



Arroyo en Medio Map 1



Arroyo en Medio Map 2

VI. Arroyo en Medio – Old Santa Fe Trail to Arroyo Chamisos

Valuable as wildlife corridor, recreation.

Segment A. Old Santa Fe Trail to the Old Las Vegas Highway

Notes: The sandy upper section of the Arroyo en Medio flows through a sparsely populated juniper/piñon habitat. The shallow, narrow channel of the arroyo is mildly incised and braided. Bank deterioration in this area is minimal. Beyond an area heavily overgrown by chamisa, the arroyo loses elevation. At this point the arroyo moves quickly from a shallow waterway to a deep, moderately constricted gouge as it approaches Old Las Vegas Highway. Most of this segment is in good condition. The erosion measures taken behind the new housing subdivision in this area have remained effective.



Segment A/ Incising of Upper Arroyo en Medio, 2016.

Segment B. Old Las Vegas Highway to Old Pecos Trail

Notes: Segment B of Arroyo en Medio is in good condition. Few problems were noted since thoughtfully engineered slopes in combination with mature vegetation have successfully prevented further expansion of the arroyo as it passes beneath a number of highways.

Segment C. Old Pecos Trail to the Rodeo Road

Notes: This segment of the Arroyo en Medio is in the same stable condition as the previous section. Since 2012, the road shoulder below Old Pecos Trail Bridge has been improved. The steep bank and storm water runoff will continue to create problems in this area until surrounding vegetation matures.

Segment D: Rodeo Road to Calle Pava

Notes: The Arroyo en Medio becomes the most constricted and incised between Rodeo Road and frontage road homes. Intermittent, vertical walls up to eight feet in height have developed in this segment. Erosion is affecting the condition of culverts, rip rap and out falls that were installed to allow residents to access their homes. These areas were marked with GPS coordinates for further examination. Also an exposed cable was located within this area.



Segment D/ Example of one of many undercut rip rap, banks, in Arroyo en Medio, 2012.



Segment D/ Exposed cable in Arroyo en Medio,2016.

Segment E: Calle Pava to Sawmill Road

Notes: Minor erosion occurs in this winding section of the arroyo leaving infrastructure, mainly culverts, in good shape. Fences are built across the arroyo bed.

Segment F: E. Sawmill Road to W. Sawmill Road

Notes: The sandy channel of the Arroyo en Medio broadens in this area. A variety of bank conditions appear in this area. Banks range from an average four feet to 20 feet in height. Along the highest banks, drainage pipes leading from residences have been installed to drain into the arroyo.



Segment F/Questionable drainage lines into Arroyo en Medio, 2016.



Segment F/Drain pipes in Arroyo en Medio, 2016.

Segment G: W. Sawmill Road to S. St. Francis Drive

Notes: Infrastructure conditions in this segment are very poor in the Arroyo en Medio. Conditions noted in 2012 have since declined, further exposing a pipeline, exposing more cable, putting an important culvert out of service and dissolving a bank supporting a retaining wall and its system of rip rap and gabion walls. The breakdown of storm water infrastructure has caused major deterioration in this section of the arroyo. After passing S. St. Francis Drive the arroyo changes its name and becomes Arroyo Chaparral. Trash from the highway, surrounding properties (especially the shopping complex) and transient camps are common in this area.



Segment G/Undercut rip rap mat, Arroyo en Medio, 2016



Segment G/A partially exposed pipeline, Arroyo en Medio, 2012



Segment G/Disconnected storm culvert in Arroyo en Medio ,2016.



Segment G/Storm culvert in Arroyo en Medio 2012.



Segment G/Photo of the same storm culvert as pictured above in 2016, Arroyo en Medio.



