



Map Explorer

Visualize the existing state of the stormwater BMP system. Search for specific facilities, and explore subbasins, pollutant heat maps, and reference imagery.



WQ Results Viewer

Evaluate BMP performance, pinpoint potential retrofit sites, identify viable approaches to treat stormwater and improve Tacoma's receiving waters.



Decision Support

Prioritize investments and allocate resources more effectively through an understanding of life-cycle costs and project benefits.



Scenario Builder

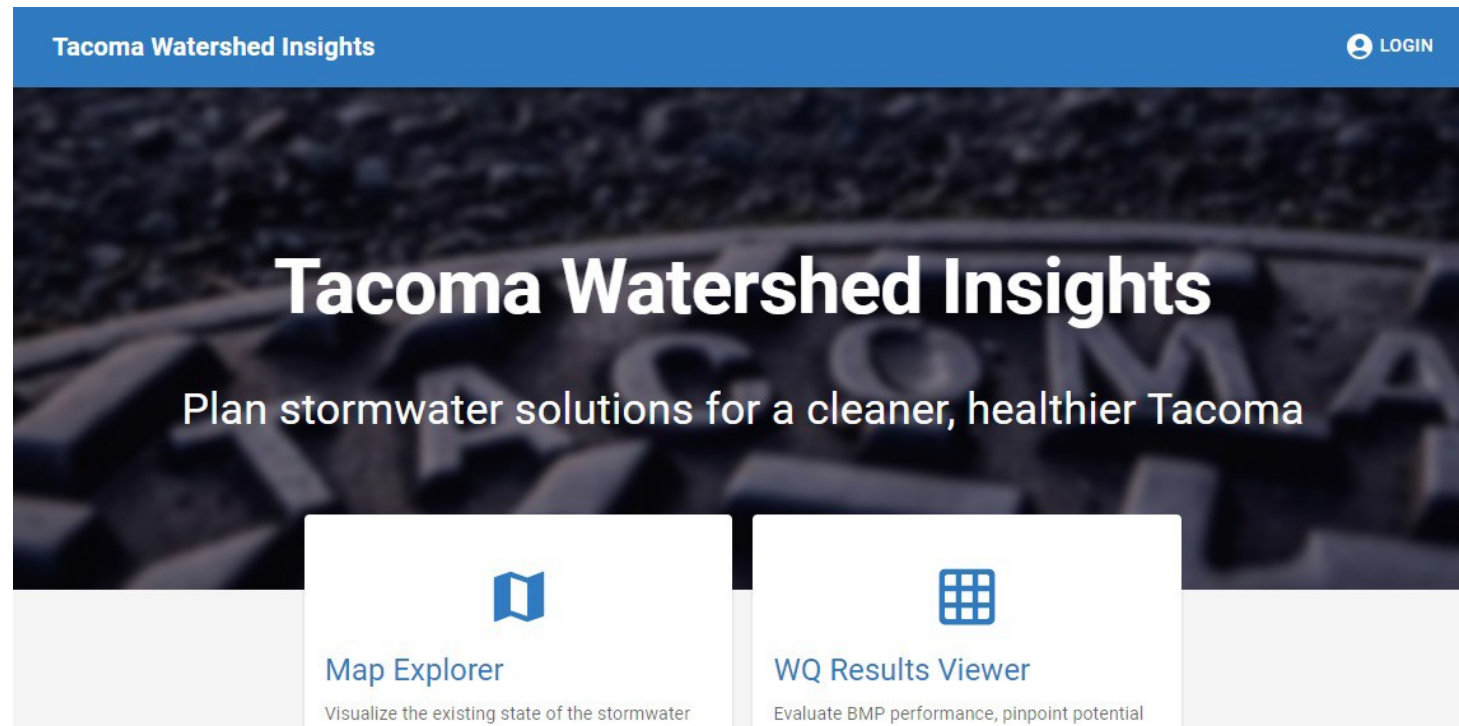
Ensure decisions help improve watershed conditions for all community members. Help promote equitable and sustainable outcomes in stormwater project and enhance neighborhoods for everybody.

