



James River Water Quality Improvement Program (JRWQIP) Restoration Planner User Guide

How to access the Restoration Planner

To request access to the JRWQIP Restoration Planner, potential applicants must submit the form found at: <https://goo.gl/forms/ATHTen0EtUkYFKgt1>. After submitting their email address, applicants will receive an automated email reply containing:

1. Link to the Restoration Planner web application
2. Login credentials
3. Link to Chesapeake Conservancy's website with instructions on how to use the tool, data documentation, and metadata.

Navigate to the web app link (#1) and enter the login credentials (#2). You will be directed the Restoration Planner.

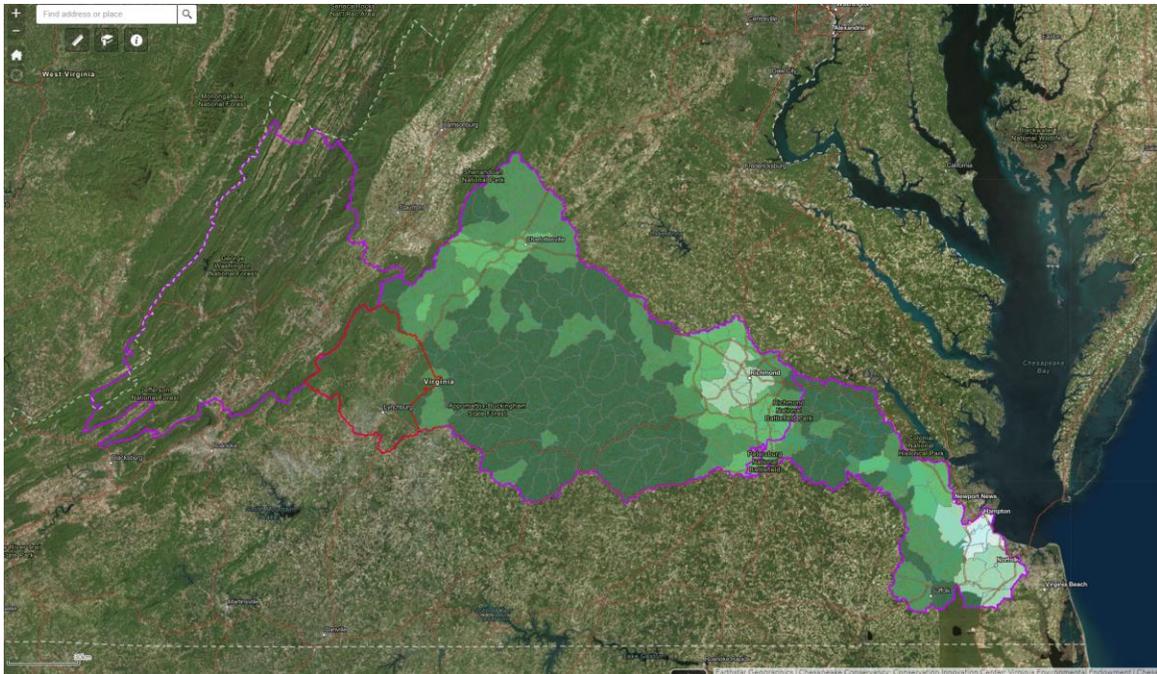
How to use the Restoration Planner

A. Home screen and general layout

1. Read the splash screen welcome and instructions. Click 'OK' to close. If you need to reference these instructions again, you can click the 'Information' widget (i) in the upper right hand corner.

