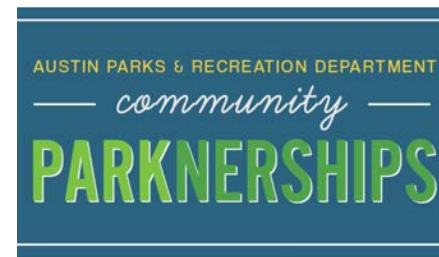




Walnut Creek Metropolitan Park Unified Stewardship Plan

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Introduction from Austin Parks and Recreation

The City of Austin Parks and Recreation Department (PAR) is proud and grateful to have enthusiastic park supporters in Austin. Volunteerism and advocacy make Walnut Creek Metropolitan Park a beautiful, vibrant community space, rich in ways to enjoy/experience and interact with nature. We are excited to see what all of us can accomplish together when volunteer stewardship is easier and more accessible to everyone.

Thank you for supporting Walnut Creek Metropolitan Park.

People have been caring for the land that makes up today's Walnut Creek Metropolitan Park for millennia. PAR honors this historic stewardship, and in creating this plan, we hope to empower people to take up this vital work.

The land known as Texas is the traditional and ancestral homelands of the Tonkawa, the Apache, the Ysleta del Sur Pueblo, the Lipan Apache Tribe, the Texas Band of Yaqui Indians, the Coahuiltecan, and other tribes not explicitly stated. American indigenous peoples from diverse tribal nations continue to live and work in Texas today. Regardless of their tribal affiliations, many keep their ancestors' memories, traditions, cultures, and languages alive.

Since its establishment in 1928, PAR has upheld its role as a steward of COA's public lands. PAR has remained committed to both preserving and enhancing our park system, thereby ensuring that residents and visitors alike can enjoy well-maintained green spaces and recreational amenities.

With jurisdiction spanning more than 20,000 acres, encompassing over 250 miles of trails and nearly 360 parks, including the renowned Walnut Creek Metropolitan Park, PAR holds a significant responsibility in managing Austin's natural resources. Collaborating closely with the Watershed Protection Department (WPD), PAR actively works to safeguard the ecological health of our creeks and waterways. Through joint initiatives, PAR and WPD underscore their shared commitment to environmental stewardship, promoting a healthier ecosystem for all. Emphasizing the power of collaboration, PAR values its partnerships with non-profit organizations and community groups. Together, these entities embark on innovative projects aimed at enhancing public spaces, whether through the development of new parks, trails, or greenways or by coordinating environmental stewardship projects. These endeavors not only beautify neighborhoods but also foster a sense of unity and belonging among community members.

The Unified Stewardship Plan is a collective effort to foster a mutually beneficial relationship with PAR and community members and stakeholders to create a holistic practice to manage and preserve this natural area through knowledge-sharing and equitable distribution of responsibilities and resources for present and future generations.

Recognizing the collective efforts of community partners, engaged residents, and city departments, we are unwavering in our commitment to preserve the longevity and vitality of Austin's park system. Together, we have the capacity to safeguard our natural heritage and cultivate inclusive outdoor spaces that enrich the lives of all who call Austin home. With a shared vision and collaborative spirit, we can continue to create a brighter, greener future for generations to come.

About the Plan

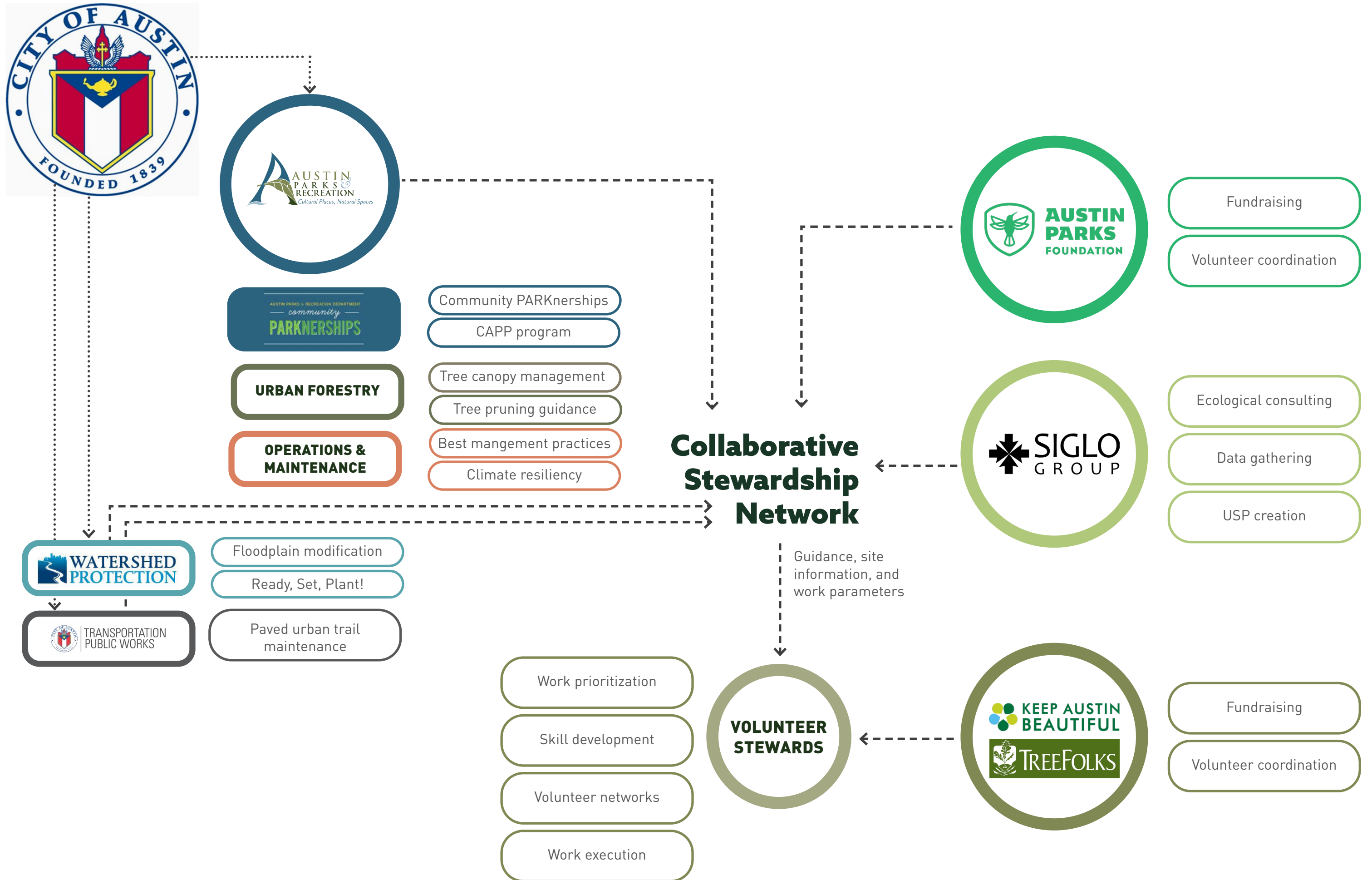
The Unified Stewardship Plan aims to increase multi-department collaboration at park sites with active community groups and to strengthen community autonomy and trust at sites with long-standing stewardship groups.



PROJECT GOALS

- 1** Create a Unified Stewardship Plan aligned with the stakeholders who care for the park today
- 2** Inventory past and current conditions of the park, ecosystems, and issues within natural areas
- 3** Provide volunteers with clear projects to steward landscape
- 4** Produce detailed instructions for landscape management tasks that are in line with best practices and City of Austin standards

4 Walnut Creek Unified Stewardship Plan



Regional Context

Walnut Creek Metropolitan Park lies in the upper reaches of Walnut Creek, one of the longest creeks within Austin city limits. The Walnut Creek watershed encompasses nearly 28,000 acres primarily in Austin, catching water as far north as the Williamson County line and draining southeast towards the Colorado River. Walnut Creek is joined by Wells Branch and Tar Branch in the park itself and Little Walnut Creek further downstream. At the southeastern edge of the park, the creek drains water from 10,800 acres.

The park is the largest in North Austin at 290 acres, anchoring a long chain of parks along Walnut Creek reaching down to the Colorado River. It is heavily used by hikers, mountain bikers, dog owners, and other Austinites seeking a natural refuge in the city.



0 1 mi.

Site Boundary

Source: Siglo Group, CoA, 11/28/23
Stakeholder Meeting

Park Area

Gracywoods
Neighborhood
Park

**PARK
AREA**
290 acres

GILLELAND CREEK

North Walnut Creek Trail

Transmission Line Easement

Walnut Creek Park Rd

TAR BRANCH

WELLS BRANCH

Parking Area
& Trailhead

Swimming
Pool

Detention Dam

WALNUT CREEK

0 400'

Site Boundary

Source: Siglo Group, CoA

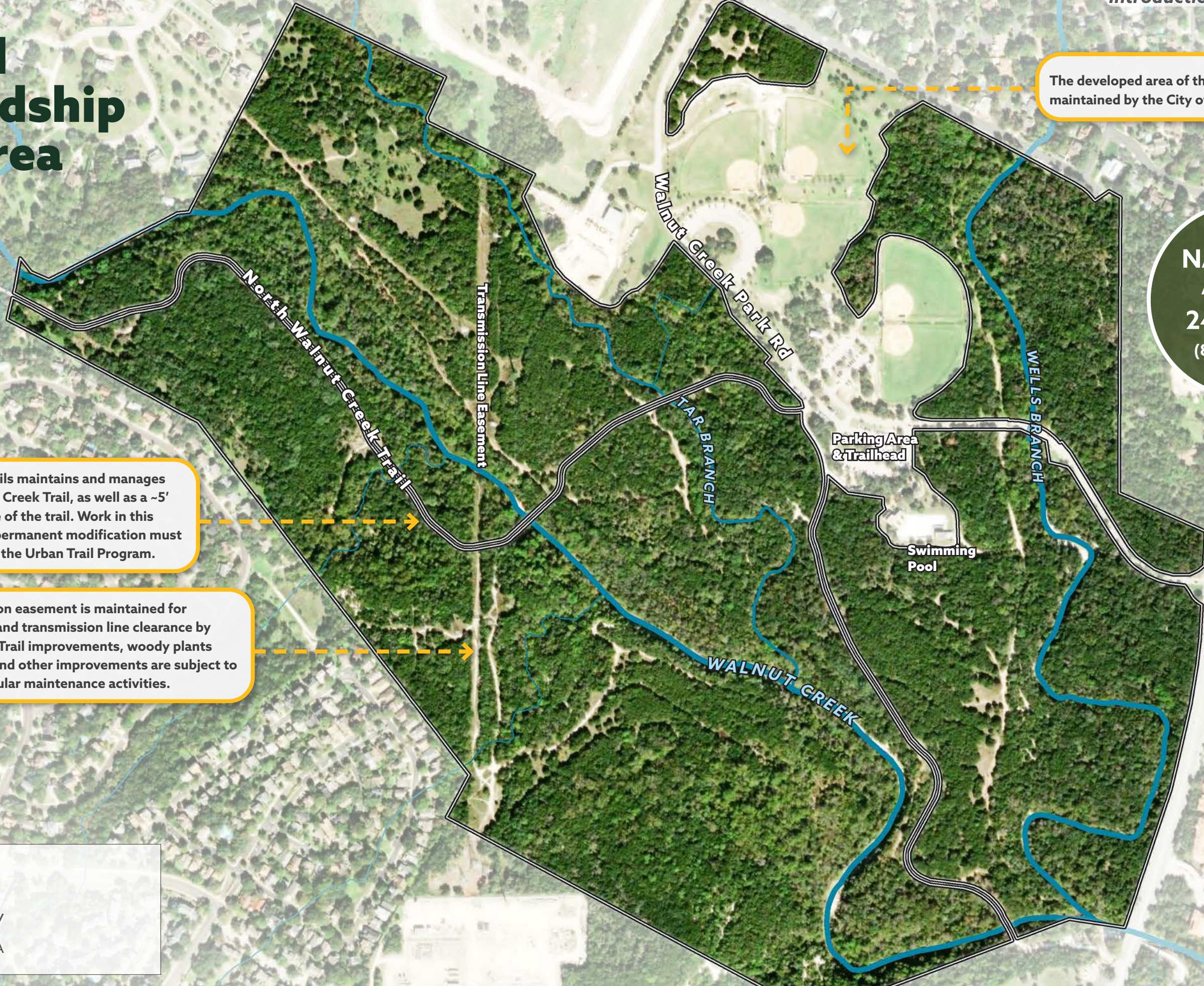
Unified Stewardship Plan Area

The developed area of the park is maintained by the City of Austin (COA).

NATURAL AREAS
247 acres
(85% of site)

City of Austin Urban Trails maintains and manages the paved North Walnut Creek Trail, as well as a ~5' mow strip on either side of the trail. Work in this area that constitutes a permanent modification must be coordinated through the Urban Trail Program.

The transmission easement is maintained for vehicle access and transmission line clearance by Austin Energy. Trail improvements, woody plants maintenance, and other improvements are subject to removal by regular maintenance activities.



0 400'

USP Boundary

Source: Siglo Group, CoA

Guidelines to Volunteering

Volunteer Activities

Generally, volunteer activities in adopted parks are supported through the Adopt-A-Park program, a partnership between PARD and Austin Parks Foundation (APF). Adopt-A-Park members commit to a minimum of one park improvement or cleanup activity per year. APF provides tools, supplies, guidance, and suggestions on planning successful workdays and can help recruit new volunteers through social media.

In parks with creeks, volunteer groups may also be working through the Adopt-A-Creek program, a partnership between the COA Watershed Protection Department (WPD) and Keep Austin Beautiful (KAB). Adopt-A-Creek members commit to a minimum of two activities per year. KAB supplies cleanup and restoration materials, can provide guidance and suggestions on planning successful workdays, and can help recruit new volunteers through social media and their event calendar.

COA encourages volunteers who are interested in planting trees on parkland to take advantage of a program such as Ready, Set, Plant!, a partnership between TreeFolks and WPD, which have established processes for reviewing, approving, and supporting tree planting. KAB's Adopt-A-Creek Program can also provide such support to creek adopters.

Generally, KAB and APF communicate when new groups are involved in a particular creek or park when the two programs overlap. When volunteers wish to do projects on parkland, they will work with these partner organizations to submit a volunteer request form to PARD. This form is routed for review by the Community PARKnerships team. Volunteers can request a single review and approval for recurring projects. Organizers are encouraged to use GivePulse to manage volunteer events and groups, as the platform facilitates tracking and communicating with volunteers and helps ensure that volunteers are covered for liability while working on parkland. APF can assist with page setup to ensure updated liability forms are available to volunteers who register.

These guidelines to volunteering are established by PARD to guide community members and organizations in their work, clarify the scope of allowable work, and define processes for working outside of the Unified Stewardship Plan.

TRASH CLEANUPS

Trash is often the first issue community members notice with our waterways. KAB and APF can provide trash bags, pickers, gloves, and other materials for cleanup days and arrange for bagged trash to be picked up by Austin Resource Recovery. Volunteers must plan cleanup days in advance through APF or KAB so that COA can review and approve the project request and pick up trash in a timely manner.

RESTORATION

Volunteers are encouraged to consider activities that will help to restore natural areas. Work includes invasive vegetation removal (discussed below), strategic planting and seeding of native species, and long-term maintenance of restoration areas. Volunteer efforts should be coordinated through APF or KAB staff who can provide necessary guidance, tools, and other resources through their respective Adopt-A-Park and Adopt-A-Creek programs. WPD supports restoration activities near our city's waterways through the Grow Zone program. See WPD's Creekside Restoration Guide (austintexas.gov/restorationguide) for additional resources, including their guiding principles of restoration.

INVASIVE PLANT REMOVAL

Volunteers can remove small invasive trees in non-riparian areas such as upland woodlands. Volunteers are required to participate in training through WPD or partner organizations like KAB and APF. Generally, volunteers can remove invasive plants with a weed wrench. Invasive trees should not be cut to the ground as they will re-sprout from the cut stumps. Volunteers should remove no more than 30 % of tree canopy. Replanting or seeding an area with native plants following invasive removal is highly recommended. There should also be a replanting plan in place for the cleared area. Slash, or any debris from invasive removal, must be dragged 30' from the interior of the trail and broken down into piles no higher than 3' tall with as much contact with the soil as possible. Ligustrum girdling must be at least 100' away from any amenity. APF and KAB can lend volunteers weed wrenches of varying sizes for approved small invasive tree removal projects. Volunteers can apply for an APF grant to hire Texas Conservation Corps (TxCC) crews for large-scale invasive removal projects once they have an approved CAPP form and scope of work from TxCC.

TREE CARE/MAINTENANCE

Volunteers play an integral part in caring for and monitoring our urban forest. All non-invasive tree work (except tree mapping) must be approved by submitting a CAPP proposal through PARD Urban Forestry or, in some cases, WPD.

WILDFIRE RISK MITIGATION

Community members play an important role in wildfire risk mitigation. everyone should take care to follow the right protocols. All residents are encouraged to focus on home hardening first, as a burning structure fire will continue to produce dangerous embers long after a wildfire front has passed. The degree to which vegetation density is managed will depend on the proximity to a structure. Often an intermediate backyard exists even for properties that are adjacent to park property. Excessive pruning and canopy reduction actually increases the likelihood of wildfire and fire-spread. A PARD-sponsored wildfire risk reduction plan is required for any fuels work. Vigilante wildfire fuels work is not only counterproductive in many cases but is also trespassing and a breach of the Federal Endangered Species Act. The Austin Fire Department (AFD) Wildfire Division has a website with information on wildfires in the Austin area: <https://wildfire-austin.hub.arcgis.com/>.

WHO TO CONTACT FOR CONCERNS OUTSIDE SCOPE OF THIS PLAN:

- **Call 311 for concerns associated with**
 - **Americans with Disabilities Act (ADA) and other Accessibility Concerns**
 - **Encampments**
 - **Maintenance Requests**
 - **Safety Concerns**
- **Always call 911 for emergencies**

Processes for Stewardship & Community Activated Park Projects

The Unified Stewardship Plan aims to be a comprehensive guide to stewardship needs and guiding practices in priority areas of Walnut Creek Metropolitan Park. To propose a project that falls outside of the identified areas or beyond the scope of the volunteer work listed in the plan, community members will need to submit a Community Activated Park Project (CAPP) proposal.

Any tree work on non-invasive trees or establishing a wildflower meadow requires a CAPP form, located here:

- In English: <https://pardpartnerships.wufoo.com/forms/community-activated-park-project-program-capp>

- En Español: <https://pardpartnerships.wufoo.com/forms/proyectos-de-parques-activados-por-la-comunidad/>

PARD will facilitate an interdepartmental review to ensure that the project is feasible and has community support. If approved, volunteers can apply for funding through APF, Urban Forestry Grant, or other sources.

STEWARDSHIP OPPORTUNITIES

- Bioblitz / data collection
- Trash clean-up
- Mulching
- Invasive removal
- Restoration work: hand pulling, girdling, invasive seed removal, seeding native plants
- Trail maintenance and erosion control

PROJECTS REQUIRING A CAPP PROPOSAL

- Non-invasive tree pruning
- Wildflower meadows
- New amenities
- Signage

WORK OUTSIDE THE SCOPE OF VOLUNTEERS

- Requires power equipment
- Requires professional services
- Requires permitting
- Non-standard park amenity
- Would result in change of use of the park

Safety Practices

Volunteer will

- i. comply with the Park Rules,
- ii. comply with all other applicable laws and governmental regulations, rules, and orders now in effect or that may be adopted relating to the Park, and
- iii. secure, or cause to be secured, all applicable permits and licenses required for activities by Partner, Partner's contractors, and Partner's vendors.

GENERAL SAFETY PRACTICES

Dress appropriately. Volunteers should wear sturdy closed-toed shoes, long pants, long-sleeved shirts, and a hat. Eye protection and gloves should be provided by the volunteer coordinator in the event that volunteers do not provide their own. This provides some protection from minor injury, sun exposure, or poison ivy contact.

Weather conditions should be considered and communicated to volunteers before initiating volunteer work. Water and sunscreen should be provided, and volunteers should be encouraged to work at a sustainable pace and take breaks as needed. Volunteer leaders should be familiar with the symptoms of heat-related conditions such as heat exhaustion or heat stroke and dehydration.

Alertness and situational awareness is essential at all times. Be aware of other volunteers as well as dogs, cars, poison ivy or other harmful plants, fire ants, and barbed wire or broken glass.

Be aware of the environment. Walnut Creek Metropolitan Park has uneven terrain, marshy areas, loose rocks, steep cliffs, and wet stone slabs. Be aware of where you step and walk with care to avoid falls.

Proper tool handling must be demonstrated to volunteers at the start of the work session. All tools have the potential to be dangerous if mishandled.

Watch children. Children should dress appropriately, listen carefully to the safety instructions, and stay next to their guardian at all times. Do not allow children to become unattended.

If volunteers come across hypodermic needles or other dangerous debris, call 311 to report the area and debris. Park Rangers or PARD maintenance will dispose of it safely.

If volunteers come across encampments or items thought to belong to someone else, volunteers will be instructed to leave items as they are and adjust work away from the encampment. If volunteers feel unsafe, call 911.



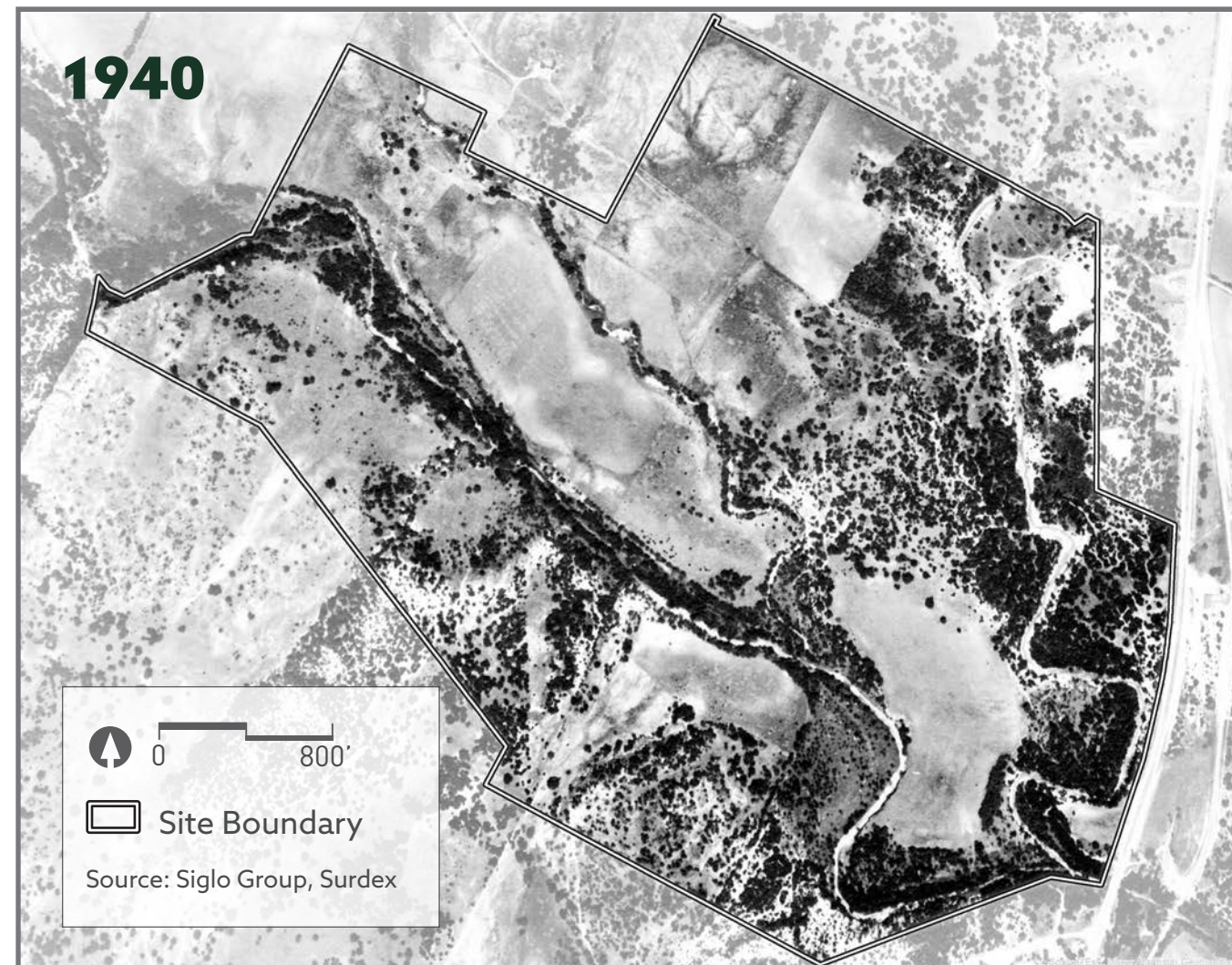


PART 2
SITE ECOLOGY

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Historic Aerials

By 1940, over a century of grazing and agriculture has created a mosaic of maintained hayfields (areas of clear delineation with no trees), pasture with scattered trees, and concentrated canopy cover near Walnut Creek, Wells Branch, and Tar Branch. The visible trees here correspond to the areas of most mature canopy cover today. The powerline easement is present.



The upland canopy cover in the east of the site has filled in and densified. A large dam has been installed on the upper reach of Wells Branch, much of it still present and overgrown today at the BMX trails. Several smaller dams, present today, have been installed downstream. The pastures and hayfields are still maintained, and there is apparent erosion in the steeper hillsides in the south of the site.



In the previous 28 years, suburban development has surrounded the site which has been converted into a park with baseball fields, a pool, road, and supporting infrastructure still present today. Canopy cover has expanded dramatically, filling in all but portions of the hayfields.

The city has further developed around the park, and woodland now covers all but small patches of remnant hayfield, the powerline easement, and the modern infrastructure. The riparian canopy is well-developed and the eroded hillsides in the south are now mostly wooded. The outlines of the modern trail system are visible in the clearings between trees.



