Long Island Sound Community Impact Fund

Presents

GIS Mapping: Sharing Results and Findings

Using geographic information, software and technology to enhance projects, proposals, and organizations

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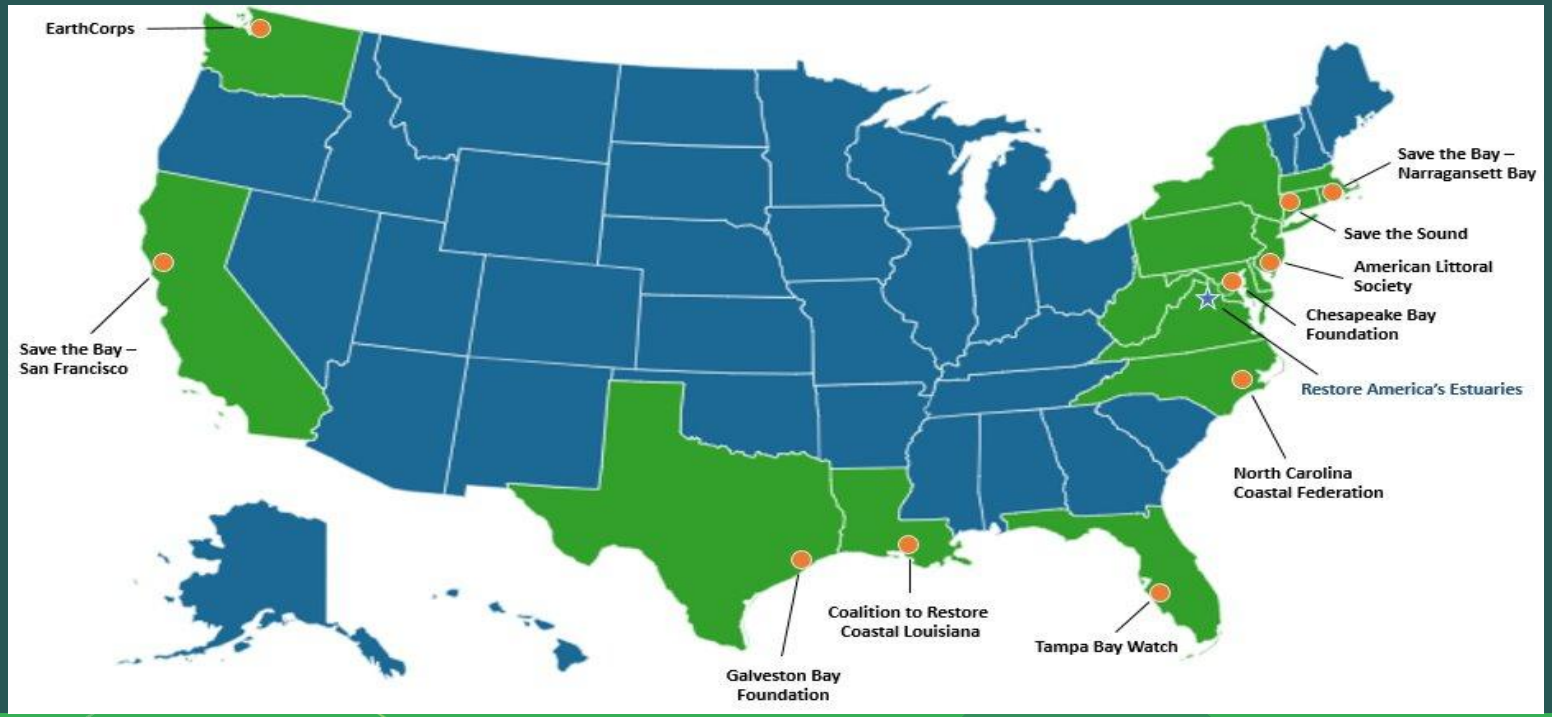
RESTORE AMERICA'S ESTUARIES

UNIVERSITÄT LEIPZIG

Restore America’s Estuaries

Restore America's Estuaries is committed to protecting and restoring bays and estuaries as essential resources for our nation.



