

Colorado Watershed Resilience Tool - Quick Guide

Version Date: 6/30/2023

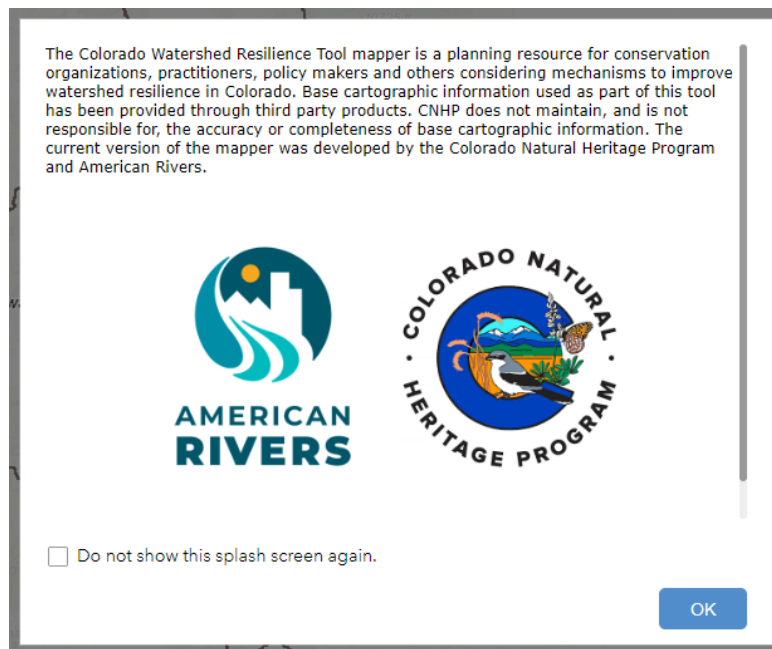
The Colorado Watershed Resilience Tool was released in 2023 by American Rivers and the Colorado Natural Heritage Program. It is intended to be a planning resource and research tool for conservation organizations, practitioners, policy makers and others considering mechanisms for improving watershed resilience across Colorado. Specifically, the tool provides mapping data to identify opportunities for riparian, wetland and instream restoration and protection at the watershed scale. Opportunities to improve resilience are often based on various values including the protection of biodiversity, improving hazard resilience and bolstering water security.

The Tool is focused on four main themes - Biodiversity in Colorado Watersheds, Opportunities to Promote Water Security, Challenges to Watershed Resilience, and River Protection and Restoration Opportunities - that are made up of different statewide layers that can be turned on and off by Tool users.

The Tool is available on the American Rivers website (<https://www.americanrivers.org/colorado-watershed-resilience-tool/>) as well as in the Colorado Wetland Information Center (CWIC) where it can be found under the Data & Tools tab (<https://cnhp.colostate.edu/cwic/tools/toolbox/>).

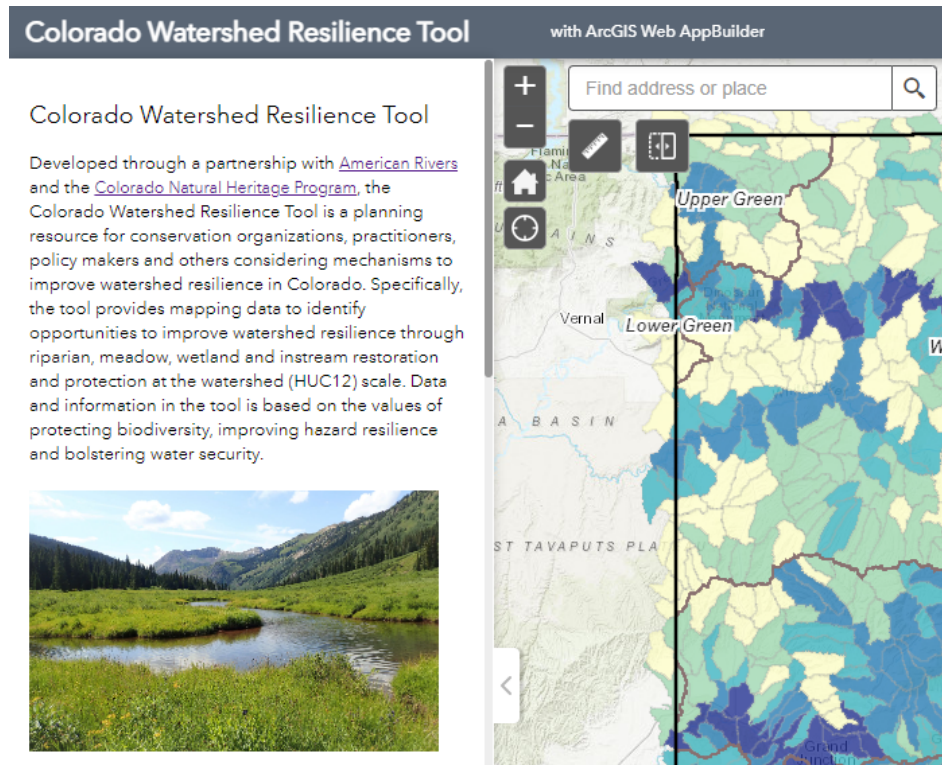
I. Overview of Key Tool Features

When you open the web link for the Colorado Watershed Resilience Tool, you will first see a splash screen, which can be turned off for future use by clicking the box next to “Do not show this splash screen again”.

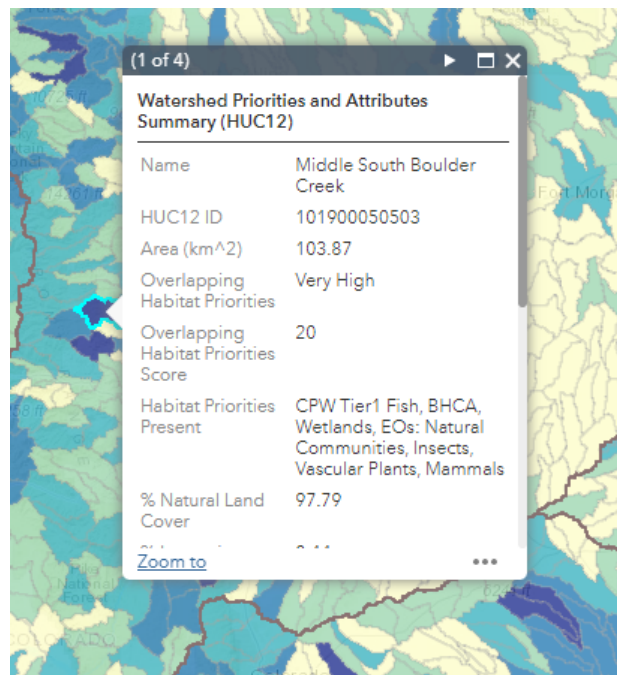


The **About** panel on the left side of the screen displays an overview of the Tool, including the different layer groups, examples of potential applications, attribute descriptions for Watershed Priorities and Attributes

Summaries for each HUC12 watershed, and data sources. You can minimize or expand the About panel at any time by clicking on the arrow along the right side of the panel.

