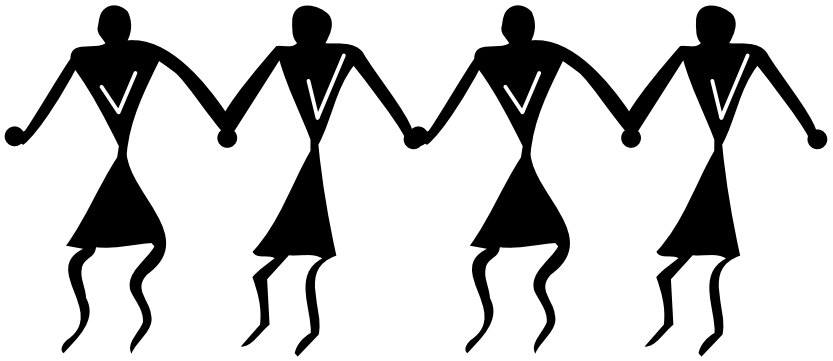
DOWNTOWN UNDER GROUND:
ARCHAEOLOGICAL CLUES TO TUCSON'S PAST



THE RIO NUEVO PROJECT

Teacher Guide and
Elementary Classroom Activities

Kyle Lyn McKoy

Sponsored by the City of Tucson and
Desert Archaeology, Inc.
as part of the public outreach component
of the Rio Nuevo Project

DOWNTOWN UNDER GROUND:
ARCHAEOLOGICAL CLUES TO TUCSON'S PAST
THE RIO NUEVO PROJECT

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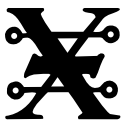

Cover photos by David A. Harvey.
Background photo: Downtown Tucson with "A" Mountain.
Inset photo: Sara Plescia of Desert Archaeology, Inc.

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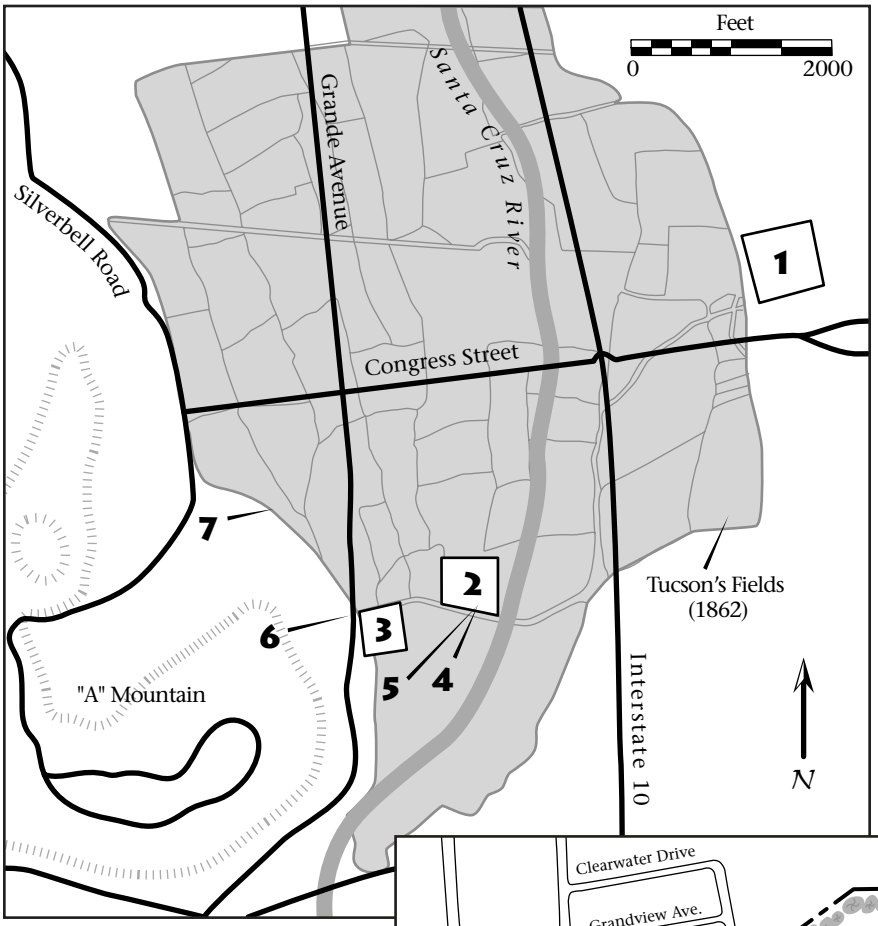
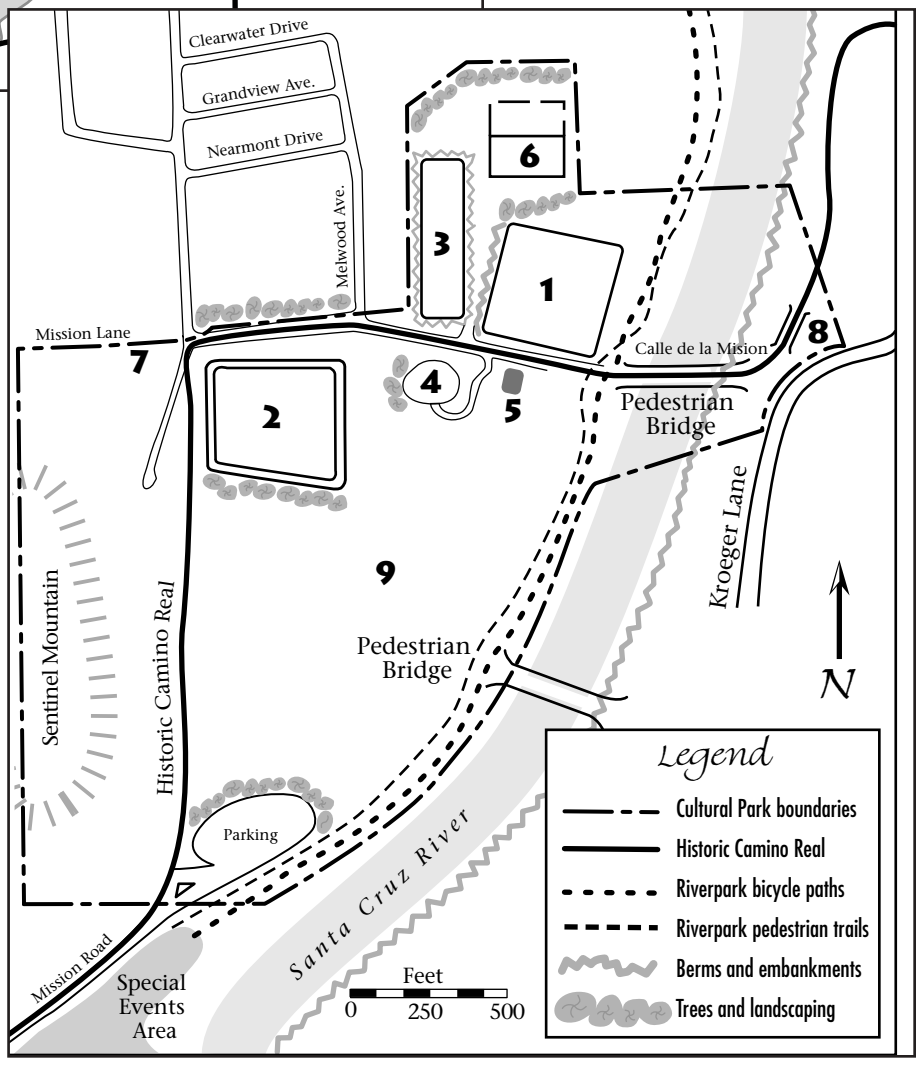


