WEPP Online GIS – OpenLayers/Google Maps Interface
November 18, 2013
Website: http://milford.nserl.purdue.edu/ol/wepp/

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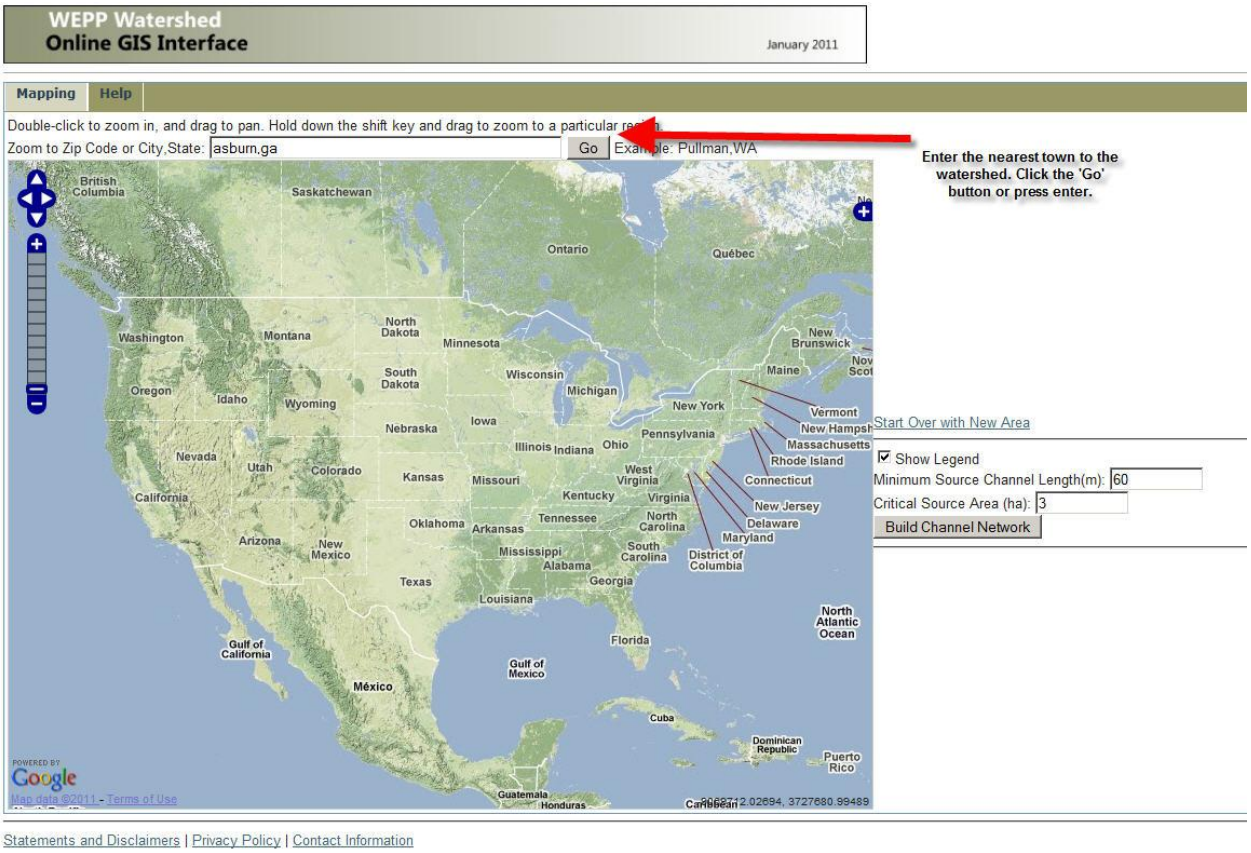
Overview

The WEPP online GIS interface uses the OpenLayers (http://openlayers.org/) software to assist in setting up WEPP watershed simulations. The TOPAZ model (http://ars.usda.gov/Main/docs.htm?docid=21167) is used to determine the channel network, delineate the watershed and determine the flowpaths within the watershed. To translate the GIS data into WEPP inputs, custom software is used. The model outputs show soil loss and runoff from watershed.

1. Select your area of interest

The first step is to zoom to an area of interest. There are several ways to navigate:

a) Type in a zip code or the nearest city and state to where your watershed is located.
b) Draw an area by holding down the SHIFT key and dragging the mouse with the left button held down .
c) Use the zoom level bar on the left to zoom in/out from the current location, or the arrows at the top left to pan. Holding the left mouse button down can also be used to pan.

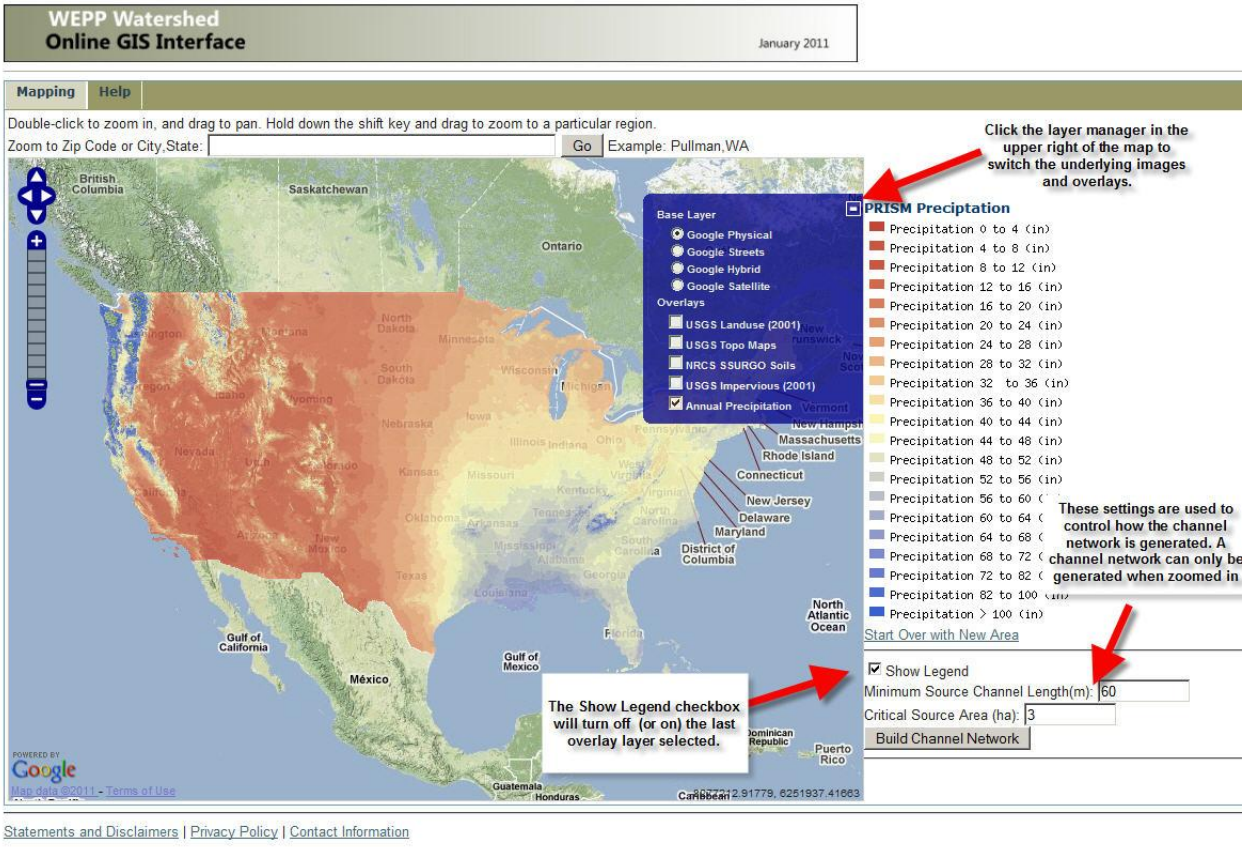


The layers available on the map can be seen by clicking the + sign towards the upper right of the map to display the layer switcher. The Google Physical, Streets, Hybrid, or Satellite images can be used as a base layer. GIS layers that can be used as overlays include USGS 2001 land use, topographic maps, SSURGO soils, or impervious areas from USGS. In the image below the PRISM gridded precipitation data is shown. The NRCS SSURGO soils data is very detailed and is only shown when zoomed in at one of the higher zoom levels.

To proceed to the next step, you need to zoom in to an area less than 0.2 degrees from east to west. In the central U.S., this is about 12 miles. If the zoom bar on the left is at the first, second or third bar from the top this would be a small enough area.

Physical: zoom level 3

Street, satellite, hybrid: zoom level 7



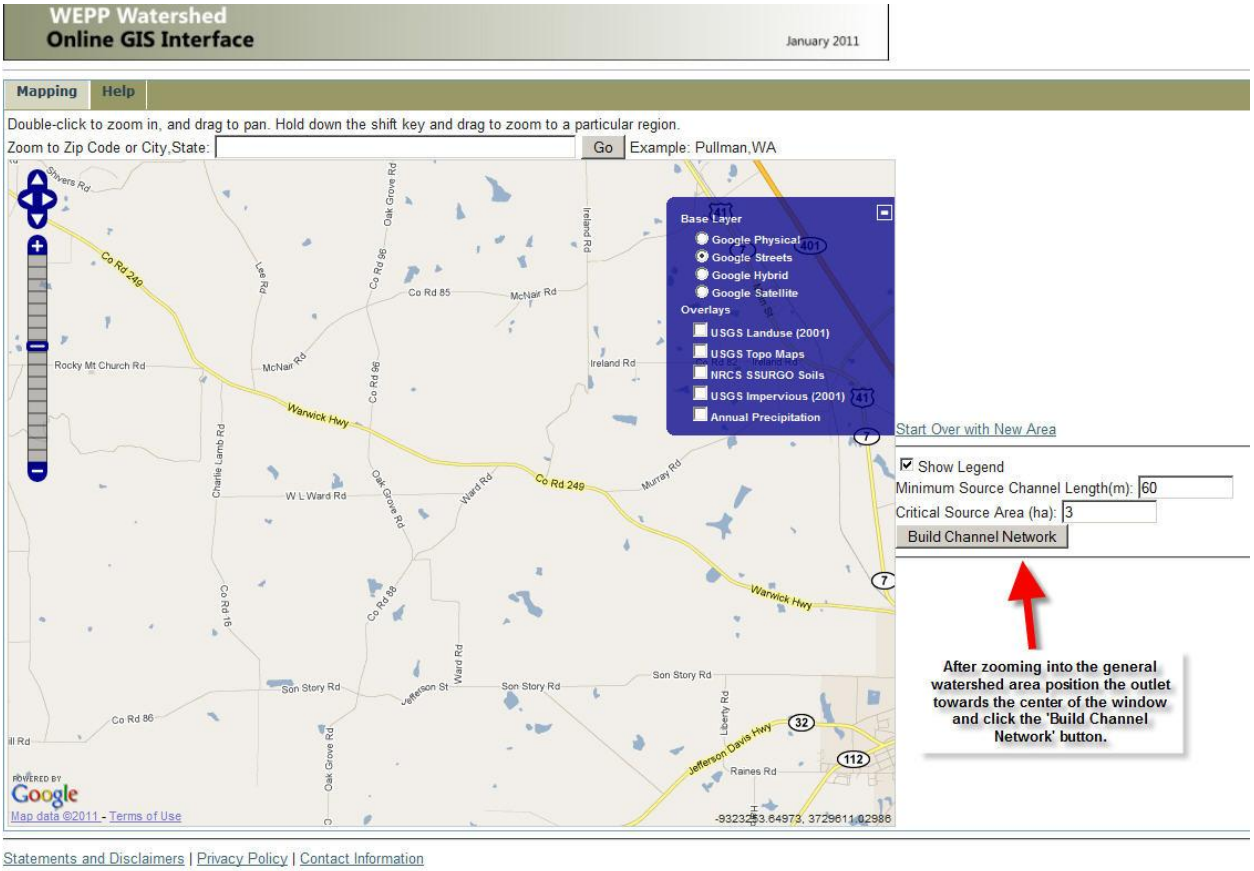
2. Build the Channel Network

After zooming to the area of interest click the **Build Channel Network** button. This will run the TOPAZ software, using elevation values from the National Elevation Data layer (USGS, 200x) . Two parameters define the amount of detail in the channel network:

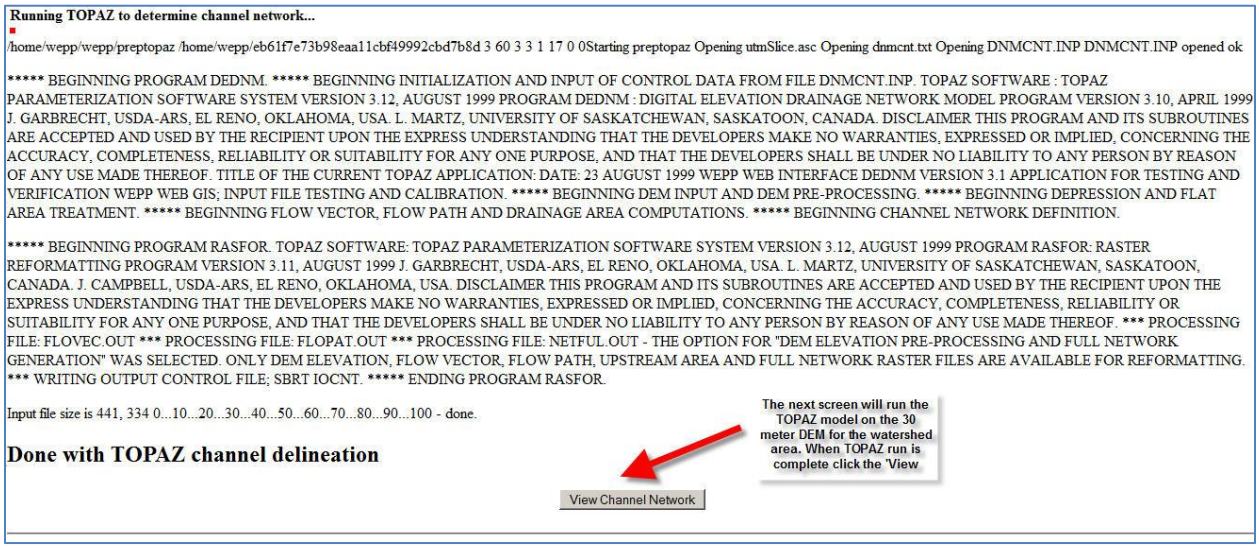
- **Minimum Source Channel Length–** the shortest channel length that can support other channels. Increasing the value will generate fewer channels in the watershed. (meters) (The minimum length for source channels (channels without tributaries).)

- **Critical Source Area** -the minimum upstream drainage area at which a channel is initiated. Increasing the value will cause fewer channels to be delineated.

Unless you have a basis for selecting these, a good strategy is to use the default setting to define an initial channel network. If the resulting channel network does not match the topography, or creates too many or too few subcatchments in step 4, adjust these parameters and rebuild the channel network.

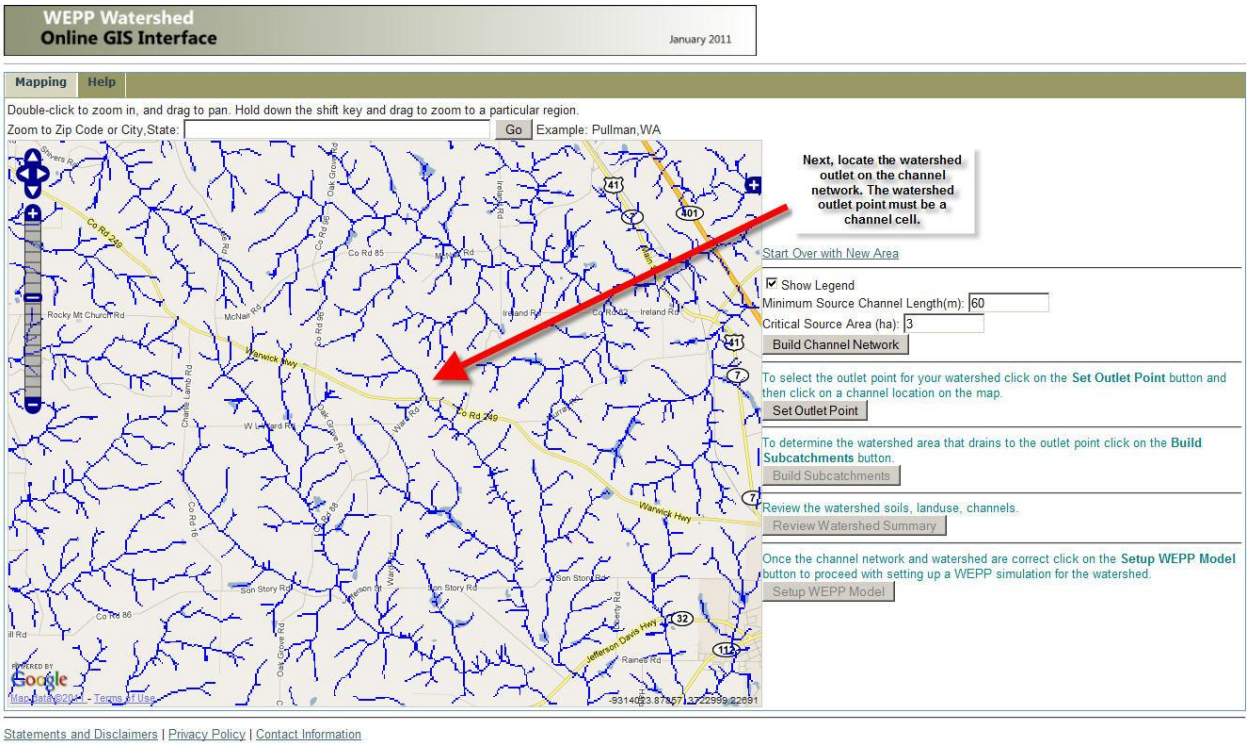


When the TOPAZ model is running to define the channels information will be sent to browser. When the simulation is complete click on the **View Channel Network** button.



