



WEB APPLICATION USER GUIDE

Mapping Environmental Conditions & Vulnerability in the Robeson County
- Hurricane Matthew Hazard Exposure Assessment

Geeta Nakkina

MGIST, NCSU

BACKGROUND:

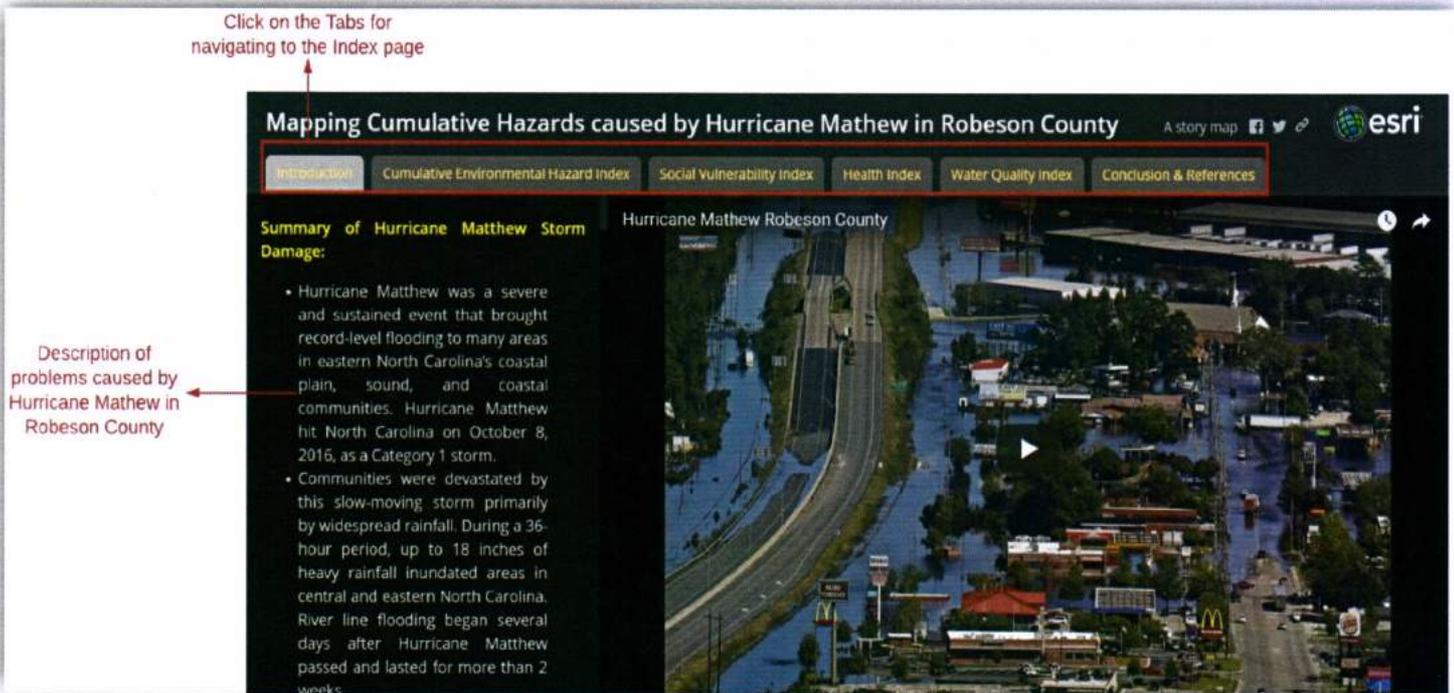
This application narrates the story of problems caused by Hurricane Matthew and storm impacts in the Robeson County. This application allows for a more holistic understanding of the flood-related Hazards populations are facing. Hopefully, collaborative partnerships between public environmental health agencies and local government, provide long-term recovery efforts and facilitate the reduction in vulnerability and improve resilience in Robeson County. Using a variety of local datasets for community indicators as well as data representing different Indices, the application allows users to explore how the Robeson County community interacts with existing Environmental Hazards and in turn, how this is related to the overall quality of life.

