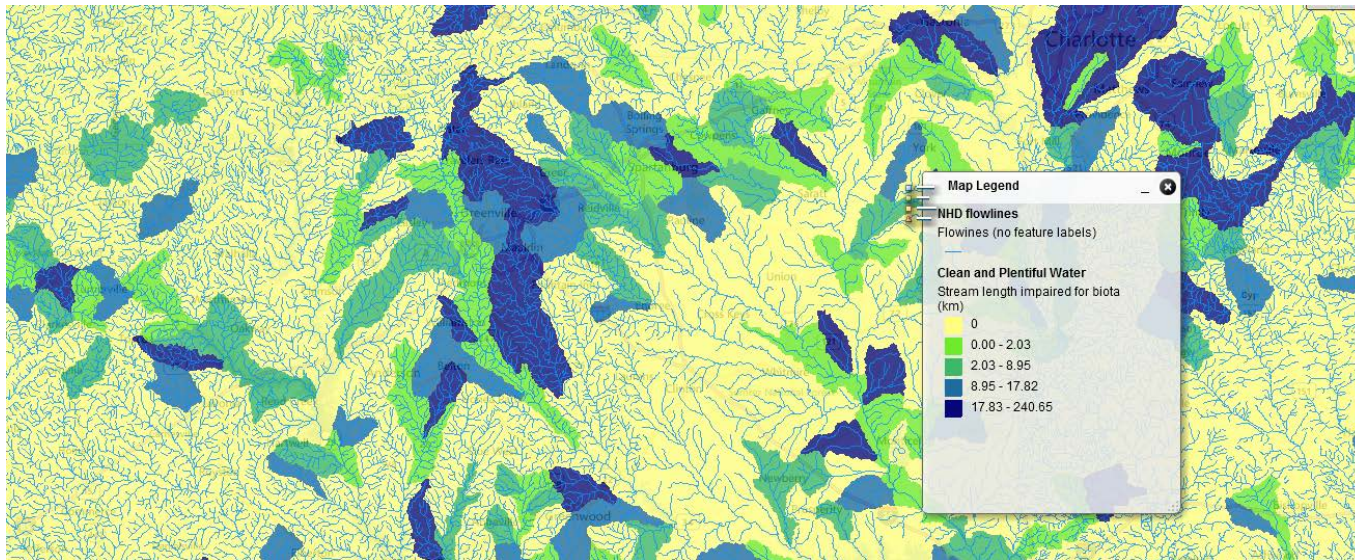
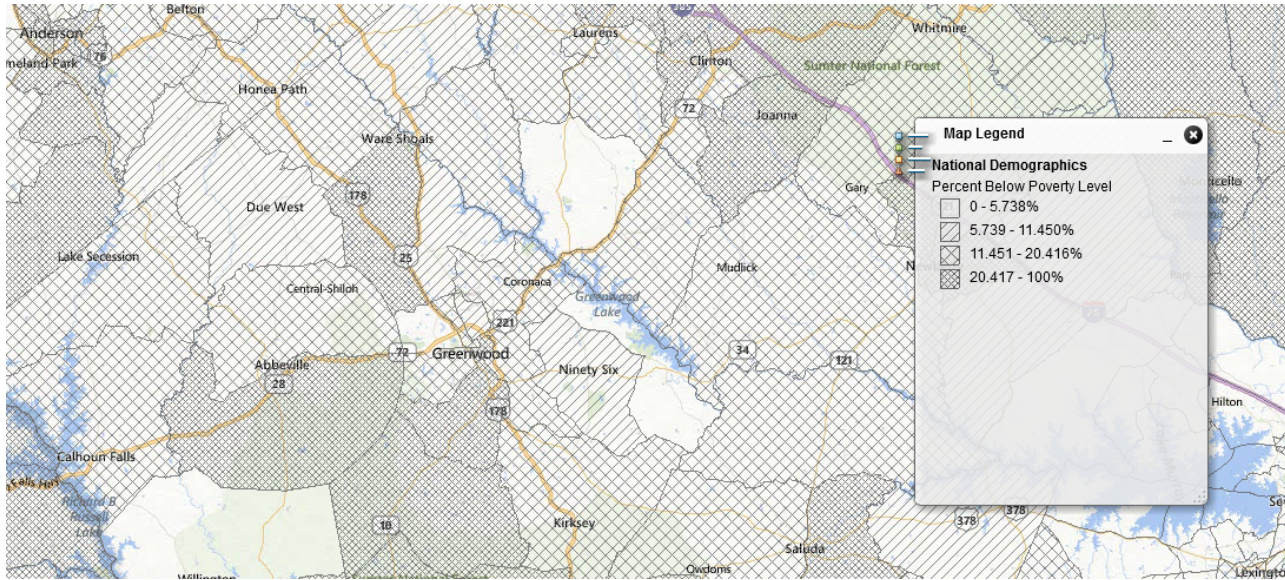
Another group points out that no matter how careful they are, there will be some wetlands mitigation required

