

This presentation premiered at WaterSmart Innovations

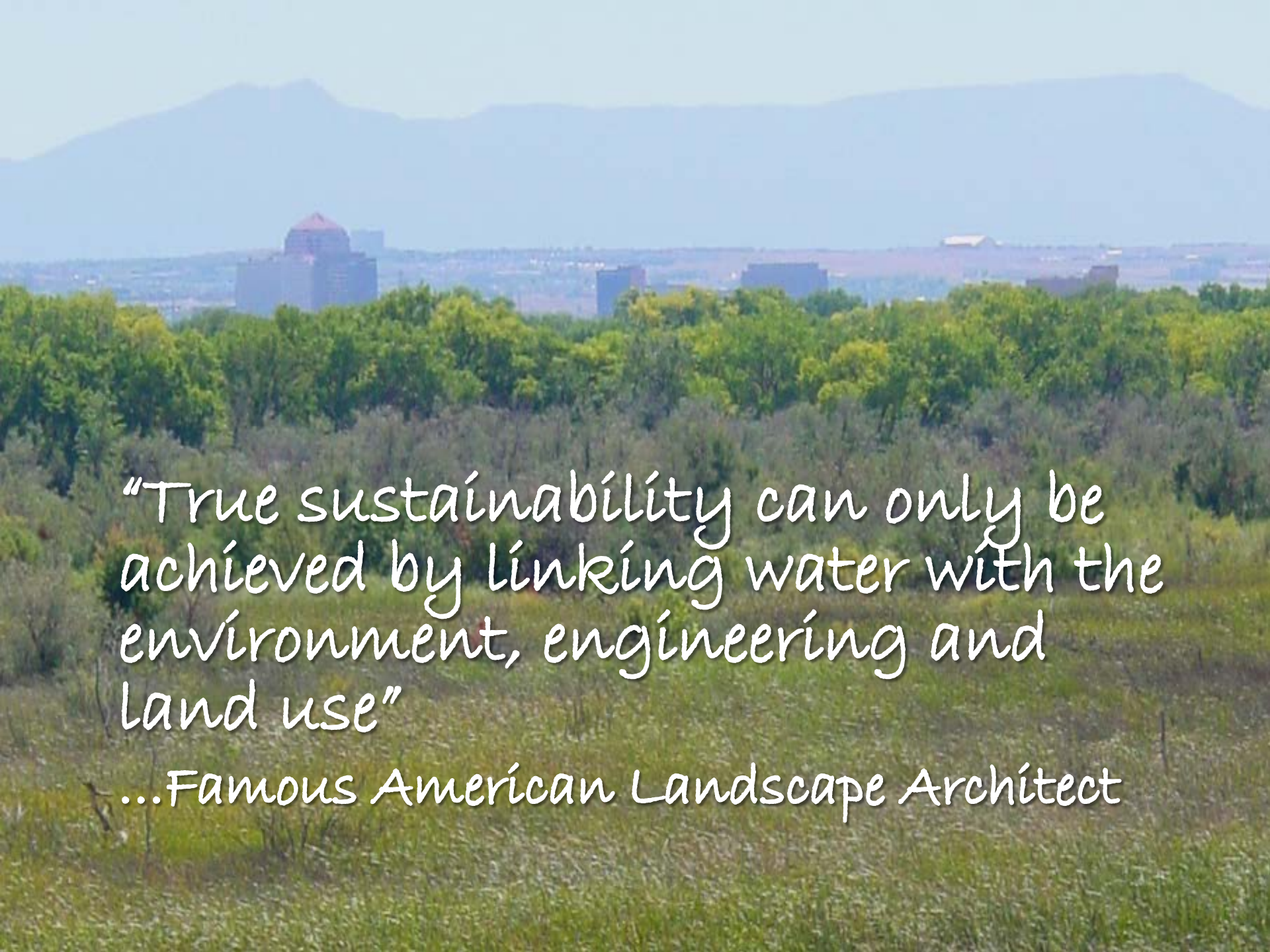
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Hahn Arroyo: A Model for Sustainable Watershed Improvement

**George Radnovich, ASLA
Sites Southwest LLC**



"True sustainability can only be achieved by linking water with the environment, engineering and land use"

...Famous American Landscape Architect

Albuquerque and the Hahn Arroyo's Past

- As Albuquerque grew, its arroyos were engineered to fit its subdivision street layouts
 - Meanders were straightened
 - Floodplains were narrowed
 - Channels were lined in concrete
 - Adjacent service roads were built



Enter..... a New Era

- The environment becomes a more central theme
- In arid lands water conservation takes on a new importance
- EPA standards demand stormwater quality be addressed (MS4)

The Whole Systems Approach

- Integration of Environment/Land Use/Infrastructure is essential to economic and social vitality
- Transportation linkages make public lands more accessible to residents
- Dual use facilities reduce costs and educate the public
- Making public lands wildlife oriented creates healthier environments.
- A water crisis is upon us...conserving water is important!