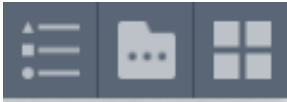


At any point, Tool users can click on and zoom into a given HUC12 watershed polygon to get a summary of watershed habitat priorities and attributes including size (km²), number of overlapping habitat priorities, percent natural land cover, and the importance of the watershed to surface drinking water supplies downstream. Descriptions of each layer and definitions of key attributes can be found in the Map Layer Library at the end of this guide. The example below shows popup information for the Middle South Boulder Creek watershed.

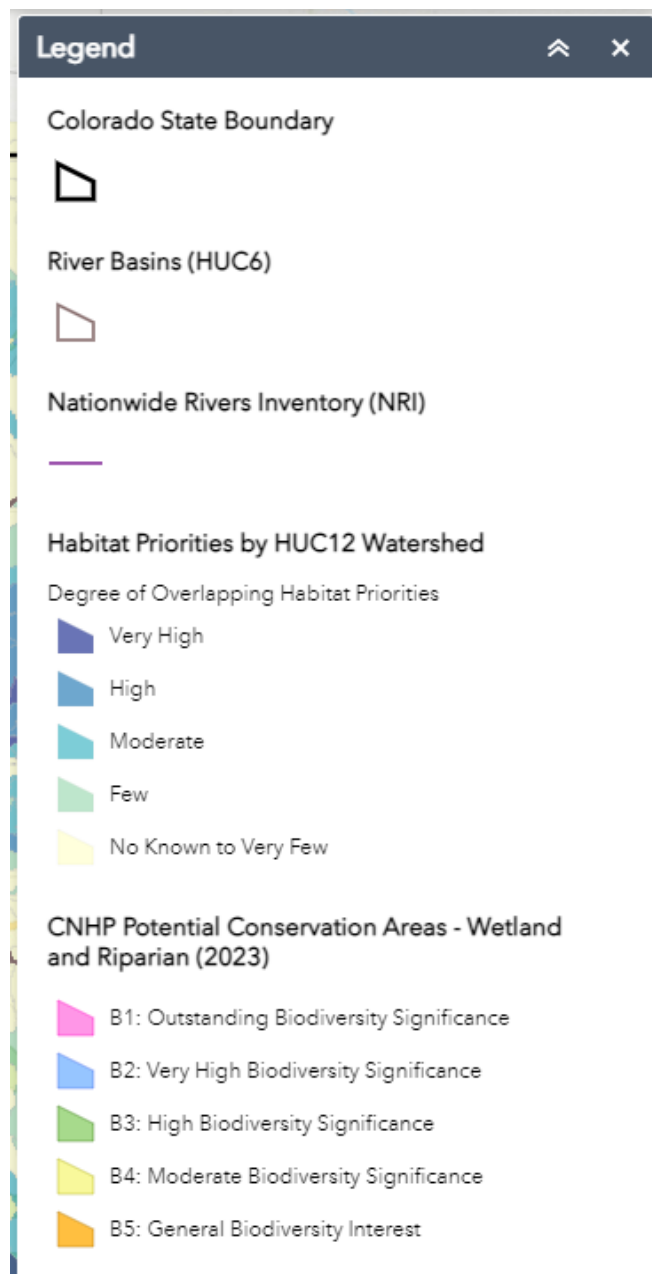


II. Cartographic Tools

By selecting the icons in the upper right corner of the window, you can view the **Legend** for selected layers, the **Layer List** of all available layers, and different options for **Basemaps**.



The **Legend** icon allows you to view symbols for all selected layers. In the following example, the Colorado State Boundary, River Basins (HUC6), Habitat Priorities by HUC12 Watershed, and CNHP Potential Conservation Areas are turned on in the **Layers List** and symbols and associated descriptions are visible in the **Legend** panel.





The **Layer Library** icon allows exploration of 5 different root layer groups, which contain 28 different layers that may be selected. Checking the box to the left of each layer turns a layer on or off. Layers that appear in gray text are visible at set scales, meaning users must zoom in or out for the layer to become visible. The source for each layer is provided in the **Layer Library** and **Legend**. Several layers, such as NHD Plus v 2.1 waterbodies and the Nationwide Rivers Inventory, are pulled from web services hosted by the creators of the data layer. For the best viewing experience and performance, we recommend only turning on several layers at the same time.