Watershed Insights

Main Components

Tacoma

System Administration



Enroll New User





- Navigate to site
- Click Login
- Click Register
- Click Submit
- Check Email &
Click through Verification











Modify User Roles

Role	Permission
Public	None
Read-only	Read access to data via site and via token
User/Editor	All of the above + access to scenarios and editing data
User Admin	All of the above + access to user manager + access to application settings
System Admin	All of the above + direct api access



admin@geosyntec.com ✓

-  Profile
-  Manage Users
-  Settings
-  Logout

Email	Role	Full name	Is Verified	
shansen2@cityoftacoma.o...	User/Editor	Shauna Hansen	true	
lnokes@cityoftacoma.org	User/Editor	Laura Nokes	true	
aang@geosyntec.com	System Admin	Adrian Ang	true	
ddeleon@cityoftacoma.org	Public	Dana de Leon	true	 
cnilsen@geosyntec.com	System Admin	Christian Nilsen	true	 
admin@geosyntec.com	System Admin		true	 
datastudio@geosyntec.com	Read-only		false	 
aorr@geosyntec.com	Public	Austin Orr	true	 
<div><div></div></div>				
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- Ask a User Admin to change your role
- Click on Profile
- Click Manage Users
- Click the pen to edit
- Select Role
- Save or cancel



Cost Settings

Variable	Value	Actions
discount_rate	0.042	
inflation_rate	0.022	
planning_horizon_yrs	50	
cost_basis_year	2023	
Rows per page: 100 ▾ 1-4 of 4 < >		