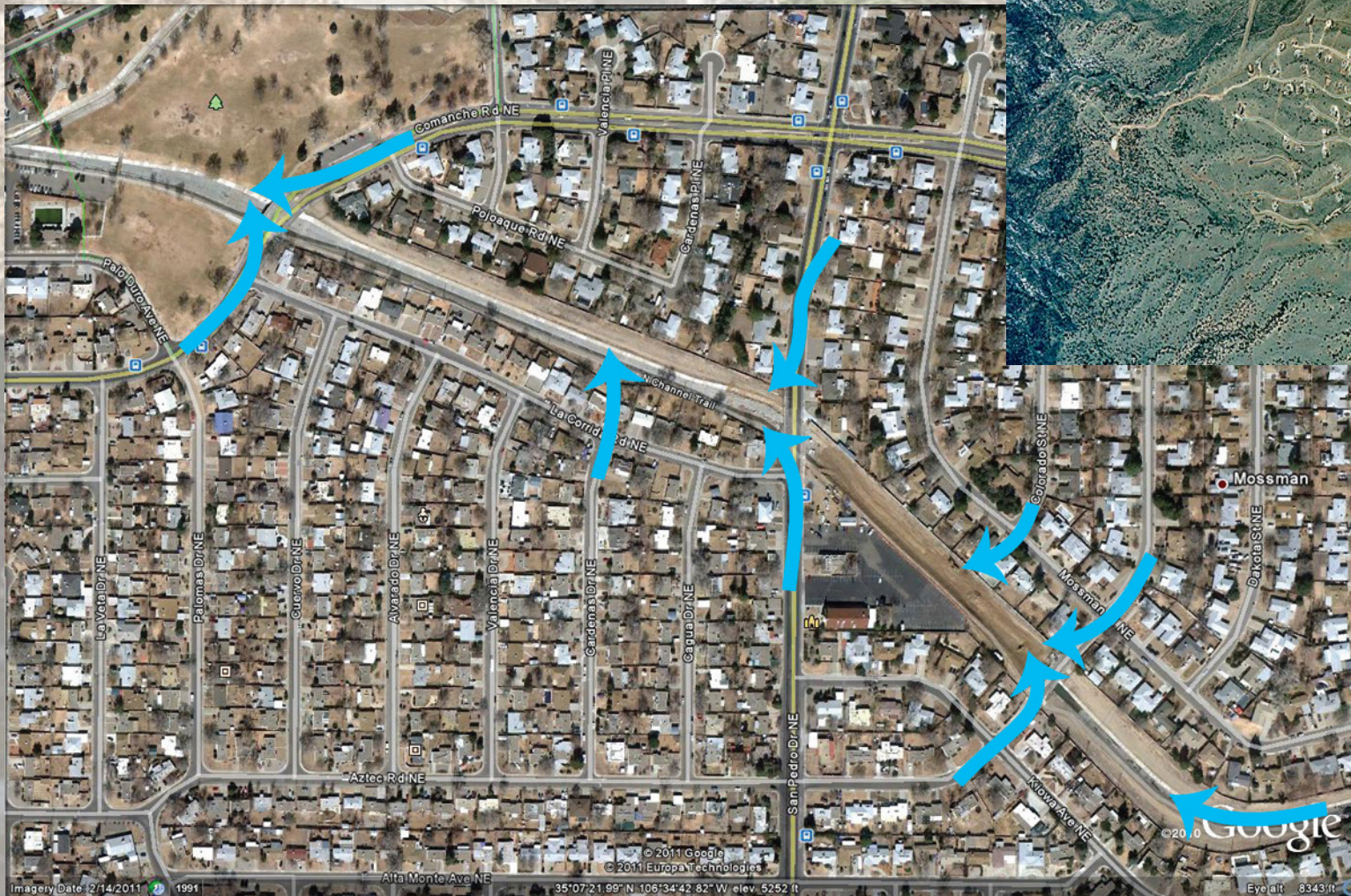
Concepts that shaped the Hahn Arroyo Project