3. Set the watershed outlet point

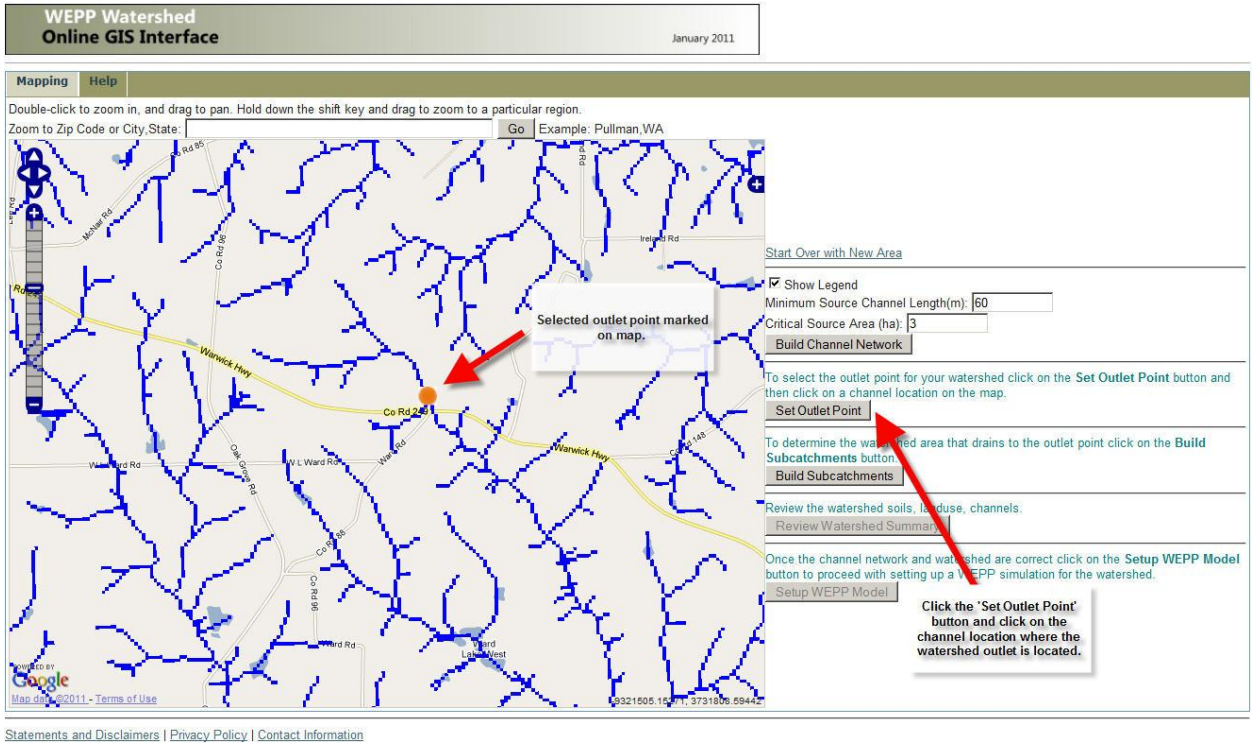
In this step, you have the opportunity to select the outlet of the watershed you are modeling. This point should lie on one of the channels that were delineated. Select **Set Outlet Point** then click on a channel cell.



4. Build Subcatchments

After setting the watershed outlet point on a channel the **Build Subcatchments** button is available. This delineates the watershed draining into the selected outlet. It also divides the watershed into a number of subcatchments, determined by the channel network that was built in Step 2.

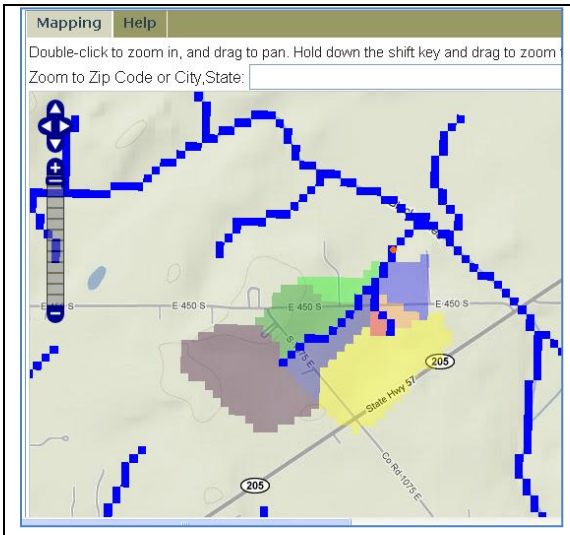
As the TOPAZ model is running to determine the watershed boundary, subcatchment and flowpath information will be sent to the browser. In addition, the online SSURGO database is queried to determine the different soils in the watershed.



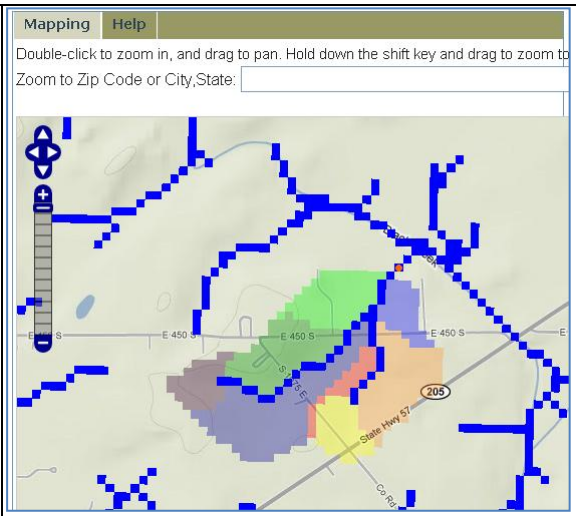
When the processing is complete click on the **View Watershed Subcatchments** button to return to the map window

After the watershed has been defined the outlet and subcatchment layers will be shown in the map window. Each different colored subcatchment will be used as WEPP hilllslope in a watershed simulation.

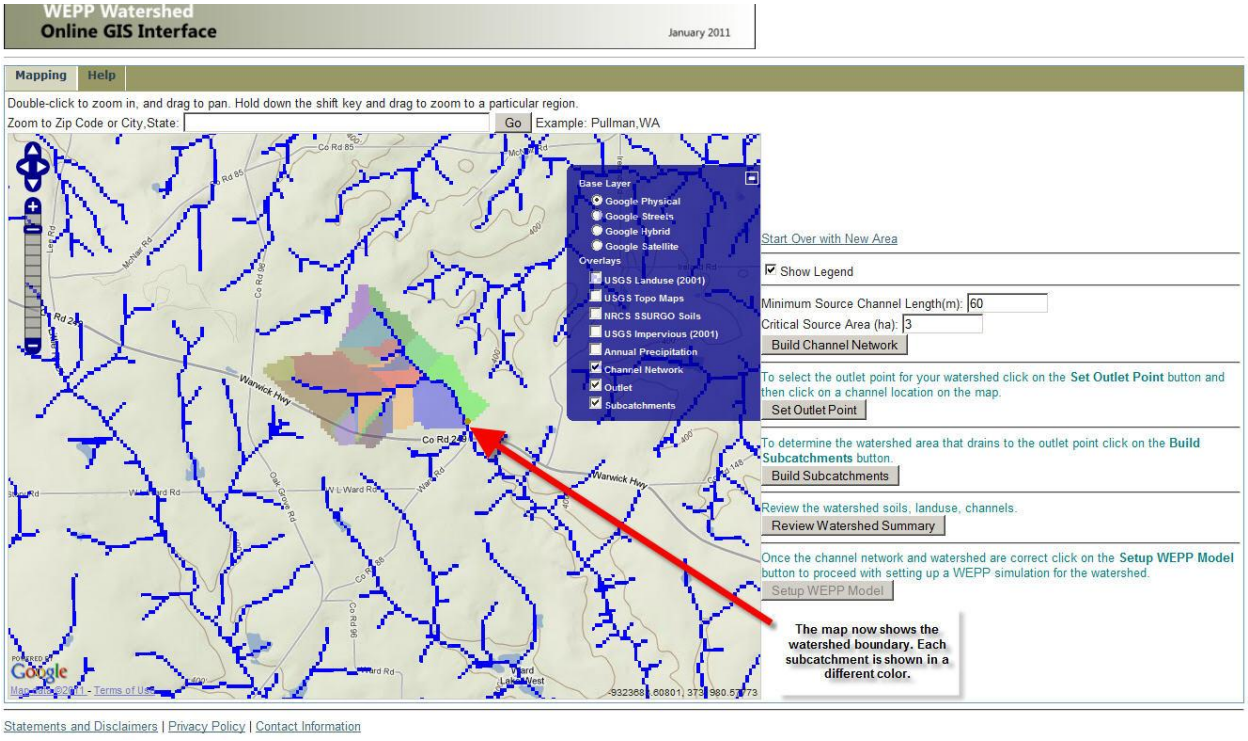
In addition, all the flowpaths within the watershed will be simulated with WEPP to estimate spatial soil loss.



Critical source area = 10 ha

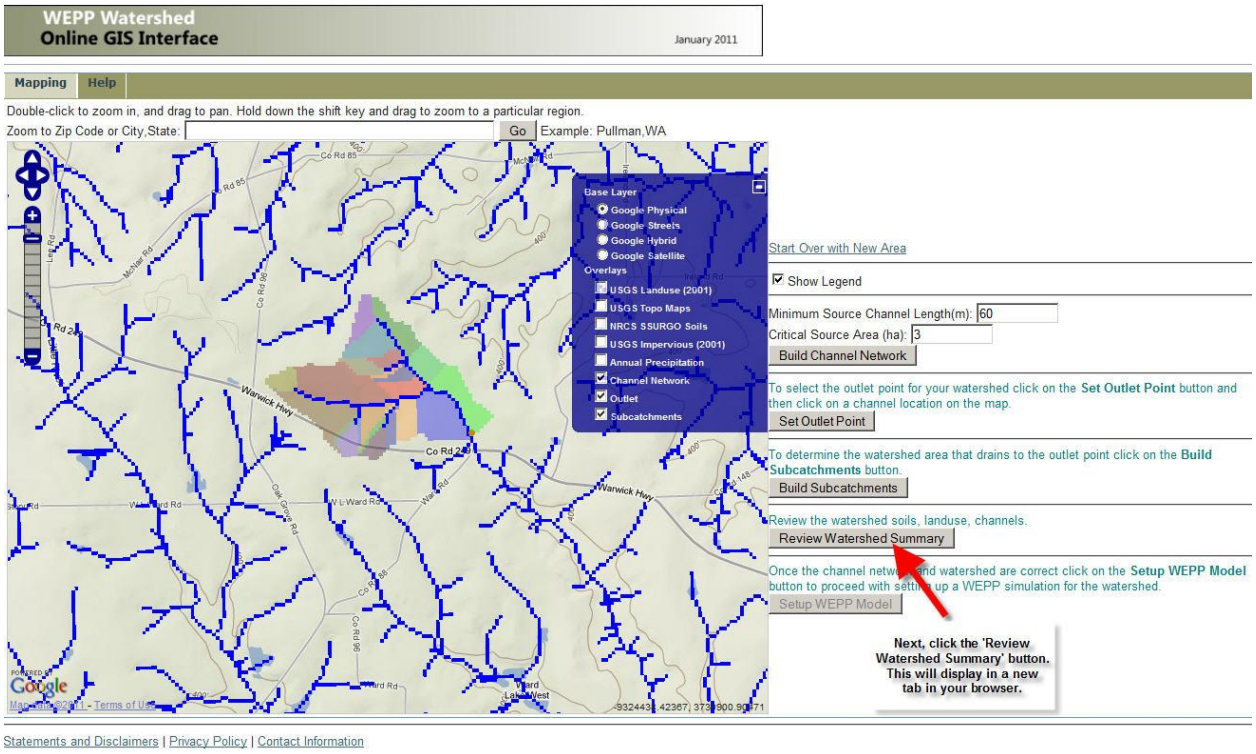


Critical source area = 3 ha

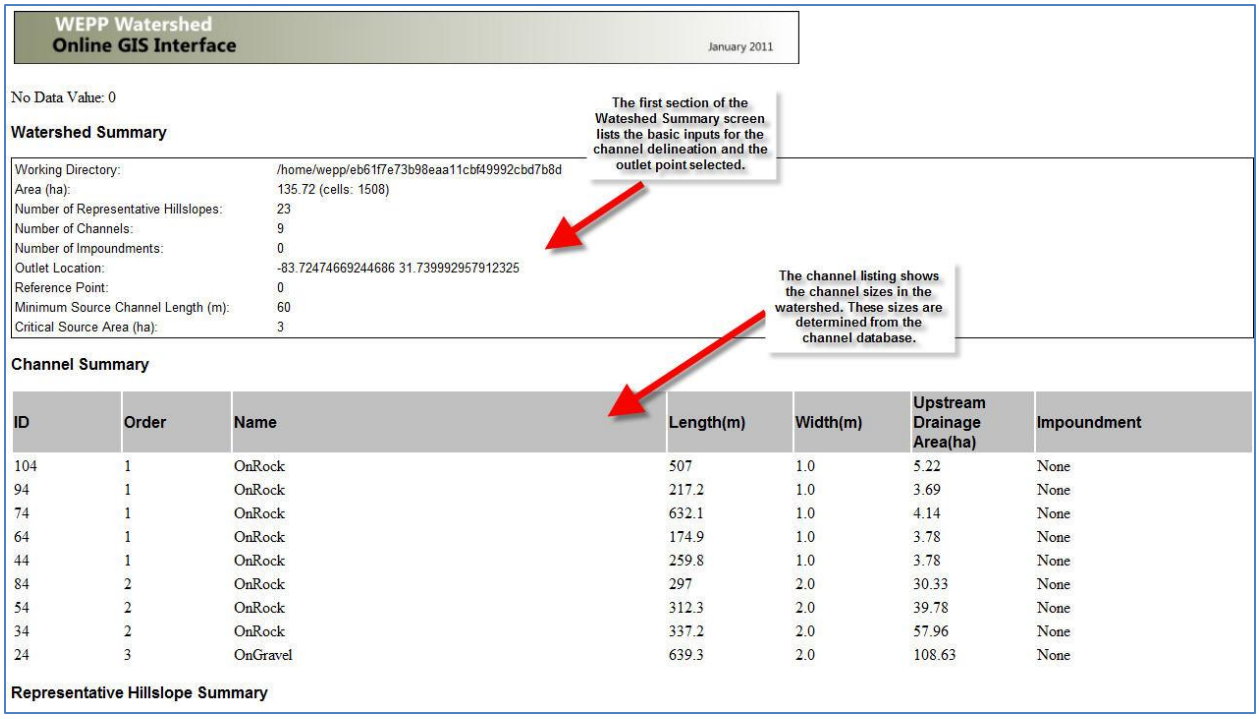


5. Review and edit watershed, channel, representative hillslope, land use, and soil properties

After building the subcatchments click on the **Review Watershed Summary** button. The button is only available after the subcatchments have been defined.



The first section of the page gives some general information about the watershed. The next section lists the channels defined within the watershed. Impoundments may be added to the ends of channels.



WEPP Watershed
Online GIS Interface

January 2011

No Data Value: 0

Watershed Summary

The first section of the Wateshed Summary screen lists the basic inputs for the channel delineation and the outlet point selected.

Working Directory:	/home/wepp/eb61f7e73b98eaa11cbf49992cbd7b8d
Area (ha):	135.72 (cells: 1508)
Number of Representative Hillslopes:	23
Number of Channels:	9
Number of Impoundments:	0
Outlet Location:	-83.72474669244686 31.739992957912325
Reference Point:	0
Minimum Source Channel Length (m):	60
Critical Source Area (ha):	3

The channel listing shows the channel sizes in the watershed. These sizes are determined from the channel database.

Channel Summary

ID	Order	Name	Length(m)	Width(m)	Upstream Drainage Area(ha)	Impoundment
104	1	OnRock	507	1.0	5.22	None
94	1	OnRock	217.2	1.0	3.69	None
74	1	OnRock	632.1	1.0	4.14	None
64	1	OnRock	174.9	1.0	3.78	None
44	1	OnRock	259.8	1.0	3.78	None
84	2	OnRock	297	2.0	30.33	None
54	2	OnRock	312.3	2.0	39.78	None
34	2	OnRock	337.2	2.0	57.96	None
24	3	OnGravel	639.3	2.0	108.63	None

Representative Hillslope Summary

The next section shows the representative hillslopes. Each WEPP representative hillslope is the area defined by a subcatchment within TOPAZ. Within each representative hillslope there are many flowpaths. Each of the flowpaths slope data are combined to arrive at a single representative hillslope profile that is used in WEPP watershed runs.

The major soils and landuses are determined by looking at the landuse grid and SSURGO soil grid over the subcatchment area. When a WEPP watershed simulation is run the dominate landuse and soil on each representative hillslope is used.