Rio Nuevo Excavation Areas

Location map:

1. Tucson Presidio
2. San Agustín Mission
3. Mission Gardens
4. Carrillo House
5. Well with Chinese Trash
6. Warner's Mill
7. Chinese gardener's household



Rio Nuevo Experience Areas as of 2001

1. Convento Complex
2. Mission Gardens
3. Prehistoric dwellings
4. Pima Village
5. Carrillo House
6. Cultural Center
7. Warner's Mill
8. Historic Footbridge replica
9. Open space, historic native vegetation

AN INTRODUCTION TO RIO NUEVO

In November, 1999, Tucson voters approved Proposition 400 which instructed the City of Tucson to create a new cultural district, called the Rio Nuevo District, in downtown Tucson. Rio Nuevo ("new river" in Spanish) is a 62-acre area that extends from "A" Mountain, west of the Santa Cruz River, and continues east down Broadway about six miles. The Rio Nuevo District will include shops, hotels, restaurants, theaters, museums, and other cultural attractions.

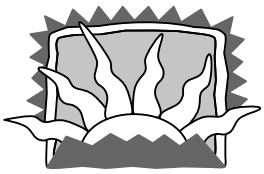
Although plans are not yet finalized at this printing, the project is presently conceived in three "experience areas." The historic/cultural park experience is slated for the west side of the Santa Cruz River and Interstate 10. This park-like setting may include the reconstructed San Agustín Mission complex, along with interpretation of early agricultural and Hohokam canals and habitation sites. A regional visitor's center, and historical and cultural museums, have been planned around a new plaza.

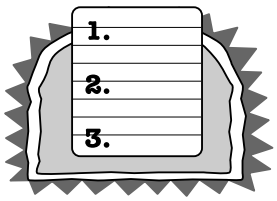
An urban/cultural experience is planned for the east side of I-10. Organized around a central plaza conceived to be Tucson's new "town square," it may include the Sonoran Sea Aquarium, a new science center and planetarium, a convention hotel, parking facilities, and the renovated Tucson Civic and Convention Center.

Upgraded and new buildings along Congress and Pennington streets, in the heart of the traditional downtown area, will transform the retail district into an expanded and improved arts and entertainment experience. The renovated historic Fox and Rialto theaters may serve as anchor attractions.

The goal of the Rio Nuevo project is to recapture and celebrate Tucson's history. One way to capture historical evidence is through the science of archaeology. The city has hired Desert Archaeology, Inc., to excavate the construction sites before the evidence is destroyed.

The excavations have uncovered evidence of 4,000 years of human occupation along the banks of the Santa Cruz River at the foot of "A" Mountain. American Indians, Spaniards, Mexicans, Chinese, European Americans, have all left their marks in the earth. Once the excavations are completed, the information will be used to interpret Tucson's past for visitors. The old river will begin a new life.