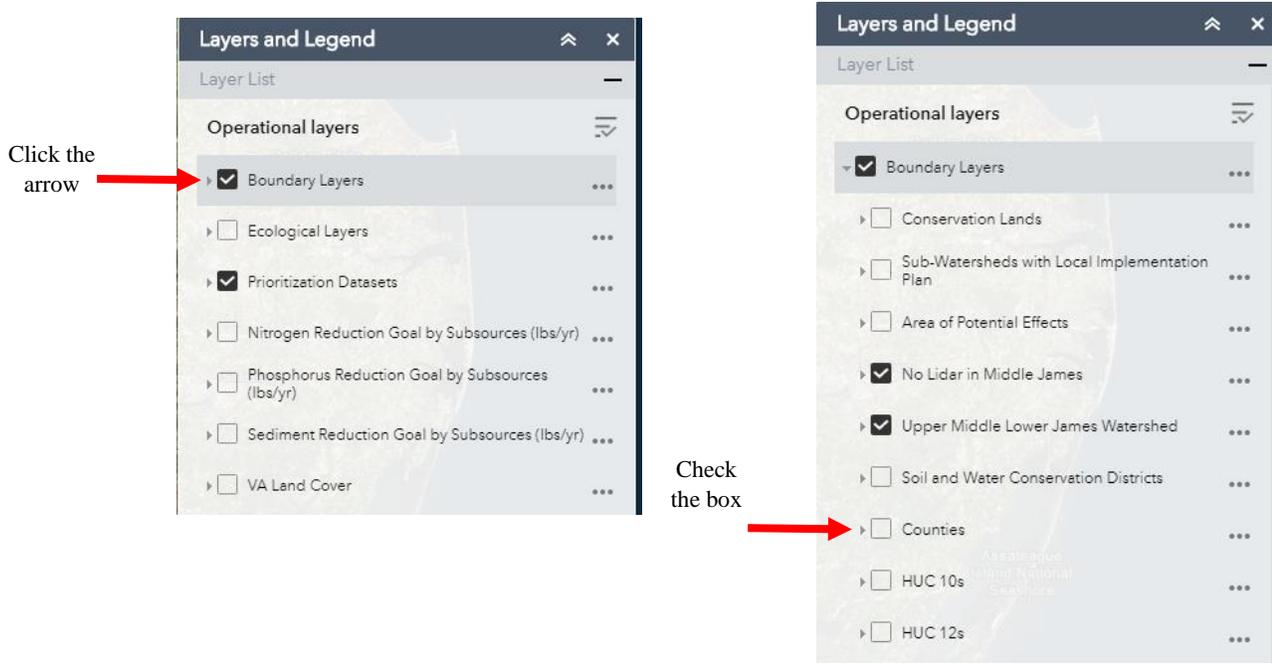


2. At the home screen, you will see the entire James River watershed boundary (purple). The prioritization analysis was conducted in areas with available Lidar data. You will see that the Upper James and a small southwestern portion of the Middle James (outlined in red) are not included in this analysis. To return to this home screen at any time, click the 'Home' button in the upper left hand corner.

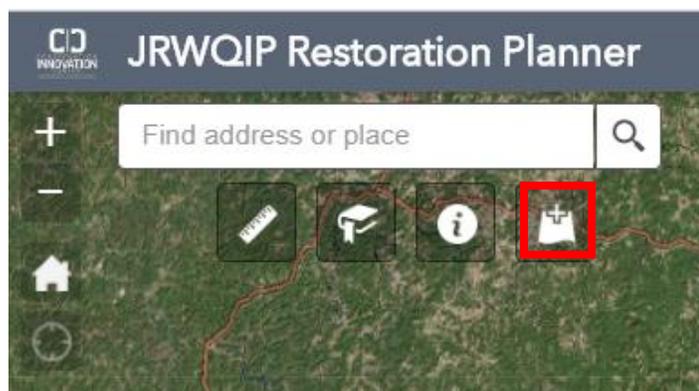


- a. If you are proposing work in either of the areas described above, use of the Restoration Planner is not required for your application. Future inclusion of these areas in the prioritization analysis is contingent upon Lidar data collection.
- b. You will see the ‘HUC 12s Percent Unbuffered 35’ layer, which highlights the sub-watersheds that have higher percentages of unbuffered stream area. If you open this layer’s attribute table, you will also find buffered and unbuffered land acreage and total restoration opportunity area by HUC12, as well as land cover breakdowns for both 35’ and 100’ buffers adjacent to the water network.
If you do not yet know where your proposed project(s) is located, you may find the ‘HUC 12s Percent Unbuffered 35’ layer helpful in narrowing your search for potential projects.

- The Layer List and Legend appear in the right hand panel. You can turn group layers on and off by checking the box next to the group layer name. To expand the menu under a group layer, click the arrow. In order for sub-layers to display, you will need to turn both the group layer and the sub-layer on.