Segment G/Over view of multiple problems, Arroyo en Medio, 2016

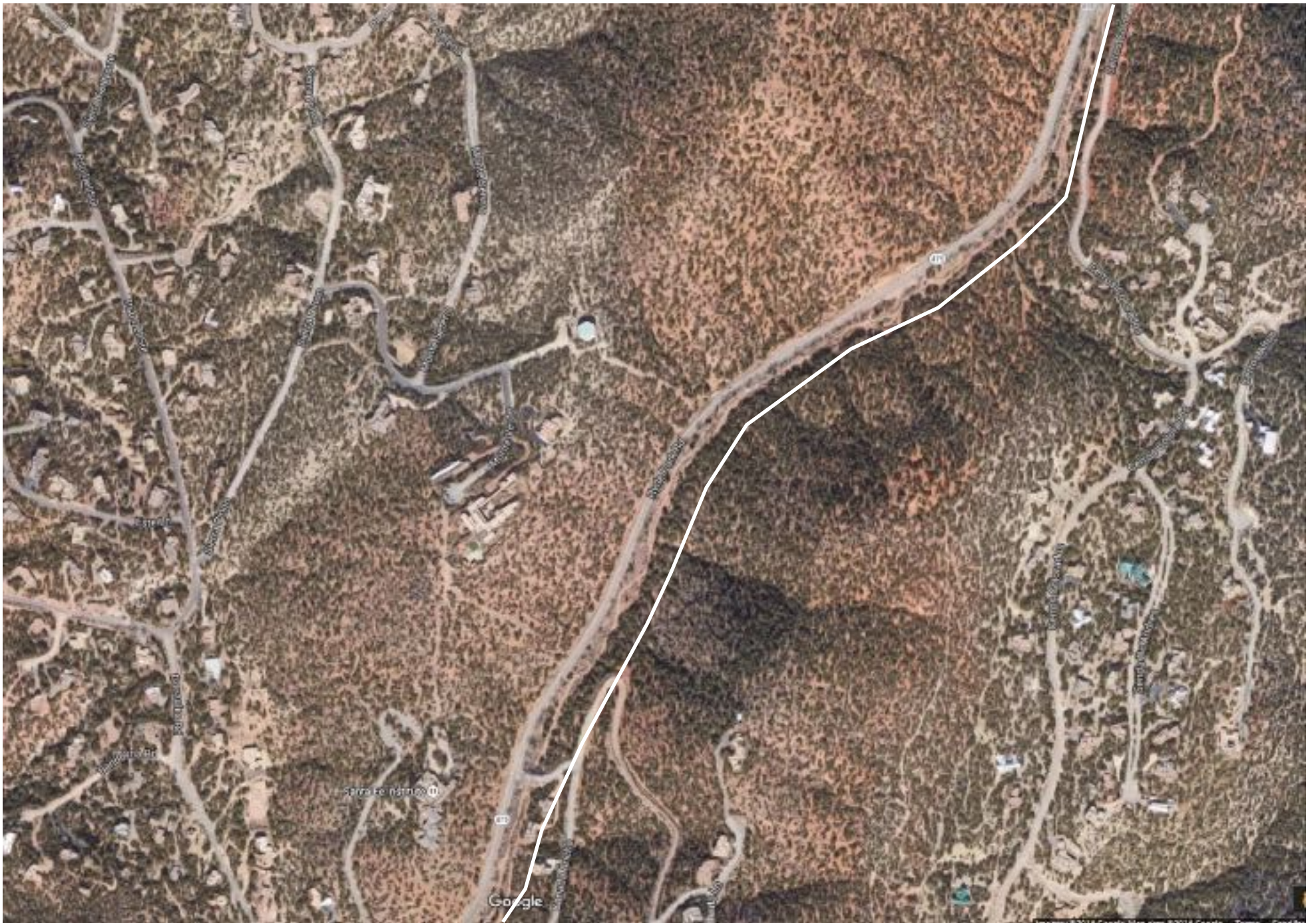


Segment G/Overview of multiple problems, Arroyo en Medio,2016



Segment G/ Undercut retaining wall, Arroyo en Medio, 2016, as pictured above.