Representative Hillslope Summary

These are the representative hillslopes (subcatchments) defined by the TOPAZ model.

ID	Major Landuse	Major Soil	Number of Cells	Area(ha)	Percentage of Watershed
101	Evergreen Forest	Tifton loamy sand, 2 to 5 percent slopes	58	5.22	3.8
103	Cultivated Crops	Kinston and Osier soils	80	7.2	5.3
102	Evergreen Forest	Tifton loamy sand, 2 to 5 percent slopes	93	8.37	6.2
83	Cultivated Crops	Dothan loamy sand, 2 to 5 percent slopes	65	5.85	4.3
93	Evergreen Forest	Dothan loamy sand, 2 to 5 percent slopes	31	2.79	2.1
91	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	41	3.69	2.7
73	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	155	13.95	10.3
53	Evergreen Forest	Tifton loamy sand, 2 to 5 percent slopes	63	5.67	4.2
71	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	46	4.14	3.1
92	Cultivated Crops	Dothan loamy sand, 2 to 5 percent slopes	11	0.99	0.7
82	Evergreen Forest	Dothan loamy sand, 2 to 5 percent slopes	28	2.52	1.9
23	Cultivated Crops	Dothan loamy sand, 2 to 5 percent slopes	128	11.52	8.5
33	Evergreen Forest	Leefield loamy sand	50	4.5	3.3
72	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	140	12.6	9.3
22	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	157	14.13	10.4
32	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	70		4.6
52	Mixed Forest	Tifton loamy sand, 2 to 5 percent slopes	49		3.2
42	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	27		1.8
63	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	14		0.9
62	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	8	0.72	0.5
43	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	14	1.26	0.9
61	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	42	3.78	2.8
41	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	42	3.78	2.8

The representative hillslope summary lists each subcatchment along with the dominate landuse and soil.

The landuse and soils summary that follow show all the landuse classes present and soil types. This information is used in detailed WEPP flowpath simulations.

Landuse Summary

The watershed contains the following landuse as detemined by the USGS National Land Cover Database 2001 - http://www.mrlc.gov/nlcd.php

ID	Name	WEPP File	Number of Cells	Area(ha)	Percentage of Watershed
11	Open Water	Bare.rot	9	0.81	0.6
21	Developed, Open Space	Good grass.rot	18	1.62	1.2
22	Developed, Low Intensity	Poor grass.rot	7	0.63	0.5
41	Deciduous Forest	Mature forest.rot	57	5.13	3.8
42	Evergreen Forest	Mature forest.rot	290	26.1	19.6
43	Mixed Forest	Mature forest.rot	115	10.35	7.8
71	Grasslands/Herbaceous	Good grass.rot	79	7.11	5.3
81	Pasture/Hay	Good grass.rot	45	4.05	3.0
82	Cultivated Crops	corn,soybean-fall mulch till.rot	761	68.49	51.4
90	Woody Wetlands	Good grass.rot	100	9	6.8

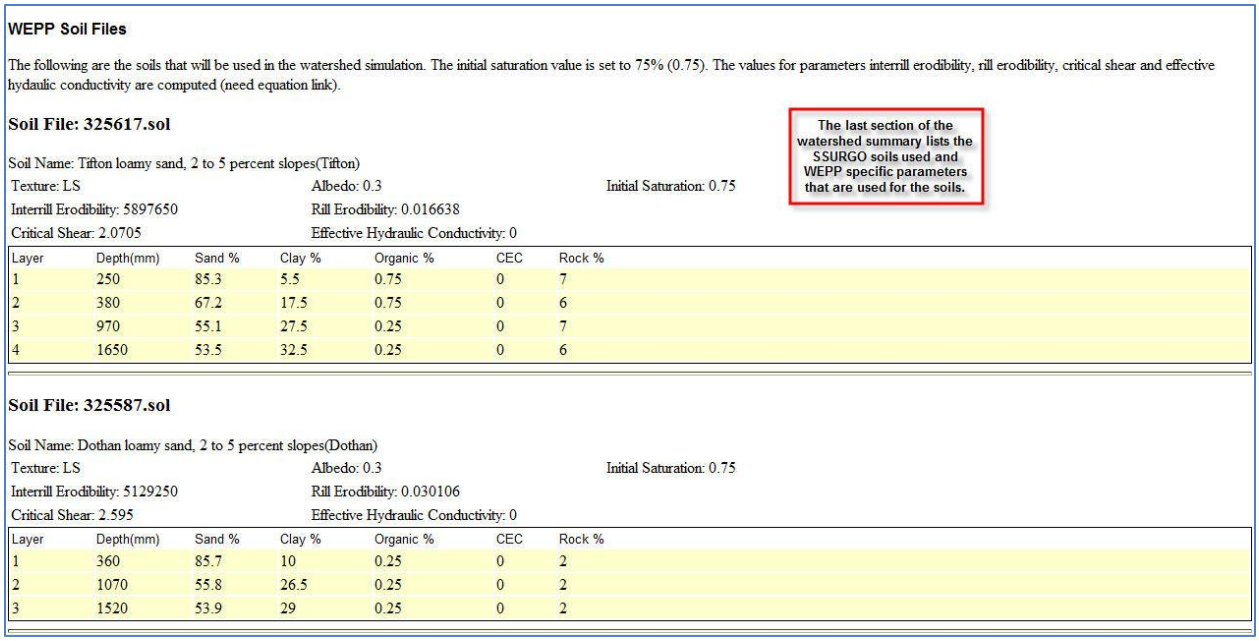
The land use and soil summaries show the different classes and the WEPP inputs that are used. The soil data is derived from SSURGO data and the land use from the USGS 2001 Landcover Map.

Soils Summary

The watershed contains the following soils as determined by the NRCS Soil Survey. The data is requested directly from the NRCS soils database. Information on the NRCS Soils Data structure and how it can be accessed are found at: http://sdmdataaccess.nrcs.usda.gov/

MuKey	Soil Name	Number of Cells	Area(ha)	Percentage of Watershed
325576	Alapaha loamy sand	145	13.05	9.8%
325587	Dothan loamy sand, 2 to 5 percent slopes	221	19.89	14.9%
325596	Kinston and Osier soils	128	11.52	8.6%
325599	Leefield loamy sand	72	6.48	4.9%
325611	Stilson loamy sand	102	9.18	6.9%
325617	Tifton loamy sand, 2 to 5 percent slopes	813	73.17	54.9%

The last section of the watershed review summary lists the WEPP soil files that were generated from the SSURGO data.



WEPP Soil Files

The following are the soils that will be used in the watershed simulation. The initial saturation value is set to 75% (0.75). The values for parameters interrill erodibility, rill erodibility, critical shear and effective hydaulic conductivity are computed (need equation link).

Soil File: 325617.sol

Soil Name: Tifton loamy sand, 2 to 5 percent slopes(Tifton)

Texture: LS | Albedo: 0.3 | Initial Saturation: 0.75

Interrill Erodibility: 5897650 | Rill Erodibility: 0.016638

Critical Shear: 2.0705 | Effective Hydraulic Conductivity: 0

Layer	Depth(mm)	Sand %	Clay %	Organic %	CEC	Rock %
1	250	85.3	5.5	0.75	0	7
2	380	67.2	17.5	0.75	0	6
3	970	55.1	27.5	0.25	0	7
4	1650	53.5	32.5	0.25	0	6

Soil File: 325587.sol

Soil Name: Dothan loamy sand, 2 to 5 percent slopes(Dothan)

Texture: LS | Albedo: 0.3 | Initial Saturation: 0.75

Interrill Erodibility: 5129250 | Rill Erodibility: 0.030106

Critical Shear: 2.595 | Effective Hydraulic Conductivity: 0

Layer	Depth(mm)	Sand %	Clay %	Organic %	CEC	Rock %
1	360	85.7	10	0.25	0	2
2	1070	55.8	26.5	0.25	0	2
3	1520	53.9	29	0.25	0	2

The last section of the watershed summary lists the SSURGO soils used and WEPP specific parameters that are used for the soils.

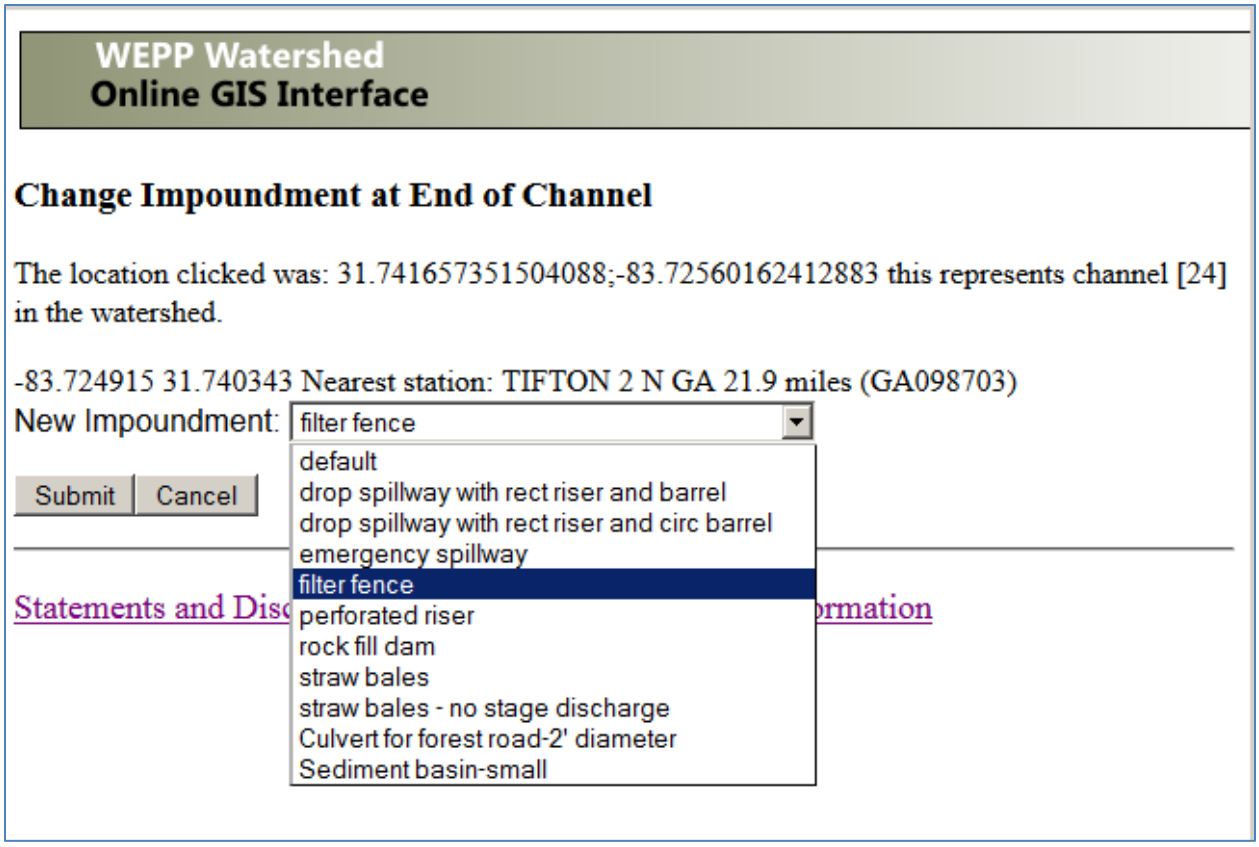
After reviewing the watershed for the first time there are some links available to make changes. These include:

Change Properties of Hillslopes – For a representative hillslope override the default settings and select a new dominant land use or soil. The hillslope to change is selected by clicking the area on the map.

Change Properties of Channel – Select a different channel parameter set or change the width. The channel is selected by clicking the area on the map.

Type: Choices are ditch, Graded, Ungraded, Waterway, Earth Channel, Gravel Channel, Ditch in forest, Forest road ditch, Waterway through channel

Add/Change Impoundment at end of channel – WEPP watershed impoundments can be placed in the watershed only at the ends of channels. These structures will be used in the WEPP watershed simulation but not in the flowpath runs.

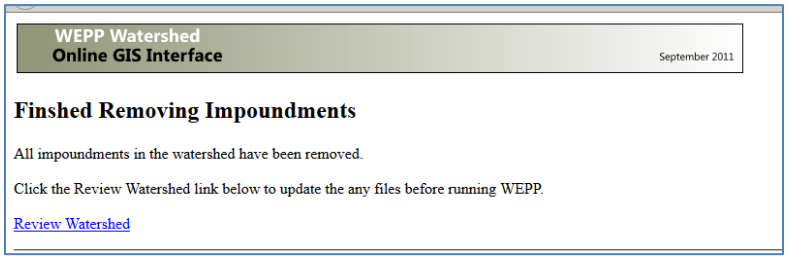


When the impoundment is added it will be indicated in the Review Watershed window:

Channel Summary

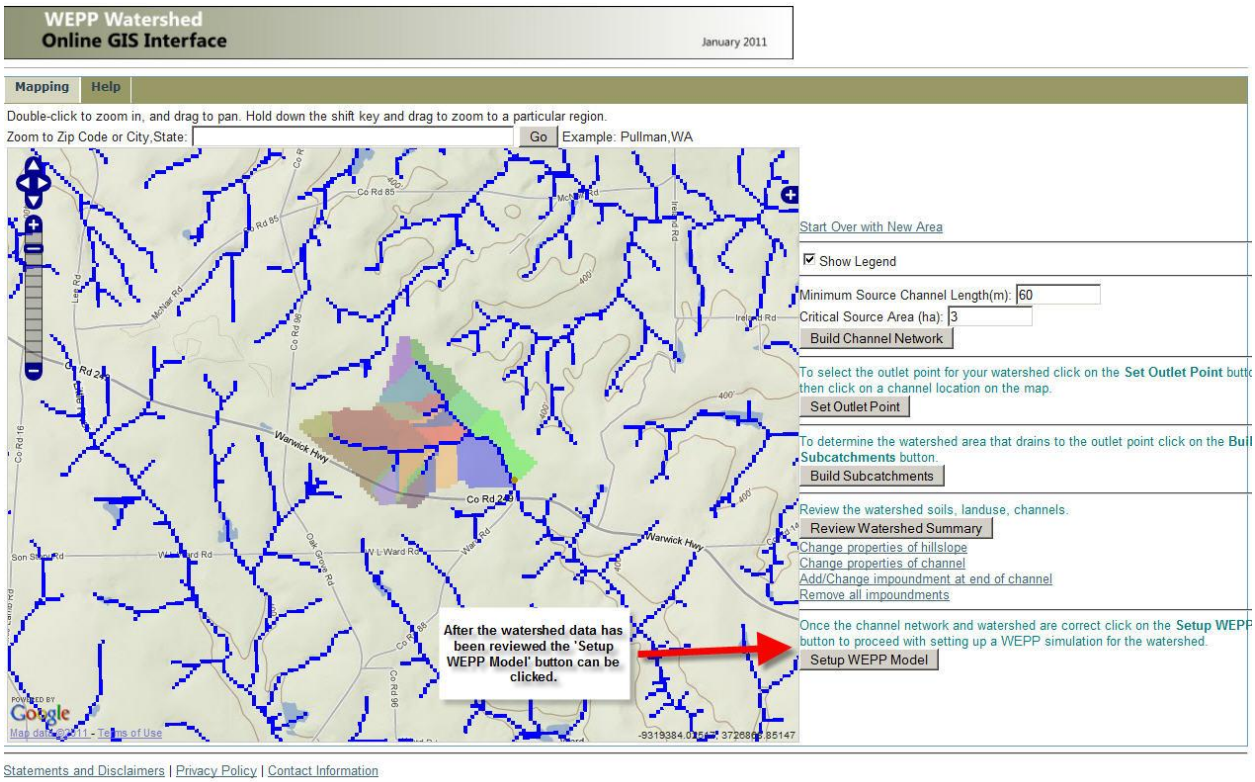
ID	Order	Name	Length (m)	Width (m)	Upstream Drainage Area (ha)	Impoundment
124	1	OnEarth (Earth Channel)	404.7	1.0	8.46	---
114	1	OnEarth (Earth Channel)	132.3	1.0	4.77	---
94	1	OnEarth (Earth Channel)	632.1	1.0	3.96	---
44	1	OnEarth (Earth Channel)	84.9	1.0	4.86	---
84	1	OnEarth (Earth Channel)	144.9	1.0	4.23	---
64	1	OnEarth (Earth Channel)	217.2	1.0	4.14	---
104	2	OnEarth (Earth Channel)	327	2.0	30.15	---
74	2	OnEarth (Earth Channel)	312.3	2.0	40.86	---
54	2	OnEarth (Earth Channel)	277.2	2.0	59.13	---
34	2	OnEarth (Earth Channel)	60	2.0	67.95	---
24	3	OnGravel (Gravel Channel)	621.9	2.0	109.8	filter fence

Remove All Impoundments – Removes any added impoundments.



6. Set Up WEPP Model Runs

Click on the **Setup WEPP Model** button to proceed to run WEPP with the defined watershed. Once this button is clicked the general watershed structure (size, number of channels, representative hillslopes, flowpaths) defined by TOPAZ is finalized and cannot be changed. Landuse and soils inside the watershed can still be changed between WEPP, just not the overall watershed structure.



Below the map window some fields are displayed that can be used to customize a WEPP run. The following are the fields:

Climate Station – The nearest CLIGEN station to the watershed outlet.

Default Soil – If the soil grid is not used this defines the soil that is used for the whole watershed.

