

ALBUQUERQUE AND THE YAZOO

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INTRODUCTION

Albuquerque was founded on a unique floodplain of the Rio Grande in 1706. The original site was located on some higher ground in the floodplain. The railroad came in 1880 and with it came the need to locate the tracks and supporting facilities away from the original site. With the introduction of the railroad, downtown Albuquerque, or New Town Albuquerque, was created about 1 ½ miles southeast of the original town site for Albuquerque, which became Old Town after the railroad came. New Town was laid out by the New Mexico Town Company in association with the railroad in 1880 in what is called a “yazoo.”¹ In geological terms, a yazoo means a depression that cannot drain properly because the adjacent river lies above it. The threats of a yazoo are that, if the river floods, properties at lower elevations get inundated, and a high groundwater table exists forming undesirable swamp like conditions. New Town developers had to adjust to the physical setting caused by this location. This paper addresses ramifications of locating New Town Albuquerque in the yazoo. The presence of the yazoo wasn’t all bad. The fact that water, while it may present problems, was a readily available resource in a desert environment had something to do with the founding of Albuquerque and this fact leads to an interesting speculation. Important questions discussed are:

1. What is the physical setting of downtown Albuquerque in the presence of the yazoo?
2. What did citizens do to mitigate the problems of the yazoo?
3. How did the presence of the yazoo influence the founding of Albuquerque?

In preparing this paper I have relied heavily on a book by Marc Simmons¹ and a report by Michael Marshall.²

PHYSICAL SETTING OF DOWNTOWN ALBUQUERQUE

Figure B1 is a Google Earth map showing a major deviation in the alignment of the Rio Grande that occurred some 1000 to 2000 years ago. Seasonal flooding caused the river to divert to the west above the community of Alameda, about 8 miles north of downtown Albuquerque.

Originally, the river went down the east side of the valley in the general vicinity of the light-colored road shown in the upper part of the photograph. The railroad was to the east of the road before the road makes a sharp turn to the east. The new channel flowed west about a mile and then was turned south by the bluffs. This detour went for about 10 miles; then the river came back to the original channel near Barelás, about 2 miles south of downtown Albuquerque. This deviation in channel alignment is shown as the bow in the river between

these two communities. The major change in the floodplain for the Rio Grande impacted over 17 square miles. The lower part of the segment lying between the old and new channels became the prime yazoo area. This lower region was relatively flat and had a high water table.

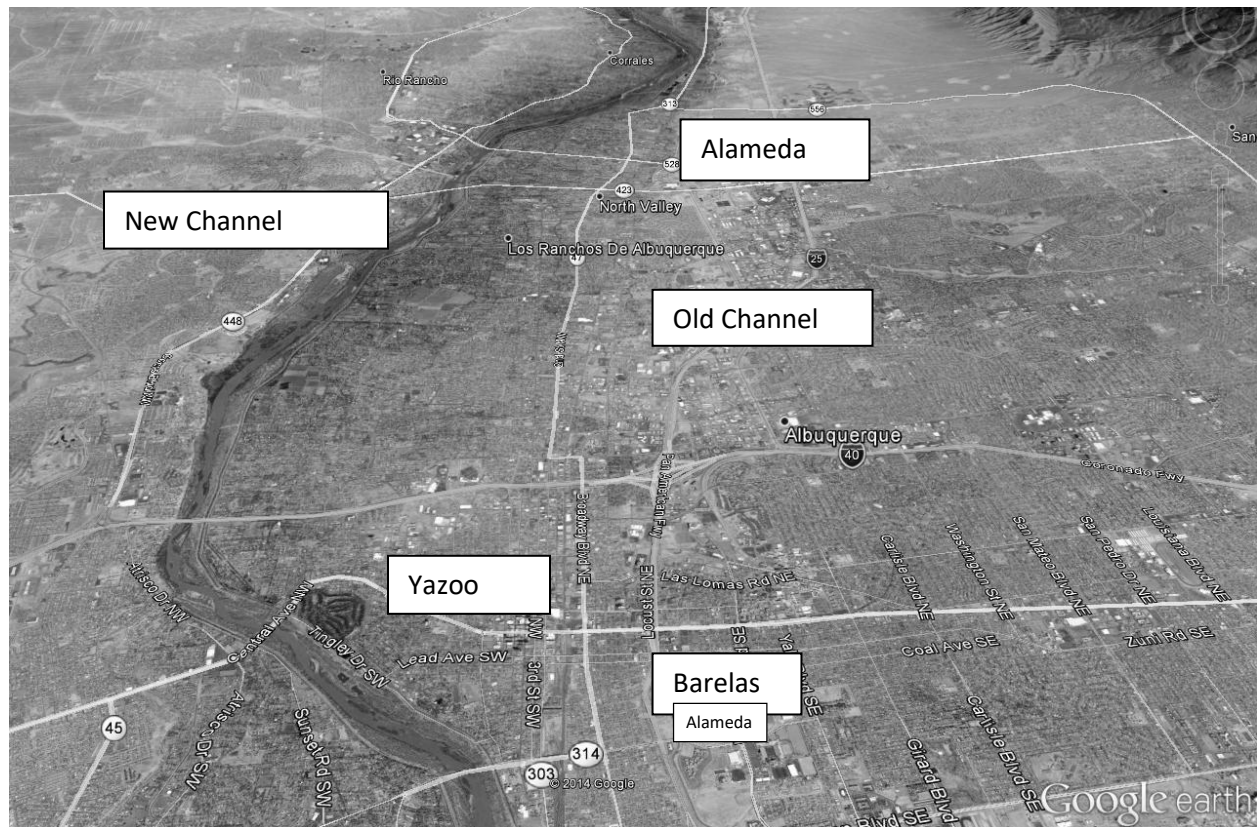


Figure B1. Map showing deviation of Rio Grande at Alameda

Figure B2 is a copy of a 1917 US Geological Survey map of the lower part of the Middle Valley of the Rio Grande floodplain. The middle valley is identified as part of the Rio Abajo, which is the region of the Rio Grande below La Bajada Hill. Several survey related features are highlighted. Dashed lines are highlighted to indicate elevations in 10 ft. contours. This means that the elevation of the land was constant where the lines are drawn. The map shows numbers ranging from 70 ft (4970 ft) to 40 ft near the bottom. Curvature of the contours indicates locations of declining elevations within the curve. The swamp is in a depressed area as is the pond. Central Avenue is shown as it goes from New Town to Old Town. The AT&SF Railroad is indicated by a dash with cross hatches.