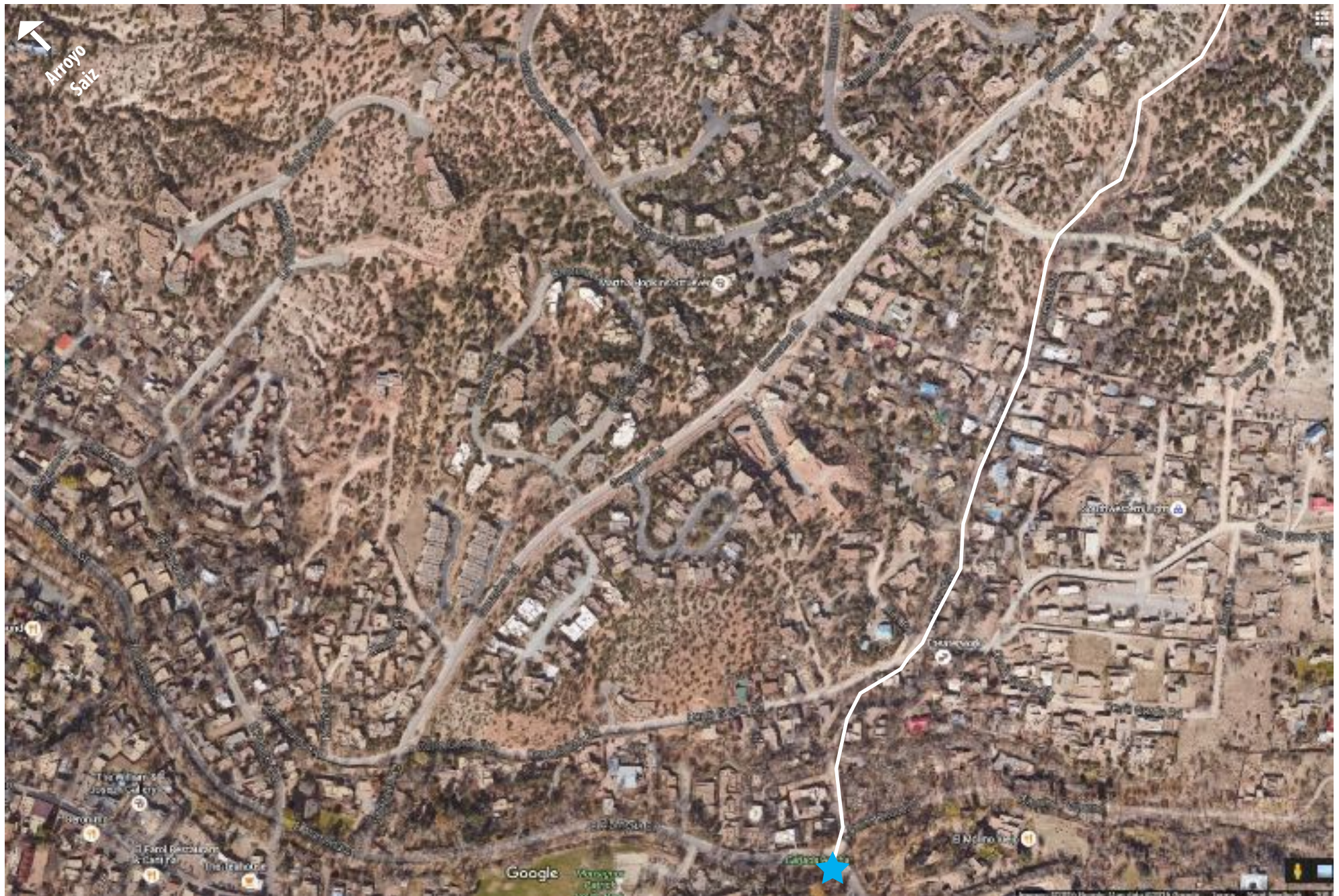


Arroyo Ancha Map 2



Arroyo Ancha Map 3

☆----- Arroyo Saiz



Arroyo Ancha Map 4

★ River connection

VII. Arroyo Ancha Headwaters to Cañada Sur

Valuable for a wildlife corridor and recreation.

Segment A. Headwaters – Cañada Sur

Notes: Hyde Park Road follows the Arroyo Ancha, a narrow, constricted, rocky waterway that passes beneath a canopy of ponderosa, piñon, and juniper. The passage attracts wildlife, hikers, and mountain bikers. When the arroyo enters the La Entrada area, it remains constricted and incised. Many culverts placed to drain storm water off of Hyde Park Road to then empty into the Arroyo Ancha are restricted by sediment.



