Remedial Priority System

Ecological Health Layers

Water Bodies

"Surface Water Quality Standards"

March 2012

Ecological Receptor Layers

The Ecological Receptor Layers developed by the Department are:

- **Pinelands**,
- **Highlands**,
- **Water Bodies (Surface Water Quality Standards)**,
- **Natural Heritage**,
- **Landscape - Habitats and Animals**,
- **Other Freshwater Wetlands**,
- **Salt Water Marsh**

Water Body Layer

Derived Layer based on population

- Reason for Inclusion: The Surface Water Quality Standards (SWQS) establish the designated uses to be achieved and specify the water quality (criteria) necessary to protect the State's waters. Designated uses include potable water, propagation of fish and wildlife, recreation, agricultural and industrial supplies, and navigation. These are reflected in use classifications assigned to specific waters.
- Source Layers:
  - Surface Water Quality Standards
    - Basis for Layer: Streams designated as antidegredation
  - Land Use
    - Basis for Layer: The Surface Water Quality Standards layers were intersected with the water land use areas to give a better polygon coverage.

Water Body Layer

- Cell Values:
  - Four new layers were created from the surface water quality standards (SWQS) coverage based on antidegradation values for Category One Waters (C1), Category Two Waters (C2), Delaware River (DL), and Outstanding National Resource Waters (ON). Each of these layers were intersected with land use areas described as water to give a better defined polygon coverage of water bodies. The same was done with land use areas defined as wetlands resulting in four wetlands polygon layers with an antidegradation value. Each of these 12 layers (four each for streams, lakes and wetlands) were buffered by 300' and 500'. Each of these layers (now 24) were given an initial value, exported into a raster coverage and then combined into one composite raster taking the max value from input grids.
  - Values were created to reflect inter-relationships between this layer and all other Ecological Receptor Layers.

Water Body Layer

The Cell Values for the Delaware River Basin Commission Zones:

Ecological Health Layers					
Surface Water Quality Standards		Cell Values			
Anti Degradation	"Category"	300 ft buffer	500 ft buffer	300' Wetland	500' Wetland
DR	DRBC – Zone 5	300	230	150	110
DR	DRBC – Zone 4	400	300	200	150
DR	DRBC – Zone 3	500	380	250	190
DR	DRBC – Zone 2	500	380	250	190
DR	DRBC – Zone 1E	600	450	300	230
DR	DRBC – Zone 1D	600	450	300	230
DR	DRBC – Zone 1C	600	450	300	230

Key for this Table is on slide 9

Water Body Layer

The Cell Values for the Category Two Waters:

Ecological Health Layers					
Surface Water Quality Standards		Cell Values			
Anti Degradation	"Category"	300 ft. buffer	500 ft. buffer	300' Wetland	500' Wetland
C2	SE3	300	230	150	110
C2	SE2	300	230	150	110
C2	SE1	300	230	150	110
C2	FW2 – NT / SE3	400	300	200	150
C2	FW2 – NT / SE2	500	380	250	190
C2	FW2 – NT / SE1	500	380	250	190
C2	FW2 – NT	600	450	300	230
C2	FW2 – TP	700	530	350	260
C2	FW2 – TM	800	600	400	300

Key for this Table is on slide 9

Water Body Layer

The Cell Values for Class One Waters:

Ecological Health Layers					
Surface Water Quality Standards		**Cell Values**			
Anti Degradation	**"Category"**	**300 ft. buffer**	**500 ft. buffer**	**300' Wetland**	**500' Wetland**
C1	FW2 – NT / SE2	600	450	300	230
C1	FW2 – NT/SE1/SC	600	450	300	230
C1	FW2 – NT / SE1	600	450	300	230
C1	FW2 – NT	700	530	350	260
C1	FW2 – TP	800	600	400	300
C1	FW2 – TM	900	680	450	340

Key for this Table is on slide 9

Water Body Layer

The Cell Values for Outstanding National Resource Waters:

Ecological Health Layers					
Surface Water Quality Standards		Cell Values			
Anti Degradation	"Category"	300 ft. buffer	500 ft. buffer	300 ft. Wetland	500 ft. Wetland
ON	FW1	800	600	400	300
ON	FW1 – TP	900	680	450	340
ON	FW1 – TM	900	680	450	340
ON	PL	1000	750	500	380
ON	PL – TM	1000	750	500	380

Key for this Table is on slide 9

- Calculation Method:
  - All cells that are within the ground water Extent Area are summed.