The Rio Grande channel is highlighted in Figure B2 by dotted lines. Channel elevations are shown as numbers located in the channel and are enclosed by boxes. The figure shows that the channel elevations are close to the surrounding ground elevations. This is not good.

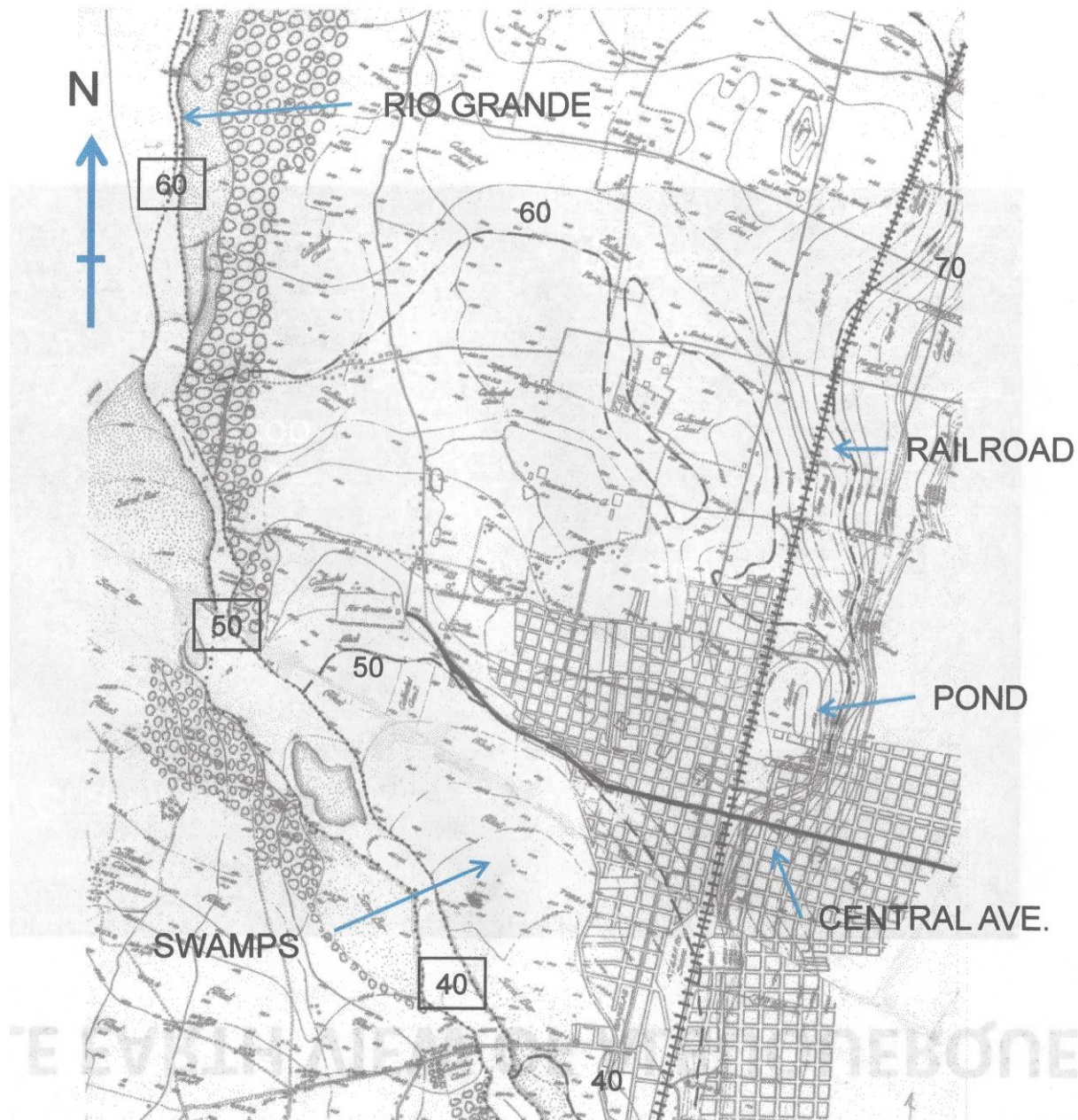


Figure B2 USGS Map Showing Results of 1917 Survey. (Courtesy MRGCD)

There are two features of a yazoo that influenced New Town: (1) high groundwater and (2) potential flooding. The relative height of the normal river to the surrounding ground causes groundwater problems as there is no effective drainage. Surface water in the yazoo doesn't drain properly and is deposited in thin ponds. The ground can absorb little of the inflow from the mountains and this water remains on the surface. Unfortunately, these ponds become stagnant and breed insects until evaporation can dry them up. Digging in the yazoo is easy because of the high-water table.

Simmons wrote about the swamp area south of New Town Albuquerque; it was known as the Esteros de Mejia. The esteros once covered much of the district from present Central Ave south to the Barelás Bridge. Notice, it is located near the confluence of the old and new channels of the Rio Grande, and this would be expected to be a region of high groundwater. In general, the swamp area was comprised of swamps and shallow pools. A detriment of the swamp was that the water table was too high for cultivation. Crops just wouldn't grow in regions of the high-water table. The land surrounding the swamp was better suited for grazing.

In the 1600s, the hacienda at the Esteros de Mejia was located beside the Camino Real and was a designated "paraje," which meant that it was a spot where travelers customarily stopped for the night. There was a ford across the Rio Grande below Barelás and that was important to travel on the Camino Real. In 1692, when Governor Don Diego de Vargas Zapata y Luján was reestablishing the area after the Pueblo Revolt, he passed the bleak and burned-out walls of Isleta and arrived at the ruined hacienda of Mejia.¹ The site was plentifully furnished with water and good pasture. This hacienda was situated in an open pastureland without trees. Governor Vargas decided that he would establish a supply base there.

In 1880, the Esteros de Mejia became important in the location of the railroad. Railroad planners had to decide if they wanted to cross the swamp on the way to Old Town or take the higher alignment on the east side of the valley. Figure 2 shows that the railroad was located along some slightly higher ground and that it missed both the swamp and the pond. The extensive railroad yards south of Central were located on slightly higher ground as well.