RESTORE AMERICA'S ESTUARIES

The Long Island Sound Community Impact Fund

The Long Island Sound Community Impact Fund (LISCIF) is a partnership between:

- Restore America's Estuaries
- U.S. Environmental Protection Agency
- Long Island Sound Study (LISS)

Purpose: To provide technical and financial assistance to environmentally distressed communities, to address environmental issues and improve the quality and accessibility of the Long Island Sound.

RESTORE AMERICA'S ESTUARIES

Schedule and Content

Introductions

What is GIS

Thinking Spatially

Examples of GIS projects

About Data!

GIS resources for you

Questions

What is GIS?

Developing spatial thinking skills

GIS - Explained

What is GIS?

GIS: **G**eographic **I**nformation **S**ystem(s)

- Most often involves the use of mapping software (paid or free) to create visualizations
- GIS is a type of technology that creates, manages, analyzes, and maps all kinds of data
- GIS connects data to a map (visualization), integrating location (where things are) with various descriptive information (what things are like there)
- GIS helps users understand patterns, relationships, and geographic content
- Benefits include: improved communication, efficiency, management, and decision-making

GIS and mapping software

esri

Arc GIS, ArcPro, ArcGIS Online, ArcMap...

Google Earth

Leaflet

QGIS

Datawrapper

What does GIS do?

Data Management

- GIS is a foundation record keeping system
- You can store and integrate information from multiple sources, magnifying data's usefulness

Mapping and Visualization

- Most well known for map creation
- Digital maps, satellite imagery, 3D, real time maps
- GIS brings data to life, visualizing problems to help us solve them

Spatial Analysis

- Most data has ***some*** location component - everything happens somewhere
- Using spatial analyst tools, you can find hidden relationships and generate new insights

Communication

- Maps and dashboards communicate complex ideas **quickly**
- Science and data build common understanding, support collaboration, and problem-solving

Developing a GIS focused mind

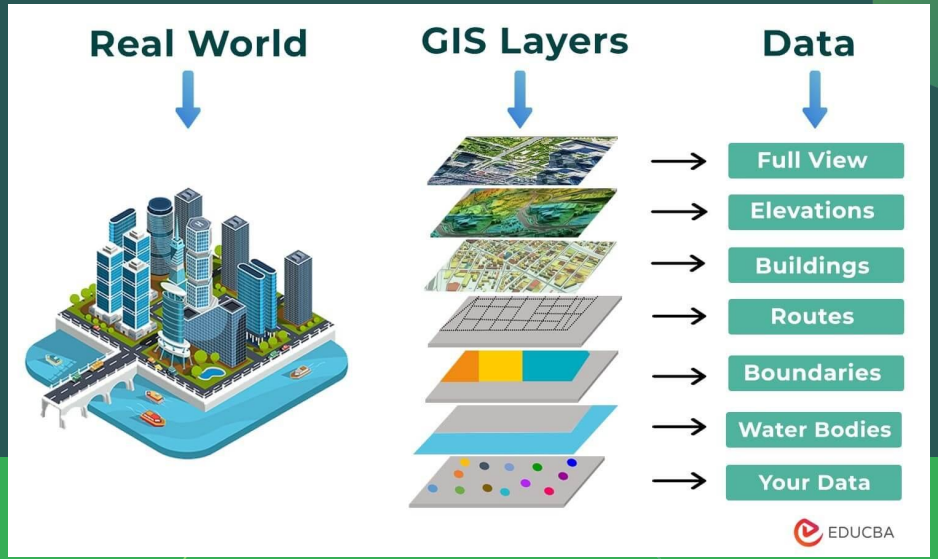
To **think spatially** means to understand the world in terms of **location, distance, direction, relationships, patterns, and scale**.

Spatial thinking allows users to see how complex systems interact and evolve across landscapes

It allows us to answer questions like: Where is XYZ located? Why is it there? How is it connected to other locations? How do things vary by location?