Soils

0 400'

2' Contours

Creek centerline

AsB, AsC2: Austin silty clay

AtC2, AtD2: Austin-Wainwright complex

BkC: Whitewright clay loam

BtD: Brackett-Rock outcrop complex

EdC: Eddy gravelly loam

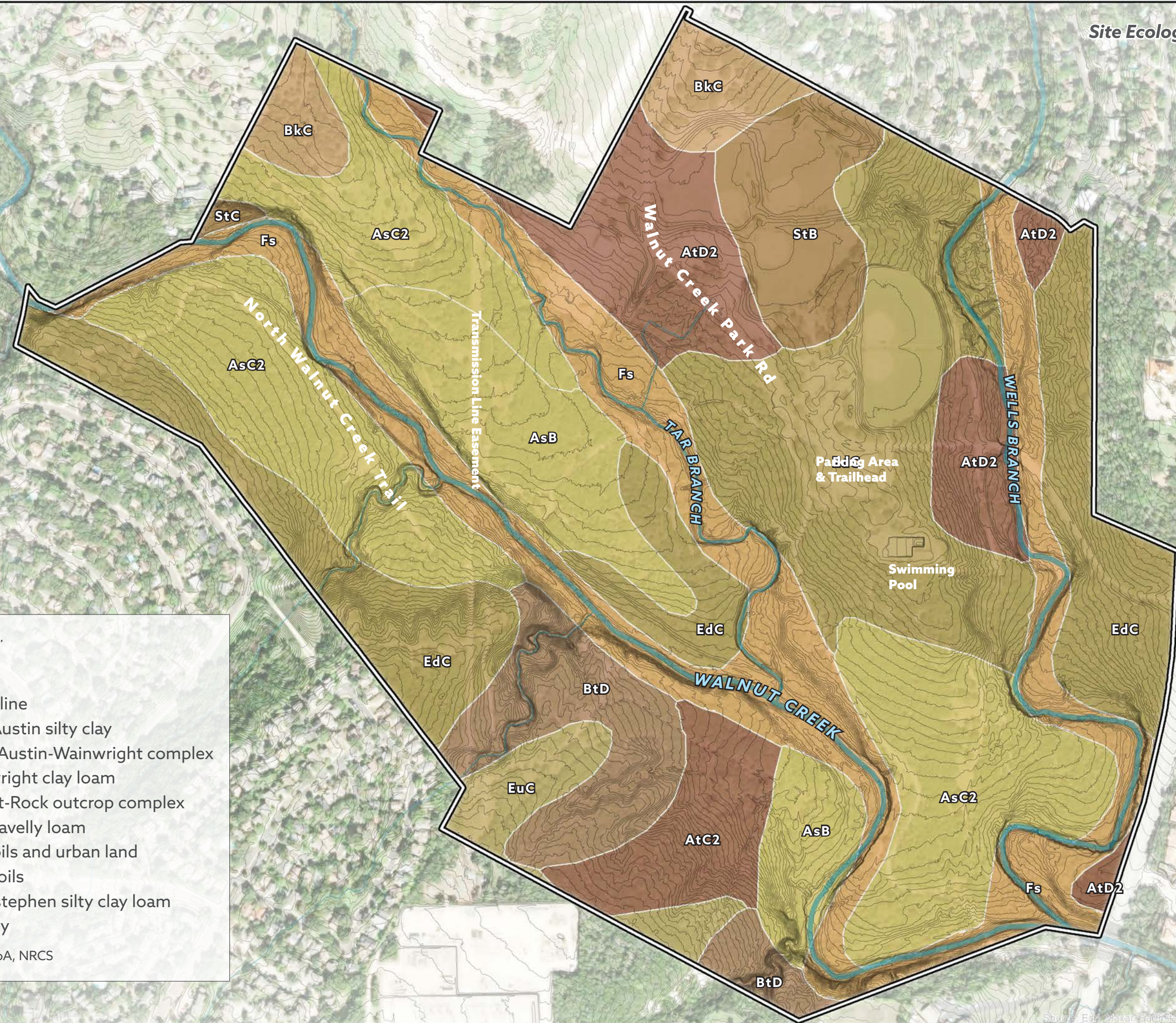
EuC: Eddy soils and urban land

Fs: Oakalla soils

StB, StC: Castephen silty clay loam

Site Boundary

Source: Siglo Group, CoA, NRCS



Soils

The soils on the site vary significantly in texture and slope. The Austin series is the most common, covering 28% of the site. These have low slopes and are deep, rich, and tend to favor tallgrass prairies. They correspond directly to the historic hayfields and today are covered in a generally young and dense woodland of juniper, mesquite, and cedar elm.

The next most common soil series, covering 18% of the site, is the Oakalla series. This is a deep, well-draining, loamy bottomland soil occupying the site's floodplains. This soil today supports a dense hardwood woodland, and historically would have supported an unbroken gallery forest along the creek, with significant areas of tall, deep-rooted grass on the flatter, upper elevations of the floodplain.

29% of the site includes the Austin-Whitewright, Whitewright, Eddy, and Castephen soils, which are generally shallow and calcareous with a low slope. These soils vary between shallow and deep and correspond to the areas of the site that were once savannas and used as pasture. Today they are dense woodlands of varied composition.

The final soil is the Brackett-Rock outcrop complex, a steep soil that here has seen significant erosion and is generally covered with dense juniper woodland.

% AREA	ACRES	SOIL TYPE	NAME	TYP. SLOPES
8%	23.4	AsB	Austin silty clay	1 - 3%
20%	56.7	AsC2	Austin silty clay	2 - 5%
3%	10.1	AtC2	Austin-Whitewright complex	3 - 5%
8%	23.2	AtD2	Austin-Whitewright complex	5 - 8%
3%	9.39	BkC	Whitewright clay loam	1 - 5%
6%	17.2	BID	Brackett-Rock outcrop complex	1 - 12%
8%	23.6	EdC	Eddy gravelly loam	3 - 6%
2%	6.60	EuC	Eddy soils and urban land	0 - 6%
18%	51.9	Fs	Oakalla soils	0 - 1%
4%	12.1	StB	Castephen silty clay loam	1 - 3%
0%	0.626	StC	Castephen silty clay loam	3 - 5%

Topography

The majority of the site is gently sloped towards the three waterways that cross the site. Elevation of the site ranges from 716' at the northern entrance to the site on Walnut Creek Park Rd at Old Cedar Ln to 600' as Walnut creek exits the study area. The slopes generally increase in proximity to the creeks, with the steepest slopes defining the deeply-incised streambeds. Creekside slopes are near vertical in many locations with sheer or slightly overhung cliff above the creek in many locations. More often, creekside slopes are steep with eroded banks. In some cases, such as the lower reaches of Tar Branch and much of Walnut Creek, a lower terrace is defined between two areas of steep slopes, being above the main channel but within the floodplain.

The region south of Walnut Creek has multiple deep canyons formed by tributaries to Walnut Creek, as well as a region of steep rock outcrops associated with the Brackett-Rock outcrop soil type.

The developed areas of the site have been manipulated, especially the sports fields which are nearly level. In a few areas, some modified drainage swales have been created to manage the additional runoff created by the impervious cover and sports fields.

Topography

The steepest slopes define the deeply-incised streambeds

The developed areas of the site have been manipulated, especially the sports fields which are nearly level

The region south of Walnut Creek has multiple deep canyons formed by tributaries to Walnut Creek

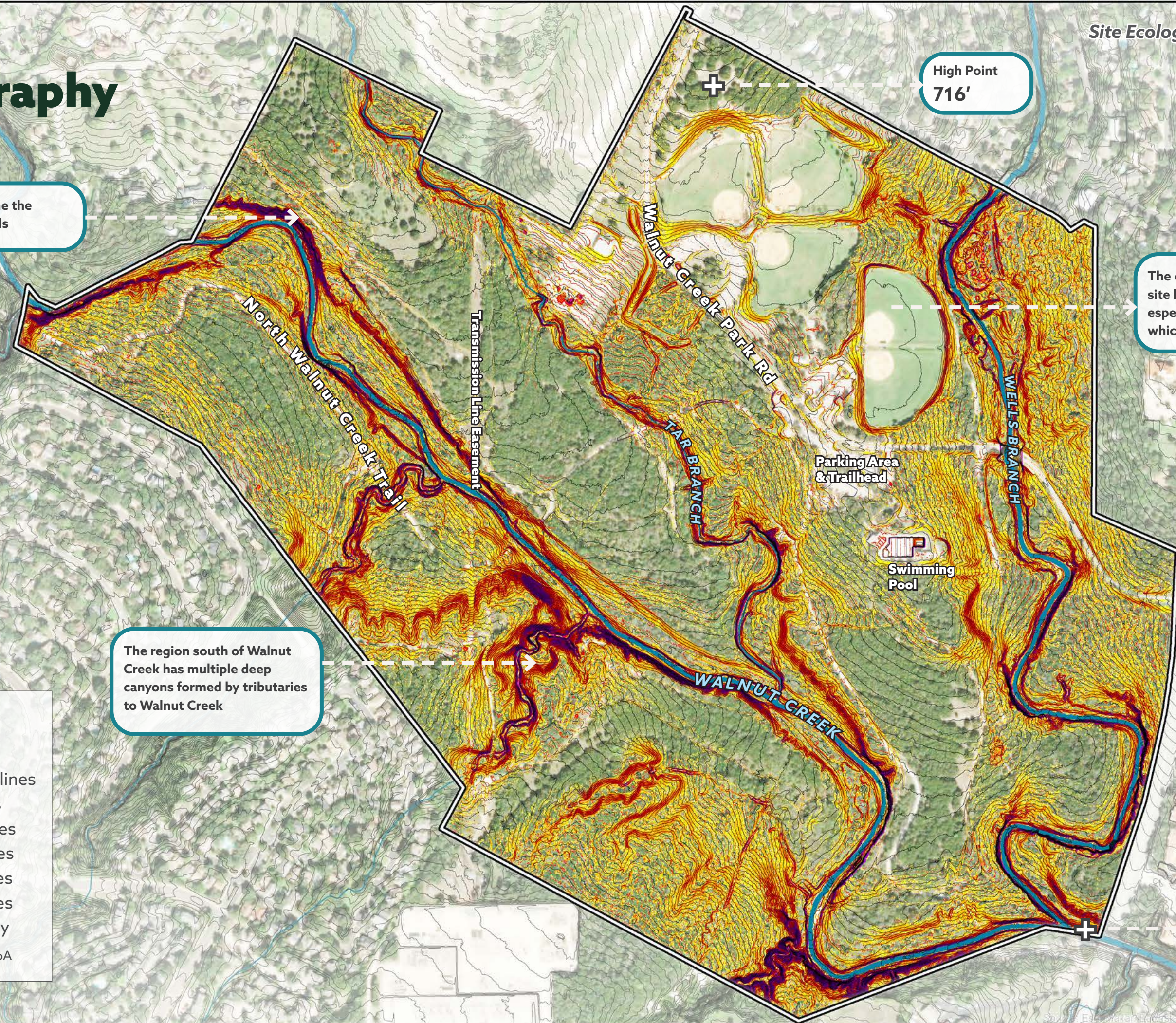
High Point
716'

Low Point
600'

0 400'

- 2' Contours
- Creek centerlines
- 60%+ slopes
- 35-60% slopes
- 25-35% slopes
- 15-25% slopes
- 10-15% slopes
- Site Boundary

Source: Siglo Group, CoA



Hydrology



- 2' Contours
- Creek centerline
- 25-year floodplain
- 100-year floodplain
- Critical Water Quality Zone
- Site Boundary

Source: Siglo Group, CoA, NRCS

The hydrology of the site is closely related to the topography. The site is divided by the three creeks. Walnut Creek is by far the largest, with nearly 40 acres of floodplain, which equals 61% of the site's total floodplain and 14% of the total site area. Wells Branch occupies 17.7 acres and floodplain and Tar Branch 7.9 acres. Due to the steep canyon walls, the 25-year and 100-year floodplains differ very little in their surface areas, rarely extending far outside the well-defined stream canyons.

There are few tributaries to these three creeks. Most of the water flow excluding the creeks is sheet flow across the evenly sloped uplands. The most well-defined tributaries are the few canyons in the south that flow into Walnut Creek, and a small number of short gullies found throughout the site.



Plant Communities

0 400'

2' Contours

Creek centerline

Riparian Woodland

Juniper Woodland

Transition Juniper Woodland

Ashe Juniper Slope Forest

Oak - Evergreen Woodland

Oak - Hardwood Woodland

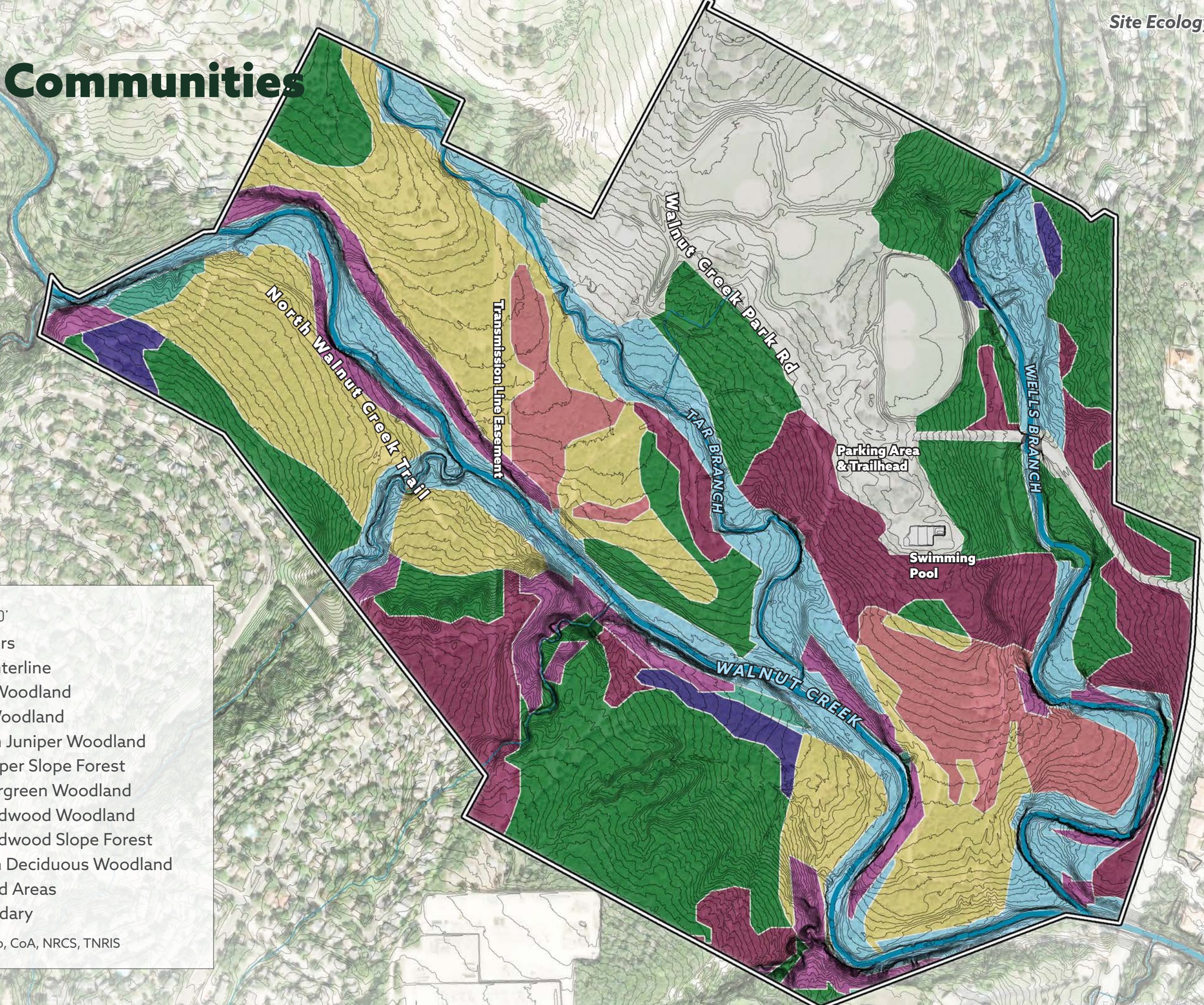
Oak - Hardwood Slope Forest

Transition Deciduous Woodland

Developed Areas

Site Boundary

Source: Siglo Group, CoA, NRCS, TNRI



Plant Communities

Plant communities can be defined in many ways. The *Climate Vulnerability Analysis and Land Management Strategies* report (2023) uses the NRCS Ecological Site classifications and Target Communities to classify the site, the latter taxonomy dividing the site into Oak Juniper woodland to Mixed woodland and Bottomland mixed woodland (page 45 of report). This report builds on those land classifications utilizing the TPWD Ecosystem Classification Dataset, the NRCS Ecological Sites Description, and site observations to create more detailed plant communities relevant to the ongoing management and volunteer work at Walnut Creek.



Juniper Woodland

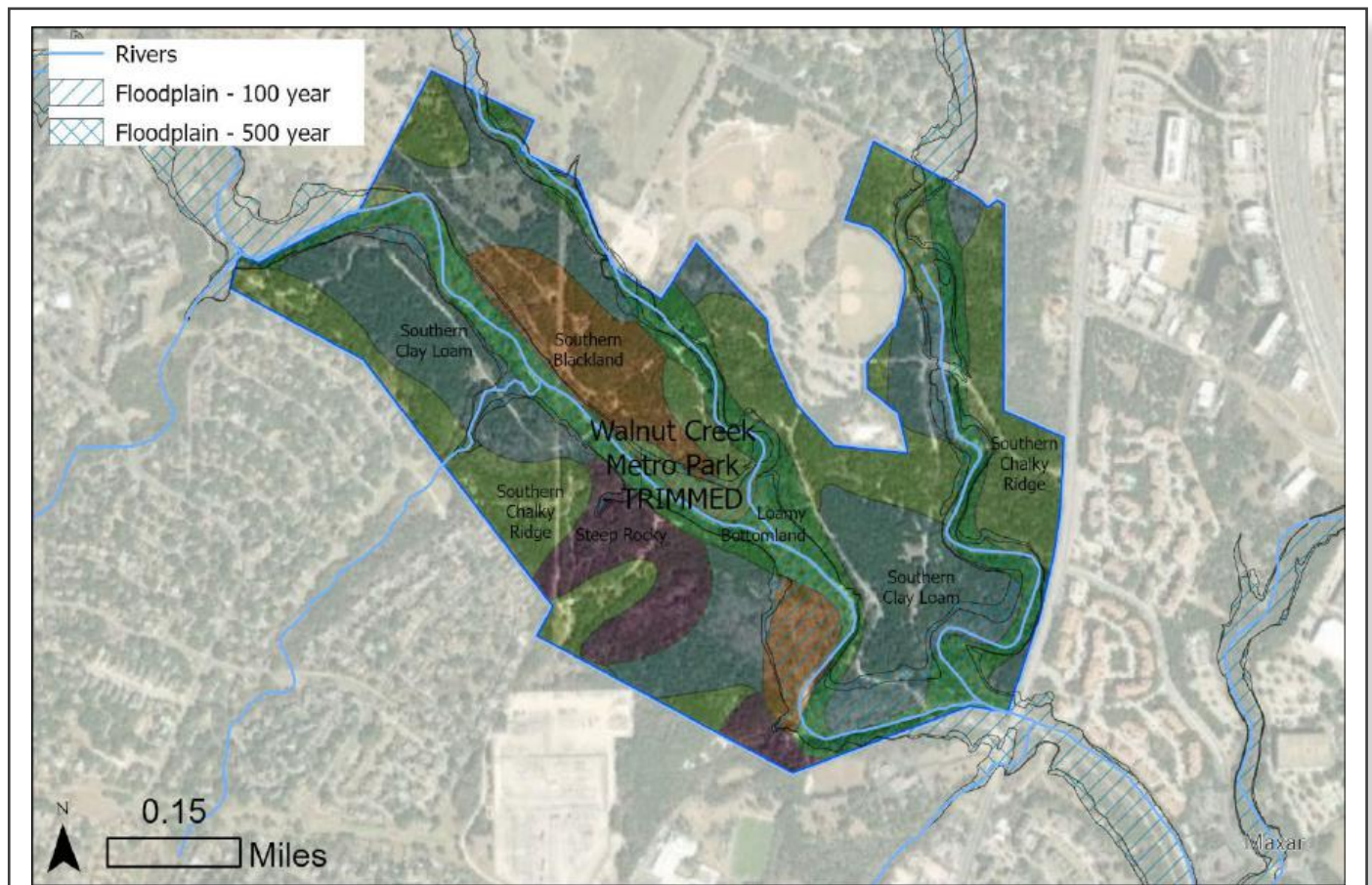


Figure 1-52 Walnut Creek Metro Park Ecological Sites

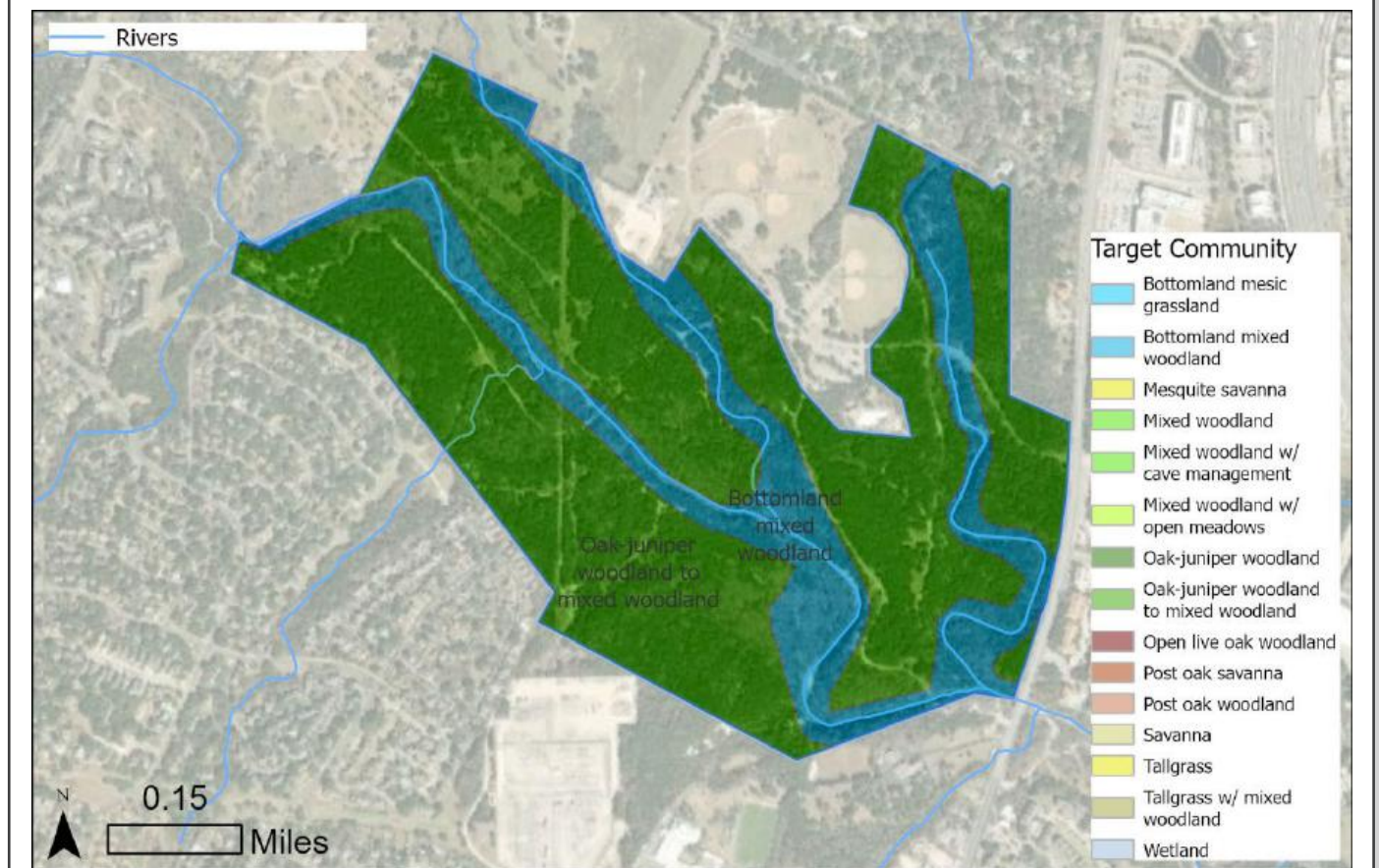


Figure 1-53 Walnut Creek Metro Park Target Communities



Transition Juniper Woodland



Transition Deciduous Woodland

The **upland woodlands and forests** of the site are characterized primarily by their species composition, as they are comprised of various proportions of oak (live oak - *Quercus fusiformis*, shin oak - *Q. sinuate* var. *breviloba*, and Texas red oak - *Q. buckleyii*), other hardwoods (cedar elm - *Ulmus crassifolia*, hackberry - *Celtis laevigata*, pecan - *Carya illinoensis*, honey mesquite - *Prosopis glandulosa*, Texas persimmon - *Diospyros texana*) and evergreens (ashe juniper - *Juniperus asheii*, Texas mountain laurel - *Sophora secundiflora*). **Slope forests** are defined by topography as well as canopy species.

The **Riparian Woodland** is defined by its association with the floodplain or close proximity to it. The canopy trees in the Riparian Woodland are generally more hydrophilic, such as pecan (*Carya illinoensis*), American elm (*Ulmus americana*), boxelder maple (*Acer negundo*), American sycamore (*Platanus occidentalis*), mulberry (*Morus spp.*), black willow (*Salix nigra*), eastern black walnut (*Juglans nigra*), little walnut (*Juglans microcarpa*), and eastern cottonwood (*Populus deltoides*). The higher elevations in the Riparian Woodland are populated with trees common in every other plant community.

The **Transition Juniper** and **Deciduous Woodlands** (regions classified as Native Invasive by TNRIS) are woodland areas that overlap with the Austin soil series, some of which are considered prime farmland and all of which are considered by the NRCS to have a tallgrass prairie climax plant community. They are characterized by a dense, young woodland community of ashe juniper (*Juniperus asheii*) or a mixed deciduous woodland (primarily cedar elm - *Ulmus crassifolia*, hackberry - *Celtis laevigata*, honey mesquite - *Prosopis glandulosa*, and Texas persimmon - *Diospyros texana*). They are typical of pasture or agricultural land that had grazing or mowing regimes cease decades earlier.

Invasive species are found more often in the plant communities with the most disturbance: the Transition Juniper and Deciduous woodlands, being historically plowed and seeded often with exotic grasses before fallowed, and the Riparian Woodland, which has the most erosion and destructive flood events. The majority of the site's glossy privet, Chinaberry, and heavenly bamboo are located in these areas.



Oak - Evergreen Woodland



Riparian Woodland

Canopy Cover

0 400'

2' Contours

Tree Canopy (CoA LiDAR)

Site Boundary

Source: Siglo Group, CoA



Canopy Cover

The site is well-covered by canopy, which encompasses 79% of the total site area, or 89% of its natural areas. This means that Walnut Creek Preserve is a major contributor to COA's goal of reaching 50% canopy cover by the year 2050. The majority of the open areas are the powerline easement, the paved urban trail, and Walnut Creek itself. Some minor remnants of the historic hayfields exist in the northwest and southeast of the site, now comprised of a mix of native and invasive grasses and forbs.

Based on the site soil and topography, the site has capacity to support a higher structural diversity if there was less canopy cover to favor more savanna and meadow plant communities. Much of the Transition Woodlands are very dense and pose a higher fire risk. However, as a public park with miles of trails, the canopy cover offers a more comfortable user experience during the hotter months. Canopy management should balance the need for higher biodiversity with users' needs for shade, especially over impervious cover.

Finally, the developed areas of the park have a mere 15% of canopy cover. This should be increased. Much of the developed areas are impervious cover such as roads and parking as well as playgrounds, picnic areas, and other gathering spaces. These areas are an opportunity to expand canopy for human health and comfort as well as urban heat island mitigation.