I am going to try to define the yazoo by describing my impression of the physical setting of Albuquerque in 1880, at the time the railroad came. I am going to address what people might have seen by rotating 360° in a counter-clockwise direction at a location at the corner of 1st Street and Central Avenue. It should be remembered that Central Avenue was originally Railroad Avenue in the nineteenth century.

I am going to start this viewing of the region with a photograph. Figure 3 shows an 1881 photograph of the land west of 1st street. The photograph was taken from an elevated structure along the railroad south of Central Avenue and shows a view to the northwest. The Armijo Hotel, located on Central and 3rd Street, is the large building in the center. Most trees are in the distance. The trees on the right side of the photo are around some cultivated land between New Town and Old Town. Notice how barren much of the land looks.

The canal shown in Figure B3 is the Lower Barelás Canal. The open canal looked much like a wide swampy channel. It was most likely part of the old alignment of the Rio Grande. The canal appears to have been used to irrigate farmlands in the area prior to and during the early town site development. It was connected to the pond located in Martíneztown. Because of the presence of the railroad to the east, its main function after 1880 was to be the main drain for runoff during the early town site development. This canal will be discussed in more detail later in this document.

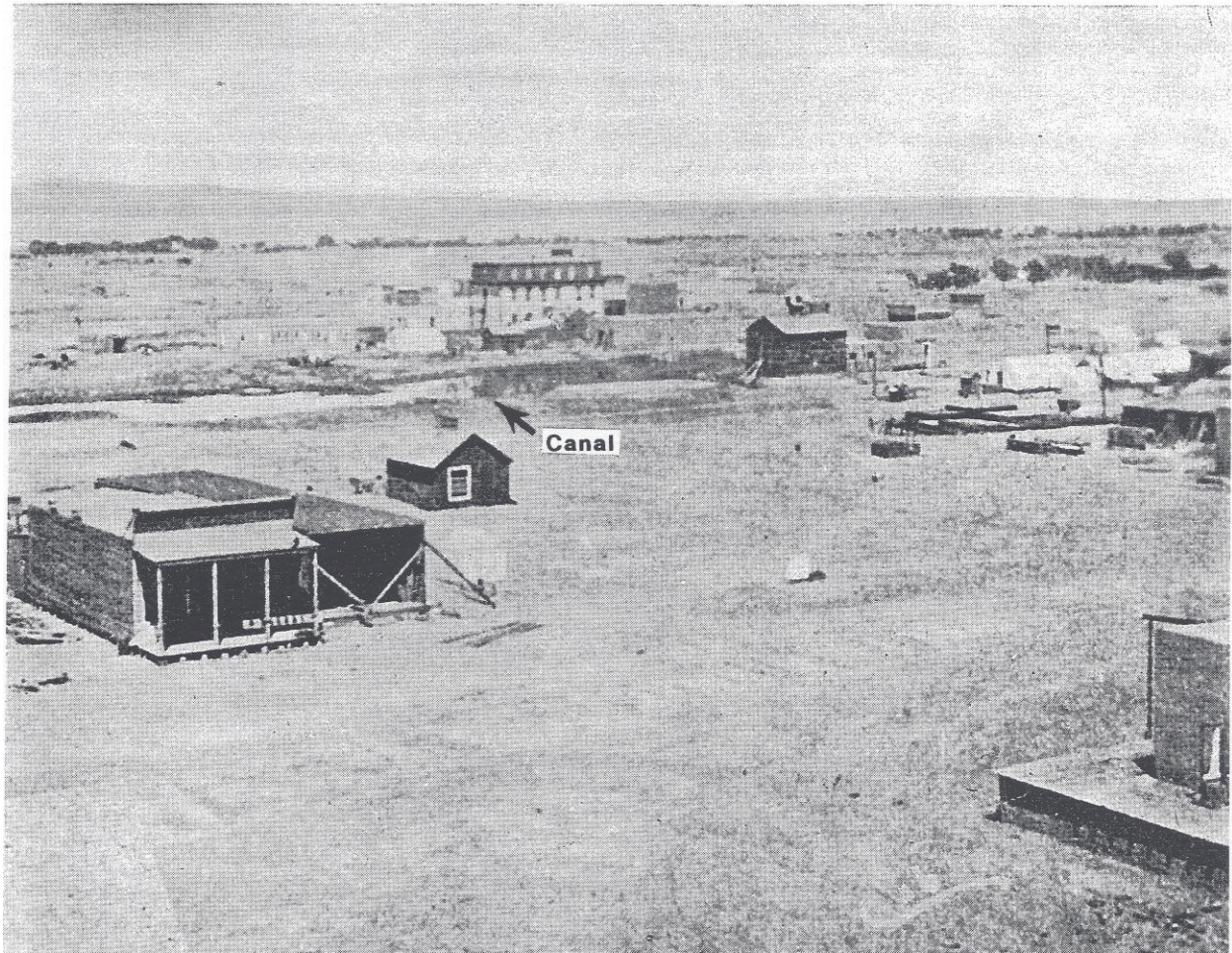


Figure B3 New Town Site in 1881 (Courtesy of Museum of Albuquerque)

The early farmers in the Rio Grande Valley had created a network of acequias to distribute surface water to their fields. Laterals to the major acequias would be used to spread irrigation water out on the crops. Near Old Town, the fields were fed primarily by the Acequia Madre (mother ditch) de los Griegos, which was a major acequia coming from the Rio Grande, and it went through the small Griegos community that was north of Old Town. This acquia took water from the river and transported it just east of the Old Town plaza and then ran parallel to the river until it returned to the river. This was a major feeder canal for farming in the region north and west of the swamp. This acequia is not evident in the photo in Figure 3.

In Figure B3, the buildings of Old Town are visible over a mile away to the northwest. They are on slightly higher ground and that was intentional by the 1706 founder. Beyond that you can see a bluff that rises about 150 ft above the Rio Grande. Beyond that, you can see a black volcanic cap that is highlighted by 5 volcanic cones. These cones and the surrounding cap were formed about 190,000 years ago.

Standing at 1st Street and Central and looking west, you would see relatively open land beyond the canal. You might see a few adobe houses near the fields. Notice the absence of trees.

