National Stormwater Calculator

Ava Yon

EPA's National Stormwater Calculator **(SWC)** is a web-based application tool that **estimates the annual amount of rainwater and frequency of runoff from a specific site** using green infrastructure as low impact development controls.

United States Environmental Protection Agency

When to Use SWC

1. When you want to measure the impact on stormwater runoff **when replacing impervious surface with pervious surface**.

2. **Comparing "existing" and "redevelopment"** scenarios to justify proposals.

3. Exploring future **climate scenarios** for a project.

Presentation Example

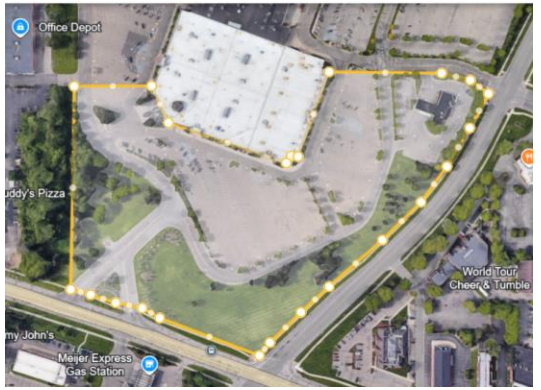
Location:
Meridian Mall
1982 W Grand River Ave, Okemos, MI 48864

County:
Ingham County

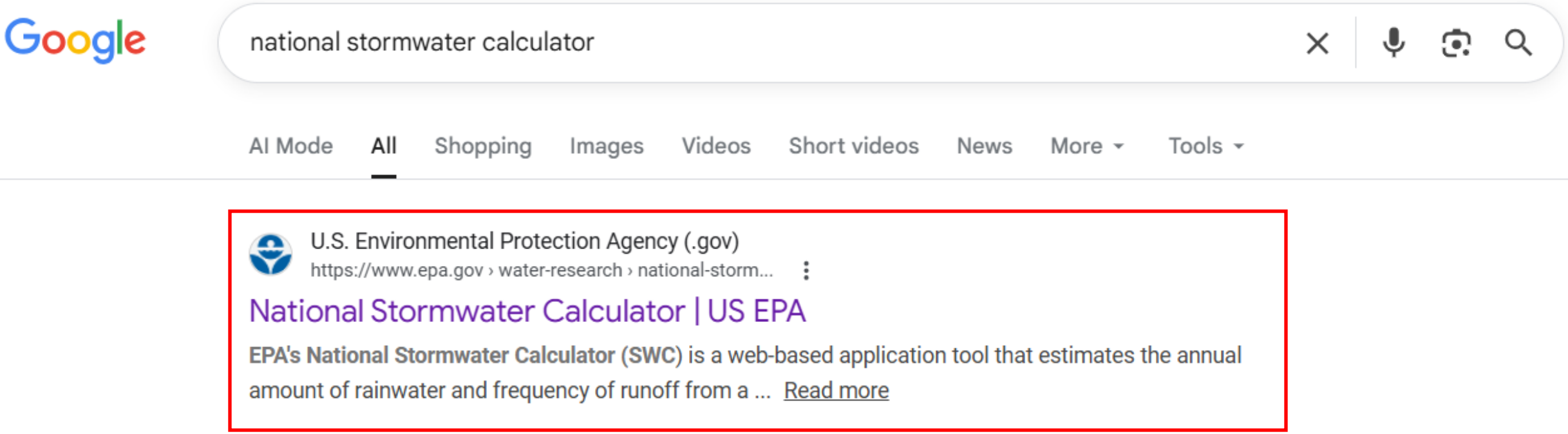
Area:
12 Acres

Proposal:

1. Replace 10% of parking lot with pervious paving.
2. Add rain garden to 20% of lawn area.



Find the National Stormwater Calculator



https://www.epa.gov/water-research/national-stormwater-calculator

Water Research

- Watersheds Research
- Nutrients and Harmful Algal Blooms Research
- Water Treatment and Infrastructure Research
- Water Research Grants
- Research Outputs
- Training, Outreach, and Technical Support

Contact Us about Water Research

National Stormwater Calculator

Help control runoff and promote the natural movement of water

EPA's National Stormwater Calculator (SWC) is a web-based application tool that estimates the annual amount of rainwater and frequency of runoff from a specific site using green infrastructure as low impact development controls. The SWC is designed for use by anyone interested in reducing runoff from a property, including site developers, landscape architects, urban planners, and homeowners.

Software, Compatibility, and Manuals

The SWC is available as a mobile web-based application or as a desktop program (no longer supported)—both versions require an internet connection. The mobile web-based app can be used on desktop devices and mobile devices, such as smartphones and tablets, and is compatible with all operating systems. The Windows-based desktop program runs on any version of Microsoft Windows with Version 4 or higher of the .Net Framework installed.

On this Page

- Software, Compatibility, and Manuals
- Capabilities
- Applications
- Resources and Technical Support

Access the National Stormwater Calculator

Highlight Video

Get Started

EPA National Stormwater Calculator

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Help prevent pollution by controlling stormwater runoff.

It's one of the greatest threats to clean water in America today.

Whether you're an urban planner, developer, landscape architect, or homeowner, this tool can help you balance land developments and landscaping with the right amount of green infrastructure.

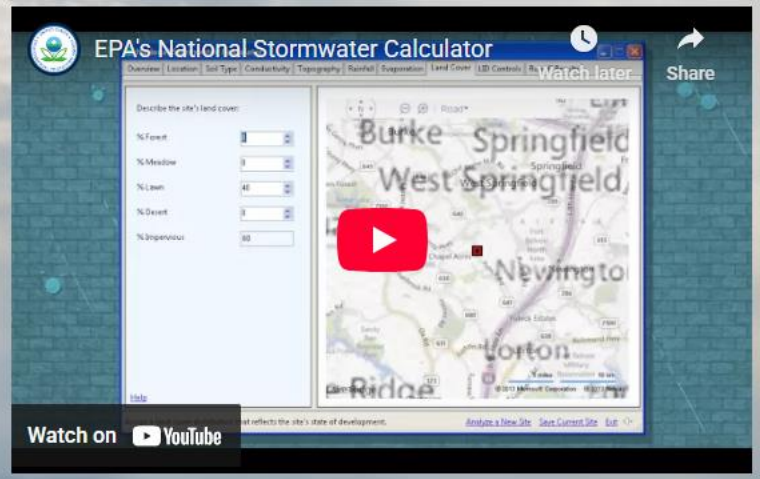
Name Your Site (Optional)

Get Started >

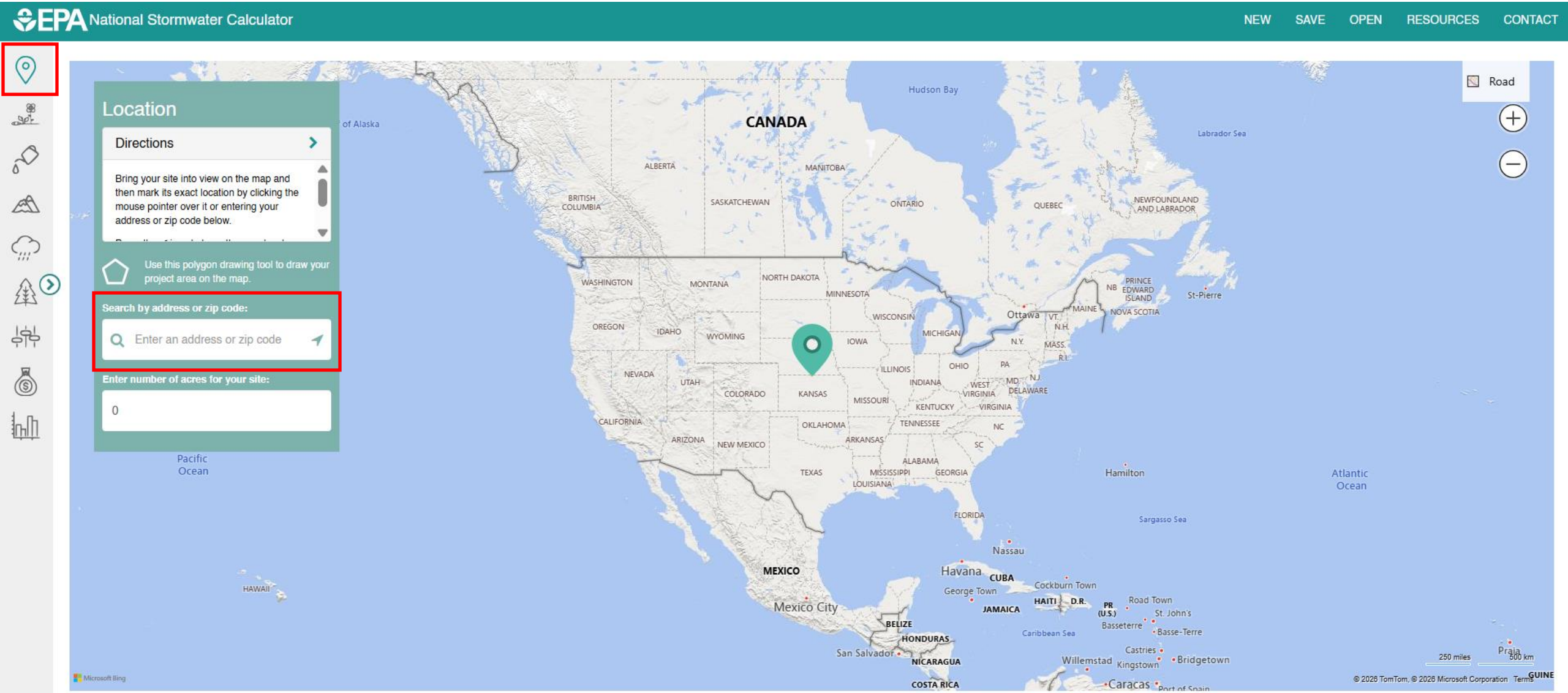
The SWC web app works best with the following browsers: Microsoft Edge, Google Chrome, Mozilla Firefox, and Apple Safari.