GETTING STARTED



LESSON SETUP


TEACHER'S CORNER

HOW TO USE THIS MANUAL

This manual was created by the Arizona Historical Society's Education Department for Desert Archaeology, Inc., and the City of Tucson, to inform the public and educate students in the classroom about archaeology and Tucson history as revealed by the excavations of the Rio Nuevo Project.

The first part of the manual consists of an *Introduction to the Rio Nuevo Project; 12,000 Years of Tucson's History;* and *Turning Points in Tucson's History: A Timeline*.

Section 1 provides basic concepts of the principles of archaeology. It includes a *Vocabulary List, Talking Trash: The Science of Archaeology,* and six lesson plans that build upon archaeological principles. By the end of these lessons, students will be able to define archaeology and key terms, demonstrate archaeological skills, and describe the work of archaeologists.

Section 2 aids students in understanding the history of their community by applying archaeological concepts to the City of Tucson's Rio Nuevo Project. This section includes six lesson plans or activities corresponding to periods in Tucson history. The lessons bring together archaeological principles and the Rio Nuevo Project.

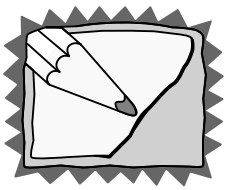
The lesson plans are divided into sections: *Objective, Key Words, Materials, Time, Teacher's Corner, Lesson Setup, Lesson Outline,* and *Pass It On!* They are uniform throughout the manual. Teachers may use the entire manual in the established order, or select individual lessons that fit into their prepared curriculum. The *Teacher's Corner* provides background information helpful in preparing the lesson. *The Pass It On!* section contains black line masters that teachers may copy for student handouts, or for transparencies for classroom presentation.

The final part of the manual, *State DOE Standards* and *Additional Resources,* features a list of field trip destinations, speakers, and other resources to help illustrate the concepts included in the lesson plans.

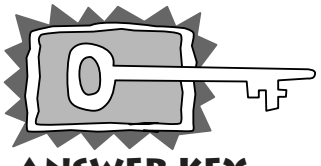
Most of the activities have been field tested in classrooms and work with upper elementary classes. Much of it should work with middle school as well. The educators at the Arizona Historical Society hope this manual provides an exciting and thought stimulating resource about archaeology and Tucson's heritage.

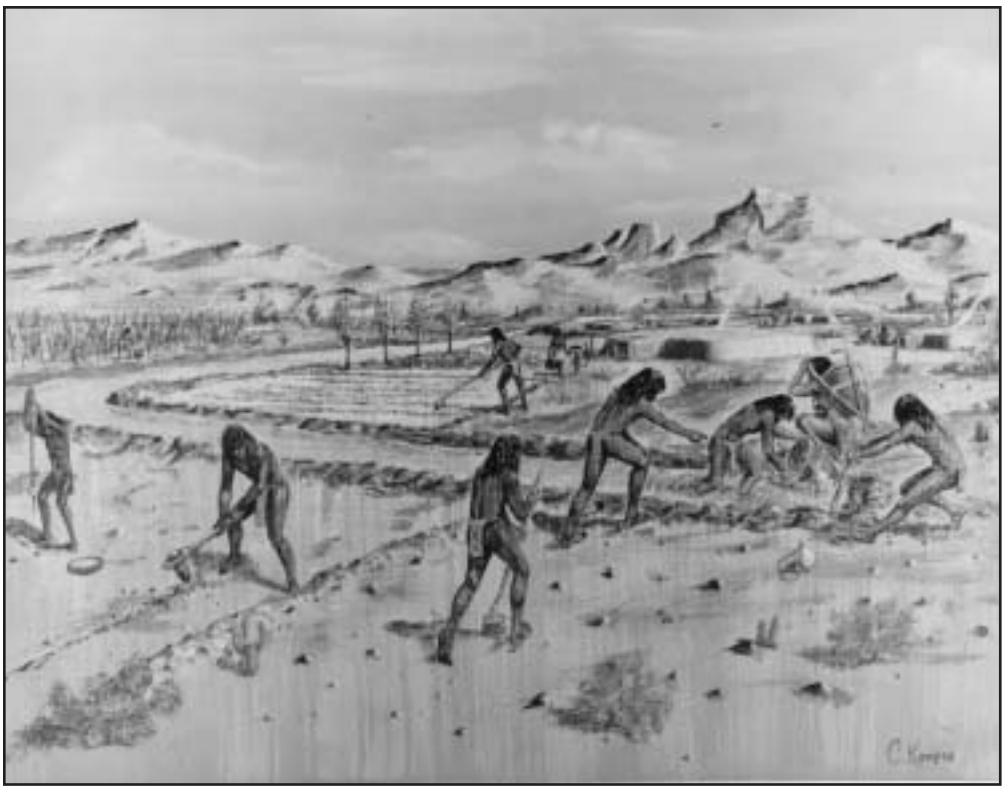
We encourage feedback on how this works in your classroom.

—Kyle McKoy


LESSON OUTLINE


PASS IT ON!


