

IX. Arroyo Mascaras

Valuable for wildlife corridor and recreation.

Segment A. Bishop's Lodge Road – Arroyo Barranca

Notes: The Arroyo Mascaras is separated only by name from Arroyo Piedra by Bishop's Lodge Road Bridge. Arroyos Barranca and Rosario discharge water into the arroyo Mascaras. The arroyo Mascaras delivers these combined waters to the Santa Fe River near St. Francis and W. Alameda. The part of the Arroyo Mascaras that flows within the boundaries of Ft. Marcy Park has been well maintained by the City's Park Division. The banks of the arroyo are steep and are sometimes reinforced with gabion walls in places. The entire arroyo is used for recreation.

Segment B. Arroyo Barranca – Old Taos Highway Bridge

Notes: The arroyo channel in this segment widens and the banks are not steep. The Old Taos Highway Bridge crosses the arroyo. The concrete underside of this bridge is decaying exposing rebar. Also the bridge provides shelter for transient populations. From this segment to the Santa Fe River numerous transient camps can be found. Trash is common in this area as a result of these camps.



Segment B/Example of Upper Mascaras ,2016.



Segment B/Underside of concrete damage, Old Taos Bridge Arroyo Mascaras ,2016.

Segment C. Old Taos Highway Bridge-Paseo de Peralta/Guadalupe Street intersection.

Notes: Similar to the Lower Pinos Arroyo, devices engineered to direct water flow such as culverts, rip rap, and check dams are common in segment C. Next the arroyo flows beneath the Paseo de Peralta/Guadalupe intersection by way of a large box culvert. Transient camps are common along this section.



Segment C/Arroyo bed above Paseo de Peralta culvert, Arroyo Mascaras ,2016.



Segment C/ Paseo de Peralta culvert, Arroyo Mascaras, 2016.

Segment D. Paseo de Peralta/Guadalupe Street intersection – St. Francis Road

Notes: Various types of engineering devisces to manage water flow are found throughout the arroyos system. The arroyo channel in segment D has been reinforced with concrete retaining walls to support its banks. This method of erosion prevention was not found in any other surveyed arroyo.

Since 2012, the majority of the arroyo has remained the same. Infrastructure in disrepair is found in the rip rap mats located beneath the culverts. Unique to this arroyo is an area that remains wet all year round. The cause for the unusual amount of standing water is not apparent in this area. The occurrence of bridges to shelter transient residents increases as does the amount of trash. Through the Santa Fe Watershed's Adopt an Arroyo program Santa Fe Prep has officially adopted this section of this arroyo.



Segment D/Perineal wet area below culvert, Arroyo Mascara , 2016.



Segment D/Comparison of rip rap damage below culvert, Arroyo Mascaras , 2016.

2016



2012

Segment E. N St. Francis Road – Santa Fe River

There are five arroyos that deliver water to the Arroyo Mascaras; Arroyo Ranchitos, Arroyo Barranca, Arroyo Lovatos, Arroyo Rosario, and lastly the Arroyo Canada Rincon. The water load from these afore mentioned arroyos courses into the Santa Fe River. The last structure to cross the Arroyo Mascaras is the W. Alameda Bridge. Pollution from the combination of five arroyos enters the river at this spot.