Please contact SWC@epa.gov with any questions, suggestions, or problems with this application.

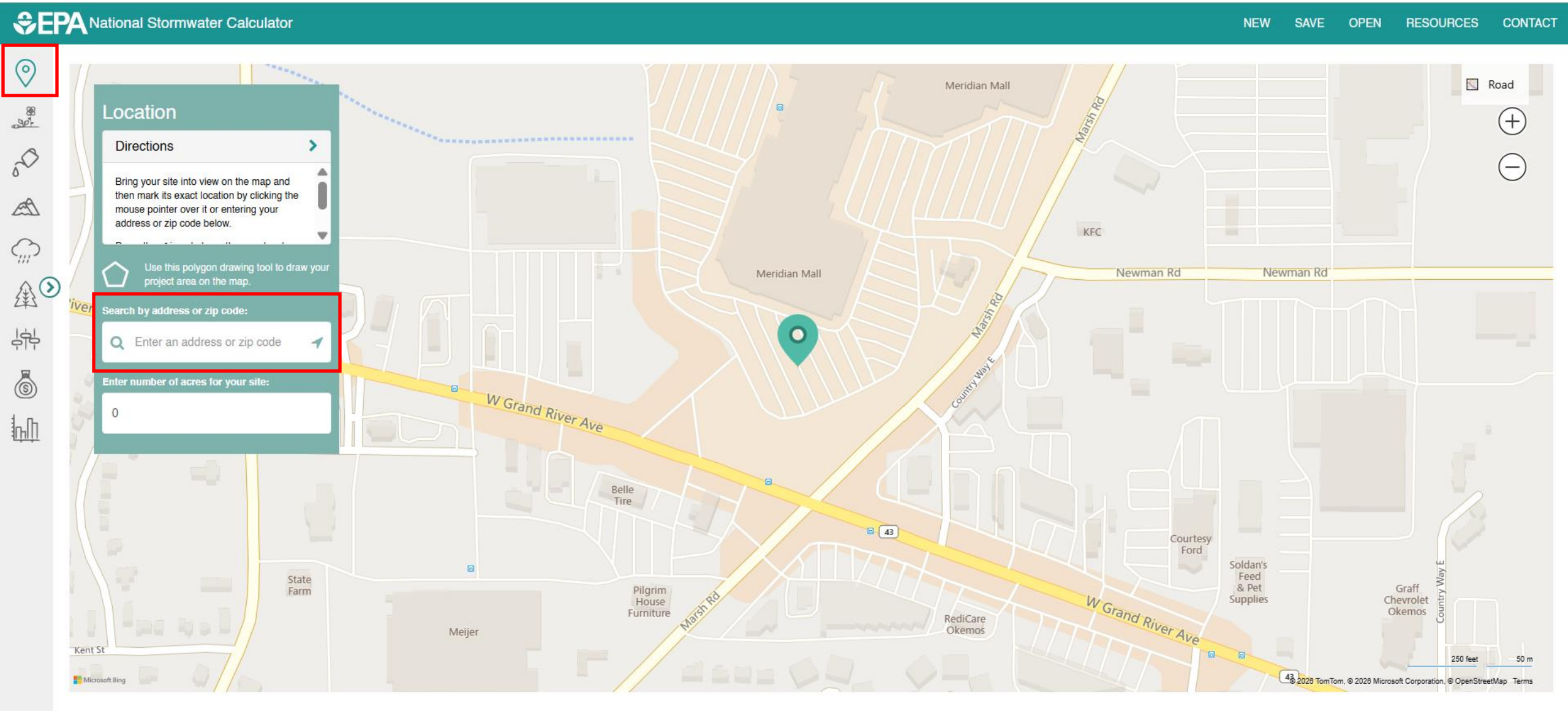
Last updated on: April 12, 2025



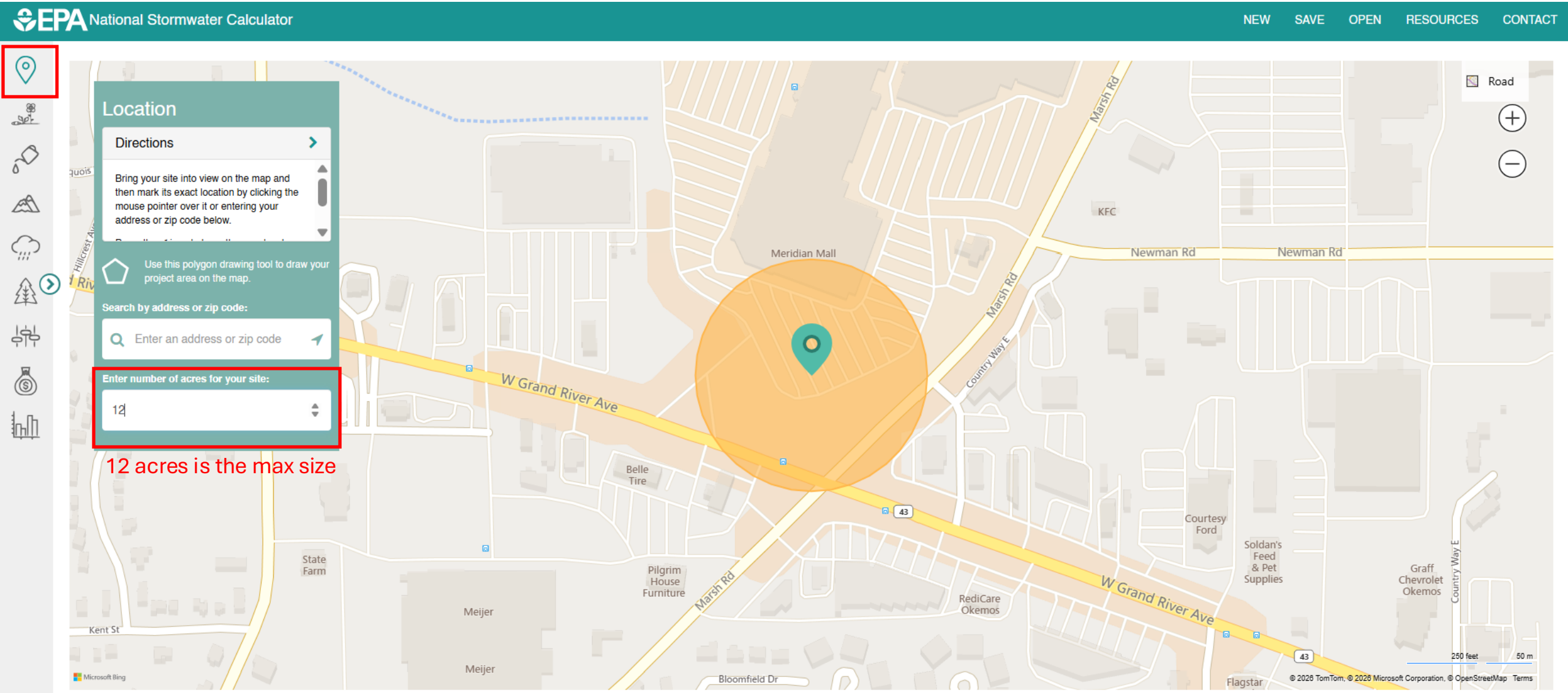
Find Your Site Location



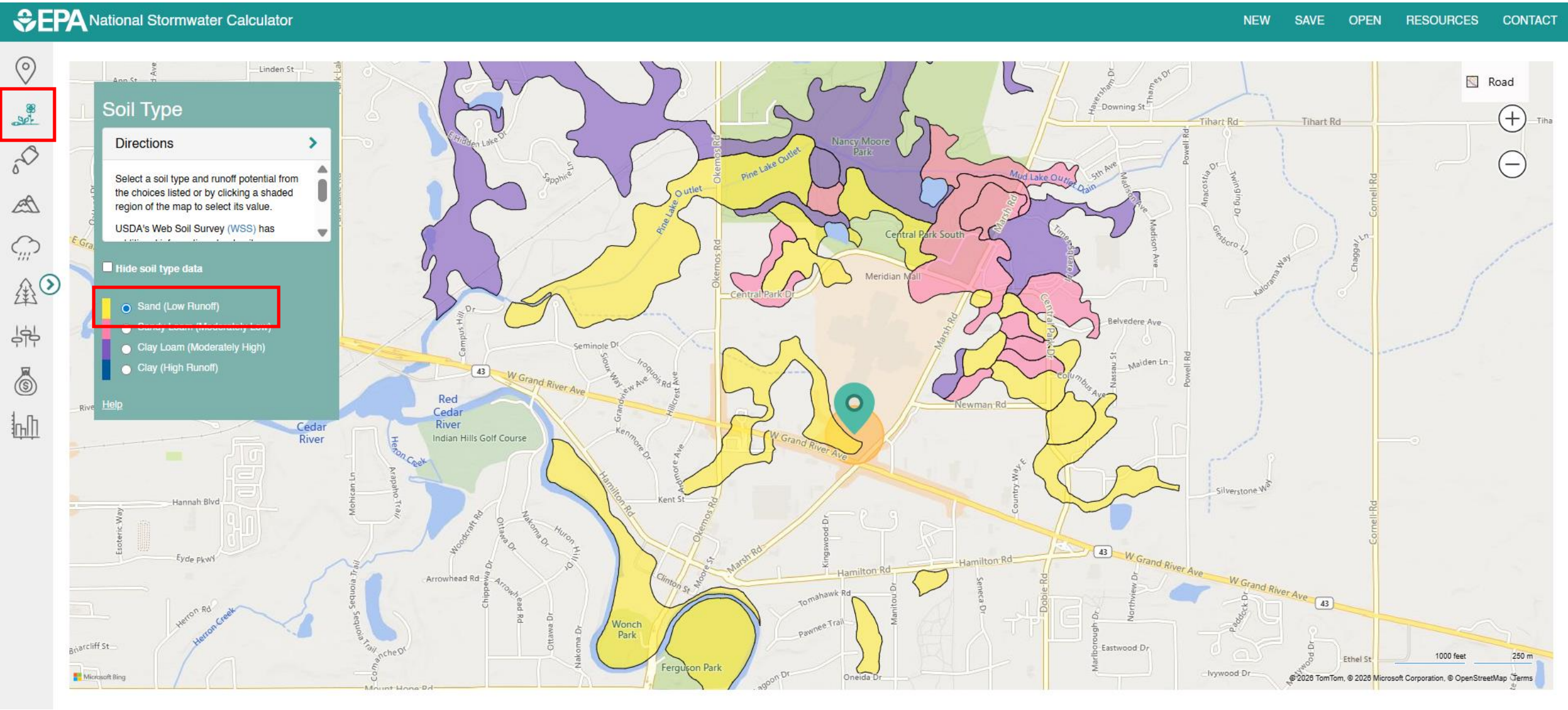
Find Your Site Location



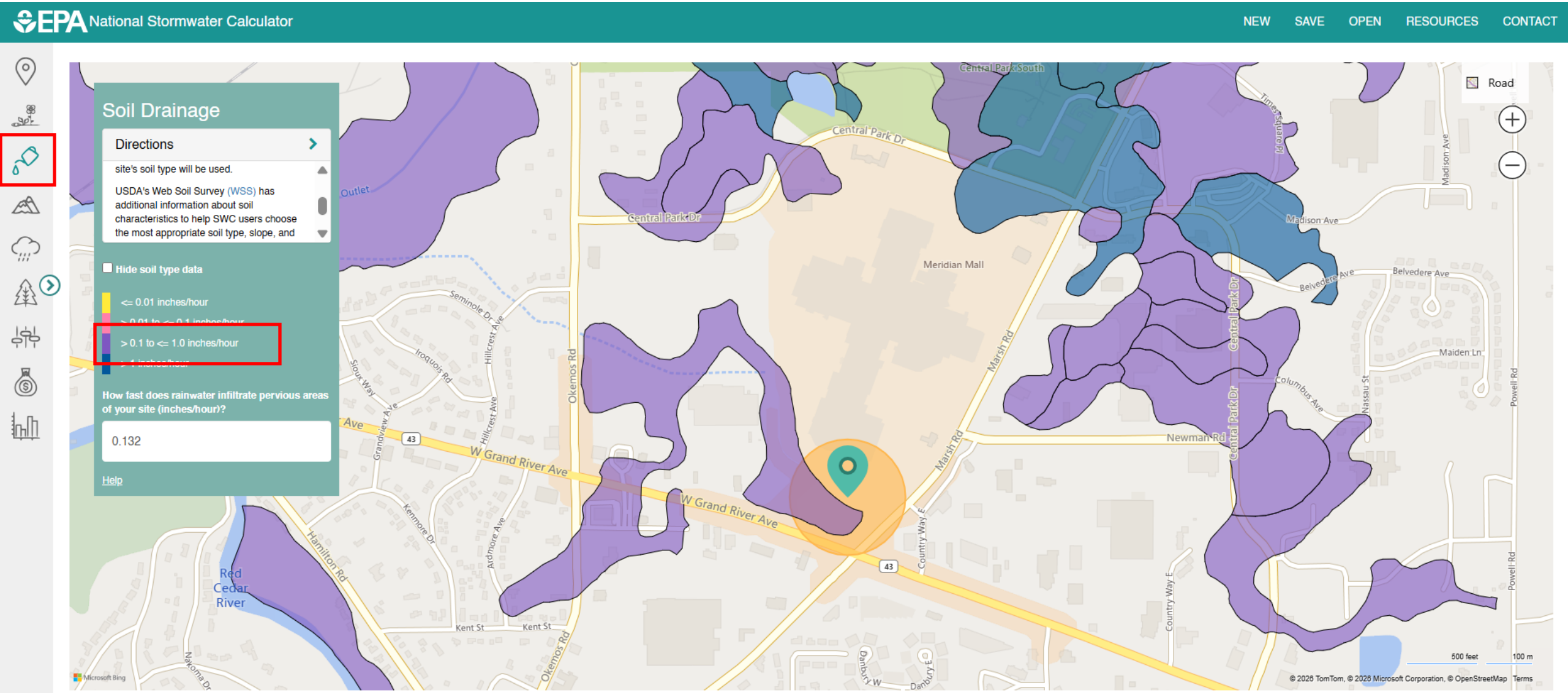
Add Site Acreage



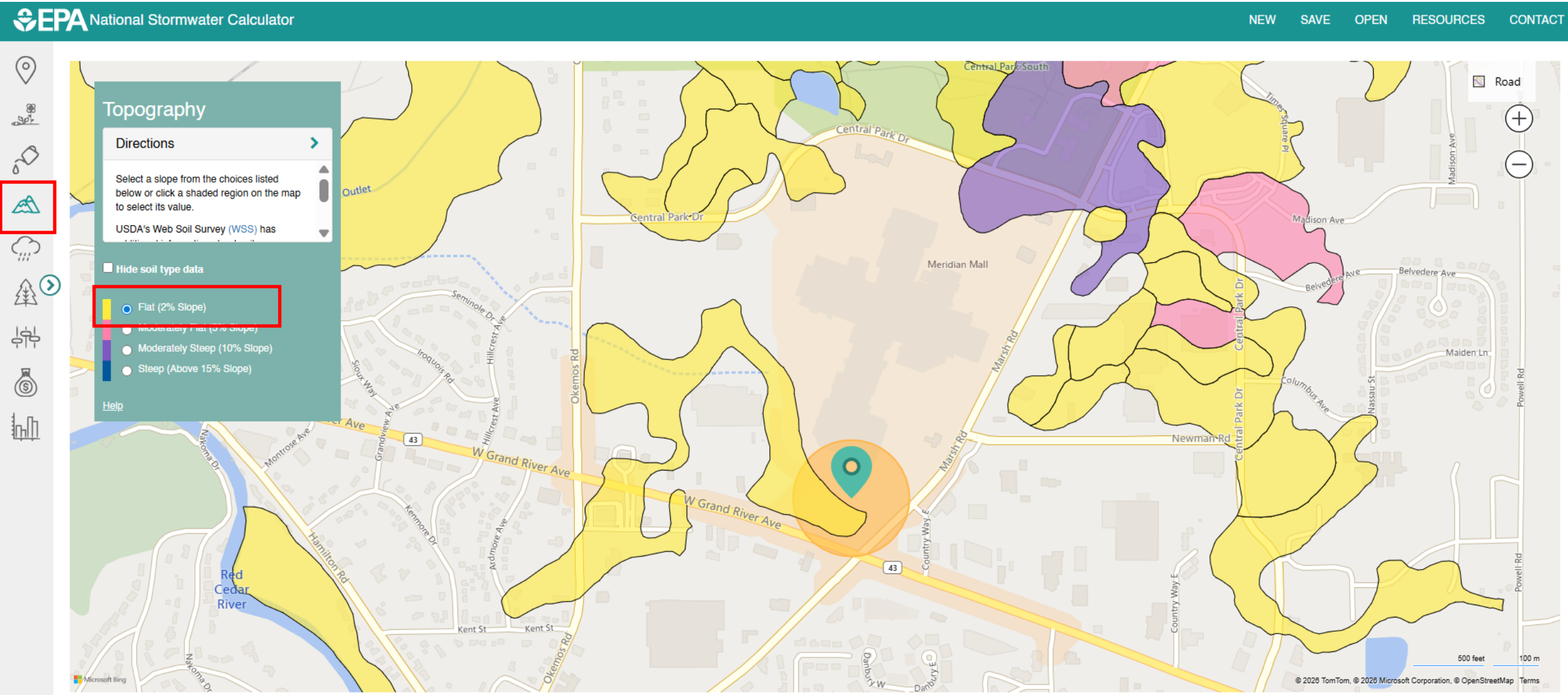
Select Soil Type



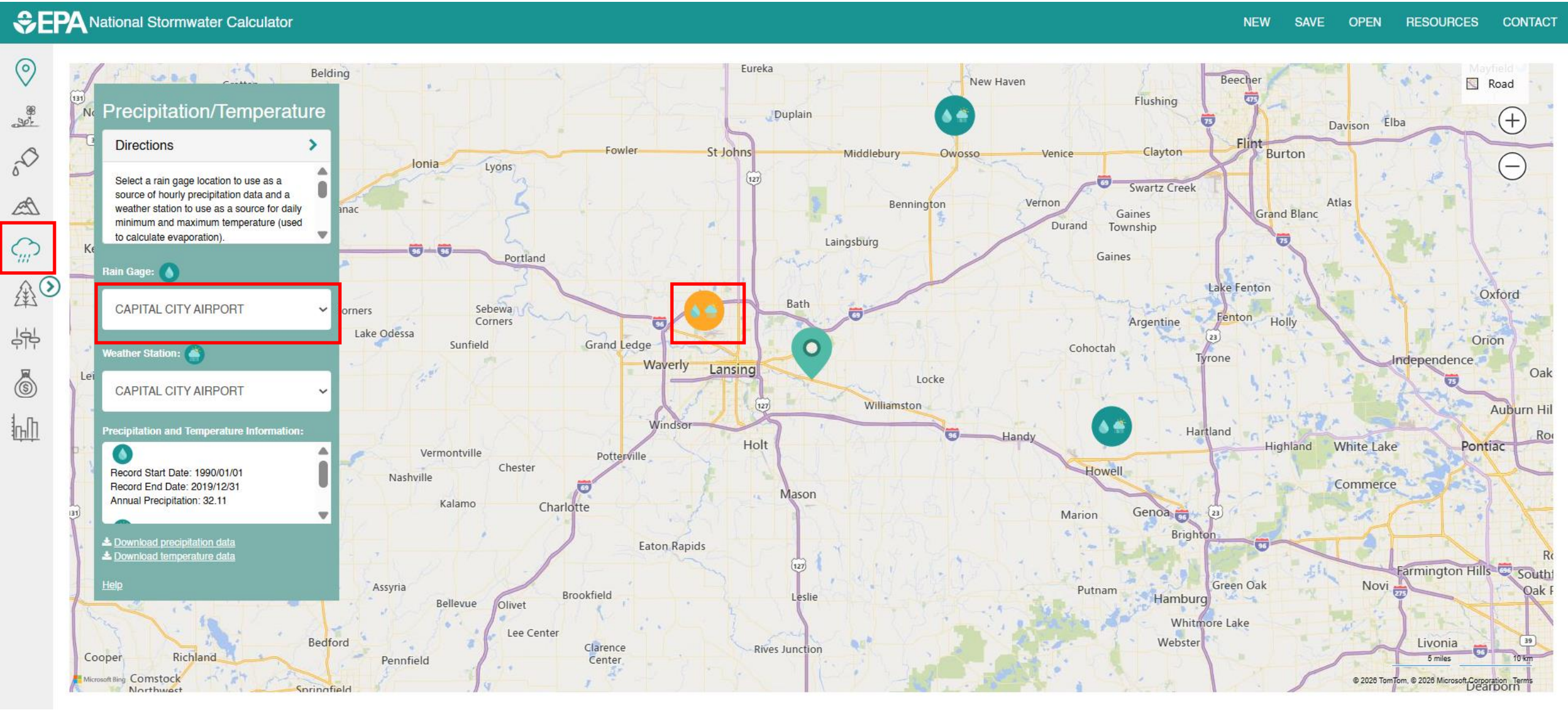
Select Soil Drainage



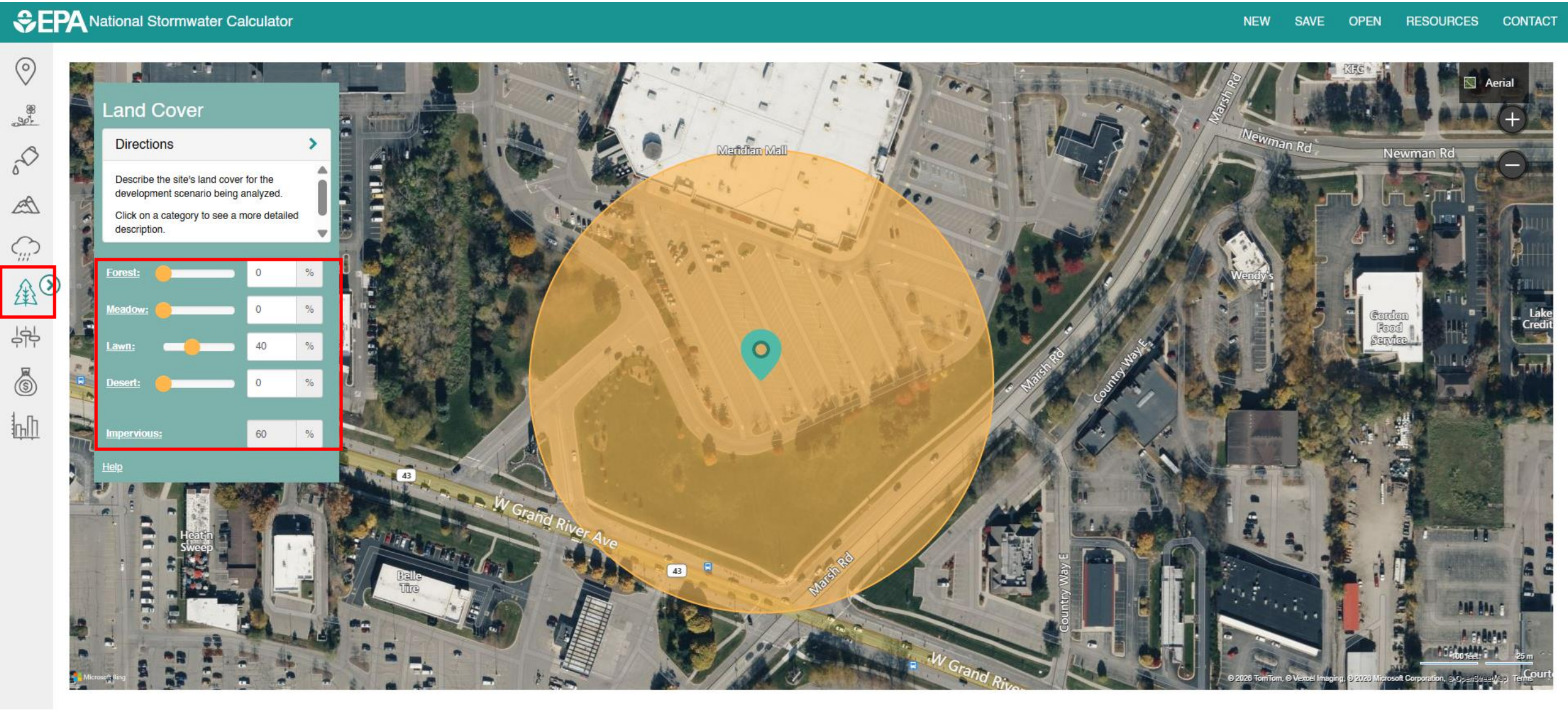
Select Slope Range



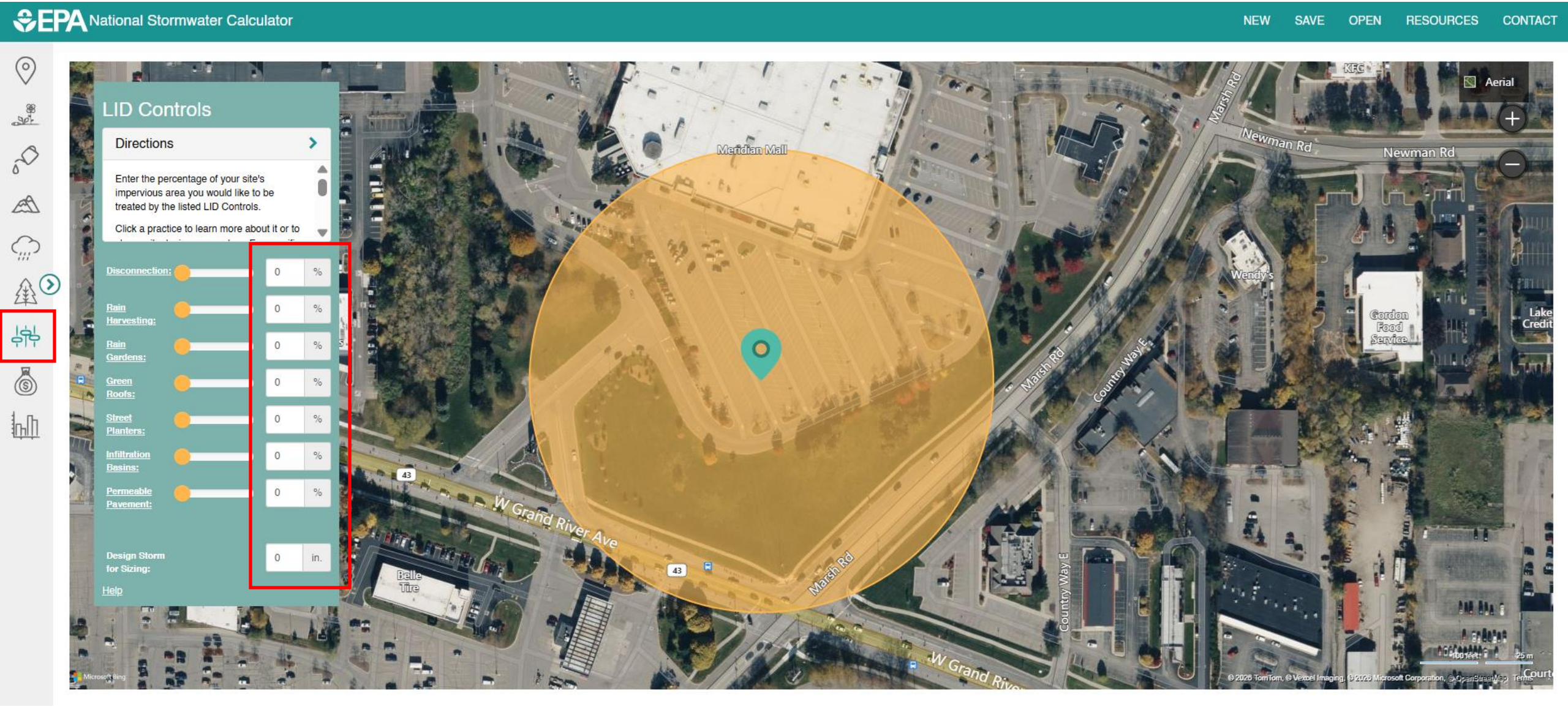