Default Landuse – If the landuse grid is not used this defines the landuse that is used for the whole watershed.

Simulation Type – Can be both Watershed and Flowpaths. This will run a WEPP watershed simulation using the representative hillslopes and also run WEPP simulations for each of the flowpaths in the watershed. This may result in hundreds or thousands of WEPP runs. To get the detail cell by cell soil loss results the flowpaths simulations must be run.

Years to Simulate – How long the WEPP simulations are, 1 to 10 years. This is limited by computer processing power on the several, to do much longer runs use the desktop versions of the software.

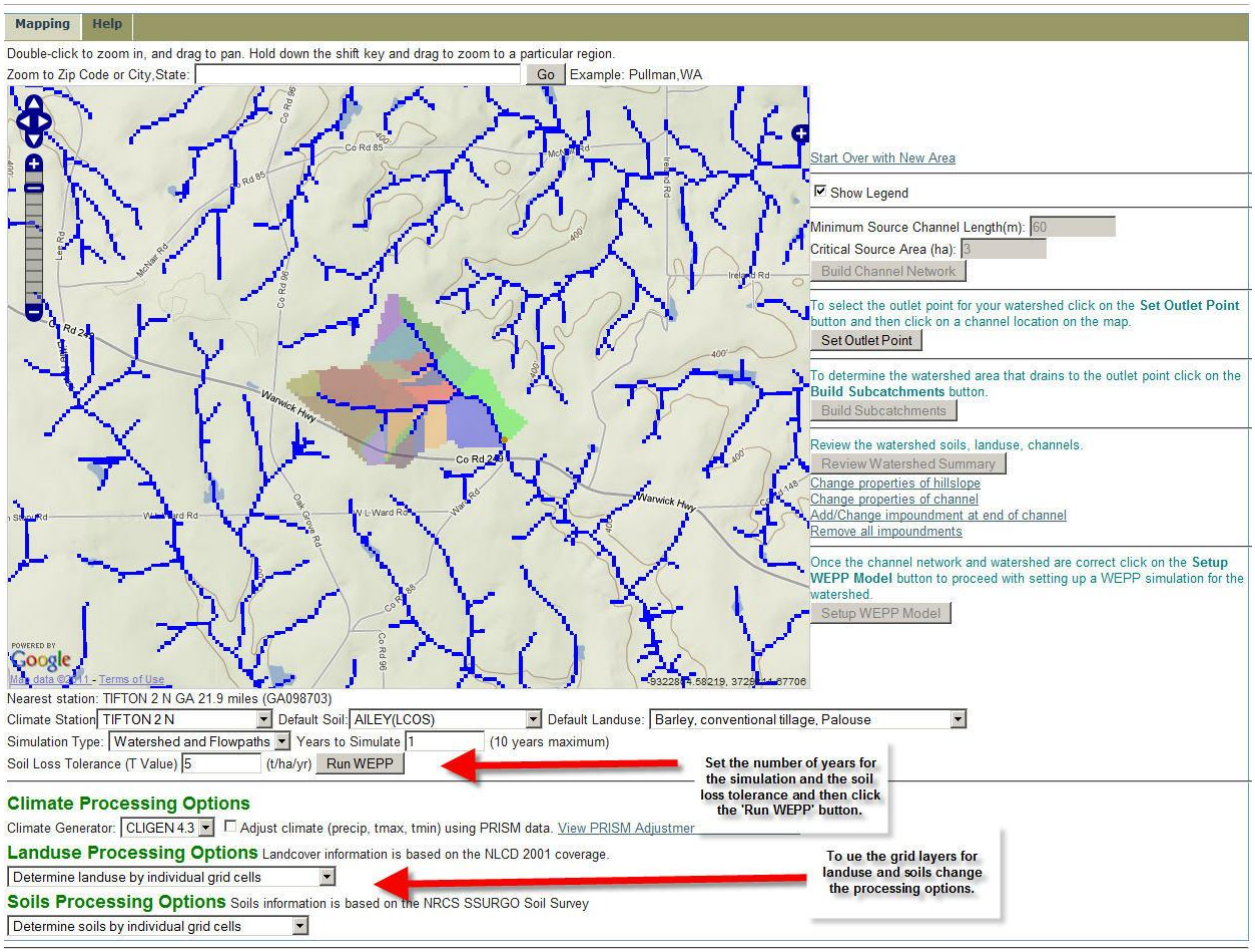
Soil Loss Tolerance – This defines how the output soil loss maps colors will be set in. Shades of red are soil loss values greater than T while shades of green are soil loss values below T.

Climate Generator – This defines the CLIGEN program version to use when producing the synthetic climate data. Version 5.2

Adjust for PRISM – The PRISM climate data (http://www.prism.oregonstate.edu/) can be used to adjust the CLIGEN station data values for precipitation, minimum and maximum temperature. This is useful in areas where the CLIGEN station is quite a distance from the watershed or there is a significant elevation difference.

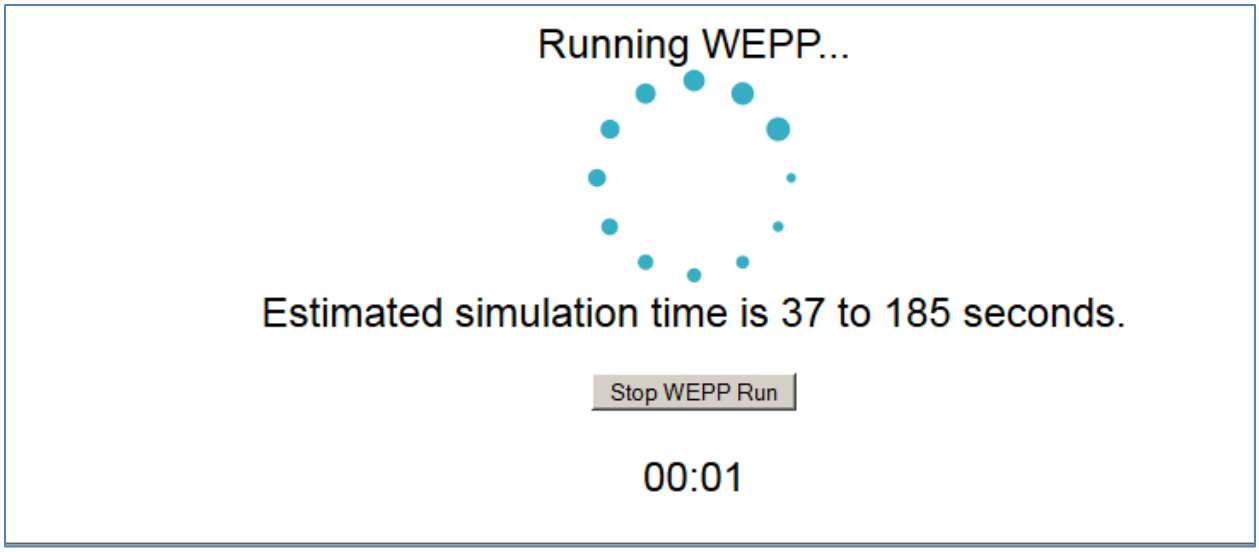
Land use Processing Options – Use either landuse layer or manually set landuse.

Soil Processing Options - Use either soil layer or manually set landuse.

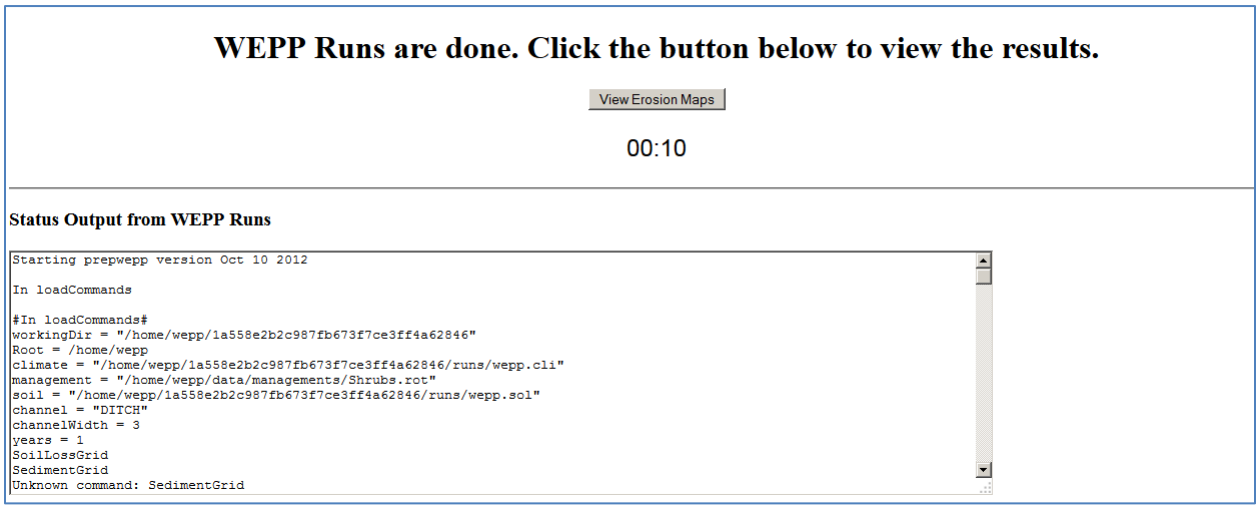


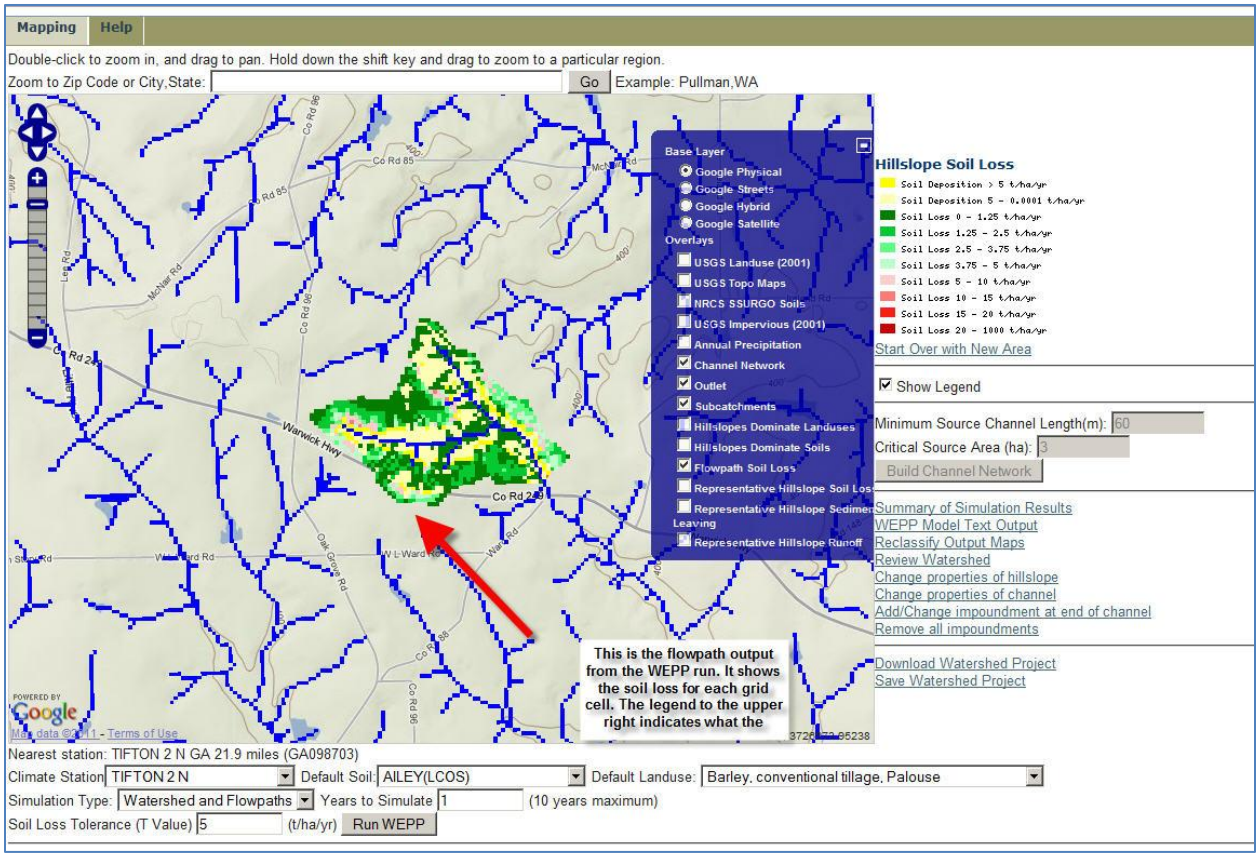
7. Run WEPP and View Output

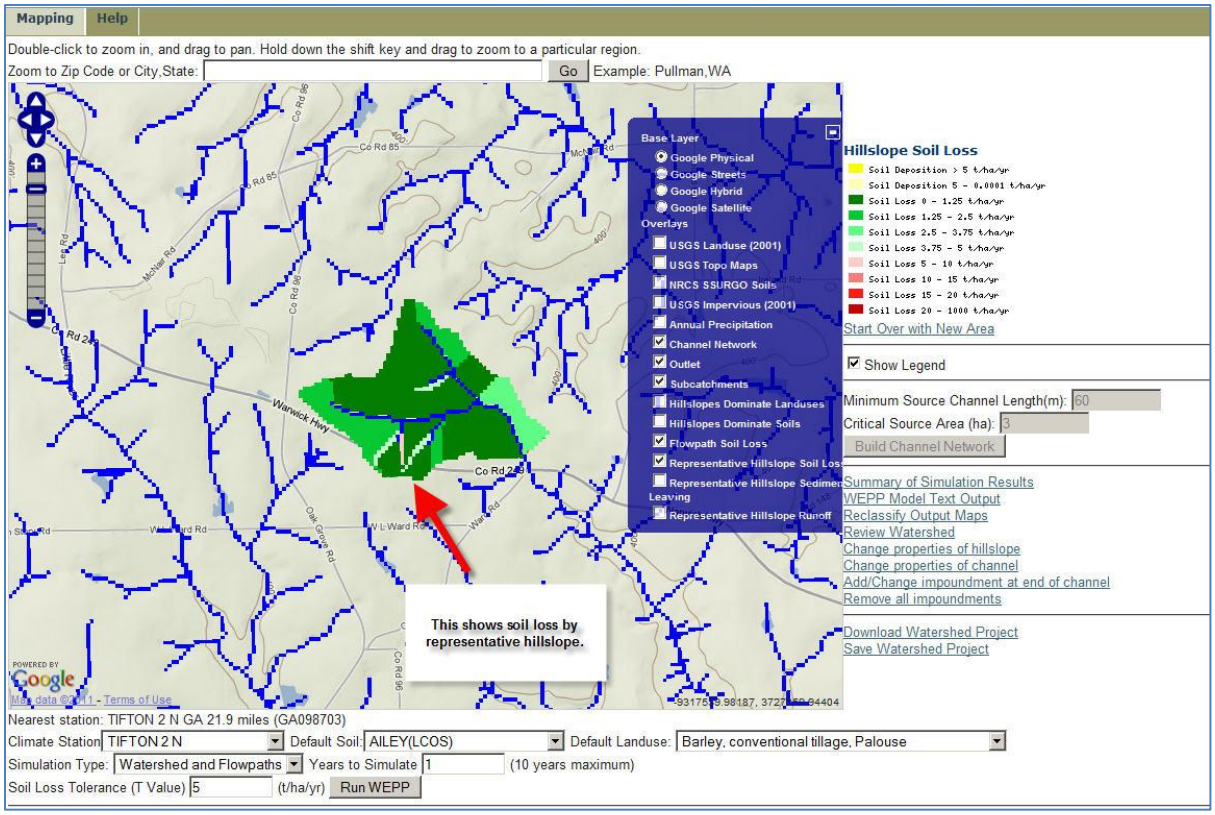
When the WEPP simulation starts a window will be displayed while the model is running indicating the simulation time. The number of years to run, size of the watershed and number of different land uses along with any freeze thaw winter processes influence how long the simulation will take to finish.