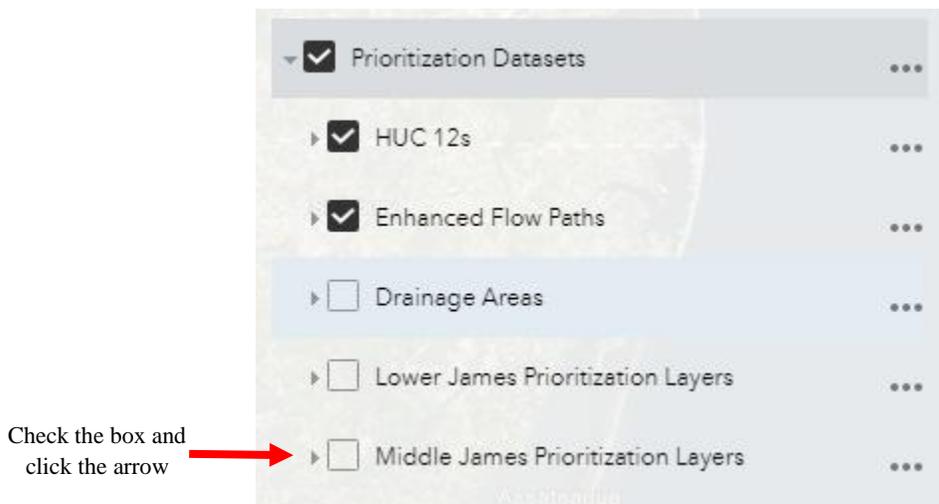


- You can turn on select layers in the 'Boundary Layers' and 'Ecological Layers' groups for context, e.g. counties, soil and water conservation districts, sub-watershed boundaries, and impaired waters. For a complete list, see the last section of this document, **'Additional data layers in the Restoration Planner.'**
- You can also add your own data layers to the Restoration Planner by clicking on the 'Add Data' button in the upper left hand corner. You can search for layers on ArcGIS Online, enter a URL of an ArcGIS Server Web Service, or upload your own data. For example, you can upload a zipped shapefile or a spreadsheet (.csv) of GPS coordinates.



B. Use prioritization data

6. First, expand the 'Prioritization Datasets' group by clicking the arrow. Click the checkbox next to either the 'Middle' or 'Lower James Prioritization Layers', depending on your geographic area. Click the arrow to expand the group layer.



7. Within the group layer, turn on the appropriate prioritization layers for your project:
 - a. **Layer #1- Parcels:** First turn on the parcels layer to see the priority level of the whole parcel in terms of restoration opportunity.
 - b. **Layer #2- ROAs:** If you are proposing riparian buffer work, turn on either of the 'Restoration Opportunity Areas' layers, choosing 35' or 100' based on the most appropriate buffer width for your proposed project.

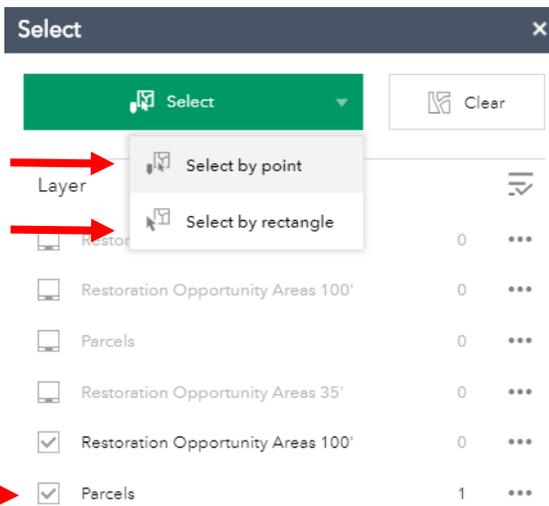
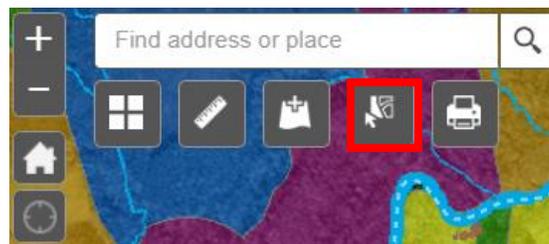


8. Zoom in to your area of interest. If any layers were greyed out, they should now become visible. You can simply navigate to your area of interest using the mouse scroller and dragging the map, you can use the zoom buttons (+/-), or you can enter a place or address in the search bar in the top left corner.



