

Lundelius McDaniel's Water Quality Retrofit Project

Project Briefing

Description of Property and Project

The City of Austin Watershed Protection and Development Review Department is proposing a water quality retrofit project within the Williamson Creek Watershed to remove pollutants from storm runoff that drains into a significant Barton Springs Zone recharge feature. The City has acquired two tracts of land near William Cannon Boulevard and Brodie Lane through development settlements: the McDaniel tract (9.32 acres); and Lundelius tract (18.98 acres). Together the total area is 28.30 acres. Both tracts are undeveloped. There is an abandoned home site (house removed) on the Lundelius tract and a sedimentation/filtration basin that treats runoff from Brodie Lane on the McDaniel's tract.

The project site is crossed by an unnamed tributary to the Kincheon, or Dry Branch, of Williamson Creek. The total drainage area of the unnamed tributary to a feasible water quality control location on the McDaniel tract is 166.6 acres. Water quality calculations for the control are based on a watershed area of 133.7 acres, eliminating from the calculations a portion of the contributing area that is developed with storm water controls that meet Save Our Springs (SOS) Ordinance standards. The unnamed tributary's confluence with Kincheon Branch is upstream of Dry Fork Sink, a karst recharge feature to the Barton Springs Edwards Aquifer. This sink has been observed by the members of the Texas Speleological Survey and the Barton Springs/Edwards Conservation District staff to recharge the entire flow of Williamson Creek during some rain events. A dye injected into Dry Fork Sink in June 1997 was detected in Barton Springs in less than 30 hours. The total watershed tributary to the Dry Fork Sink is approximately 5,000 acres. The area that could be affected by a project on the McDaniel and Lundelius tracts represents roughly 3% of this total watershed.

Existing Topography and Geology

Land use in the watershed is primarily single family residential. Impervious cover area was determined from a digitized map of the drainage boundary and 2003 City of Austin impervious cover information. A City of Austin Watershed Protection and Development Review Department staff-derived adjustment factor was used to account for sidewalks, driveways, and other features not included within the impervious cover polygons. Existing impervious cover area is estimated to be 26.4% of the total watershed area, or approximately 44 acres. Future land use and impervious cover percentages within the contributing drainage area are unknown. The impervious cover within the most developed portion of the drainage area is 35.0%. A future impervious level for the entire drainage area is assumed equal to that percentage.

The contributing drainage area is dominated by Denton Silty Clay, 3-5% slopes, and Tarrant Slopes, rolling. The predominant geologic formation in the contributing watershed is the Del Rio Formation, which is 15 to 50 feet thick and comprised of dark gray to olive brown, pyretic, gypsiferous, calcareous, and slowly permeable clay. Other geologic formations in the drainage area are the Georgetown Formation and the Buda Formation. The Georgetown Formation comprises 60 feet or less of dense, marly limestone deposited under marine conditions and has low porosity and permeability. The Buda Formation contains poorly bedded to nodular, hard to chalky, mudstone, 40 to 56 feet thick. The coloration is light grey to orange, and this unit has low porosity.

Vegetation

The vegetative community observed within the McDaniel and Lundelius tracts is a mix of savannah and woodland. There are large patches which are composed of woody species with dense canopies; these areas have depauperate herbaceous vegetation due to lack of sunlight penetrating the canopy. The savannah-like areas have much more dense herbaceous vegetation. Tree and large woody shrub species within the McDaniel and Lundelius tracts were primarily live oak (*Quercus virginiana* var. *fusiforma*), elm (*Ulmus* sp.), juniper (*Juniperus ashei*), honey mesquite (*Prosopis glandulosa*), Texas hackberry (*Celtis laevigata*), Chinaberry (*Melia azedarach*), gum bumelia (*Bumelia lanuginosa*), agarita (*Mahonia trifoliolata*), and Texas persimmon (*Diospyros texana*). Rare, but present on site are western soapberry (*Sapindus saponaria*), pecan (*Carya illinoensis*), red oak (*Quercus buckleyi*), Chinese tallow (*Sapium sebiferum*), privet (*Ligustrum* sp.), and hoptree (*Ptelea trifoliata*).

Two species of cacti—pencil cactus (*Opuntia leptocaulis*), prickly pear (*Opuntia* sp.)—were present, as well as twist-leaf yucca (*Yucca rupicola*). Net-vein milkvine (*Matelea reticulata*), dewberry (*Rubus trivialis*), and cow itch vine (*Cissus* sp.) are common vines—mostly along the ground—while greenbriar (*Smilax bona-nox*) and mustang grape (*Vitis mustangensis*) were most commonly seen growing on the trunks and branches of trees.