If you look to the southwest, you see the Esteros de Mejía. The land was essentially grazing land and ponds. Beyond the swamps to the southwest was the old Camino Real and then the village of Atrisco would be in the background across the Rio Grande

By turning counterclockwise to the south, you see evidence of the Esteros de Mejia and hacienda. You might see evidence of the Rio Grande beyond the swamps. Again, notice the absence of trees.

To the southeast, you see the highlands. These are common lands where dry land grazing could occur because it was higher in elevation than the visible irrigation canal. Sheep were the most common domestic animals, but horses, cattle, goats and chickens were also raised and grazed there.

There is a special feature if you turn your view to the east. Of course, there is the railroad in the foreground. There is a canal a few hundred yards ahead of you beyond the railroad bed. You clearly see the banks of the Acequia Madre de los Barelás, which was built before 1800. The Las Lagunitas land grant was given to Antonio Sandoval and he later built the acequia.¹ This was a major acequia that provided Rio Grande waters for irrigation on the east side of the valley. It had an entrance to the Rio Grande upstream from Alameda at an elevation near 5000 ft. and the grade was kept higher than the valley to facilitate irrigation in the valley. The acequia fed the region near what is now known as Martineztown and continued down to include the fields around Barelás.

In the background of your view to the east, the land rises until it reaches the Sandia Mountains. The faint traces of the one of the pathways of the Old Camino Real are shown beyond the acequia. The sand hills above the road are highlighted by long benches that are generally oriented along drainage arroyos. Tijeras Canyon lies in the low region between the Sandias and the Manzano Mountains located to the south.

By turning to the northeast, you see the north peak of the Sandias, which rises to near 10,700 ft in elevation, and the long terrace that rises from the top of the sand hills to the base of the mountains. You see evidence of arroyos coming down from the mountains. There were 8 arroyos draining into the Albuquerque floodplain. You might see some evidence of the pond at Martineztown in this view.

If you turn your view to the north, you may see evidence of a minor swamp north of Central Avenue. You see the swamp that would eventually be located under City Hall, near 4th Street and Marquette Avenue. The swamp at this location drained to the south and east into the Lower Barelás Canal. Minor swamplands existed from about Second Street to Twelfth in the form of thin ponds north of Central. This completes the 360° survey of the land conditions in early 1880, and it is hoped that this panoramic survey gives the reader some appreciation of what early New Town Albuquerque looked like.

If the map in Figure B2 were to show further land to the north, it would show that the nominal elevation of the river near Alameda, where it turns west, would be near 5000 ft. This means that downtown Albuquerque was in the Old Rio Grande channel and was some 50 ft below a potential flooding point. This was the major feature of the flooding threat presented by the yazoo condition. Mitigation of this threat is discussed later.

It is useful to describe the Lower Barelvas Canal in more detail as it flowed under the developing New Town. Roy Stamm described the Lower Barelvas Canal as he recalled it from the 1880s³. He noted that the ditch began at a swampland north of Railroad Avenue near the railroad tracks.

Always, it contained turtles, spotted frogs and water snakes. Coming up from the river floods in the spring through the outlet, muskrats were plentiful and, once, I saw a beaver. In the high banks, forts and shallow caves could be dug and also it furnished make believe mountains to balance the forests of sunflowers and weeds growing in the now dry swales below its western side.

When not on my horse, I spent many of my childhood hours playing and dreaming along its banks. In Albuquerque's northern part, close to the railroad, was a half pond, half swamp, full of tules and cattails, into which two or three main ditches emptied. Ducks were shot there all through the season. That ditch through town, and our backyard, was the outlet for the surplus water. Fairly deep and wide, it went down the middle of Albuquerque but was heavily planked over at the streets and covered by the buildings in the main part of town. Bridges were built to cross it on streets in the residential section. In the spring and early summer, a good stream of muddy water flowed through, yet in late summer, fall and winter it became an open sewer beyond the business district but, with trap doors in their floors, a convenience to meat markets, livery stables, restaurants and Chinese laundries under which it ran!

For years, father fought to close the ditch but was stymied by politics; he couldn't even get it into the courts as a clear-cut issue. The town was small and country interests dominated those of the town. The county politicians could never see why they should permit a small town to work an inconvenience on their more numerous constituents in the county. That pond had been used as a receiver for those ditches for generations and it had an outlet through the town to the river. In its final analysis, the issue was not that it might be a nuisance but whether it could be proven a menace to health -- and the majority of voters would not so decide; "The only trouble-maker is that man Stamm and he's a radical anyway!

This canal split off from the Acequia Madre de los Barelvas east of the railroad tracks near the junction of Arno and Marquette. It crossed under the railroad tracks at Carroll Street. It crossed the Copper and Second Street intersection, and then proceeded south across Central, Gold, Silver, Lead and Coal in the West 200 block.

A section of the Lower Barelvas canal between Copper, Second, and Gold Avenue was channeled

into a masonry tunnel sometime in the late 1880s². The canal entered the tunnel at the intersection of Copper and First Street and crossed under what is now the old Hilton Hotel. The tunnel then turned south and passed under Central Avenue at 209 and 210 West Central. The tunnel continued to the alley between Central and Gold, and then came out into an open ditch at Gold Avenue. It was later extended to Silver Avenue as additional building lots were developed. The top of the tunnel was about 2 to 3 feet below the present ground surface.

There is evidence to indicate that the drainage and open sewer canal of the Lower Barelás Canal became a real health hazard before it was filled. Apparently, the canal and tunnel was filled in sometime in the time period between 1902 and 1908.¹

On a broader scale, there were some important factors associated with the yazoo and how it impacted the cultivation of land in the middle valley. An important fact was that the water level of the Rio Grande was slowly rising in elevation over geologic time.¹ This is a condition referred to as being an “aggrading stream.” This means that it was constantly in the process of depositing sediments along the stream bed. The river was filled with sediment that dropped out of the flow and became deposited in the bottom and confining banks. The fact that the river water level was rising also meant that the ground water table was rising as well, and fields were getting more boggy.