ANSWER KEY



Hohokam farmers digging irrigation canals. Painting by Charles O. Kemper. Courtesy Salt River Project Heritage.

12,000 YEARS OF TUCSON HISTORY

Archaeologists continue to debate the timing and the route of initial human habitation of the Americas. The possibilities include migrations by land and by sea between 30,000 and 14,000 years ago. Most archaeologists, however, agree that by 14,000 years ago, humans had arrived on the North American continent. These people successfully adapted to new and changing environments and spread throughout North and South America.

For thousands of years, the Santa Cruz River created a desert oasis that attracted many people. The Rio Nuevo excavations have uncovered different periods of occupation that include early farmers, Hohokam, O'odham, Spaniards, Mexicans, Chinese farmers, and Anglos.

The Prehistoric Period in the Tucson Basin began approximately 10,000 B.C., when Paleo-Indian hunters roamed the area hunting mammoths and other large mammals. As the climate warmed, these big game animals disappeared and people adapted to a way of life focused on hunting smaller animals and gathering seeds, nuts, and the fruits of wild plants. Excavations in the southern part of the Rio Nuevo property indicate that the earliest occupation of the area occurred about 2,000 B.C., when hunter-gatherers began supplementing their diet by planting maize. Farmers living in early villages along the Santa Cruz made the first irrigation canals around 1,200 B.C. They grew squash, beans, maize, and possibly cotton.

The later cultures in the prehistoric American Southwest are called the Anasazi (ah nah SAH zee, also known as Ancestral Puebloan), the Hohokam (HOE hoe kahm), and the Mogollon (MUH gee own). These groups developed sophisticated societies. They built extensive trade networks, lived in large villages, and developed public works systems such as irrigation canals and roads.

By A.D. 600, Hohokam villages flourished along the Santa Cruz River. Archaeologists have been unable to determine whether the Hohokam people were descendants of the earlier populations, or a new people who moved to the area. Centuries of plowing and other activities have destroyed much of these early archaeological remains. Archaeologists know from previous excavations in the region, however, that at the height of the Hohokam culture in southern Arizona, agriculture was a sophisticated and elaborate operation. Excavations at the Rio Nuevo sites support these previous discoveries, as they have revealed a series of Hohokam canals that run from north to south across the excavated property.

Despite the apparently successful adaptation to their desert surroundings, the Hohokam suffered a population decline between A.D. 1400 and 1500, which eventually led to the collapse of their culture. There are many theories about what caused the decline. One theory suggests that a combination of events including floods that ruined irrigation canals, warfare, and disease all contributed to the collapse. A different theory claims that the Hohokam abandoned ancestral lands and simply migrated to new areas. Another theory argues that the Hohokam people are ancestors of the Tohono O'odham (TOE hoe no AH ah tom) and never left the area at all. Little is known about life along the Santa Cruz between the disappearance of the Hohokam, around 1450, and the arrival of the Spaniards, around 1690. Archaeologists have become detectives as they try to piece together the story.

The transition from the Prehistoric to the Historic Period occurs when written language is introduced to an area. In the case of the American Southwest, this change happened with Spanish contact. The Historic Period in the American Southwest began with a shipwreck in the Gulf of Mexico in 1528. Alvar Nuñez Cabeza de Vaca survived the shipwreck and, along with three other survivors, wandered through Texas and northern New Spain (the Spaniards' name for Mexico) before finding his way to Mexico City. One of Cabeza de Vaca's companions was a black slave named Estevan de Dorantes. In 1539, Estevan left Mexico City and returned north with a Franciscan friar named Marcos de Niza to search for the legendary Seven Cities of Cíbola. When Zuni warriors killed Estevan, Fray Marcos returned to Mexico City. He boasted that he had reached the Seven Cities of Cíbola and spoke of the riches he had found there. This aroused the interest of the viceroy, Antonio de Mendoza. Mendoza selected Francisco Vasquez de Coronado to lead an expedition north to claim the riches for the Spanish Crown. The entry of Estevan and Fray Marcos into Zuni territory marks the beginning of Spanish history in Arizona.

Scholars still argue about Coronado's exact route, but it is almost certain that he did not enter the Tucson Basin. Therefore, the Historic Period in the Tucson Basin does not begin until the

arrival of the missionary Father Eusebio Francisco Kino in 1691. The arrival of Kino also marks the beginning of the Spanish Period.

The Spanish Period began as Kino, the first European to visit the Santa Cruz Valley, found villages of O'odham Indians at Bac and at Chuk-son, later to be called Tucson. In 1700, Kino established the foundations for the first mission church at San Xavier del Bac. Kino died in 1711, without ever having seen the church completed.

Another mission, San Agustín del Tucsón, was constructed in the 1770s at the base of Sentinel Peak, or "A" Mountain. The San Agustín Mission complex eventually included a convento, or living quarters; a chapel; and a granary, although they were only used for a short period. Ultimately, most of the mission was destroyed.

Archaeologists began excavations at the mission site in November, 2000. They uncovered what they believe to be the rock foundation of the wall that surrounded the mission complex. They also exposed the outline of the granary building. Artifacts such as cattle bones, potsherds, and arrow points, provide information about the diet and lifestyle of the mission residents.