Segment A/Obstructed culvert, Arroyo Ancha, 2016



Segment A/Obstructed culvert, Arroyo Ancha, 2016



Segment A/Gabion askew, Arroyo Ancha, 2016.

Below Kachina Heights Drive, a gabion wall is hanging precariously off of the arroyo bank. Here water from the arroyo channel drops 10 feet below this culvert/gabion system expanding the arroyo bed in width and impacting infrastructure and channel characteristics.

From this point, the condition of the arroyo is very poor due to extreme erosion. The sewage outlets found above ground were all emanating a noxious odor. Nearby, an above ground pipe labeled sewer was found. Corrective actions to protect infrastructure in this area are highly recommended and may be urgent. Foot and bike traffic is also frequent in this area.



Segment A/One of four sewage outlets emanating noxious odors, Arroyo Ancha, 2016



Segment A/ Exposed sewer line in Arroyo Ancha, 2016

Segment B. Cañada Sur – Santa Fe River

Notes: Segment B, as it continues to follow Hyde Park Road from Cañada Sur to the Santa Fe River, continues to be well traveled by hikers and wildlife. The arroyo crosses Dempsey Lane turns south and empties into the Santa Fe River. The arroyo's channel characteristics influenced by road crossings and high density housing are variable in this section. The channel which alternates between broad to constricted stretches is intermittently braided, incised and contains occasional vertical or collapsing banks.



Segment B/ Example of bank erosion in Arroyo Ancha, 2016.



Segment B/ Example of bank calving in Arroyo Ancha, 2016.



Segment B/ Bank erosion by check dam, Arroyo Ancha, 2016

Drainage from this arroyo continues to wear on infrastructure such as rip rap mats, footings around concrete check dams and private property. The sediment in the box culvert at the junction of the arroyo and the Santa Fe River has increased.



Segment B /Expose pipe at crest of bank, Arroyo Ancha 2016.



Segment B/Drain pipe with opening in the arroyo bed, Arroyo Ancha, 2016.



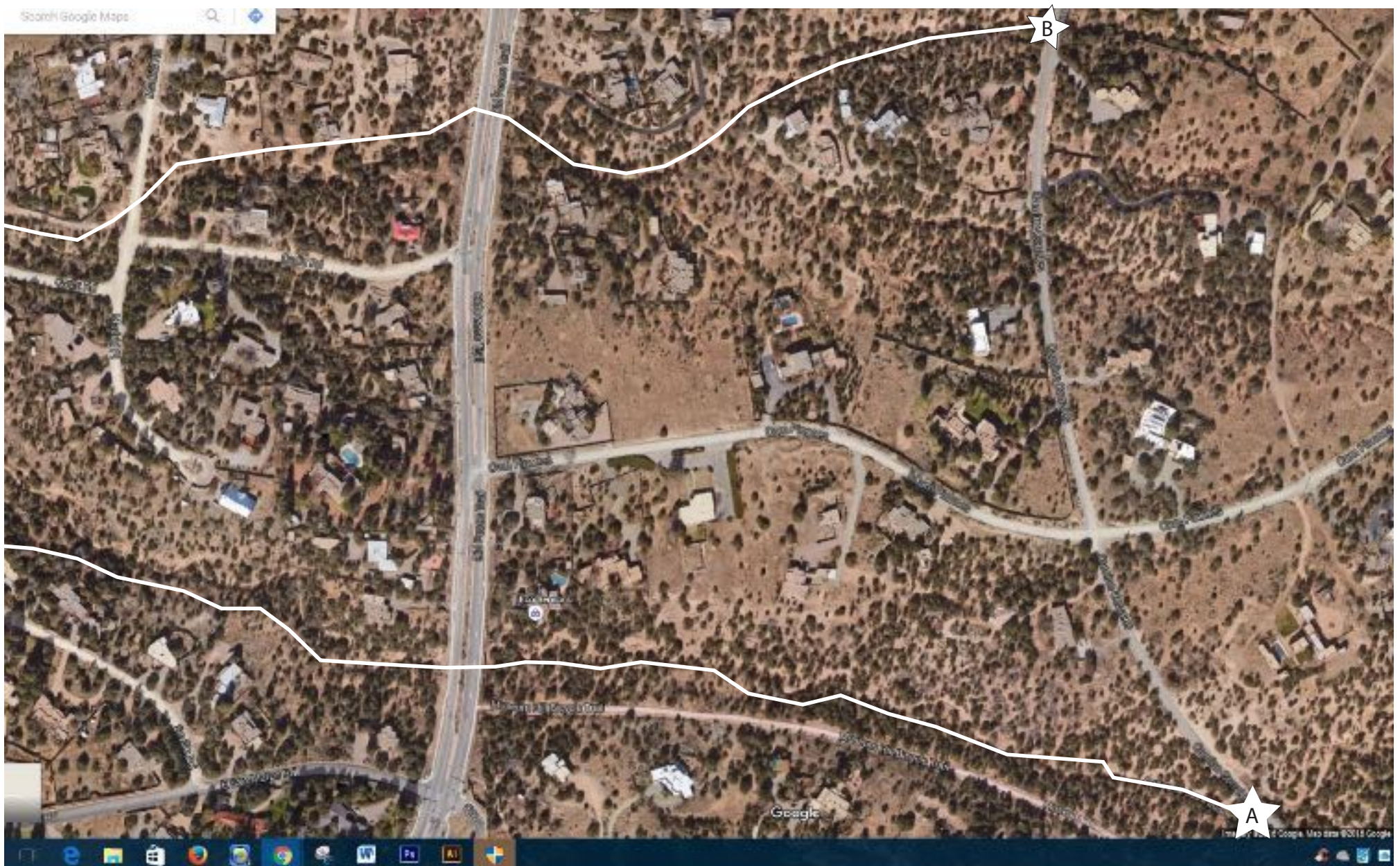
Segment B/ Utility line in bed of the arroyo, appears to be in the same condition, Arroyo Ancha 2012 – 2016 .