Select Rain Gage Location



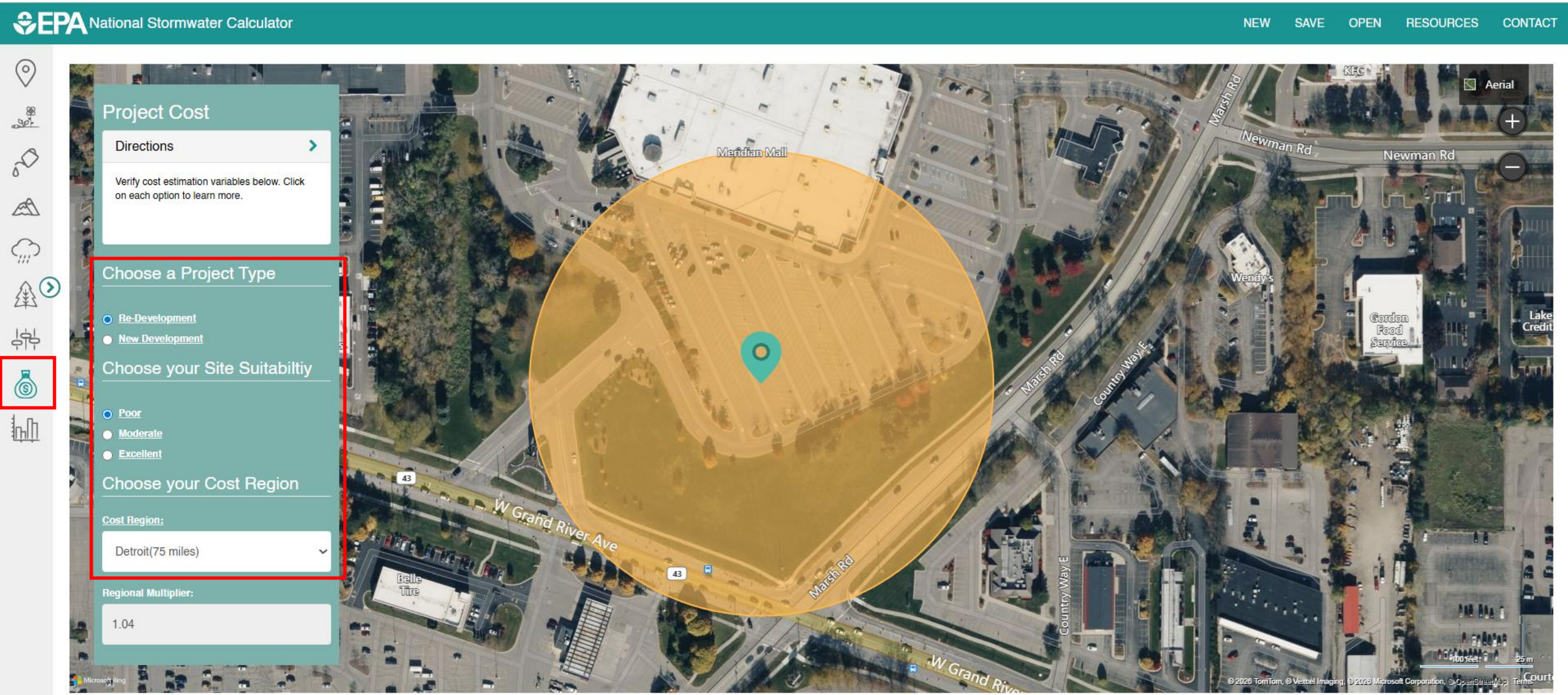
Select Land Cover



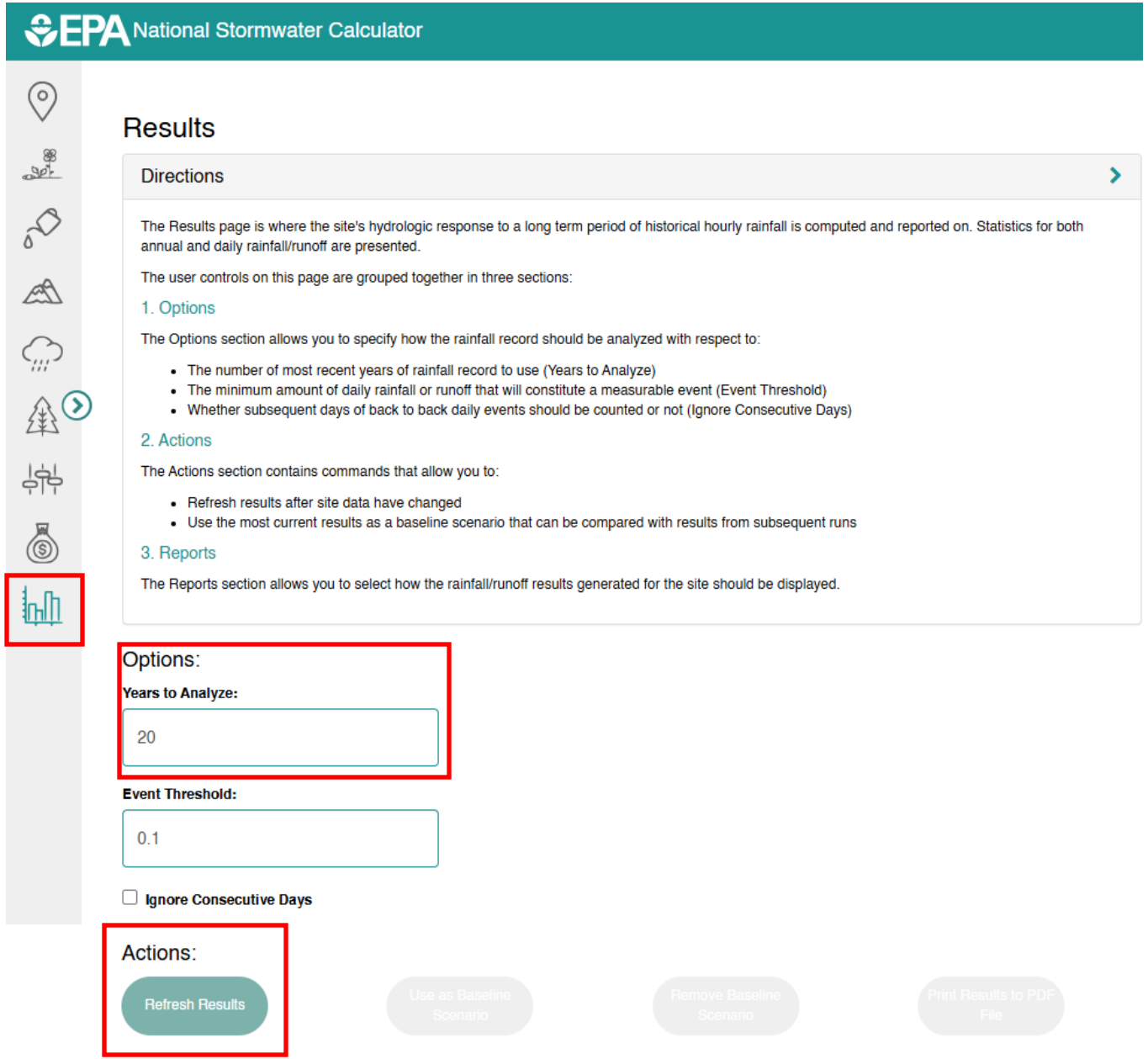
Select LID Controls for BASELINE SCENARIO



Select Cost Variables



Generate Results for BASELINE SCENARIO



Generating Results

Processing of results may take some time

Generate Results for BASELINE SCENARIO

EPA National Stormwater Calculator

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Directions

The Results page is where the site's hydrologic response to a long term period of historical hourly rainfall is computed and reported on. Statistics for both annual and daily rainfall/runoff are presented.