Austin Orr

aorr@geosyntec.com ✓

Profile

Manage Users

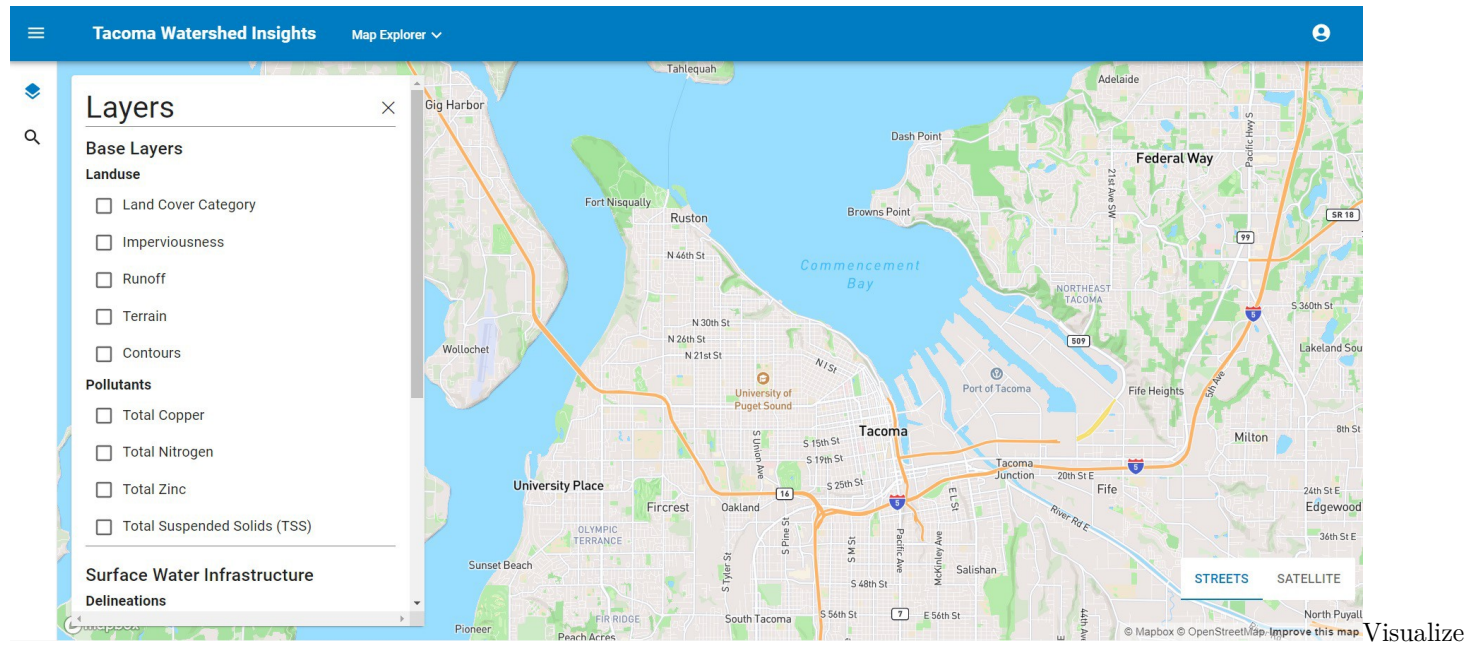
Settings

Logout

Cost Module Settings

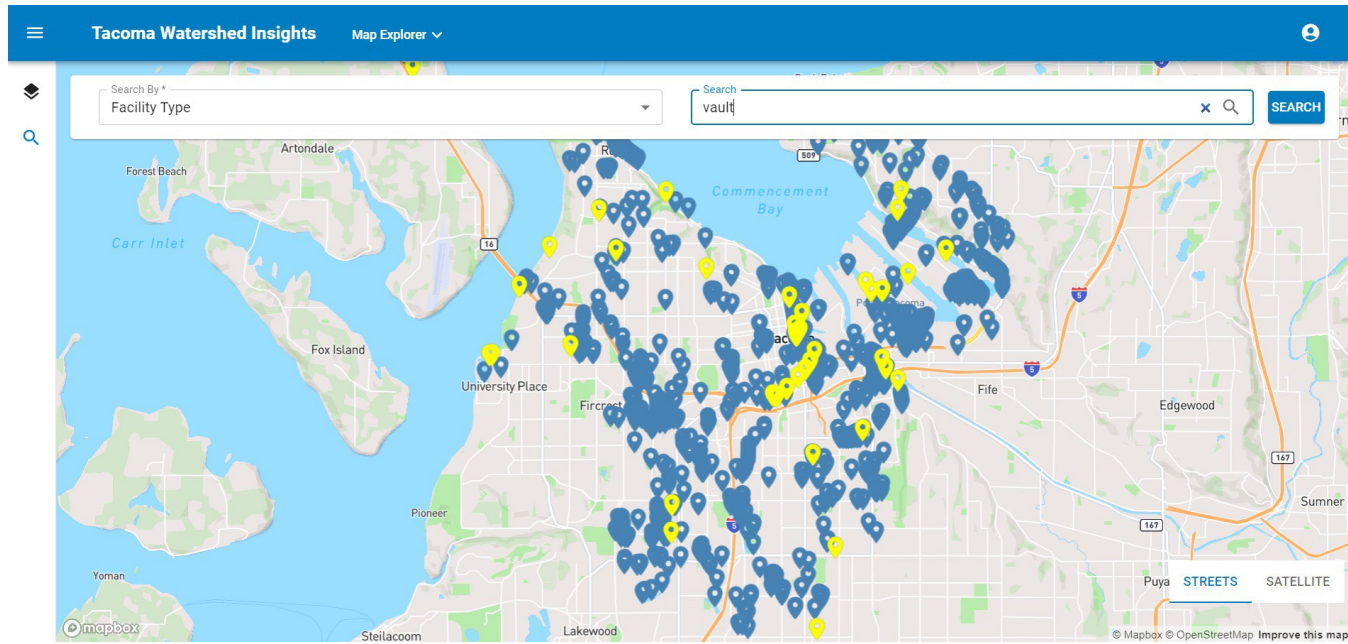
Modify Global Settings

Map Explorer



Existing Infrastructure and Conditions

- Available Layers:
 - Pollutant heat maps
 - Landuse/Terrain
 - Stormwater subbasins
 - Stormwater BMPs
 - Stormwater pipes



by Facility Type

Search

Results Reviewer

Tacoma Watershed Insights

WQ Results Viewer

Water Quality Results Viewer

This module provides a comprehensive summary of the water quality performance of existing Tacoma BMP's, and the conditions of each stormwater subbasin.