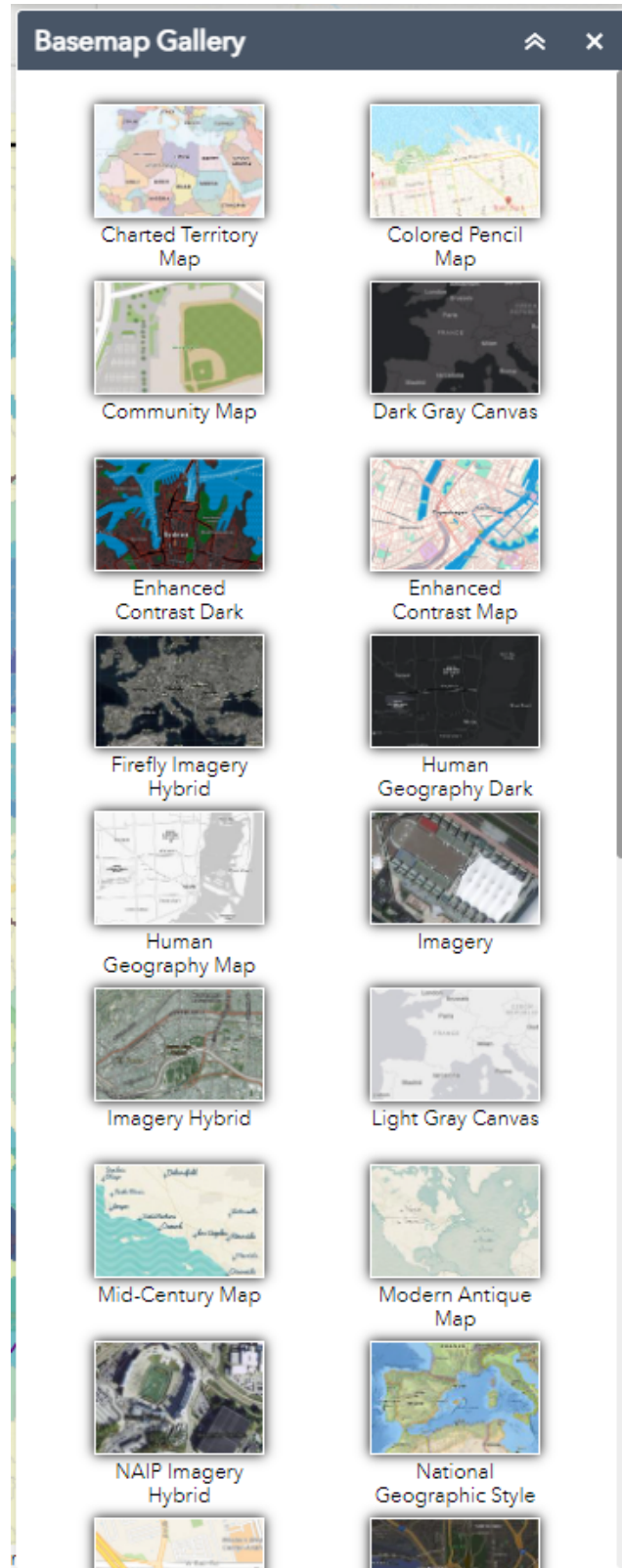
The screenshot displays the 'Layer Library' panel with the following sections and layers:

- Watershed Boundaries and Land Management**
 - River Basins (HUC6)
 - River Subbasins (HUC8)
 - Watersheds (HUC10)
- River Protection and Restoration Opportunities**
 - Nationwide Rivers Inventory (NPS)
 - Barriers to Fish Passage (NABD; USGS)
 - Disappearing Rivers Degree of Alteration (clipped to Colorado; CSP)
 - Decreased Instream Flow Stream Reaches (DWR)
- Biodiversity in Colorado Watersheds**
 - Potential Conservation Areas - Wetland and Riparian (CNHP)
 - Habitat Priorities by HUC12 Watershed (CNHP)
 - Number of CPW Tier 1 Fish Species by HUC12 Watershed (CPW)
- Opportunities to Promote Water Security**
 - Active Points of Diversion (DWR)
 - Natural Seeps and Springs (USGS)
 - Waterbodies (NHD Plus v2.1; USGS)
- Challenges to Watershed Resilience**
 - Wildfire Threat to Important Surface Drinking Water Areas (F2F2; USFS)
 - Water Yield Decrease Threat to Important Surface Drinking Water Areas (2040, High Emissions Scenario; F2F2; USFS)
 - Future Land Use Change Threat to Important Surface Drinking Water Areas (2040, High Emissions Scenario; F2F2; USFS)

At the bottom of the panel, the following text is visible: '© 2019 USGS, NGA, EPA, USDA, NPS, BLM, Colorado, esri'.

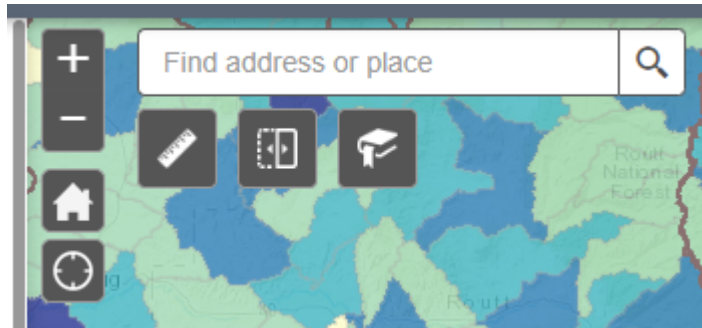


The **Basemap Gallery** icon allows you to choose from a variety of basemaps, including aerial imagery, topographic maps, and street maps. Imagery hybrid maps include imagery along with place names, streets, and other human features.



III. Measurement and Navigation Tools

In the upper left corner, next to the **About** panel, you will find icons to **Zoom** in (+) and out (-) in the mapper and the option to enter and search for an address or place name.



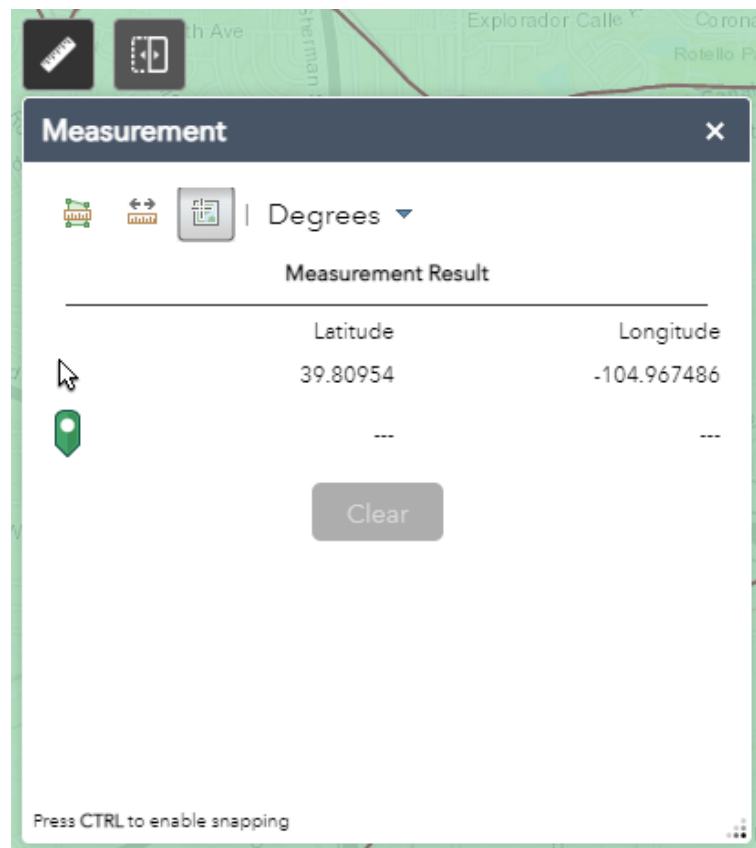
The **Default Extent** icon returns the map view to the entire state of Colorado.