Segment B/ Sediment level rises beneath box culvert E. Alameda St. in Arroyo Ancha, 2016



Segment B/ Box culvert trapping sediment beneath E. Alameda St., Arroyo Ancha, 2012.



Upper Arroyo de los Pinos A&B Map 1



Upper Arroyo Pinos A & B Map 2

VIII. Arroyo de los Pinos North

Valuable for recreation.

Segment: A. Camino Corrales /Lejo to Galisteo

Notes: The Upper Segments of the Arroyo de los Pinos are located in a less populated section of the City of Santa Fe. It is with in an arid pinon juniper habitat. The upper arroyo differs from the lower channel in many ways. The upper arroyo is able to meander before reaching Old Pecos Trail. The channel character vacillates between constricted and braided, to braided. This upper branch passes under or over many roads. (Seville, Don Gaspar, Galisteo) A walking/ biking trail exists in the arroyo ending at Old Pecos Trail. A permanent trail, built for the Santa Fe Botanical Gardens, also parallels the arroyo to Old Pecos Trail. The residential density increases at the lower end of this segment.

After 2012, structures like one rock dams and step downs have been placed in the arroyo and at intersections with smaller drainages in the arroyo between Galisteo and Old Pecos Road. At this time the condition of these additions appear to be functional.

The infrastructure in this area seems secure. The obstructed culvert noted in 2012 remains obstructed. Residential density increases at the lower end of this segment.



Segment A/ Obstructed culvert, Old Pecos Trail, Upper Arroyo Pinos North, 2016



Segment A. One rock check dams, Upper Arroyo Pinos North, 2016.

VIII. Arroyo de los Pinos South

Segment: B. Camino Corrales /Lejano to Don Gaspar South Fork

Notes: The two upper branches of Arroyo de los Pinos converge near Don Gaspar. As with Segment A, Upper Pinos South, the channel of the arroyo and vegetative zone are very similar. Obstructed culverts are the most common problem to be found within the infrastructure located in this arroyo. An unofficial walking trail along the banks and in the arroyo until can also be found here. Since 2012, a road has been made, leading from one property to another. Trash is present in this segment as well as the previous segment.



Segment B/New road entering Upper Arroyo Pinos South, 2016.



Segment B /Obstructed culvert Upper Arroyo Pinos South, 2016.



Segment B /Vertical banks Upper Arroyo Pinos South, 2016.