Water Body Layer

Key for Cell Value Tables

Antidegradation Categories

- **ON -** Outstanding National Resource Waters
- **C1** - Category One Waters: Protected from any measurable change in water quality because of ecological, recreational or fisheries resources.
- **C2** - Category Two Waters: A "default" designation that applies to all surface waters except those designated as Outstanding National Resource Waters (ONRW) or C1.
- **DR** - Delaware River

Stream Classifications

- **DRBC** - Delaware River Basin Commission
  - **Zones** 1,2,3,4 & 5 - The Delaware River is divided into five Zones
- **SE** - Saline Estuarine Waters/3 Categories
- **FW** - Freshwater
- **NT** - Non-Trout
- **TP** - Trout Producing
- **TM** - Trout Maintenance
- **PL** - Pinelands

Water Body Layer

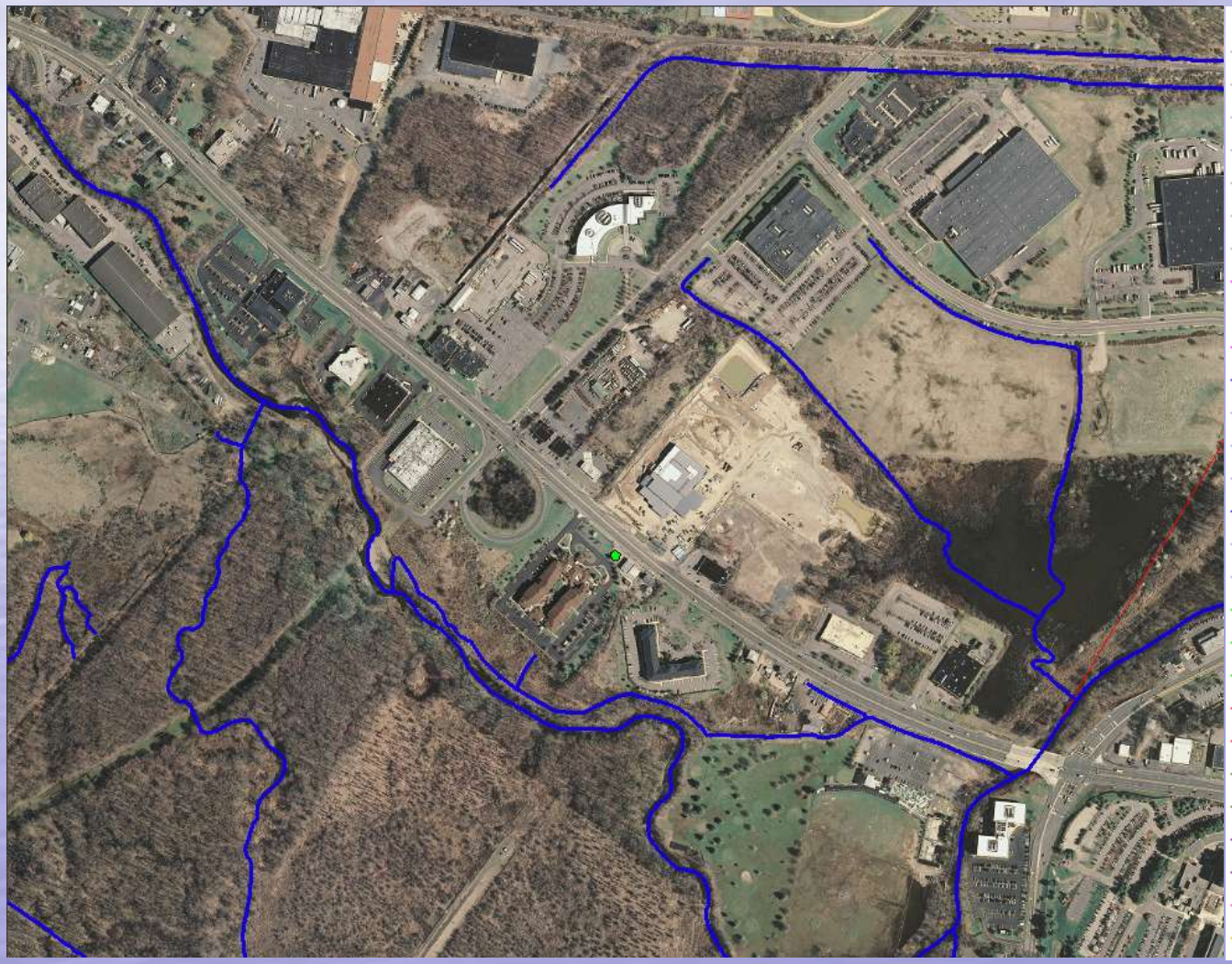
- The following is the method used to create the Water Body GIS layer