C. Generate Parcel PDF Reports

9. If you know on which parcel(s) you will be proposing projects, generate a parcel-specific PDF Report to append to your grant application
 - a. Adjust your map view to the desired extent of the parcel. Turn on any relevant layers you would like to appear in your map (e.g. drainage areas, impaired streams, estimated soil loss RUSLE, etc.)
 - b. Click on the 'Select' widget and a dialogue box will open. Click the grey arrow on the green 'Select' button to change how you select parcels, either by clicking a point or drawing a rectangle (for multiple parcels).

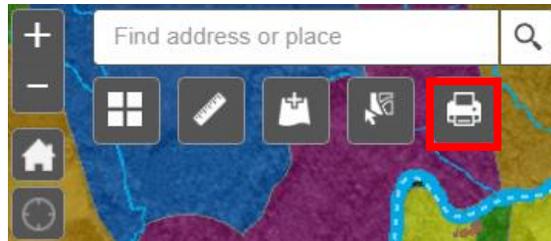


Click on a single parcel

Drag a box to select multiple parcels

Checked on

- c. Ensure that the checkbox next to the layer you want to select is checked and click on the map to make your desired selection.
- d. Click on the 'Print' widget.



- i. Change the map title to your desired description.
- ii. Under the 'Advanced' options button, ensure that 'Preserve map extent' is toggled on and 'Include attributes' is checked on. Press 'Print.'

Toggled on

The 'Print' dialog box is shown with the 'Advanced' options expanded. The 'Map title' is set to 'My Map Title'. The 'Layout' and 'Format' dropdowns are visible. The 'Advanced' button is highlighted. The 'Map scale/extent' section shows 'Preserve' with 'map extent' selected (indicated by a red arrow from the text 'Toggled on'). The 'Force scale' is set to 'current'. The 'Output spatial reference WKID' is set to '102100' with the text 'WGS_1984_Web_Mercator_Auxiliary_Sphere' below it. The 'Layout metadata' section has 'Author' set to 'Web AppBuilder for Arc' and 'Copyright' is empty. The 'Include legend' checkbox is checked. The 'Scale bar unit' is set to 'Miles'. The 'MAP_ONLY size' section has 'Width (px)' set to '670' and 'Height (px)' set to '500'. The 'Print quality' section has 'DPI' set to '96'. The 'Feature attributes' section has 'Include attributes' checked (indicated by a red arrow from the text 'Checked on').

Checked on

- iii. Click on the generated PDF link and a parcel PDF report will open in a new tab. The report including a map and table of relevant attributes. If you have selected multiple parcels, the report will include a single map and a table for each selected parcel.

Print
✕

Map title:

Layout:

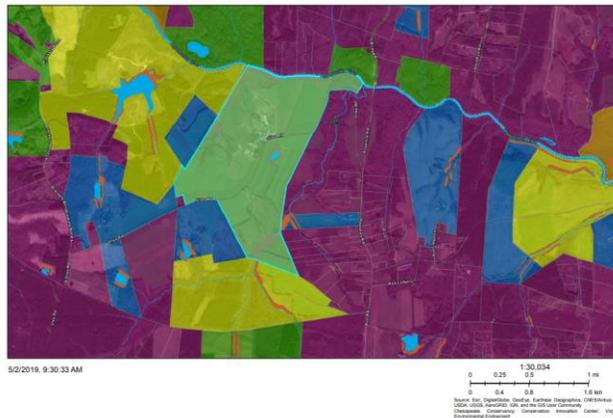
Format:

⚙️ Advanced 🖨️ Print

1. My Map Title

🗑️ Clear prints

Click here



Parcel Report

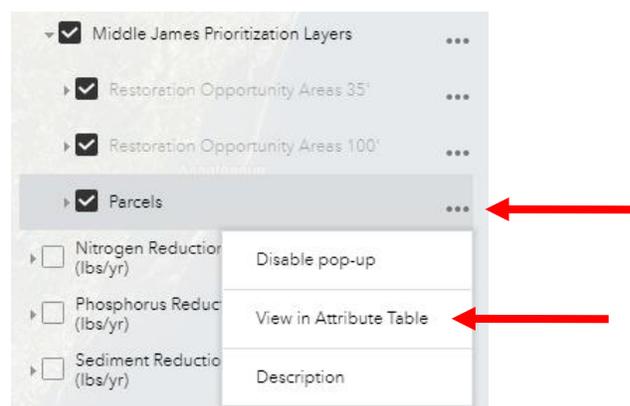
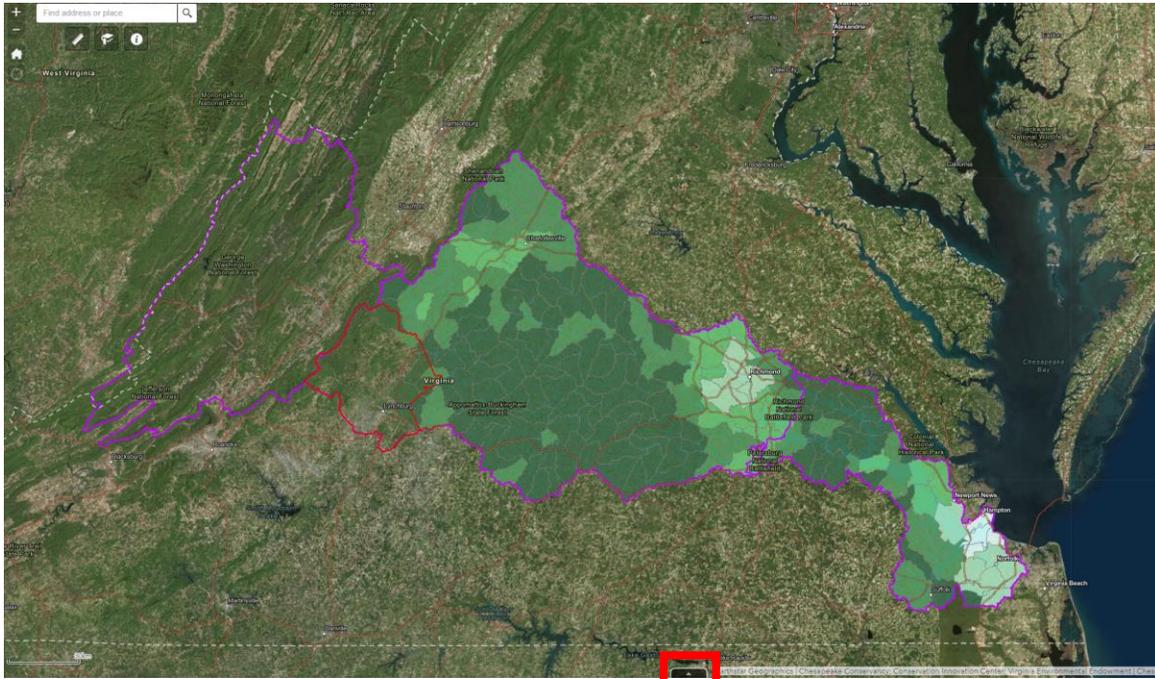
Parcel ID:	520390
Tier:	1
Total Parcel Area (Acres):	486.18
Total ROA Area (Acres):	3.44
Total Drainage Area to ROAs (Acres):	164.17
Total Agriculture in DAs (Acres):	129.91
Total Impervious in DAs (Acres):	5.13
Total Turf in DAs (Acres):	3.45
Total Land Cover of Concern in DAs (Acres):	138.48
Soil Loss in DAs to ROAs (Tons/Year):	71.40
Total Area of DAs on Parcel (Acres):	199.59
Total LC of Concern in DAs on Parcel (Acres):	174.51
Total Soil Loss in DAs on Parcel (Acres):	90.72
Vegetated Area in DAs on Parcel (Acres):	25.09
Restorable Area in DAs on Parcel (Acres):	169.14
Unrestorable Area in DAs on Parcel (Acres):	5.37
Vegetated Area on Parcel (Acres):	73.30
Restorable Area on Parcel (Acres):	397.94
Unrestorable Area on Parcel (Acres):	14.94
Tidal:	0
Impaired Waters:	1
Sub-Watershed with Local Implementation Plan:	0
In Area of Potential Effects:	0
Conservation Lands:	0
Urban Growth:	0
Upper/Middle/Lower James:	MIDDLE
County:	Amelia County
Soil and Water Conservation District:	Piedmont
HUC 10 Name:	Rocky Ford Creek-Appomattox River
HUC 12 Name:	Bent Creek-Appomattox River

- iv. Download this PDF, save to your desired location, and append to your grant application.