Canopy covers 79% of the site, offering ample shaded trails for visitors

Areas cleared of canopy:



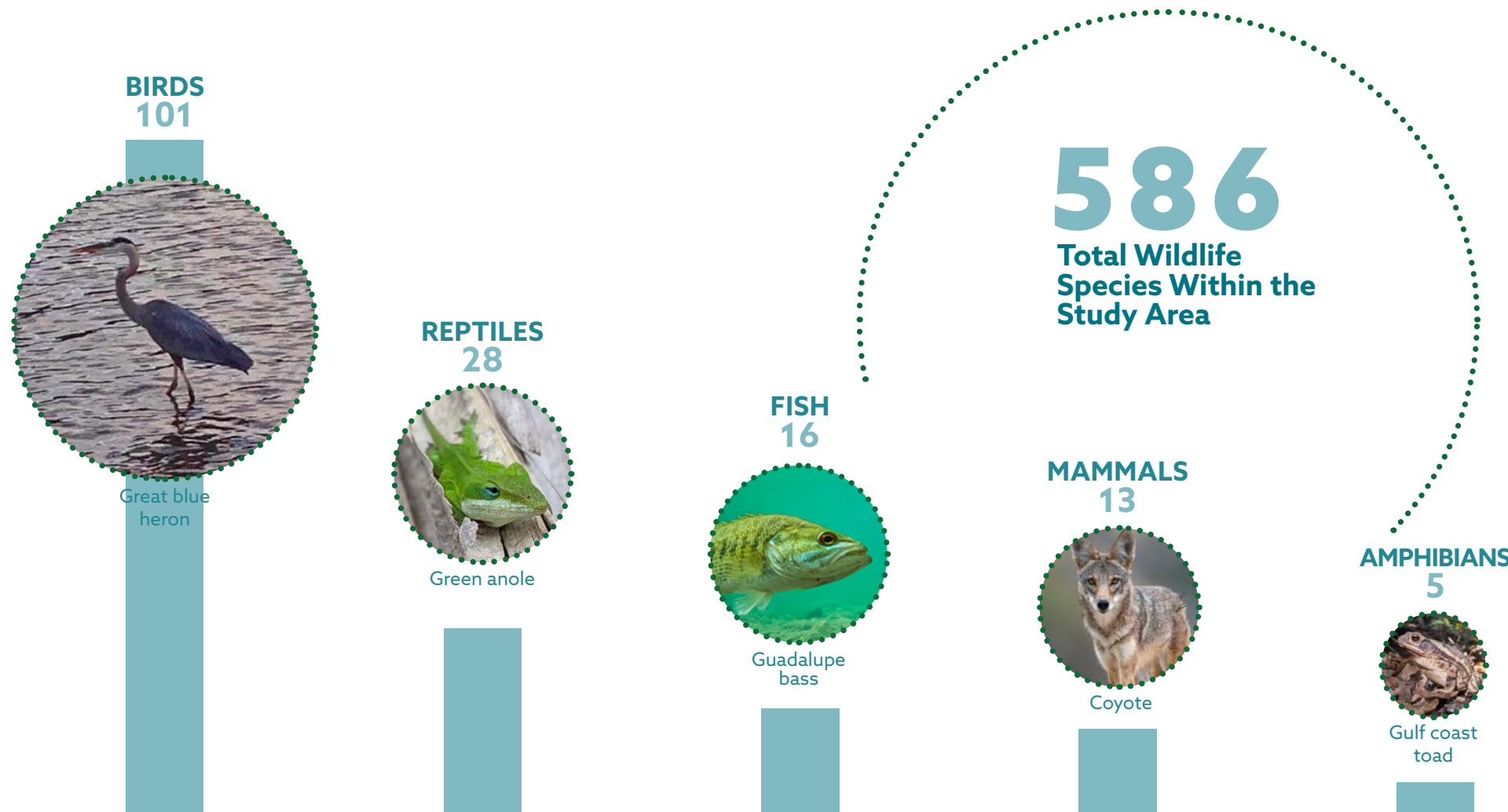
Powerline easement, periodically cleared of trees



Little bluestem in a remnant clearing

Wildlife

The wildlife data for Walnut Creek Metropolitan Park is primarily sourced from community science sources: research-grade observations from iNaturalist and eBird. As of April 22, 2024, there were 9752 research-grade observations on iNaturalist made by 866 individual observers, and comprising 1169 species (including plants, animals, and fungi). This represents 4.0 species observed per acre, a comparable biodiversity to Lady Bird Lake (4.2 species/acre) and Zilker Park (4.1 species/acre, and higher than Roy G. Guerrero Colorado River Metropolitan Park (3.4 species/acre). The factors affecting the biodiversity are the park’s size, with nearly 300 acres, as well as the diversity of habitats. Multiple types of woodland and available open meadows, as well as perennial waterways and riparian corridors, allow Walnut Creek Metropolitan Park to support an impressive diversity of wildlife.



BIRDS

Common Name	Scientific Name
Cooper's Hawk	<i>Accipiter cooperii</i>
Red-winged Blackbird	<i>Agelaius phoeniceus</i>
Grasshopper Sparrow	<i>Ammodramus savannarum</i>
Domestic Swan Goose	<i>Anser cygnoides domesticus</i>
American Pipit	<i>Anthus rubescens</i>
Ruby-throated Hummingbird	<i>Archilochus colubris</i>
Great Egret	<i>Ardea alba</i>
Great Blue Heron	<i>Ardea herodias</i>
Titmice	<i>Baeolophus</i>
Black-crested Titmouse	<i>Baeolophus atricristatus</i>
Cedar Waxwing	<i>Bombycilla cedrorum</i>
Great Horned Owl	<i>Bubo virginianus</i>
Western Cattle Egret	<i>Bubulcus ibis</i>
Red-tailed Hawk	<i>Buteo jamaicensis</i>
Eastern Red-tailed Hawk	<i>Buteo jamaicensis borealis</i>
Red-shouldered Hawk	<i>Buteo lineatus</i>
	<i>Buteo lineatus texanus</i>
Broad-winged Hawk	<i>Buteo platypterus</i>
Swainson's Hawk	<i>Buteo swainsoni</i>
Green Heron	<i>Butorides virescens</i>
Crested Caracara	<i>Caracara plancus</i>
Wilson's Warbler	<i>Cardellina pusilla</i>
Northern Cardinal	<i>Cardinalis cardinalis</i>
Turkey Vulture	<i>Cathartes aura</i>
Hermit Thrush	<i>Catharus guttatus</i>
Brown Creeper	<i>Certhia americana</i>
Lark Sparrow	<i>Chondestes grammacus</i>
Common Nighthawk	<i>Chordeiles minor</i>
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>
Northern Flicker	<i>Colaptes auratus</i>
Feral Pigeon	<i>Columba livia domestica</i>
Eastern Wood-Pewee	<i>Contopus virens</i>
Black Vulture	<i>Coragyps atratus</i>
Ruby-crowned Kinglet	<i>Corthylio calendula</i>
American Crow	<i>Corvus brachyrhynchos</i>



Crested caracara, *Caracara plancus*

BIRDS, CONTINUED

Common Name	Scientific Name
Blue Jay	<i>Cyanocitta cristata</i>
Black-bellied Whistling-Duck	<i>Dendrocygna autumnalis</i>
Downy Woodpecker	<i>Dryobates pubescens</i>
Ladder-backed Woodpecker	<i>Dryobates scalaris</i>
Gray Catbird	<i>Dumetella carolinensis</i>
Snowy Egret	<i>Egretta thula</i>
American Kestrel	<i>Falco sparverius</i>
American Coot	<i>Fulica americana</i>
Common Yellowthroat	<i>Geothlypis trichas</i>
House Finch	<i>Haemorhous mexicanus</i>
Barn Swallow	<i>Hirundo rustica</i>
Orchard Oriole	<i>Icterus spurius</i>
Mississippi Kite	<i>Ictinia mississippiensis</i>
Loggerhead Shrike	<i>Lanius ludovicianus</i>
Orange-crowned Warbler	<i>Leiothlypis celata</i>
Nashville Warbler	<i>Leiothlypis ruficapilla</i>
Eastern Screech-Owl	<i>Megascops asio</i>
Golden-fronted /Red-bellied Woodpecker	<i>Melanerpes aurifrons /Carolinus</i>
Red-bellied Woodpecker	<i>Melanerpes carolinus</i>
Lincoln's Sparrow	<i>Melospiza lincolni</i>
Northern Mockingbird	<i>Mimus polyglottos</i>
Great Crested Flycatcher	<i>Myiarchus crinitus</i>
Monk Parakeet	<i>Myiopsitta monachus</i>
Helmeted Guineafowl	<i>Numida meleagris</i>
Domestic Guineafowl	<i>Numida meleagris domesticus</i>
Yellow-crowned Night Heron	<i>Nyctanassa violacea</i>
Eastern Yellow-crowned Night Heron	<i>Nyctanassa violacea violacea</i>
House Sparrow	<i>Passer domesticus</i>
Savannah Sparrow	<i>Passerculus sandwichensis</i>
Blue Grosbeak	<i>Passerina caerulea</i>
Painted Bunting	<i>Passerina ciris</i>
Indigo Bunting	<i>Passerina cyanea</i>
American White Pelican	<i>Pelecanus erythrorhynchos</i>
Summer Tanager	<i>Piranga rubra</i>
Pied-billed Grebe	<i>Podilymbus podiceps</i>

Common Name	Scientific Name
Carolina Chickadee	<i>Poecile carolinensis</i>
Blue-gray Gnatcatcher	<i>Poliophtila caerulea</i>
Purple Martin	<i>Progne subis</i>
Great-tailed Grackle	<i>Quiscalus mexicanus</i>
Golden-crowned Kinglet	<i>Regulus satrapa</i>
Eastern Phoebe	<i>Sayornis phoebe</i>
Yellow-rumped Warbler	<i>Setophaga coronata</i>
Myrtle Warbler	<i>Setophaga coronata coronata</i>
Magnolia Warbler	<i>Setophaga magnolia</i>
Chestnut-sided Warbler	<i>Setophaga pensylvanica</i>
Yellow Warbler	<i>Setophaga petechia</i>
Pine Warbler	<i>Setophaga pinus</i>
American Redstart	<i>Setophaga ruticilla</i>
Black-throated Green Warbler	<i>Setophaga virens</i>
Blue-winged Teal	<i>Spatula discors</i>
Pine Siskin	<i>Spinus pinus</i>
Lesser Goldfinch	<i>Spinus psaltria</i>
American Goldfinch	<i>Spinus tristis</i>
Chipping Sparrow	<i>Spizella passerina</i>
Barred Owl	<i>Strix varia</i>
European Starling	<i>Sturnus vulgaris</i>
Bewick's Wren	<i>Thryomanes bewickii</i>
Carolina Wren	<i>Thryothorus ludovicianus</i>
American Robin	<i>Turdus migratorius</i>
Scissor-tailed Flycatcher	<i>Tyrannus forficatus</i>
Western Kingbird	<i>Tyrannus verticalis</i>
White-eyed Vireo	<i>Vireo griseus</i>
Blue-headed Vireo	<i>Vireo solitarius</i>
White-winged Dove	<i>Zenaida asiatica</i>
Mourning Dove	<i>Zenaida macroura</i>
White-throated Sparrow	<i>Zonotrichia albicollis</i>

REPTILES

Common Name	Scientific Name
Green Anole	<i>Anolis carolinensis</i>
Spiny Softshell	<i>Apalone spinifera</i>
Guadalupe Spiny Softshell	<i>Apalone spinifera guadalupensis</i>
Common Snapping Turtle	<i>Chelydra serpentina</i>
Western Diamond-backed Rattlesnake	<i>Crotalus atrox</i>
Deirochelyine Turtles	<i>Deirochelyinae</i>
Mediterranean House Gecko	<i>Hemidactylus turcicus</i>
Eastern Hognose Snake	<i>Heterodon platirhinos</i>
Western Coachwhip	<i>Masticophis flagellum testaceus</i>
Texas Coralsnake	<i>Micrurus tener</i>
Watersnakes	<i>Nerodia</i>
Plain-bellied Watersnake	<i>Nerodia erythrogaster</i>
Diamondback Watersnake	<i>Nerodia rhombifer</i>
Rough Greensnake	<i>Opheodrys aestivus</i>
Western Ratsnake	<i>Pantherophis obsoletus</i>
Four-lined Skink	<i>Plestiodon tetragrammus</i>
Texas Cooter	<i>Pseudemys texana</i>
Texas Blind Snake	<i>Rena dulcis</i>
Texas Spiny Lizard	<i>Sceloporus olivaceus</i>
Little Brown Skink	<i>Scincella lateralis</i>
DeKay's Brownsnake	<i>Storeria dekayi</i>
Flat-headed Snake	<i>Tantilla gracilis</i>
Checkered Garter Snake	<i>Thamnophis marcianus</i>
Western Ribbon Snake	<i>Thamnophis proximus</i>
Redstripe Ribbon Snake	<i>Thamnophis proximus rubrilineatus</i>
Pond Slider	<i>Trachemys scripta</i>
Red-eared Slider	<i>Trachemys scripta elegans</i>
Rough Earthsnake	<i>Virginia striatula</i>

AMBHIBIANS

Common Name	Scientific Name
Blanchard's Cricket Frog	<i>Acris blanchardi</i>
Gulf Coast Toad	<i>Incilius nebulifer</i>
Rio Grande Leopard Frog	<i>Lithobates berlandieri</i>
American Bullfrog	<i>Lithobates catesbeianus</i>
Southern Leopard Frog	<i>Lithobates sphenoccephalus</i>

FISH

Common Name	Scientific Name
Yellow Bullhead	<i>Ameiurus natalis</i>
Central Stoneroller	<i>Campostoma anomalum</i>
Western Blacktail Shiner	<i>Cyprinella venusta</i>
Amur Carp	<i>Cyprinus rubrofusculus</i>
Orangethroat Darter	<i>Etheostoma spectabile</i>
Plains Orangethroat Darter	<i>Etheostoma spectabile pulchellum</i>
Western Mosquitofish	<i>Gambusia affinis</i>
Texas Cichlid	<i>Herichthys cyanoguttatus</i>
Common Sunfishes	<i>Lepomis</i>
Plains Longear Sunfish	<i>Lepomis aquilensis</i>
Green Sunfish	<i>Lepomis cyanellus</i>
Bluegill	<i>Lepomis macrochirus</i>
Longear Sunfish	<i>Lepomis megalotis</i>
Largemouth Bass	<i>Micropterus nigricans</i>
Guadalupe Bass	<i>Micropterus treculii</i>
Gray Redhorse	<i>Moxostoma congestum</i>

MAMMALS

Common Name	Scientific Name
Coyote	<i>Canis latrans</i>
American Beaver	<i>Castor canadensis</i>
Nine-banded Armadillo	<i>Dasypus novemcinctus</i>
Virginia Opossum	<i>Didelphis virginiana</i>
Domestic Cat	<i>Felis catus</i>
Striped Skunk	<i>Mephitis mephitis</i>
White-tailed Deer	<i>Odocoileus virginianus</i>
Rock Squirrel	<i>Otospermophilus variegatus</i>
Texas Rock Squirrel	<i>Otospermophilus variegatus buckleyi</i>
Common Raccoon	<i>Procyon lotor</i>
Fox Squirrel	<i>Sciurus niger</i>
Eastern Cottontail	<i>Sylvilagus floridanus</i>
Gray Fox	<i>Urocyon cinereoargenteus</i>



Texas spiny lizard, *Sceloporus olivaceus*

PART 3
TRAILS



Site Circulation Map

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Trails and Trail Types

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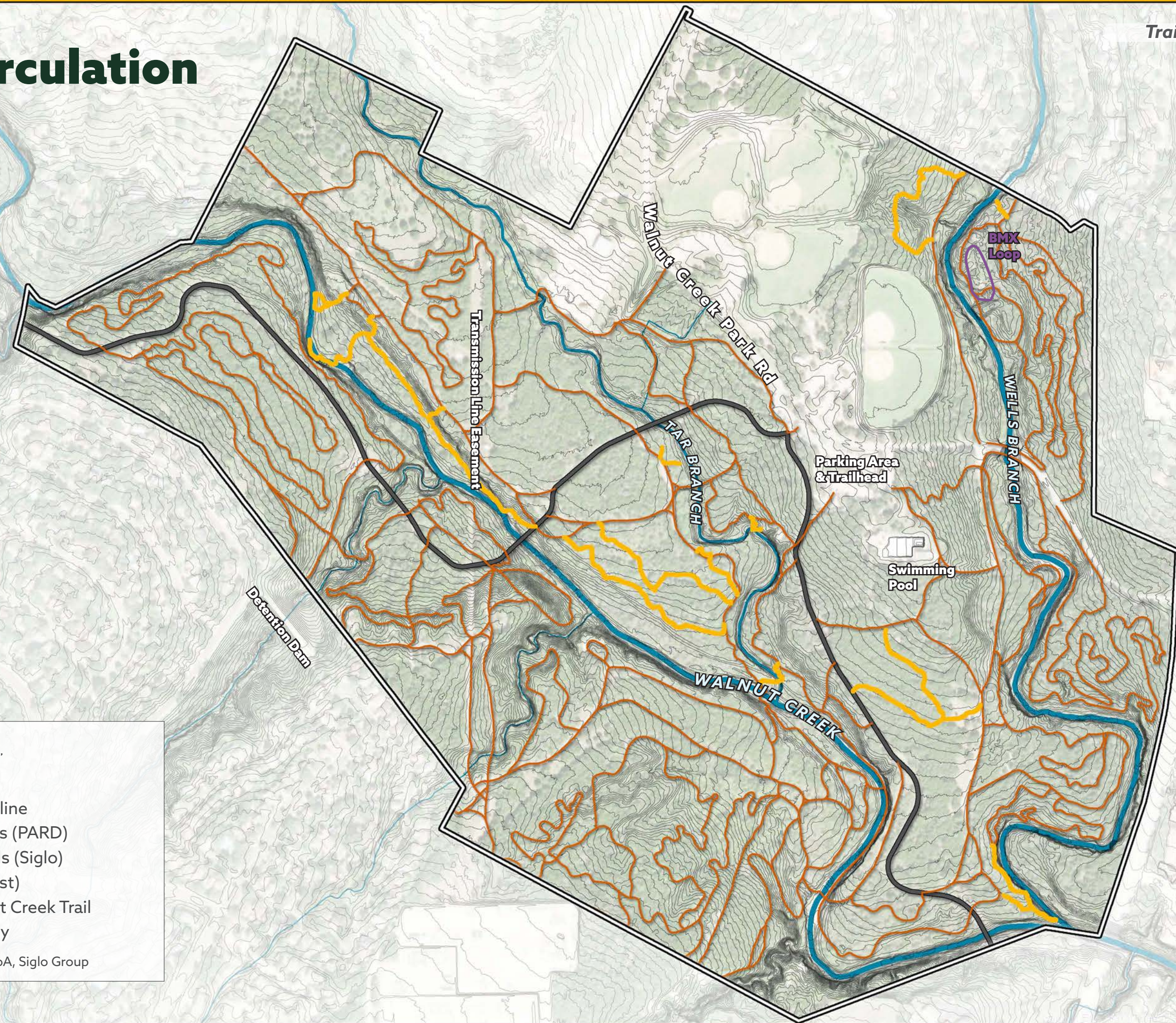
Site Circulation

Gracywoods
Neighborhood
Park

0 400'

- 2' Contours
- Creek centerline
- Mapped Trails (PARD)
- Informal Trails (Siglo)
- BMX Loop (est)
- North Walnut Creek Trail
- Site Boundary

Source: Siglo Group, CoA, Siglo Group



Trails and Trail Types

Walnut Creek Metropolitan Park currently has over 18 miles of trail. The primary pedestrian and bicycle trail in the park is the Northern Walnut Creek Trail. Intersecting this trail at many points is a variety of natural-surfaced trails. Walnut Creek Metropolitan Park currently has 15.24 miles of natural-surfaced trail mapped by PARD and 1.42 miles of informal trail mapped by Siglo Group. There are likely additional unmapped informal trails that remain un-mapped, including many short water access spur trails and shortcuts between switchbacks.

These trails can be categorized into four types of trail:

1. PAVED URBAN TRAIL

1.33 miles of this concrete trail bisects the site, connecting the park west to Gracywoods Neighborhood Park and Balcones District Park, and east to the Walnut Bluffs Trailhead. COA plans to connect this path south to the existing Southern Walnut Creek Trail, completing a 19-mile urban trail from Balcones District Park to Govalle Neighborhood park in East Austin.

The intersections of this trail with the many natural-surfaced trails is an ongoing challenge. Erosion regularly washes sediment and gravel onto the concrete, creating a slippery and hazardous surface for paved urban trail users.

Erosion is common along the edge of this trail, and gully erosion is present at most bridge footings. The mowed edges of the trail are host to invasive grasses such as Johnsongrass and KR bluestem. The City of Austin Urban Trails Program generally has jurisdiction over this trail and its mowed edges.

2. ROAD ALIGNMENTS

In some cases, these follow historic ranch road alignments, such as the service road that runs parallel to Wells Branch, stretching from Old Cedar Ln at the north boundary of the site to the Northern Walnut Creek Trail just before it crosses Walnut Creek. These trails are wider and relatively level, and in some cases have sheet or rill erosion where they descend hills.



North Walnut Creek Trail, a wide, paved urban trail bisecting the park



A former ranch road that parallels Tar Branch on its right bank

3. SINGLETRACK TRAILS

The majority of the trails in the park are singletrack, designed to be relatively narrow and allow a single pedestrian or cyclist to pass at one time. All singletrack trails are designated as multi-use and today support a mix of hikers, dog owners, and mountain bikers. These trails are easily built by hand.

Many of these trails have been built and maintained by the mountain bike community, represented by Austin Ridge Riders (ARR), starting in the 1990's. These were developed with PARD coordination and built upon the existing network of ranch roads. These trails are often circuitous, doubling back multiple times to provide more distance in relatively small areas. These trails can feature different types of improvements ranging from minor drainage improvements and in-slope turns to, in some cases, technical trail features for higher-skilled mountain bikers.

An ongoing challenge is the cutting across switchbacks and development of new trails outside the purview of the Austin Ridge Riders organization and the existing official trail network.

4. WATER ACCESS TRAILS

Hikers, especially those with dogs, are the primary creators and users of water access trails. These range in length but are generally less than 1/4 mile long, splitting from a longer trail to descend to one of the three waterways in the park.

These trails represent the greatest erosion and water quality challenge on the site. Several are deeply gullied where runoff has eroded them. In other areas, the larger volume of pedestrian and dog traffic has compacted large areas of riverbank.

Some of these trails or the streambanks near them have volunteer-led bank armoring or stone steps installed to mitigate erosion and improve access. Reducing the number of creek access points and improving the durability of specific points will help reduce the compaction and erosion while providing for the needs of a large user group.

5. BMX LOOP

This small area, located in the northeast of the park and documented as early as 2009, contains overlapping loops consisting of jumps and a pump track. It is constructed and maintained by local cyclists.



A narrow (<3') singletrack trail through a dense transition hardwood woodland



A deeply gullied water access spur leading to Walnut Creek from another informal trail

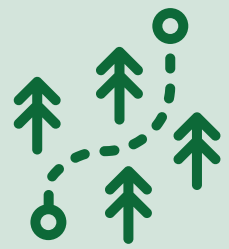
PART 4 UNIFIED STEWARDSHIP PLAN



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Documentation, Monitoring, and Community Science	48

Metrics

The Unified Stewardship Plan is a step towards enhancing the ecological health of Walnut Creek Metropolitan Park and streamline stewardship efforts between different organizations and individuals. To evaluate progress, we recommend the metrics below as measures of success in the park. These metrics were specifically developed to be measured easily and indicate progress towards the goals of the Stewardship Plan. The metrics are organized by the major themes of the plan.



Trails

- Retire 25% of unauthorized trails in the first year, and 50% in three years. Maintain less than 50% rate of retirement failure.
- Take action on 5 instances of trail erosion with a variety of trail improvement strategies within 1 year.
- Improve 5 instances of substandard trails with bench cuts, hardened drainage crossings, berms, or other improvements within 1 year.



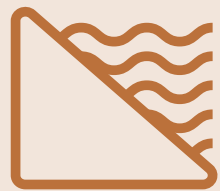
Invasive Species

- Remove 15% of invasive Ligustrum the park in the next three years at four location points following current practices of girdling and other methods.
- Remove 10% of invasive Nandina in the park in the next three years at three location points.
- Remove 100% of Chinese pistache in developed areas and replace with appropriate native tree species within next four years.



Stewardship

- Host 12 events annually dedicated to riparian restoration, seeding and planting events, or invasive species removal.
- Conduct an annual survey or bioblitz to record biodiversity.



Erosion

- Retire 25% of unauthorized water access points in the first year, and 100% in three years. Maintain less than 25% rate of retirement failure.
- Take action on 300 linear feet of creekbed with a variety of bank stabilization strategies in the first year.



Biodiversity

- 400 iNaturalist or eBird records/entries per year (or 50% increase per year).
- 5 plantings or seedings in areas where invasives have been removed.
- Seed or plant 10,000 sf with native plants.

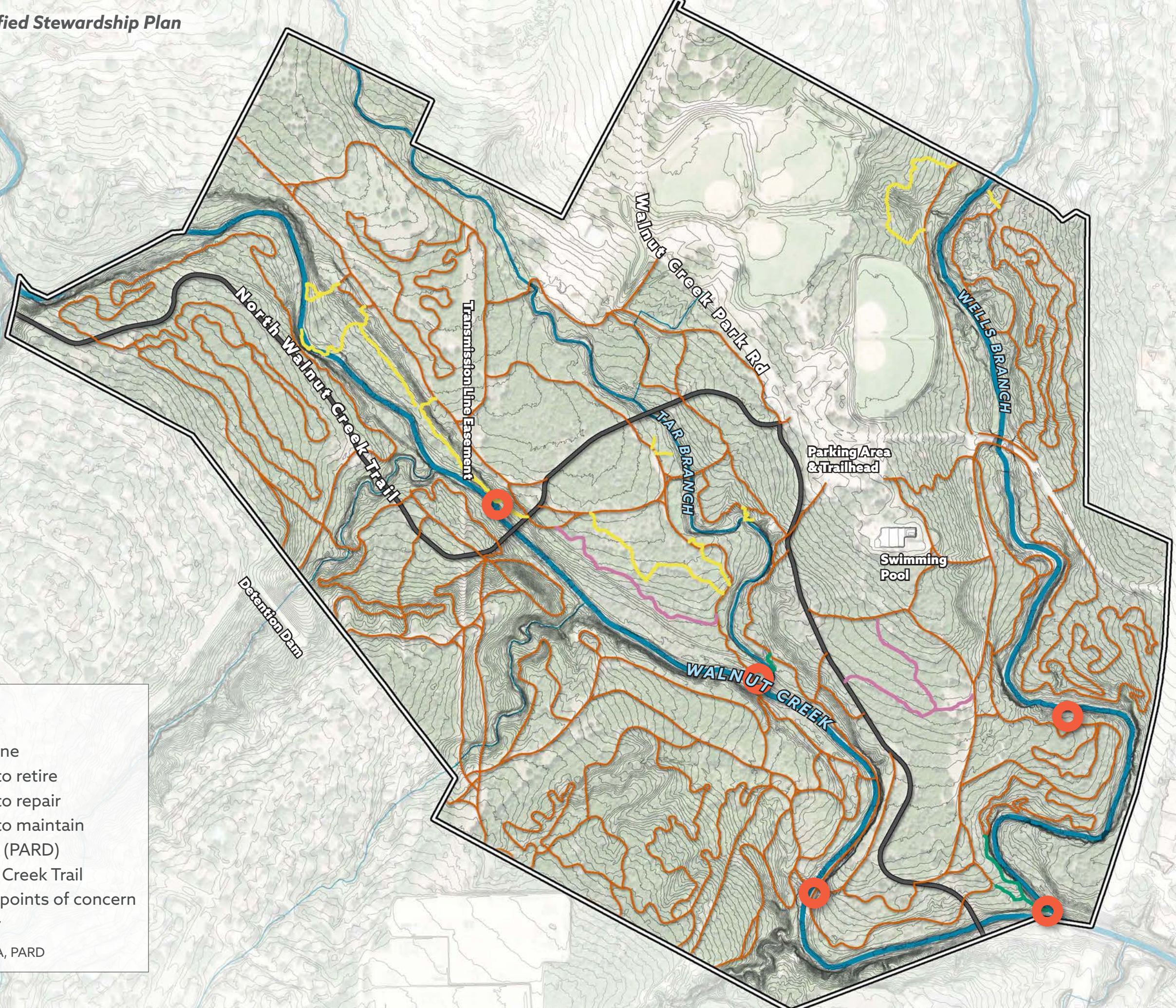
Trails

Gracywoods
Neighborhood
Park

0 400'

- Creek centerline
- Informal trail to retire
- Informal trail to repair
- Informal trail to maintain
- Mapped Trails (PARD)
- North Walnut Creek Trail
- Water access points of concern
- Site Boundary

Source: Siglo Group, CoA, PARD



Trail Management

Trails are perhaps the most popular and often-used recreational resource at the Walnut Creek Metropolitan Park, with hikers, dog owners, bicyclists, and other user groups. They facilitate access to each of the different plant communities and multiple points on each waterway. Unfortunately, trails also are a cause of erosion when they are poorly built or designed, and they facilitate the trampling of stream banks and waterways, worsening sheet and bank erosion.

