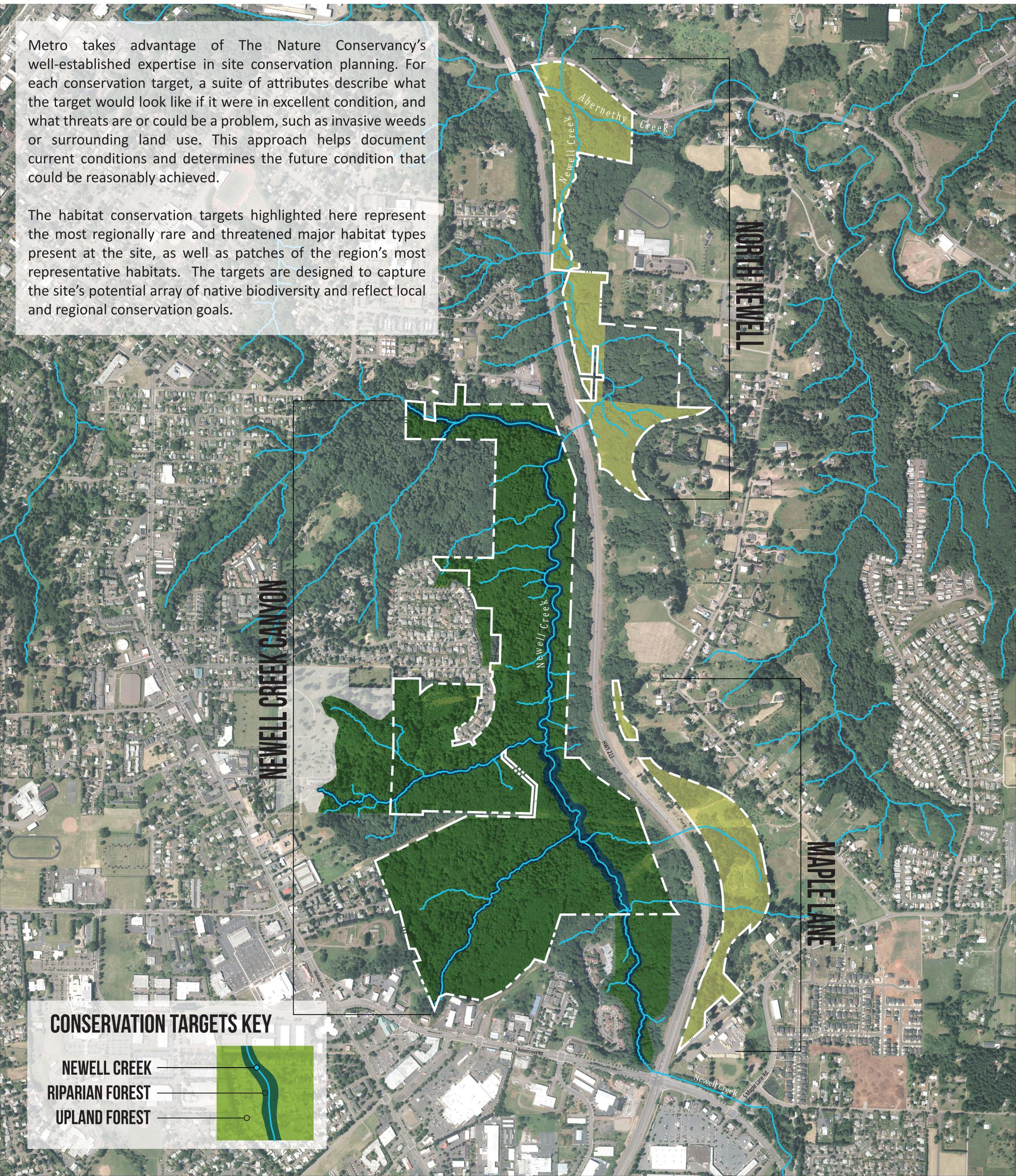


NEWELL CREEK CANYON CONSERVATION

Metro takes advantage of The Nature Conservancy's well-established expertise in site conservation planning. For each conservation target, a suite of attributes describe what the target would look like if it were in excellent condition, and what threats are or could be a problem, such as invasive weeds or surrounding land use. This approach helps document current conditions and determines the future condition that could be reasonably achieved.