D. View Attribute Tables

10. If you do not yet know where your proposed project(s) is located, you can explore the prioritization data layers' attribute tables to narrow your search for high priority projects. Click the 'up arrow' at the bottom center of the web page to open the attribute table view.

11. To view a particular layer's attribute table, click the 'More Options' button (...) next to the layer in the Layer List, and click 'View Attribute Table.'

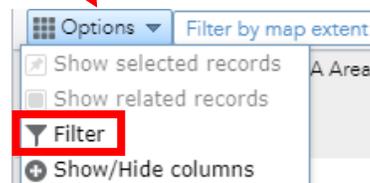


- a. You can view the data for just the projects or parcels within your map frame by clicking 'Filter by Map Extent.' The button will be outlined in blue and have blue text when this feature is activated. To deactivate, click again.

- b. By clicking on 'Options', you can filter for specific attributes or show/hide columns from view.

Tier	Total ROA Area (Acres)	Total Drainage Area to ROAs (Acres)	Total Agriculture in DAs (Acres)	Total Impervious in DAs (Acres)	Total Turf in DAs (Acres)	Total Land Cover of Concern in DAs (Acres)	Soil Loss in DAs to ROAs (Tons/Year)	Total Area of DAs on Parcel (Acres)
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

508574 features 0 selected



- c. In the 'Filter' dialog box, you can build sets of expressions using multiple attributes for which you want to select. For example, you might want to find all the restoration opportunity areas that are Tier 1 in a given county.
- d. Click 'Add expression' for a single-attribute query or 'Add set' for a multiple-attribute query. Use the dropdown arrow to select attributes of interest (far left), define the query (middle), and select settings (far right).

Select attribute

Filter ✕

[+ Add expression](#) [+ Add set](#)

Get features in the layer that match All ▾ of the following expressions

All ▾ of the following expressions in this set are true ✕ [+](#)

Tier (Number) ▾ is ▾

- Parcel ID (Number)
- ROA Area (Acres) (Number)
- Drainage Area (Acres) (Number)
- Agriculture in DA (Acres) (Number)
- Impervious in DA (Acres) (Number)
- Turf in DA (Acres) (Number)
- Land Cover of Concern in DA (Acres) (Number)
- Ratio (LC of Concern) : (ROA Area) (Number)
- Soil Loss in DA (Tons/Year) (Number)
- Tidal (Number)
- Impaired Waters (Number)
- Sub-Watershed with Local Implementation Plan (Number)
- APE (Number)

OK Cancel

Select query definition

Filter ✕

[+ Add expression](#) [+ Add set](#)

Get features in the layer that match All ▾ of the following expressions

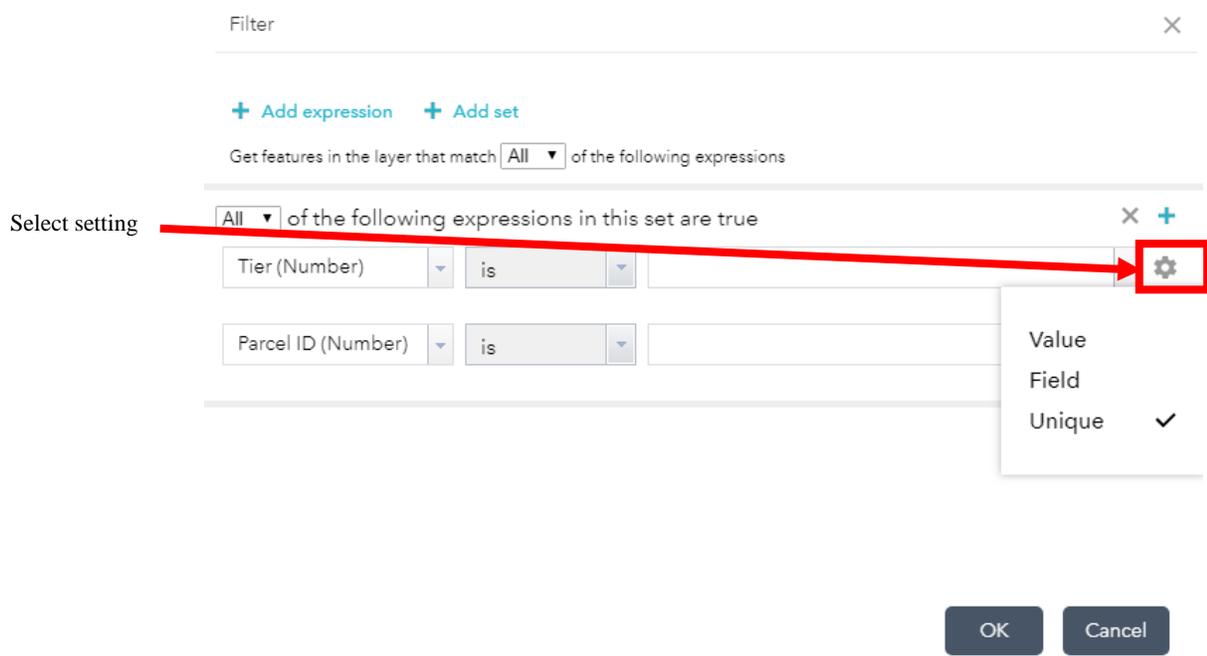
All ▾ of the following expressions in this set are true ✕ [+](#)