As the water table rose, it became more difficult to plant and harvest crops in the yazoo. Each farmer had a series of lateral ditches to turn water into his fields. Unfortunately the farmers did not have returns from their laterals. In the yazoo, there was no convenient place to drain fields. A problem that developed was that salts were contained in the waters as they evaporated, and in time the alkalinity of the soil increased over the centuries that they were in use. It was reported by Simmons that by the 1920s, almost half of the farmland lying 50 miles north and south of the city was unfit for cultivation.¹ A careful viewing of the map in Figure 2 shows that there are alkali regions identified in the 1917 survey, particularly in the swampy region.

MITIGATION OF YAZOO EFFECTS

New Town was laid out by representatives of the New Mexico Town Company in 1880. They were working with representatives of the railroad in establishing a railroad station, railroad yards, and a community in the area that would become New Town Albuquerque. Early railroad planners aligned the track bed on higher ground on the east side of the floodplain. The eastern alignment better fit building bridges over the river to the south and was a more direct alignment going north.

The early developers also recognized that there was a flood threat to this lower area where they were going to develop the downtown area. The presence of the yazoo below the Rio Grande provided a major flood threat. Simmons reported that there were major floods recorded in the New Town area in 1680, 1735, 1760, 1769, 1780, 1814, 1823, 1828, 1865, 1868, 1872, 1880, 1884, 1891, and 1903.¹ During the major flood of 1874, Old Town Plaza was said to have been an island surrounded by the flood waters. It is reported that, during this major

flood, business owners in Old Town loaded what merchandise they could into wagons and fled, while the majority of residents escaped to the hills on the east, where they lived for days in tents.¹

Mitigation efforts to minimize flooding in the yazoo were instituted soon after the founding of New Town. As a citizen response to the flood threat presented by the yazoo condition, Simmons reported that many businesses in New Town were built 4 to 5 feet above ground level, with high steps leading to their porches, as a hedge against flooding.¹

In the early 1880s, citizens of New Town and the railroad company recognized that breaching of the Rio Grande at Alameda could cause serious interruptions to its operations. The prime danger to New Town was at Alameda where the Rio Grande began its turn to the west. Downtown Albuquerque was on occasion flooded by waters following the old channel south from Alameda.

Between the two entities, which were deeply integrated with the same personnel, there was a high priority to make sure that the river did not overflow. A property tax was instituted by Bernalillo County in 1883 to help pay for a dike in the Alameda area. The dike was built in 1883 and was seriously challenged in 1884. It did not fail.

Figure B4 shows a segment of the 1917 USGS map of the area north of Alameda. The dike is shown in the map. The view shows where the Rio Grande turned to the west. Notice how narrow the river was at the turn. It would be expected that the velocity of the river would be higher in this region and more scouring of the dike and later levees could occur. This was the critical area for flooding. The map shows that the dike was constructed at a critical location. The map also shows the entrance to the Acequia Madre de los Barelás. It is seen that the entrance to the acequia was at a relatively high elevation and this allowed the acequia to be as long as it was.

The builders of the railroad included the presence of the Acequia Madre de los Barelás in their flood and drainage planning. Potential flooding to the tracks and New Town was mitigated somewhat by the presence of the acequia, which ran essentially parallel to the new tracks, but on the east side.

This acequia served to divert water from arroyos coming down from the Sandia Mountains. Town planners knew that there were eight major arroyos that were headquartered in the nearby Sandia Mountains, and that drainage from these could threaten the tracks and town site. After heavy rains, the barrow ditches on either side of the rails were reported to become small raging rivers. Excess mountain flows could be directed southward to the Rio Grande through the Barelás neighborhood in an orderly fashion.