- Protection of existing landscape
- Natural stormwater as model
- Recreation / linear parks
- Water harvesting (LID)
- Use of cisterns (LID)
- Permeable pavements
- Employing stormwater quality devices (LID)
- Linkages
- Use of recycled materials

Landscape Protection

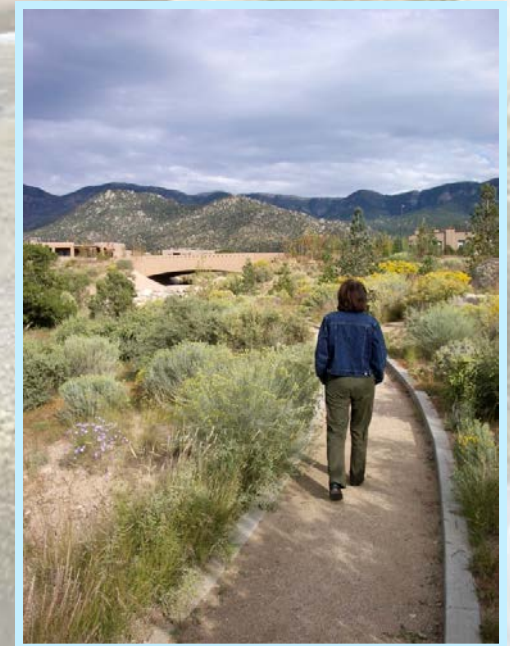


Natural Stormwater Systems as the Model



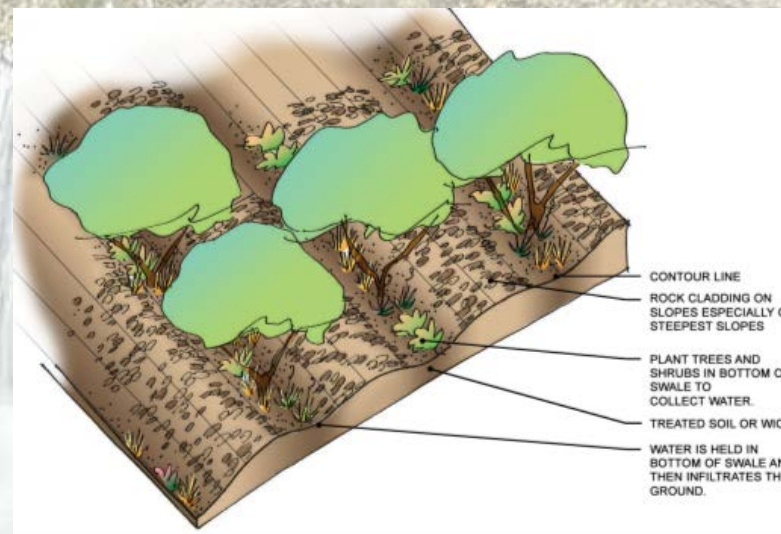
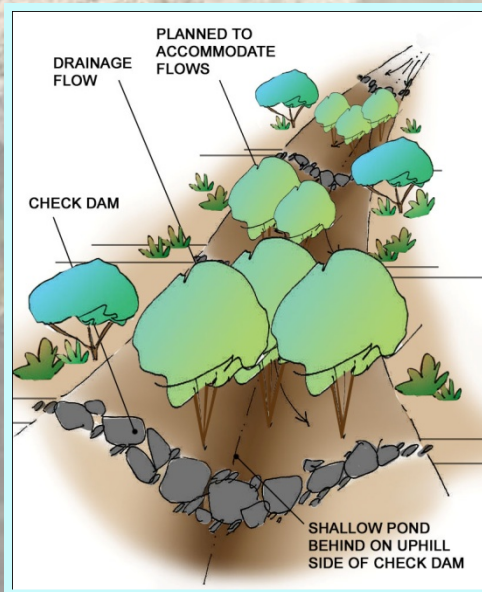
Recreation / Linear Parks

- Open Space for Hiking / Biking
- Shade and Space for Relaxation
- Picnicking
- Observing Nature