The user controls on this page are grouped together in three sections:

1. Options

The Options section allows you to specify how the rainfall record should be analyzed with respect to:

- The number of most recent years of rainfall record to use (Years to Analyze)
- The minimum amount of daily rainfall or runoff that will constitute a measurable event (Event Threshold)
- Whether subsequent days of back to back daily events should be counted or not (Ignore Consecutive Days)

2. Actions

The Actions section contains commands that allow you to:

- Refresh results after site data have changed
- Use the most current results as a baseline scenario that can be compared with results from subsequent runs

3. Reports

The Reports section allows you to select how the rainfall/runoff results generated for the site should be displayed.

Options:

Years to Analyze:

20

Event Threshold:

0.1

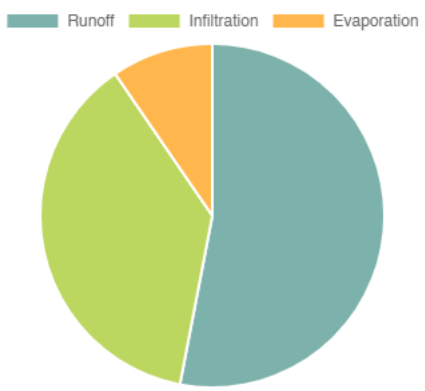
Ignore Consecutive Days

Actions:

Refresh Results | Use as Baseline Scenario | Remove Baseline Scenario | Print Results to PDF File

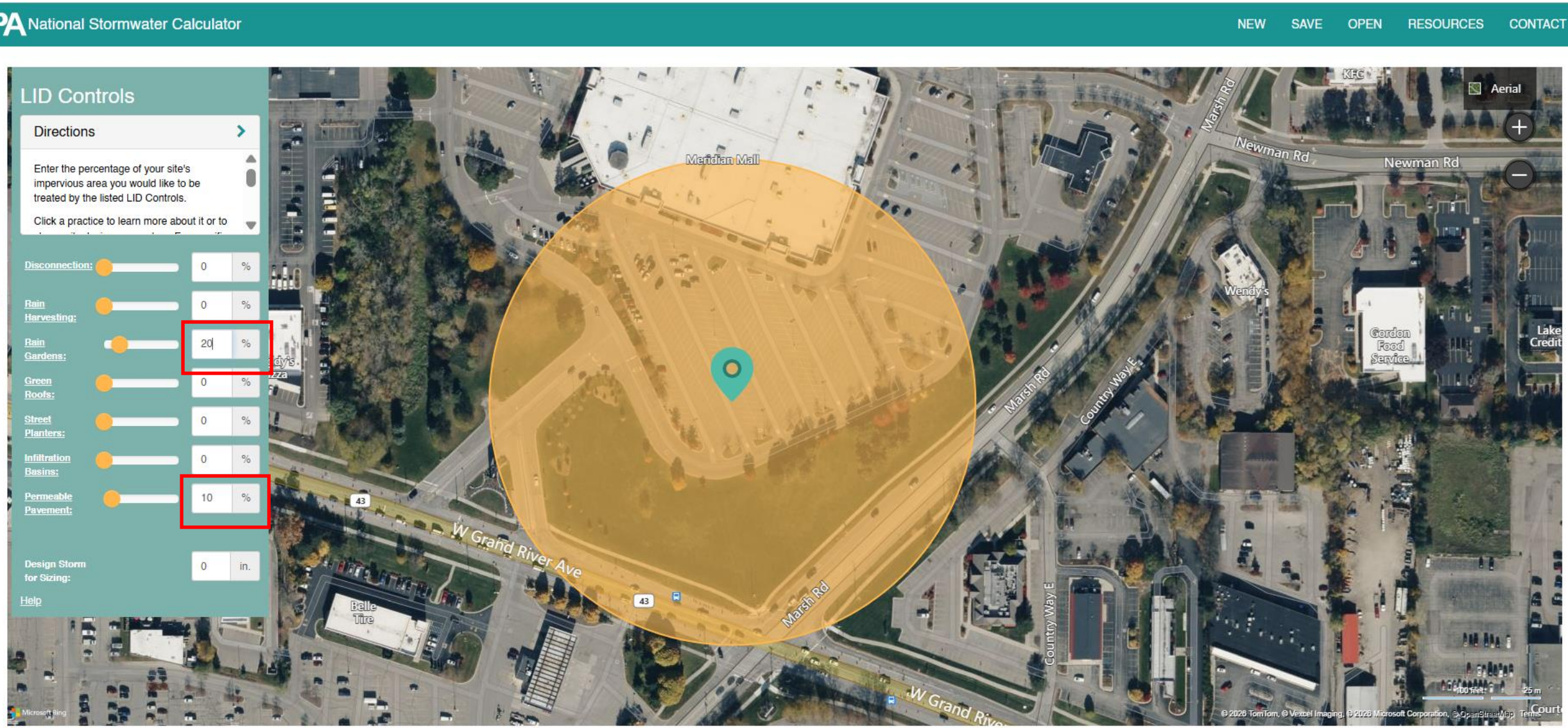
Current Scenario

Annual Rainfall: 32.71 in.