In the early 1770s, the Spanish Crown decided to realign the chain of presidios, or forts, to better protect the expanding frontier against hostile Indian groups. Officials decided to relocate the Tubac presidio to Tucson. The Spanish Crown sent Lieutenant Colonel Hugo O'Conor, an Irishman, to claim the location on the east bank of the Santa Cruz River. The area had a plentiful water supply, irrigated fields, an abundance of trees that could be used for building purposes, and a full view of the valley for better defense. Also it was located near the O'odham labor force at the San Agustín Mission. The mission and presidio were settled across from each other on opposite banks of the river, separated by fertile farm fields and irrigation canals.

Computer model of San Agustín Mission Complex developed by Doug Gann, Center For Desert Archaeology, featuring the Convento and chapel in the foreground and the granary behind the chapel.

Family life in a presidio.
Cal Peters. AHS #64456

From the beginning of the 1770s, presidio soldiers and other Spanish colonists occupied lands that once belonged to the Tohono O'odham. Spanish frontier life was difficult, but the Spanish community grew and prospered. Presidio soldiers provided protection for Spanish colonists. They also guarded the peaceful natives and Spanish settlers who farmed the fields outside the presidio walls.

The community around the presidio continued to grow as soldiers and their families moved into the fort. Another form of settlement sprang up outside the presidio walls. In an effort to stop raiding, Spaniards offered Apaches food and other goods to induce them to settle in the area. According to historical records, these measures succeeded for a while. The Apaches who remained in the area became known as the peaceful Apaches, or Apaches de Paz. They helped fight off hostile Indians on several occasions. Archaeological investigations at Rio Nuevo have not uncovered signs of this Apache settlement. This is an important lesson about archaeological interpretation: do not confuse absence of evidence with evidence of absence.

The Mexican Period of Tucson's history begins in 1821, when the Spanish colonists won independence from Spain. The ten year war had drained the Mexican coffers, which left little government support for the inhabitants of the Tucson area. It was difficult to get supplies into the isolated presidio. Soldiers were not always paid and there were constant conflicts with various Apache groups.

In the midst of this turmoil, in 1829, the Mexican government expelled Spanish-born soldiers and missionaries from the country. Without proper staffing, the Tucson buildings began to fall into disrepair and much archaeological information about the mission complex was lost due to erosion and vandals.

In the mid-1800s, Mexican residents became alarmed by the arrival of another group: American explorers. Fur trappers, traders, ranchers, prospectors, and farmers all came to southern Arizona seeking opportunity and wealth. The United States, with its expansionist vision of manifest destiny, engaged in a war with Mexico over the southwest territory in 1846. The United States viewed the area as a much needed travel corridor and was looking for a railroad route to connect the east with the west. The war ended in 1848 with the Treaty of Guadalupe Hidalgo, which transferred ownership of a substantial portion of what is now the American West from Mexico to the United States. Tucson remained under the jurisdiction of Mexico. Then, in 1853, James Gadsden, a railroad promoter, concluded a deal with Antonio López de Santa Anna, president of Mexico, for the purchase of an additional 29,000 square miles of Mexican land for ten million dollars. The U.S. Congress ratified the purchase in 1854, although American soldiers did not arrive in Tucson until 1856. The Gadsden Purchase ended Mexican rule in southern Arizona as Tucson and its surrounding communities became part of the United States.

The Gadsden Purchase brought Arizona under the control of the United States, not as a state, but as a territory. Arizona's Territorial Period spanned the time from the Gadsden Purchase until statehood was finally granted in 1912.

Territorial status was a trying time for Tucsonans. Politicians in Washington largely ignored the Arizona Territory. Residents could not vote in presidential elections. The legislature could only pass laws subject to review in Washington. Most officials were appointed by people in Washington who had never visited the territory, and knew little of the needs of territorial residents. The U.S. Congress controlled all finances. Lawlessness and Apache wars threatened the safety of the population. Tucson's infrastructure was almost nonexistent as roads and public works were poor at best. Yet, droves of people moved west in search of gold, land, adventure, and opportunity. European and Mexican immigrants; Chinese railroad workers and miners; blacks fleeing the South and the remnants of slavery; Jewish families; Mormons; single women; military men; and many others sought their futures and their fortunes in Arizona.

In the 1870s, the United States began construction on a southern railroad connecting the east and the west. The railroad company hired Chinese immigrants who worked for low wages. As the Chinese immigrant population increased, more Chinese businesses opened such as bakeries, laundries, and grocery stores. The Southern Pacific Railroad reached Tucson from the west in 1880. Some of the Chinese railroad workers chose not to follow the railroad work, but remained behind to take advantage of a new business opportunity: growing fresh produce for the Tucson community.

By the 1880s, Chinese farmers were regularly providing Tucson restaurants and homes with fresh lettuce, watermelons, and strawberries. These crops required much water and put the Chinese in direct competition with Mexican farmers. A court case eventually settled the issue. The Mexican farmers lost

their water rights, just as the O'odham had lost their water rights to the Spanish, thereby ending a communal tradition that dated back to Spanish presidio days. Profitable farming along the Santa Cruz River ended for everyone around 1930, when the water table dropped due to extensive pumping of ground water. Many of the Chinese farmers became grocers, opening stores around the Tucson area.