But they are prepared and have already looked into possible agricultural lands which would readily lend themselves to wetlands restoration for mitigation



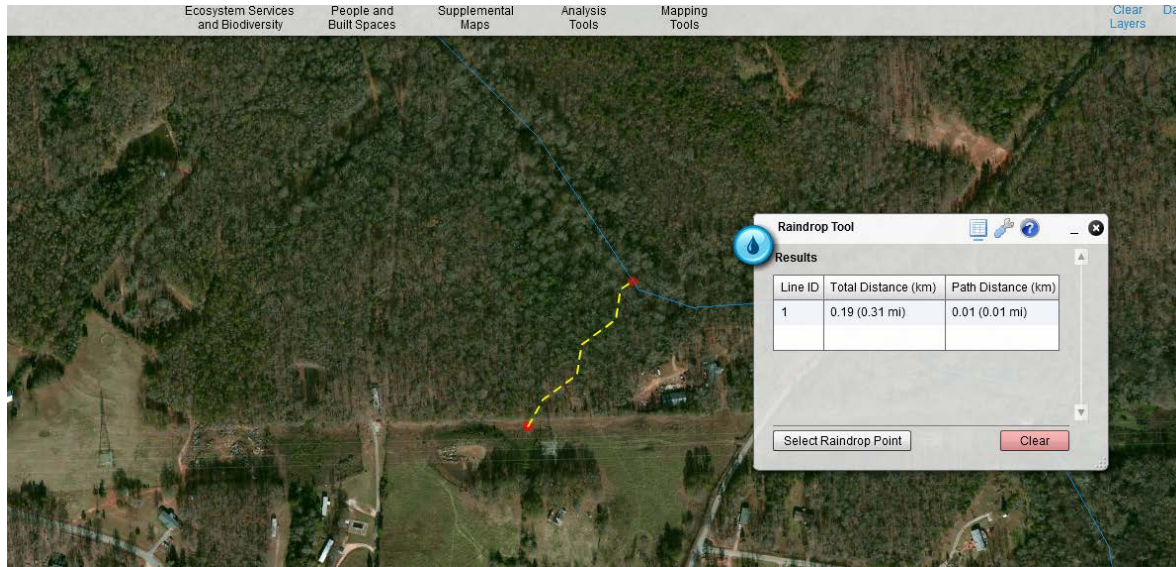
# Hypothetical Use Case

Several rural community planners are there and they note that a station could help their economically depressed community. A track with no station, however, would further afflict an already burdened community

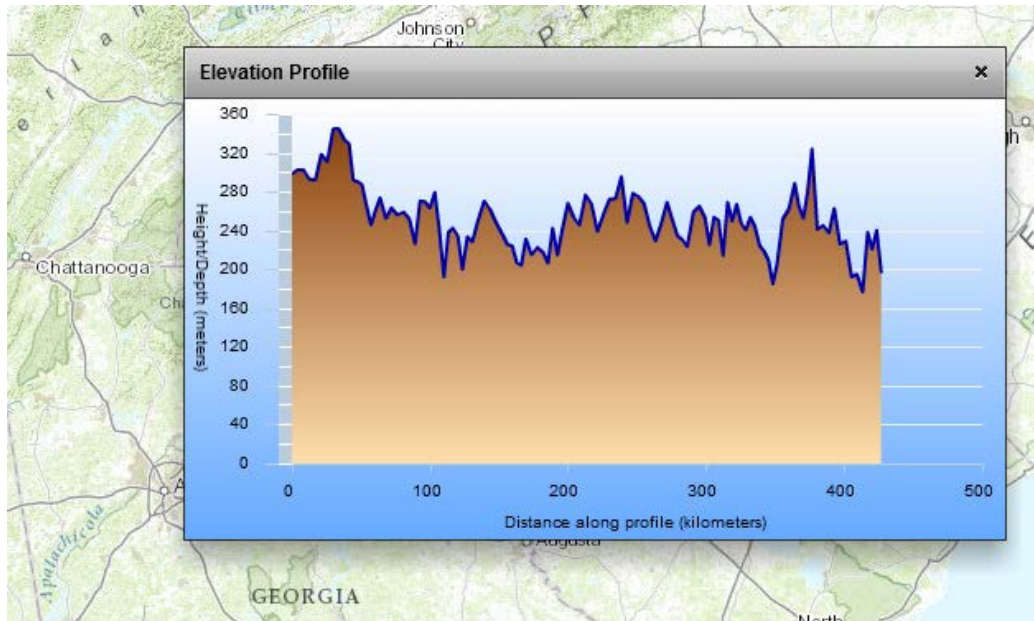


NC and GA have many stream kilometers on the 303d list for biota impairment, they express concern that construction of the rail line would add to that burden

# Hypothetical Use Case



A representative from a rural drinking water utility is concerned because she has used the EnviroAtlas Raindrop Tool and noted that runoff from a proposed rail yard would flow directly into her community's drinking water source.



An engineer notes that one of the routes could be cheaper because there would be less elevation change and less chance of encountering endangered species