Of the nearly 17 miles of mapped natural-surface trails at Walnut Creek, this project has identified some trails that may be best to retire, some previously unmapped trails that may be permitted to be left open, and some water access points that should be improved and reinforced to allow for the enjoyment of these locations while protecting the adjacent streambanks and vegetation.

Considerations for these decisions include the following factors:

- Existing popularity and volume of use
- Existing or potential degradation, primarily from erosion
- Redundancy, or the existence of equivalent trails nearby
- Environmentally sensitive areas
- Access to restoration areas, such as significant areas of invasive species



An armored bank at a water access point



A gullied water access trail spur

Refer to the Trail Brushing, Tree Pruning, Trail Drainage Improvements, and Steps and Armoring Task Sheets for specific trail maintenance methods.

Task Sheets

These task sheets were developed as part of this plan to streamline stewardship efforts within the park. These can be used during community events or to guide internal efforts.

Walnut Creek Unified Stewardship Plan

TREE PRUNING

PURPOSE:

To safely remove branches from live or dead trees to maintain their health, improve their form, and remove obstructions from the trail.

SAFETY:

Use sharp tools responsibly.
Stay aware of fellow workers to avoid hitting them with limbs or tools.
Use appropriate clothing and protective gear.

MATERIALS:

Tools needed:

- gloves and eye protection
- pants, closed-toed shoes, and long-sleeve shirt
- hand saw
- loppers
- pruning shears

METHODS:

Identify the visual or physical obstruction before determining limbs to be pruned. Do not prune more than necessary.

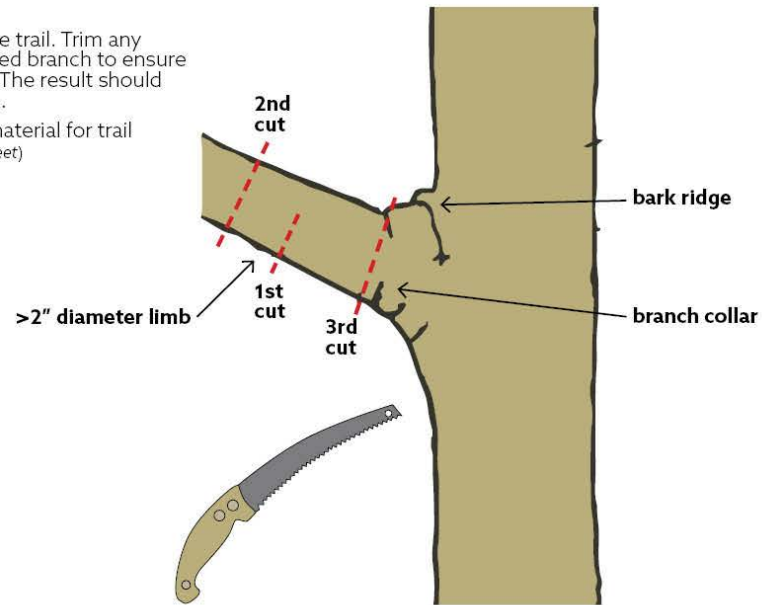
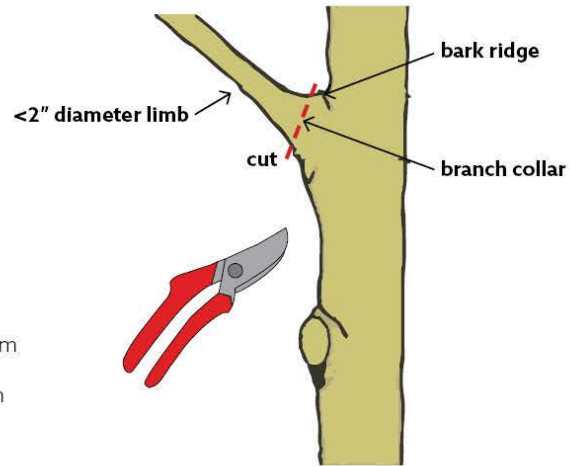
Ensure work area is clear of fellow workers and safe from other trail users.

For smaller branches (top), cut right outside the branch collar. Do not leave a stub or cut into the branch collar. Fit the branch as deeply into the jaws of the shears or loppers as possible before cutting.

For larger branches (bottom), first create an undercut a couple of inches above the branch collar. Then a couple inches above that, saw from above and cut through the limb. Finally, remove the stub just outside the branch collar.

Dispose of pruned branches off the trail. Trim any additional branches from the pruned branch to ensure the debris lays flat on the ground. The result should appear to be a naturally fallen limb.

If appropriate, utilize the pruned material for trail brushing. (refer to Trail Brushing task sheet)



Reference ANSI A300 pruning standards for more information.

Walnut Creek Unified Stewardship Plan

TRAIL BRUSHING

PURPOSE:

To retire trails that are unsanctioned, need re-routing, causing degradation, or are redundant, including switchback cutoffs and informal water access points
To physically block people from using the path in question and visually obscure the trail from trail users.
To restore organic material and protect the soil from disturbance and compaction.

SAFETY:

Be aware of snakes, scorpions, or fire ants that may be living under rocks or logs.
Use caution when lifting or rolling heavy material that may pinch fingers and toes or injure your back.
Use sharp tools responsibly.
Stay aware of fellow workers to avoid hitting them with brush or tools.
Poison ivy is a common understory plant in many areas of the park. Avoid coming in contact with any part of this plant. Wear long sleeves and pants to avoid skin contact.

MATERIALS:

Any size organic or natural material found nearby:

- removed invasive trees and shrubs
- removed hazard trees
- trimmed limbs
- relocated dead trees
- relocated boulders

Tools needed:

- gloves
- loppers and pruning saws (if pruning live trees, refer to Tree Pruning task sheet)
- buckets, wheelbarrows, or carts
- rake
- pick, shovel, or McLeod

METHODS:

Identify the length of trail, including both ends where it meets the sanctioned trail(s).

Source brush materials nearby.

Pile brush on the trail, prioritizing the ends where it meets the sanctioned trail(s). Brush should extend beyond the immediate junction to be an additional deterrent.

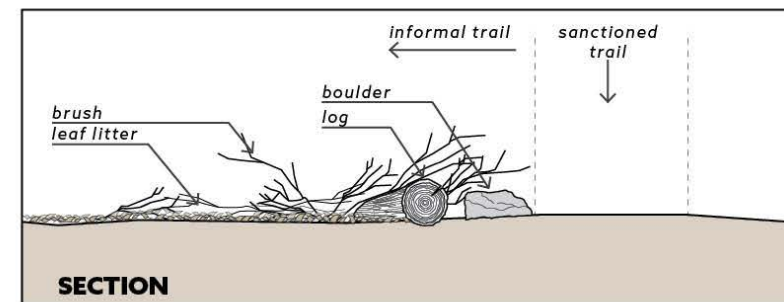
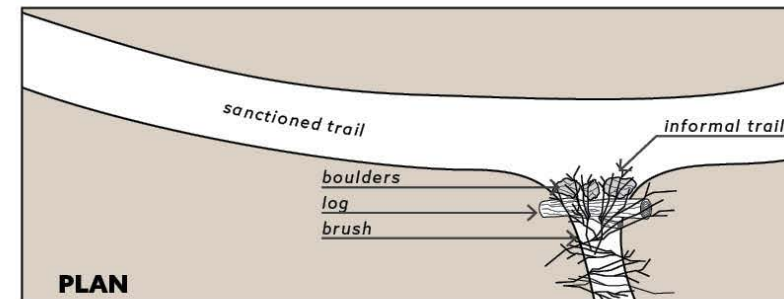
Brush should be piled at least 3' high to appear imposing and impassable. Place brushy, branched end towards sanctioned trail.

Utilize leaf litter and brush to hide the trampled soil surface so that it is not visible to passers-by.

Brush should be a diversity of materials: 4"+ diameter logs at the surface, smaller limbs and sticks piled above to increase volume and visibility, boulders at the trail junction, relocated leaf litter and small brush on the soil surface to reduce its visibility.

Heavier rocks and logs are less likely to be removed especially if they are heavy enough that they cannot be easily moved by a single person.

DESIGN:



EXAMPLE:



Task Sheets

Walnut Creek Unified Stewardship Plan

DRAINAGE IMPROVEMENTS

PURPOSE:

To create a trail that sheds water from its surface and does not channel or gather water. This is most useful in low-lying areas where excess water ponds, or where minor drainages cross or follow the trail.

MATERIALS:

Tools needed:

- gloves and eye protection
- spade shovel
- pick mattock
- rock bar
- McLeod
- tamper
- rake if seeding
- buckets, wheelbarrows, or carts

METHODS:

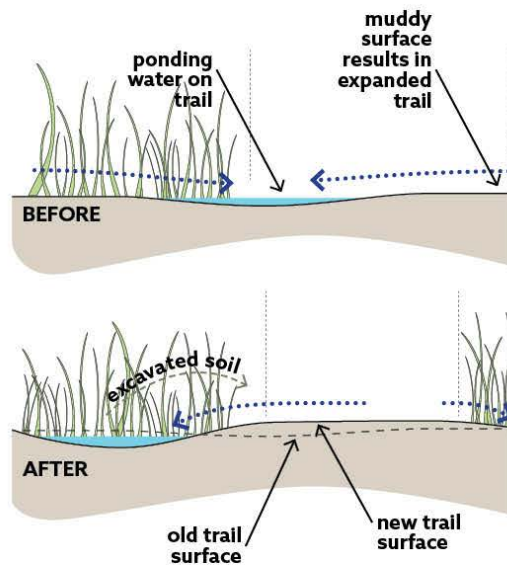
RAISED TREAD

Use this method when there is frequent mud or ponded water on a flat or gently sloped section of trail.

Source excess soil to create the fill. This may be sourced from directly adjacent to the trail. Limit excavation to 6" depth and avoid creating linear ditches that may erode.

Add excavated soil to the trail surface. Thoroughly compact the fill soil as you go for every 2-4" added. The finished trail surface should be a firm and compacted layer of soil with a smooth transition to the existing trail.

If needed, use larger logs or rocks along the edge of the trail to retain the added fill material (refer to Stone Pitching in the Trail Armoring task sheet for more information). Ensure these logs or rocks are buried 1/3-1/2 their depth into existing soil so they remain in place.



SAFETY:

Stay aware of fellow workers to avoid hitting them with logs, rocks, or tools.

Use appropriate clothing and protective gear.

Use proper lifting techniques to avoid injury when moving heavy objects.

Ensure trail improvements are stable and able to withstand significant abuse from future trail users. A poorly-built trail improvement may fail under use and cause avoidable injury to a trail user.

CHECK DAMS

Use this method when the trail crosses a minor drainage and is experiencing gully or rill erosion perpendicular to the trail. Drainages steeper than a 3:1 slope may be more difficult to address.

Reinforce the downhill side of the trail with large rocks or stacked logs. Ensure rocks are buried 1/3-1/2 their depth into existing soil so they remain in place.

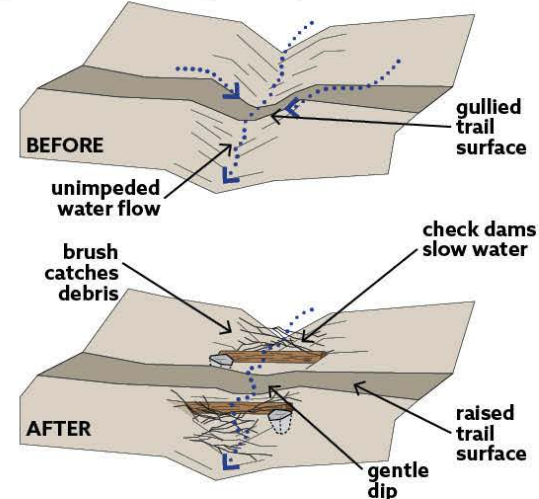
Optional: bury a section of drainpipe at the bottom of the drainage if it is deep. Use 4-6" perforated plastic pipe and secure well with compacted soil and add an apron of large (4-12") gravel to either side of the pipe.

Backfill the eroded portion of the trail, bringing the tread up 12-18" to the top of the rocks. Allow the trail to gently dip to allow for water to gently flow over the top in heavy rain events.

Thoroughly compact the fill soil as you go for every 2-4" added.

Optional: armor the final surface of the trail with flat rocks embedded into the soil (refer to Stone Pitching in the Trail Armoring task sheet for more information).

Optional: incorporate container plantings, seedings, or live staking to encourage plant growth in eroded areas. (refer to Restoration Planting task sheet)



Walnut Creek Unified Stewardship Plan

TRAIL ARMORING

PURPOSE:

To create a more durable and resilient trail surface for a short section. This is most useful in areas of rill or gully erosion, where trails are very steep, or combined with drainage improvements (refer to Trail Drainage Improvement sheet)

MATERIALS:

Tools needed:

- gloves and eye protection
- spade shovel
- pick mattock
- rock bar
- McLeod or tamper
- rake if seeding
- buckets, carts, or wheelbarrows
- hand saw (power tools not permitted)

METHODS:

STONE PITCHING

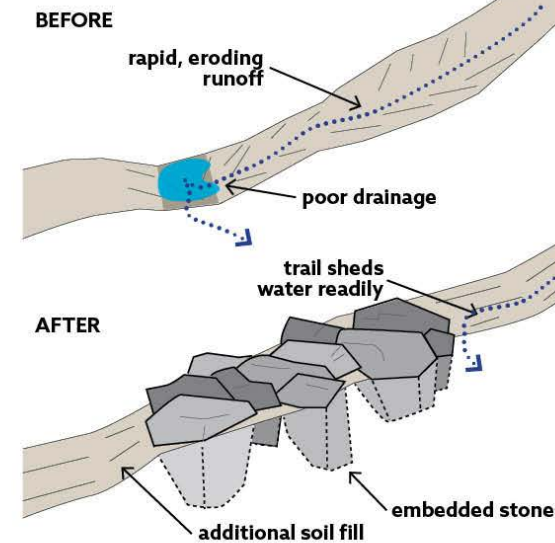
Use this technique when the trail surface needs to be re-created with a more level and durable surface.

Identify the work area, typically an eroded, sloped section of trail that is either gullied or eroding.

Source nearby stones. Stones should be as large as volunteers can safely move to the work site.

Starting from the bottom of the work area, prepare an excavated bed. Add large rocks pitched on their sides and soil to create the fill. Compact fill soil thoroughly and ensure rocks are stable and stationary. Continue until the stones reach the top of the work area.

Ensure the rocks are buried 2/3-3/4 their depth into existing soil so they remain in place. Arrange stones to ensure smooth, flat faces create an even trail surface and avoid tall, sharp leading edges that may impact the user experience.



SAFETY:

Stay aware of fellow workers to avoid hitting them with logs, rocks, or tools.

Use appropriate clothing and protective gear.

Use proper lifting techniques to avoid injury when moving heavy objects.

Ensure trail improvements are stable and able to withstand significant abuse from future trail users. A poorly-built trail improvement may fail under use and cause avoidable injury to a trail user.

LOG STEPS

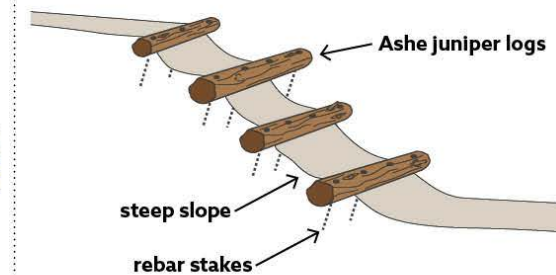
Use this technique when the trail surface is very steep, frequently slick, has few rocks, and used primarily by pedestrians.

Identify the work area, typically an eroded, sloped section of trail with a relatively level surface at the top and bottom.

Source nearby logs, minimum 6" diameter, and relatively straight and clear of knots and branches. Ashe juniper is recommended due to its abundance and rot resistance. Bald cypress or bois d'arc are acceptable as well. Cut only dead or fallen juniper, never fell live trees. Trim to length 1-2' wider than the desired trail surface.

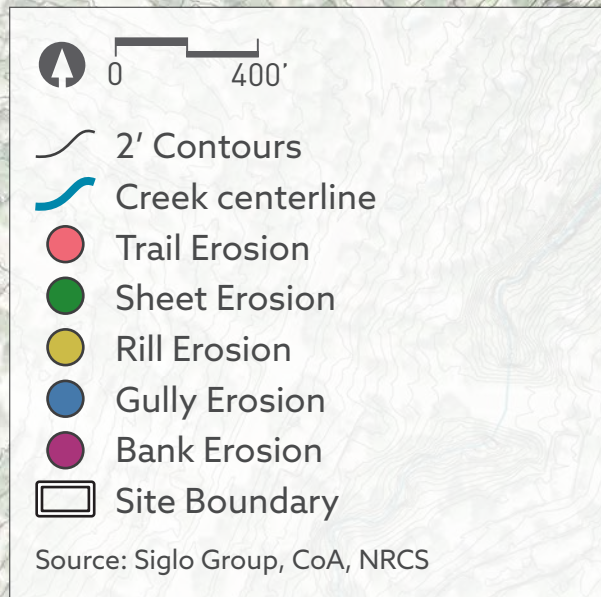
Embed logs 1/3-1/2 their depth into existing soil so they remain in place.

Recommended: drill 2-4 holes through the juniper logs and drive 12-24" rebar stakes through the holes. Ensure the tip of each rebar stake is flush or below the log surface so trail users do not come into contact with them.



Erosion

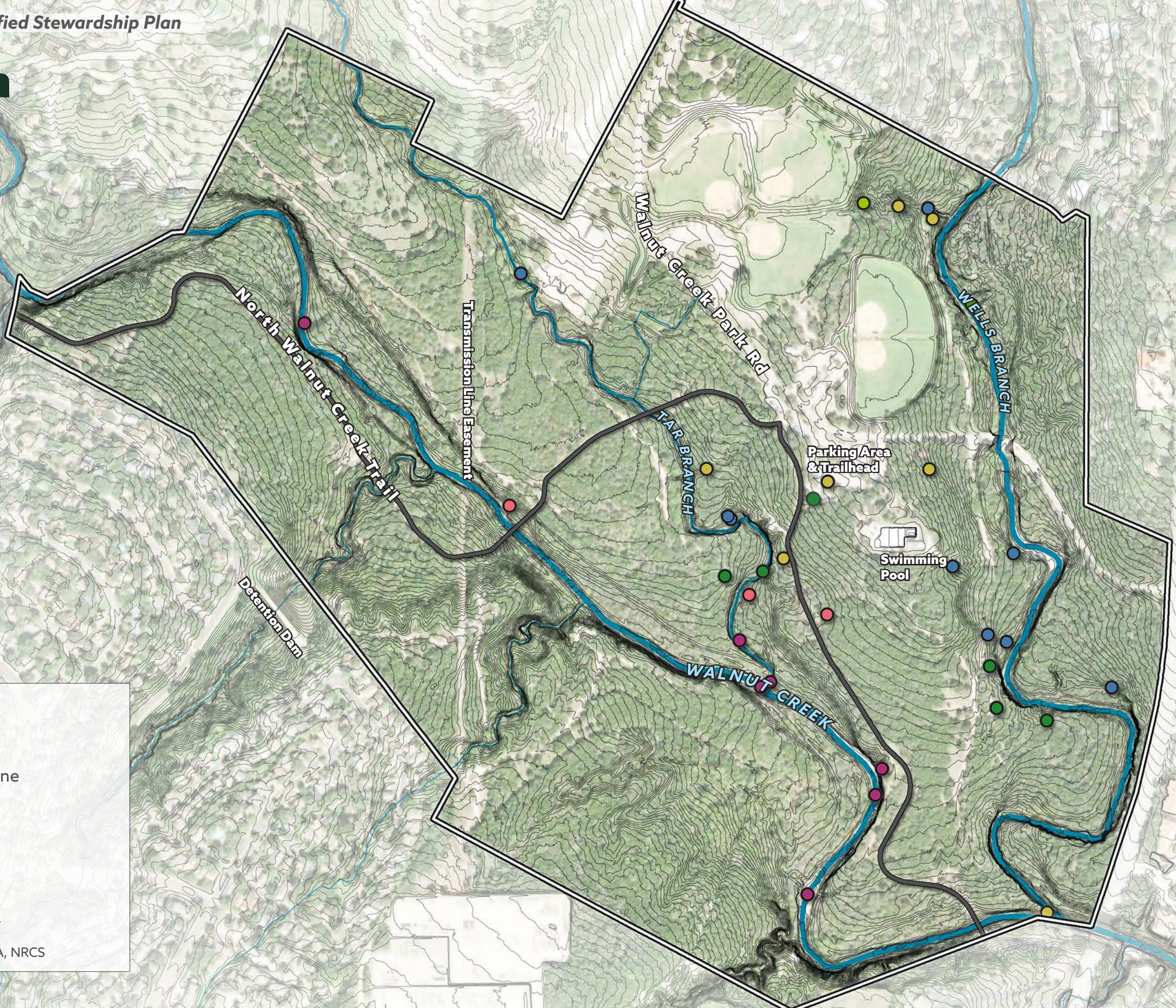
Gracywoods
Neighborhood
Park



0 400'

- 2' Contours
- Creek centerline
- Trail Erosion
- Sheet Erosion
- Rill Erosion
- Gully Erosion
- Bank Erosion
- Site Boundary

Source: Siglo Group, CoA, NRCS



Soil Disturbance: Erosion, Deposition, and Compaction

Any action or infrastructure that removes, compacts, or covers soil will have an impact on a site's ability to support a healthy ecosystem. The primary causes of soil disturbance in Walnut Creek Metropolitan Park are stormwater flow, poorly functioning or absent infrastructure, mowing and use of other heavy machinery, off-trail recreation, formal recreation without suitable supporting infrastructure, and erosion of trail material. Soil disturbance is problematic in all areas but is particularly concerning along environmentally sensitive waterways.

Field data and field-verified stakeholder information was gathered into 34 points.

The following characteristics were recorded:

- Erosion type (described below)
- Size of the disturbance (under 100 ft², 100 to 650 ft², 650 ft² to 0.25 acres, and > 0.25 acres)
- Priority (high, medium, and low)
- Probable cause of the disturbance (pet traffic, unauthorized or authorized human traffic, wildlife traffic, flood events along waterways, stormwater flow from infrastructure, habitat improvement project, or other)

TRAILS & WATER ACCESS POINTS

Trails, both formal and informal, often lead to sheet erosion, rills, or gullies.

These trails are found throughout the park in areas where people want to access water along the three waterways; where people are moving between park areas, such as from parking areas to parkland; and where people who are experiencing homelessness access sleeping areas. In some cases, there is erosion associated with the North Walnut Creek Trail, both along the hard concrete edges of the trail and where bridge abutments have created disturbed or compacted conditions.

SHEET EROSION

Sheet erosion is the removal of thin layers of soil due to precipitation and shallow surface flow. At Walnut Creek Metropolitan Park, it is found associated with trampling on some formal and informal trails. It also occurs in mowed areas with little vegetation near parking and road infrastructure. Sheet erosion results in the loss of topsoil critical for vegetation establishment and can result in larger erosion issues like rill and gully erosion if not addressed.

RILL AND GULLY EROSION

Rill erosion is the formation of one or more small channels less than 1 ft deep; gullies are deeper than 1 ft. If the conditions that led to their formation continue unchecked, these channels may deepen. Rill erosion is most often found on trails with long, uninterrupted downhill stretches. Gullies and rills that have not been armored or stabilized pose a threat to trails as they may eventually intercept and damage them.

Causes of rill and gully erosion include:

- Areas with high amounts of off-trail recreation, including informal trails and trampled areas on slopes, where vegetation is removed and soil begins to erode.
- Poorly-designed trails that are too steep or funnel water down the trail instead of shedding it to either side.
- Infrastructure that does not account for storm water runoff such as the parking areas.

BANK EROSION

Bank erosion is found along each of the three creeks. It is a result of their urban setting and the powerful force of water after major rain events. These erosion issues are created by watershed-wide conditions that cannot be mitigated within the park and require infrastructure that is outside the scope of volunteer work. Long-term solutions are expensive and often require large capital improvements. Along parts of Walnut Creek and Tar Branch, streambank erosion is intensified by trampling. This bank erosion is resulting in tree mortality with numerous large trees recently falling over due to compromised banks and in some cases is threatening established trails.

Refer to the Trail Drainage Improvements and Steps and Armoring Task Sheets for specific methods.

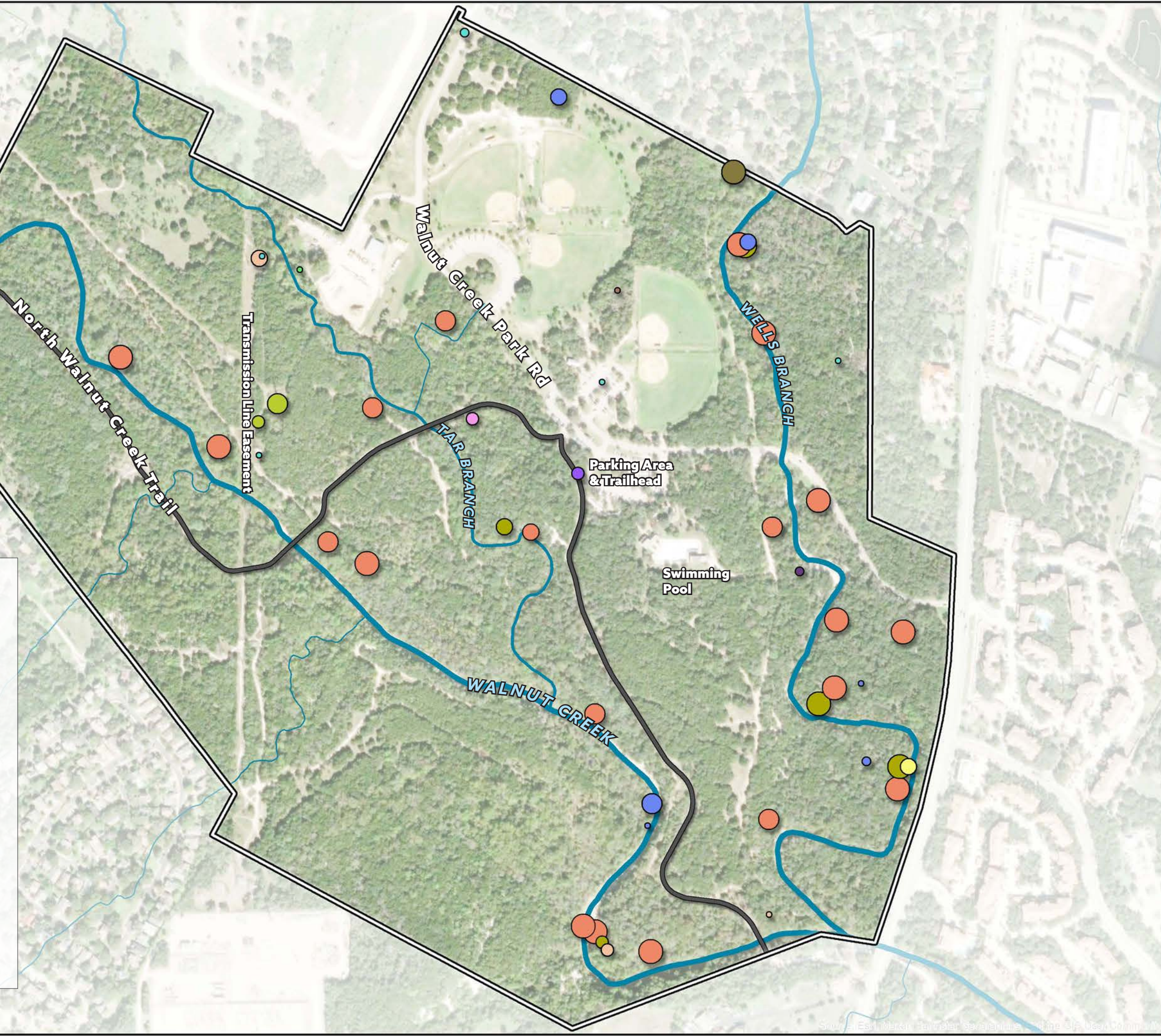
Invasive Species

Gracywoods
Neighborhood
Park

0 400'

- Creek centerline
- North Walnut Creek Trail
- Giant reed (*Arundo donax*)
- Bamboo (*Phyllostachys aurea*)
- KR bluestem (*Bothriochloa ischaemum*)
- Johnsongrass (*Sorghum halapense*)
- Japanese honeysuckle (*Lonicera japonica*)
- Heavenly bamboo (*Nandina domestica*)
- Chinaberry (*Melia azedarach*)
- Chinese pistache (*Pistacia chinensis*)
- Taiwanese photinia (*Photinia serratifolia*)
- Chinese tallow (*Triadica sebifera*)
- Glossy privet (*Ligustrum lucidum*)
- Site Boundary

Source: Siglo Group, CoA, PARD



Invasive Species

Invasive species are plants (or animals) introduced from other regions of the world. They damage local habitats by crowding out native species, by competing with native species for light, water, and nutrients, or by releasing chemicals that prevent native species from growing. Invasive plants also reduce habitat quality for pollinators, birds, and other wildlife.