Key aspects of Spatial Thinking are:

1. **Location Awareness**
2. **Understanding Spatial Relationships**
3. **Recognizing Patterns and Distribution**
4. **Using Scale and Perspective**
5. **Thinking in Layers**



Your turn to Think Spatially:

An exercise to develop our spatial thinking skills

1. Pick something relevant to your project/organization
   a. Ex. bike path, urban farm, subway stations, schools, parks, etc.
2. Discuss how you could display important information about these locations on a map
   a. Who uses these services and where are they coming from? What areas do these locations serve? How are they accessing these places?
3. Share either in the chat or using the “raise hand” function what you came up with

Examples of GIS in the real world

Some of my previous projects/what can be done with GIS

Environmental inequality and its impact on access to green space in Boston

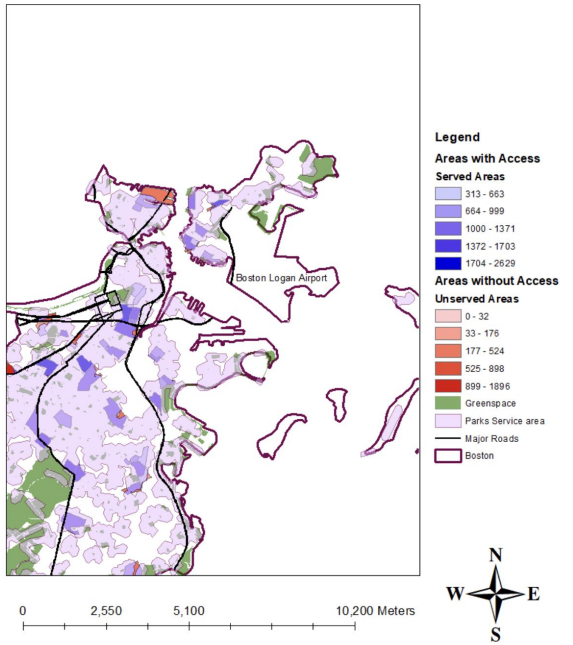
Disability access to land trust trails

Mapping amenities in Dublin

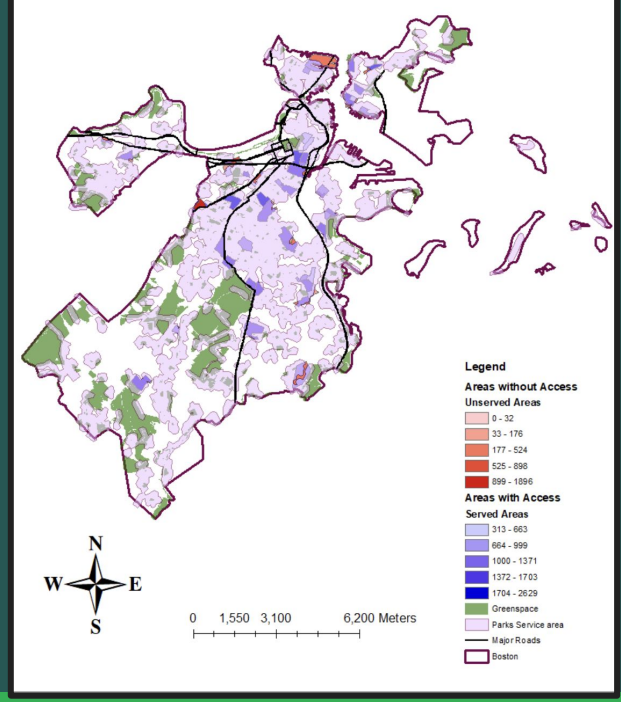
Bike access to the Hudson River

Environmental inequality and its impact on access to green space in Boston

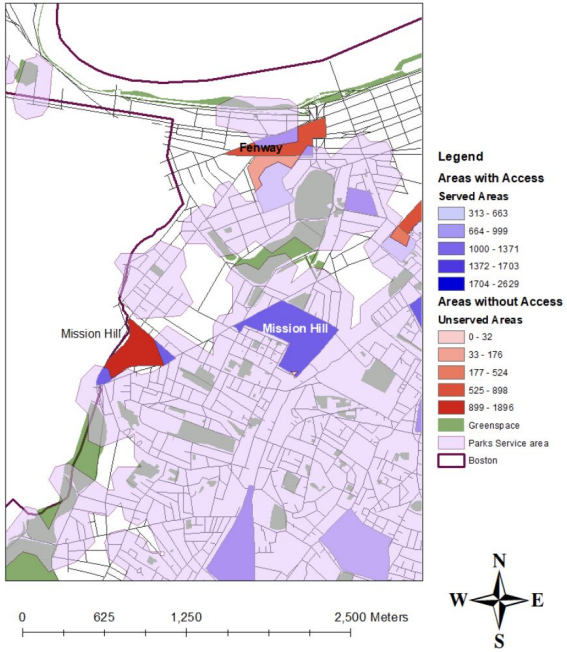
Major Roads and Environmental Justice groups



Accessibility of Greenspace in Boston for Minority, Low-No Income and English Language Isolation Populations



Mission Hill and Fenway Neighborhoods



Disability access to land trust trails

Accessibility Description

Parking: There are two parking locations for Destruction Brook Woods. You can access all trails through either parking area.