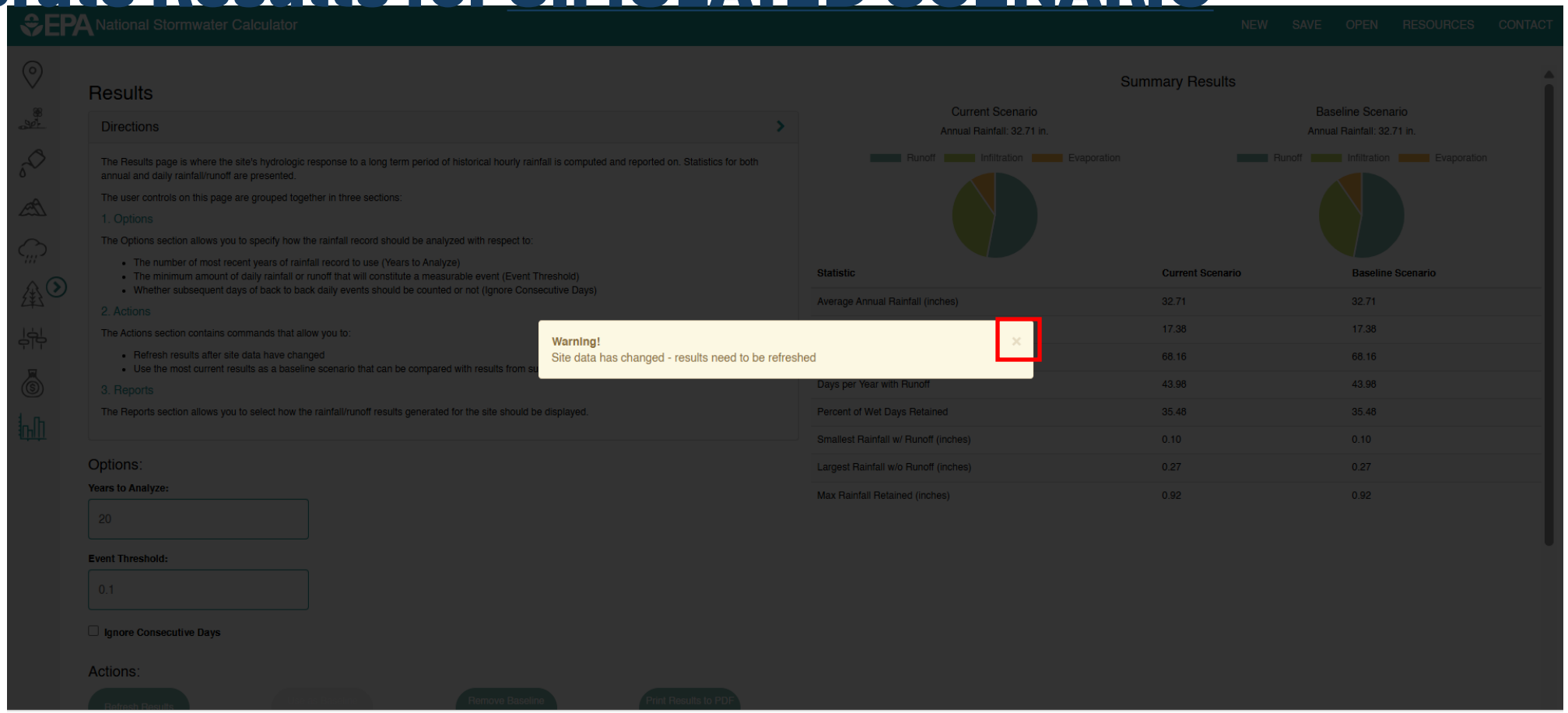


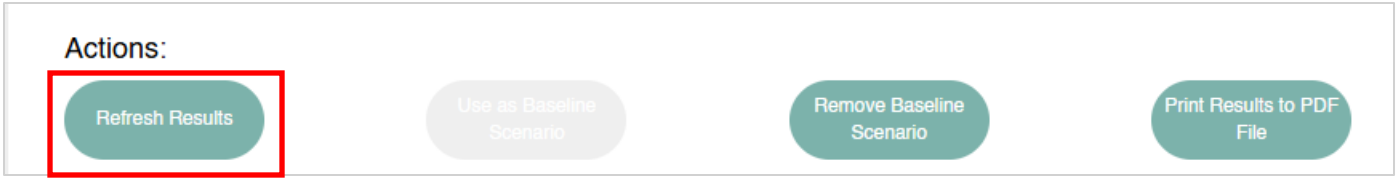
Statistic	Current Scenario
Average Annual Rainfall (inches)	32.71
Average Annual Runoff (inches)	17.38
Days per Year with Rainfall	68.16
Days per Year with Runoff	43.98
Percent of Wet Days Retained	35.48
Smallest Rainfall w/ Runoff (inches)	0.10
Largest Rainfall w/o Runoff (inches)	0.27
Max Rainfall Retained (inches)	0.92

Edit the LID Variables for SIMULATED SCENARIO



Generate Results for SIMULATED SCENARIO





Generating Results

Processing of results may take some time

Results

NEW SAVE OPEN RESOURCES CONTACT

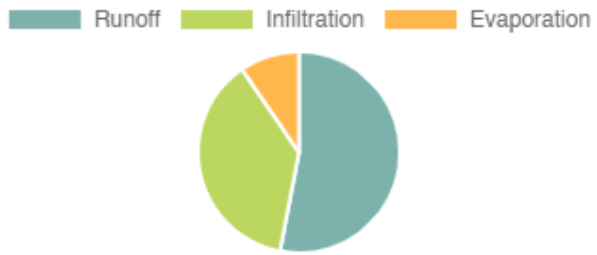
Summary Results

Current Scenario

Annual Rainfall: 32.71 in.

Baseline Scenario

Annual Rainfall: 32.71 in.



Statistic	Current Scenario	Baseline Scenario
Average Annual Rainfall (inches)	32.71	32.71
Average Annual Runoff (inches)	13.69	17.38
Days per Year with Rainfall	68.16	68.16
Days per Year with Runoff	37.33	43.98
Percent of Wet Days Retained	45.23	35.48
Smallest Rainfall w/ Runoff (inches)	0.15	0.10
Largest Rainfall w/o Runoff (inches)	0.36	0.27
Max Rainfall Retained (inches)	1.17	0.92

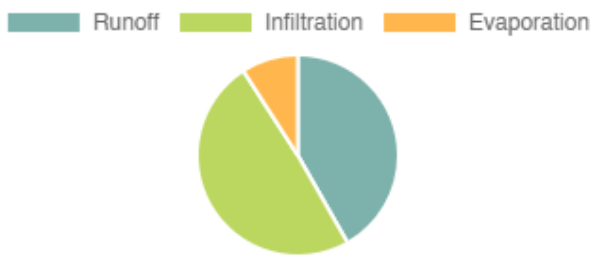
Results

NEW SAVE OPEN RESOURCES CONTACT

Summary Results

Current Scenario

Annual Rainfall: 32.71 in.