Lower Arroyo de los Pinos Map 4

Ditch



Ditch connection

VIII. Arroyo de los Pinos DITCH St. Michaels Drive to La Farge Library

Notes: The entrance into this segment of arroyo is poorly drained due to an occluded, culvert. This culvert remains in its 2012 condition. An infiltration basin located here could be successful. The channel characteristics in this location are constricted yet shallow. Segment X is an engineered ditch that empties into the Lower Arroyo Pinos below La Farge Library. New to the landscape is the recently built HEC building. The “ditch” is used as a pathway between Santa Fe High and the campus of the School for Art and Design. Trash accumulation is prevalent along the entire ditch as are many transient camps with in the ditch and below the La Farge library.



Segment X/ Restricted, sunken culvert, Lower Arroyo Pinos, 2016.



Segment X/ Storm outlet , Lower Arroyo Pinos, 2016.



Segment X/ Debris caught in storm outlet , Lower Arroyo Pinos, 2016.



Lower Arroyo de los Pinos Map 1



Lower Arroyo de los Pinos Street Map 2



Lower Arroyo de los Pinos Map 3

----- ditch



Lower Arroyo de los Pinos Map 4

Ditch



Ditch connection



Lower Arroyo de los Pinos Map 5

—○ Ditch connection



Lower Arroyo Pinos Map 6

-----○ Arroyo Chamisos connection

VIII. Lower Arroyo de los Pinos

Segment A. Galisteo Street to St. Francis Drive

Notes: Arroyo de los Pinos flows from Galisteo Street culverts into a wide, densely wooded area. This segment, along with the rest of the Arroyo Pinos, flows through a densely populated area.

Next the arroyo transforms into a long narrow constricted channel as it meets St. Francis Drive passing between homes. The impacts from erosion begin to be more apparent once the arroyo picks up below Luisa Street before flowing under St. Francis Drive.

A well-worn pedestrian path appears from Galisteo Street to Luisa. Pedestrians and bicyclists use the bank of the arroyo as a recreational path to access the bike trail near Second Street Brewery. Rip rap, outfalls, and storm culverts in various states of wear, are located throughout the arroyo.



Segment A/Arroyo Pinos culvert located below St. Francis Drive, 2016

Segment B. St.Francis to 6th Street

Notes: Arroyo de los Pinos flows beneath large shade trees growing between residential and commercial buildings. Segment B of this arroyo begins at the St. Francis culverts where storm water continues to scour a basin beneath them, further incising and undercutting existing vertical banks. Near these steep banks, gabion and rip rap mats have been used to control erosion. Located beneath the Pacheco street culverts are existing basins that deepen by the scouring action of storm water. Infiltration basins located at these culverts may encourage more growth of riparian species. The banks remain steep. Since 2012, the utility pipe seen below has been further exposed in the arroyo bed. Transient camps are popular in the area as were noted in 2012 resulting in unusually large amounts of trash and bio hazards.



Segment A /Left photo 2012 bank erosion ; photo right 2016 bank erosion same location. Lower Arroyo de los Pinos,2016.



Segment B/Exposed pipe, Lower Arroyo Pinos, 2012.



Segment B/ Exposed pipe same location, Lower Arroyo Pinos, 2016.

The stretch between St. Francis Drive and the Rail Runner crossing near Second Street is covered with dense ground vegetation and mature deciduous trees. In several areas beneath the trees, the arroyo is shallow and opens into a wide bed, later returning to an incised channel after passing under the Rail Runner tracks. The culverts beneath the tracks in 2012 were clear of sediment. These culverts are now no longer sediment free. A perpendicular ditch runs into the arroyo from the railroad property. Soils eroding from this ditch may be contributing to extra sedimentation in the culverts and has uncovered a conduit pipe that services rail infrastructure.



Segment B/ Heavy erosion on RR property into the Pinos, 2016.



Segment B/ Culverts under Rail Runner tracks, Lower Arroyo Pinos, 2016.



Segment B /Volunteers after Arroyo Pinos trash clean up Lower Arroyo Pinos, 2016,.

From Hopewell Street to 6th Street Arroyo de los Pinos transforms into a long, constricted ditch traveling through several neighborhoods. It is strewn with trash and concrete. Banks are undercut and are usually high in areas. The arroyo is encroaching on private property at the 5th street crossing.