The habitat conservation targets highlighted here represent the most regionally rare and threatened major habitat types present at the site, as well as patches of the region's most representative habitats. The targets are designed to capture the site's potential array of native biodiversity and reflect local and regional conservation goals.



CONSERVATION TARGETS KEY

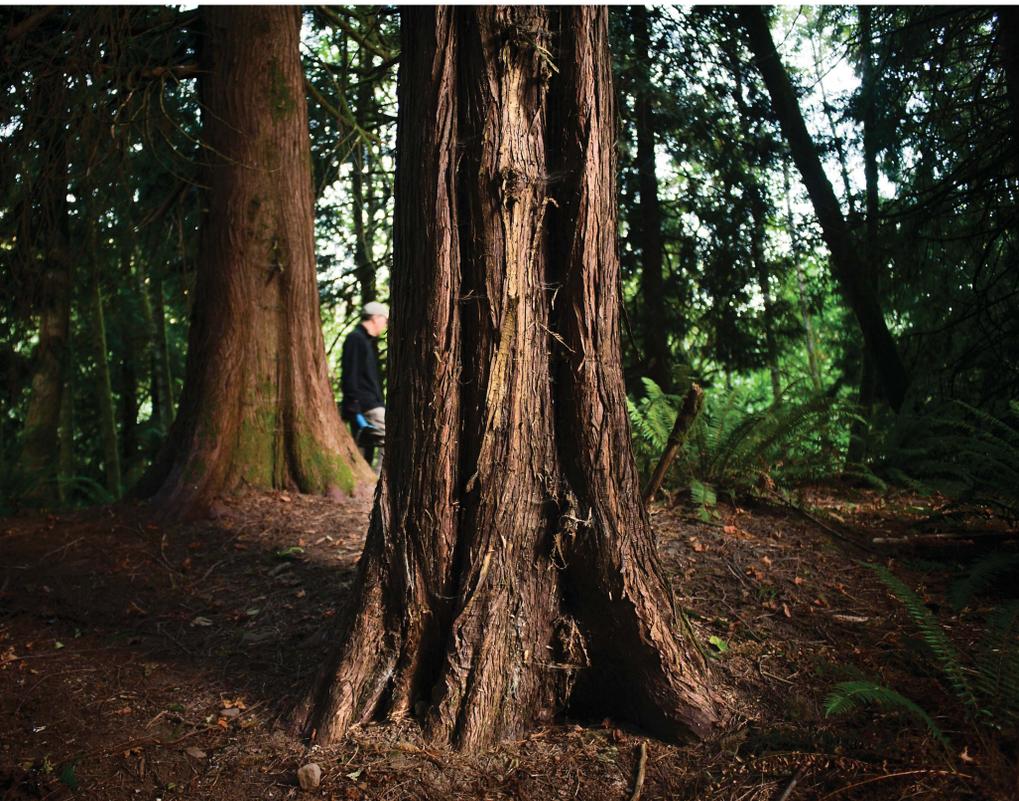
- NEWELL CREEK
- RIPIARIAN FOREST
- UPLAND FOREST

NEWELL CREEK CANYON HABITAT

- Newell Creek is a tributary to Abernethy Creek which connects to the Willamette River and provides important native fish habitat.
- The creek is especially important for water quality sensitive species such as brook and pacific lamprey, cutthroat trout, Coho salmon and steelhead.
- Upstream development and agriculture have degraded water quality and the stream channel. Restoring riparian and floodplain forest will heal the channel and help native fish.