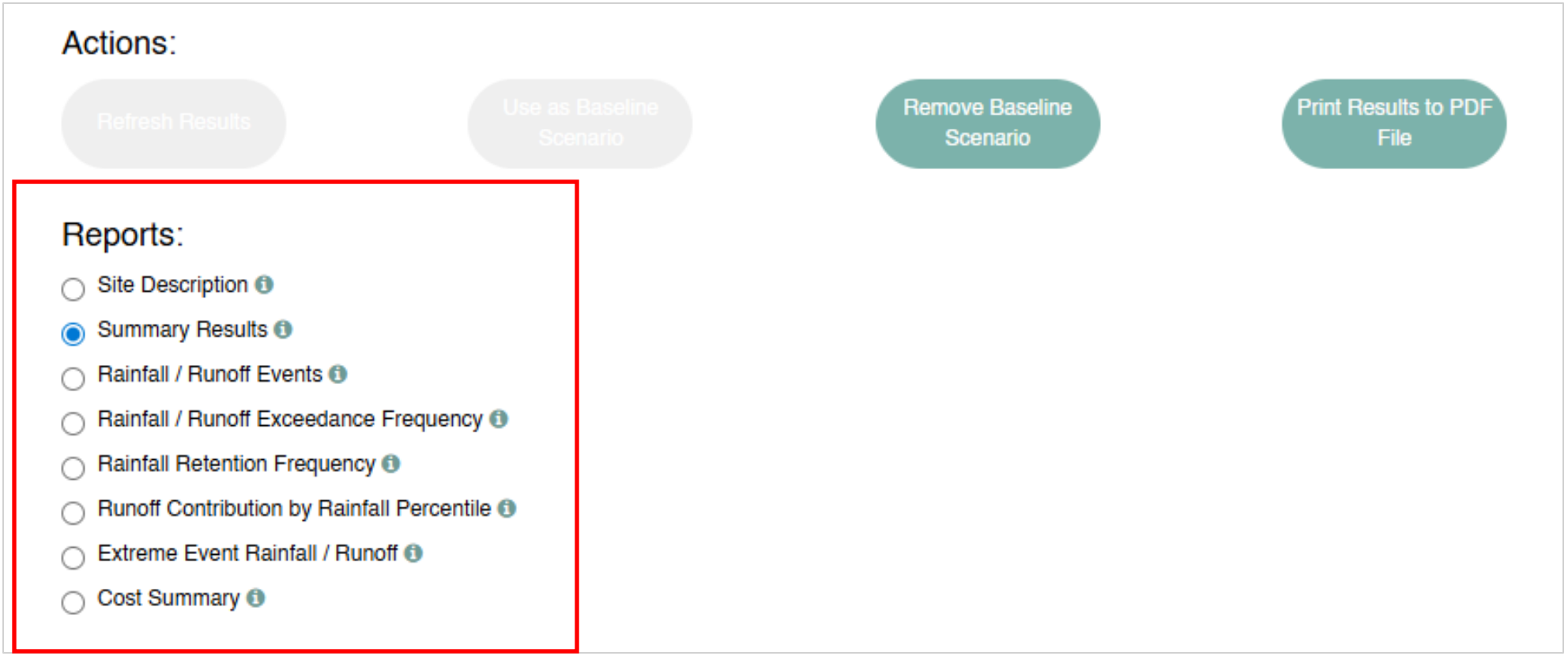


Baseline Scenario

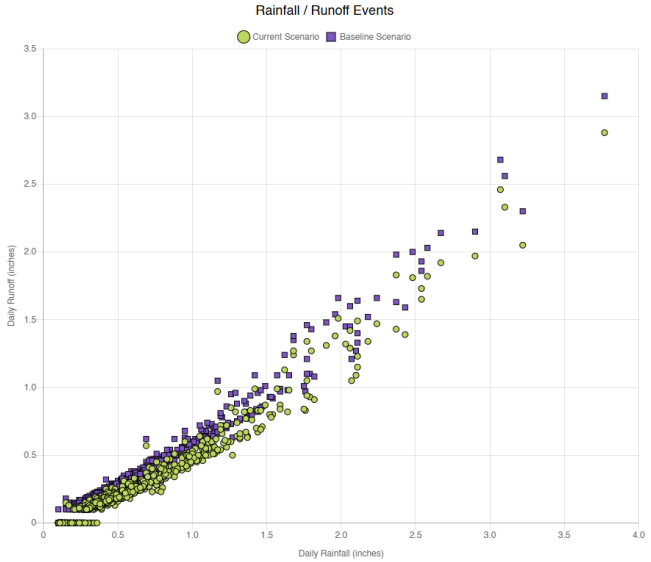
Annual Rainfall: 32.71 in.

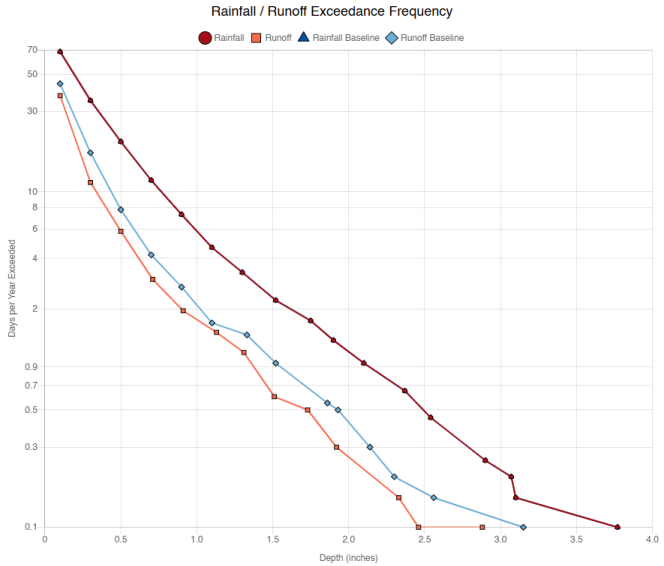
Statistic	Current Scenario	Baseline Scenario
Average Annual Rainfall (inches)	32.71	32.71
Average Annual Runoff (inches)	13.69	17.38
Days per Year with Rainfall	68.16	68.16
Days per Year with Runoff	37.33	43.98
Percent of Wet Days Retained	45.23	35.48
Smallest Rainfall w/ Runoff (inches)	0.15	0.10
Largest Rainfall w/o Runoff (inches)	0.36	0.27
Max Rainfall Retained (inches)	1.17	0.92