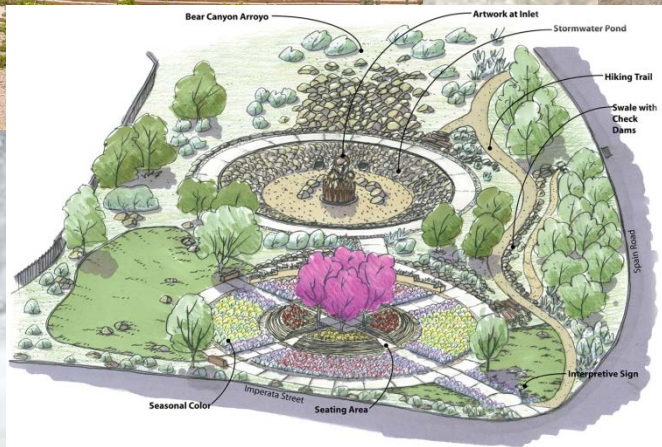
Water Harvesting (LID)

- Swales and Check Dams

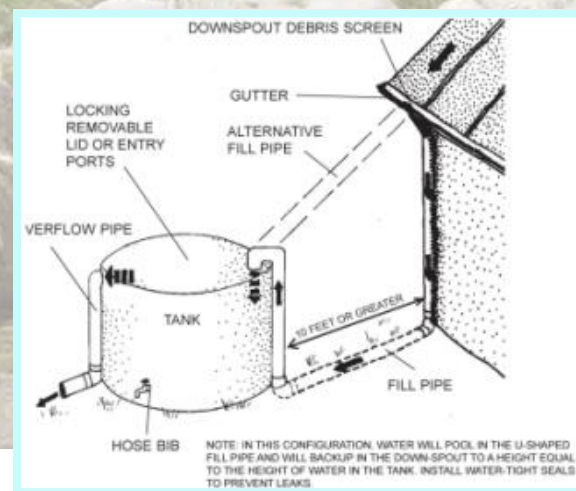
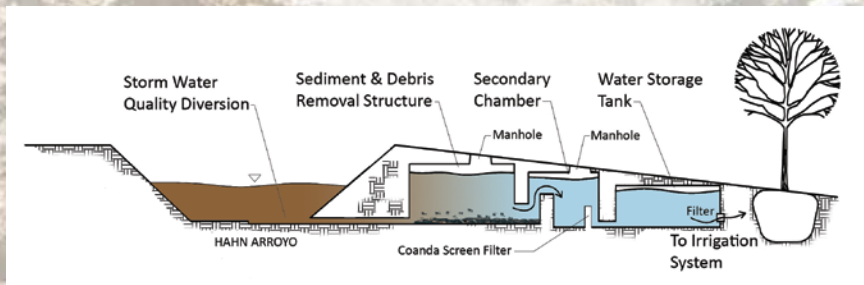


Water Harvesting (LID)