Excavation of one Rio Nuevo site uncovered a deep well filled with objects discarded by Chinese farmers between 1880 and 1890. Soup spoons, soy sauce jugs, rice bowls, and food remnants indicate a strong desire by Chinese farmers to maintain their heritage in territorial Tucson.

Politics and current events played major roles in delaying the Arizona Statehood Period. Arizona's fight for statehood, which began shortly after territorial status was granted in 1863, was one of the longest in American history. Finally, in 1910, Congress passed the Enabling Act, which allowed Arizonans to write a constitution that Congress would either approve or disapprove. President William Taft signed the bill on February 14, 1912, making Arizona the 48th state.

Tucson has seen many changes since statehood. The World War II defense industry and training facilities brought jobs and thousands of people to Tucson in the 1940s. Over the years, the temperate climate attracted many more newcomers to Tucson as a prime destination for health, tourism, and retirement. The growth of the University of Arizona and Davis Monthan Air Force Base also contributed to the population increase.

Population growth triggered a building boom as more housing was needed for workers and more buildings were needed to house the new industries. In the 1940s, the Tucson Pressed Brick Factory mined clay in the mission area to satisfy the need for raw building materials. Several University of Arizona archaeology projects attempted to salvage information from the site before the brick company destroyed all the evidence of the past. As the company mined the clay and the sand, it also removed evidence of the earliest farming culture, Hohokam canals, the mission, and other historic remains.

The final insult to the mission complex site came in the mid 1950s, when the City of Tucson destroyed the remains of the convento and the chapel by replacing them with a landfill.

Today, Tucson is a thriving multicultural city, known affectionately as the Old Pueblo. Tucson's present is a direct reflection of its past. The City of Tucson's Rio Nuevo Project traces the story of 12,000 years of Tucson history. It captures the unique flavor of the city by exploring the past, building on the present, and preserving for the future.

TURNING POINTS IN TUCSON'S PAST: A TIMELINE

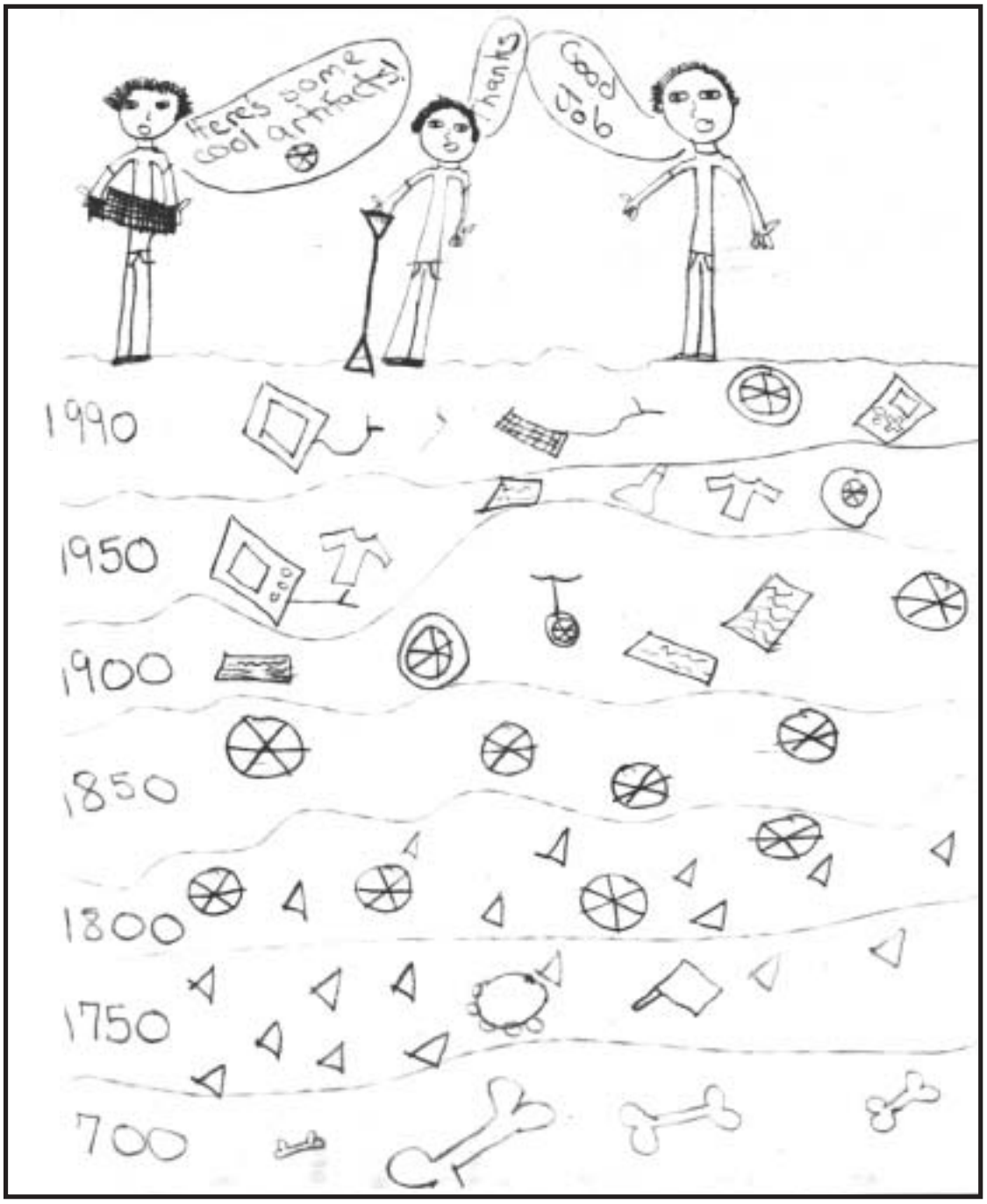
DESERT ARCHAEOLOGY, INC.
UPDATED 9-13-01