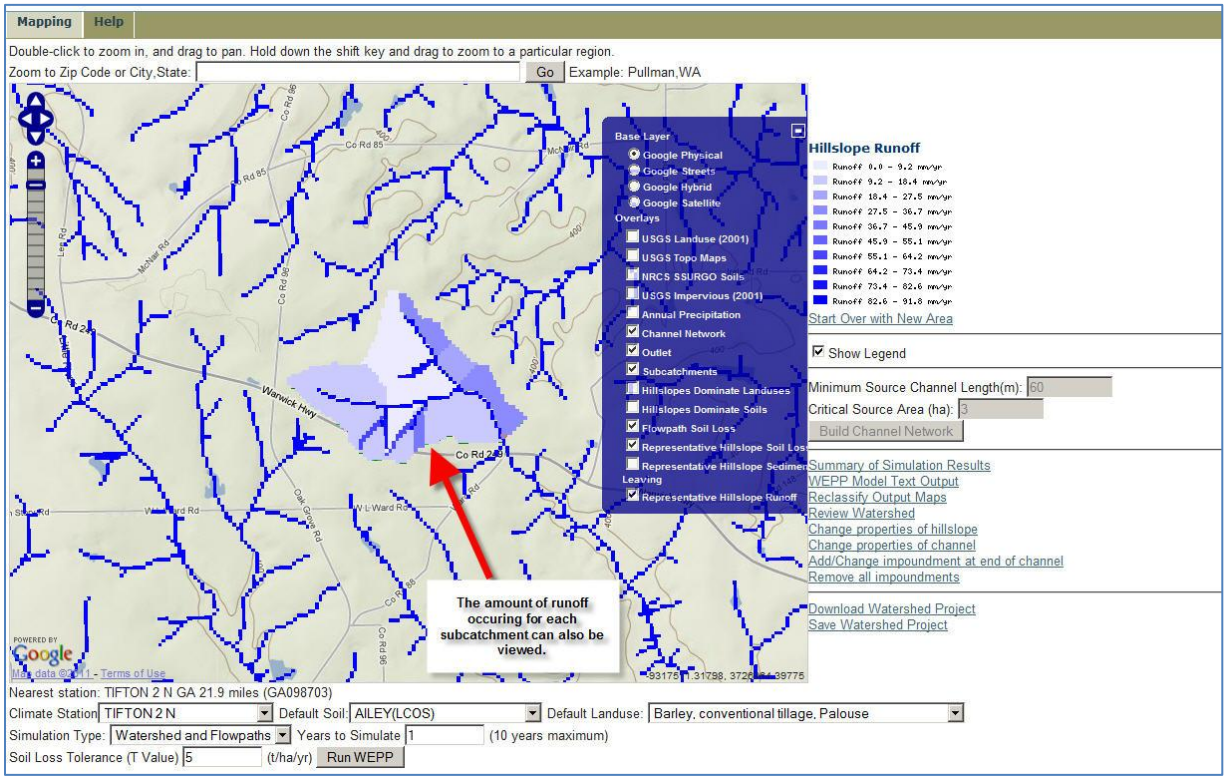


After the WEPP run completes the following window will be displayed. Click the 'View Erosion Maps' button to return to the map window to see the results displayed on the map and also in report form.




Mapping
Help
Double-click to zoom in, and drag to pan. Hold down the shift key and drag to zoom to a particular region.
Zoom to Zip Code or City,State:
Go
Example: Pullman,WA
Base Layer
Google Physical
Google Streets
Google Hybrid
Google Satellite
Overlays
USGS Landuse (2001)
USGS Topo Maps
NRCS SSURGO Soils
USGS Impervious (2001)
Annual Precipitation
Channel Network
Outlet
Subcatchments
Hillslopes Dominate Landuses
Hillslopes Dominate Soils
Flowpath Soil Loss
Representative Hillslope Soil Loss
Representative Hillslope Sediment Leaving
Representative Hillslope Runoff
Hillslope Soil Loss
Soil Deposition > 5 t/ha/yr
Soil Deposition 5 - 0.0001 t/ha/yr
Soil Loss 0 - 1.25 t/ha/yr
Soil Loss 1.25 - 2.5 t/ha/yr
Soil Loss 2.5 - 3.75 t/ha/yr
Soil Loss 3.75 - 5 t/ha/yr
Soil Loss 5 - 10 t/ha/yr
Soil Loss 10 - 15 t/ha/yr
Soil Loss 15 - 20 t/ha/yr
Soil Loss 20 - 1000 t/ha/yr
Start Over with New Area
Show Legend
Minimum Source Channel Length(m): 60
Critical Source Area (ha): 3
Build Channel Network
Summary of Simulation Results
WEPP Model Text Output
Reclassify Output Maps
Review Watershed
Change properties of hillslope
Change properties of channel
Add/Change impoundment at end of channel
Remove all impoundments
Download Watershed Project
Save Watershed Project
This is the flowpath output from the WEPP run. It shows the soil loss for each grid cell. The legend to the upper right indicates what the
Warwick Hwy
Co Rd 85
Co Rd 88
Co Rd 96
Co Rd 200
Nearest station: TIFTON 2 N GA 21.9 miles (GA098703)
Climate Station TIFTON 2 N
Default Soil: AILEY(LCOS)
Default Landuse: Barley, conventional tillage, Palouse
Simulation Type: Watershed and Flowpaths
Years to Simulate 1
(10 years maximum)
Soil Loss Tolerance (T Value) 5
(t/ha/yr)
Run WEPP


Mapping
Help
Double-click to zoom in, and drag to pan. Hold down the shift key and drag to zoom to a particular region.
Zoom to Zip Code or City,State:
Go
Example: Pullman,WA
Base Layer
Google Physical
Google Streets
Google Hybrid
Google Satellite
Overlays
USGS Landuse (2001)
USGS Topo Maps
NRCS SSURGO Soils
USGS Impervious (2001)
Annual Precipitation
Channel Network
Outlet
Subcatchments
Hillslopes Dominate Landuses
Hillslopes Dominate Soils
Flowpath Soil Loss
Representative Hillslope Soil Loss
Representative Hillslope Sediment Leaving
Representative Hillslope Runoff
Hillslope Soil Loss
Soil Deposition > 5 t/ha/yr
Soil Deposition 5 - 0.0001 t/ha/yr
Soil Loss 0 - 1.25 t/ha/yr
Soil Loss 1.25 - 2.5 t/ha/yr
Soil Loss 2.5 - 3.75 t/ha/yr
Soil Loss 3.75 - 5 t/ha/yr
Soil Loss 5 - 10 t/ha/yr
Soil Loss 10 - 15 t/ha/yr
Soil Loss 15 - 20 t/ha/yr
Soil Loss 20 - 1000 t/ha/yr
Start Over with New Area
Show Legend
Minimum Source Channel Length(m): 60
Critical Source Area (ha): 3
Build Channel Network
Summary of Simulation Results
WEPP Model Text Output
Reclassify Output Maps
Review Watershed
Change properties of hillslope
Change properties of channel
Add/Change impoundment at end of channel
Remove all impoundments
Download Watershed Project
Save Watershed Project
This shows soil loss by representative hillslope.
Warwick Hwy
Co Rd 85
Co Rd 96
Co Rd 24
Nearest station: TIFTON 2 N GA 21.9 miles (GA098703)
Climate Station TIFTON 2 N
Default Soil: AILEY(LCOS)
Default Landuse: Barley, conventional tillage, Palouse
Simulation Type: Watershed and Flowpaths
Years to Simulate 1
(10 years maximum)
Soil Loss Tolerance (T Value) 5
(t/ha/yr)
Run WEPP


Mapping
Help
Double-click to zoom in, and drag to pan. Hold down the shift key and drag to zoom to a particular region.
Zoom to Zip Code or City,State:
Go
Example: Pullman,WA
Base Layer
Google Physical
Google Streets
Google Hybrid
Google Satellite
Overlays
USGS Landuse (2001)
USGS Topo Maps
NRCS SSURGO Soils
USGS Impervious (2001)
Annual Precipitation
Channel Network
Outlet
Subcatchments
Hillslopes Dominate Landuses
Hillslopes Dominate Soils
Flowpath Soil Loss
Representative Hillslope Soil Loss
Representative Hillslope Sediment Leaving
Representative Hillslope Runoff
Hillslope Runoff
Runoff 0.0 - 9.2 mm/yr
Runoff 9.2 - 18.4 mm/yr
Runoff 18.4 - 27.5 mm/yr
Runoff 27.5 - 36.7 mm/yr
Runoff 36.7 - 45.9 mm/yr
Runoff 45.9 - 55.1 mm/yr
Runoff 55.1 - 64.2 mm/yr
Runoff 64.2 - 73.4 mm/yr
Runoff 73.4 - 82.6 mm/yr
Runoff 82.6 - 91.8 mm/yr
Start Over with New Area
Show Legend
Minimum Source Channel Length(m): 60
Critical Source Area (ha): 3
Build Channel Network
Summary of Simulation Results
WEPP Model Text Output
Reclassify Output Maps
Review Watershed
Change properties of hillslope
Change properties of channel
Add/Change impoundment at end of channel
Remove all impoundments
Download Watershed Project
Save Watershed Project
The amount of runoff occuring for each subcatchment can also be viewed.
Warwick Hwy
Co Rd 85
Co Rd 96
Co Rd 24
Nearest station: TIFTON 2 N GA 21.9 miles (GA098703)
Climate Station TIFTON 2 N
Default Soil: AILEY(LCOS)
Default Landuse: Barley, conventional tillage, Palouse
Simulation Type: Watershed and Flowpaths
Years to Simulate 1
(10 years maximum)
Soil Loss Tolerance (T Value) 5
(t/ha/yr)
Run WEPP

WEPP Watershed
Online GIS Interface

January 2011

1 YEAR AVERAGE ANNUAL VALUES FOR WATERSHED

WEPP Watershed Simulation for Representative Hillslopes and Channels (watershed method)

Watershed Area(ha) = 127.6
Watershed Discharge Volume (m^3/yr) = 20169.0
Watershed Sediment Yield (tonne/yr) = 51.7
Watershed Sediment Yield (tonne/ha/yr) = 0.4
Watershed Sediment Delivery Ratio = 0.386
Precipitation Volume in Watershed (m^3/yr) = 1565106.0

Clicking the Simulations Results link will show WEPP results. The first section is from a WEPP watershed simulation, each hillslope is a subcatchment.

WATERSHED SUMMARY (watershed method, off-site assesment)

Hillslope IDs		Landuse	Soil	Runoff Volume	Soil Loss	Sediment Yield	Area	Mapped Soil Loss	Sediment Yield
WEPP	TOPAZ	(Majority)	(Majority)	(m^3/year)	(tonne/year)	(tonne/year)	(ha)	(tonne/ha /year)	(tonne/ha /year)
1	23	Cultivated Crops	Dothan loamy sand, 2 to 5 percent slopes	3511.1	31.9	31.9	11.5	2.8	2.8
2	22	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	2085.3	11.1	11.1	14.1	0.8	0.8
3	33	Evergreen Forest	Leefield loamy sand	0	0	0	4.5	0	0
4	32	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	1112.7	5.8	5.8	6.3	0.9	0.9
5	42	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	894.4	5.3	5.3	2.4	2.2	2.2
6	43	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	788.1	5.6	5.6	1.3	4.4	4.4
7	41	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	525.2	3.2	3.1	3.8	0.8	0.8
8	53	Evergreen Forest	Tifton loamy sand, 2 to 5 percent slopes	0	0	0	5.7	0	0
9	52	Mixed Forest	Tifton loamy sand, 2 to 5 percent slopes	0	0	0	4.4	0	0
10	63	Cultivated Crops	Tifton loamy sand, 2 to 5 percent slopes	709.4	5.7	5.7	1.3	4.5	4.5

CHANNEL SUMMARY (watershed method, off-site assesment)

Channel ID's		Discharge Volume	Soil Loss	Sediment Yield	Length	Length
WEPP	TOPAZ	(m^3/year)	(tonne/year)	(tonne/year)	(m)	(cells)
1	104	2156.7	n.a.	3	507	14
2	94	1182.4	n.a.	3.2	217.3	6
4	74	4948.6	n.a.	5.5	632.1	19
5	64	1844	n.a.	5.3	174.9	5
7	44	2256.5	n.a.	4.2	259.7	7
3	84	4628.7	n.a.	3	297	7
6	54	6782.8	n.a.	3.4	312.4	10
8	34	10148.3	n.a.	6.5	337.3	10
9	24	20169.4	n.a.	51.7		

The next section shows the channel outputs from the WEPP watershed run.

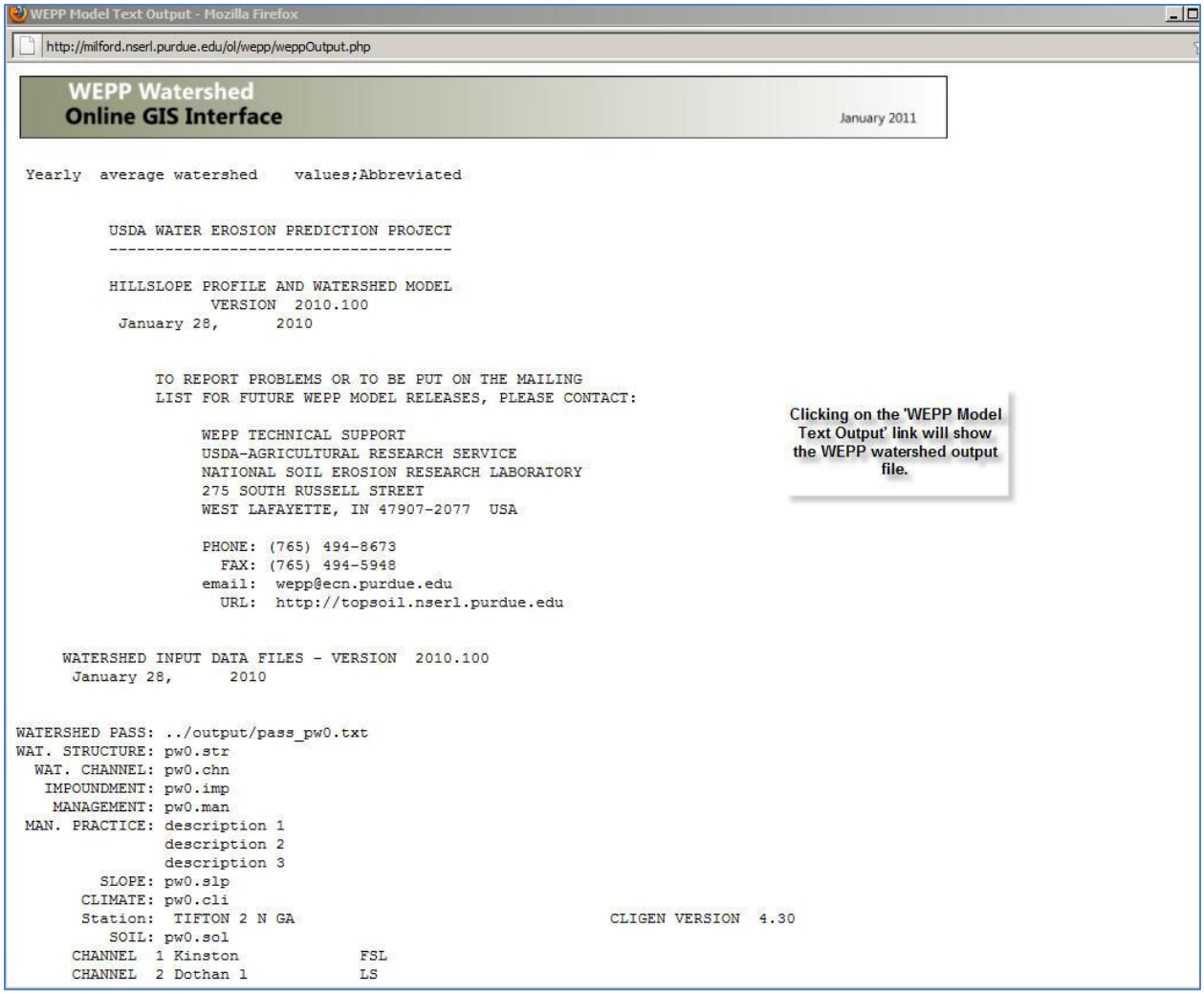
IMPOUNDMENT SUMMARY (watershed method, off-site assesment)

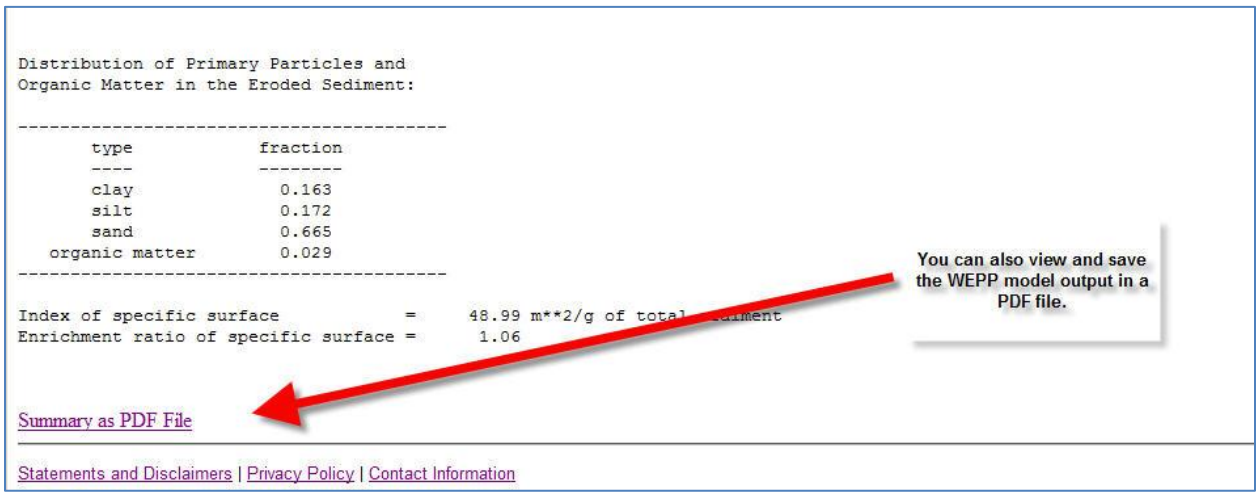
Impoundment ID's	Discharge Volume	Sediment Yield
---	(m^3/year)	(tonne/year)