1. **Slade's Corner Road:** This is the large, main parking lot for the Reserve. Use this entrance when hiking on the Red and Green Trails.
2. **Fisher Road:** Roadside parking is available on Fisher Road. This parking area provides easy access to the Yellow and Blue Trails .

This property is our largest Reserve so terrain varies greatly. A few generalized statements can be made:

- **Rain:** Sections of the Yellow and Blue Trails near the wetland and Destruction Brook can be wet after heavy rainfall.
- **Trail slope and width:** The Blue Trail has many variations in elevation and lots of hills. The Yellow Trail also has some small hills. The trails are generally wide, four to six feet on average.
- **Trail Material:** Most trails are packed earth with some sections having visible roots and rocks. Many sections of trail are covered with leaf litter.
- Motorized mobility aids allowed on this property with permission from DNRT
- **Accessibility level**: High-moderate (Wide trails, minimal-moderate obstacles, but some hills)

Red trail accessibility map of Destruction Brook Woods

Parking Lot

The Slades Corner Road parking lot is quite large and able to hold 12-15 cars. It packed earth and will sometimes have puddles after rain …

Field Trail

The Red Trail begins through a field. It is a flat packed trail and about two feet wide. This goes on for about 200 feet.

Rocks and Roots

When you are about to walk into the woods, there is a rocky area, which can be stepped on top of. The trail entering the woods is abo…

Red Trail Splits

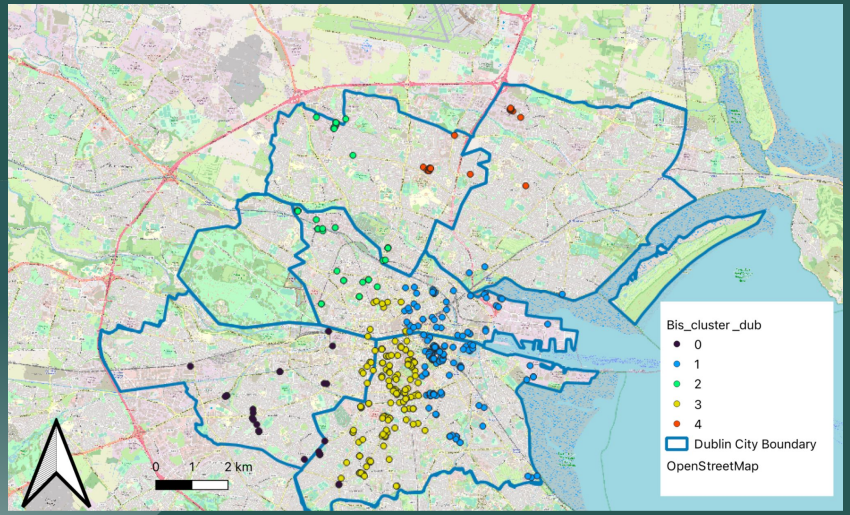
The Red Trail continues both left and right. To follow the path of this evaluation, take the left-hand trail.