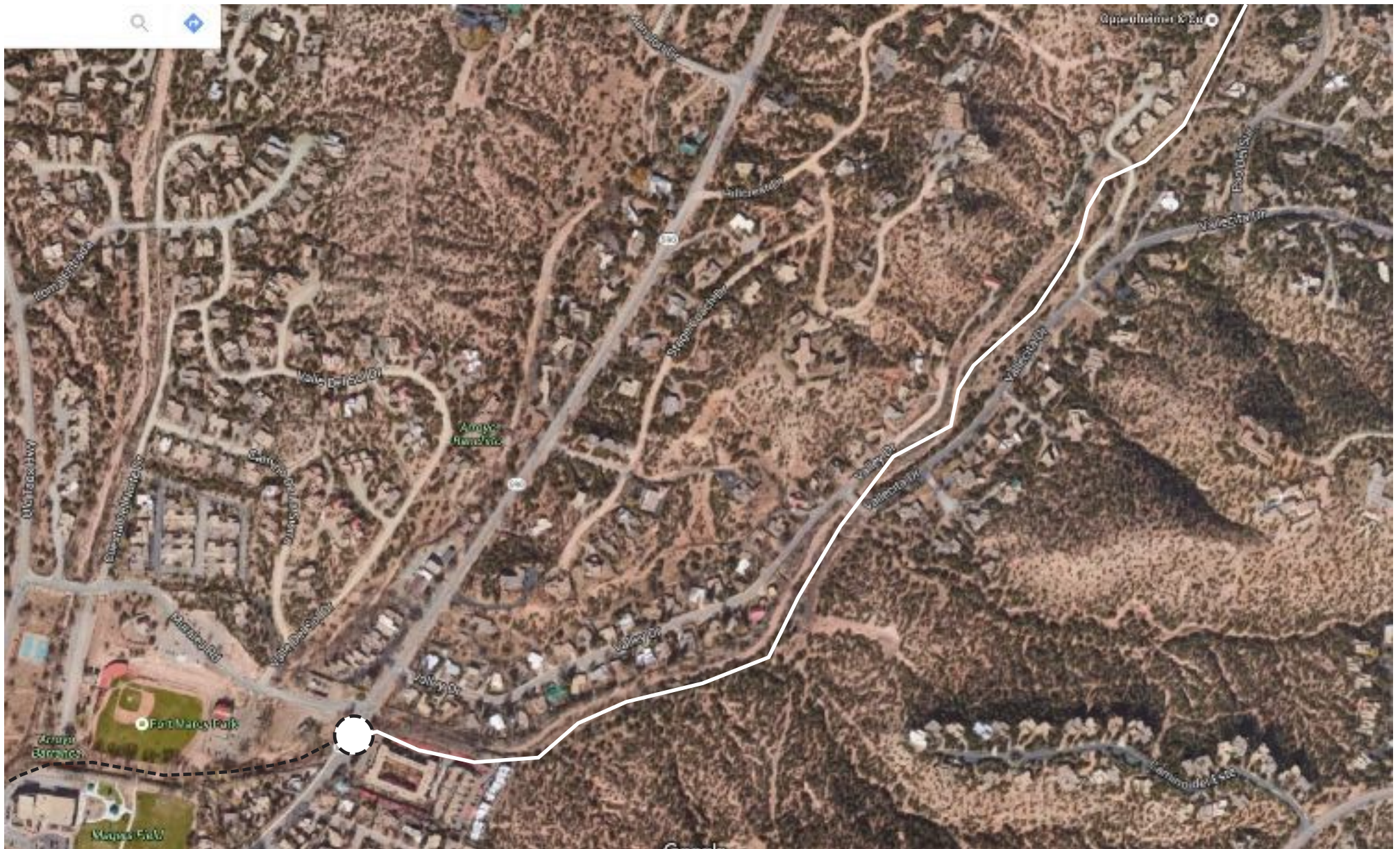
Segment D/ Entry way into the Santa Fe River for the Arroyo Mascaras , 2016.



Arroyo de la Piedra West and East Map 1



Arroyo de la Piedras West and East Map 2



Arroyo de la Piedra Map 3

Mascaras -----○ Piedra

X. Arroyo de la Piedra

Valuable wetland and wildlife corridor.

Segment A. Piedra East from Conejo Rd – Camino Real

Notes: Arroyo de la Piedra, located in the foothills of the Sangre de Cristo Mountains, captures runoff from the north in either its east or west branches. These two branches meet near Paseo del Sur and Camino Real where water is conveyed into one channel that empties into the Santa Fe River. The name of this arroyo changes to Arroyo Mascaras Water at Bishop's Lodge Road.

The broad, rocky, sandy eastern fork of the Arroyo de la Piedra follows a winding path surrounded by piñon/ juniper habitat. An active game trail runs throughout this arroyo due to a large wetland found in the arroyo bed. No other arroyo in Santa Fe contains a wetland of this size. Along the route backyards, rip rap, gabion, culverts, and exposed pipes are crossed by the arroyo before it meets up with the west branch.