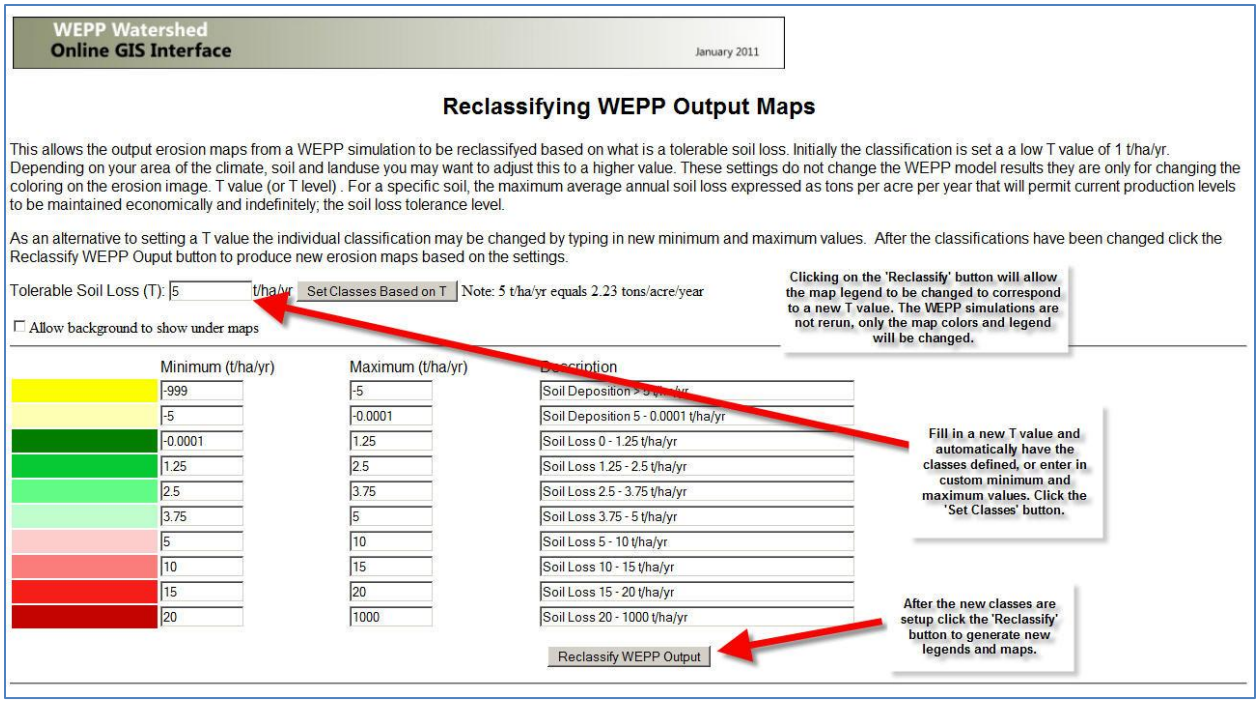
WEPP Watershed Simulation for all flowpaths averaged over subcatchments (flowpath method)

FLOWPATH SUMMARY (watershed method, off-site assesment)							
Hillslope ID's		Runoff Volume	Soil Loss	Sediment Yield	Area	Mapped Soil Loss	Sediment Yield
WEPP	TOPAZ	(m^3/year)	(tonne/year)	(tonne/year)	(ha)	(tonne/ha/year)	(tonne/ha/year)
1	23	984.8	28	n.a.	11.5	2.4	n.a.
2	22	924.8	10.4	n.a.	14.1	0.7	n.a.
3	33	115.5	3.2	n.a.	4.5	0.7	n.a.
4	32	126.9	3.9	n.a.	6.3	0.6	n.a.
5	42	159.8	1.9	n.a.	2.4	0.8	n.a.
6	43	106.5	0.9	n.a.	1.3	0.7	n.a.
7	41	535.4	4.5	n.a.	3.8	1.2	n.a.
8	53	103.3	4.2	n.a.	5.7	0.7	n.a.
9	52	44.9	2.9	n.a.	4.4	0.7	n.a.
10	63	110.9	1.6	n.a.	1.3	1.3	n.a.
11	62	37.4	0.8	n.a.	0.7	1.1	n.a.
12	61	202	6.1	n.a.	3.8	1.6	n.a.
13	73	1343	23.4	n.a.	13.9	1.7	n.a.
14	71	664.1	8.8	n.a.	4.1	2.1	n.a.
15	72	870	19.3	n.a.	12.6	1.5	n.a.
16	83	568	10.4	n.a.	5.8	1.8	n.a.
17	82	82	2.2	n.a.	2.5	0.9	n.a.
18	93	126.8	6.6	n.a.	2.8	2.4	n.a.
19	91	570.8	2.9	n.a.	3.7	0.8	n.a.
20	92	276.9	2.7	n.a.	1	2.8	n.a.
21	101	385.8	1.9	n.a.	5.2	0.4	n.a.
22	103	792.7	4.4	n.a.	7.2	0.6	n.a.
23	102	84.8	4.5	n.a.	8.4	0.5	n.a.

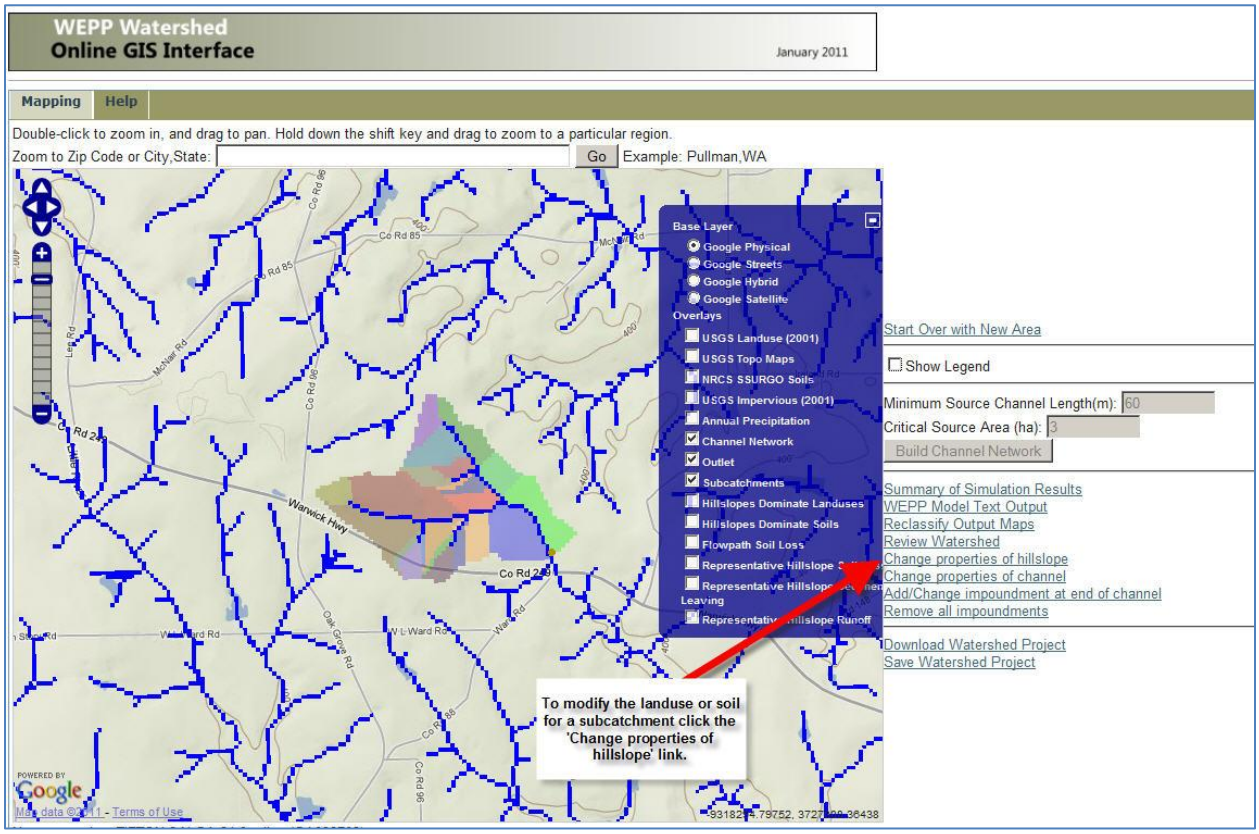
The last section shows the flowpath results, which combine all the flowpaths within each subcatchment.

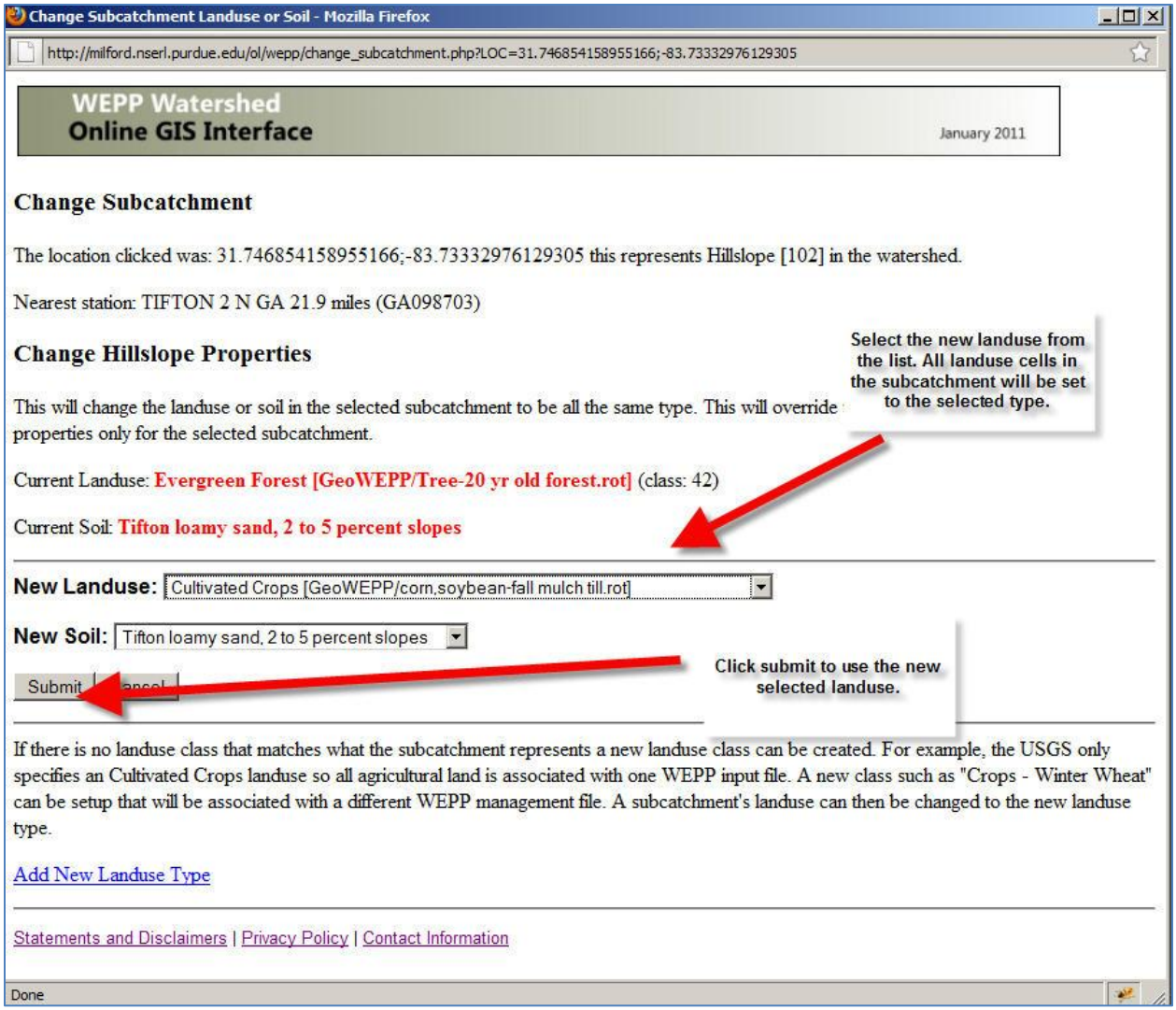

WEPP Model Text Output - Mozilla Firefox
http://milford.nserl.purdue.edu/ol/wepp/weppOutput.php
WEPP Watershed
Online GIS Interface
January 2011
Yearly average watershed values;Abbreviated
USDA WATER EROSION PREDICTION PROJECT
HILLSLOPE PROFILE AND WATERSHED MODEL
VERSION 2010.100
January 28, 2010
TO REPORT PROBLEMS OR TO BE PUT ON THE MAILING
LIST FOR FUTURE WEPP MODEL RELEASES, PLEASE CONTACT:
WEPP TECHNICAL SUPPORT
USDA-AGRICULTURAL RESEARCH SERVICE
NATIONAL SOIL EROSION RESEARCH LABORATORY
275 SOUTH RUSSELL STREET
WEST LAFAYETTE, IN 47907-2077 USA
PHONE: (765) 494-8673
FAX: (765) 494-5948
email: wepp@ecn.purdue.edu
URL: http://topsoil.nserl.purdue.edu
WATERSHED INPUT DATA FILES - VERSION 2010.100
January 28, 2010
WATERSHED PASS: ../output/pass_pw0.txt
WAT. STRUCTURE: pw0.str
WAT. CHANNEL: pw0.chn
IMPOUNDMENT: pw0.imp
MANAGEMENT: pw0.man
MAN. PRACTICE: description 1
description 2
description 3
SLOPE: pw0.slp
CLIMATE: pw0.cli
Station: TIFTON 2 N GA
CLIGEN VERSION 4.30
SOIL: pw0.sol
CHANNEL 1 Kinston FSL
CHANNEL 2 Dothan 1 LS
Clicking on the 'WEPP Model Text Output' link will show the WEPP watershed output file.

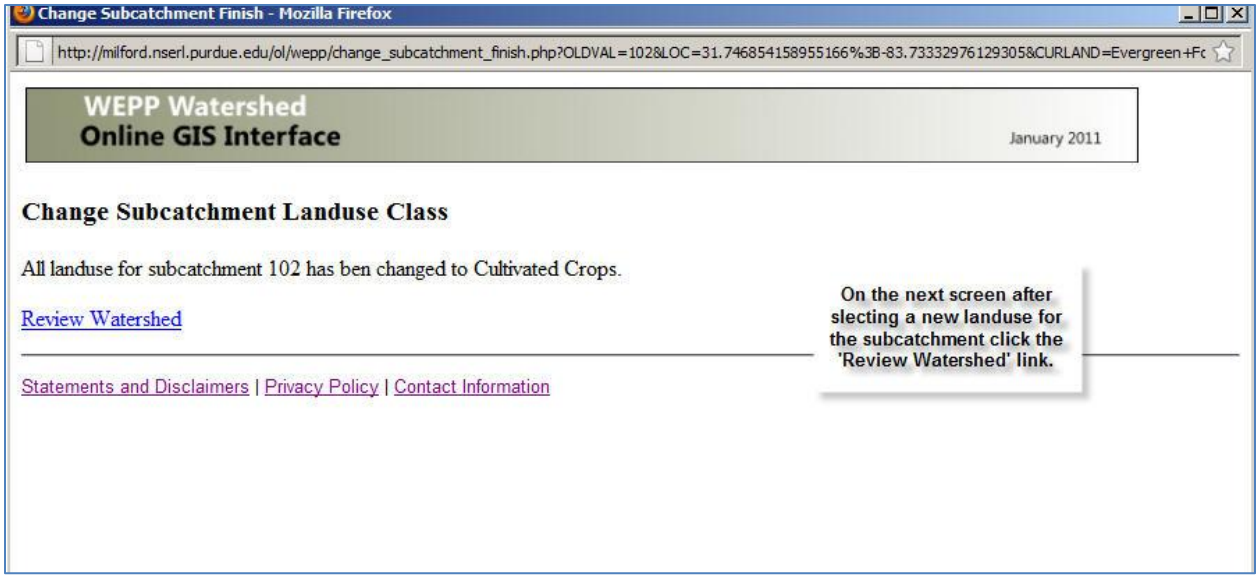

Distribution of Primary Particles and
Organic Matter in the Eroded Sediment:
type fraction
clay 0.163
silt 0.172
sand 0.665
organic matter 0.029
Index of specific surface = 48.99 m**2/g of total sediment
Enrichment ratio of specific surface = 1.06
Summary as PDF File
Statements and Disclaimers | Privacy Policy | Contact Information
You can also view and save the WEPP model output in a PDF file.