NEWELL CREEK CONSERVATION TARGET



- Upland forest is composed primarily of native trees and shrubs such as Douglas fir, big-leaf maple, Oregon grape, salal and sword fern.
- Especially important to migrating and nesting songbirds, woodpeckers, mammals such as Douglas squirrel and deer, and seasonal habitat for salamanders, frogs and turtles.
- Urbanization has fragmented and reduced the amount of this habitat. Patches the size of Newell Canyon are increasingly uncommon.

UPLAND FOREST CONSERVATION TARGET

- A mix of native shrubs and deciduous trees such as Oregon ash, cottonwood, red-osier dogwood, red elderberry as well as sedges, rushes and ferns. Adapted to seasonal flooding.
- Rich with insects, seeds and fruit. Critical for many species including red-legged frogs, salamanders, herons, songbirds, beaver, voles, weasels, native turtles and pollinators.
- Protects stream water quality and helps keep nearby properties from flooding; riparian corridors are key conduits for wildlife movement.

RIPARIAN FOREST



NEWELL CREEK CANYON GEOLOGY

GEOLOGY (jē-ōl'ə-jē)

The scientific study of the origin, history, and structure of the earth.

SCARP (skärp)

a steep slope, especially one formed by erosion or faulting

LANDSLIDE (länd'slīd')

the falling or sliding of a mass of soil or rock on or from a steep slope.

BORING LAVAS

The Boring Lavas are basaltic lavas that overlie the Sandy River Mudstone and Troutdale Formation. These Lavas are Pliocene-Pleistocene age basalts that are light gray in color and vary in thickness from 8 to over 150 meters. They occur as blocky intracanyon flows, volcanic cones, and shield volcanoes, which result in deposits ranging from tuff breccias and agglomerates to lavas (Schlicker and Finlayson, 1979). Where the flows are thin they are sometimes weathered to a red clay with scattered residual boulders (Schlicker and Finlayson, 1979). Weathering of the Boring Lavas produces a 0.3 to 3 meter thick impermeable clay-rich soil over the bedrock which saturates quickly and forms ponds or heavy runoff through rivulets.

TROUTDALE FORMATION (Upper and Lower)

Troutdale Formation is a fluvial deposit that is currently divided into two distinct lithologies: the upper and lower members. The lower member consists of paleo-Columbia River gravels and sands composed mainly of basaltic pebbles and cobbles and minor amounts of intrusive granite and metamorphic rock types of which quartzite is usually noted. These gravels will stand vertically for several tens of meters and are highly permeable. In addition to some gravels, the upper member largely consists of finer grained sands, silts, and clays that are generally locally derived volcanic debris, altered to a clay, agglomerates and highly weathered basaltic gravels. The upper member, like the Sandy River Mudstone, also contains impermeable clay layers that are moisture sensitive.

SANDY RIVER MUDSTONE

Sandy River Mudstone consists of mudstone, siltstone, and fine to medium grained sand with some gravel lenses ranging in thickness of individual beds from 0.6 to 4.5 meters. This formation is currently thought to be the same as the lower Troutdale Formation and represents the fine-grained, overbank facies of the ancestral Columbia River. The fine grained facies tends to be an impermeable barrier to groundwater causing local high water tables and springs if they intercept the surface. Moisture-sensitive clays, present in certain parts of the Sandy River Mudstone, expand with increasing moisture, decreasing its shear strength, and contract when drying (Schlicker and Finlayson, 1979).

COLUMBIA RIVER BASALT

The Columbia River basalt is a series of lava flows or flood basalts ranging in thickness from 5 to 45 meters, with a total thickness of about 300 meters. Thin, baked soil zones often separate the individual flows. Prior to the deposition of younger formations on top of the Columbia River basalt, the Columbia River Basalt Group was gently folded and faulted resulting in topographic highs and lows. In some of these topographic lows, such as Newell Creek Canyon, thick sedimentary units have been deposited on top of the Columbia River basalt, filling in the depression.