The condition of the arroyo varies depending on location. Below the wetland the narrowing of the arroyo has incised the arroyo bed to create high vertical walls. The arroyo bed drops suddenly, approximately 10 feet below a gabion check dam. Impacts from erosion from this point south begin to increase as the arroyo nears the Paseo del Sur area. Multitudes of high cut banks, sediment filled culverts and exposed utilities exemplify the nature of erosion up to the west fork junction.



Segment A/ Wetland located in Arroyo Piedra, 2016.



Segment A/ Bank erosion, Arroyo Piedra, 2016.



Segment A/ Comparison of exposed iron pipe. Left 2016 condition/ Right 2012 condition, Arroyo Piedra, 2016.



Segment A/ Comparison of exposed green pipe. Photo left 2012 condition and photo right 2016 condition, Arroyo Piedra, 2016.



Eroded banks in Arroyo Piedra East, segment A.

Segment B. Piedra West from Brownell - Howland to Arroyo Mascaras

Arroyo Piedra's west branch carries water along a narrow, sand filled drainage through a piñon, juniper, and ponderosa habitat. The arroyo narrows and continues to narrow as it flows south. Parts of the west branch were inaccessible since several fences were built across the arroyo. Similar to its east branch, the west branch passes through a lower density of residential properties which increases in the lower sections of the arroyo. As a result, the amount of infrastructure encountered rises. Erosion in this area is moderate to severe which has caused damage to culverts, banks, and utilities. Once the last man-made barrier is crossed, the arroyo broadens as it nears the border of Arroyo Mascaras. The west branch is both a corridor for wildlife and hikers.



Segment B/Fence across the arroyo bed, Arroyo Piedra, 2016.



Segment B/Bank deterioration below culverts, Arroyo Piedra, 2016.



Segment B/ Comparison of culverts, Arroyo Piedra, 2016.



Segment B/ Comparison of culverts photo from 2012, Arroyo Piedra.



Segment B/ Rip rap mats undermined , Arroyo Piedra, 2016.



Segment B/ Exposed utility 2016 , Arroyo Piedra.



Segment B/ Exposed utility 2012 , Arroyo Piedra.



Segment B/ Upstream side of restricted culverts with sediment displacement , Arroyo Piedra, 2016.



Segment B/ Downstream side of restricted culverts , Arroyo Piedra, 2016.



Segment B/ Incising of the arroyo bed and bank deterioration, Arroyo Piedra, 2016.



Segment B/ Arroyo channel in 2012, Arroyo Piedra, 2016.



Segment B/ Retaining wall and gabion basket added to arroyo channel, Arroyo Piedra, 2016



Segment B/ Gabion check dam in 2012, Arroyo Piedra.



Segment B/ Same gabion check dam with added retaining wall, Arroyo Piedra, 2016



Segment B/ Gabion check dam in 2012, Arroyo Piedra.



Segment B/ Same gabion check dam with added retaining wall, Arroyo Piedra, 2016



Arroyo Foothills

Charises  Foothills

XI. Foothills Arroyo

Valuable for recreation, wildlife corridor, and teaching model.

Segment A. Old Santa Fe Trail – Arroyo de los Chamisos

Notes: Located at the base of Moon Mountain, the Foothills Arroyo captures run off and delivers it to the Arroyo de los Chamisos. The narrow, sandy, constricted upper section passes through several large properties. Exposed utilities, drainage pipes from adjacent properties emptying into the arroyo, and obstructions by trees or yard trimmings were located.

Before the intersection of the arroyo and Calle Cacique, the arroyo passes over driveways and behind residential housing. The arroyo passes through a narrow constricted canyon with vertical walls which in places ,reach fifteen feet in height. Throughout this segment eroded banks reveal exposed utilities ranging from electrical lines to sewer lines. One of the sections of the Old Pecos Trail box culvert is severely obstructed by debris of one kind or another which may cause flooding in the surrounding area. The box culvert is commonly used as a shelter for the transients. Excessive trash is common due to the proximity of the arroyo to Old Pecos Trail.