MODERN	A.D. 1999	**Rio Nuevo Cultural District created.** People have been living in the Tucson Basin for the past 12,000 years. By creating the Rio Nuevo District, Tucson has chosen to embrace the past as part of our shared cultural heritage.
	1968	**Urban Renewal began.** The Pueblo Center Redevelopment Project replaced approximately 80 acres of Tucson's oldest surviving neighborhood with the Convention Center, a shopping center, and a four-square-block government complex.
	1950	During the 1950s Tucson began using the base of "A" mountain as a landfill.
	1923	Between 1896 and 1935 bricks from the Tucson Pressed Brick Company, located at the base of "A" Mountain, were used to build many familiar buildings around Tucson, including San Agustín Cathedral, the Rialto Theater, and buildings on the University of Arizona campus.
STATE-HOOD	A.D. 1912	**Arizona Statehood.** By 1912, life in Tucson changed dramatically. Over the course of a few years, the river rapidly cut down over 10 feet as far south as the Mission of San Xavier.
TERRITORIAL	A.D. 1880	The arrival of the Southern Pacific Railroad allowed for rapid settlement of the Tucson basin. "Progress" arrived quickly with the telephone, electricity, and the central water system. In the mid-1880s, the Santa Cruz River became entrenched after an ill-fated irrigation scheme failed. Irrigation canals were no longer able to draw water from the river, and many farmers were no longer able to grow crops. Tucson now relied upon wells to draw water from an underground aquifer.
	A.D. 1862	**A Brief Confederacy 1861–1862.** In 1861, the citizens of Tucson voted to join the Confederate States of America. The occupying Union troops, led by Major David Fergusson, drafted the first two maps of Tucson. One map reveals that by 1862, the Tucson Presidio had been mostly dismantled.
MEXICAN	A.D. 1854	**Gadsden Purchase.** The 1854 purchase of the territory that is now Arizona and New Mexico brought Tucson and its surroundings into the American territorial system. Life began to change as Americans from the eastern United States moved to Tucson. Many people opened mercantile businesses, others developed ranches and mines.

SPANISH	A.D. 1821	**Mexican Revolution.** As Mexico gained independence from Spain, times were difficult in Tucson. Conflicts with various Apache groups took a great toll on the village. In response to the conflicts of the mid-19th century, the Tucson Presidio was expanded to better protect the community.
	A.D. 1800	Construction of the San Agustín Mission convento began. It was used as an administrative building, dormitory, and school for the San Agustín Mission.
	A.D. 1775	On August 21, 1775, Hugo O'Conor founded the Tucson Presidio, selecting this site for its location next to irrigated land and its extensive view of the valley.
	A.D. 1770	Although Tucson celebrates its birthday on the day that the Tucson Presidio was founded, the San Agustín Mission and the adjacent O'odham village were already in place. The mission was founded in the early 1770s at the foot of Sentinel Peak ("A" mountain) and would be part of the Tucson community for the next 75 years.
	A.D. 1700	Father Kino founded the Mission of San Xavier at the O'odham village of Bac, on the Santa Cruz River. This first church was never completed. Father Espinosa built the second church in 1755. In 1797, the third church, which still stands today, was completed.
PROTO-HISTORIC	A.D. 1691	Historic period began as Father Kino, the first European to visit the Santa Cruz Valley, found villages of Piman-speakers at Bac and (the next year) at Chuk-son—where the San Xavier and San Agustín missions were later established.
	A.D. 1600	Apache peoples arrived in southern Arizona from the north, and began raiding O'odham villages.
HOHOKAM CLASSIC	A.D. 1400	The Hohokam culture of southern Arizona collapsed after a population decline related to a series of disastrous floods in the Phoenix Basin that may have destroyed most canal systems.
	A.D. 1275	Population aggregated, possibly in response to warfare, into a few large villages. Platform mounds were built as public ceremonial structures within large walled compounds containing most of the houses.
HOHOKAM PRECLASSIC	A.D. 1150	In the Tucson Basin, many Hohokam villages were abandoned and new ones established. Compounds and rectangular aboveground architecture appeared.
	A.D. 1050	Ballcourts were no longer built in the Tucson Basin and most other Hohokam areas.
	A.D. 1000	Villages spread out along expanded canal systems.