BMP Facility Results View

Explore BMP results across four climate epochs

Subbasins Results View

Explore stormwater subbasin results. Results only available for the 1980's climate epoch

Explore

WQ Performance at Facilities and Subbasins

Tacoma Watershed Insights

WQ Results Viewer

Facility Water Quality Results

View tabular data below, or click on individual facilities to view detailed stats

EXPORT

Climate Epoch
1980s

Overview

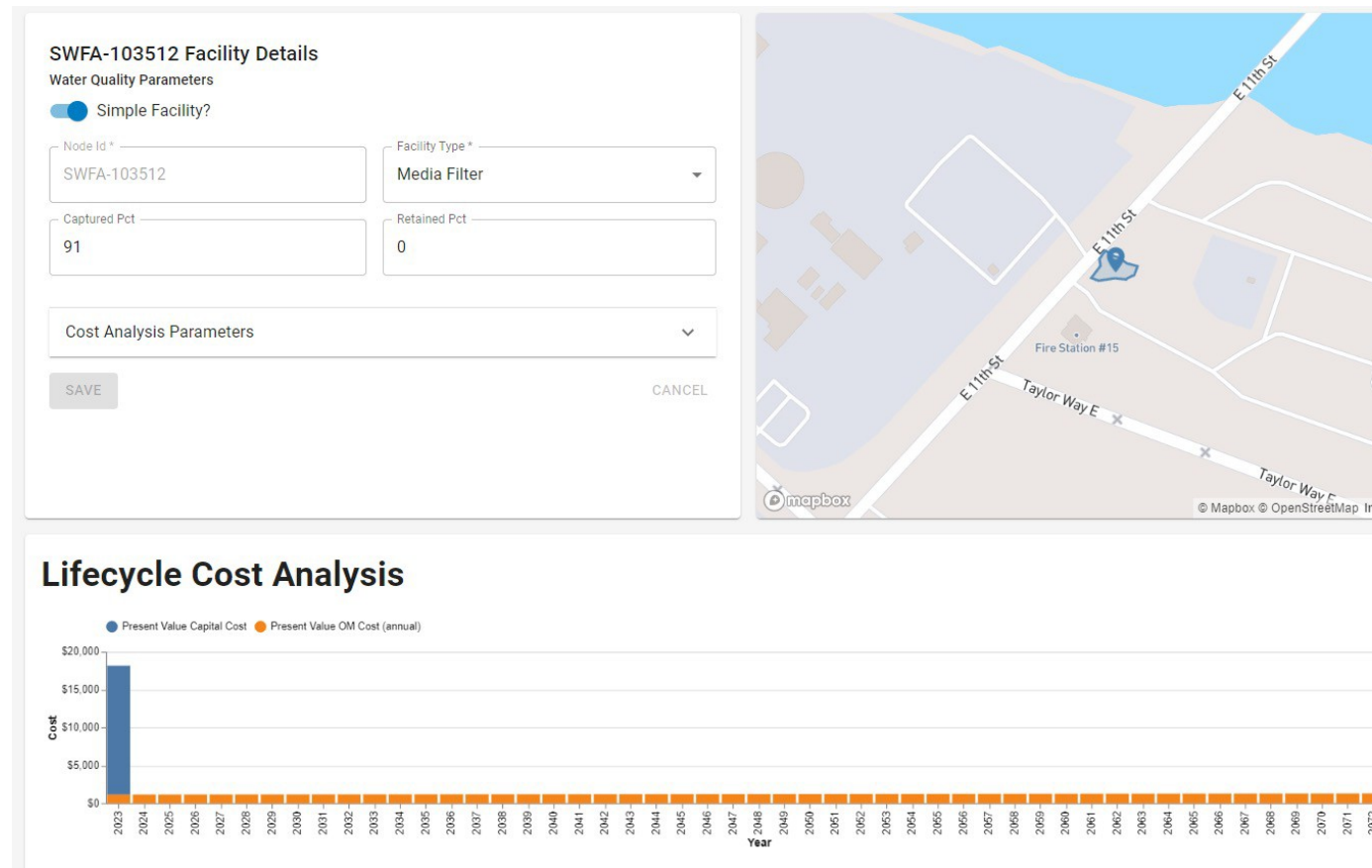
Runoff Stats

Pollutant Mass Flow

Pollutant Concentration

Node Id	Epoch	Facility Type	Node Type	Captured Pct	Treated Pct	Retained Pct	Bypassed Pct
SWFA-100362	1980s	infiltration	simple facility	91.0%	0.0%	91.0%	9.0%
SWFA-100400	1980s	bioretention with f	simple facility	91.0%	0.0%	91.0%	9.0%

- Link to individual facility details
- View stats by climate epoch and type



Drill down to individual BMPs

SWFA-103512 Facility Details

Water Quality Parameters

☐ Simple Facility?

Node Id *

SWFA-103512

Facility Type *

Media Filter

Tributary Area To Min

5

Offline Diversion Rate Cfs

0

Total Volume Cuft *

1000

Area Sqft *

200