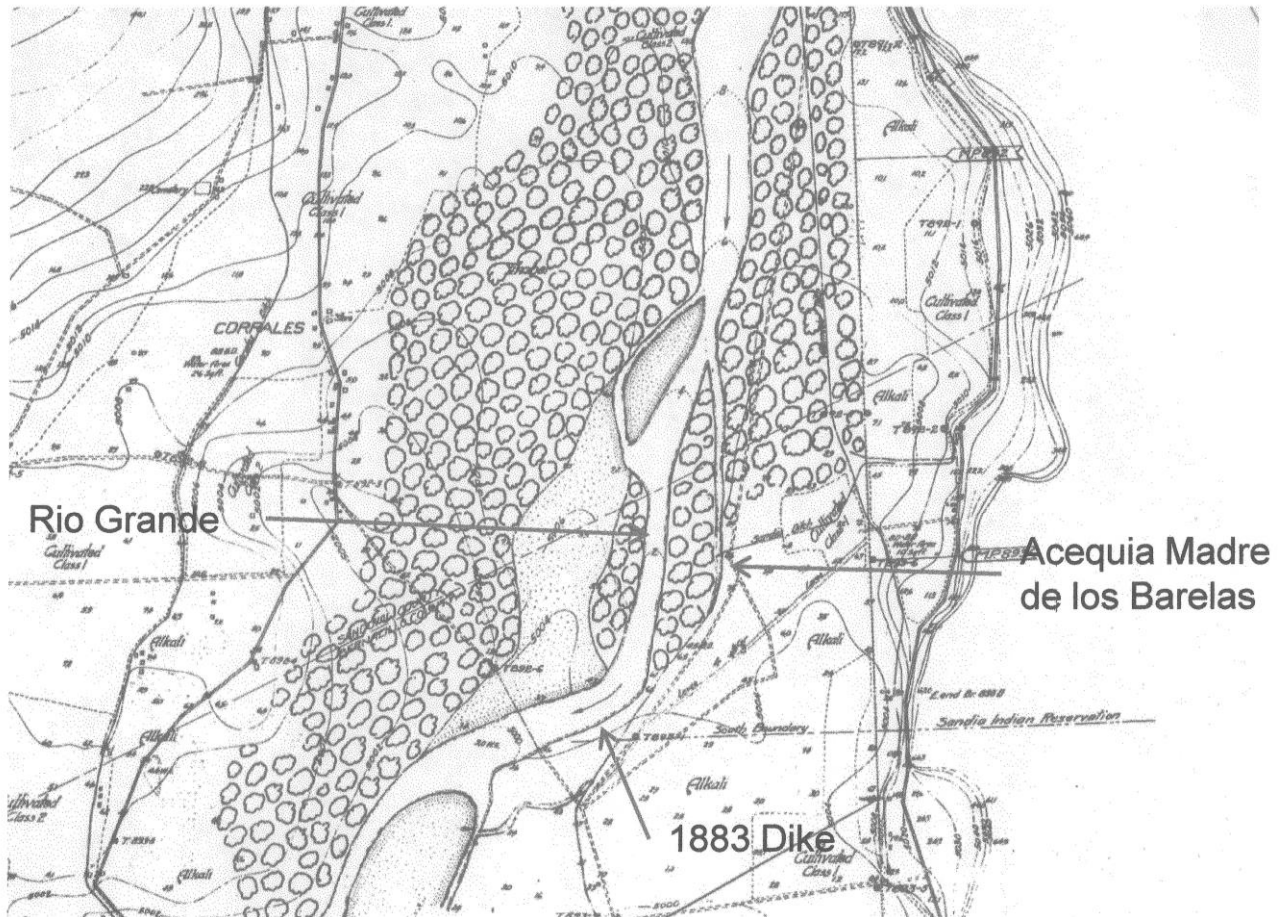


Figure B4 1917 USGS Topographical Survey of Region North of Alameda (Courtesy of MGRCD)

When there was lateral arroyo flooding, the water was captured by the railroad embankment and channeled under a culvert into the Lower Barellos Canal while it was functional. After the closure of the lower canal, surface water has channeled east of the railroad tracks towards a drain going through Barellos.

Another effort to mitigate the flood threat was to raise the land by adding fill materials. Marshall reported that soil testing along Central and Gold Avenue revealed a layer of sand, 3 to 5 feet in thickness, had been deposited above the native swampland clay.² This sandy soil was probably imported onto the streets to elevate the roads and deal with the problem of mud. Much of this fill was probably brought in from earthwork operations for house sites in the Huning's Highland where extensive leveling was completed along a section of Walter and High Street. The contour maps of the 1917 survey, shown in Figure B2, reveal the results of this filling of the land so the liability of the original New Town layout to flooding was even greater.

As New Town Albuquerque matured, the need came to reduce the threats associated with the yazoo. There was a major flood in 1903. The Middle Rio Grande Conservancy District was established in 1923 by the communities and pueblos in the middle valley with the goal to:

- (1) protect the villages in the Albuquerque basin from floods
- (2) drain the swamps, and
- (3) provide water for irrigating the farms.

Figure B5 shows a MRGCD map of the yazoo area in the 1931 timeframe. The Central Avenue bridge across the Rio Grande is not shown; it was completed in 1931. Ten ft levees are shown on the east side of the Rio Grande and an 8 ft levee is shown on the west side near the swamp area. These were constructed MRGCD after 1927 to protect the downtown area. By 1935 the Conservancy had built almost 200 miles of levees along the riverbanks. These levees were in place in Albuquerque in the 1932 timeframe.

A major MRGCD structure is the Albuquerque Riverside Drain that is next to the 10ft levee. This drain served to drain flood waters and also to help lower the water table. The Figure also shows the Alameda Drain, which served to buffer potential flood waters coming in from the north. The MRGCD had a goal to lower the water table by 4 to 6 feet.² This was accomplished by the active construction of drainage ditches and the effects of well pumping associated with residential and industrial development in the downtown area.

There was an unintended consequence when the MRGCD started to lower the water table in the 1920s. In the 2000s, there was a study undertaken to evaluate streets and buildings.² Included in the study was an investigation of the soils in downtown Albuquerque. Certain buildings along Central Avenue located between 2nd and 3rd Streets were subsiding. The study indicated that many of the buildings were constructed on the clay substrata in the original river channel, and that at the time of construction this clay substrate was waterlogged. The unintended consequence was that, when a clay substrate is waterlogged and then is dewatered, the clay subsides upon drying. It was postulated that much of the settling was probably caused by the drying of the clay substrata as the water table was dewatered and this caused the subsidence of some of the downtown buildings.



Figure B5 MRGCD Map of Major Flood Control and Drainage Features

Figure B6 shows the Rio Grande in flood stage in 1948. The U S Bureau of Reclamation photograph was taken above the Alameda bridge and it shows that the levees to the east held while to the west there was flooding. If the river ever got above the levees to the east, it was clear that New Town would be seriously flooded.

The MRGCD was also active in building storage and diversion dams in major river drainage basins above the Albuquerque area to help reduce flood potentials along the Rio Grande. As Albuquerque developed in the 20th century, another flood control entity was established to handle flow in the developing northeast heights. This was a state agency called Albuquerque Metropolitan Arroyo Flood Control Authority (AMAFCA). It was created in 1963 by the New Mexico Legislature.

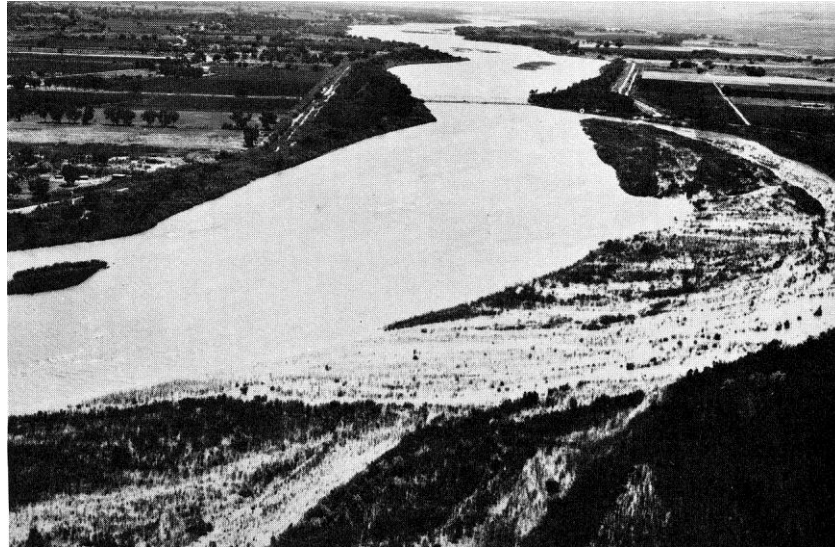


Figure B6 Rio Grande near Flood Stage in 1948 (Courtesy of Bureau of Reclamation)

INFLUENCE OF YAZOO ON FOUNDING OF ALBUQUERQUE

While the Rio Grande proved to be a problem to New Town settlers, it was a boon to the early Spanish settlers. After the Pueblo Revolt, efforts were underway in 1695 to develop the Middle Valley of the Rio Abajo. Bernalillo was the first regular community developed in the middle valley. Settlers lost no time in applying for land grants and filling the country south of Bernalillo as far as the Esteros de Mejia. One of their number was a man named Pedro Lopez, who received a grant from the hand of Governor Vargas, dated March 4, 1695.¹ The location of this farm, which Lopez called San Nicolas, was described as being "opposite the agricultural lands of Atrisco and on the edge of the Esteros de Mejia."¹ Thus, the property was very close to the lands upon which Albuquerque would be founded eleven years later.