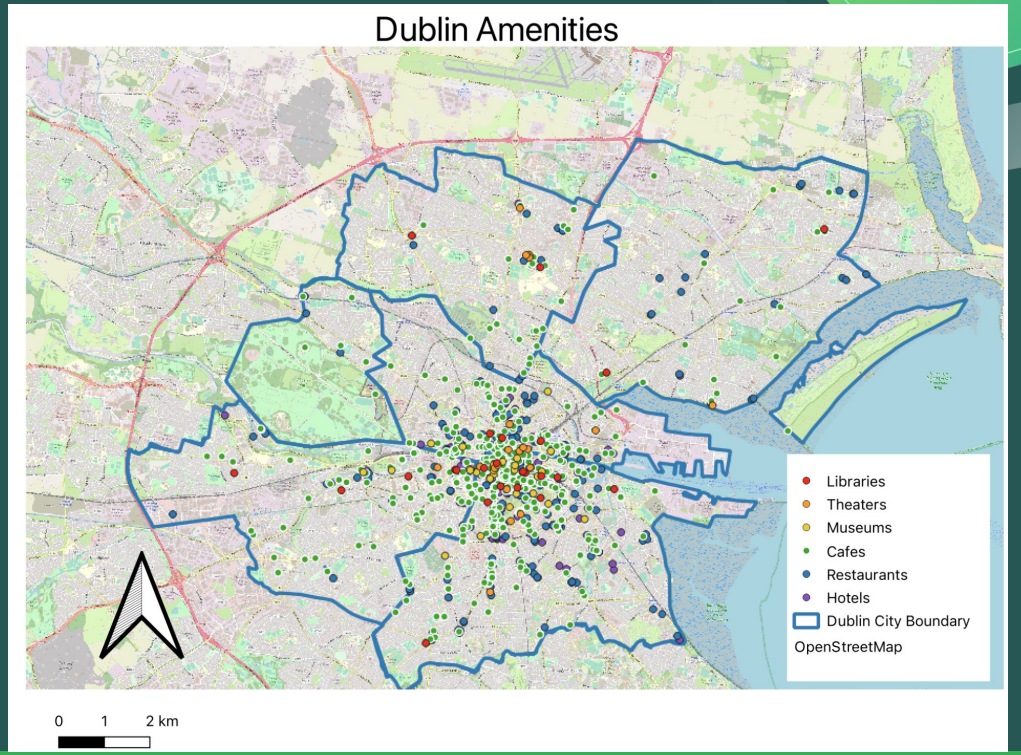
Wide, Flat Trail

Loose rocks

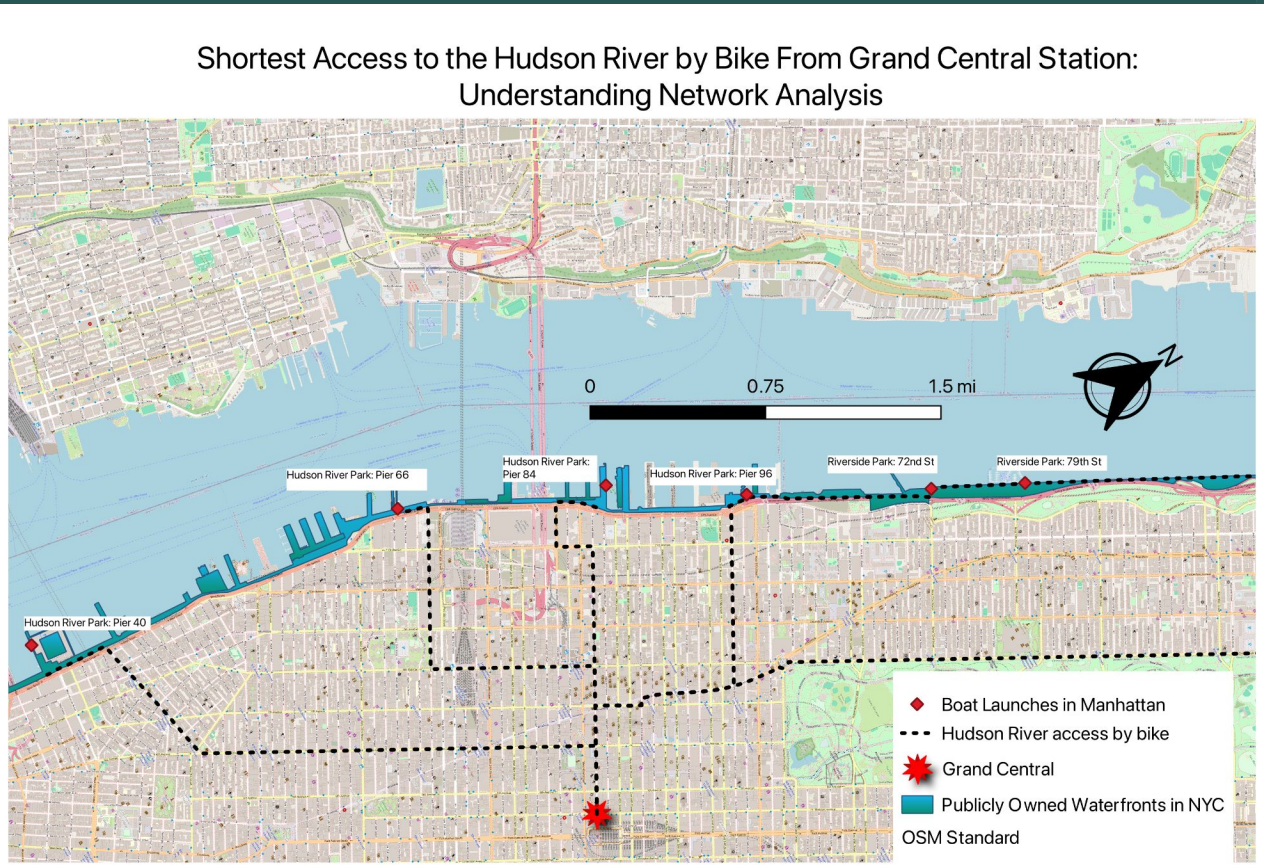
At approximately .32mi there is a section of loose rocks and dirt.