Segment A/ Upper Foothills Arroyo, 2016.



Segment A/ Rip rap mat undermined, Foothills Arroyo, 2016.



Segment A/ Exposed cables, Foothills Arroyo, 2016.



Segment A/ Drain pipes protrude into arroyo from private property, Foothills Arroyo, 2016.



Segment A/ Exposed cables, deteriorating banks and sewer outlet, Foothills Arroyo, 2016.



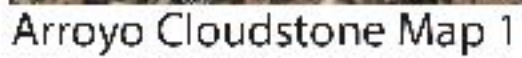
Segment A/ Vertical walls with rip rap mat folded back from flooding, Foothills Arroyo, 2016.



Segment A/ Two exposed utilities, Foothills Arroyo, 2016.




Segment A/ Obstructed box culvert with transient camp, Foothills Arroyo, 2016.





Arroyo Cloudstone Map 2

Chamisos  Cloudstone

XII. Arroyo Cloudstone

Valuable for recreation.

Segment A. Old Santa Fe to Old Pecos Trail

Notes: Arroyo Cloudstone, located near the base of Moon Mountain, empties into the larger Arroyo Chamisos. Run off from precipitation flows through a Y shaped culvert under Old Santa Fe trail where dead and down wood collects on either side of the culvert. A fence located on the downstream side of the culvert causes the debris to build up and obstruct the culvert. The upper length of Arroyo Cloudstone meanders freely from a lightly populated area to that of a densely populated area. Although the channel is shallow it vacillates between constricted sections, to braided, sandy, broad, open spaces in the upper reaches. It is possible for upper sections of the arroyo to meander freely before reaching Old Pecos Trail. It is not possible for natural meanders to occur since development up to its banks has been allowed. Below this point the sandy channel of the arroyo becomes deep, narrow and constricted.



Segment A/Upstream (left) and downstream right) of culvert, Old Santa Fe Trail, Arroyo Cloudstone, 2016.



Segment A/Erosion of bank, Arroyo Cloudstone,2016.



Segment A/Exposed cable, Arroyo Cloudstone, 2016.

Segment B. Old Pecos Trail to Arroyo Chamisos

The highest concentration of damage to city infrastructure is located in this arroyo's midsection. This area begins near Quail Run and ends in the area below Old Pecos Trail Road. Beyond this point, heavy erosion has collapsed tree covered banks into the channel of the arroyo.



Segment B/Erosion below gabion walls, Arroyo Cloudstone, 2016.



Segment B/One of several tree obstructions in the narrow constricted section of Arroyo Cloudstone, 2016.

XIII. Arroyo Nopal- East of Calle Nopal – W. Alameda

Notes: Arroyo Nopal begins at the crest of a hill northwest of W. Alameda Street. Calle Nopal, The High Road, Painted Sky Road, and W. Alameda border this arroyo. Also an easement road to access city sewer lines travels through the arroyo. Development of the surrounding hillside has changed this arroyo's natural drainage patterns. The soil type, surrounding hard top and new culverts contribute to a large volume of water passing quickly through Arroyo Nopal despite its short length. This excessive runoff has impacted homes in the area.

An upper and lower system of check dams and basins over filled with sediment, are unable to accommodate large volumes of water. Rather than slowing the water, these check dams are often by passed. As a result, damage to the arroyo channel and property has increased. Beyond the catch basins the arroyo becomes extremely incised as it flows toward W. Alameda.



Several culverts drain the west side of Calle Nopal, Arroyo Nopal, 2016.



Detail of sewage outlet next to incised bank, Arroyo Nopal, 2016



Example of storm water bypassing upper catchment basin as it enters the lower basin, Arroyo Nopal, 2016.



Example of incision created by run off, Arroyo Nopal, 2016.