The **My Location** icon allows you to explore mapped features near your current location (or the location tied to your computer or other viewing device), which may be different than your precise location depending on your privacy settings.

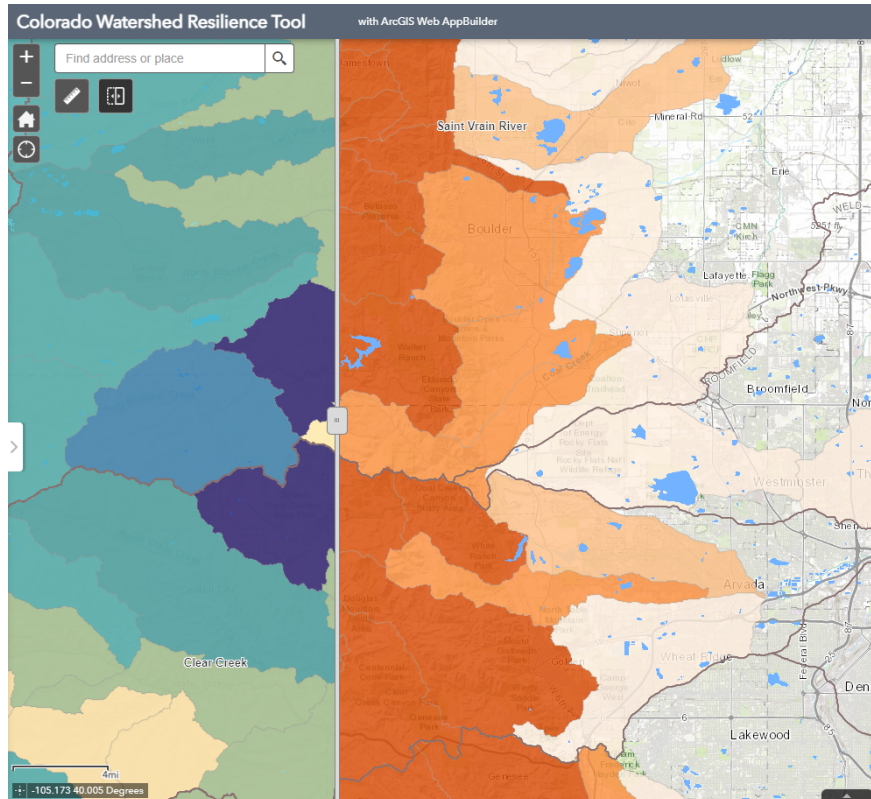


By clicking the **Measurement** icon, you can draw a polygon to get an area, measure a distance along a line, or find coordinates for a point on the map. Each measurement option allows the user to specify preferred units. Pressing **CTRL** while using measuring tools allows snapping to features on the map.

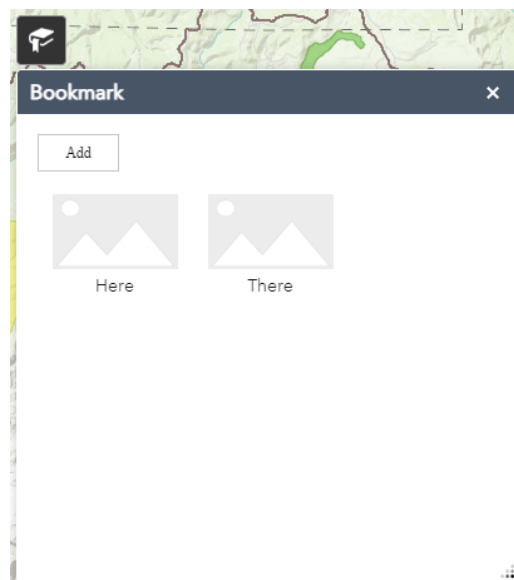




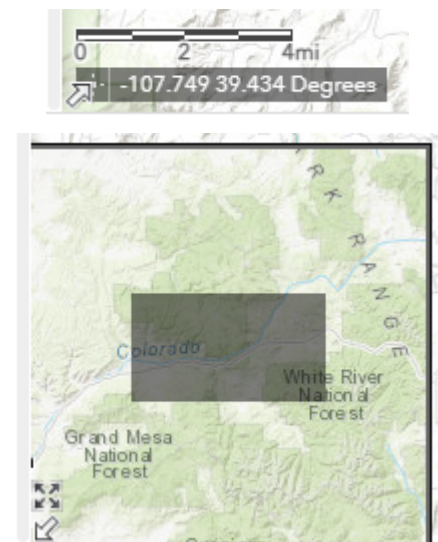
Clicking on the **Swipe** icon allows users to slide the Habitat Priorities layer left and right using the small gray box at the center of the swipe bar to enable viewing other map layers side-by-side. In the following example, Habitat Priorities are visible as an overlay on the left, but pulled away to reveal waterbodies and Wildfire Threat to Important Surface Drinking Water Areas to the right of the bar.



The **Bookmark** icon allows users to add bookmarks to return to at a specified location and extent (zoomed in/out). Users can click the **Add** button to create new bookmarks, delete existing bookmarks, and personalize bookmarks with icons or images.



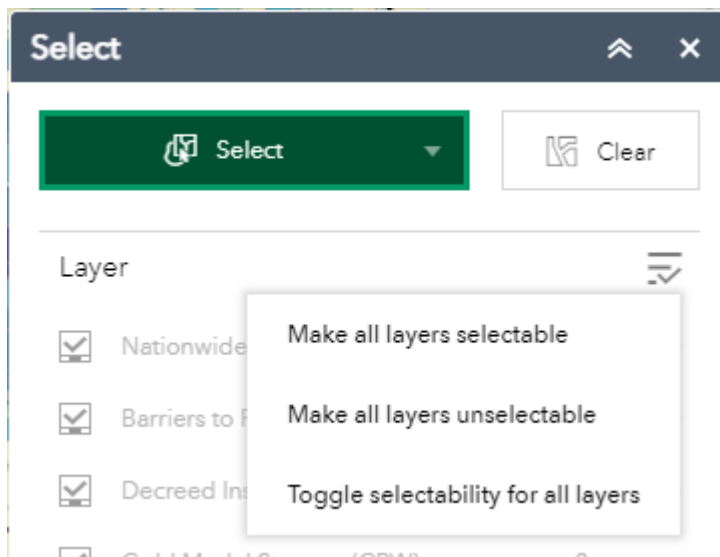
Finally, whether viewing a bookmark or zoomed in or out of the mapper, users can view the current scale of the map, view the current location of the mouse arrow on the map, and click on the small white arrow in the lower left corner of the map to show or hide the map overview box. The map overview box can also be maximized or minimized to the full map screen by clicking on the four small black arrows.