Water Body Layer

Creating the Water Body Layer

Water Body Layer

Creating the Water Body Layer

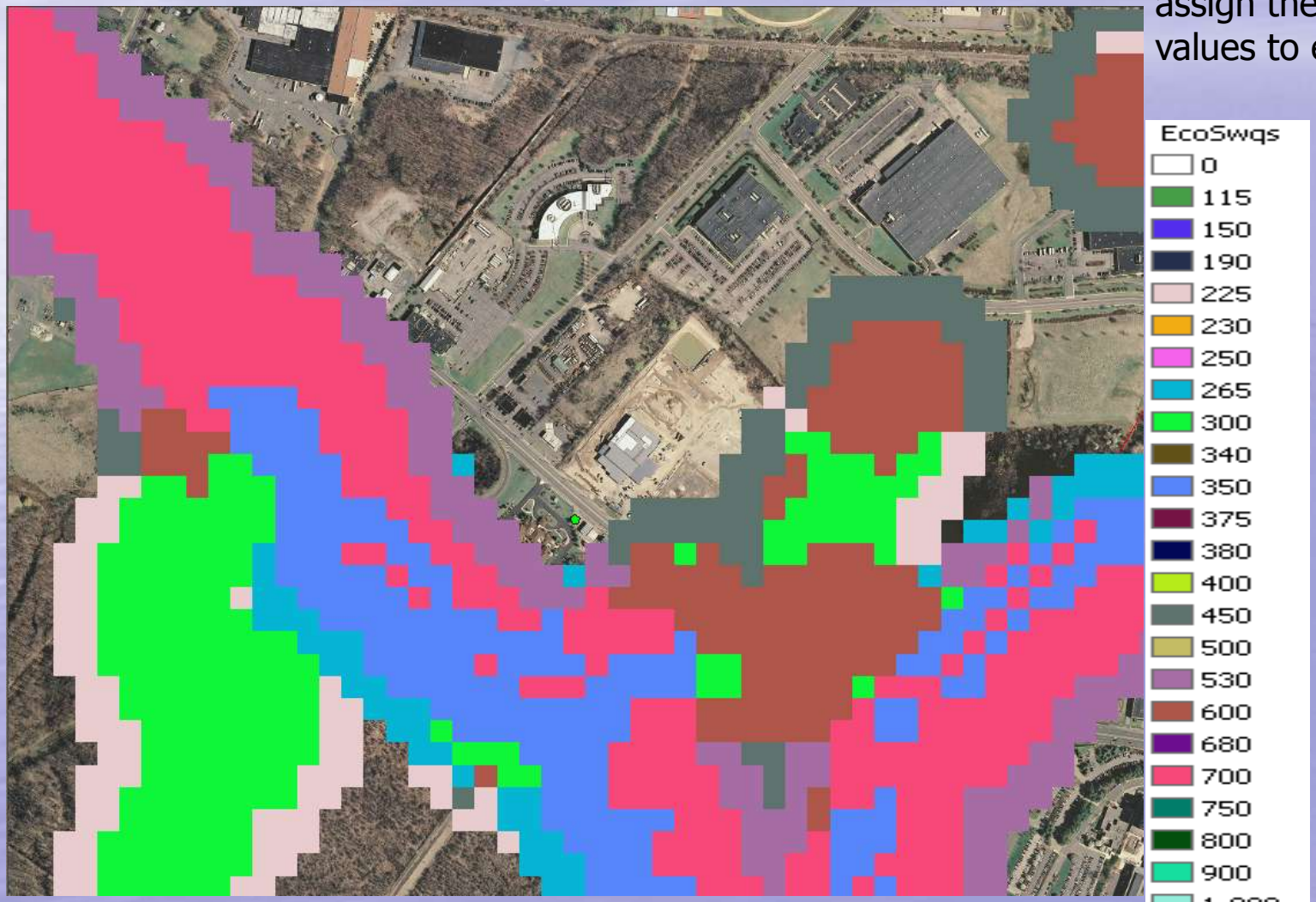


Use Surface Water Quality Standards layer

Surface Water Quality Standards
- DRBC-Zone-1C
- DRBC-Zone-1D
- DRBC-Zone-1E
- DRBC-Zone-2
- DRBC-Zone-3
- DRBC-Zone-4
- DRBC-Zone-5
- FW1
- FW1-TM
- FW1-TP
- FW2-NT
- FW2-NT/SE1
- FW2-NT/SE2
- FW2-NT/SE3
- FW2-NTC1
- FW2-NTC1/SE1
- FW2-NTC1/SE1/SC
- FW2-TM
- FW2-TM/SE1
- FW2-TMC1
- FW2-TP
- FW2-TPC1
- PL
- PL-TM
- SE1
- SE1C1
- SE2
- SE3