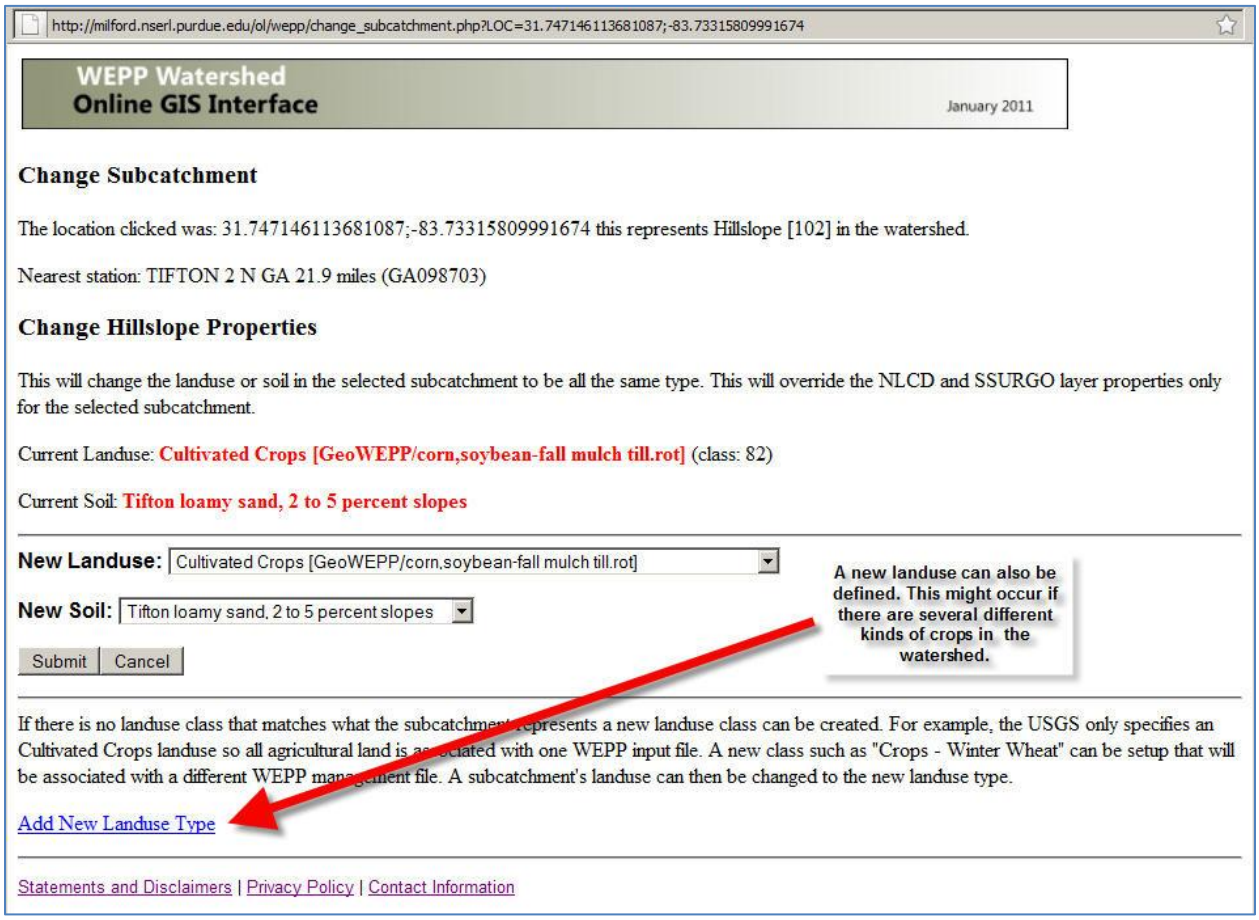


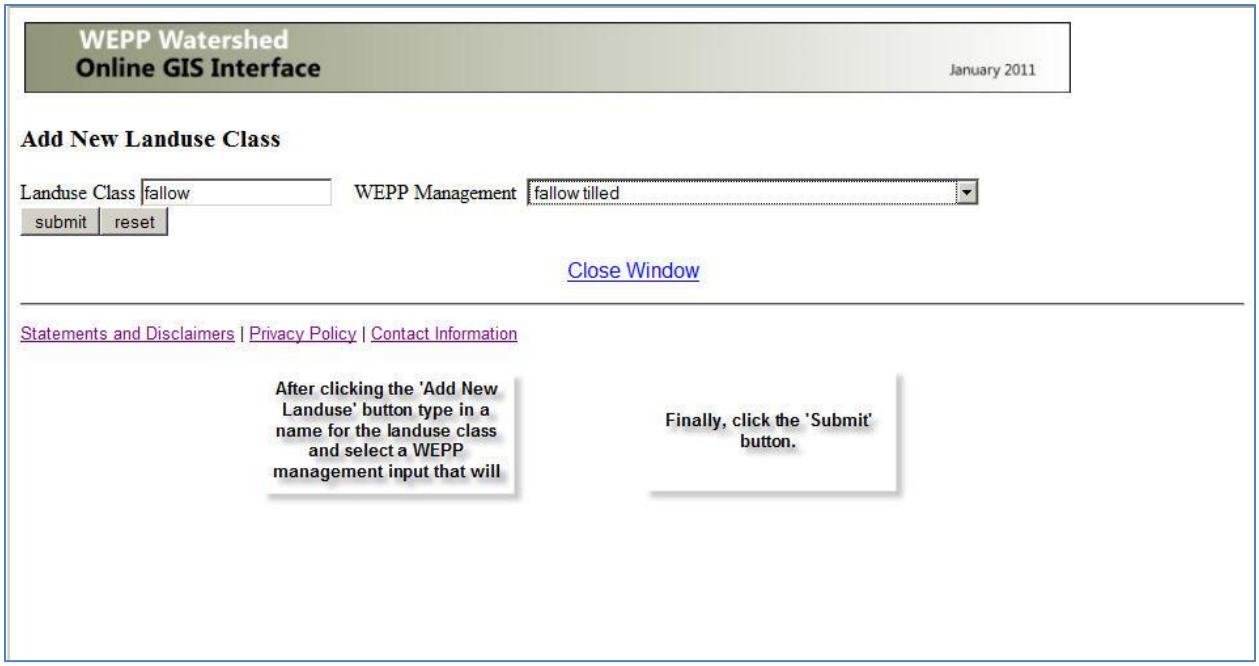
8. (Optional) Change subcatchment, channel, or impoundment properties

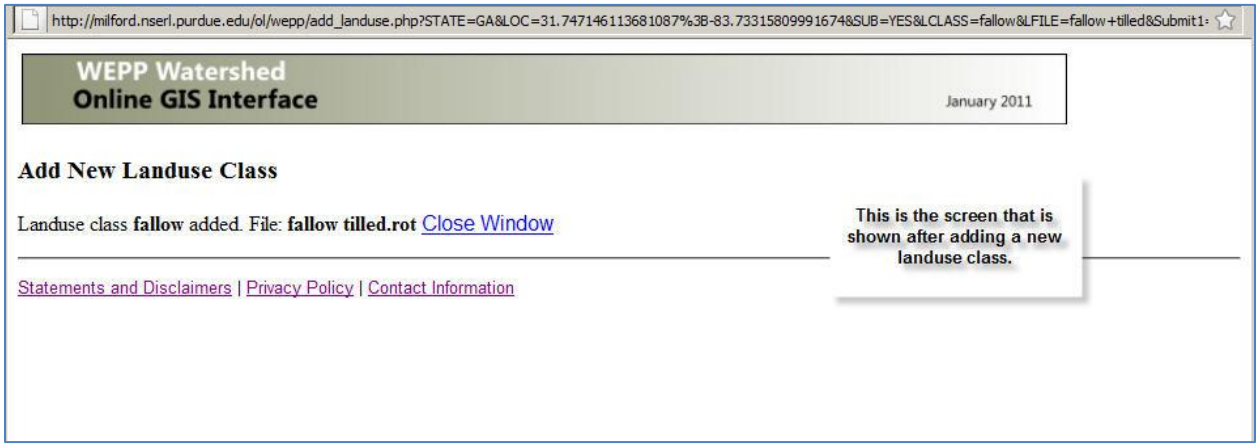


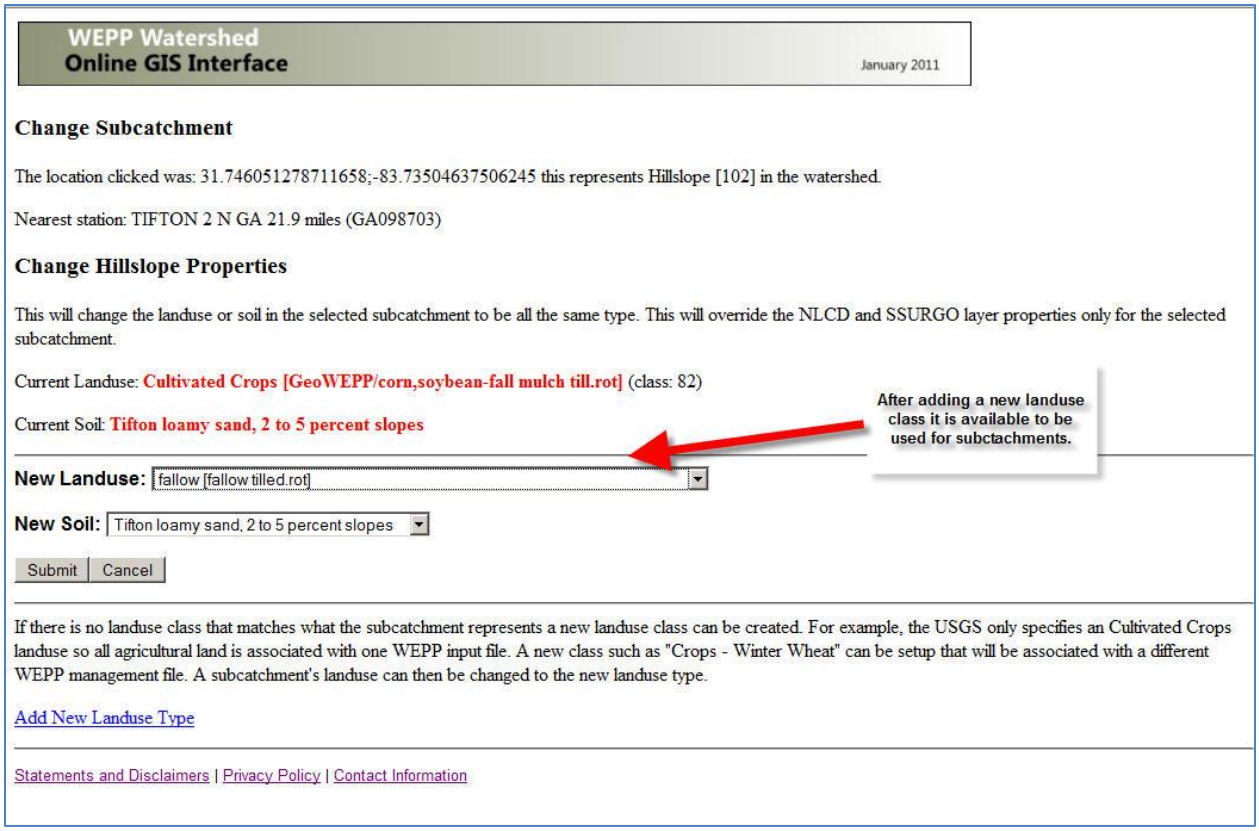

Change Subcatchment Landuse or Soil - Mozilla Firefox
http://milford.nserl.purdue.edu/ol/wepp/change_subcatchment.php?LOC=31.746854158955166;-83.73332976129305
WEPP Watershed
Online GIS Interface
January 2011
Change Subcatchment
The location clicked was: 31.746854158955166;-83.73332976129305 this represents Hillslope [102] in the watershed.
Nearest station: TIFTON 2 N GA 21.9 miles (GA098703)
Change Hillslope Properties
Select the new landuse from the list. All landuse cells in the subcatchment will be set to the selected type.
This will change the landuse or soil in the selected subcatchment to be all the same type. This will override properties only for the selected subcatchment.
Current Landuse: Evergreen Forest [GeoWEPP/Tree-20 yr old forest.rot] (class: 42)
Current Soil: Tifton loamy sand, 2 to 5 percent slopes
New Landuse: Cultivated Crops [GeoWEPP/corn,soybean-fall mulch till.rot]
New Soil: Tifton loamy sand, 2 to 5 percent slopes
Submit
Click submit to use the new selected landuse.
If there is no landuse class that matches what the subcatchment represents a new landuse class can be created. For example, the USGS only specifies an Cultivated Crops landuse so all agricultural land is associated with one WEPP input file. A new class such as "Crops - Winter Wheat" can be setup that will be associated with a different WEPP management file. A subcatchment's landuse can then be changed to the new landuse type.
Add New Landuse Type
Statements and Disclaimers | Privacy Policy | Contact Information
Done

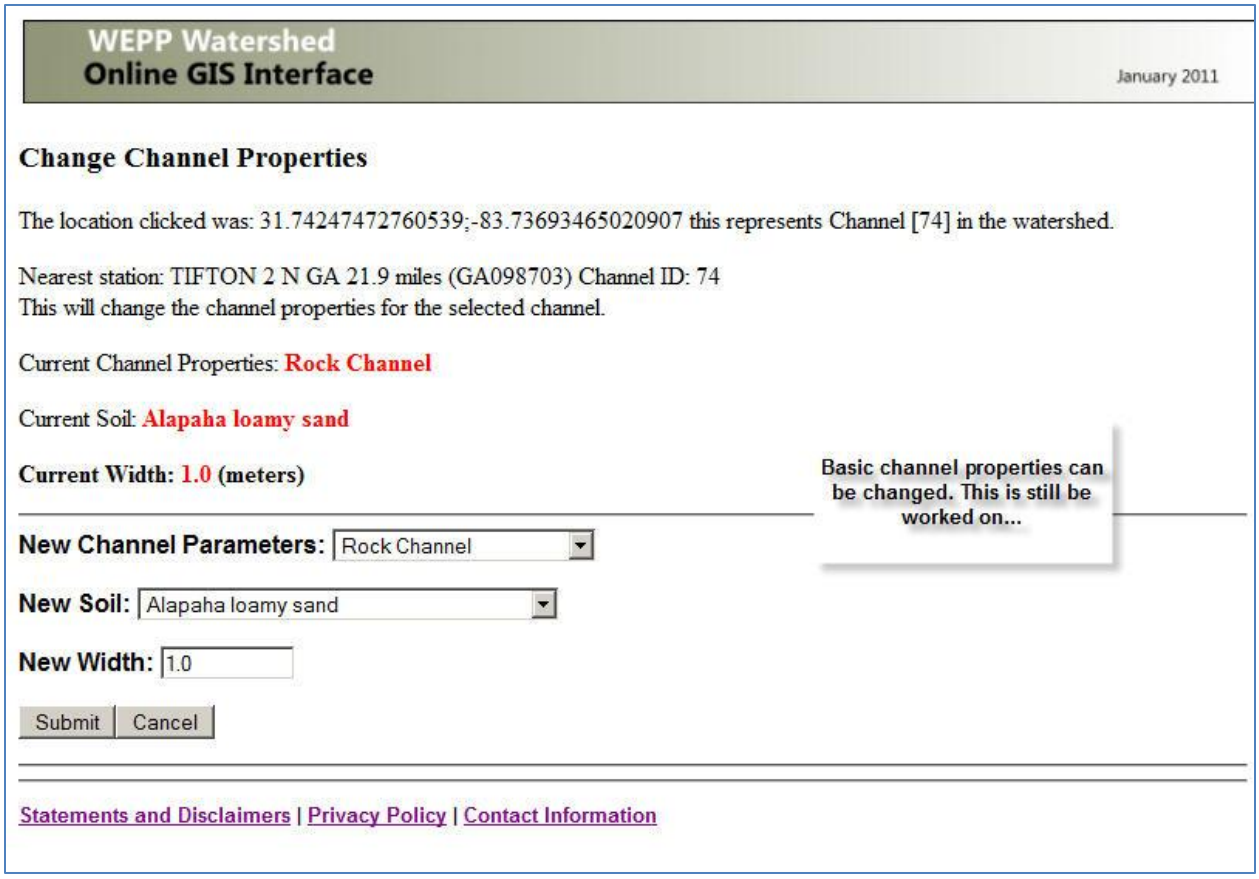

Change Subcatchment Finish - Mozilla Firefox
http://milford.nserl.purdue.edu/ol/wepp/change_subcatchment_finish.php?OLDVAL=102&LOC=31.746854158955166%3B-83.73332976129305&CURLAND=Evergreen+Fc
WEPP Watershed
Online GIS Interface
January 2011
Change Subcatchment Landuse Class
All landuse for subcatchment 102 has ben changed to Cultivated Crops.
Review Watershed
Statements and Disclaimers | Privacy Policy | Contact Information
On the next screen after slecting a new landuse for the subcatchment click the 'Review Watershed' link.