The application was developed as a part of the project Building Resilience by Innovating through Diverse Group Engagement Long-term recovery from Hurricane Matthew. This project is under Bethany B. Cutts and the work on the analysis part is completed for master's level capstone project through the MGIST program at NC State University. Hurricane Matthew exposed tensions between vulnerability and resilience that had always existed within Robeson County and the Lumber River watershed. This project was developed as a comprehensive community voice framework to improve long-term recovery efforts and facilitate reductions in vulnerability and improve in state and federal aid opportunities to support a comprehensive community vision that addresses long-standing social inequities.

Application URL: <http://arcg.is/0eqXOW>

Interface Overview:

- The Story Map has an Introduction page which describes the problems caused by Hurricane Matthew and the Problems Robeson residents are facing in the left side panel.
- On the right side a video is embedded which has photos of the area and describe the extent of flooding occurred during the Hurricane Matthew.
- For understanding the analysis used for calculating the Index click on the tab with the Index name to navigate to the page.
- Each Index has a web mapping application included, which provides querying capability. There is



a link option on the top right corner which provides the URL for the story map and it ca copied and shared easily.

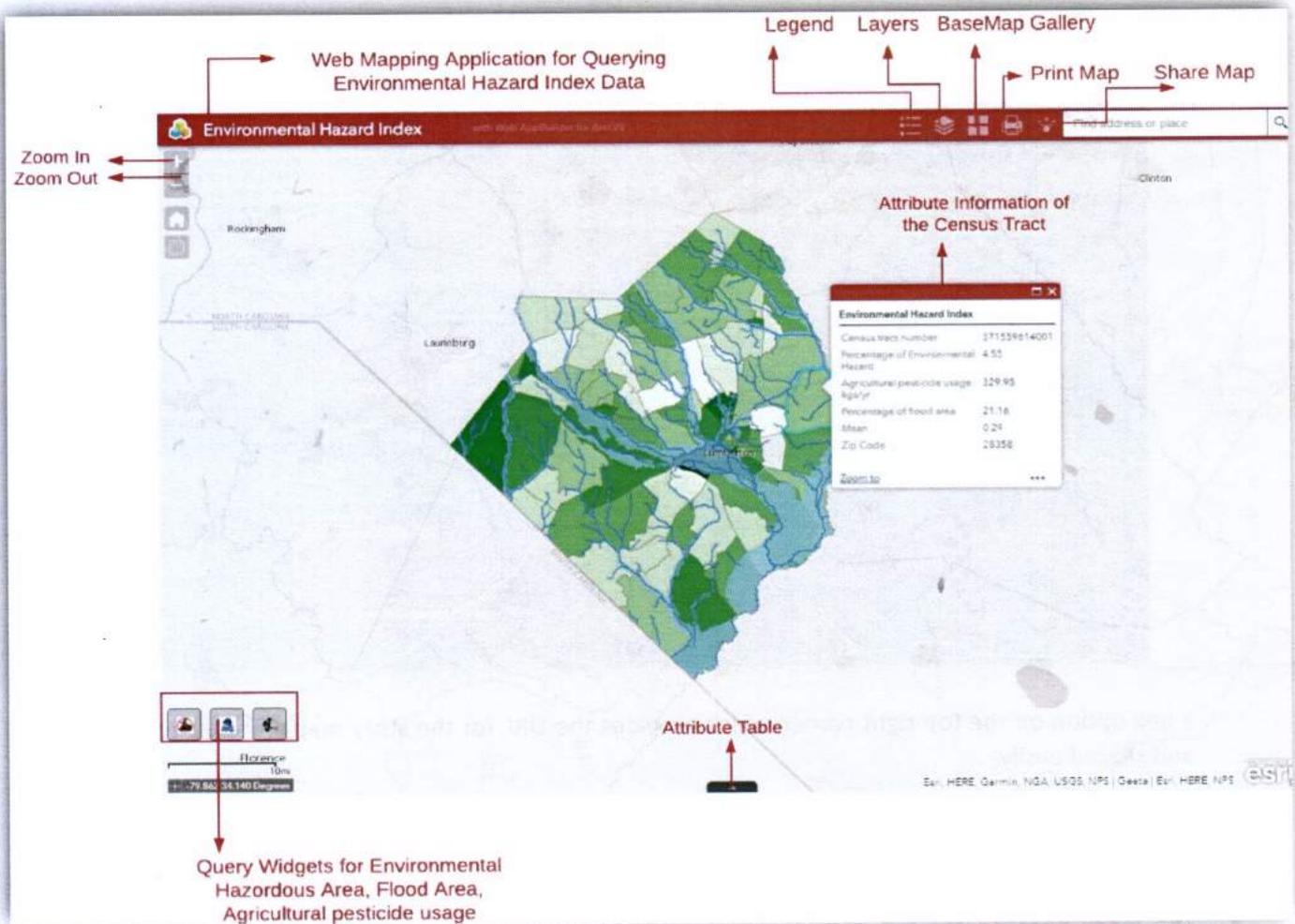
Picture 1: Story Map Developed for sharing the Analysis results with Querying Capability