There was a desire to establish a Spanish "villa" in the Rio Abajo. A villa was the Spanish term for a town that had a governance structure and offered protective capabilities for citizens. Simmons reports on two precursors:¹

- In 1662 Governor Diego de Penalosa traveled to the middle valley to draw up an order to establish a formal town, or a villa in a region north of Barelaz. Nothing happened.
- The municipal council of Santa Fe in 1698 called upon the Governor Don Diego de Vargas Zapata y Lujan, to establish a villa in the Rio Abajo.

Governor Vargas, who was appointed governor of New Mexico in 1691, was busy squelching the Pueblo Revolt in his first two years. He returned to New Mexico in 1693 with Spanish settlers to resettle the recovered area. He had 800 persons including seventeen missionaries with him.¹ He still had some Pueblo problems as he resettled the area, but he had bigger problems with the Apaches and sometimes Navajos.

Among his other duties, he founded a new villa at Santa Cruz in 1695. Santa Fe was already a villa. As incentives, settlers to the Santa Cruz villa were given seeds, farm implements and firearms by the Spanish authorities for this resettlement process. Also, Governor Vargas was responsible for land grants and was busy giving land grants to persons in Santa Cruz and also the middle valley between Bernalillo and the Esteros de Mejia.

Bernalillo was started by Governor Vargas in 1695 as the Real de Bernalillo, which was the legal title for a mining town. A "Real" had different functions than a "Villa." The Real did not have governance or protection functions. This was the first regular community established in the Middle Valley. Governor Vargas never got around to converting the Real to a third villa before his untimely death in April of 1704. Governor Vargas died while pursuing hostile Apaches who had been raiding the Middle Valley of the Rio Grande.

There were two major factors affecting the settling of New Mexico and Governor Vargas's later-year operations, and these continued to be in effect for his successor:¹

- In 1698, Spain cut off supplying materials to rebuild the province. This means new settlers would not be given incentive items to help sustain and defend themselves. The authorities thought that New Mexico should have made enough headway so they could go it alone. Settlers for new villas were on their own.
- There was a seven-year drought from 1698-1704 that seriously affected the middle valley. Streams evaporated and pastureland became barren. Livestock was decimated. Farmers could hardly produce enough seed to sow in the next planting. Hunger threatened the colonists.

Don Francisco Cuervo y Valdes became the replacement for Governor Vargas. He came up from Mexico where he had been a competent military governor. He took office in New Mexico in 1705. Upon arriving, Simmons wrote about him: "Once in Santa Fe, Cuervo made a hasty survey of local conditions and discovered excellent grounds for apprehension. The depth of his dismay is evident in words he addressed to the king, 'I have never seen so much want, misery, and backwardness in my life.'"¹ Obviously he thought he was facing a terrible situation.

Military defense was a prime responsibility for the new governor, but the forces available were too small to accomplish the task of defending the broad domain, and economy-minded Spanish authorities weren't going to help out. Governor Cuervo was on his own. He visited the Pueblos and promised that he would assist in the continuing war with the raiding Apaches in an effort to keep them happy. He was successful in settling things down in 1706, but Pueblo/Spanish issues arose again in 1707 after he left.

Governor Cuervo knew he needed to establish another villa to help in the defense of the region and, in the presence of official heel dragging from Spanish authorities, he elected to start a villa in the potentially rich agricultural lands of the middle valley below Bernalillo. This was a major

decision that deviated from the apparent precedent started by Governor Vargas. He knew he had to justify his decision by selling the new location to the Spanish authorities in Mexico and eventually Madrid, and he proceeded to do so.

The Spanish authorities had established a “code” to provide new colonial villas with an orderly form of government. The code was actually a list of requirements before a villa could be certified by the Crown. The major code provisions were ¹:

- A minimum of thirty family heads was necessary to charter a villa.
- The site chosen should have good water, arable land, and some timber, if possible.
- The town received as much land as needed, measured with a cord.
- At its center, space was to be marked off for a plaza, a church, and government buildings. As soon as streets were laid out, each family should be given a lot for a house and assigned farm plots in severalty. After living upon the lots and improving the farmland for a specified number of years, residents obtained final title.
- Portions of the town grant, not distributed to citizens, were reserved as commons (ejidos) available to all for pasturing, wood gathering, or rock quarrying.
- A villa was to have an elected council (cabildo) with jurisdiction over executive and judicial affairs of the municipality.

Governor Cuervo is attributed to this statement:

“I certify to the king, our lord, and to the most excellent señor viceroy: That I founded a villa on the banks and in the valley of the Rio del Norte in a good place as regards land, water, pasture, and firewood. I gave it as patron saint the glorious apostle of the Indies, San Francisco Xavier, and called and named it the Villa de Alburquerque.” —Don Francisco Cuervo y Valdes, April 23, 1706

Three days after certifying to the founding of Albuquerque, Governor Cuervo wrote a letter to Viceroy Francisco Fernandez de la Cueva, Duke of Albuquerque. In it he provided background information about the new villa that had not been included in the earlier notice of certification. Motivated by a desire to see New Mexico expand and prosper, Governor Cuervo said that he had issued orders for the placing of a villa on the river below Bernalillo and Alameda. In advance of actual settlement, he had sent one of his subordinates, General Juan de Ulibarri, to scout the area and find a suitable site. The site Ulibarri selected possessed the necessary tillable land, water, pasture and firewood, as the law required. The center of the proposed villa was situated on ground slightly elevated above the surrounding bottom lands, affording some protection from periodic flooding by the Rio Grande, or Rio del Norte, as the governor called it.¹

It is postulated that the Albuquerque location in the middle valley offered more natural resources from which a town could prosper. Of the assets mentioned in the settlement, it is thought that the presence of water was the most appealing. Farmers could have water without depending on rainfall. This was especially important after the citizens were rebounding from

effects of the seven-year drought. Water provided the settlers with the opportunity to grow crops, and the region could prosper. There was another advantage that Albuquerque had. This was the near annual flooding of the Rio Grande. Rich alluvial soil was added to enhance cultivation of crops. Bernalillo did not offer that advantage.