SAG POND (sag pänd)

body of water collected in the lowest parts of a depression formed near the head scarp of rotational landslides

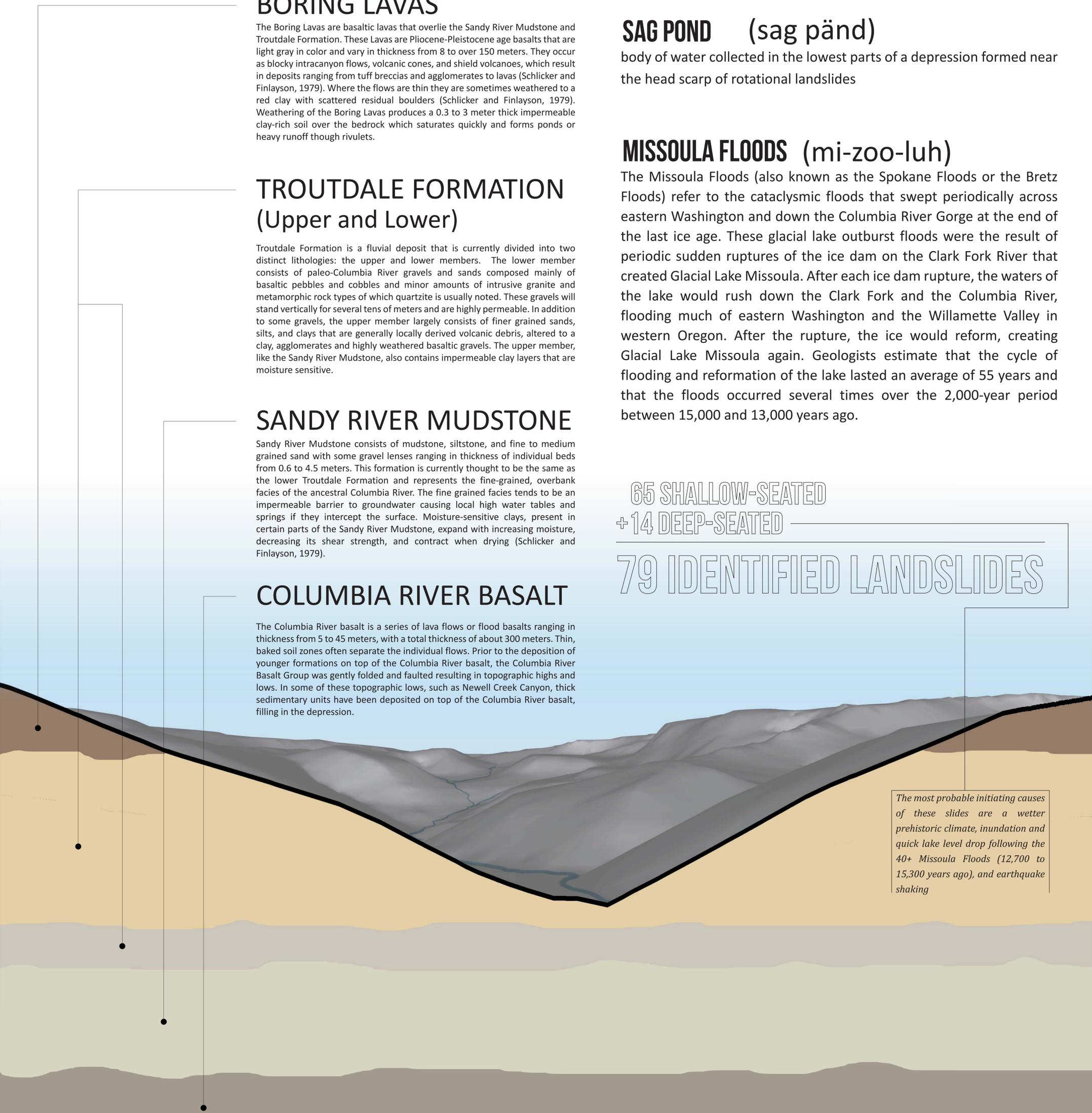
MISSOULA FLOODS (mi-zoo-luh)