Elements in the Index page:

- The Index page on the left provides description of the datasets and procedure used for the development of the Index. It also has information on specific usage of the web mapping application.
- On the right side, a web mapping application is embedded in the story map, which has a map showing the Mean values calculated.

Web Mapping Application:

- The web mapping application has Legend widget, Layers widget, Base map Gallery Widget, Print Widget and Share Widget in the header bar.
- Query widgets are developed separately for all the different measures, In the example below Query widget is created for querying Environmental hazardous area, Flood area and Agricultural pesticide usage in the Robeson County.
- Queries are separately developed for County and Zip Code measures.
- By clicking on the Census tract in the Map the Attribute details of the census tract can be seen. Zoom in and Zoom Out options are available in the Map document.

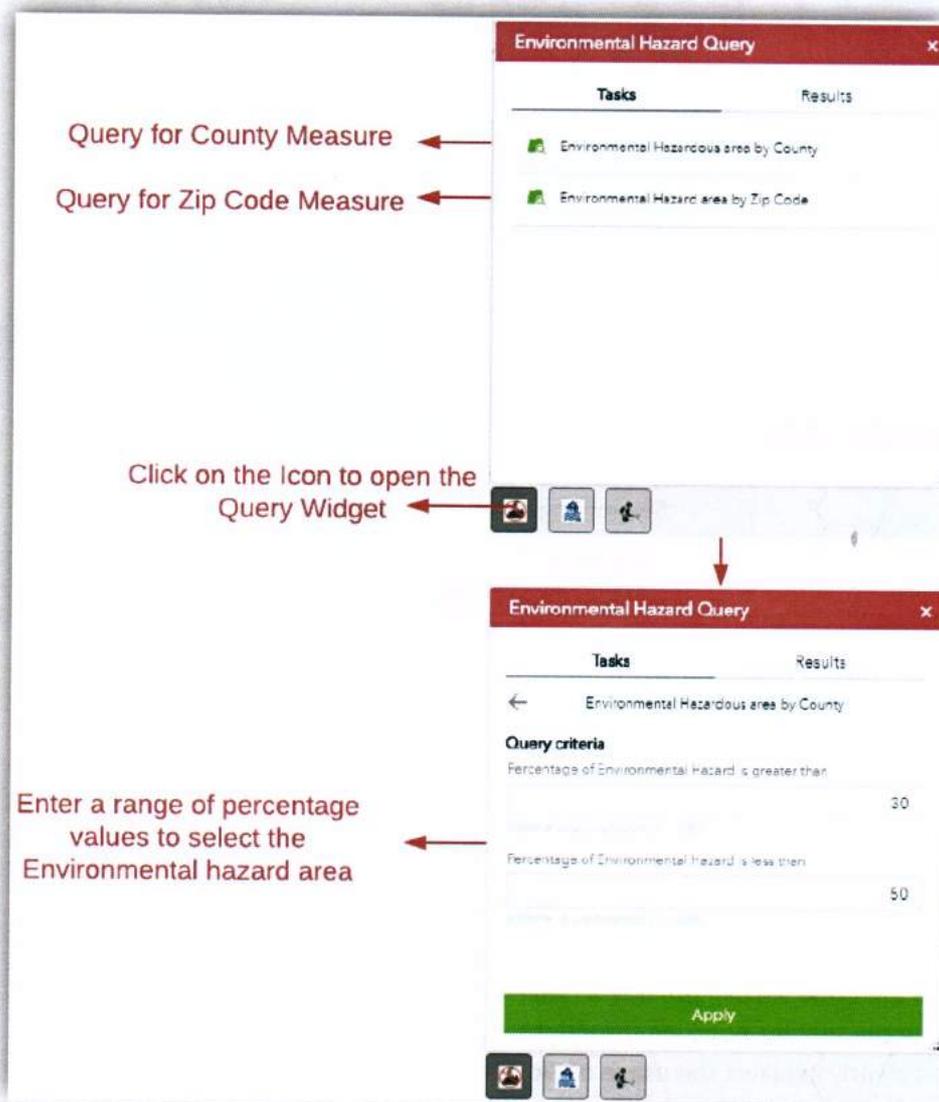


Picture 2: Explanation of the web mapping application functionality

Using Query Widget for County Measure:

- Click on the query widget and an widget opens showing Queries separately for County and Zip Code Measures.

- Select the county measure and a query opens where you can provide range of values for selection.
- Example attached clearly explains the usage of County level measure for selecting the Environmental Hazard Area with in the user specified percentage values.
- Hints are provided in the tool for entering the values. Click on Apply for running the Query and the results are highlighted in the Query results tab. The Census tracts with in the given range are selected and are highlighted in the map.
- The results of the Query can be exported by clicking on the . . . in the Results tab. The attribute Information of the Census Tracts can be viewed in the map and by clicking on the particular census tract.
- By Using the Print widget in the header of web mapping application the map can be saved as a image or Pdf file.



Picture 3: Query widget for Entering the range of values to select Census Tract in the County

Environmental Hazard Index

Query results are shown in the Results Tab and the census tracts with in the range are highlighted on the Map

Attribute Information of the selected Census Tract Fayetteville

Environmental Hazard Query

Tasks Results

Environmental Hazardous area by County _Query result

Number of features found: 22

Environmental Hazard Index

Census tract number	371559003002
Percentage of Environmental Hazard	43.77
Agricultural pesticide usage kg/yr	80.60
Percentage of flood area	9.77
Mean	0.23
Zip Code	28364

Export to CSV file

Export to feature collection

Export to GeoJSON

Statistics...