IV. Selecting Map Features

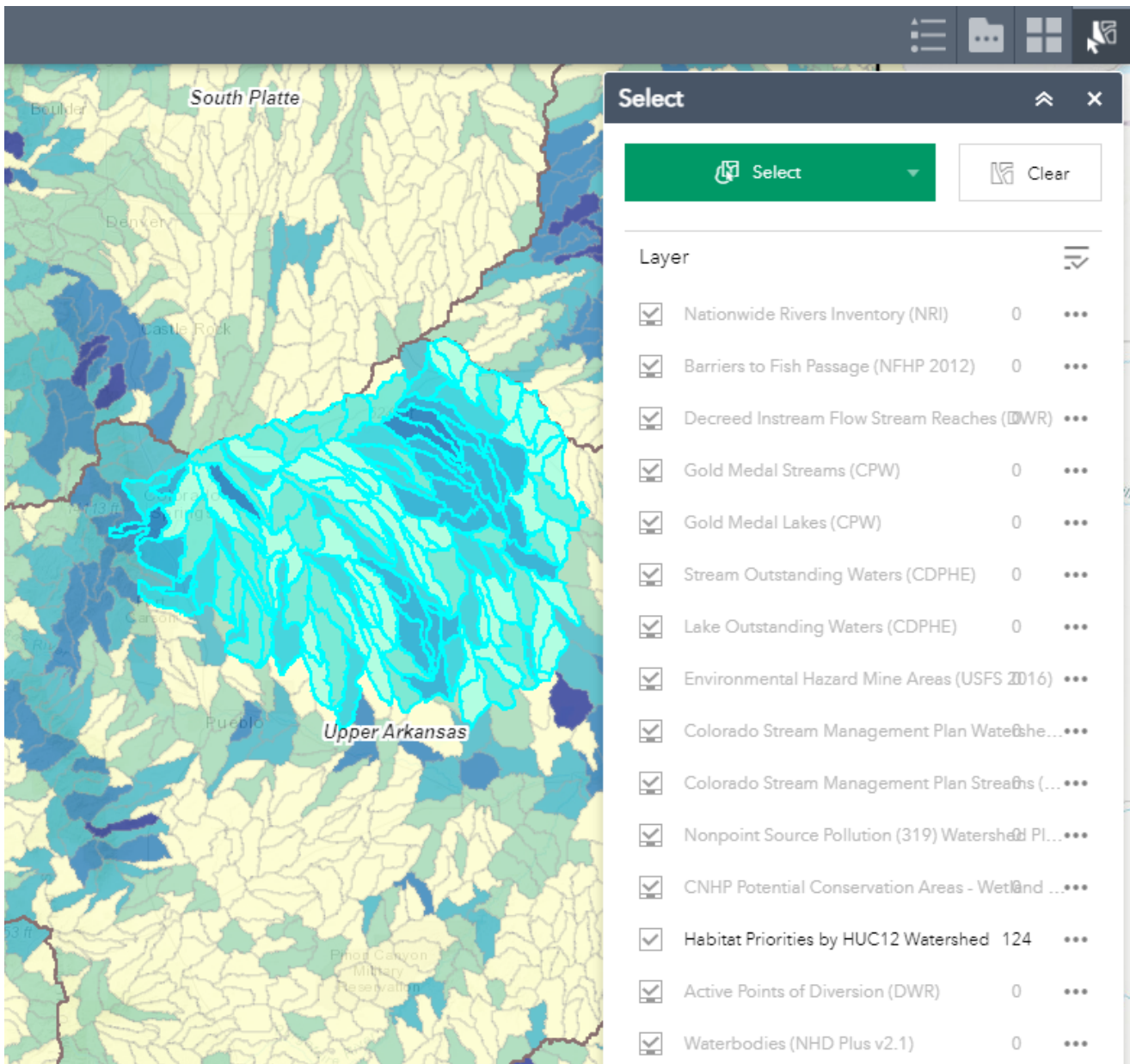


The **Select** icon in the upper right corner of the mapper allows users to manually select features within the map. By clicking on the icon, a menu of selectable layers opens. By default, Habitat Priorities by HUC12 Watershed is the only selectable layer. Users can make additional layers selectable by clicking on the check box at the top of the layer list:



The green **Select** menu includes options for different types of selection tools, including a user-defined polygon, rectangle, circle, point, line, and lasso. All selections can be cleared using the **Clear** button at the top of the **Select** menu. Note: layers must be turned on in the Layer Library before being selectable using the **Select** tool, and for selected features to be shown in attribute tables for each layer.

In the following example, the **Select by lasso** tool from the **Select** menu was used to select a batch of HUC12 watersheds in the Upper Arkansas basin. Selected features from the Habitat Priorities by HUC12 Watershed layer will be shown as selected in the attribute table associated with that layer.



V. Viewing Features within Select Areas and Filtering Data in a Table

Attribute tables for select data layers within the Tool can be accessed in several ways: 1) In the **Layer Library** or a popup box for a given layer, by clicking on the three dots to the right of the layer name and scrolling down to select **View in Attribute Table**, or 2) by clicking the **Open Attribute Table** button at the bottom of the screen.



Within the **Attribute Table**, click on **Options** and then **Filter** to search for specific watershed attributes by choosing **Add Expression** or **Add Set**. In the example below, choosing the overlapping habitat priorities and the wildfire threat fields, **contains**, and the text “High” returns a subset of HUC12 watersheds that have a high or very high number of overlapping habitat priorities while also having a high or very high wildfire threat. Once you’ve filtered watersheds, return to the **Options** menu in the **Attribute Table** and click **Export All to CSV** to download a table of the filtered results.

HUC12 Name	Area (km ²)	Habitat Priorities Score	Wildfire Threat (F2F)
Upper Greenhorn Creek	81.11	Very High	High
Long Gulch-Trout Creek	113.66	Very Low	Very High

You can also select “Filter by Map Extent” at the top of the Attribute Table to only view features in the current map extent.

Colorado Watershed Resilience Tool Map Layer Library

Colorado Watershed Resilience Tool (<https://www.americanrivers.org/colorado-watershed-resilience-tool/>) map layer groups and layers with source, date, description, why it matters, and attribute details. Layer groups correspond with how layers are organized in the mapper’s layer list.