For invasive species, colonization can be prevented but plants that are already established must be treated or removed. Prevention methods include maintaining robust native plant communities that compete with invasive species and cleaning tools/equipment used on the site that could carry seeds from one area to another. Treatment methods include physical or mechanical removal (like digging, cutting, or mowing) or chemical control (herbicides).

Herbicide applications are:

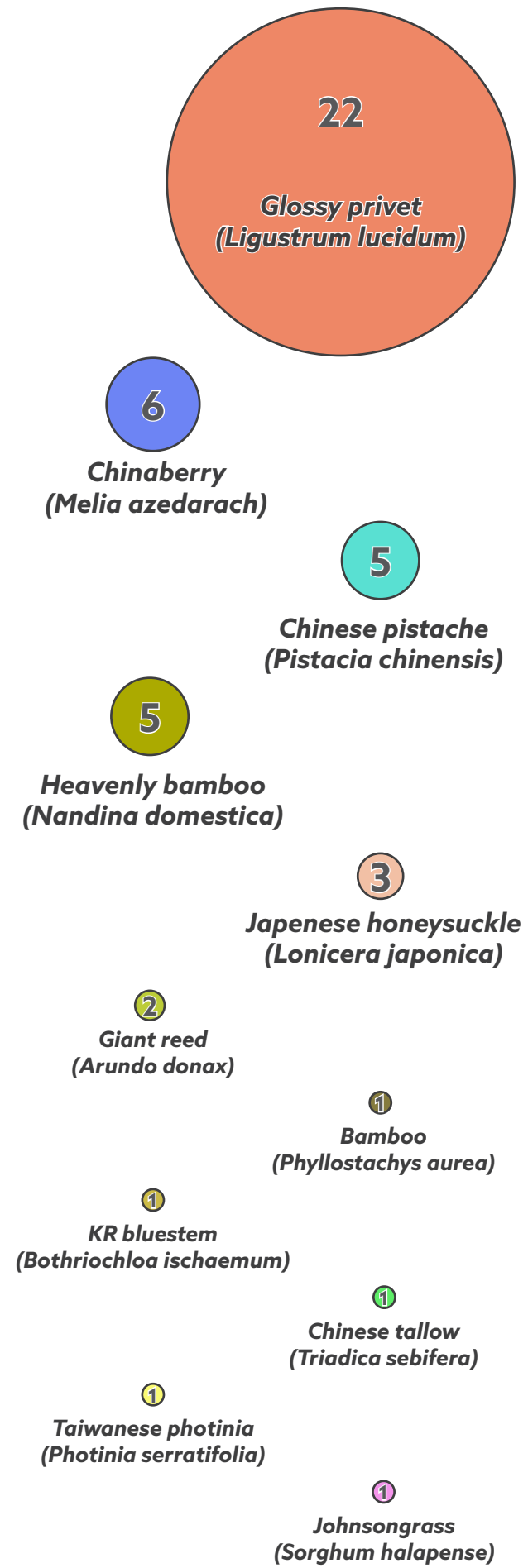
- **excluded from the scope of volunteer work**
- required to follow all federal, state, and city regulations as well as manufacturer recommendations
- done only with permission from and in coordination with PARD
- applied by a commercially licensed herbicide applicator.

When treating plants near water, community member should consult WPD. The best approach is to use application methods that minimize the amount of herbicide used (like stump treatments rather than foliar sprays) to reduce potential impacts on surrounding plants. Controlling invasive species is a long-term process that requires repeated treatments.

If an invasive removal project is likely to result in bare areas larger than 10 square feet, a reseeding plan must be developed before the project begins.

Our site surveys found 11 invasive species within the Walnut Creek Metropolitan Park. The most problematic species are glossy privet, Chinaberry, Chinese pistache, and heavenly bamboo.

Refer to the Invasive Species ID, Restoration Plantings, and Invasive Species Removal Task Sheet for more information and specific management guidelines.



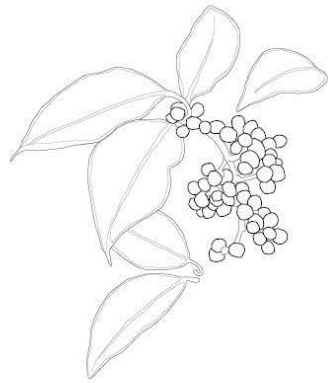
Task Sheets

Walnut Creek Unified Stewardship Plan

INVASIVE PLANT I.D.

The following invasive trees are some of the most commonly observed species in Walnut Creek Metropolitan Park. This guide will help make field identifications. For more species and more information, refer to *Trees of Central Texas* by Robert A. Vines or *Native and Naturalized Woody Plants of Austin and the Hill Country* by Daniel Lynch.

INVASIVE TREES



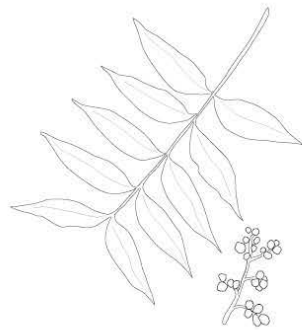
GLOSSY PRIVET, *Ligustrum lucidum*

Fast-growing, evergreen tree up to 45' tall
Glossy, dark green leaves, opposite, simple
Dusty, drooping, dark blue berry clusters
Multiple, tightly-grouped trunks with pale grey bark



CHINABERRY, *Melia azedarach*

Large deciduous tree up to 50' tall
Smooth reddish bark with white spots when young. Bark is grey and furrowed when mature
Dark green, alternate, bipinnately compound leaves with serrated edges
Clusters of small, lilac flowers, developing into golden, drooping clusters of fruits that persist through the winter



CHINESE PISTACHE, *Pistacia chinensis*

15-25' tall with a single-trunked, symmetrical form
Spotted gray-brown bark, flakes with age
Pinnately compound leaves, usually with an even number of leaflets. Leaves do not have a terminal leaflet.
On female trees, small red to blue berry clusters
Bright yellow and red foliage in fall
Leaves have an unpleasant odor when crushed
Often mistaken for Western soapberry

Walnut Creek Unified Stewardship Plan

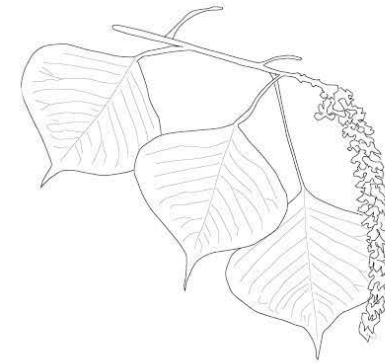
INVASIVE PLANTS, CONT'D

The following invasive trees are some of the most commonly observed species in Walnut Creek Metropolitan Park. This guide will help make field identifications. For more species and more information, refer to *Trees of Central Texas* by Robert A. Vines or *Native and Naturalized Woody Plants of Austin and the Hill Country* by Daniel Lynch.

INVASIVE TREES, CONTD

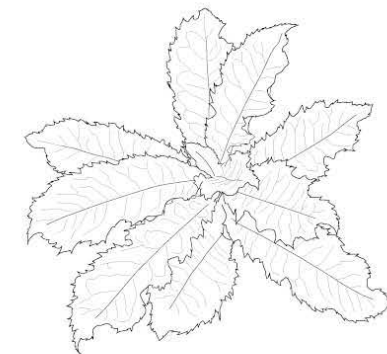
CHINESE TALLOWTREE, *Triadica sebifera*

25-35' tall
Simple, glossy leaves with pointed tip
Beige flaky bark
bright yellow and red foliage in fall



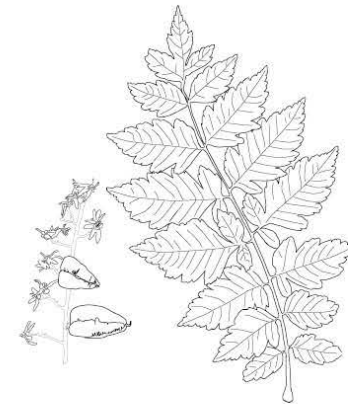
TAIWANESE PHOTINIA, *Photinia serratifolia*

10-20' tall with bushy growth
Simple serrated leaves
Glossy leaves, dark green to burgundy
Smooth and dark reddish-brown to gray bark



GOLDEN RAIN TREE, *Koelreuteria paniculata*

Bright yellow flowers, followed by papery, pink, lantern-like seed pods
Compound, alternating serrated leaves, medium green color
Bright golden foliage in the fall
Light brown bark, thin plates once mature



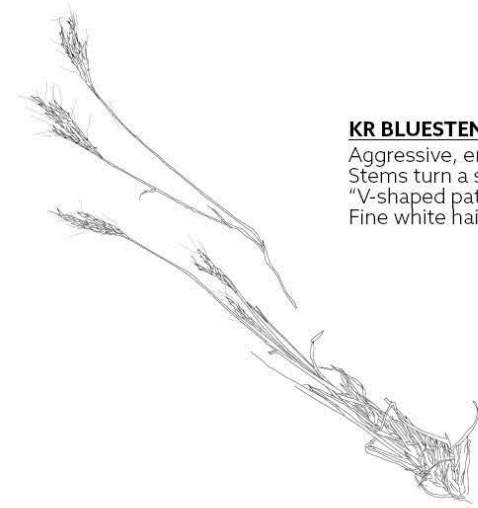
Task Sheets

Walnut Creek Unified Stewardship Plan

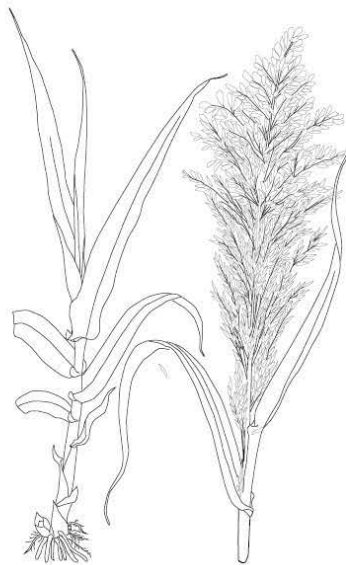
INVASIVE PLANT I.D.

The following invasive grasses are some of the most commonly observed species in Walnut Creek Metropolitan Park. This guide will help make field identifications. For more species and more information, refer to *Grasses of the Texas Hill Country* by Brian Loflin & Shirley Loflin.

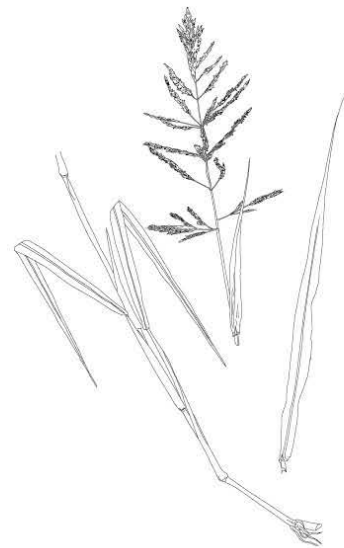
INVASIVE GRASSES



KR BLUESTEM, *Bothriochloa ischaemum var. songarica*
 Aggressive, erect bunchgrass 18-48" tall
 Stems turn a straw color when mature
 "V-shaped pattern" seed head, light green to burgundy
 Fine white hairs visible on stem joints



GIANT REED, *Arundo donax*
 Tall, perennial cane, up to 20'
 Thin, elongated leaves, often 1-2' long
 Very dense and aggressive root rhizome
 Large plume of flowers at top of stalk



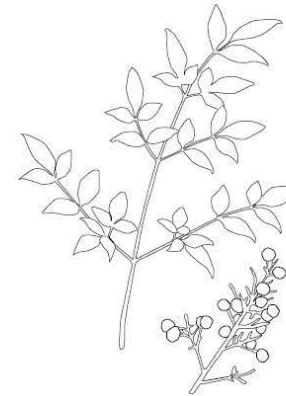
JOHNSONGRASS, *Sorghum halepense*
 Fast-growing, warm-season perennial grass 36-72" tall
 Rhizomatic growth, often grows in patches
 Long, fibrous leaf blades with thin white stripe through center
 Round, cylindrical stem
 Noticeable light green to burgundy panicle seed head

Walnut Creek Unified Stewardship Plan

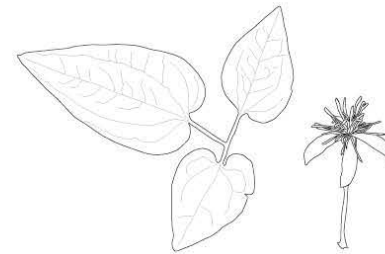
INVASIVE PLANTS I.D.

The following invasive shrubs and vines are some of the most commonly observed species in Walnut Creek Metropolitan Park. This guide will help make field identifications. For more species and more information, refer to *Central Texas Invasive Plants Volunteer Field Guide* by the City of Austin Watershed Department or *Invasive Plant Atlas of the United States* at invasiveplantatlas.org

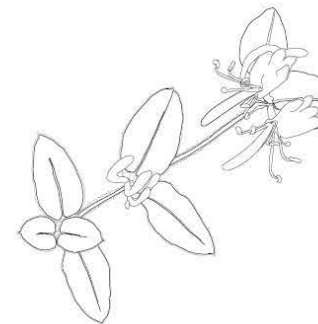
INVASIVE SHRUBS AND VINES



NANDINA, *Nandina domestica*
 Multi-stemmed, evergreen shrub, 4-8' tall
 Dark green-red pinnately compound leaves
 Bright red berry clusters atop of each plant in fall-winter
 Thin, long trunk with woody, brown bark, and fissures near the base



SWEET AUTUMN CLEMATIS, *Clematis terniflora*
 Beautiful but aggressive flowering vine, climbing 15-30'
 Small cream-white, 4-petaled blooms in fall
 Semievergreen shiny compound leaves with 3-5 elliptic leaflets



JAPANESE HONEYSUCKLE, *Lonicera japonica*
 Vigorous, spreading vine, 15-30'
 Opposite, simple, ovate, dark green leaves. Soft in texture
 New leaves produced in spring are often highly lobed
 Small white and yellow flowers spring-fall

Task Sheets

INVASIVE PLANT REMOVAL

PURPOSE:

Invasive species are plants that have been introduced to Texas from other regions around the world. They cause problems by crowding out native species and do not provide the same wildlife habitat value. Removing these invasive species allows for a healthier native plant community and a healthier community of other flora and fauna that depend on relationships with native plants.

MATERIALS:

Tools needed:

- Gloves and eye protection
- Weed wrench or Lawn Jaws
- Utility knife or linoleum knife
- 2-3" stiff putty scraper or similar
- Coarse plastic scrub pads
- Spray bottle with soapy water
- 70% rubbing alcohol

METHODS: INVASIVE TREES

Includes glossy privet, Chinaberry, Chinese pistache, Taiwanese photinia, golden raintree, and Chinese tallowtree

If focusing on a large area of 75% or greater invasive species cover, it is recommended to remove no more than 1/3 of the invasive trees during one season if using mechanical removal. Girdling is a preferable method for areas like these.

MECHANICAL REMOVAL

1. For saplings 2" or less diameter (measured at the base of the trunk), uproot using a Weed Wrench or other mechanical device.
2. Provide for erosion control or restoration plantings as needed.
3. Leave as much of the pulled material as possible on site in low-use woodlands, taking care to remove any seed material, and leaving roots without soil contact.
4. Plan on removing seeds or fruit from the site.
5. Ensure woody material is broken down into shorter lengths and lays flat on the ground surface so that it readily decomposes. Do not leave large piles of brush or logs in natural areas. Reference Trail Brushing sheet for ways to use brush to close informal trails.

GIRDLING

1. For trees 2" or greater diameter (measured at the base of the trunk), remove the outer layer of bark.
2. With cutting tool, score the bark around the trunk twice, 4-6" apart, at 1/16-1/8" depth.
3. With a flat-edged scraping tool, remove the outer layer of bark from the tree, which should separate from the wood relatively easily.
4. With coarse plastic scrub pad and soapy water, roughly scrape away the toothpick-like remainder of the bark until smooth.
5. Repeat with 70% rubbing alcohol.

SAFETY:

Use sharp or heavy tools responsibly. Weed wrenches may pinch or injure with their weight. Girdling tools are extremely sharp.

Stay aware of fellow workers to avoid hitting them with trees, limbs, or tools.

Use appropriate clothing and protective gear, including long-sleeved shirt and closed-toed shoes, and gloves and glasses.

Supply first-aid, including gauze, tape, super glue, and other materials for lacerations.

Poison ivy is a common understory plant in many areas of the park. Avoid coming in contact with any part of this plant. Wear long sleeves and pants to avoid skin contact.

GIRDLING EXAMPLE



NOTES

For mechanical removal of Chinese pistache, loosen soil at base of plant to reduce the risk of the trunk snapping at the base.

For girdling of Chinaberry and Chinese pistache, plan to follow up every 3 months to remove or girdle new sprouts from the trunk.

Plan for re-seeding or planting in the areas where significant amounts of invasive plants are removed or soil is disturbed. Reference Restoration Plantings sheet for more information.

For video instructions on girdling ligustrum, refer to "Demonstration of Invasive Tree Girdling with Cliff Tyllick", available on YouTube:

<https://www.youtube.com/watch?v=R-L1RjN095w>

INVASIVE PLANT REMOVAL

METHODS: INVASIVE GRASSES

Includes KR bluestem and Johnsongrass

MECHANICAL REMOVAL

1. If the area will be mostly bare following invasive removal, plan for erosion control measures and/or restoration plantings before beginning work.
2. Remove existing plant material including root material from the site.
3. Ensure removal of as much below-ground rhizome material as possible.
4. Remove all plant material and dispose off-site.
5. Install erosion control materials, such as mulch logs, or jute netting if necessary. If replanting, immediately plant after invasive removal. Refer to Restoration Plantings task sheet for more information.

METHODS: INVASIVE VINES AND SHRUBS

Includes nandina, sweet autumn clematis, and Japanese honeysuckle

MECHANICAL REMOVAL

1. For vines 2" or less diameter (measured at the base of the trunk), cut 6-8" above ground level.
2. Uproot using a Weed Wrench or other mechanical device.
3. For nandina, loosen soil around the plant and extract as much of the root mass as possible.
4. Provide for erosion control or restoration plantings as needed.
5. Leave as much of the pulled material as possible on site in low-use woodlands, taking care to remove any seed material, and leaving roots without soil contact. Use pulled material for trail brushing if appropriate (refer to Trail Brushing task sheet).
6. Leave vines in trees and do not attempt to pull them down.
7. Cut vines above 7' height if they interfere with trail users.

NOTES

Refer to Invasive Species ID task sheet for descriptions of common invasive species.

Refer to Native Plant ID task sheet for descriptions of common native species, including those that can be mistaken for invasive species.

Plan for re-seeding or planting in the areas where significant amounts of invasive plants are removed or soil is disturbed. Reference Restoration Plantings sheet for more information.

Plan for next year: the process of invasive species removal often creates the conditions for germination of invasive species seeds in the seedbank. Hand pulling of new sprouts is required for multiple years until the seed bed is diminished and other plants can fill the niches.

Plan to remove materials: the removal of invasive species can generate significant amounts of brush. Plan on

removing seeds, fruit, or rhizomes (depending on species) from the site. Ensure woody material is broken down into shorter lengths and lays flat on the ground surface so that it readily decomposes. Do not leave large piles of brush or logs in natural areas. Reference Trail Brushing sheet for ways to use brush to close informal trails.

Contact City of Austin Watershed Protection Department for guidance on invasive species removal efforts as well as Ready Set Plant events for re-planting of native species following invasive species removal.

Contact City of Austin Urban Forestry Department for removal of mature invasive trees that cannot be removed by volunteers or hand tools.

Contact City of Austin PARD for removal of invasive giant reed (*Arundo donax*) that cannot be removed by volunteers or hand tools.

Task Sheets

Walnut Creek Unified Stewardship Plan

RESTORATION PLANTINGS

PURPOSE:

To increase biodiversity, create pollinator habitat, restore soils, increase shade, and improve woodland health.

MATERIALS:

Plant material for installation:

- container plants or plugs
- bare root saplings or shrubs
- live root grasses and forbs
- seed

Amendments:

- single-grind mulch or straw
- compost

METHODS:

CONTAINER PLANTINGS

1. Identify the planting area. Prioritize areas of recently-removed invasive species, thin vegetation, bare soil, eroded slopes, low plant diversity, or high visibility.
2. Schedule planting. Most live planting should occur from November to February to allow plants to establish before the heat of the summer.
3. Source plant material. Species should be native to the area and suited to the water and light conditions. Plants should be the smallest size suitable for the circumstances.
4. Establish clear boundaries with fences, rocks, logs, brush, or biodegradable straw logs (also called mulch socks or straw wattles) that are durable and deter foot traffic.
5. Do not remove native plants.
6. Arrange plants, considering their mature size and assume 50-75% survival.

SAFETY:

Be aware of snakes, scorpions, or fire ants that may be living under rocks or logs.

Use sharp tools responsibly.

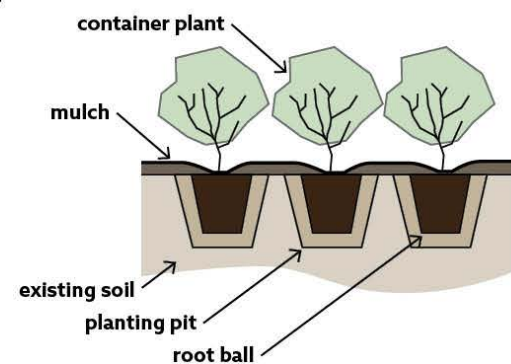
Stay aware of fellow workers to avoid hitting them with brush or tools.

Poison ivy is a common understory plant in many areas of the park. Avoid coming in contact with any part of this plant. Wear long sleeves and pants to avoid skin contact.

Tools needed:

- gloves
- long-sleeved shirts and pants recommended
- soap and/or lotion for poison ivy treatment
- spade or sharpshooter shovel if planting live plants
- rake if seeding
- buckets, wheelbarrows, or carts

7. Ensure holes for planting are twice as wide as the plant's container and the plant is planted to full depth, flush with the soil surface.
8. Plant plants and fill hole with excavated soil. Ensure soil around the plant is firm and without voids.
9. Water plants immediately after planting.
10. Container plantings should be mulched with a 3" layer of wood mulch. Take care to not bury container plants with mulch. This may be sourced locally from PARD or arborists, and should be free of trash and invasive species.
11. Plan for maintenance. Long-term success requires that the new plants have sufficient water, are not being outcompeted by invasive species, and are not impacted by erosion issues.



Walnut Creek Unified Stewardship Plan

RESTORATION PLANTINGS

METHODS:

SEEDINGS

1. Identify the seeding area. Prioritize areas of recently-removed invasive species, low plant diversity, low canopy cover, high erosion, or high visibility.
2. Source seeds. Species should be native to the area and suited to the water and light availability. Seed rate should be between 20 and 40 lbs per acre, dependent on species, for areas of thin vegetation.
3. Establish clear boundaries with fences, rocks, logs, or brush that are durable and deter foot traffic. Plan for erosion and utilize logs, brush, or biodegradable straw logs to retain soil.

4. Most seeding should occur from October to March to allow plants to establish before the heat of the summer.
5. Clear the seeding area of leaf litter and duff layer to expose the soil. Lightly disturb the soil if it is soft, or actively break up the top 3-6" of soil if it is compacted. Retain all leaf litter and duff layer on site and replace following seeding.
6. Do not remove existing native plants. Leave native plants in place and seed around them.
7. Plan for maintenance. Long-term success requires that the new plants have sufficient water, are not being outcompeted by invasive species, and are not impacted by erosion issues.

For approved seed mixes, reference Unified Stewardship Plan or City of Austin Standard Specification Manual 609S Native Seeding and Planting for Restoration

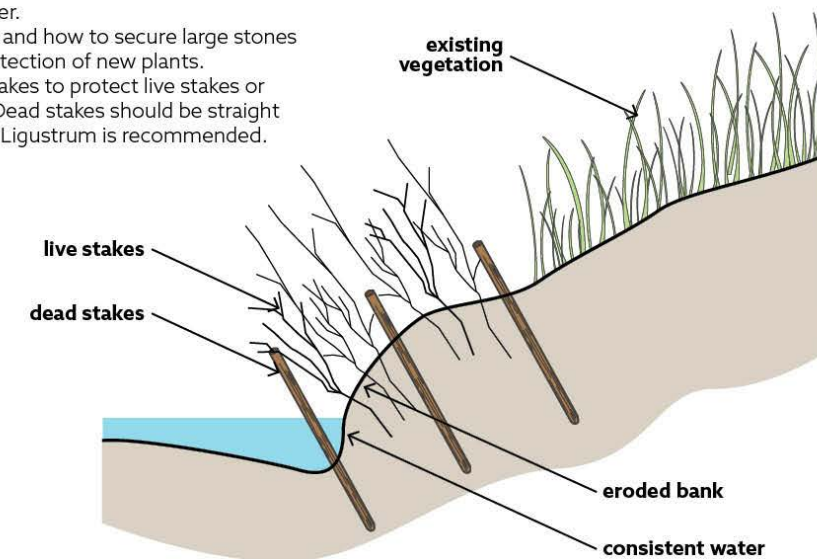
LIVE STAKING

Be aware of snakes, scorpions, or fire ants that may be living under

1. Identify an area of creek bank with consistent moisture, low canopy cover, high erosion, or high visibility. The outside of a curve will receive higher floodwater velocities, but is also in greater need of staking.
2. Source stakes by pruning existing willows on-site. Use stakes of roughly 1/2-1" diameter and 3-8' length.
3. Embed stake 12-18" in the creek bank, using a sharpshooter shovel if needed. Embed stakes 1-3' apart from one another.
4. Consider floodwaters and how to secure large stones or utilize them for protection of new plants.
5. Optional: use dead stakes to protect live stakes or secure large stones. Dead stakes should be straight and free of branches. Ligustrum is recommended.