- Collection Ponds

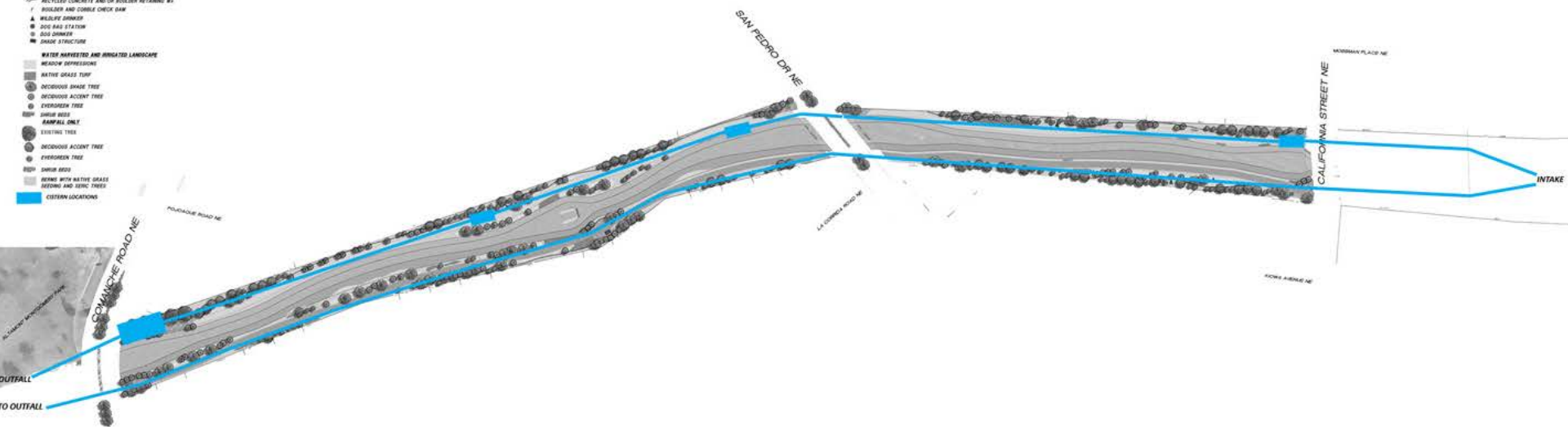


Use of Cisterns (LID)



LEGEND

- PLAZA RECYCLED CONCRETE, GRAVEL, PAVERS, OR COLORED CONCRETE
- RECYCLED CONCRETE AND/OR BOLLER RETAINING WALL
- POSSIBLE AND CORNER CHECK DAM
- WELIFE DRINKER
- DOG PAD STATION
- DOG DRINKER
- SHADE STRUCTURE
- WATER HARVESTED AND IRRIGATED LANDSCAPE
- MEADOW REPRESENTATION
- WATER GRASS TOP
- DECIDUOUS SHADE TREE
- DECIDUOUS ACCENT TREE
- EVERGREEN TREE
- SHRUB BUSH
- RAMPART ONLY
- EXISTING TREE
- DECIDUOUS ACCENT TREE
- EVERGREEN TREE
- SHRUB BUSH
- BEYOND WITH NATIVE GRASS, LEGUMES AND SENSITIVE TREES
- CISTERN LOCATIONS



Permeable Pavement



Stormwater Quality Devices



Linkages

- Transportation
- Land Use
- Habitat



Hahn Arroyo Project





Downstream side of Hahn Arroyo crossing at Washington NE.
Wall extended entire length of this yard at Delamor & Washington.
(8-13-63)



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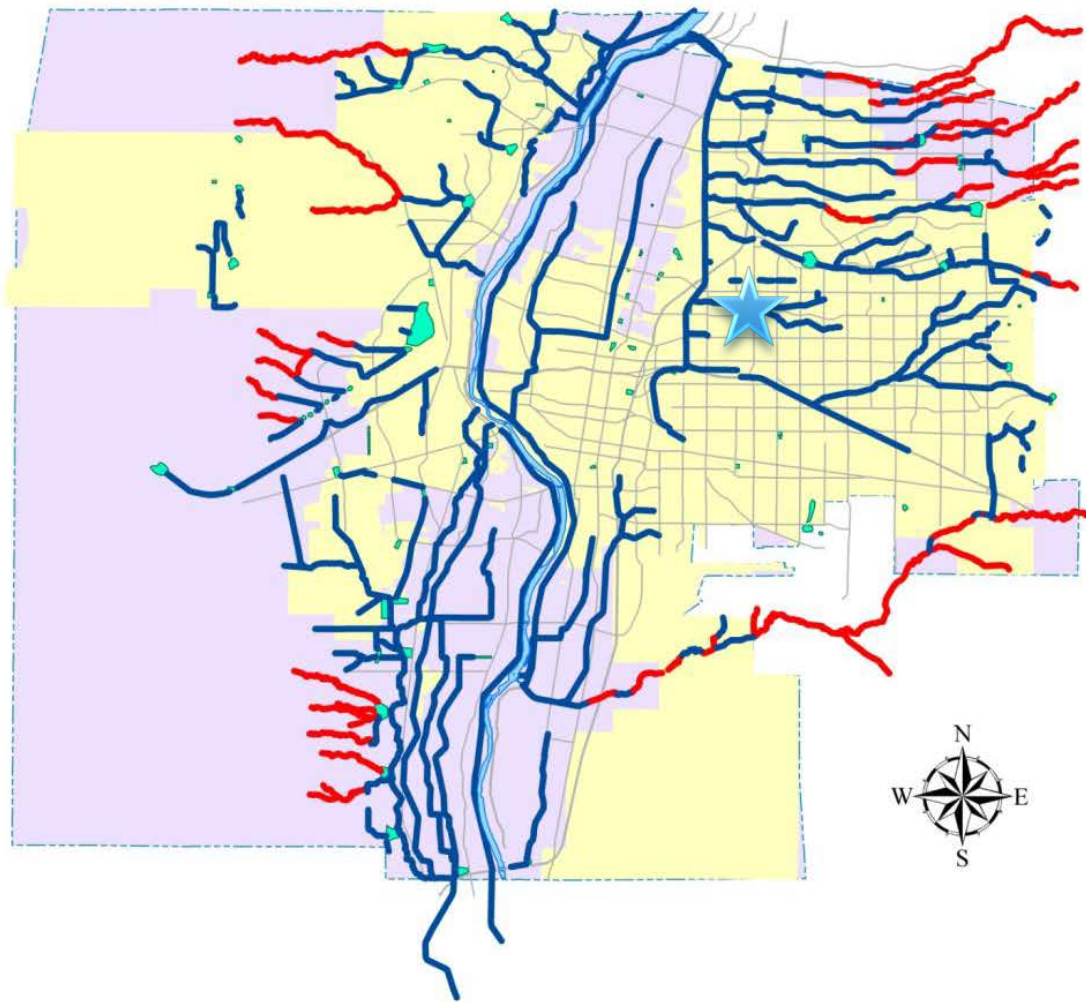
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Hahn Project Goals