<https://www.google.com/maps/@35.6801482,-105.9813195,20m/data=!3m1!1e3>



Aerial map of Arroyo Nopal describing the direction of water flow, catch basin locations and road locations. 2016



Arroyo Torreon Map 1



XIV. Arroyo Torreon-East of Buckman Road - Santa Fe River

Valuable for recreation and wildlife corridor.

Segment A. Upstream from Buckman Road to Camino de las Crucitas

Notes: Piñon / juniper vegetation anchors Arroyo Torreon's upper two branches which begin south of Camino de los Montoyas, wind through heavy clay soils and join together at Buckman Road to create the main channel. The upper branches of Arroyo Torreon are deeply incised and narrow. Approximately 1.5 miles later, the arroyo ends at the Santa Fe River upstream from Frenchy's Field Park.



Segment A/Example of one of many trash sites in Arroyo Torreon, 2016.



Segment A/ Upper Arroyo Torreon, 2016.



Segment A/Silt trapped in culvert, Arroyo Torreon, 2016.

Segment B. Camino de las Crucitas to Santa Fe River

After the branches meet above Paseo de las Vistas Road, then the arroyo passes beneath the road and transitions to an engineered channel which has been lined with concrete and retaining walls built from tires and adobe. Beyond this man made channel the Arroyo Torreon begins to slowly widen into a sandy meandering channel which broadens until it arrives at the base of a steep hill. Evidence of damage to the arroyo banks caused by erosion is common as the arroyo nears the river.



Segment B/Two views of engineered walls made of tire and adobe with undercutting, Arroyo Torreon, 2016.





Segment B/Arroyo character below engineered channel, Arroyo Torreon, 2016.



Segment B/Collapsing debris from steep bank, Arroyo Torreon, 2016.



Segment B/Collapsing bank against Rincon de Torreon, Arroyo Torreon, 2016.



Segment B/Collapsing gabion and bank collapse (far right), Arroyo Torreon, 2016.



Arroyo Chaparral Map 1

Charrisus --- ○ Chaparral

☆ ----- medio connection

XV. Arroyo Chaparral

Valuable for recreation, wildlife corridor, teaching model,

Segment A. Old Pecos Trail – Galisteo Rd.

Notes: Arroyo Chaparral is the lower extension of Arroyo en Medio. Several bridges cross the upper reach of segment A. A sandy, wide, shallow channel disappears through a culvert beneath Galisteo Rd. Damage to infrastructure and the channel bed from erosion is not significant in this area. However, significant amounts of trash have accumulated in the area from transient homes and passing traffic.



Segment A/Rip rap below culvert, Arroyo Chaparral, 2016.

Segment B. Galisteo Rd. - Esplendor St.

The arroyo below the culvert narrows to the width of an ATV track. The narrow sandy channel of the arroyo is enjoyed by locals since it provides easy access by foot to an elementary school, the Santa Fe Rail Trail, and green space along its banks. Impacts from erosion to both the channel and infrastructure are common to this area. Long intervals of vertical walls rising to approximately seven feet appear along north facing banks above the arroyo bed. Infrastructure such as check dams, rip rap and gabion walls are losing supportive soils.



Segment B/ View of upper arroyo with bank deterioration, Arroyo Chaparral ,2016.



Segment B/ Bank deterioration at check dam, Arroyo Chaparral ,2016.



Segment B/ Bank deterioration at gabion wall check dam, Arroyo Chaparral ,2016

Segment C. Esplendor St – Arroyo Chamisos

A sudden drop in arroyo bed elevation (head cut) near Chaparral Elementary School has caused storm water to undermine the soil from beneath rip rap and gabion structures placed to protect the arroyo bank and a nearby sewer line should be marked as a high priority area. Raw sewage was found leaking into the bed of the arroyo from this sewer outlet. Past this severely damaged infrastructure the arroyo passes through a highly incised canyon like segment until it flows beneath W. Zia Rd. into the Arroyo de los Chamisos.



Segment B/ Erosion below sewer outlet, Arroyo Chaparral, 2016.



Segment B/ Leaking sewage outlet, Arroyo Chaparral, 2016



Segment B/ View of banks below leaking sewage outlet, Arroyo Chaparral, 2016