Segment B /Bank erosion below private property, Lower Arroyo Pinos, 2016.



Segment B /Bank erosion below private property, Lower Arroyo Pinos, 2012.

Segment C. St. Michaels Drive to Camino Carlos Rey

Notes: A severely constricted, incised, channel with vertical banks either sheathed with gabion or bare walls define the arroyo from St. Michael's Drive to Camino Carlos Rey. Gabion walls and rip rap are in various states of disrepair throughout this section.

The arroyo is not heavily used as a recreational path. The amount of trash throughout this area is high. Much of the rip rap mats beneath check dams are damaged or missing. Storm water flow has also scoured out deep basins below these features resulting in an increase of water retention. The slow evaporation of storm water is left standing for weeks during the mosquito season. Often transient camps can be found on the camps below La Farge Library as well as along the arroyo banks below the old Greyhound station. These camps manufacture large quantities of trash and biohazards.



Segment C/, Gabion walls sagging, Lower Arroyo Pinos, 2016.



Segment C/ Water standing in deep scour below undercut rip rap mat, Lower Arroyo Pinos, 2016.

As in 2012, erosion is the leading cause of infrastructure deterioration in this segment of the Arroyo de los Pinos. Banks around gabion walls, culverts, rip rap, and box culverts are in various states of erosion. Severe erosion conditions are present along Siringo Road where the arroyo banks are extremely high and vertical. An arroyo bank off Llano Street is working its way towards a manhole located near a sidewalk. Some culverts in the Arroyo de los Pinos system are either restricted or occluded by debris. A section from Llano Street to Alumni drive has been adopted by Santa Fe High School through the Santa Fe Watershed Association's Adopt an Arroyo program.



Segment C/ Bank erosion to right of manhole, Lower Arroyo Pinos, 2016.



Segment C/ Bank erosion ~2 feet from manhole, Lower Arroyo Pinos, 2016.



Segment C/Cracked concrete pipeline, Lower Arroyo Pinos, 2016.



Segment C/ Trash caught in tire check dam, Lower Arroyo Pinos, 2016.

Segment D. Camino Carlos Rey to Richards

Notes: There are no changes in the arroyo's channel characteristics in Segment D. The arroyo continues to be a constricted, incised, channel with vertical banks that are either sheathed with gabion walls or remain bare. Outfalls and rip rap continue to deteriorate, while culverts are compromised by restrictions or occlusions.



Segment D/ Bank erosion; upper photo 2016, lower photos 2012, Lower Arroyo Pinos.



Segment D/ Damaged rip rap mat 2016, Lower Arroyo Pinos.



Segment D/ Damaged rip rap mat 2012, Lower Arroyo Pinos.

Segment E. Richards to Arroyo de los Chamisos

Notes: The Arroyo de los Pinos continues to be constricted, incised, and eroded to its junction with the Arroyo Chamisos. Also the methods engineered to control flow are in various states of disrepair. Since 2012, the bank surrounding the sewage outlet located upstream above the Kachina Ridge crossing near Richards has been repaired yet should be monitored. The arroyo continues to heavily erode the bank below it and the cracks in the concrete collar have enlarged. A fair amount of property is eroding into this arroyo as well. Transient camps are common with in the juniper/piñon banks located where the Arroyo Chamisos and Arroyo de los Pinos join producing extensive trash and biohazards.



Segment E/ Unprotected Sewer utility, Lower Arroyo Pinos, 2012.



Same sewer outlet with protection, Lower Arroyo Pinos, 2016 .



Segment E/ Bank erosion, Lower Arroyo Pinos, 2016 .



Segment E/ Bank erosion, Lower Arroyo Pinos, 2016 .



Segment E/ Exposed utility, Lower Arroyo Pinos, 2016.



Segment E/ View of Lower Arroyo Pinos, 2016.



Segment E/ Young trees anchor bank stabilization materials, Lower Arroyo Pinos, 2016.



Arroyo Mascaras Map 1



Arroyo Mascaras Map 2

- ★ River connection
- Arroyo underground
- Rosario connection