- Multi-Use Flood Corridor
 - Flood Control / Water Quality
 - Water / Material Conservation
 - Recreation
 - Education





Legend

- Channel
- Arroyo
- Detention Pond
- City of Albuquerque
- AMAFCA Boundary
- Rio Grande
- Major Street

Land Use

- Residential Neighborhoods
- Major Street Crossings
- Major City Park at Westside of Site
- Commercial Area Nearby
- Civic Buildings on Corridor
- Nearby Schools



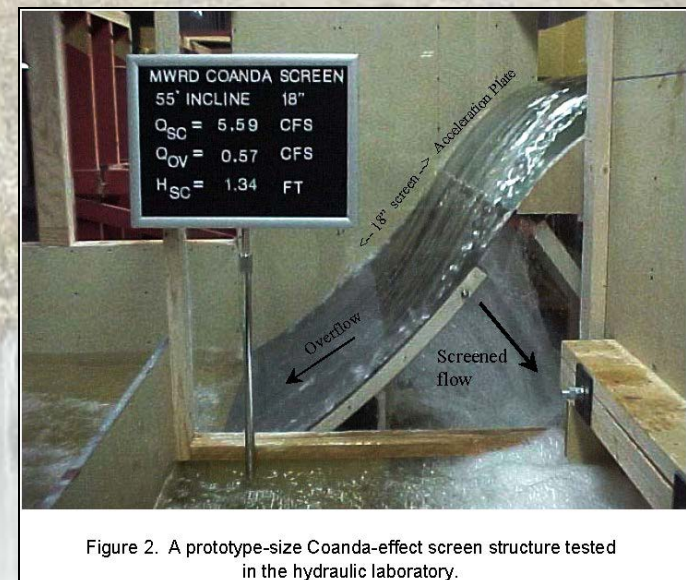
Flood Control / Water Quality

- Carrying Capacity
 - 200 Year Storm Event
 - Between 1,600 cfs at the San Pedro Bridge and 2,000 cfs at the Comanche Bridge
- Channel Geometry Curvilinear
- Trickle Flows from Wells



Flood Control / Water Quality

- In-Channel Water Quality Devices
- Off-Channel Stormwater Quality Devices with Secondary Treatment



Concepts

Hahn Arroyo Rehabilitation

& Integrated Drainage Corridor Enhancement Project



New Channel

A new, continuously reinforced, tinted concrete lined channel is proposed to prevent future channel failure on the existing deteriorated channel.



Tinted Concrete Channel



Wildlife Drinker



Dog Bag Station



Dog Drinker



Walking Path

Walking Path

A split-surface trail meanders along the north edge of the Hahn Arroyo through a landscape irrigated with harvested storm water and through areas that receive rainfall only. Exercise equipment is located along the path for use by pedestrians. A wildlife drinker and dog drinker are also located along this path.

Storm Water Quality

First flush storm water and nuisance water from the low frequency storm events are harvested along the Hahn Arroyo to be filtered of debris and sediment, stored in a subsurface cistern and reused for irrigating landscape nodes along the Hahn Arroyo.