Media Filtration Rate Inhr *

4

Cost Analysis Parameters

Capital Cost

17000

Capital Cost Basis Year

2023

Om Cost Per Yr

1150

Om Cost Basis Year

2023

Install Year

Replacement Cost

Lifespan Yrs

[KING COUNTY COST ESTIMATOR TOOL](#)

SAVE

CANCEL

Create BMPs with Detailed Performance and Cost Attributes

- Toggle between 'simple' facilities driven by percentage based capture and treatment stats to ones based on physical attributes
- Add cost data that allows for capital and O&M costs to be amortized over the lifespan of the facility

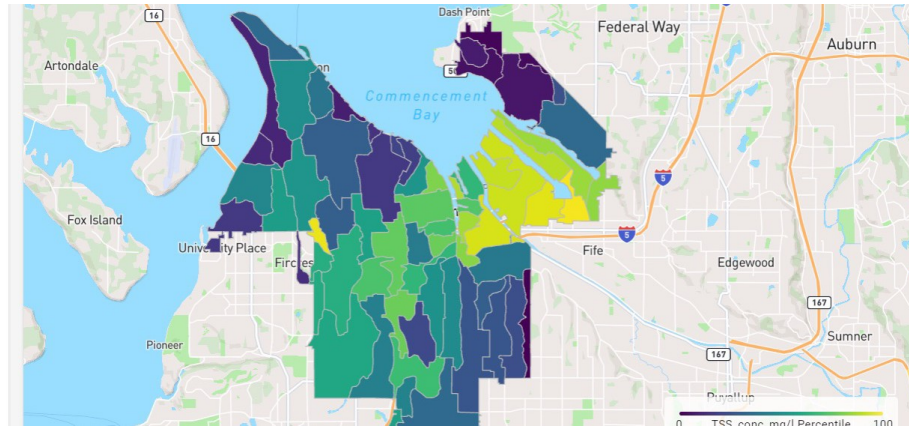
Visualize Subbasin Attributes

Subbasin Water Quality Results

Select attributes below to visualize results across all subbasins.

View and download all subbasin data in the table below.

Subbasin Parameter to Visualize
TSS Conc (mg/l)



Available

- Parameters:
 - -Land Use/Cover
 - -Runoff
 - -Treatment Facility Summary
 - -Pollutant Concentrations/Reductions

[EXPORT](#)
[Land Use Breakdown](#)
[Land Cover Breakdown](#)
[Runoff](#)
[Treatment Facility Summary](#)
[Average Pollutant Washoff Concentration](#)
[Annual Load Reductions](#)