Species appropriate for live stakes:

- Black willow (*Salix nigra*)
- Buttonbush (*Cephalanthus occidentalis*)
- Roosevelt weed (*Baccharis neglecta*)
- Cottonwood (*Populus deltoides*)
- Roughleaf dogwood (*Cornus drummondii*)
- American sycamore (*Platanus occidentalis*)



Vegetation Restoration

Vegetation restoration work may be an activity undertaken on its own, or as a companion activity to invasive species removal or erosion mitigation. The best way to reduce invasive species and erosion long-term is to establish and steward healthy native plant communities. To that end, there are multiple methods for increasing the number and diversity of native plants in the Walnut Creek Metropolitan Park.

Refer to Guidelines to Volunteering on page 8 and Processes for Stewardship & Community Activated Park Projects on page 10 in the Introduction chapter of this document for more information about approval processes.

SEEDING

Seeding can introduce a large number of potential plants and species into an area at low cost. It is most useful in areas where rapid plant establishment is not critical and the goal is an increase in biodiversity and overall ecological function. Seed can be procured from approved vendors at right, or gathered locally.

PLANTING

Planting can introduce smaller numbers of plants in specific areas, and if planned wisely (considering seasonality, location, species, and potential for irrigation) can have success quicker than seeding. Ensuring the success of live plantings requires a multi-year commitment to keep the young plants watered, weeded, and protected.

LIVE STAKING

Live staking is the method of planting dormant branches of certain species so that they sprout roots and become new shrubs or trees. It is a method limited to areas of high moisture, such as eroded streambanks, but can be very successful at re-establishing vegetation when performed correctly. Because the stakes are gathered locally from fast-growing species like black willow, it is possible to plant large quantities at low cost.

APPROVED SEED VENDORS

- **Native American Seed**
<https://seedsource.com/>
- **Douglas King Seed**
<https://www.dkseeds.com/>
- **Turner Seed**
<https://www.turnerseed.com/>

SPECIES APPROPRIATE FOR LIVE STAKING

Common name	Scientific name	Shade Tolerance	Growth Rate	Mature Height (ft)	Wetland Indicator
False Willow	<i>Baccharis neglecta</i>	Intolerant	Rapid	9	FAC
Buttonbush	<i>Cephalanthus occidentalis</i>	Tolerant	Moderate	15	OBL
Roughleaf dogwood	<i>Cornus drummondii</i>	Intermediate	Rapid	20	FAC
American sycamore	<i>Platanus occidentalis</i>	Intermediate	Rapid	100	FAC+
Eastern cottonwood	<i>Populus deltoides</i>	Intolerant	Rapid	190	FAC
Black willow	<i>Salix nigra</i>	Intolerant	Rapid	100	FACW+

Refer to the Restoration Plantings Task Sheet for more information and specific management guidelines.

Approved Seeds

		Upland Full Sun	Upland Shade-Dappled	Moderate to High Moisture
Native American Seed Mix	Seed Contents			
Shade-Friendly Grass Mix	blue grama, little bluestem, Pineywoods little bluestem, purpletop, threeflower melic, cereal rye grain, sideoats grama, Virginia wildrye, hooded windmill grass, plains bristlegass, slim tridens, inland seaoats, prairie wildrye, splitbread bluestem, Waco indiagrass		*	*
Shade-friendly Wildflower Mix	American beautyberry, butterfly weed, cutleaf daisy, largeflower coreopsis, purple coneflower, Turk's cap, bergamot, cardinal flower, frostweed, lemon mint, red columbine, black-eyed susan, chile pequin, golden-wave, pigeonberry, scrambled eggs, bluecurls, clasping coneflower, lanceleaf coreopsis, standing cypress, annual winecup			
Hummers & Singers	partridge pea, American basketflower, purple coneflower, cutleaf daisy, Illinois bundleflower, lemon mint, purple prairie clover, black-eyed susan, Maximilian sunflower, gayfeather, standing cypress, butterfly weed, annual winecup, mealy blue sage, pink evening primrose	*	*	*
Bee Happy Mix	American basketflower, Texas bluebonnet, common sunflower, frostweed, huisache daisy, largeflower coreopsis, mealy blue sage, purple prairie clover, smooth white penstemon, Tahoka daisy, bergamot, bush sunflower, cowpen daisy, gayfeather, Illinois bundleflower, lazy daisy, partridge pea, rattlesnake master, standing cypress, tall goldenrod, black-eyed susan, butterfly weed, cutleaf daisy, golden-wave, Indian blanket, lemon mint, prairie verbena, sleepy daisy, stiff goldenrod, blue wild indigo, clasping coneflower, cutleaf evening primrose, greenthread, lanceleaf coreopsis, Maximilian sunflower, purple coneflower, slender mountain mint, swamp milkweed, white prairie clover	*	*	*
Pollinator Essentials Mix	American basketflower, cutleaf daisy, lanceleaf coreopsis, purple coneflower, black-eyed susan, golden-wave, lemon mint, Texas bluebonnet, Illinois bundleflower, partridge pea, purple prairie clover, butterfly weed, Indian blanket, plains coreopsis, white prairie clover	*	*	*
Native Trail Mix	Texas bluebonnet, gayfeather, Indian blanket, lanceleaf coreopsis, purple coneflower, cutleaf daisy, huisache daisy, purple prairie clover, standing cypress, bush sunflower, golden-wave, clasping coneflower, lemon mint, American basketflower, black-eyed susan, Mexican hat, plains coreopsis, prairie coneflower, Maximilian sunflower, buffalograss, blue grama, prairie wildrye, little bluestem, green sprangletop, sand lovegrass, sideoats grama, cane bluestem, Texas cupgrass, Virginia wildrye, white tridens, red lovegrass, purple lovegrass, sideoats grama, slim tridens, slender grama, Drummond phlox, Missouri primrose	*	*	*
Wetland Fringe Mix	American basketflower, Illinois bundleflower, plains coreopsis, black-eyes susan, Maximilian sunflower, clasping coneflower, pink evening primrose, cutleaf daisy, pitcher sage, tall goldenrod, scarlet sage		*	*
Thunder Turf Mix	Buffalograss, blue gramma, curly mesquite	*		

UPLAND FULL SUN SPECIES

Type	Common Name	Scientific Name
Grass	purple three-awn	<i>Aristida purpurea</i>
Grass	sideoats grama	<i>Bouteloua curtipendula</i>
Grass	buffalograss	<i>Bouteloua dactyloides</i>
Grass	blue grama	<i>Bouteloua gracilis</i>
Grass	Canada wildrye	<i>Elymus canadensis</i>
Grass	green sprangletop	<i>Leptochloa dubia</i>
Grass	galleta	<i>Pleuraphis jamesii</i>
Grass	sand dropseed	<i>Sporobolus cryptandrus</i>
Herb	antelope horns	<i>Asclepias asperula</i>
Herb	plains coreopsis	<i>Coreopsis tinctoria</i>
Herb	purple prairie clover	<i>Dalea purpurea</i>
Herb	blanket flower	<i>Gaillardia pulchella</i>
Herb	sunflower	<i>Helianthus annuus</i>
Herb	Texas bluebonnet	<i>Lupinus texensis</i>
Herb	lemon beebalm	<i>Monarda citriodora</i>
Herb	pink evening primrose	<i>Oenothera speciosa</i>
Herb	prairie coneflower	<i>Ratibida columnifera</i>
Herb	greenthread	<i>Thesesperma filifolium</i>

UPLAND SHADE-DAPPLED SPECIES

Type	Common Name	Scientific Name
Grass	sideoats grama	<i>Bouteloua curtipendula</i>
Grass	inland sea oats	<i>Chasmanthium latifolium</i>
Grass	Canada wildrye	<i>Elymus canadensis</i>
Herb	tall aster	<i>Aster praealtus</i>
Herb	plains coreopsis	<i>Coreopsis lanceolata</i>
Herb	Illinois bundleflower	<i>Desmanthus illinoensis</i>
Herb	purple coneflower	<i>Echinacea purpurea</i>
Herb	cutleaf daisy	<i>Engelmannia pinnatifida</i>
Herb	drummond phlox	<i>Phlox drummondii</i>
Herb	black-eyed susan	<i>Rudbeckia hirta</i>
Herb	scarlet sage	<i>Salvia coccinea</i>
Herb	horseherb	<i>Calytocarpus vialis</i>
Herb	frogfruit	<i>Phyla nodiflora</i>

MODERATE TO HIGH MOISTURE

Type	Common Name	Scientific Name
Grass	big bluestem	<i>Andropogon gerardii</i>
Grass	bushy bluestem	<i>Andropogon glomeratus</i>
Grass	inland sea oats	<i>Chasmanthium latifolium</i>
Grass	Canada wildrye	<i>Elymus canadensis</i>
Grass	sand lovegrass	<i>Eragrostis trichodes</i>
Grass	Lindheimer's muhly	<i>Muhlenbergia lindheimeri</i>
Grass	switchgrass	<i>Panicum virgatum</i>
Grass	indiagrass	<i>Sorghastrum nutans</i>
Grass	Eastern gamagrass	<i>Tripsacum dactyloides</i>
Herb	lazy daisy	<i>Aphanostephus ramosissimus</i>
Herb	butterfly weed	<i>Asclepias tuberosa</i>
Herb	plains coreopsis	<i>Coreopsis tinctoria</i>
Herb	purple prairie clover	<i>Dalea purpurea</i>
Herb	Illinois bundleflower	<i>Desmanthus illinoensis</i>
Herb	clasping coneflower	<i>Dracopis amplexicaulis</i>
Herb	sunflower	<i>Helianthus annuus</i>
Herb	Maximilian sunflower	<i>Helianthus maximiliani</i>
Herb	lemon beebalm	<i>Monarda citriodora</i>
Herb	black-eyed susan	<i>Rudbeckia hirta</i>
Herb	goldenrod	<i>Solidago altissima</i>

Seed lists sourced from City of Austin Standard Specification Manual 609S Native Seeding and Planting for Restoration

Documentation, Monitoring, and Community Science

The creation of data to describe the existing park, document changes made to it, and monitor its evolution over time are essential to gauge success, facilitate an adaptive management approach, and track change. Ongoing documentation can facilitate coordination by ensuring all entities working in the area are aware of what has been done, what was effective, what remains to be done, and how best to allocate resources. Community science is also a method of stewardship with a low barrier to entry, requiring only an observant person and mobile device.

TRACKING BIODIVERSITY

Community science is a vital way to track biodiversity information, with many individuals in the Austin area actively recording biodiversity data through eBird, iNaturalist, Odonates of Texas, Fishes of Texas, and other online services. Individuals input data, which goes through a validation process that allows final users to understand the quality of the data. This activity can occur as part of a volunteer event, such as a Bioblitz, as part of an organized survey, or simply as a park user making observations during regular visits.

To track biodiversity data within park in iNaturalist, utilize the “project” titled “Walnut Creek Metropolitan Park” or tag the park as a location on the iNaturalist website or mobile interface. If using eBird, a Walnut Creek Pk (N. Austin) hotspot exists for users to contribute observations.. New and existing observations will automatically be added to the project, location, or hotspot for long-term biodiversity tracking.

BIOBLITZ

Bioblitzes are organized events that encourage and enable members of the public to engage in community science and biodiversity tracking. They take place at a specific location and may last for half a day. They are typically organized by a nonprofit organization, such as APF, and coordinate experts to lead educational walks during the event. Examples of experts could be professional or amateur botanists, mycologists, or entomologists. The specific experts may be tailored to the biodiversity available for observation at that location. These events allow for community outreach and education as well as achieving a large number of



A ecologist leads a Bioblitz event at Lady Bird Lake

observations and data points in a short period of time.

EARLY DETECTION MONITORING

Early detection monitoring is not designed to assess the effectiveness of management actions but rather to detect new threats at an early stage so that they can be addressed quickly. This is considered a best management practice and is called for in both COA's *Urban Forest Plan* and *Invasive Species Management Plan*. It is not tied to a specific photo point or vegetation plot, but requires a trained volunteer to periodically walk the entire study area and observe new invasive threats, expanding invasive plant issues, areas being overused and denuded, new informal trails, and new erosion issues. Once new threats are identified, volunteers can quickly take action and prevent a small problem from becoming a larger one that requires more time and resources to control in the future.

To be effective, early detection monitoring requires a volunteer who is:

- Adept at identifying invasive plants, even obscure ones;
- Familiar with the natural areas of Walnut Creek Metropolitan Park and able to accurately determine if change is occurring;
- Willing to walk the grounds a minimum of twice per year, looking for new threats; and
- Coordinating with a nonprofit organization or volunteer group to ensure incorporation of the data into the Unified Stewardship Plan

It is recommended that field data be recorded electronically with the following variables: date, recorder, type of threat (species name, new invasive species, expanding invasive species, new or expanding erosion, new or expanding trampling, new or expanding informal trail, new or expanding stormwater flow), location (including latitude and longitude, along with general identifiers), size of issue (for invasive species should include patch size, percent cover, and if appropriate number of plants), and a narrative description of the problem and potential cause. If electronic recording is not feasible, a potential early detection monitoring form template can be found the Trail Work Sheets Appendix. This document can also be

used as a reference for recommended fields if using an electronic data recording app.

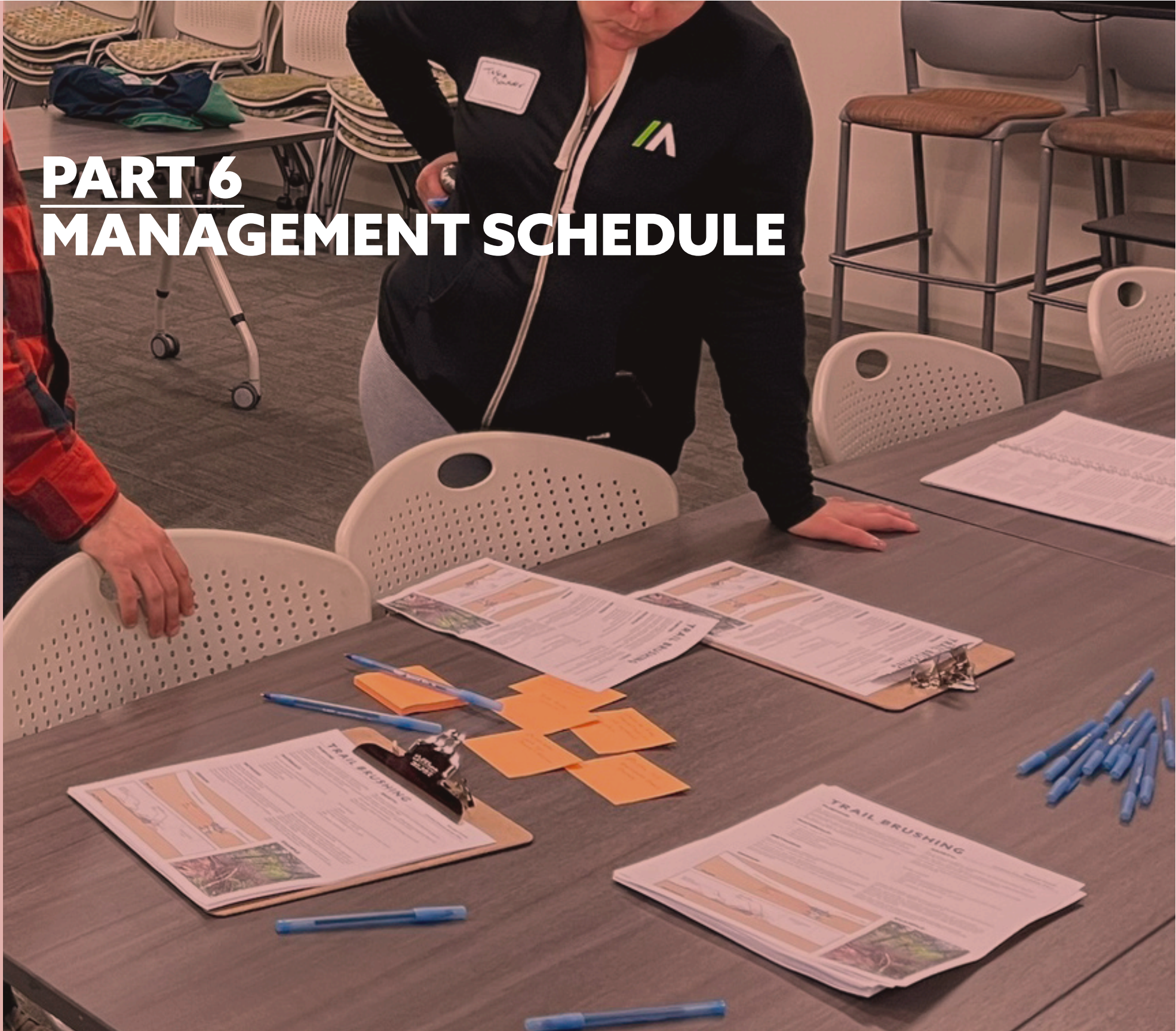
PHOTO POINTS

Photo points are a relatively quick and easy way to perform qualitative monitoring. At any project, photo points should be established in representative locations that document the site conditions during, before, and at quarterly or annual intervals following the project. Using a field data collection app on a mobile device, such as Fulcrum, Avenza, or equivalent allows one to log photos with precise GPS

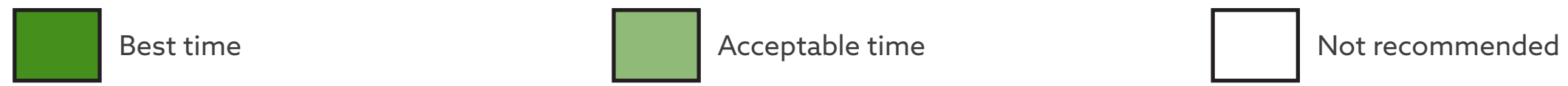


Monitoring for invasive species and recording data on a mobile device

PART 6 **MANAGEMENT SCHEDULE**



	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Notes
Restoration Planting													
Upland Restoration													
Riparian Restoration													
Seeding wildflowers and cool season grasses													
Seeding warm season grasses													
Invasive Plant Management													
Removal of live plants													Fall and winter are sub-optimal times for removal of deciduous species such as Japanese honeysuckle and Chinese pistache.
Ligustrum girdling													
Tree Pruning (oaks)													Do not trim oak trees during oak wilt season (February through June).
Tree Pruning (other trees)													
Trail Drainage Improvements													It is advised to not perform manual labor during the hottest months or the peak rainy season.
Steps and Armoring													It is advised to not perform manual labor during the hottest months or the peak rainy season.
Trail Brushing													It is advised to not perform manual labor during the hottest months or the peak rainy season.
Urban Trail Maintenance													
Volunteer Workdays													It is advised to not perform manual labor during the hottest months or the peak rainy season.
Bioblitzes													Bioblitzes should happen during the peak growing seasons or when target species are most active.





PART 7
STAKEHOLDER PROCESS &
CONCLUSION

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STAKEHOLDER MEETING 1

November 28, 2023

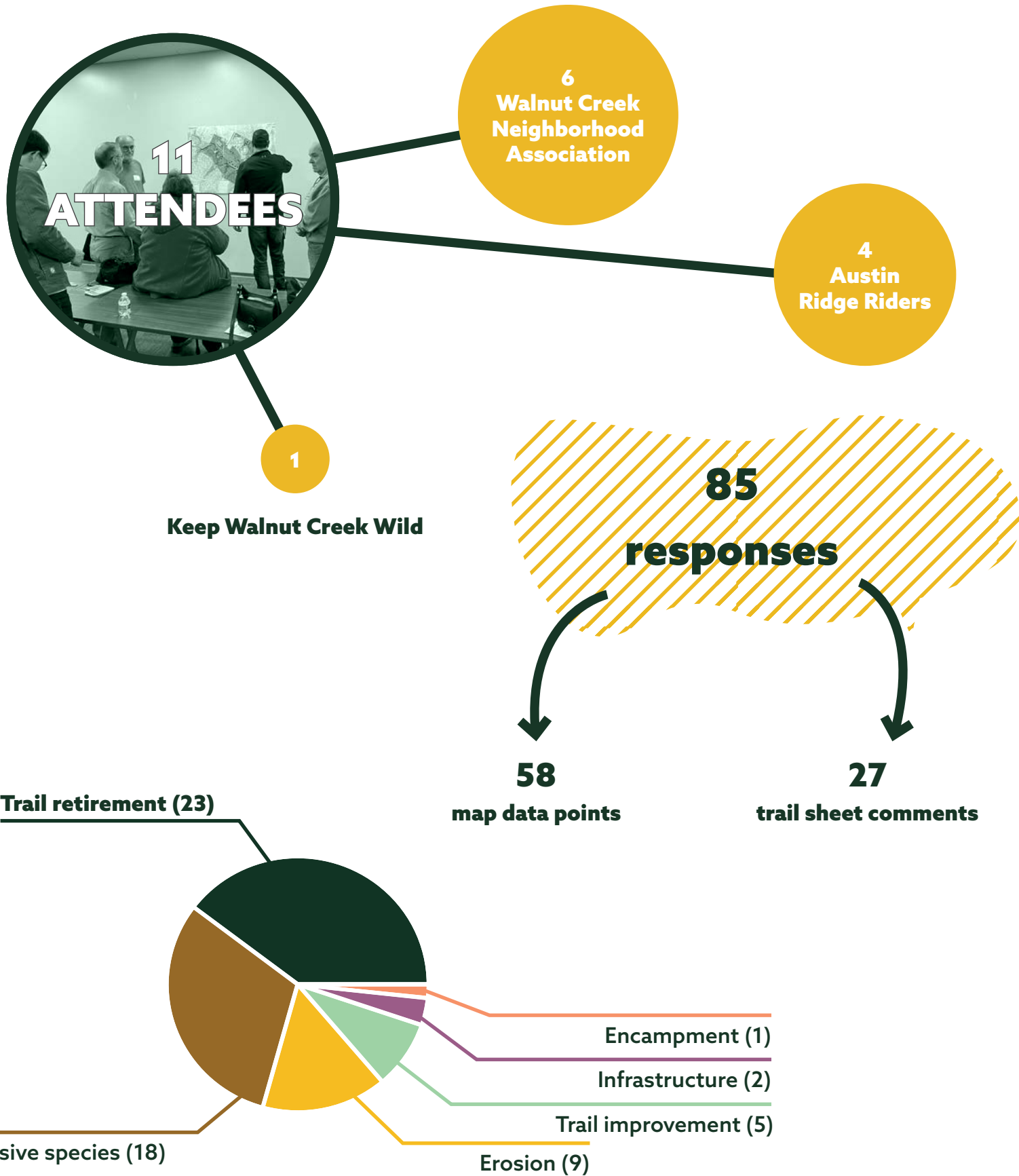
The Unified Stewardship Plan aims to fortify a collaboration between PARD, community members, and stakeholders to create a holistic practice in managing the natural areas of Walnut Creek Metropolitan Park. The shared vision was informed by two stakeholder meetings to gather information about existing stewardship in the park, future goals, and share progress to allow for feedback before the final draft of the plan.

Stakeholder Process

The development of the Walnut Creek Metropolitan Park Unified Stewardship Plan depended on contributions from stakeholders, especially the established organizations Austin Ridge Riders and Keep Walnut Creek Wild. The initial stakeholder meeting took place on November 28, 2023 at the North Austin YMCA. Representatives of the Walnut Creek Neighborhood Association, Austin Ridge Riders, and Keep Walnut Creek Wild attended, and provided the experiential knowledge necessary to begin the project.

This initial meeting established 58 data points which were then located and verified by Siglo Group.

A second meeting was held April 23, 2024 at the Asian American Resource Center to share final progress with stakeholders and get feedback before publishing the final report of the Unified Stewardship Plan. Feedback from this meeting was gathered and incorporated into the final draft version of the Plan.



Conclusion

Stewardship has long existed in Walnut Metropolitan Park. This plan was created to unify land management efforts between PARD, community members, and other stakeholders in enhancing the ecological health and beauty of this urban asset. Project goals included creating a Unified Stewardship Plan aligned with the stakeholders who care for the park today, creating an inventory of past and current conditions of the park and its systems, providing volunteers with clear stewardship projects, and producing detailed instructions for landscape management that abides by COA standards.

Visitors come to this forested park for its shaded trails, urban wildlife, and recreational offerings, including mountain biking. This park faces common issues associated with high use and urban conditions, such as unauthorized trails that have led to trampling and erosion and invasive species, most notably ligustrum.

This plan highlights methods for management, restoration, and monitoring efforts. As work continues within the park, it will be important to establish a monitoring protocol to record actions within the park between the different individuals and organizations that steward it. Record keeping should include community science efforts in tracking biodiversity in the park, as a benchmark of the efficacy of restoration efforts. As data is logged, this report should be updated annually to reflect changes, lessons learned, and evolving goals within Walnut Metropolitan Park.

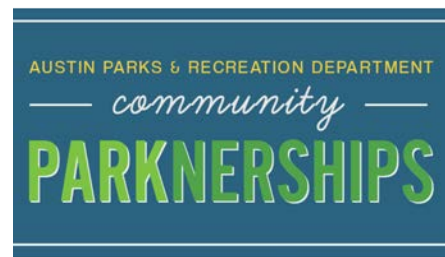
The strategic allocation of resources as outlined in these guidelines, including defined management tasks, ongoing best management practices, land monitoring, will enhance Walnut Creek Metropolitan Park's health and value. The end result is a heightened user experience and enhanced ecological function that fosters enjoyment, excitement, interest, and participation for current and future generations.



NEXT STEPS

1. **Develop monitoring protocol**
2. **Develop record-keeping processes**
3. **Annual report updates with updated maps and priorities. Consider appendices for projects completed and by whom.**





Appendix:

Trail Work Sheets

*Walnut Creek Unified Stewardship Plan
Produced by Siglo Group*



ACTIVITY LOG

PURPOSE:

To establish records of all actions taken at Walnut Creek Metropolitan Park under the Unified Stewardship Plan, to coordinate volunteer and stakeholder actions, and to evaluate the performance of past actions.

Date: _____ Recorded by: _____ Organization: _____

Crew size: _____ Crew lead: _____ Lead contact email: _____

Location: _____

latitude: _____ longitude: _____

Action taken:

Example include: tree planting, invasive plant removal, seed sowing, trail maintenance, etc. Include methods, quantities, and details.

Area treated:

- Point (one or few invasives or locations) Count: _____
- Linear (erosion or invasives extending along a line) Length: _____
- Area (of non-linear type) Area: _____

Photos Taken and Attached: Yes No

PARD notified: Yes No PARD contact: _____

MONITORING LOG

PURPOSE:

To monitor existing conditions at Walnut Creek Metropolitan Park, identify current or future threats, and to plan and prioritize future actions.

Date: _____ Recorded by: _____ Organization: _____

Location: _____

latitude: _____ longitude: _____

Type of threat:

New invasive infestation

New erosion

Expanding invasive infestation

Expanding erosion

New denuding of vegetation

Overgrown trail or hazard limb/tree

Informal trail

Poor trail drainage

Other; describe: _____

Patch type:

Point (one or few invasives or locations)

Count: _____

Linear (erosion or invasives extending along a line)

Length: _____

Area (of non-linear type)

Area: _____

Detailed observation: _____

Narrative observation
to include details not
included above.

Potential restoration opportunities:

Invasive removal

Trail armoring

Restoration plantings

Drainage improvements

Tree pruning

Trail brushing

Other; describe: _____

Labor required: _____

Photos Taken and Attached: Yes No

PARD notified: Yes No PARD contact: _____

NATIVE TREE I.D.