The most dominant grasses are Johnsongrass (*Sorghum halepense*), Virginia wild rye (*Elymus virginicus*), and Texas wintergrass (*Nassella leucotricha*). While southwestern bristlegass (*Setaria scheelei*), bermudagrass (*Cynodon dactylon*), silver bluestem (*Bothriochloa laguroides* ssp. *torreyana*), and perennial ryegrass (*Lolium perenne*) are all fairly common on the site. Common curly-mesquite (*Hilaria belangeri*), Hall's panicum (*Panicum hallii* var. *hallii*), threeawn (*Aristida* sp.), rescuegrass (*Bromus catharticus*), and little bluestem (*Schizachyrium scoparium* var. *scoparium*) are all present, though not in abundance. Other herbaceous species observed on the tracts were Wright's pavonia (*Pavonia lasiopetala*), beggar's lice (*Torilis arvensis*), noseburn (*Tragia* sp.), wild petunia (*Ruellia nudiflora*), Mexican hat (*Ratibida columnifera*), horse herb (*Calypocarpus vialis*), prairie-tea (*Croton monanthogynus*), mealy blue sage (*Salvia farinacea*), poison ivy (*Toxicodendron radicans*), silver leaf nightshade (*Solanum elaeagnifolium*), frog fruit (*Phyla nodiflora*), horsemint (*Monarda citriodora*), rain lily (*Cooperia pedunculata*), Indian blanket (*Gaillardia pulchella*), dayflower (*Commelina erecta* var. *erecta*), wood sorrel (*Oxalis* spp.), Texas thistle (*Cirsium texanum*), Texas lantana (*Lantana urticoides*), gaura (*Gaura* sp.), marvel-of-Peru (*Mirabilis jalapa*), frostweed (*Verbesina virginica*), ponyfoot (*Dichondra* sp.), and two flower milkvine (*Matelea biflora*).

Critical Environmental Features

A significant area on this proposed project site is designated “Priority Woodlands”. As defined by the City of Austin Land Development Code, there are no springs, seeps, wetlands, bluffs, canyon rimrock, caves, or faults, within 150’ of the project area. However, the William Cannon Sinkhole (Dry Fork Sink) which has been identified by the City of Austin is roughly a third of a mile downstream and constitutes a significant recharge feature.

Amendment Request

- 1. To amend the SOS ordinance section 25-8-514(B) to allow the construction of water quality facilities within the Critical Water Quality Zone (CWQZ)**

The applicant proposes to build a partial sedimentation/biofiltration pond and vegetative filter strips within the CWQZ of Williamson Creek.

Justification – As previously mentioned, the unnamed tributary's confluence with Kincheon Branch is upstream of Dry Fork Sink, a karst recharge feature to the Barton Springs Edwards Aquifer. This sink has been observed by the members of the Texas Speleological Survey and the Barton Springs/Edwards Conservation District staff to recharge the entire flow of Williamson Creek during some rain events. A dye injected into Dry Fork Sink in June 1997 was detected in Barton Springs in less than 30 hours. The proposed improvements will result in environmentally superior conditions than what exist, including pollutant attenuation to Barton Creek and Barton Springs Pool.

The City of Austin Watershed Protection and Development Review Department is proposing a water quality retrofit project within the Williamson Creek Watershed to remove pollutants from storm runoff that drains into a significant Barton Springs Zone recharge feature. The City has acquired two tracts of land near William Cannon Boulevard and Brodie Lane through development settlements: the McDaniel tract (9.32 acres); and Lundelius tract (18.98 acres). Together the total area is 28.30 acres. Both tracts are undeveloped. There is an abandoned home site (house removed) on the McDaniel's tract and, a sedimentation/filtration basin that treats runoff from Brodie Lane on the Lundelius tract.

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The location of the pond in the Critical Water Quality Zone is required in order to capture and treat the runoff from this tributary. Section 25-8-514 of the Save Our Springs Initiative prohibits pollution control structures within the CWQZ of watersheds contributing to Barton Springs; therefore, a site specific amendment to the Save Our Springs Initiative is required for this project.

- The proposed pond will be located in a relatively remote area that gets little use by the public. Additional landscaping will further minimize visual impact. The approximately 1.0 acre pond site and approximately 6.0 acres vegetative filter strip area will be fenced as a safety measure and to reduce existing unauthorized dumping issues. It is estimated that construction will last 196 days and will occur during the summer months, beginning in July 2008.
- Benefits
 - Treatment of stormwater runoff prior to discharge into unnamed tributary of Kincheon Branch and Dry Fork Sink, a karst recharge feature to the Barton Springs Edwards Aquifer

- Impacts
 - Loss of trees
- Mitigation Strategy
 - Erosion/sedimentation controls
 - Tree mitigation
- Environmental Board presentation
- Planning Commission
- City Council
- Drainage area to pond – 166.6 acres (133.7 acres untreated)
- Impervious cover - 35%
- Treatment of runoff with sedimentation/biofiltration pond and vegetative filter strips
- Capture volume - 0.2 inches
- Water Quality volume – 98,819 cubic ft
- The proposed water quality control would remove about 31,600 pounds of total suspended solids (TSS) per year.
- Surface area of pond – 56,482 sq ft
- Total area of vegetative filter strips – 259,711 sq ft
- Current SOS ordinance prohibits WQ treatment facilities in CWQZ of Barton Creek.