Save to My Content

View in Attribute Table

Remove this result

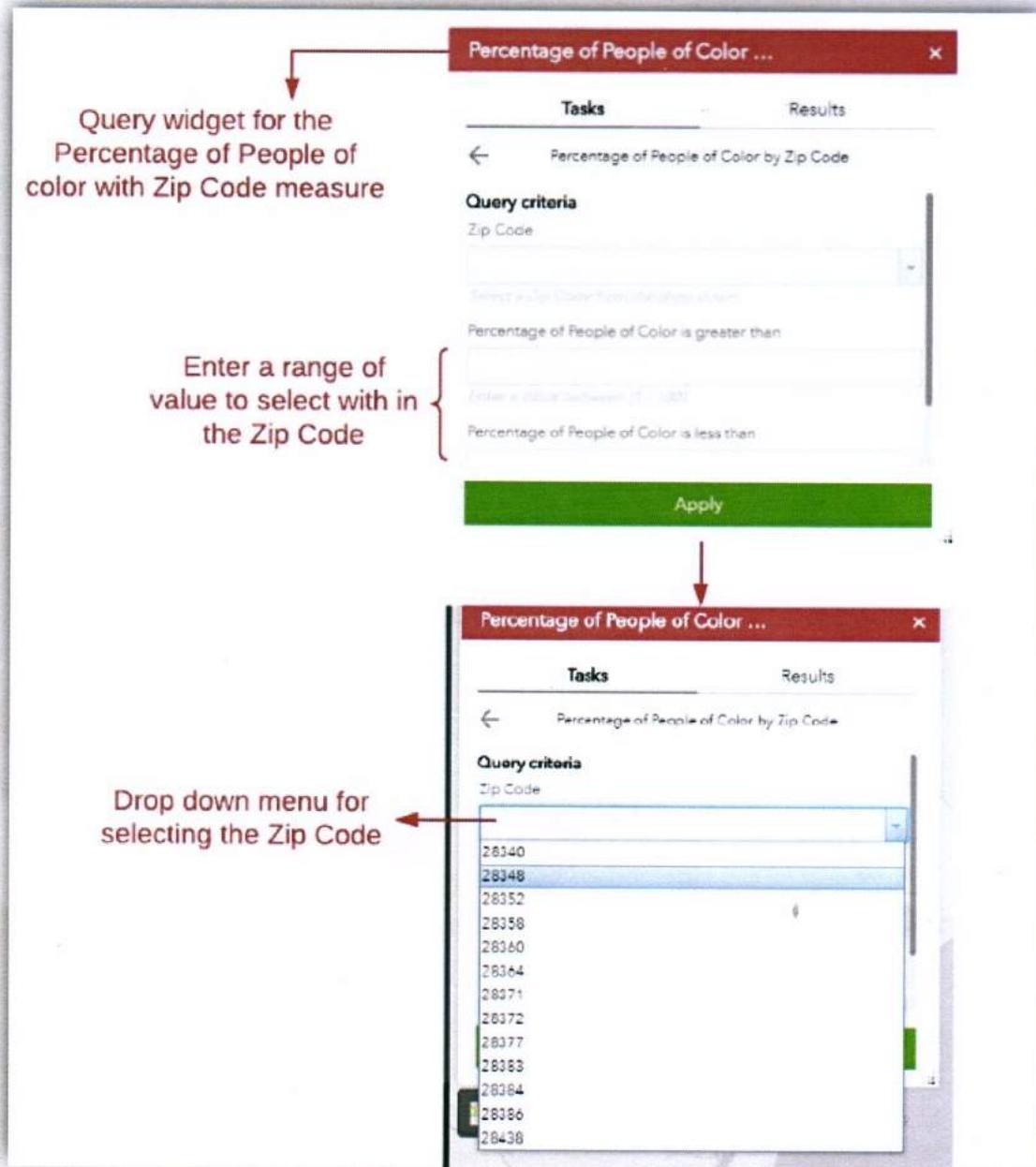
Results can be exported in the required format

Picture 4: Explore the Query Results using the attribute information and Export options to save the Query Results

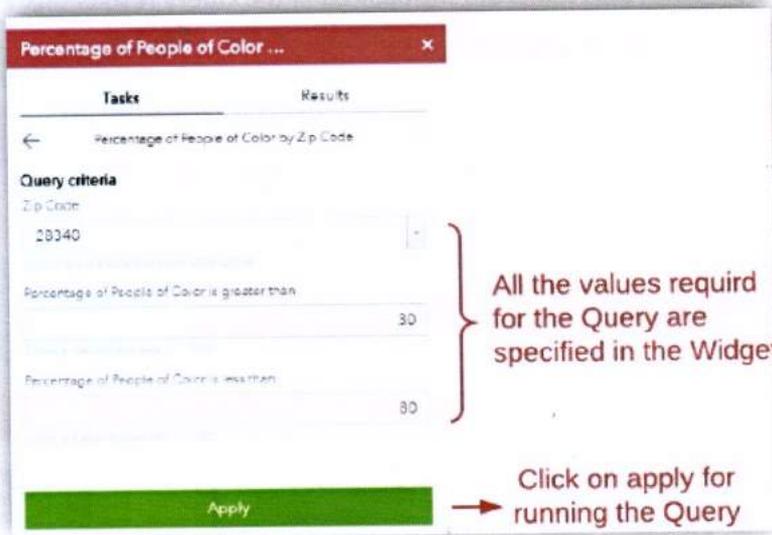
Using the Query Widget for Zip Code Measure:

- Click on the query widget and a widget opens showing Queries separately for County and Zip Code Measures.
- Select the Zip Code measure and a query opens where you can select Zip Code from the drop down menu
- After selecting the Zip Code we can provide a range of values for selection and Hints are provided in guiding the tool for entering the values.
- Example attached clearly explains the usage of Zip Code level measure for selecting the Percentage of people of color with in the user specified values.