The following native trees are some of the most commonly observed species in Walnut Creek Metropolitan Park. This guide will help make field identifications. For more species and more information, refer to *Trees of Central Texas* by Robert A. Vines or *Native and Naturalized Woody Plants of Austin and the Hill Country* by Daniel Lynch.

UPLAND TREES

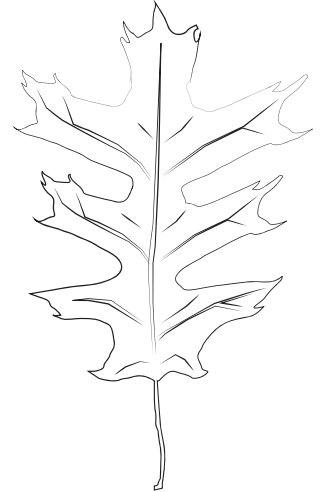
LIVE OAK, *Quercus virginiana* var. *fusiformis*

Large, evergreen, overstory tree up to 50' tall
Simple, alternate, evergreen, thick, and dark leaves
Dark grey/brown bark, smooth and light when young, furrowed with age



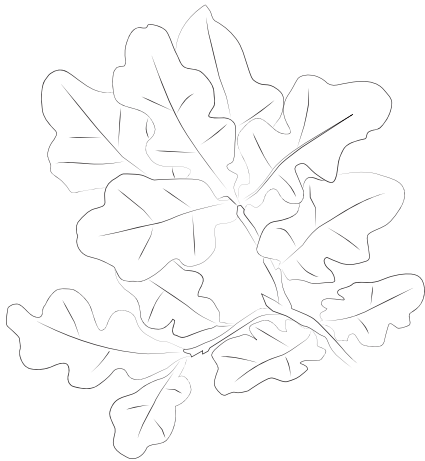
BUCKLEY OAK, *Quercus buckleyi*

Medium, deciduous tree 15-30' tall
Glossy, green leaves, bright red in fall deeply lobed, generally 5-7 lobes, with pointed tips
Mottled gray bark resembling camouflage pattern
Often multi-trunked or low-branching, and may resprout from the stump



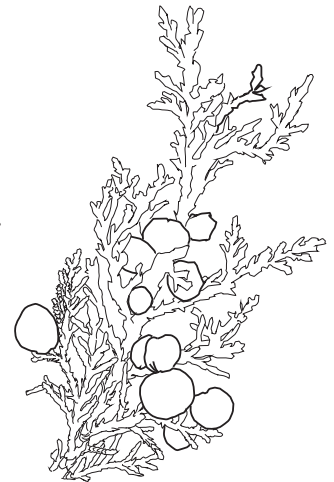
WHITE SHIN OAK, *Quercus sinuata* var. *breviloba*

Medium, deciduous tree 12-40' tall
Single, lobed leaves
Gray and flaky bark with broad, thin scales
Shin-high sprouts around base
Single-trunked and often found growing in clusters of 3-5 trees, seldom a single tree



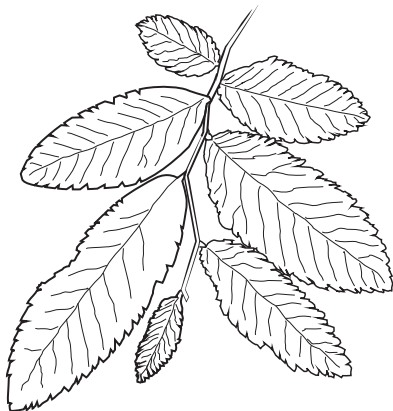
ASHE JUNIPER, *Juniperus ashei*

Medium, evergreen tree up to 30' tall
Evergreen, scaly foliage
Strips of shedding, red, stringy bark
Dark blue berries appearing August-September
Form may be conical with one trunk, but often broad and shrubby with low-branching limbs



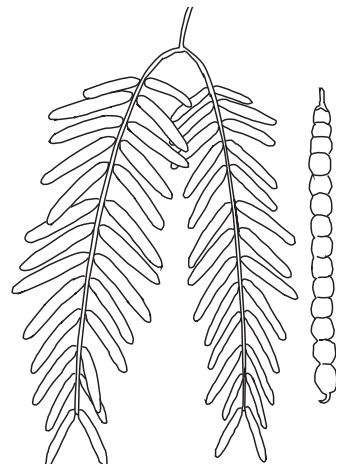
CEDAR ELM, *Ulmus crassifolia*

Tall, vertical tree reaching up to 75'
Small simple, alternate, and serrated leaves 1-2" long
Leaves are dark green with coarse texture
Gray-brown bark with flat ridges made of flaky scales
Smaller branches and twigs have lateral corky wings



HONEY MESQUITE, *Prosopis glandulosa*

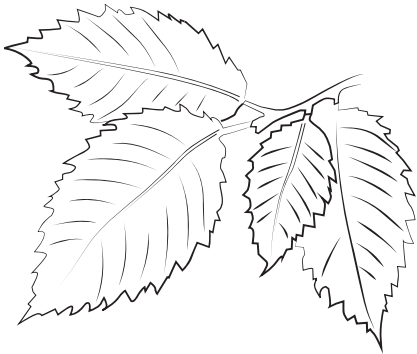
Small, deciduous tree 15-25' tall with 1-3" thorns
Alternate, compound leaves with two diverging leaflets
Smooth gray bark when young, deep ridges once mature
Long, fuzzy yellow flowers turn into long, tan bean pods
Form may be sinuous and single-trunked, or shrubby with multiple trunks



NATIVE TREE I.D., CONT'D

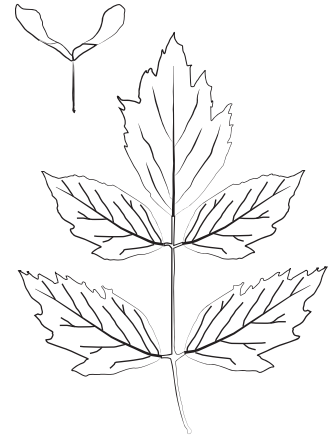
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LOWLAND TREES



AMERICAN ELM, *Ulmus americana*

Large deciduous tree, up to 100' tall
Simple, oval leaves with serrated teeth and pointed tip, 2-4" long
Notably asymmetrical leaf base
Dark gray bark with narrow, shaggy ridges



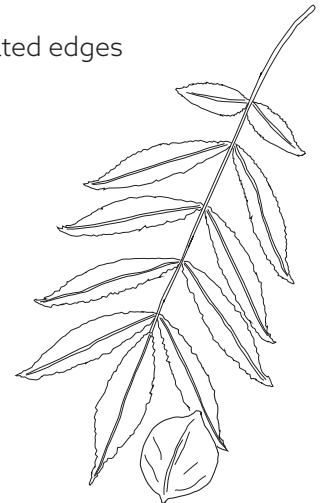
BOX ELDER, *Acer negundo*

Medium, deciduous riparian tree, up to 50' tall
Opposite, pinnately compound leaves with 3, 5, or 7 coarsely toothed leaflets
Resembles poison ivy when young
Winged, paired seeds that fall in spirals



COTTONWOOD, *Populus deltoides*

Large deciduous tree, up to 100'
Simple, spade-shaped leaves with a pointed tip and serrated edges
Massive branches with arching ends
Smooth white bark matures into dark, scaly ridges



PECAN, *Carya illinoensis*

Large, deciduous riparian tree up to 75' tall
Alternate, compound lanceolate leaves, 9-20" long
Grayish-brown bark with thick, rectangular, gray scales
Green-brown nut pods ripening September-October

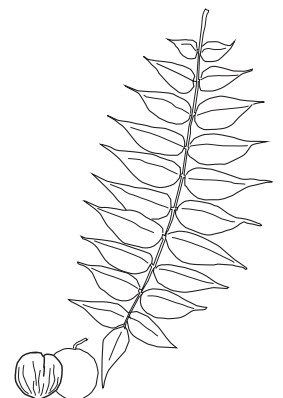


BLACK WILLOW, *Salix nigra*

Fast growing wetland tree up to 50' in height
Light brown to black bark, rough and deep ridges with thick shaggy scales
Simple, slender leaf blades 3-6" long
Almost always growing near water source

LITTLE WALNUT, *Juglans microcarpa*

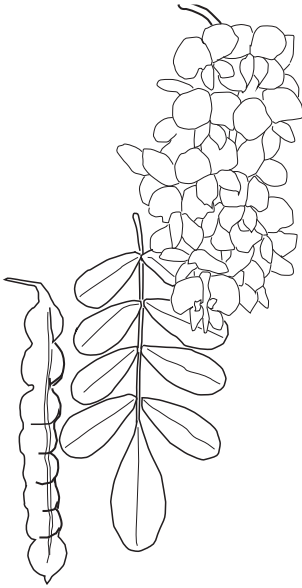
Small deciduous tree, 10-20' tall
Compound, narrowly lanceolate leaflets
Gray to dark brown bark with deep fissures
Often shrubby or multi-trunk
Typically found in riverbeds



NATIVE SHRUB I.D.

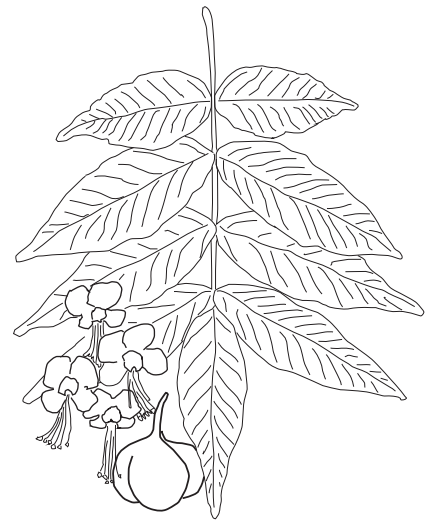
The following shrubs are some of the most commonly observed species in Walnut Creek Metropolitan Park. This guide will help make field identifications. For more species and more information, refer to *Trees of Central Texas* by Robert A. Vines or *Native and Naturalized Woody Plants of Austin and the Hill Country* by Daniel Lynch.

UPLAND SHRUBS



TEXAS MOUNTAIN LAUREL, *Sophora secundiflora*

Small, evergreen shrub, 5-20' tall
Dark green compounded oval leaves
Showy, fragrant violet flowers, drooping growth
Dark seed pods with bright red seeds
Smooth and green bark matures into dark gray, and scaly ridges



MEXICAN BUCKEYE, *Ungnadia speciosa*

Large, deciduous shrub, 6-12' tall
Multi-trunked, light gray to brown bark, smooth on young branches, becoming fissured with age
Medium green, leathery leaves, pinnately compound, 5-7 leaflets
Small, light pink flowers in spring followed by 3-celled seed pods



LINDHEIMER SILKTASSEL, *Garrya ovata* ssp. *lindheimeri*

Evergreen shrub, 2-15' tall
Simple, oval-shaped, fuzzy leaves, up to 2.5" long with rounded edges
Arching, fountain-shaped growth
Frisly tassel-like blooms, dark blue berries
Often mistaken for glossy privet

NATIVE SHRUB I.D., CONT'D

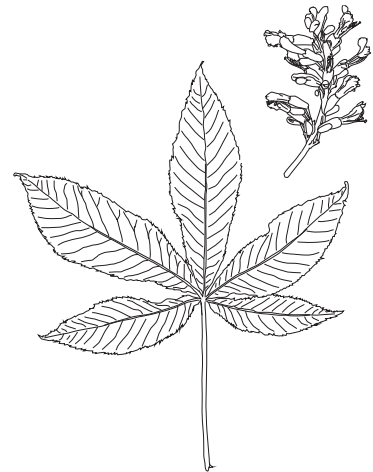
The following native trees are some of the most commonly observed species in Walnut Creek Metropolitan Park. This guide will help make field identifications. For more species and more information, refer to *Trees of Central Texas* by Robert A. Vines or *Native and Naturalized Woody Plants of Austin and the Hill Country* by Daniel Lynch.

LOWLAND SHRUBS



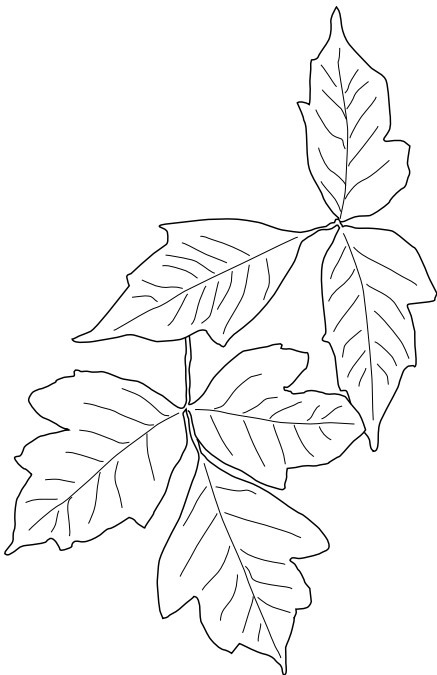
BEAUTYBERRY, *Callicarpa americana*

Deciduous shrub, 3-6' tall, 4-6' wide
Rough, light green, opposite ovate leaves with serrated edges
Thin, reddish-tan branches with small white speckles
Bright magenta berry clusters



RED BUCKEYE, *Aesculus pavia*

Small deciduous shrub, 4-8' tall
Dark green, palmate leaves, 5-7 ovate leaflets
Large, red flower clusters
Mostly smooth, reddish-gray bark



POISON IVY, *Toxicodendron radicans*

Poisonous shrub or vine, 1-3' tall, capable of climbing trees
Smooth trifoliate leaves, alternate, consisting of 3 leaflets
Leaflets ovate, typically lobed but highly variable
Leaves bright green in spring, turn red-yellow in fall
Greenish-white flowers bloom May to July, white berries in fall
Oils cause highly irritating rash upon skin contact; appears 12-24 hours after contact with the plant
All plant parts are poisonous and should be avoided

INVASIVE PLANT I.D.

The following invasive trees are some of the most commonly observed species in Walnut Creek Metropolitan Park. This guide will help make field identifications. For more species and more information, refer to *Trees of Central Texas* by Robert A. Vines or *Native and Naturalized Woody Plants of Austin and the Hill Country* by Daniel Lynch.

INVASIVE TREES



GLOSSY PRIVET, *Ligustrum lucidum*

Fast-growing, evergreen tree up to 45' tall
Glossy, dark green leaves, opposite, simple
Dusty, drooping, dark blue berry clusters
Multiple, tightly-grouped trunks with pale grey bark



CHINABERRY, *Melia azedarach*

Large deciduous tree up to 50' tall
Smooth reddish bark with white spots when young. Bark is grey and furrowed when mature
Dark green, alternate, bipinnately compound leaves with serrated edges
Clusters of small, lilac flowers, developing into golden, drooping clusters of fruits that persist through the winter



CHINESE PISTACHE, *Pistacia chinensis*

15-25' tall with a single-trunked, symmetrical form
Spotchy gray-brown bark, flakes with age
Pinnately compound leaves, usually with an even number of leaflets. Leaves do not have a terminal leaflet.
On female trees, small red to blue berry clusters
Bright yellow and red foliage in fall
Leaves have an unpleasant odor when crushed
Often mistaken for Western soapberry

INVASIVE PLANTS, CONT'D

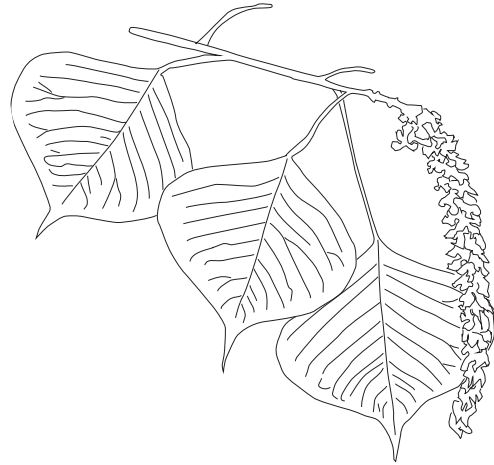
The following invasive trees are some of the most commonly observed species in Walnut Creek Metropolitan Park. This guide will help make field identifications. For more species and more information, refer to *Trees of Central Texas* by Robert A. Vines or *Native and Naturalized Woody Plants of Austin and the Hill Country* by Daniel Lynch.

INVASIVE TREES, CONTD

CHINESE TALLOWTREE, *Triadica sebifera*

25-35' tall

Simple, glossy leaves with pointed tip
Beige flaky bark
bright yellow and red foliage in fall



TAIWANESE PHOTINIA, *Photinia serratifolia*

10-20' tall with bushy growth

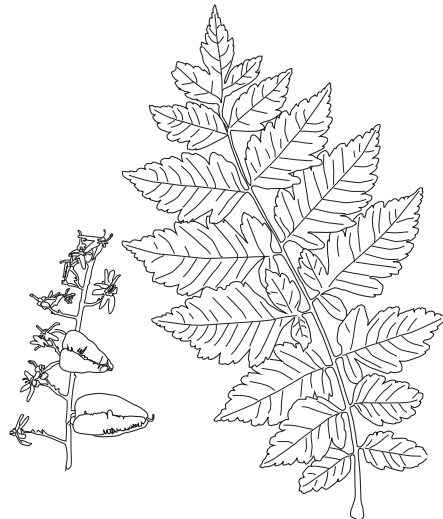
Simple serrated leaves

Glossy leaves, dark green to burgundy
Smooth and dark reddish-brown to gray bark



GOLDEN RAIN TREE, *Koelreuteria paniculata*

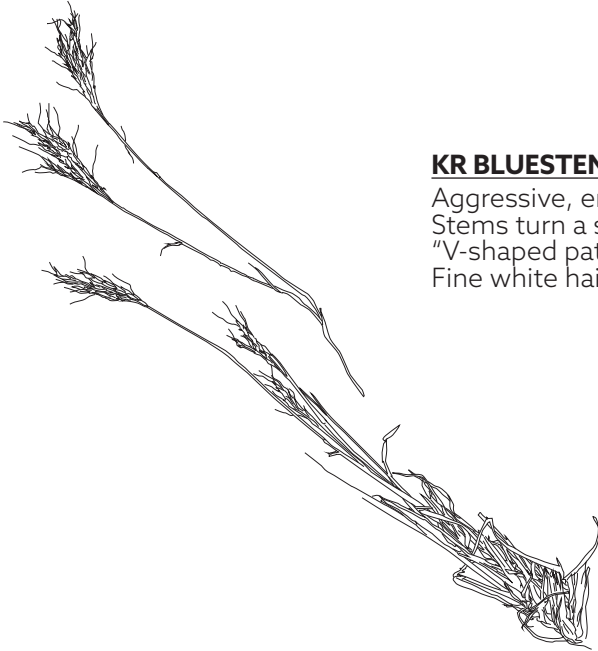
Bright yellow flowers, followed by papery, pink,
lantern-like seed pods
Compound, alternating serrated leaves, medium
green color
Bright golden foliage in the fall
Light brown bark, thin plates once mature



INVASIVE PLANT I.D.

The following invasive grasses are some of the most commonly observed species in Walnut Creek Metropolitan Park. This guide will help make field identifications. For more species and more information, refer to *Grasses of the Texas Hill Country* by Brian Loflin & Shirley Loflin.

INVASIVE GRASSES



KR BLUESTEM, *Bothriochloa ischaemum* var. *songarica*

Aggressive, erect bunchgrass 18-48" tall
Stems turn a straw color when mature
"V-shaped pattern" seed head, light green to burgundy
Fine white hairs visible on stem joints



GIANT REED, *Arundo donax*

Tall, perennial cane, up to 20'
Thin, elongated leaves, often 1-2' long
Very dense and aggressive root rhizome
Large plume of flowers at top of stalk



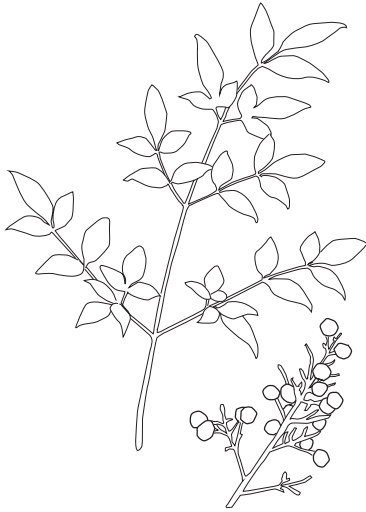
JOHNSONGRASS, *Sorghum halepense*

Fast-growing, warm-season perennial grass 36-72" tall
Rhizomatic growth, often grows in patches
Long, fibrous leaf blades with thin white stripe through center
Round, cylindrical stem
Noticeable light green to burgundy panicle seed head

INVASIVE PLANTS I.D.

The following invasive shrubs and vines are some of the most commonly observed species in Walnut Creek Metropolitan Park. This guide will help make field identifications. For more species and more information, refer to *Central Texas Invasive Plants Volunteer Field Guide* by the City of Austin Watershed Department or *Invasive Plant Atlas of the United States* at invasiveplantatlas.org

INVASIVE SHRUBS AND VINES



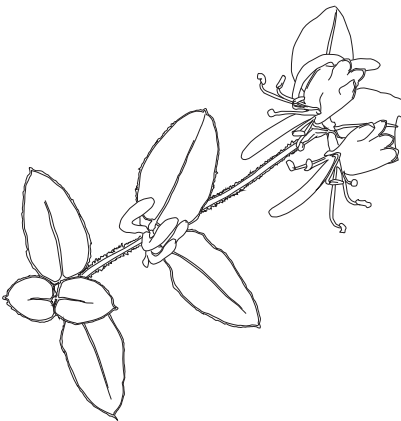
NANDINA, *Nandina domestica*

Multi-stemmed, evergreen shrub, 4-8' tall
Dark green-red pinnately compound leaves
Bright red berry clusters atop of each plant in fall-winter
Thin, long trunk with woody, brown bark, and fissures near the base



SWEET AUTUMN CLEMATIS, *Clematis terniflora*

Beautiful but aggressive flowering vine, climbing 15-30'
Small cream-white, 4-petaled blooms in fall
Semievergreen shiny compound leaves with 3-5 elliptic leaflets



JAPANESE HONEYSUCKLE, *Lonicera japonica*

Vigorous, spreading vine, 15-30'
Opposite, simple, ovate, dark green leaves. Soft in texture
New leaves produced in spring are often highly lobed
Small white and yellow flowers spring-fall

RESTORATION PLANTINGS

PURPOSE:

To increase biodiversity, create pollinator habitat, restore soils, increase shade, and improve woodland health.

MATERIALS:

Plant material for installation:

- container plants or plugs
- bare root saplings or shrubs
- live root grasses and forbs
- seed

Amendments:

- single-grind mulch or straw
- compost

METHODS:

CONTAINER PLANTINGS

1. Identify the planting area. Prioritize areas of recently-removed invasive species, thin vegetation, bare soil, eroded slopes, low plant diversity, or high visibility.
2. Schedule planting. Most live planting should occur from November to February to allow plants to establish before the heat of the summer.
3. Source plant material. Species should be native to the area and suited to the water and light conditions. Plants should be the smallest size suitable for the circumstances.
4. Establish clear boundaries with fences, rocks, logs, brush, or biodegradable straw logs (also called mulch socks or straw wattles) that are durable and deter foot traffic.
5. Do not remove native plants.
6. Arrange plants, considering their mature size and assume 50-75% survival.

SAFETY:

Be aware of snakes, scorpions, or fire ants that may be living under rocks or logs.

Use sharp tools responsibly.

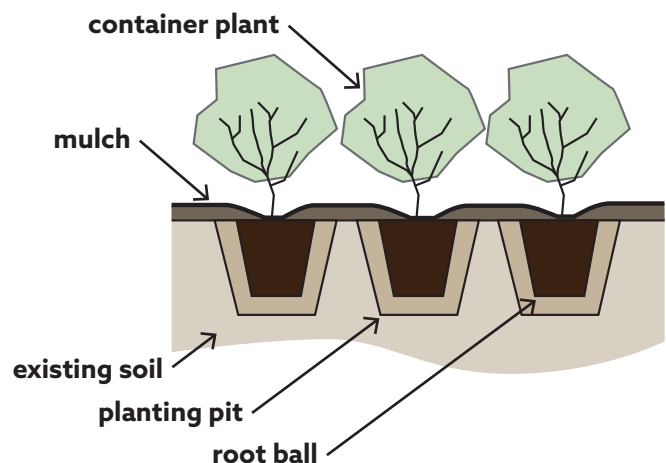
Stay aware of fellow workers to avoid hitting them with brush or tools.

Poison ivy is a common understory plant in many areas of the park. Avoid coming in contact with any part of this plant. Wear long sleeves and pants to avoid skin contact.

Tools needed:

- gloves
- long-sleeved shirts and pants recommended
- soap and/or lotion for poison ivy treatment
- spade or sharpshooter shovel if planting live plants
- rake if seeding
- buckets, wheelbarrows, or carts

7. Ensure holes for planting are twice as wide as the plant's container and the plant is planted to full depth, flush with the soil surface.
8. Plant plants and fill hole with excavated soil. Ensure soil around the plant is firm and without voids.
9. Water plants immediately after planting.
10. Container plantings should be mulched with a 3" layer of wood mulch. Take care to not bury container plants with mulch. This may be sourced locally from PARD or arborists, and should be free of trash and invasive species.
11. Plan for maintenance. Long-term success requires that the new plants have sufficient water, are not being outcompeted by invasive species, and are not impacted by erosion issues.



RESTORATION PLANTINGS

METHODS:

SEEDINGS

1. Identify the seeding area. Prioritize areas of recently-removed invasive species, low plant diversity, low canopy cover, high erosion, or high visibility.
2. Source seeds. Species should be native to the area and suited to the water and light availability. Seed rate should be between 20 and 40 lbs per acre, dependent on species, for areas of thin vegetation.
3. Establish clear boundaries with fences, rocks, logs, or brush that are durable and deter foot traffic. Plan for erosion and utilize logs, brush, or biodegradable straw logs to retain soil.
4. Most seeding should occur from October to March to allow plants to establish before the heat of the summer.
5. Clear the seeding area of leaf litter and duff layer to expose the soil. Lightly disturb the soil if it is soft, or actively break up the top 3-6" of soil if it is compacted. Retain all leaf litter and duff layer on site and replace following seeding.
6. Do not remove existing native plants. Leave native plants in place and seed around them.
7. Plan for maintenance. Long-term success requires that the new plants have sufficient water, are not being outcompeted by invasive species, and are not impacted by erosion issues.