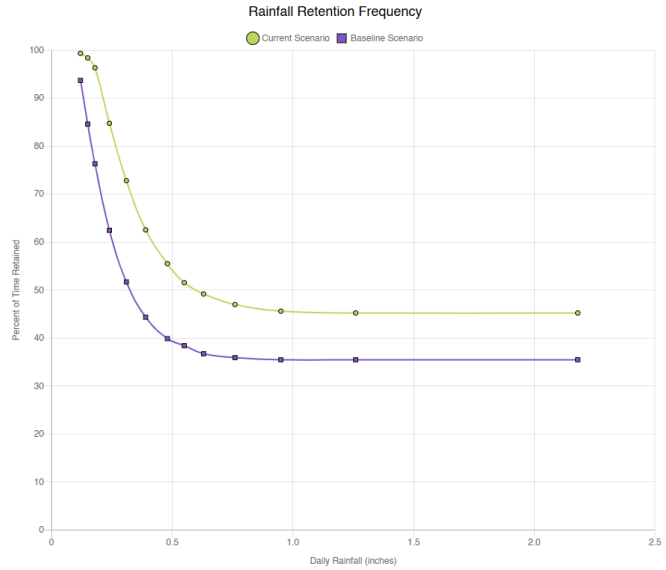
Other Results

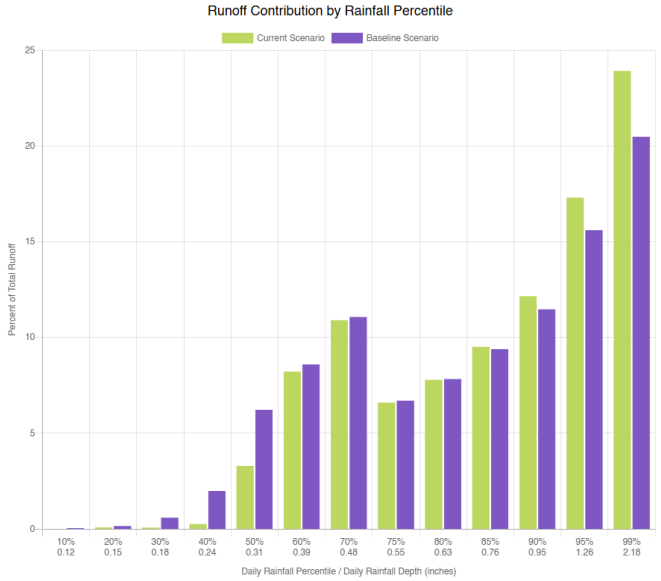


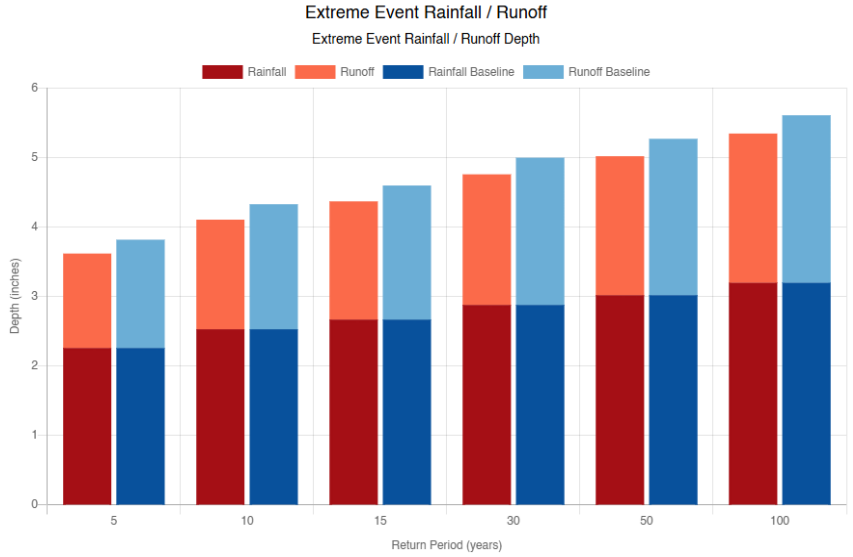
Other Results

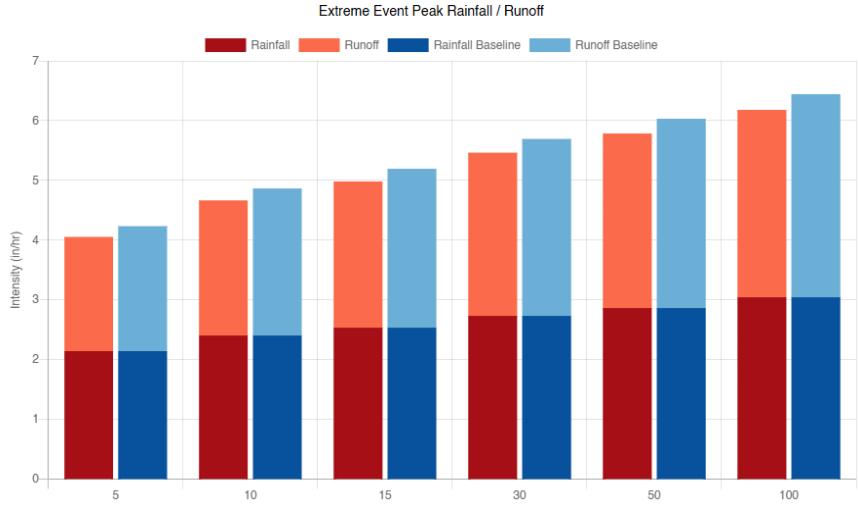




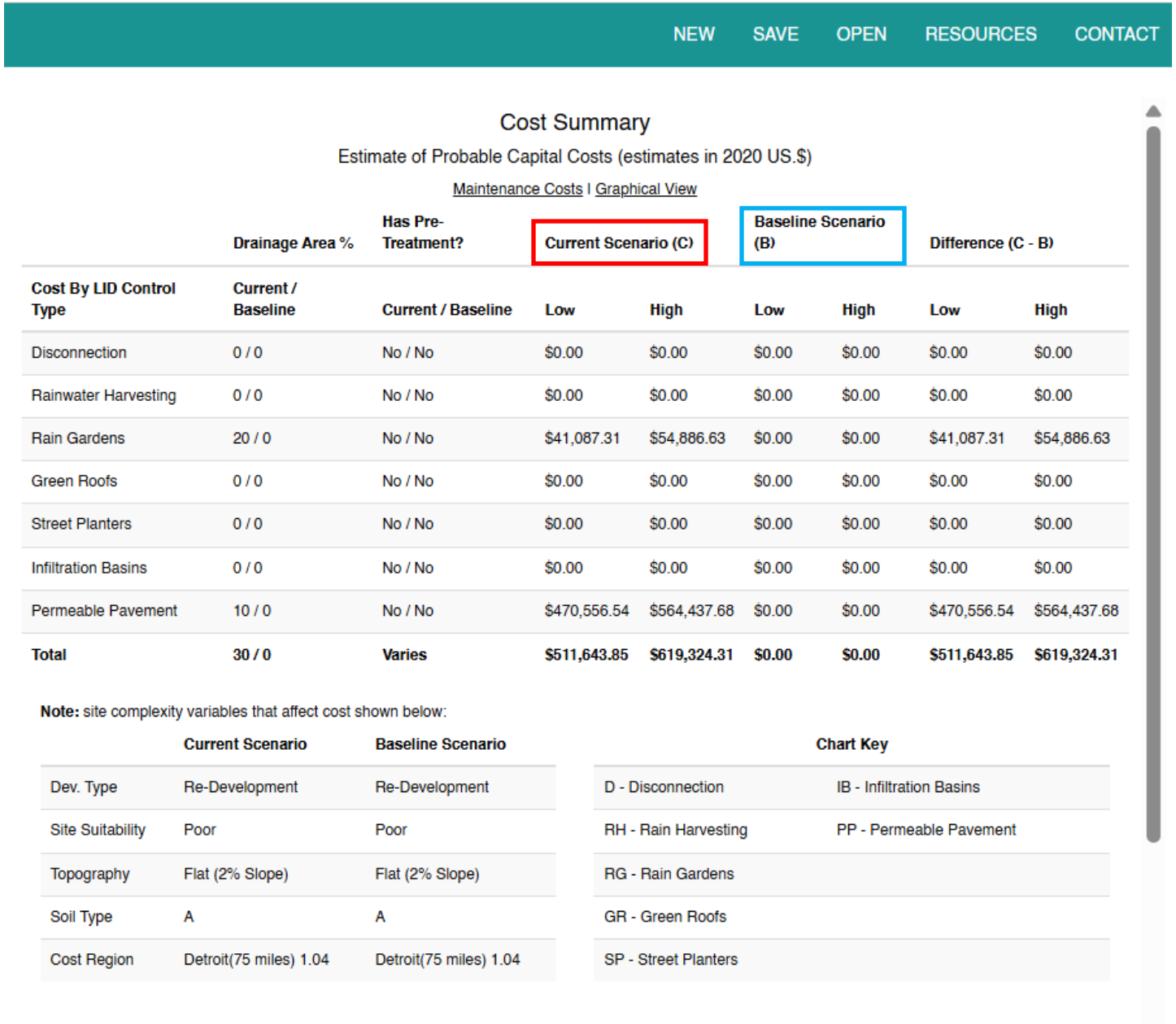








Other Results



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Cost Summary

Estimate of Probable Capital Costs (estimates in 2020 US.$)

Maintenance Costs | Graphical View

	Drainage Area %	Has Pre-Treatment?	Current Scenario (C)		Baseline Scenario (B)		Difference (C - B)	
Cost By LID Control Type	**Current / Baseline**	**Current / Baseline**	**Low**	**High**	**Low**	**High**	**Low**	**High**
Disconnection	0 / 0	No / No	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Rainwater Harvesting	0 / 0	No / No	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Rain Gardens	20 / 0	No / No	$41,087.31	$54,886.63	$0.00	$0.00	$41,087.31	$54,886.63
Green Roofs	0 / 0	No / No	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Street Planters	0 / 0	No / No	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Infiltration Basins	0 / 0	No / No	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Permeable Pavement	10 / 0	No / No	$470,556.54	$564,437.68	$0.00	$0.00	$470,556.54	$564,437.68
Total	**30 / 0**	**Varies**	**$511,643.85**	**$619,324.31**	**$0.00**	**$0.00**	**$511,643.85**	**$619,324.31**

Note: site complexity variables that affect cost shown below:

	Current Scenario	Baseline Scenario
Dev. Type	Re-Development	Re-Development
Site Suitability	Poor	Poor
Topography	Flat (2% Slope)	Flat (2% Slope)
Soil Type	A	A
Cost Region	Detroit(75 miles) 1.04	Detroit(75 miles) 1.04

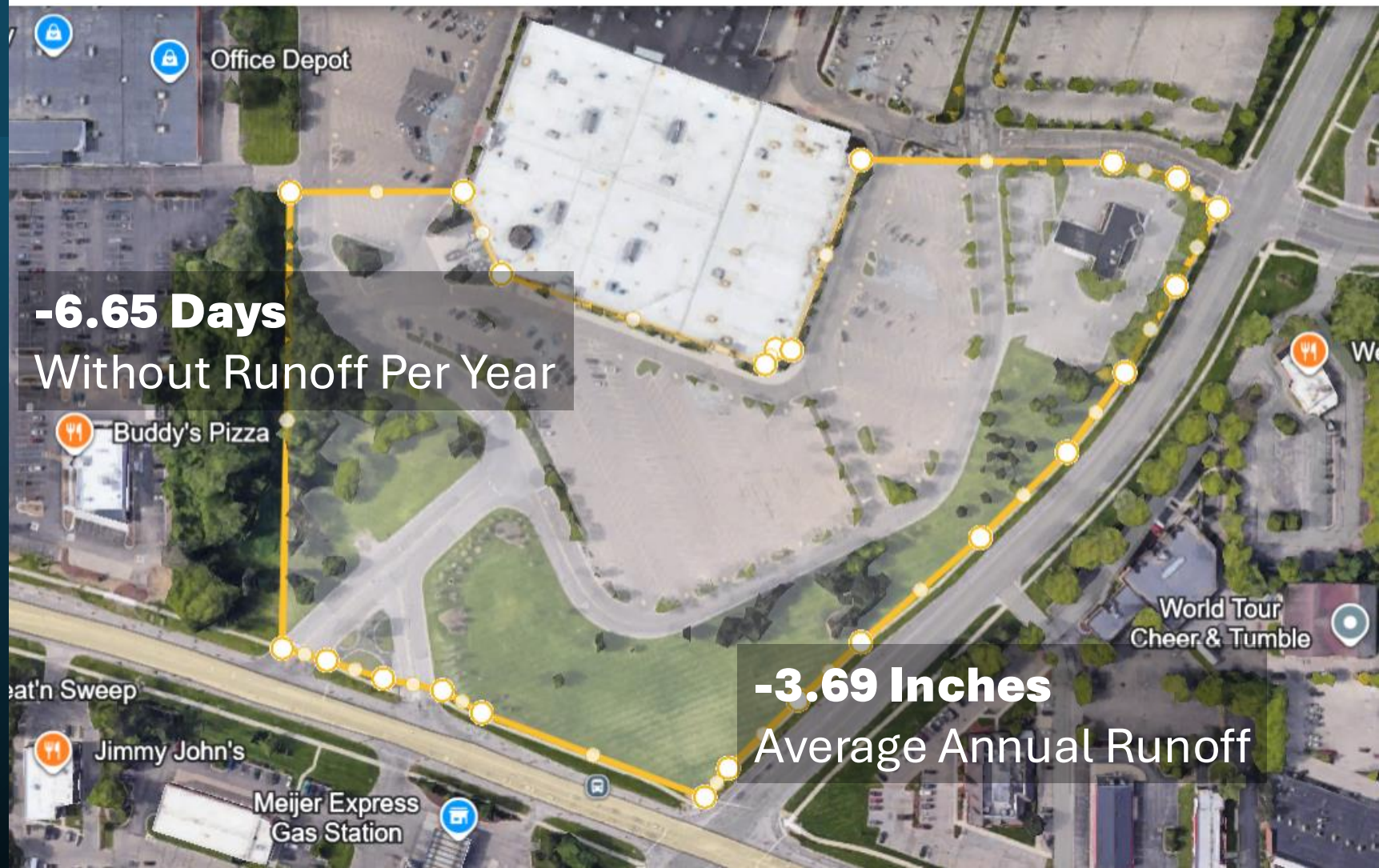
Chart Key	
D - Disconnection	IB - Infiltration Basins
RH - Rain Harvesting	PP - Permeable Pavement
RG - Rain Gardens	
GR - Green Roofs	
SP - Street Planters	

Using the Results

Proposal:

1. Replace 10% of parking lot with pervious paving.

2. Add rain garden to 20% of lawn area.



Resources

EPA's SWC Site
https://www.epa.gov/water-research/national-stormwater-calculator

Web User Guide
https://www.epa.gov/system/files/documents/2022-08/National%20Stormwater%20Calculator%20Web%20App%20User%20Guide-Version%203.4.0.pdf

Desktop User Guide
https://www.epa.gov/system/files/documents/2022-08/National%20Stormwater%20Calculator%20Web%20App%20User%20Guide-Version%203.4.0.pdf