Basinname	Subbasin	DEHP Conc (mg/l)	PHE Conc (mg/l)	PYR Conc (mg/l)	TCu Conc (mg/l)	TN Conc (mg/l)	TP Conc (mg/l)	TSS Conc (mg/l)	1
FLETT CREEK	FL_07	0.000476	0.00000583	0.00000886	0.0121	1.28	0.161	16.8	
FLETT CREEK	FL_08	0.00041	0.00000502	0.00000763	0.0114	1.37	0.147	14.5	
FLETT CREEK	FL_09	0.00038	0.00000466	0.00000708	0.012	1.05	0.0832	13.4	
FLETT CREEK	FL_10	0.000445	0.00000545	0.00000829	0.0117	1.37	0.177	15.7	
FOSS WATERWAY	FS_01	0.000445	0.00000545	0.00000829	0.015	1.18	0.137	15.7	
FOSS WATERWAY	FS_02	0.000486	0.00000595	0.00000905	0.0136	1.42	0.233	17.1	

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Visualize

Subbasin Attributes

- View and download tabular results

Scenario Builder

Purpose and Process

- Allows users to model a proposed single BMP facility with an upstream delineation
- Scenarios can be designed incrementally (facility/delineation can be added after creation)
- WQ results can be generated after scenario creation and future edits

Tacoma Watershed Insights

Home

1 Enter Basic Info

2 Create a Delineation
Optional

3 Create a BMP
Optional

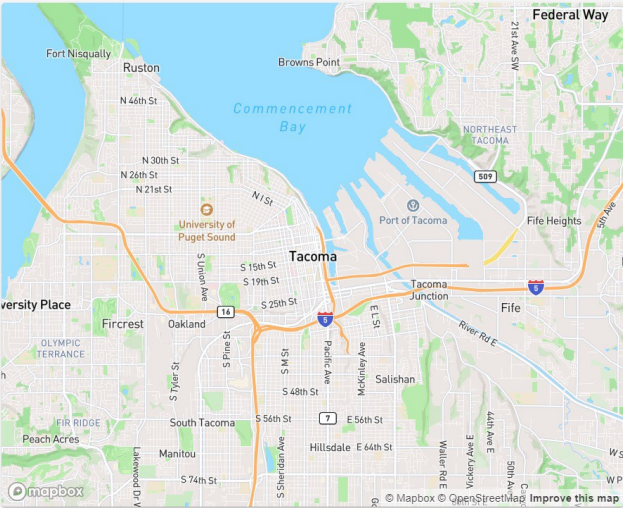
Scenario Name *

Purpose

Description

BACK

NEXT



Design Process

Scenario

Tacoma Watershed Insights

Home

1

Enter Basic Info

2

Create a Delineation

Optional

3

Create a BMP

Optional

Water Quality Parameters

Simple Facility?

Node Id *

Test BMP

Tributary Area To Min

5

Total Volume Cub * *

1000

Media Filtration Rate Inhr *

4

Facility Type *

Media Filter

Offline Diversion Rate Cfs

0

Area Sqft *

200

Cost Analysis Parameters

BACK

SKIP

NEXT

5 9th St

Peoples Park

Housing Authority of the City of Tacoma

5 11th St

Bob's

5 13th St

5 15th St

5 17th St

5 19th St

5 21st St

5 23rd St

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About Subbasin Prioritization

Use this tool to identify regions of the City of Tacoma Watershed that are most in need of stormwater retrofit or preservation projects

Set a project type

Are you prioritizing preservation projects or retrofit projects?

Retrofit ▾

Set Priority Weights

Goal 1: Improve water quality outcomes (Clean Water Goal)

1.1: Prioritize areas based on pollutant concentrations

0

1.2: Improve infrastructure in areas with inadequate stormwater management

0

Goal 2: Increase resilience to climate change impacts (Resilient Community Goal)