It has other natural advantages too, which though left unmentioned by Cuervo in his letter to the viceroy, could scarcely have escaped notice. For one, it lay astride the Camino Real and a good ford on the river existed near to the west. Also, it was situated to facilitate trade with the east. A dozen miles due east was the mouth of the Canon de Carnue (Tijeras Canyon), a pass giving access to the plains beyond the Sandia Mountains.

Albuquerque was also across the river from Atrisco that had land grants going back to 1692. These two communities provided Governor Cuervo with the best chance of economic recovery, and it is speculated that he wanted to improve the potential for growth by adding troops for defensive protection. Protective troops could be assigned to the villa that he had created.

Unfortunately, the desire for the establishment of the Villa de Albuquerque presented problems to Governor Cuervo. First, he did not have the minimum number of settlers: thirty family heads. He certified that he did, but he didn't. He probably had 12-20 families. Simmons provides detailed information about the problem between Governor Cuervo and the Crown.¹ Investigations into the governor's activities to certify the Villa de Albuquerque were initiated in 1712, long after he had left office in 1707 and returned to Mexico. The King's ministers uncovered discrepancies in the records submitted by Governor Cuervo, and prevailed upon the Crown to issue a royal decree, called a cedula, to now Governor Juan Ignacio Flores Mogollon to open an official inquiry. The investigation associated with the inquiry revealed that Governor Cuervo inflated the settlement figures, however, the Crown did not repeal the certification of the villa.

Also, the investigation revealed that the realities of colonization in New Mexico did not fit the prescriptions laid out by the Spanish authorities. Spanish authorities were anticipating a plaza-based community in their granting of villa status. This requirement was clear in their certifying code. In reality, early Albuquerqueans fanned out to settle private grants. They did not congregate around a plaza within the limits of a formal town grant as was expected. Irrigable land, restricted to a narrow strip along the river, stretched for several miles north of the villa.¹ The farming folk, from a purely practical point of view, desired to live close to their fields. This had two advantages. First, they could save time by not having to travel back and forth from the village to their fields. Second, by living on the property, they would be on hand to protect their crops from thieves and predators. Also, with the houses widely scattered, each family could take advantage of the open rangeland nearby on the mesas flanking the valley. Simply put, the people saw more advantage in developing their own independent rural properties rather than in grouping together to form a standard Hispanic villa.

In summary, the investigation revealed that very few of the stipulations required in the Spanish

code were met in the founding of Albuquerque. Among other things a church had not been started at that time and it was years before one was started in a plaza. Early Albuquerque survived and thrived as a collection of farms along the Rio Grande most likely successful because of the continual source of water in the middle valley. The availability of water was the most faithful adherence to the Spanish code that Governor Cuervo followed. It is thought that the presence of the yazoo was the underlying contributor to the wisdom of Cuervo's decision to form Villa de Albuquerque, and it was a very strong reason for the Spanish authorities to continue to support it.

It is apparent that Governor Cuervo covered the truth of the matter when he made his certification to the authorities in Mexico and Madrid. He covered his deficiencies in detailed adherence to the Spanish code with flowery statements that would flatter the viceroy in charge: the Duke of Albuquerque. Naming the new villa after the duke was a clever and successful tactic. Simmon's reported: "The governor's motive aside, the town was fortunate in acquiring a distinctive and illustrious name." ¹

SUMMARY AND CONCLUSIONS

This paper on Albuquerque and the Yazoo has been prepared to help define some little known and sometimes misunderstood aspects about the founding of downtown Albuquerque and its development after the railroad arrived. The presence of the yazoo with effectively no drainage indicated that water was here, but it had no place to go. There were swamps where vegetation could not grow. The middle valley floodplain was annually threatened with surplus waters from the Rio Grande. Availability of water is a crown jewel in a community in the southwest, and Albuquerque had one of the best supplies available. It just had to deal with the realities and liabilities associated with its physical presence.

Albuquerque was founded in the lower portion of the middle valley floodplain between the old and new channels of the Rio Grande in 1706. The railroad came in 1880 and New Town developed about 1/1/2 miles from the original Old Town. New Town was located in support of the railroad activities in a hydrologically depressed area and the presence of a high-water table was a factor. Another, and more serious threat, was the fact that New Town was located at a relatively low elevation near the old channel, and it was in danger of being flooded. For high flows, the Rio Grande would sometimes return to the old channel. Early New Town citizens recognized the problem and quickly built a dike at the junction of the old and new channels above the community of Alameda. They also hauled in sand to raise the level of downtown Albuquerque by a few feet. This served them until the 1923, when more serious efforts were undertaken by the MRGCD to further remove the danger of floods and also to lower the groundwater table in the New Town area. Over 200 miles of levees were constructed, and the groundwater level was reduced by 3 or 4 ft. Even more improvements were made as the city grew outside of the valley. The new result was that Albuquerque grew in the presence of the yazoo and all its problems because the prime resource, water, was readily available.

Early Spanish governors wrestled with where to establish a new villa, which is the formal name

for a town that has community responsibilities for governance and protection. Bernalillo was a prime candidate, but in the end Governor Cuervo y Valdez stretched his responsibilities, even distorted facts, and selected Albuquerque for the new villa for the Rio Abajo region. It is highly probable that the presence of water in the yazoo provided him with the insight to let establish a central government station where the region could grow and prosper under conditions of reduced funding from Spain and reduced rainfall from the sky.

In conclusion, it is hoped that this presentation provides readers with a better understanding of Albuquerque and the Yazoo. Clearly, they are tied together. The presence of the yazoo significantly affected the founding and development of the Villa de Albuquerque, which later became Old Town, and as New Town developed and prospered. It is unresolved whether the presence of water in the Yazoo or the vanity of the Duke of Albuquerque was the dominating factor in keeping the community of Albuquerque alive during its early days.

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