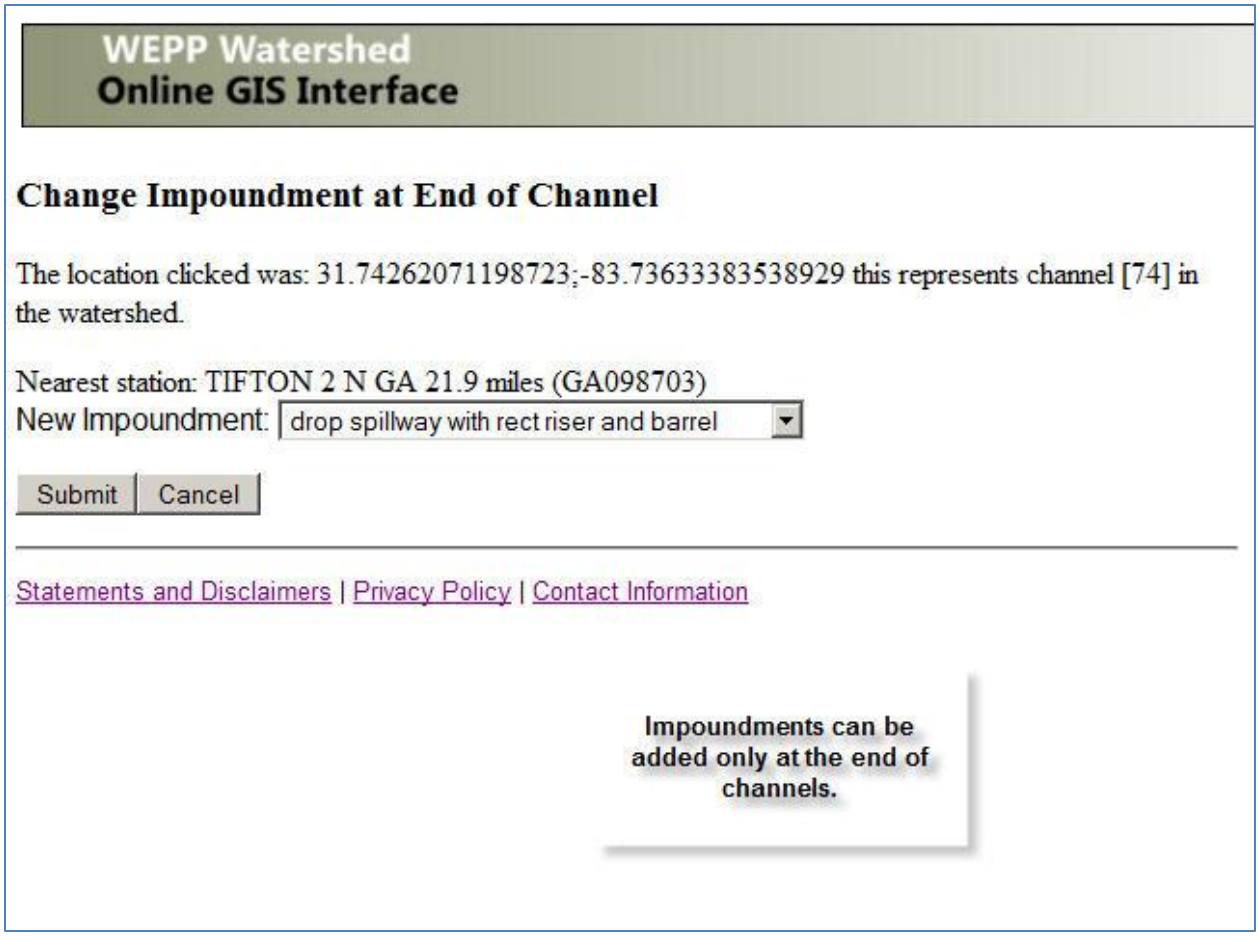

http://milford.nserl.purdue.edu/ol/wepp/change_subcatchment.php?LOC=31.747146113681087;-83.73315809991674
WEPP Watershed
Online GIS Interface
January 2011
Change Subcatchment
The location clicked was: 31.747146113681087;-83.73315809991674 this represents Hillslope [102] in the watershed.
Nearest station: TIFTON 2 N GA 21.9 miles (GA098703)
Change Hillslope Properties
This will change the landuse or soil in the selected subcatchment to be all the same type. This will override the NLCD and SSURGO layer properties only for the selected subcatchment.
Current Landuse: Cultivated Crops [GeoWEPP/corn,soybean-fall mulch till.rot] (class: 82)
Current Soil: Tifton loamy sand, 2 to 5 percent slopes
New Landuse: Cultivated Crops [GeoWEPP/corn,soybean-fall mulch till.rot]
New Soil: Tifton loamy sand, 2 to 5 percent slopes
Submit Cancel
A new landuse can also be defined. This might occur if there are several different kinds of crops in the watershed.
If there is no landuse class that matches what the subcatchment represents a new landuse class can be created. For example, the USGS only specifies an Cultivated Crops landuse so all agricultural land is associated with one WEPP input file. A new class such as "Crops - Winter Wheat" can be setup that will be associated with a different WEPP management file. A subcatchment's landuse can then be changed to the new landuse type.
Add New Landuse Type
Statements and Disclaimers | Privacy Policy | Contact Information


WEPP Watershed
Online GIS Interface
January 2011
Add New Landuse Class
Landuse Class fallow
WEPP Management fallow tilled
submit
reset
Close Window
Statements and Disclaimers | Privacy Policy | Contact Information
After clicking the 'Add New Landuse' button type in a name for the landuse class and select a WEPP management input that will
Finally, click the 'Submit' button.


http://milford.nserl.purdue.edu/ol/wepp/add_landuse.php?STATE=GA&LOC=31.747146113681087%3B-83.73315809991674&SUB=YES&LCLASS=fallow&LFILE=fallow+tilled&Submit1=
WEPP Watershed
Online GIS Interface
January 2011
Add New Landuse Class
Landuse class fallow added. File: fallow tilled.rot Close Window
Statements and Disclaimers | Privacy Policy | Contact Information
This is the screen that is shown after adding a new landuse class.

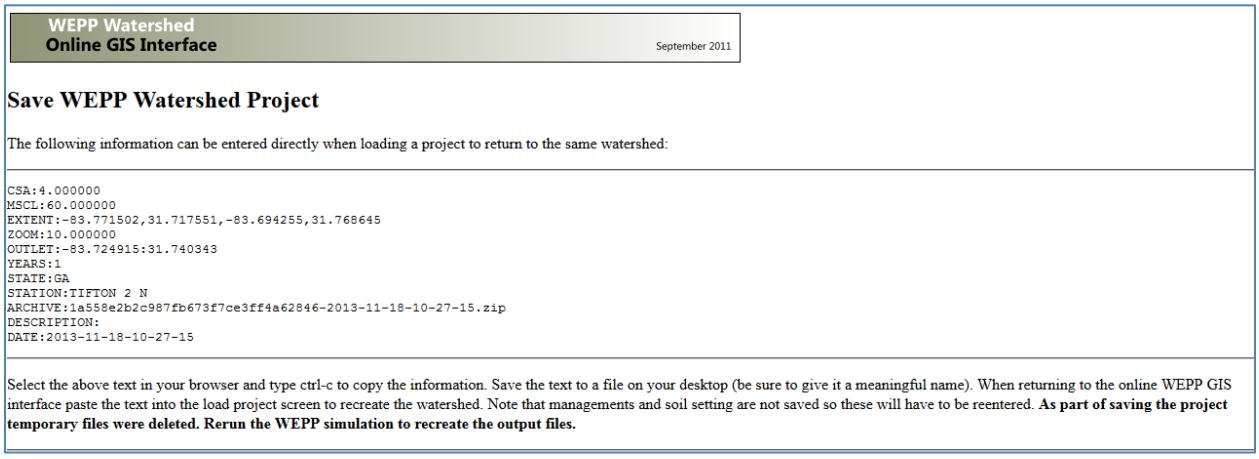

WEPP Watershed
Online GIS Interface
January 2011
Change Subcatchment
The location clicked was: 31.746051278711658;-83.73504637506245 this represents Hillslope [102] in the watershed.
Nearest station: TIFTON 2 N GA 21.9 miles (GA098703)
Change Hillslope Properties
This will change the landuse or soil in the selected subcatchment to be all the same type. This will override the NLCD and SSURGO layer properties only for the selected subcatchment.
Current Landuse: Cultivated Crops [GeoWEPP/corn,soybean-fall mulch till.rot] (class: 82)
Current Soil: Tifton loamy sand, 2 to 5 percent slopes
After adding a new landuse class it is available to be used for subctachments.
New Landuse: fallow [fallow tilled.rot]
New Soil: Tifton loamy sand, 2 to 5 percent slopes
Submit
Cancel
If there is no landuse class that matches what the subcatchment represents a new landuse class can be created. For example, the USGS only specifies an Cultivated Crops landuse so all agricultural land is associated with one WEPP input file. A new class such as "Crops - Winter Wheat" can be setup that will be associated with a different WEPP management file. A subcatchment's landuse can then be changed to the new landuse type.
Add New Landuse Type
Statements and Disclaimers | Privacy Policy | Contact Information


WEPP Watershed
Online GIS Interface
January 2011
Change Channel Properties
The location clicked was: 31.74247472760539;-83.73693465020907 this represents Channel [74] in the watershed.
Nearest station: TIFTON 2 N GA 21.9 miles (GA098703) Channel ID: 74
This will change the channel properties for the selected channel.
Current Channel Properties: Rock Channel
Current Soil: Alapaha loamy sand
Current Width: 1.0 (meters)
Basic channel properties can be changed. This is still be worked on...
New Channel Parameters: Rock Channel
New Soil: Alapaha loamy sand
New Width: 1.0
Submit
Cancel
Statements and Disclaimers | Privacy Policy | Contact Information



9. Saving a WEPP Watershed Run

To save the WEPP simulation click on the 'Save Watershed Project' link on the map page. This will display a window similar to the following:



Select the text between the two lines and hit ctrl-c to copy the information. Next, paste the text into Notepad or Wordpad and save the file. This text can then be used load the project at a later time.

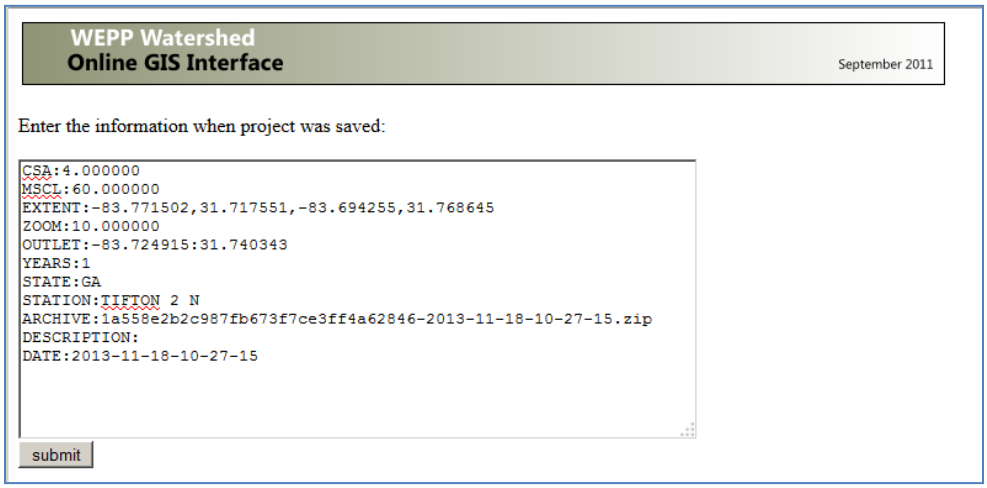
10. Loading a Saved Watershed Project

Clicking on the 'Projects' tab on the main map window there are two options:

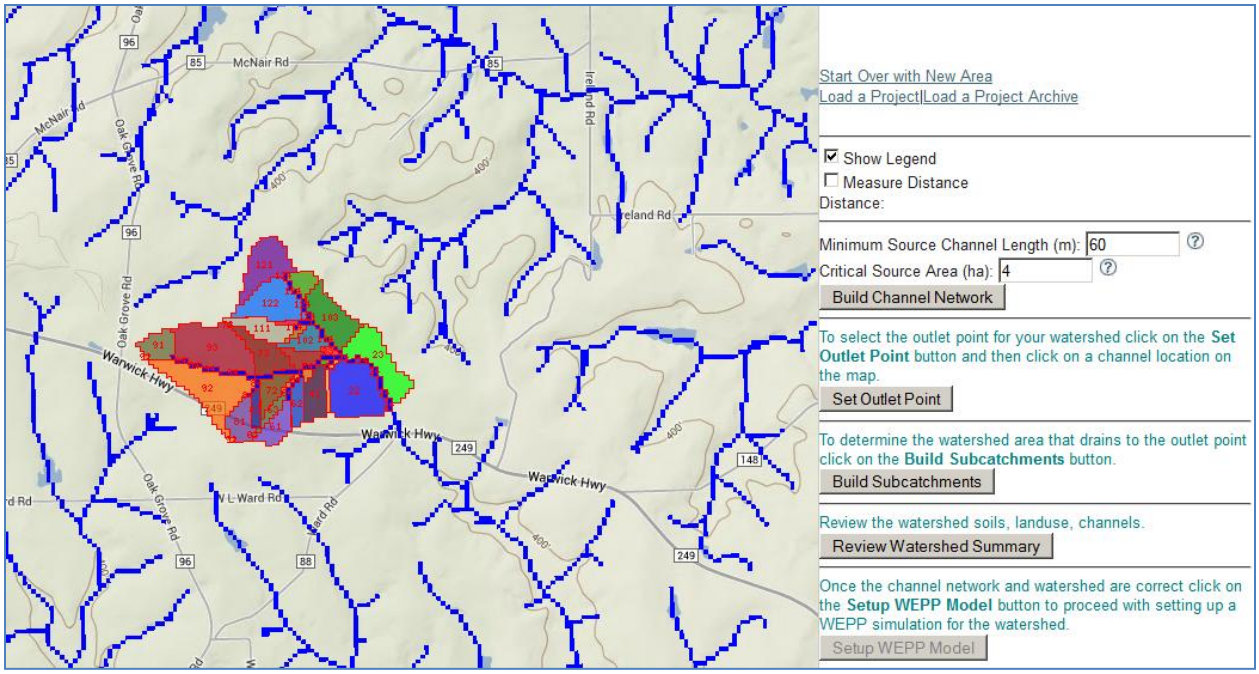
1. Load a Project – This uses the extent and outlet to recreate the channel network and watershed delineation. The user can make changes to the channel delineation or outlet point.
2. Load a Project Archive – This restores all files from the saved run, no changes can be made to the channel delineation and watershed subcatchments.

Load a Project

Paste in the information when the project was saved:

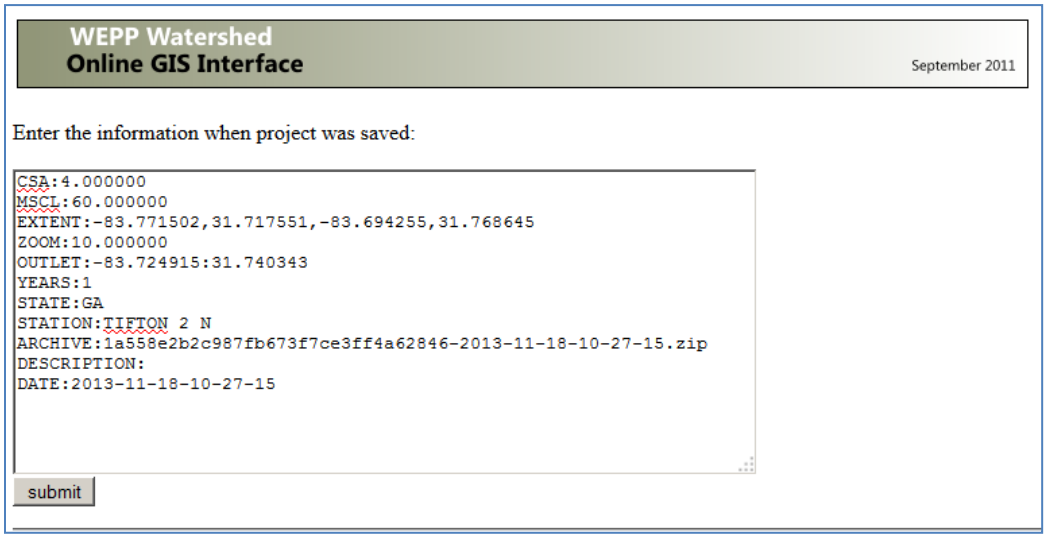


And then click the submit button. This will recreate the channel delineation and watershed subcatchments. The next step is the 'Review Watershed' which will process the land use and retrieve any SSURGO soils for the area.



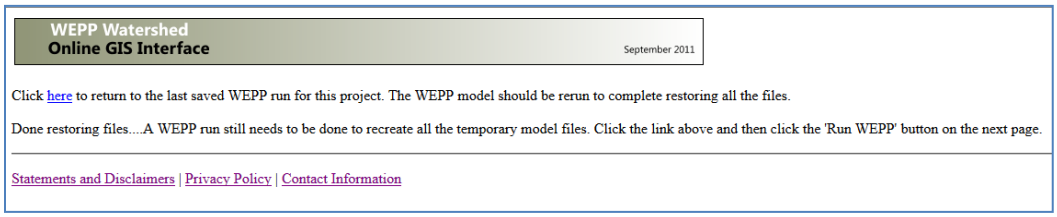
Load a Project Archive

The 'Load a Project' archive option goes further and also applies any user customizations that were done to the original watershed. The information pasted into the load project archive window is the same as above, expect that the zip file archive is processed:

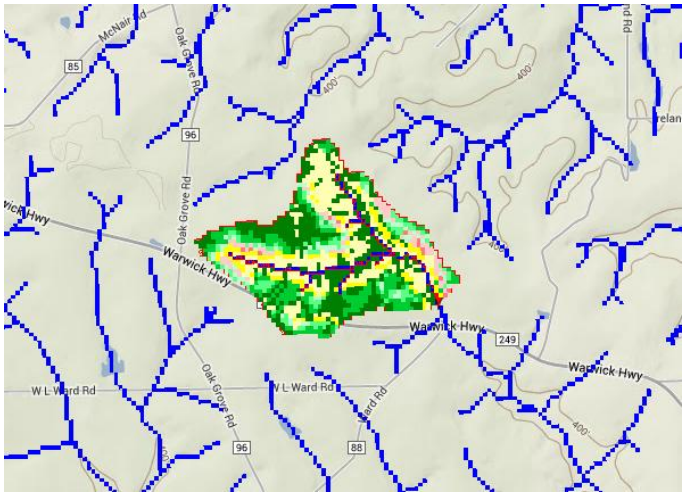


After clicking the submit button the following window will be displayed:

After all the files are restored the following window will be displayed:



The main map window is then displayed, showing the output from the run that was saved:



Not all the output files are saved so the WEPP files should be re-run by clicking on the ‘Run WEPP’ button.

11. Download WEPP project for other uses