Water Body Layer

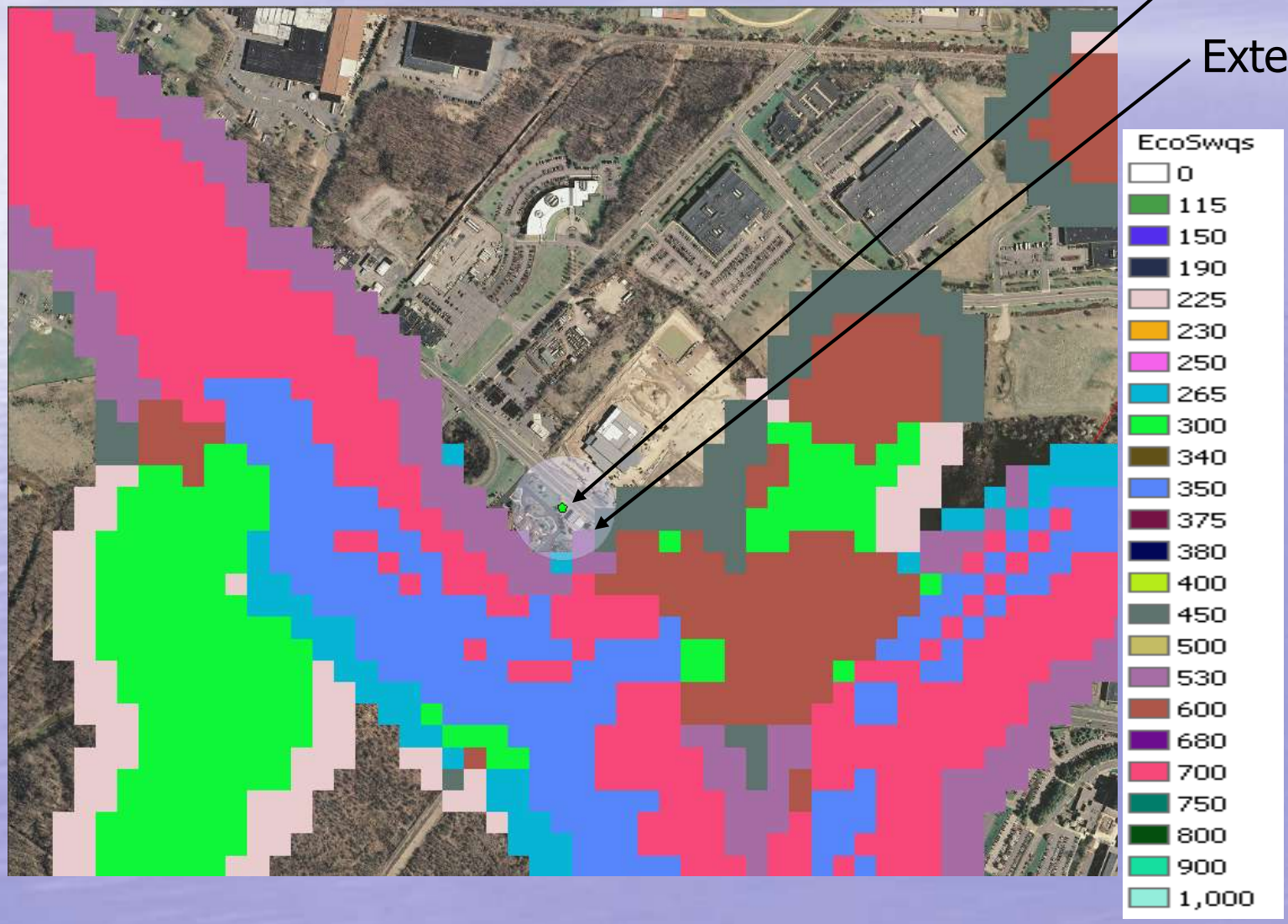
Creating the Water Body Layer



Convert vectors into Raster (100 by 100 grid) and assign the appropriate values to each cell.