2.1: Target areas most vulnerable to and at risk for climate change impacts

0

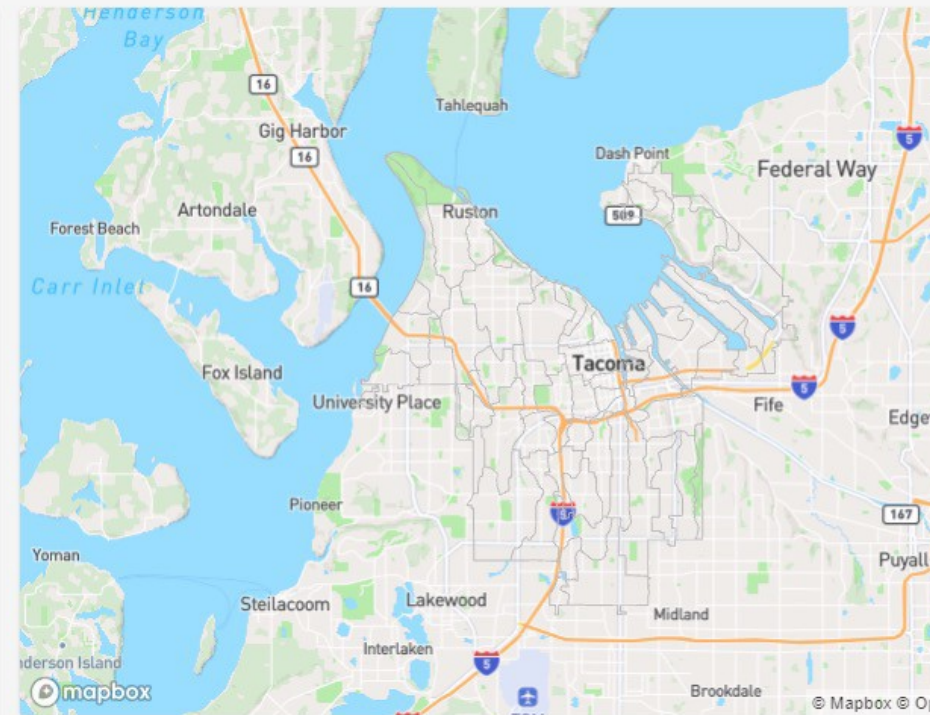
Goal 3: Preserve and restore critical and sensitive habitat (Healthy Ecosystems)

3.1 Preserve and improve Natural Spaces

0

18

Goal 4: Implement Equity and Social Justice (Healthy neighborhoods; Equity)



Submit a set of priorities to view and download results

After submitting priorities, subbasins are scored, and results can be visualized and downloaded

Tacoma GIS (refreshed each morning)

- BMP Facilities
- BMP Facility Delineations
- Subbasins (and static subbasin metrics forthcoming)

TNC in Washington Stormwater Heatmap

- POC concentration
- runoff depth (4 climate epochs)

Changeable data

- BMP Facility modeling attributes (e.g. % capture performance, size)
- BMP Facility cost attributes (e.g., capital cost)
- Scenarios

- Delineations, facility attributes

- Users & Permissions
- Cost Settings (e.g., Inflation rate)

Calculated data

- BMP Facility volume and load reductions
- BMP Facility cost metrics
- Delineation and Subbasin loading
- Upstream and Downstream source control measures (sweeping and drain line cleaning for Foss Watershed)
- Scenarios
 - Delineations, BMP Facility WQ, BMP Facility Cost

Access via api with token

- TMNT Facilities: https://dev.tacomawatersheds.com/api/rest/tmnt_facility/token/<token>?f=geojson

Data Integration



https://dev.tacomawatersheds.com/api/rest/tmnt_facility/token/9ddba26a-79a8-412f-b06f-4eebd2405457?f=json&limit=1000000&offset=0

Get attributes or geojson for all tmnt facilities.

f: str (optional, default=json, [json, geojson]) Format of response data

limit: int (optional, default=1e6) Number of records to return

offset: int (optional, default=0) Start from index



https://dev.tacomawatersheds.com/api/rest/tmnt_facility/{altid}/token/9ddba26a-79a8-412f-b06f-4eebd2405457

Get attributes for tmnt facility with given altid.