Passive Water Harvesting with Check Dams

Contouring

The landscape adjacent to the channel is contoured into berms, swales and depressions, passively harvesting storm water from the site. Check dams are placed at the base of berms, ensuring that runoff is directed to desired plantings.

Pedestrian Refuge

A 10' x 8' break in the median provides refuge for pedestrians and cyclists as they cross Comanche Road. Planted with an appropriate xeric landscape without trees in clear site lines, this median enhances the aesthetic quality of both roadway and arroyo.



Pedestrian Refuge

Multi-Use Path

A 10' wide scored and textured concrete bike path runs along the south edge of Hahn Arroyo. With a minimum distance of 5' maintained between the path and the arroyo's edge, no guardrail is required. Trees are spaced with a minimum of 3' from the path, to avoid vertical disruption along the path for cyclists. A drinking fountain, shaded benches, wayfinding signage and an air station are amongst the amenities a cyclist may have available along this stretch of the Hahn Arroyo.



Air Station

Plaza & Meadow

The surface of a small plaza is constructed from concrete recycled from Hahn Arroyo reconstruction. Within this plaza, furniture adds to the comfort of pedestrians under a canopy of shade.

A meadow depression irrigated by the harvested water from the Hahn Arroyo creates habitat along this stretch. Favorable wildlife forage is located amongst the shaded plazas of recycled concrete. Native pasture grasses in this area allow it to be low water use and to require little maintenance.



Meadow



Recycled Concrete & Asphalt Paving



Wayfinding Device

1" = 50'










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Southwest

Master Plan



LEGEND



















-  PLAZA (RECYCLED CONCRETE, GRAVEL, PAVERS, OR COLORED CONCRETE)
-  RECYCLED CONCRETE AND/OR BOULDER RETAINING WALL
-  BOULDER AND COBBLE CHECK DAM
-  WILDLIFE DRINKER
-  DOG BAG STATION
-  DOG DRINKER
-  SHADE STRUCTURE

WATER HARVESTED AND IRRIGATED LANDSCAPE

-  MEADOW DEPRESSIONS
-  NATIVE GRASS TURF
-  DECIDUOUS SHADE TREE
-  DECIDUOUS ACCENT TREE
-  EVERGREEN TREE
-  SHRUB BEDS
- RAINFALL ONLY**
-  EXISTING TREE
-  DECIDUOUS ACCENT TREE
-  EVERGREEN TREE
-  SHRUB BEDS
-  BERMS WITH NATIVE GRASS SEEDING AND XERIC TREES