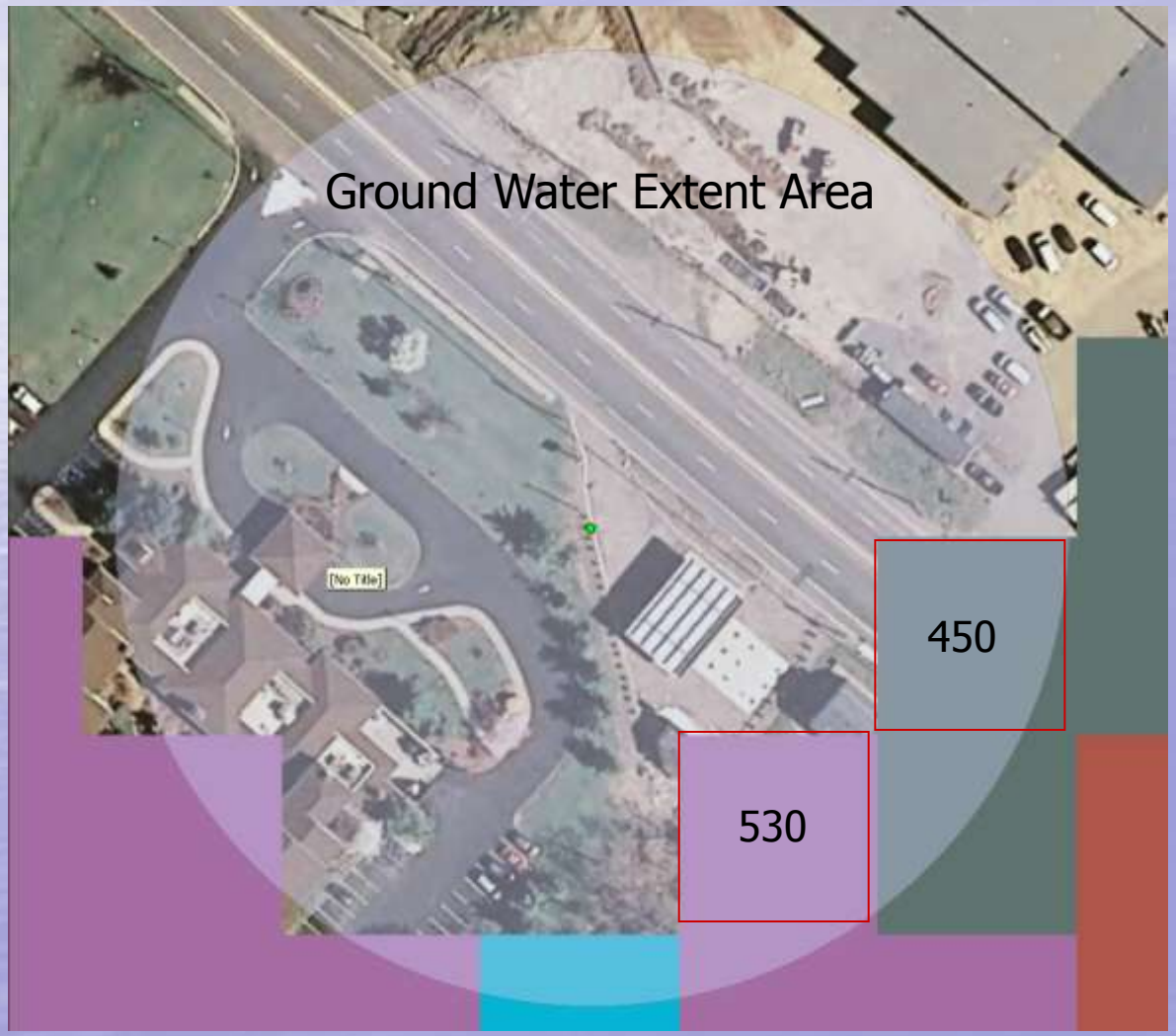
Water Body Layer

Creating the Water Body Layer



Water Body Layer

Creating the Water Body Layer



Zoom in

Sum up all cell values that are within the Extent Area

cell value = 530 , 450

Cells within area = 2

Final Score = 980

- A Water Body Layer is created for the entire state.

- The following is the layer used to calculate the Water Body Receptor Layer Score.

Ecological: Water Body