Mapping amenities in Dublin





Bike access to the Hudson river (sample project)



Data, Data, Data!

Where to find data?

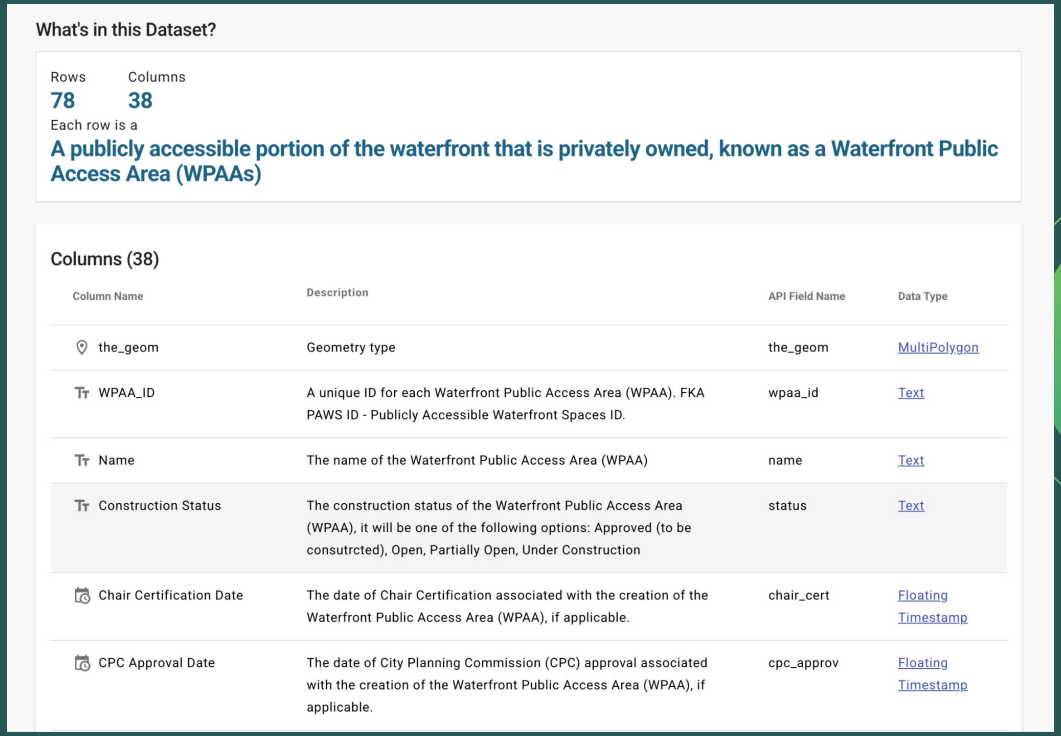
- Most states will have some kind of centralized GIS database - lookup “your state + GIS database” and you should get a .gov result
- Larger cities may have their own GIS databases - “city of interest + GIS database”
- Some universities keep public GIS records but this is less likely
- I am hesitant to pay for GIS data from private companies unless absolutely necessary

NYC OpenData

Data, Data, Data!