Layer Name	Source	Date	Description	Why it Matters	Attribute Details
Watershed Boundaries and Land Management					
Watershed Boundaries	USGS	–	Colorado river basins (HUC6), subbasins (HUC8), and watersheds (HUC10) from the Watershed Boundary Dataset (WBD)	The Watershed Boundary Dataset (WBD) is commonly used as a geographic reference in watershed planning and water-related geospatial data layers.	Name of watershed boundary and unique 6 (HUC6), 8 (HUC8), or 10 (HUC10) digit code. More information: https://www.usgs.gov/national-hydrography/watershed-boundary-dataset
Colorado County Boundaries	CDSN	2016	Colorado counties web service, hosted by the Colorado Data Sharing Network (CDSN)	County boundaries are helpful for knowing who to engage in watershed planning and land conservation efforts.	Names and boundaries of each county.
Land Management and Ownership	CNHP and Geospatial Centroid (CSU)	2023	Land ownership and management via the COMaP v10 Map Service, grouped by private, federal, state, local, and NGO/land trust management	This layer can help determine the surrounding land ownership and protection status for potential project locations.	Land management and ownership is grouped into the following categories: Private, USDA Forest Service (USFS), Federal (Bureau of Reclamation (BOR), Fish and Wildlife Service (FWS), National Park Service (NPS)), Bureau of Land Management (BLM), State, Local, and Non-governmental Organization (NGO)/Land Trust. Other attributes include the Name of the parcel (if applicable), Owner , Manager , Owner Details , Manager Details , Management Description (e.g., wilderness), whether there is Public Access , the Protection Mechanism for the land (if applicable), the Protection Term (e.g., duration of a conservation easement), the Easement Holder (if applicable), Date Established , Source Data and Source Date for the parcel’s land ownership/ management information, Notes , Acres of land within the parcel, Conservation Purpose , and easement Holder Type . More information: https://comap.cnhp.colostate.edu/

Layer Name	Source	Date	Description	Why it Matters	Attribute Details
River Protection and Restoration Opportunities					
Nationwide Rivers Inventory	NPS	2023	A list of all the designated and proposed Wild and Scenic Rivers	Colorado has only one current Wild and Scenic River, but many rivers that have a proposed designation.	Click on a mapped NRI river segment to see the name of the River and Reach , Classification , Outstanding Remarkable Values (ORVs) , Mapped Miles , Management Entities , Management Area Name , County , Description , and other information. More information at: https://www.nps.gov/subjects/rivers/nationwide-rivers-inventory.htm
Barriers to Fish Passage	USGS	2012	National Anthropogenic Barriers Database points, including dams and other fish passage barriers	Illustrates where there are instream barriers to fish passage, including dams. Dams can also limit passage of sediment, wood, seeds and other plant materials, and other aquatic organisms. Upstream/downstream dams are an important consideration when planning stream and riverscape restoration projects.	Key attributes include Dam Name , River , Dam Type , Purposes (S = storage, R = recreation, I = irrigation), Dam Height (ft) , Year Completed , County , Dam Owner Name , closest Downstream Town , Owner Type , Core material , Foundation material , Private (yes or no), State Regulatory Agency (DWR in Colorado). More information: https://www.sciencebase.gov/catalog/item/56a7f9dc_e4b0b28f1184dabd For the most current dam information, see the CO DWR Dam Safety database: https://dwr.state.co.us/Tools/DamSafety/Dams
Disappearing Rivers	CSP	2017	Disappearing Rivers dataset, clipped to Colorado and symbolized by degree of valley bottom and flow alteration	Illustrates how human impacts have altered rivers across the West by degree of alteration (from minimal alteration - light blue - to high alteration - dark pink). Understanding the degree of alteration of a stream is helpful in understanding opportunities for both restoring altered streams and protecting those in good condition.	Attributes include HUC12 ID , degree of Human Modification in Valley Bottom (%) adjacent to stream segment, Stream Name, stream segment Length (km) , stream Size Class (1 = "small/headwater", or <6 cfs mean annual flow, 2 = "medium/wadeable" or 6 to 163 cfs, and 3 = "large/boatable" or > 163 cfs), and Combined Valley Bottom and Flow Alteration (%) . More information: https://disappearingwest.org/rivers.html#big_picture
Decreed Instream Flow Stream	DWR	2023	Stream reaches with State-decreed minimum flows	Instream flow water rights ensure a certain amount of water stays in the stream. This	Attributes include the ID/Case Number for the instream flow reach, ISF Type , Miles in the reach, Name of the stream or river, a Comment field, and the

Layer Name	Source	Date	Description	Why it Matters	Attribute Details
and River Reaches				information can be helpful when considering protection and restoration opportunities because minimum stream flows are important for habitat and the overall functions of a stream.	Status of the ISF. More information: https://cwcb.colorado.gov/focus-areas/ecosystem-health/instream-flow-program
Gold Medal Streams and Lakes	CPW	2017	Streams and lakes with high-quality recreational fisheries	Illustrates where high-quality recreational fisheries exist. These areas often have other attributes associated with high-functioning rivers and streams, and can be an important factor when considering additional protection or restoration opportunities.	Attributes include the Name of the Gold Medal stream or lake and a description of the Gold Medal designated area. More information: https://www.arcgis.com/home/item.html?id=f904b5cb80cd4d18ba37b358042b7aa5
Stream Outstanding Waters and Lake Outstanding Waters	CDPHE	2023	Streams and lakes with the highest level of protection from regulated activities under Colorado's surface water antidegradation regulation	Given their high water quality, Outstanding Waters (OW) support important values such as fisheries, high biodiversity, and rare plant species. Areas upstream and downstream of existing OW designations can be an important factor when considering additional protection or restoration opportunities.	Key attributes include a Description of all features and areas associated with the Outstanding Water designation, Length (miles) or Area (acres) , 8-digit HUC ID, and additional information related to reasons for designation. More information on Colorado's water quality antidegradation protections: https://cdphe.colorado.gov/water-quality/clean-water/additional-protections-for-some-colorado-waters-anti-degradation
Environmental Hazard Mine Areas	USFS	2016	Abandoned and inactive mine areas identified by the Colorado Geological Survey and USFS as posing an environmental hazard, to be prioritized for reclamation	Depending on restoration objectives, abandoned mines are important to consider when evaluating potential restoration costs and feasibility, along with implications for downstream/downslope water quality.	Key attributes for watershed planning include Site Name , Nearest Stream , Next Nearest Stream (or waterbody), size in Acres , Nearest Town, County, and degree of Environmental Hazard and Physical Hazard . More information: https://coloradogeologicalsurvey.org/hazards/aml/
Stream Management Planning Boundaries	CWCB	2023	Illustrates the watersheds and rivers in Colorado where stream management plans (or Integrated Water	Stream Management Plans (SMPs) are local, stakeholder driven plans that outline goals and project options for restoration and protection in	Attributes include the Name of the plan, Basin , River , Sponsor(s) , and a Link to the plan. More information: https://www.coloradosmp.org/