Tier (Number) ▾ is ▾

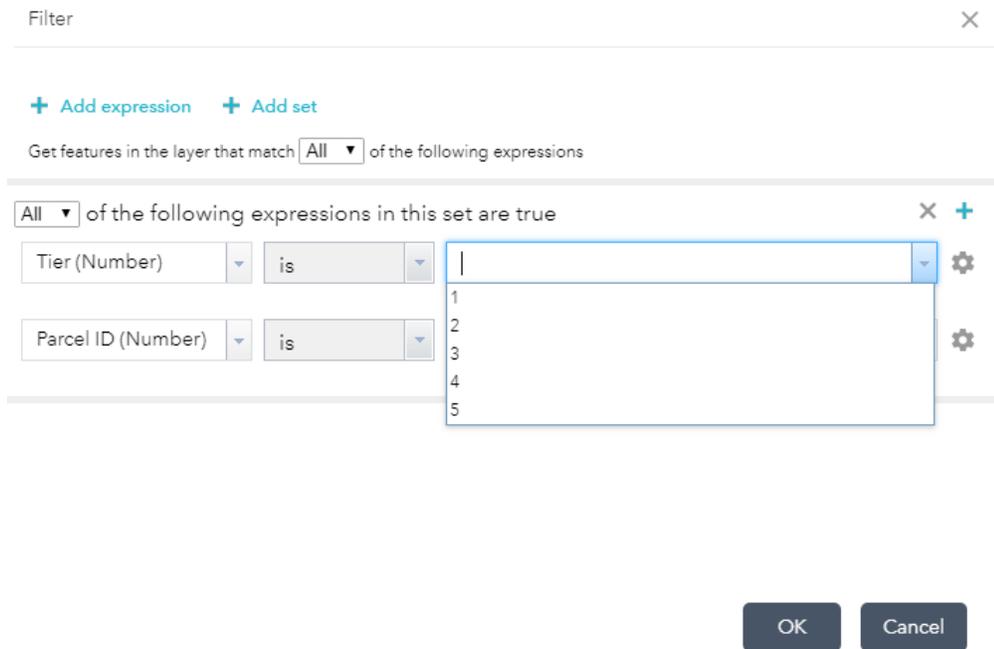
- is
- is not
- is at least
- is less than
- is at most
- is greater than
- is between
- is not between
- is blank
- is not blank

Parcel ID (Number) ▾

OK Cancel



- i. Select 'Value' if you want to be able to type in a number. Select 'Unique' if you want to populate the unique values of that attribute using a drop down menu.



- e. The attribute table also allows you to sort on attributes of interest, for example ROA Area (Acres) to focus on larger projects, or ‘Land Cover of Concern in Drainage Area (Acres)’ to focus on greatest unbuffered runoff potential.