The Missoula Floods (also known as the Spokane Floods or the Bretz Floods) refer to the cataclysmic floods that swept periodically across eastern Washington and down the Columbia River Gorge at the end of the last ice age. These glacial lake outburst floods were the result of periodic sudden ruptures of the ice dam on the Clark Fork River that created Glacial Lake Missoula. After each ice dam rupture, the waters of the lake would rush down the Clark Fork and the Columbia River, flooding much of eastern Washington and the Willamette Valley in western Oregon. After the rupture, the ice would reform, creating Glacial Lake Missoula again. Geologists estimate that the cycle of flooding and reformation of the lake lasted an average of 55 years and that the floods occurred several times over the 2,000-year period between 15,000 and 13,000 years ago.

65 SHALLOW-SEATED
+14 DEEP-SEATED

79 IDENTIFIED LANDSLIDES

The most probable initiating causes of these slides are a wetter prehistoric climate, inundation and quick lake level drop following the 40+ Missoula Floods (12,700 to 15,300 years ago), and earthquake shaking



NEWELL CREEK CANYON MANAGEMENT



VOLUNTEER AND COMMUNITY INVOLVEMENT

Metro engages volunteers to build relationships, develop conservation leaders and improve properties and programs across our region.

At Metro we value volunteers because:

- Our volunteers partner with us in creating a healthy and sustainable region;
- Our volunteers bring diverse backgrounds, experiences, skills and perspectives not possible from our staff alone;
- Our volunteers' passion, sense of place and ownership bring exceptional care and diligence to our work; and
- Our volunteers represent of our work, our mission and our agency among their families, neighbors and communities.

At Newell Canyon Volunteers help Metro to manage weeds, plant trees and remove trash from the site. School children, teens and adults partner with Metro to protect Natural Resources and make Newell Canyon a great place to visit.

ACCESS MANAGEMENT | TRAILS

Informal trails exist on many Metro sites that have not yet been planned and developed for formal access. Informal trails that develop along historical or existing roads are often fine and can even provide a benefit: extra eyes and ears to identify problems and discourage unwanted activity.

The trails through Newell Canyon were informally developed by visitors trying to find ways to travel through the natural area. In some cases these trails follow proper grades and avoid sensitive areas. In other cases they follow steep grades, are on or near fragile soil types, near unique habitats and rare plants, or have developed in areas that are prone to muddiness or "braiding" (widening) or are too close to creeks.

Metro staff works to manage both informal and formal trails to minimize impacts to natural resources and make visiting natural areas as safe and enjoyable as possible.



ACCESS MANAGEMENT | ILLEGAL CAMPING

Restoring Newell Canyon requires a close look at how humans are using the site. Like many urban natural areas, Newell Canyon provides an outlet valve for the community's transient population – and camping, litter and habitat impacts that come along with that activity. Metro actively works with law enforcement and social service agencies to transition illegal campers out of the Canyon and to restore any impacts that camps have had on natural resources.



ACCESS MANAGEMENT | WEED MANAGEMENT

Restoring Newell Canyon requires a close look at how humans are using the site. Like many urban natural areas, Newell Canyon provides an outlet valve for the community's transient population – and camping, litter and habitat impacts that come along with that activity. Metro actively works with law enforcement and social service agencies to transition illegal campers out of the Canyon and to restore any impacts that camps have had on natural resources.





PROGRAMS FOR STUDENTS

- Newell Canyon could be a wonderful site for nature immersion field trips for students and teachers from area schools, from second grade through high school.
- The site could be a “Living Laboratory” for students and professors at Clackamas Community College and other higher education institutions to do research projects of varying length and complexity.

PROGRAMS FOR FAMILIES AND THE PUBLIC

One-time or series of programs could include topics such as:

- Bird ID and Bird Language
- Tracking
- Fish stories
- Geology

PROGRAMS FOR GROUPS

Have a group of friends, a book or garden club, scout troop or faith community that would like to see Newell Canyon together?

Once construction has been completed for public access features, Metro will offer a line-up of programs that can be tailored to your group’s particular interests and availability.