Layer Name	Source	Date	Description	Why it Matters	Attribute Details
			Management Plans) have been developed	watersheds across the state. If you are considering a project in an area with a SMP, it can be helpful to review the SMP to understand goals for an area, existing and proposed projects, and how other project concepts could fit in with the current plan.	
Nonpoint Source Pollution (319) Watershed Plans	CDPHE	2022	Existing and recent watershed plans to address nonpoint source pollution such as nutrients from agricultural land and residential areas, oil and other chemicals from urban runoff, and sediment from soil and stream bank erosion	319 Watershed Plans have considered opportunities and outline a plan to address nonpoint source pollution in specific watersheds across the state. If you are considering a project in an area with a 319 Plan, it can be helpful to review the plan to understand goals of an area, what project ideas already exist and how other project concepts could fit in.	Title, Area (acres), Plan Year, Organization leading the plan, Comments, Plan Status, and URL (click link to view plan). More information: https://cdphe.colorado.gov/nonpoint-source-program-documents
Habitat Fragmentation	CNHP	2023	Degree of landscape disturbance and associated habitat fragmentation, from none/minimal to high, based on land use (NLCD), roads, trails, energy development, and natural resource extraction layers	Illustrates how humans have impacted and altered habitat and habitat connectivity. Understanding the degree of fragmentation and disconnection is helpful in understanding opportunities for both restoring areas with habitat fragmentation and protecting those with high connectivity.	Disturbance classes generally equate to degree of habitat fragmentation, and include distance decay functions to approximate how a disturbance like a highway impacts surrounding ecosystems beyond the physical footprint of the disturbance. None = often associated with roadless, trail-less natural areas such as National Forest wilderness areas. Low = includes features like buffers around less frequented dirt roads. Moderate = includes minor roads and buffer areas around major sources of habitat fragmentation (e.g., highways), as well as un-tilled agricultural areas. High = generally associated with extensive impervious surface area (e.g., pavement), busy roads, mines and other natural resource extraction areas, tilled agricultural crop areas, and urban development.

Layer Name	Source	Date	Description	Why it Matters	Attribute Details
Biodiversity In Colorado Watersheds					
Habitat Priorities by HUC12 Watershed	CNHP and others	2023	Summarizes multi-agency habitat priorities commonly used to prioritize large-scale habitat restoration by HUC12 watershed units.	Illustrates important considerations for biodiversity including rare species of animals and birds, plant species and ecosystems (like wetlands) that provide critical habitat benefits. This layer can help project proponents understand the biodiversity and habitat context of potential project sites, and can be helpful in determining if additional restoration or protection is needed to ensure healthy habitat for rare species and ecosystems.	<p>Habitat Priorities Present is a list of all habitat priorities driving the overall habitat priorities score, including:</p> <ul style="list-style-type: none"> • USFWS Critical Habitat areas for listed/candidate species under the Endangered Species Act • CPW Tier 1 Fish Species from the State Wildlife Action Plan (2016) • Bird Habitat Conservation Areas (BHCAs) identified by the Intermountain West Joint Venture (IWJV 2005), including species like the Greater Sandhill Crane. • Important Bird Areas (IBAs) identified by the Audubon Society and other bird conservation partners as critical to state, regional, and international bird conservation (Audubon 2018). • Playa Concentration Areas from the Playa Lakes Joint Venture (2022). • Wetlands of high conservation and biodiversity value (fen, headwater, alpine, and beaver-influenced wetlands). • CNHP Element Occurrences of rare species and natural communities (EOs) birds, vascular plants, non-vascular plants, natural communities, mammals, mollusks, amphibians, reptiles, fish, and insects. <p>Overlapping Habitat Priorities: 5 classes based on natural breaks in the Overlapping Habitat Priorities Score distribution, with very few = score of 0-4, few = 5-7, moderate = 8-10, high = 11-15, and very high = 16-24. Note: a score of “very few” should be qualified with “very few <i>known</i>” habitat priorities.</p> <p>Overlapping Habitat Priorities Score (0-24) = max(Wetland Score, EO Score, Playa Score) + IBA + BHCA + Critical Habitat + CPW Tier 1 Fish, where:</p> <ul style="list-style-type: none"> • Wetland Score = area-weighted score (by HUC12), accounting for degree of rarity of wetland type (e.g., fens received the highest score)

Layer Name	Source	Date	Description	Why it Matters	Attribute Details
					<ul style="list-style-type: none"> • EO Score = area-weighted score (by HUC12), accounting for state and global rarity, along with date and precision of record(s) within a HUC12 (newer, rarer, and more precise records received highest score) • Playa Score = area-weighted score (by HUC12) • IBA = if HUC12 overlaps an IBA, add 1 • BHCA = if HUC12 overlaps a BHCA, add 1 • Critical Habitat = if HUC12 overlaps USFWS Critical Habitat Areas, add 5 • CPW Tier 1 Fish = add number of rare fish species in HUC12
Wetland and Riparian Potential Conservation Areas	CNHP	2023	CNHP Potential Conservation areas (PCA) that include rare, aquatic-dependent species and ecosystems that CNHP has identified for potential conservation and/or management actions	This layer can help project proponents understand where critical biodiversity (plants, animals, and birds) exists near potential project sites, and can be helpful in determining if additional restoration or protection is needed to ensure healthy habitat for rare species and ecosystems.	Key attributes include Site Name , Alias (alternate site name), Biodiversity Significance (B1 = Outstanding Biodiversity Significance, B2 = Very High Biodiversity Significance, B3 = High Biodiversity Significance, B4 = Moderate Biodiversity Significance, and B5 = General Biodiversity Interest), Aquatic Dependent Species (Yes/No; all PCAs in the mapper include at least one wetland, riparian, or aquatic species or natural community), Management Urgency (actions needed in the next 5 years), Protection Urgency (threats or special opportunities in the next 5 years), Maximum Elevation (ft), Minimum Elevation (ft), Sensitive data, and URL (click to view a PDF of the detailed PCA report). More information: https://cnhp.colostate.edu/ourdata/pca-reports/
Tier 1 Fish Species by Watershed	CPW	2015	Derived from HUC10 watersheds designated in the State Wildlife Action Plan as habitat for Tier 1 priority fish species, including a variety of sensitive, threatened, and endangered fish	Illustrates priority habitat areas for T&E and rare species (including the number of species) within Colorado. This layer can help project proponents determine if additional restoration or protection is needed to ensure healthy habitat for rare species and the ecosystems they rely on.	HUC12 watershed Name , ID , and number of Tier 1 fish species potentially present in the watershed. Watersheds are symbolized by number of priority fish species likely occupying each HUC12. More information: https://cpw.state.co.us/aboutus/pages/statewildlifeactionplan.aspx