Concepts

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CHANNEL



PATH



MEDIAN REFUGE



DOG BAG STATION



DOG DRINKER

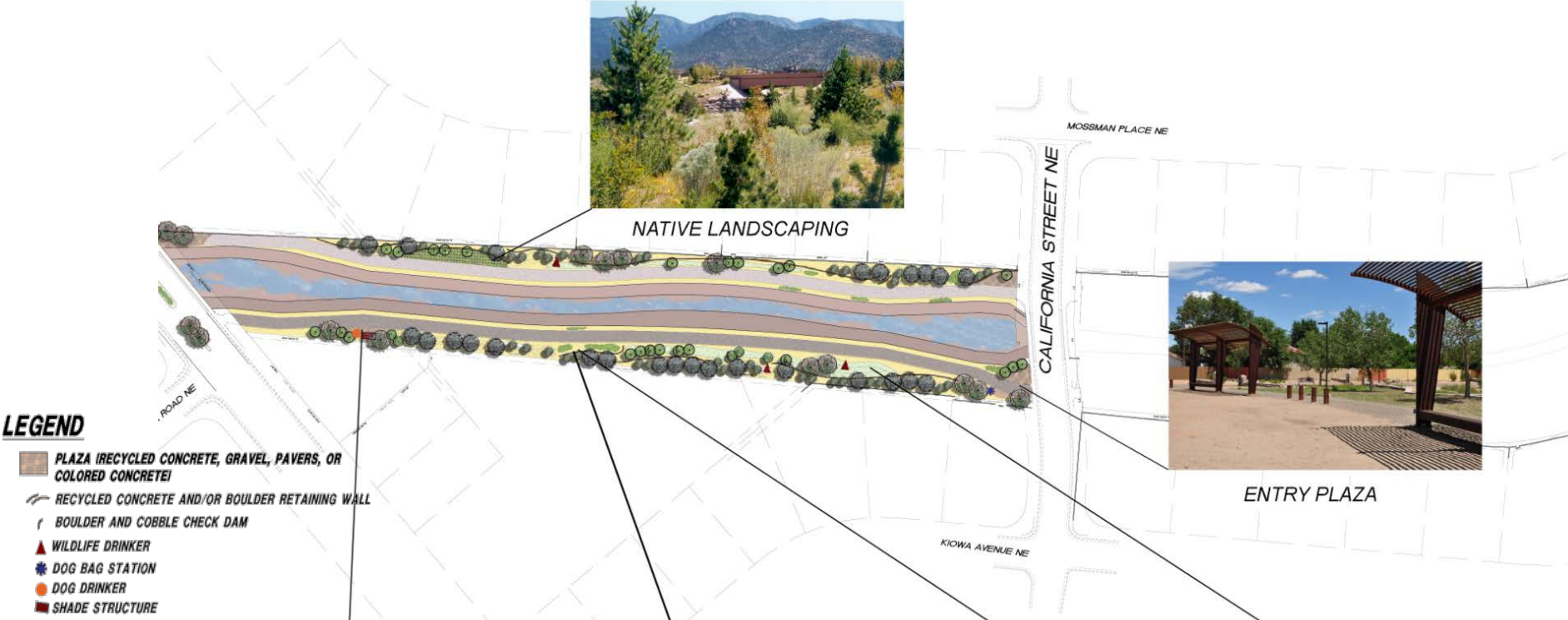


WAYFINDING SIGNAGE

SAN PEDRO DR NE

LA CORRIDA

Concepts



NATIVE LANDSCAPING



ENTRY PLAZA



RECYCLED CONCRETE PAVERS



RECYCLED CONCRETE WALL



RECYCLED CONCRETE WALL

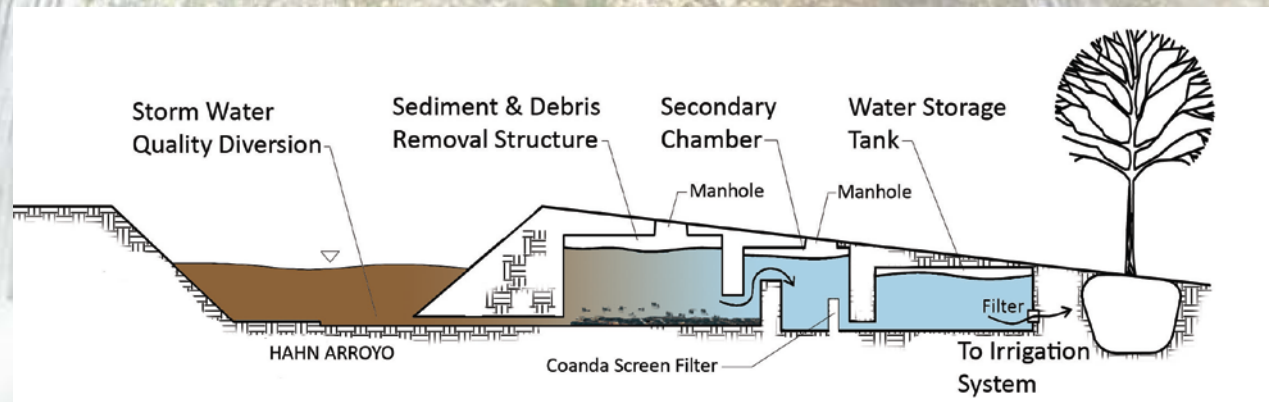


WILDFLOWER MEADOW



Water / Material Conservation

- Water Harvesting Devices
 - Cisterns and Passive Irrigation
 - Landscape Swales with Check Dams
 - Retention Ponds in Landscape
 - Wildlife Drinkers
 - Contouring



Water / Material Conservation

- Spoils Re-use
 - Concrete



*RECYCLED
CONCRETE
PAVERS*



*RECYCLED
CONCRETE
WALL*



*RECYCLED
CONCRETE
WALL*

Recreation, Aesthetics and Landscape

- Trails
- Median Refuges
- Interpretive & Directional Signage
- Artwork
- Native Landscaping
- Pigmented Channel
- Plazas