Tier	ROA Area (Acres)	Drainage Area (Acres)	Agriculture in DA (Acres)	Impervious in DA (Acres)	Turf in DA (Acres)	Land Cover of Concern in DA (Acres)
1	22.33	724.76	0.00	307.73	396.63	704.36
1	11.79	287.27	216.66	0.34	1.53	218.54
1	10.33	186.62	168.28	4.05	10.09	182.41
1	3.90	180.39	169.19	1.36	7.41	177.96
1	2.87	169.59	157.13	0.00	0.00	157.13
1	3.72	193.33	135.96	5.20	7.58	148.74
1	3.92	157.23	134.34	3.09	9.37	146.80
1	4.85	162.68	138.24	0.77	3.02	142.03
1	2.10	161.00	101.28	12.12	28.35	141.75
1	0.42	142.54	119.43	7.55	12.40	135.38

104715 features 0 selected

Land Cover of Concern in DA (Acres)	Ratio (LC of Concern) : (ROA Area)
704.36	
218.54	

Sort ascending
Sort descending
Statistics

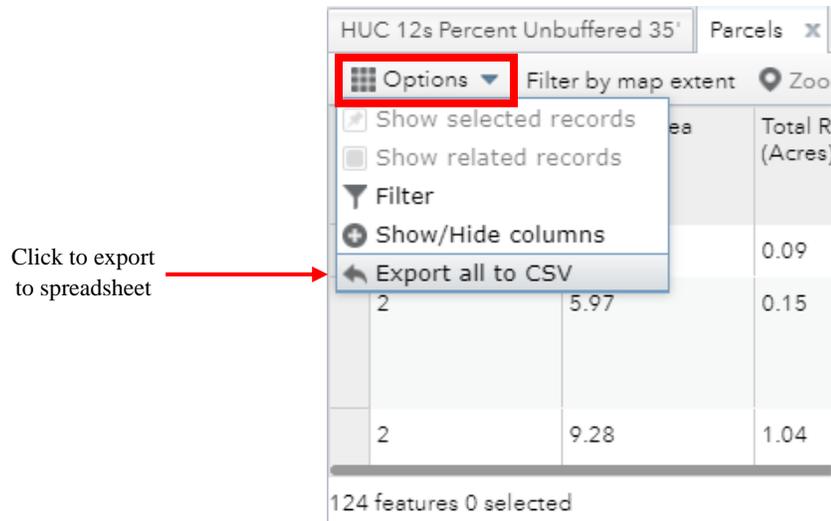
- f. You can select a row in the Attribute Table by scrolling all the way to the left and clicking the grey cell to the left of the row. The row will be highlighted in cyan. Once you have a row selected, click ‘Zoom to’ to view the selected feature, outlined in cyan, on the map. Click ‘Clear selection’ to unselect. To close the attribute table click the down arrow at the top of the table.

Tier	Total ROA Area (Acres)	Total Drainage Area to ROAs (Acres)	Total Agriculture in DAs (Acres)	Total Impervious in DAs (Acres)	Total Turf in DAs (Acres)	Total Land Cover of Concern in DAs (Acres)
1	11.92	187.38	137.91	1.41	1.60	140.92
2	2.61	136.40	129.61	0.24	0.84	130.69
2	2.28	125.47	119.43	1.51	0.05	120.99
1	5.41	142.79	107.38	1.81	1.38	110.56

Click to select

Close table

- g. To export the attribute table as an Excel spreadsheet, click on 'Options' and select 'Export all to csv.' If you have any features selected, the button will read 'Export selected to csv' and will only export your selected features.



- h. For more detailed descriptions of the attributes, visit the 'Data Documentation' PDF found at <https://chesapeakeconservancy.org/vee-web-viewer/>

Additional data layers in the Restoration Planner

Boundary Layers

- Conservation Lands
- Sub-Watersheds with Local Implementation Plan
- Area of Potential Effects
- Upper Middle Lower James Watershed
- Soil and Water Conservation Districts
- Counties
- HUC 10s and 12s watershed boundaries

Ecological Layers

- Impaired Waters- Rivers, Reservoirs, and Estuaries
- VIMS Shoreline
- VIMS Tidal Marsh
- NWI Non-Tidal Wetlands

Additional Layers

- Nitrogen, Phosphorus, and Sediment Reduction Goals by County and Subsources (lbs/yr)
- Estimated Soil Loss (tons/year) according to the Revised Universal Soil Loss Equation
- VA High-Resolution Land Cover

For descriptions of datasets and attributes, visit the 'Data Documentation' PDF found at <https://chesapeakeconservancy.org/vee-web-viewer/>