Layer Name	Source	Date	Description	Why it Matters	Attribute Details
Opportunities to Promote Water Security					
Active Points of Diversion	DWR	2023	Active surface water and groundwater diversion points (associated with water rights)	Illustrates where water is removed from streams, rivers and groundwater through means like ditches, diversions and pumps. This also illustrates where water storage projects such as reservoirs exist, along with instream flow points. This is helpful in understanding opportunities for restoration, particularly above diversion points to help reduce sedimentation. It can also help to show opportunities to improve existing infrastructure.	Key attributes useful in watershed planning include Structure Name , Structure Type (well, reservoir, ditch, augmentation plan, measuring point, spring, minimum flow, etc.), Feature Type (point of diversion, upper/lower terminus for an instream flow reach, etc.), Water Source , whether the structure is Currently in Use , and Associated Permit Number . More information: https://dwr.state.co.us/Tools/Structures
Natural Seeps and Springs	USGS	2017	Points of natural groundwater discharge, from the National Hydrography Dataset	Illustrates where water naturally comes out of the ground. Can be helpful in understanding opportunities to protect existing seeps and springs or restore adjacent habitat and ecosystems.	Popup disabled. More information: https://www.usgs.gov/national-hydrography/national-hydrography-dataset
Waterbodies	USGS, hosted by ESRI	2022	Natural and human-made lakes, reservoirs, ponds, and surrounding areas prone to flooding	Helpful in understanding opportunities to protect and restore ecosystems around lakes and their surrounding stream and wetland systems.	Name of waterbody, along with Area , Mean Depth , Maximum Depth , and Volume for reservoirs. More information: https://www.usgs.gov/national-hydrography/national-hydrography-dataset
Important Areas for Surface Drinking Water (F2F2)	USFS	2022	Forests to Faucets version 2	Illustrates watersheds that are important to restore or protect to ensure secure drinking water supplies. Restoration opportunities here can help improve water quality, reduce sedimentation and help mitigate wildfire impacts.	Important areas for surface drinking water, based on source water areas for downstream population centers. From the Forests to Faucets v2 (F2F2) dataset, symbolized using categories in the associated report (USFS 2022). Included in the attributes table for Habitat Priorities by HUC12 Watershed. More information: https://www.fs.usda.gov/research/publications/wo/gtr_wo99.pdf

Layer Name	Source	Date	Description	Why it Matters	Attribute Details
Alluvial Aquifer Extent and Vulnerability	CDPHE		Approximate extent of unconfined groundwater aquifers on alluvial deposits (formed by streams, rivers, and other flowing water)	Locations where actions on the surface can directly influence groundwater levels and quality. These are important considerations for both restoration and protection opportunities if you are interested in having positive benefits for groundwater recharge.	Aquifer Name, Vulnerability rating from the Colorado Groundwater Vulnerability Atlas (CDPHE), and Area . More information: https://cdphe.maps.arcgis.com/apps/webappviewer/index.html?id=72591d6c7d404e089e2475cebab8e8f2
Challenges to Watershed Resilience					
Wildfire Threat	USFS	2022	Forests to Faucets version 2	This layer can be helpful when considering projects that can reduce the risk and mitigate the impacts and threat of fire in relation to important surface drinking water forests.	Relative wildfire risk to important drinking water watersheds from the Forests to Faucets v2 (F2F2) dataset, symbolized using categories in the associated report (USFS 2022). Included in the attributes table for Habitat Priorities by HUC12 Watershed. More information: https://www.fs.usda.gov/research/publications/wo/gtr_wo99.pdf For more Colorado-specific details, see the CWCB's Wildfire Ready Watersheds map: https://experience.arcgis.com/experience/9b1cdd462b78465abe68fbb56bda3bdb/
Water Yield Threat	USFS	2022	Forests to Faucets version 2	This layer can be helpful when understanding potential projects that look to protect or restore areas upstream from surface water intakes that look to reduce the threat of reduced future water yield.	Relative likelihood of water yield decrease in important surface drinking water watersheds for 2040 climate change projections under the high emissions scenario. From the Forests to Faucets v2 (F2F2) dataset, symbolized using categories in the associated report (USFS 2022). Included in attributes for Habitat Priorities by HUC12 Watershed. More information: https://www.fs.usda.gov/research/publications/wo/gtr_wo99.pdf
Land Use Change	USFS	2022	Forests to Faucets version 2	This layer can be helpful when understanding potential projects that look to protect or restore areas that are within important	Relative development risk to important drinking water Watersheds for 2040 climate change projections under the high emissions scenario. From the Forests to Faucets v2 (F2F2) dataset, symbolized using

Layer Name	Source	Date	Description	Why it Matters	Attribute Details
				<p>surface drinking water forests for conservation and management in light of future land use change.</p>	<p>categories in the associated report (USFS 2022). Included in the attributes table for Habitat Priorities by HUC12 Watershed. More information: https://www.fs.usda.gov/research/publications/wo/gtr_wo99.pdf</p>
<p>Insect and Disease Threat (F2F2)</p>	<p>USFS</p>	<p>2022</p>	<p>Forests to Faucets v2</p>	<p>This layer can be helpful when considering projects that can reduce the risk and mitigate the impacts and threat of insect and disease in relation to important surface drinking water areas.</p>	<p>Relative insect and disease risk to important drinking water watersheds from the Forests to Faucets v2 (F2F2) dataset, symbolized using categories in the associated report (USFS 2022). Included in the attributes table for Habitat Priorities by HUC12 Watershed. More information: https://www.fs.usda.gov/research/publications/wo/gtr_wo99.pdf</p>