For approved seed mixes, reference *Unified Stewardship Plan* or *City of Austin Standard Specification Manual 609S Native Seeding and Planting for Restoration*

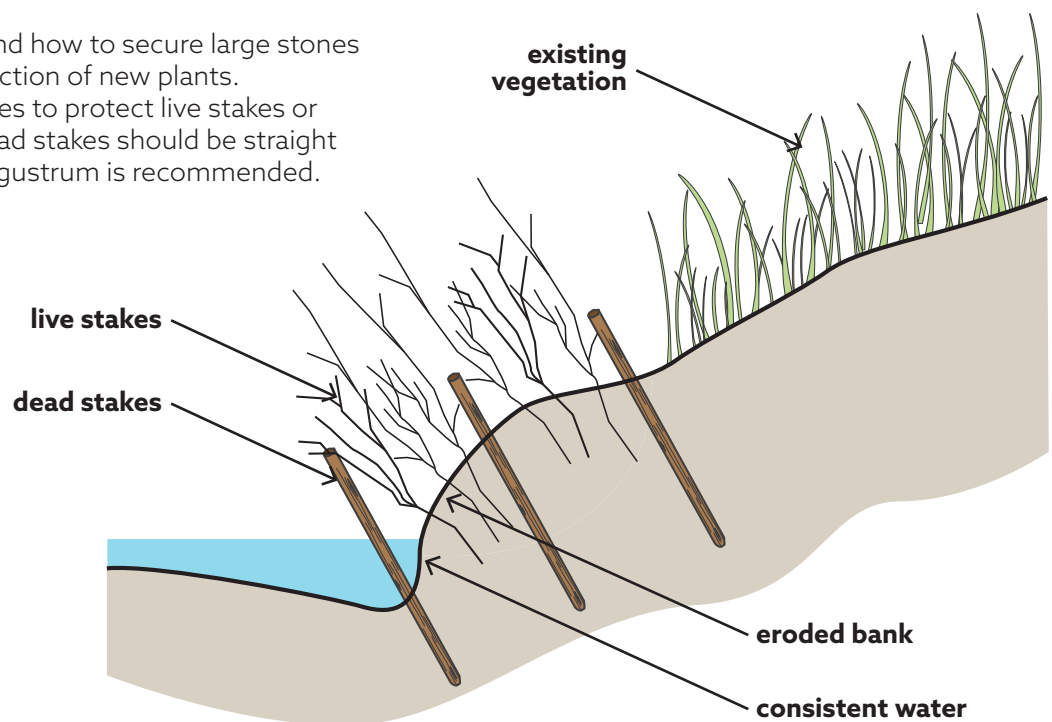
LIVE STAKING

Be aware of snakes, scorpions, or fire ants that may be living under

1. Identify an area of creek bank with consistent moisture, low canopy cover, high erosion, or high visibility. The outside of a curve will receive higher floodwater velocities, but is also in greater need of staking.
2. Source stakes by pruning existing willows on-site. Use stakes of roughly 1/2-1" diameter and 3-8' length.
3. Embed stake 12-18" in the creek bank, using a sharpshooter shovel if needed. Embed stakes 1-3' apart from one another.
4. Consider floodwaters and how to secure large stones or utilize them for protection of new plants.
5. Optional: use dead stakes to protect live stakes or secure large stones. Dead stakes should be straight and free of branches. Ligustrum is recommended.

Species appropriate for live stakes:

- Black willow (*Salix nigra*)
- Buttonbush (*Cephalanthus occidentalis*)
- Roosevelt weed (*Baccharis neglecta*)
- Cottonwood (*Populus deltoides*)
- Roughleaf dogwood (*Cornus drummondii*)
- American sycamore (*Platanus occidentalis*)



INVASIVE PLANT REMOVAL

PURPOSE:

Invasive species are plants that have been introduced to Texas from other regions around the world. They cause problems by crowding out native species and do not provide the same wildlife habitat value. Removing these invasive species allows for a healthier native plant community and a healthier community of other flora and fauna that depend on relationships with native plants.

MATERIALS:

Tools needed:

- Gloves and eye protection
- Weed wrench or Lawn Jaws
- Utility knife or linoleum knife
- 2-3" stiff putty scraper or similar
- Coarse plastic scrub pads
- Spray bottle with soapy water
- 70% rubbing alcohol

METHODS: INVASIVE TREES

Includes glossy privet, Chinaberry, Chinese pistache, Taiwanese photinia, golden raintree, and Chinese tallotree

If focusing on a large area of 75% or greater invasive species cover, it is recommended to remove no more than 1/3 of the invasive trees during one season if using mechanical removal. Girdling is a preferable method for areas like these.

MECHANICAL REMOVAL

1. For saplings 2" or less diameter (measured at the base of the trunk), uproot using a Weed Wrench or other mechanical device.
2. Provide for erosion control or restoration plantings as needed.
3. Leave as much of the pulled material as possible on site in low-use woodlands, taking care to remove any seed material, and leaving roots without soil contact.
4. Plan on removing seeds or fruit from the site.
5. Ensure woody material is broken down into shorter lengths and lays flat on the ground surface so that it readily decomposes. Do not leave large piles of brush or logs in natural areas. Reference Trail Brushing sheet for ways to use brush to close informal trails.

GIRDLING

1. For trees 2" or greater diameter (measured at the base of the trunk), remove the outer layer of bark.
2. With cutting tool, score the bark around the trunk twice, 4-6" apart, at 1/16-1/8" depth.
3. With a flat-edged scraping tool, remove the outer layer of bark from the tree, which should separate from the wood relatively easily.
4. With coarse plastic scrub pad and soapy water, roughly scrape away the toothpick-like remainder of the bark until smooth.
5. Repeat with 70% rubbing alcohol.

SAFETY:

Use sharp or heavy tools responsibly. Weed wrenches may pinch or injure with their weight. Girdling tools are extremely sharp.

Stay aware of fellow workers to avoid hitting them with trees, limbs, or tools.

Use appropriate clothing and protective gear, including long-sleeved shirt and closed-toed shoes, and gloves and glasses.

Supply first-aid, including gauze, tape, super glue, and other materials for lacerations.

Poison ivy is a common understory plant in many areas of the park. Avoid coming in contact with any part of this plant. Wear long sleeves and pants to avoid skin contact.

GIRDLING EXAMPLE



NOTES

For mechanical removal of Chinese pistache, loosen soil at base of plant to reduce the risk of the trunk snapping at the base.

For girdling of Chinaberry and Chinese pistache, plan to follow up every 3 months to remove or girdle new sprouts from the trunk.

Plan for re-seeding or planting in the areas where significant amounts of invasive plants are removed or soil is disturbed. Reference Restoration Plantings sheet for more information.

For video instructions on girdling ligustrum, refer to "Demonstration of Invasive Tree Girdling with Cliff Tyllick", available on YouTube:

<https://www.youtube.com/watch?v=R-L1RjN095w>

INVASIVE PLANT REMOVAL

METHODS: INVASIVE GRASSES

Includes KR bluestem and Johnsongrass

MECHANICAL REMOVAL

1. If the area will be mostly bare following invasive removal, plan for erosion control measures and/or restoration plantings before beginning work.
2. Remove existing plant material including root material from the site.
3. Ensure removal of as much below-ground rhizome material as possible.
4. Remove all plant material and dispose off-site.
5. Install erosion control materials, such as mulch logs, or jute netting if necessary. If replanting, immediately plant after invasive removal. Refer to Restoration Plantings task sheet for more information.

METHODS: INVASIVE VINES AND SHRUBS

Includes nandina, sweet autumn clematis, and Japanese honeysuckle

MECHANICAL REMOVAL

1. For vines 2" or less diameter (measured at the base of the trunk), cut 6-8" above ground level.
2. Uproot using a Weed Wrench or other mechanical device.
3. For nandina, loosen soil around the plant and extract as much of the root mass as possible.
4. Provide for erosion control or restoration plantings as needed.
5. Leave as much of the pulled material as possible on site in low-use woodlands, taking care to remove any seed material, and leaving roots without soil contact. Use pulled material for trail brushing if appropriate (refer to Trail Brushing task sheet).
6. Leave vines in trees and do not attempt to pull them down.
7. Cut vines above 7' height if they interfere with trail users.

NOTES

Refer to Invasive Species ID task sheet for descriptions of common invasive species.

Refer to Native Plant ID task sheet for descriptions of common native species, including those that can be mistaken for invasive species.

Plan for re-seeding or planting in the areas where significant amounts of invasive plants are removed or soil is disturbed. Reference Restoration Plantings sheet for more information.

Plan for next year: the process of invasive species removal often creates the conditions for germination of invasive species seeds in the seedbank. Hand pulling of new sprouts is required for multiple years until the seed bed is diminished and other plants can fill the niches.

Plan to remove materials: the removal of invasive species can generate significant amounts of brush. Plan on

removing seeds, fruit, or rhizomes (depending on species) from the site. Ensure woody material is broken down into shorter lengths and lays flat on the ground surface so that it readily decomposes. Do not leave large piles of brush or logs in natural areas. Reference Trail Brushing sheet for ways to use brush to close informal trails.

Contact City of Austin Watershed Protection Department for guidance on invasive species removal efforts as well as Ready Set Plant events for re-planting of native species following invasive species removal.

Contact City of Austin Urban Forestry Department for removal of mature invasive trees that cannot be removed by volunteers or hand tools.

Contact City of Austin PARD for removal of invasive giant reed (*Arundo donax*) that cannot be removed by volunteers or hand tools.

TREE PRUNING

PURPOSE:

To safely remove branches from live or dead trees to maintain their health, improve their form, and remove obstructions from the trail.

MATERIALS:

Tools needed:

- gloves and eye protection
- pants, closed-toed shoes, and long-sleeve shirt
- hand saw
- loppers
- pruning shears

METHODS:

Identify the visual or physical obstruction before determining limbs to be pruned. Do not prune more than necessary.

Ensure work area is clear of fellow workers and safe from other trail users.

For smaller branches (top), cut right outside the branch collar. Do not leave a stub or cut into the branch collar. Fit the branch as deeply into the jaws of the shears or loppers as possible before cutting.

For larger branches (bottom), first create an undercut a couple of inches above the branch collar. Then a couple inches above that, saw from above and cut through the limb. Finally, remove the stub just outside the branch collar.

Dispose of pruned branches off the trail. Trim any additional branches from the pruned branch to ensure the debris lays flat on the ground. The result should appear to be a naturally fallen limb.

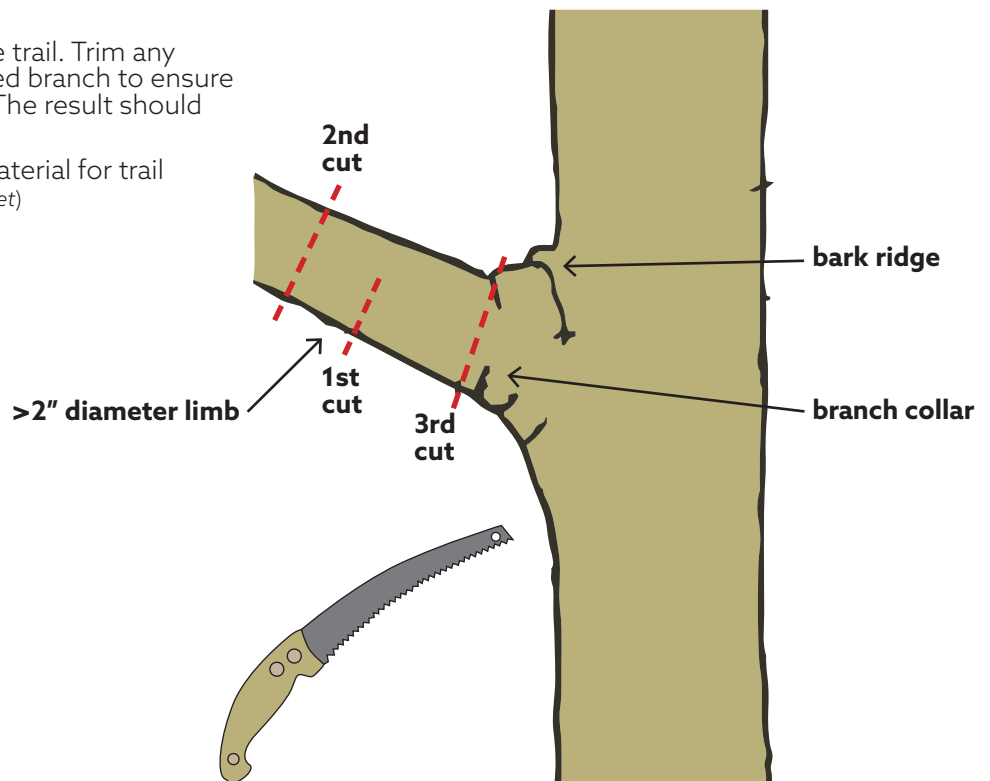
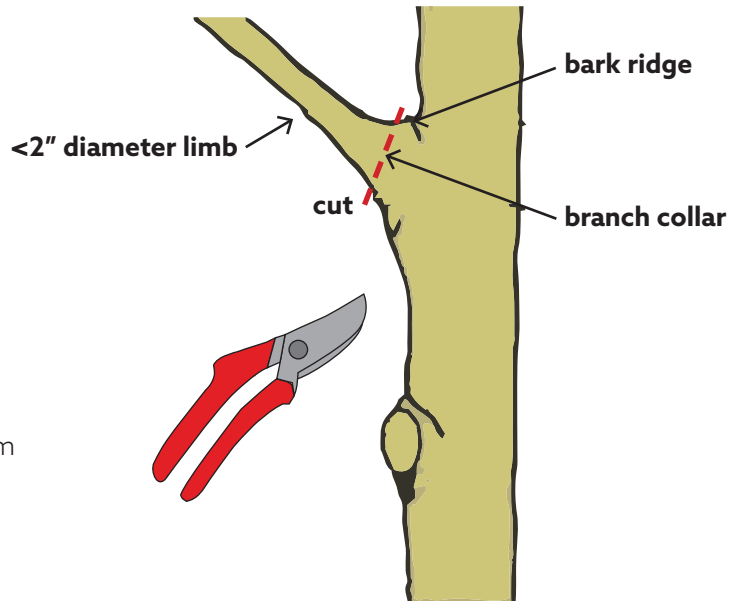
If appropriate, utilize the pruned material for trail brushing. (refer to *Trail Brushing task sheet*)

SAFETY:

Use sharp tools responsibly.

Stay aware of fellow workers to avoid hitting them with limbs or tools.

Use appropriate clothing and protective gear.



BLANK

DRAINAGE IMPROVEMENTS

PURPOSE:

To create a trail that sheds water from its surface and does not channel or gather water. This is most useful in low-lying areas where excess water ponds, or where minor drainages cross or follow the trail.

MATERIALS:

Tools needed:

- gloves and eye protection
- spade shovel
- pick mattock
- rock bar
- McLeod
- tamper
- rake if seeding
- buckets, wheelbarrows, or carts

METHODS:

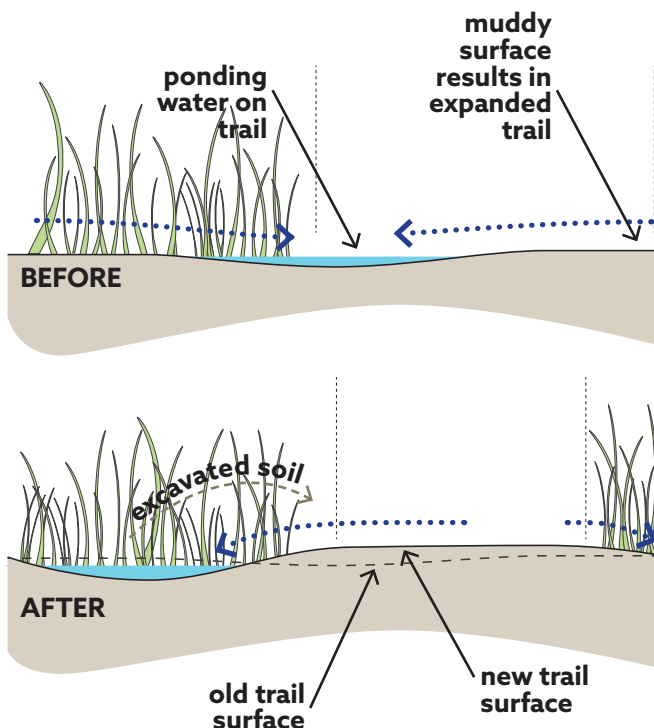
RAISED TREAD

Use this method when there is frequent mud or ponded water on a flat or gently sloped section of trail.

Source excess soil to create the fill. This may be sourced from directly adjacent to the trail. Limit excavation to 6" depth and avoid creating linear ditches that may erode.

Add excavated soil to the trail surface. Thoroughly compact the fill soil as you go for every 2-4" added. The finished trail surface should be a firm and compacted layer of soil with a smooth transition to the existing trail.

If needed, use larger logs or rocks along the edge of the trail to retain the added fill material (refer to Stone Pitching in the Trail Armoring task sheet for more information). Ensure these logs or rocks are buried 1/3-1/2 their depth into existing soil so they remain in place.



SAFETY:

Stay aware of fellow workers to avoid hitting them with logs, rocks, or tools.

Use appropriate clothing and protective gear.

Use proper lifting techniques to avoid injury when moving heavy objects.

Ensure trail improvements are stable and able to withstand significant abuse from future trail users. A poorly-built trail improvement may fail under use and cause avoidable injury to a trail user.

CHECK DAMS

Use this method when the trail crosses a minor drainage and is experiencing gully or rill erosion perpendicular to the trail. Drainages steeper than a 3:1 slope may be more difficult to address.

Reinforce the downhill side of the trail with large rocks or stacked logs. Ensure rocks are buried 1/3-1/2 their depth into existing soil so they remain in place.

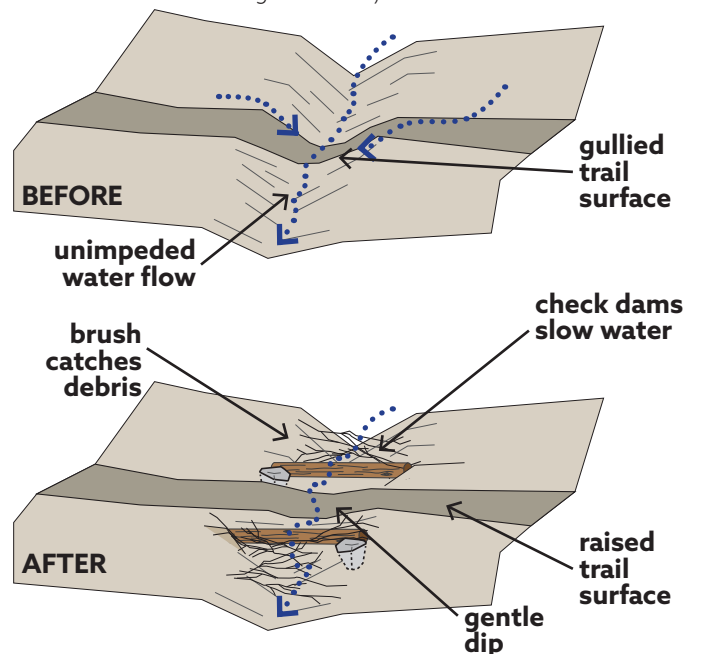
Optional: bury a section of drainpipe at the bottom of the drainage if it is deep. Use 4-6" perforated plastic pipe and secure well with compacted soil and add an apron of large (4-12") gravel to either side of the pipe.

Backfill the eroded portion of the trail, bringing the tread up 12-18" to the top of the rocks. Allow the trail to gently dip to allow for water to gently flow over the top in heavy rain events.

Thoroughly compact the fill soil as you go for every 2-4" added.

Optional: armor the final surface of the trail with flat rocks embedded into the soil (refer to Stone Pitching in the Trail Armoring task sheet for more information).

Optional: incorporate container plantings, seedings, or live staking to encourage plant growth in eroded areas. (refer to Restoration Planting task sheet)



TRAIL ARMORING

PURPOSE:

To create a more durable and resilient trail surface for a short section. This is most useful in areas of rill or gully erosion, where trails are very steep, or combined with drainage improvements (refer to Trail Drainage Improvement sheet)

MATERIALS:

Tools needed:

- gloves and eye protection
- spade shovel
- pick mattock
- rock bar
- McLeod or tamper
- rake if seeding
- buckets, carts, or wheelbarrows
- hand saw (power tools not permitted)

METHODS:

STONE PITCHING

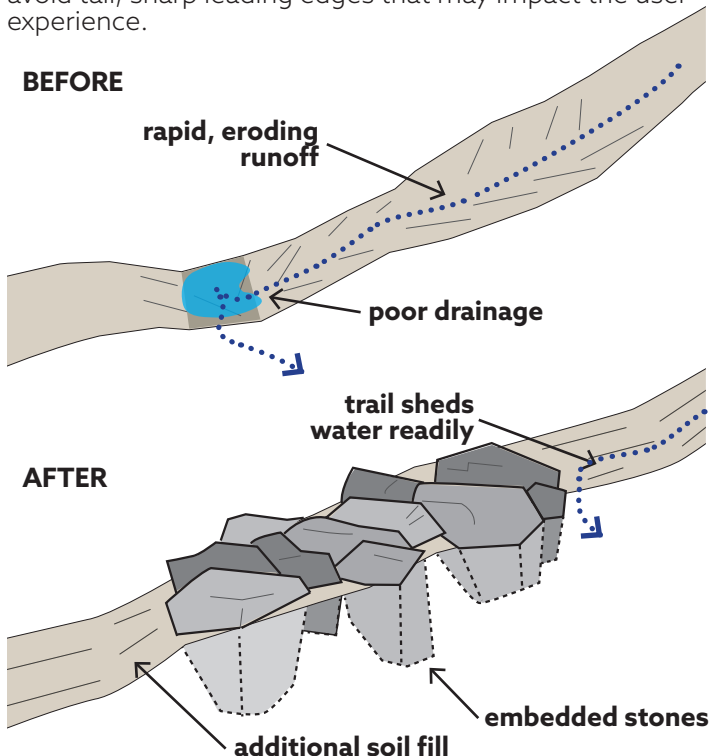
Use this technique when the trail surface needs to be re-created with a more level and durable surface.

Identify the work area, typically an eroded, sloped section of trail that is either gullied or eroding.

Source nearby stones. Stones should be as large as volunteers can safely move to the work site.

Starting from the bottom of the work area, prepare an excavated bed. Add large rocks pitched on their sides and soil to create the fill. Compact fill soil thoroughly and ensure rocks are stable and stationary. Continue until the stones reach the top of the work area.

Ensure the rocks are buried 2/3-3/4 their depth into existing soil so they remain in place. Arrange stones to ensure smooth, flat faces create an even trail surface and avoid tall, sharp leading edges that may impact the user experience.



SAFETY:

Stay aware of fellow workers to avoid hitting them with logs, rocks, or tools.

Use appropriate clothing and protective gear.

Use proper lifting techniques to avoid injury when moving heavy objects.

Ensure trail improvements are stable and able to withstand significant abuse from future trail users. A poorly-built trail improvement may fail under use and cause avoidable injury to a trail user.

LOG STEPS

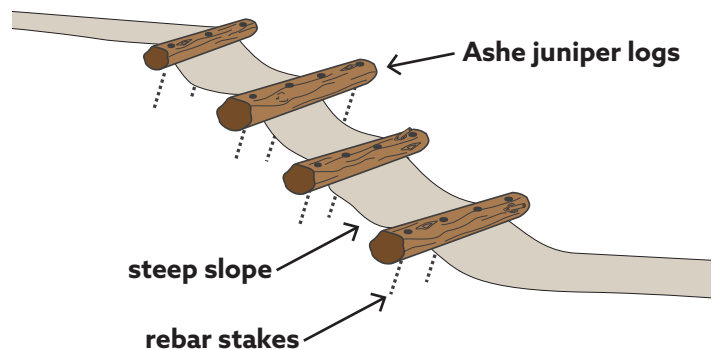
Use this technique when the trail surface is very steep, frequently slick, has few rocks, and used primarily by pedestrians.

Identify the work area, typically an eroded, sloped section of trail with a relatively level surface at the top and bottom.

Source nearby logs, minimum 6" diameter, and relatively straight and clear of knots and branches. Ashe juniper is recommended due to its abundance and rot resistance. Bald cypress or bois d'arc are acceptable as well. Cut only dead or fallen juniper, never fell live trees. Trim to length 1-2' wider than the desired trail surface.

Embed logs 1/3-1/2 their depth into existing soil so they remain in place.

Recommended: drill 2-4 holes through the juniper logs and drive 12-24" rebar stakes through the holes. Ensure the tip of each rebar stake is flush or below the log surface so trail users do not come into contact with them.



TRAIL BRUSHING

PURPOSE:

To retire trails that are unsanctioned, need re-routing, causing degradation, or are redundant, including switchback cutoffs and informal water access points

To physically block people from using the path in question and visually obscure the trail from trail users.

To restore organic material and protect the soil from disturbance and compaction.

MATERIALS:

Any size organic or natural material found nearby:

- removed invasive trees and shrubs
- removed hazard trees
- trimmed limbs
- relocated dead trees
- relocated boulders

METHODS:

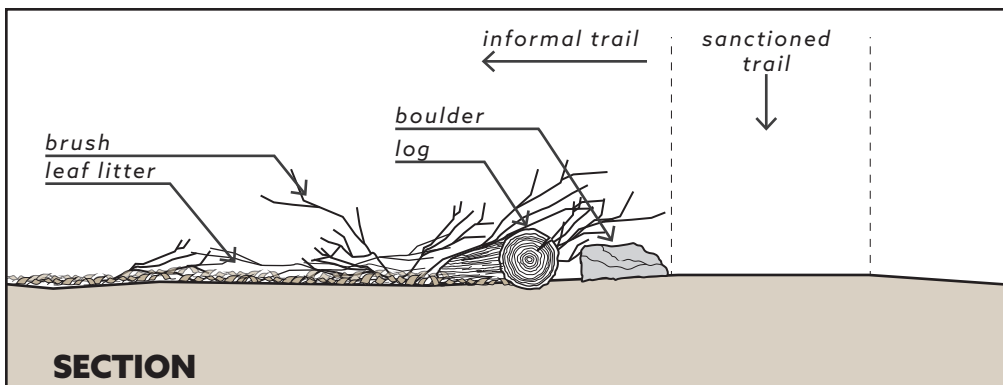
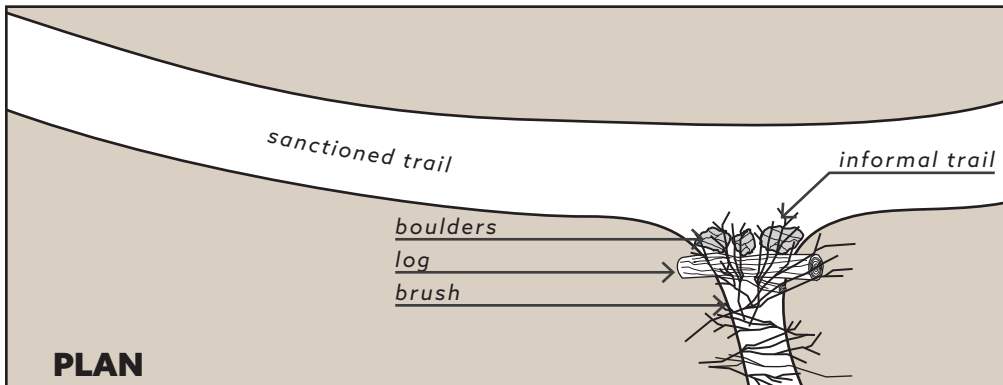
Identify the length of trail, including both ends where it meets the sanctioned trail(s).

Source brush materials nearby.

Pile brush on the trail, prioritizing the ends where it meets the sanctioned trail(s). Brush should extend beyond the immediate junction to be an additional deterrent.

Brush should be piled at least 3' high to appear imposing and impassable. Place brushy, branched end towards sanctioned trail.

DESIGN:



SAFETY:

Be aware of snakes, scorpions, or fire ants that may be living under rocks or logs.

Use caution when lifting or rolling heavy material that may pinch fingers and toes or injure your back.

Use sharp tools responsibly.

Stay aware of fellow workers to avoid hitting them with brush or tools.

Poison ivy is a common understory plant in many areas of the park. Avoid coming in contact with any part of this plant. Wear long sleeves and pants to avoid skin contact.

Tools needed:

- gloves
- loppers and pruning saws (if pruning live trees, refer to Tree Pruning task sheet)
- buckets, wheelbarrows, or carts
- rake
- pick, shovel, or McLeod

Utilize leaf litter and brush to hide the trampled soil surface so that it is not visible to passers-by.

Brush should be a diversity of materials: 4"+ diameter logs at the surface, smaller limbs and sticks piled above to increase volume and visibility, boulders at the trail junction, relocated leaf litter and small brush on the soil surface to reduce its visibility.

Heavier rocks and logs are less likely to be removed especially if they are heavy enough that they cannot be easily moved by a single person.

EXAMPLE:



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