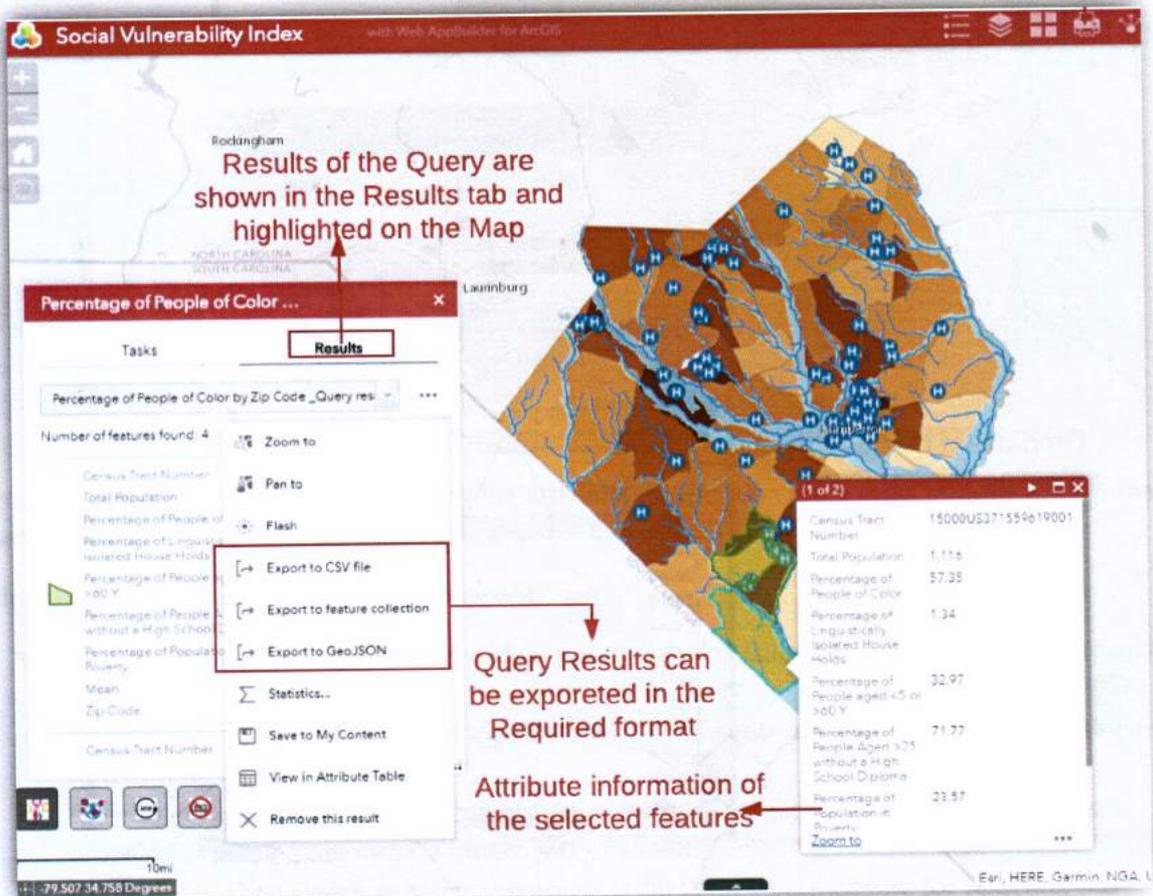
- Click on Apply for running the Query and the results are highlighted in the Query results tab. The Census tracts with in the given range are selected and are highlighted in the map.
- The results of the Query can be exported by clicking on the . . . in the Results tab. The attribute Information of the Census Tracts can be viewd in the map and by clicking on the particular census tract. By Using the Print widget in the header of web mapping application the map can be saved as a image or Pdf file.



Picture 5: Query widget drop down for selecting Zip Code and Entering the range of values



Picture 6: Query Widget After Selecting Zip Code and Values entered for Query



Picture 7: Explore the Query Results using the attribute information and Export options to save the Query Results