What is “good” GIS data?

- High quality data will be labeled correctly
- Every column in the attribute table will have a corresponding description from the source you got it from



What's in this Dataset?

Rows 78 Columns 38

Each row is a

A publicly accessible portion of the waterfront that is privately owned, known as a Waterfront Public Access Area (WPAAs)

Columns (38)

Column Name	Description	API Field Name	Data Type
the_geom	Geometry type	the_geom	MultiPolygon
WPAA_ID	A unique ID for each Waterfront Public Access Area (WPAA). FKA PAWS ID - Publicly Accessible Waterfront Spaces ID.	wpaa_id	Text
Name	The name of the Waterfront Public Access Area (WPAA)	name	Text
Construction Status	The construction status of the Waterfront Public Access Area (WPAA), it will be one of the following options: Approved (to be consutrcted), Open, Partially Open, Under Construction	status	Text
Chair Certification Date	The date of Chair Certification associated with the creation of the Waterfront Public Access Area (WPAA), if applicable.	chair_cert	Floating Timestamp
CPC Approval Date	The date of City Planning Commission (CPC) approval associated with the creation of the Waterfront Public Access Area (WPAA), if applicable.	cpc_approv	Floating Timestamp

Data, Data, Data!

How do I organize my GIS data?

- ArcPro and QGIS can be very particular about how their files are labeled
- Make sure to have a file organization system that works for you
- You **will** end up with more files than you expect. ***Keep them organized!***
- DO NOT! Put spaces in your file names. Always label with an underscore (_)
- Ex. Man_Bike_Route = Manhattan Bike Routes
- GeoJSON and .shp files do not like spaces USE _

Resources

Continue developing your GIS skills

GIS Tutorials:

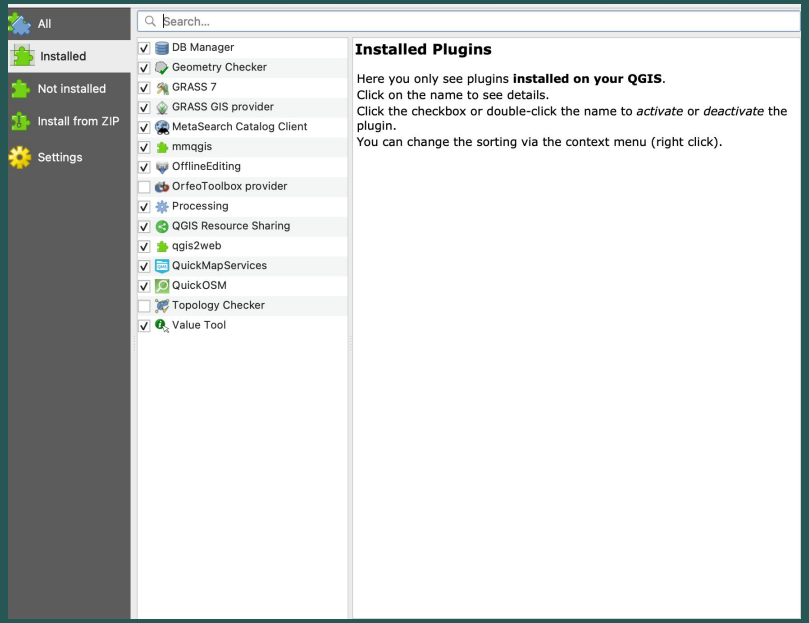
- **Very Basic QGIS tutorial (2024): Installation, Data, Layers, Vector vs. Raster Data, etc.**
- In depth QGIS tutorial (2022): 71 videos with more specific information
- ArcGIS Pro complete beginner's tutorial: recommended if your organization has access to ESRI products

Data:

- CT GIS open Data
- UCONN Map and Geographic Information Center
- New York State GIS data portal
- New York City Open Data portal
- New Jersey Geographic Information Network
- NJ Department of Environmental Protection Open Data - GIS

More resources

My QGIS plugins



StoryMaps

- Great examples from a wide range of subjects
- Winners from ESRI 2018-2014

Final tips and tricks

- I recommend everyone make a free ArcGIS online account
- This can make downloading data easier
- Lots of .gov use ArcGIS online to store info and having an account for your Org can make the download process smoother