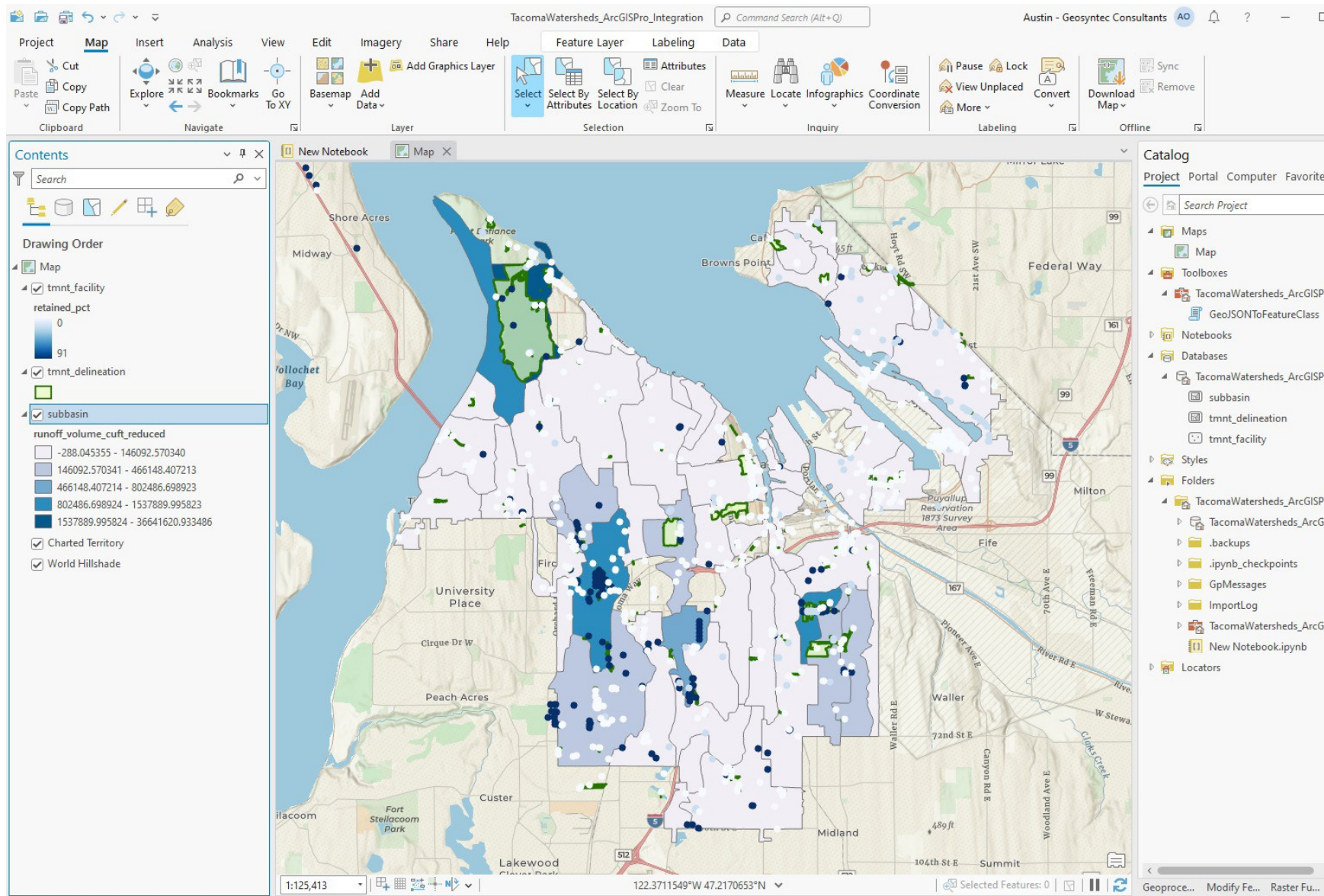
https://dev.tacomawatersheds.com/api/rest/tmnt_delineation/token/9ddba26a-79a8-412f-b06f-4eebd2405457?f=json&limit=1000000&offset=0

Get attributes for all delineations.

f: str (optional, default=json, [json, geojson]) Format of response data

limit: int (optional, default=1e6) Number of records to return

offset: int (optional, default=0) Start from index



Integration GIS