HOHOKAM PRECLASSIC	**A.D. 800**	The first ballcourts were built in the Tucson Basin and elsewhere in the southern Southwest. Villages focused on large, central plazas grew in population. Hohokam styles and iconography from the middle Gila Valley were adopted.
	A.D. 500	Styles of architecture, artifacts, and burial practices of the Hohokam culture, centered in the Phoenix Basin, appeared in the Tucson Basin. Plazas became a feature of villages.
EARLY CERAMIC	**A.D. 400**	Pithouses shifted from round to rectangular, and large villages developed along the Santa Cruz River. Village locations moved to terraces above the floodplain. Canal systems were expanded.
	A.D. 100	New types of architecture, pottery, and burial practices suddenly appeared in the Tucson Basin, perhaps representing the arrival of a new cultural group.
EARLY AGRICULTURE	**800 B.C.**	The first ceremonial buildings in the Southwest were constructed in villages along the Santa Cruz River. Earlier than in other areas of the Southwest, the bow-and-arrow began to be used in southern Arizona alongside the older spear thrower and-dart.
	1,200 B.C.	Farmers living in early villages along the Santa Cruz made the first true irrigation canals in North America. They grew beans and possibly cotton in addition to maize, and developed trade connections with distant parts of the Southwest, California, and northern Mexico to acquire volcanic glass (obsidian) for making dart points and seashells for making jewelry.
	2,200 B.C.	Maize (corn) arrived in southern Arizona from Mexico. To supplement wild foods, hunter-gatherers in the Tucson Basin planted maize to grow some of their food for the first time. They built pithouses and storage pits in summer camps near their fields along the Santa Cruz River. They made the first ceramic figures and pottery in the Southwest.
ARCHAIC	**3,000 B.C.**	Groups of hunter-gatherers camped on the banks of the Santa Cruz River during their movements around the Tucson Basin.
	3,500 B.C.	The climate of the Southwest became cooler and wetter. Hunter gatherers began to spread throughout the Southwest.
	6,500 B.C.	A long period of hotter, drier climate began. Population began to decline in the Tucson Basin and much of the Southwest.
	9,000 B.C.	As the climate warmed at the beginning of a new global climatic era and the large Ice Age mammals disappeared, a hunting and gathering adaptation developed. The Archaic focus was on smaller animals, seeds, nuts, and fruits of wild plants, and seed-grinding tools were first used.
PALEO-INDIAN	**10,000 B.C.**	Paleo-Indian hunters crossed the Tucson Basin in search of mammoths and other now-extinct large mammals at the end of the Ice Age.

SECTION 1



Artwork by Hannah Willet, age 10.

PRINCIPLES OF ARCHAEOLOGY

TALKING TRASH:

THE SCIENCE OF ARCHAEOLOGY AND THE RIO NUEVO PROJECT

Cultures in the American Southwest, such as the Anasazi, Mogollon, and Hohokam, developed complex societies, but they did not develop a written language. Without written records to study, researchers must rely on the study of the objects that people left behind. These are the clues that archaeologists use to reconstruct human behavior. Archaeologists operate in a world of other people's discarded objects—their trash.

What is archaeology and how does the science work? Archaeology is a great opportunity to teach and practice the scientific method. Archaeology involves posing questions, making hypotheses, researching, conducting experiments, clarifying data, organizing data, reaching conclusions, and creating final reports. Archaeology is a subdivision of the broader subject of Anthropology, or the study of humans. The four areas of study within Anthropology are:

a. **cultural** the study of human societies often involving the comparison of one cultural system with another in an attempt to understand human nature.

b. **physical** (sometimes called "biological") the study of the human physical form and how forms change over time.

c. **linguistic** the study of humans, through the use of language, to discover the role language plays in the creation, transmission, and interpretation of daily life and culture.

d. **archaeology** the study of human cultures using artifacts people left behind.

Archaeology can be divided further into **prehistoric** and **historical** archaeology. Prehistoric archaeologists try to assemble, through the objects people have left behind, the story of ancient cultures that have left no written record. With the aid of written historical records and oral histories, historical archaeologists try to assemble the story of past cultures through the interpretation of the material objects they left behind.

A place that people inhabited or used in some manner is called a **site.** When a site is discovered, archaeologists conduct a **survey** to describe its physical appearance and location. A testing phase may take place to determine whether a site has deeply buried features. Archaeologists then develop a **research design**, or plan of action, to decide how to go about excavating the site. After defining questions they hope to answer, archaeologists begin the **excavation** by marking the site in **grids**, so they can map their finds. They select certain areas to dig. They sift dirt through screens to find small items and save **artifacts**, or items made or used by people, for further study. They also map walls, fireplaces, and other structures they find. The artifacts are separated into like groupings, called **assemblages**, which are studied by field and laboratory analysts.

Archaeologists rely on experts from other fields of study to help them interpret what they find. **Dendrochronology,** or tree-ring dating, is a technique developed by an astronomer at the University of Arizona. Physicists developed **radiocarbon** and **archaeomagnetic** dating techniques that date artifacts by measuring radioactivity and orientation of magnetic fields. Geologists developed the principles of **stratigraphy**, or layering of sediments, that help date objects in relation to one another. Botanists and zoologists may help analyze plant and animal remains.

Other information helps archaeologists reconstruct past cultures. They can compare the site with others that have already been excavated in the region. If historical documents exist, archaeologists consult them. They can study groups of living people to search for similarities with past cultures. This approach is called **ethnographic analogy.**

The last step for archaeologists is to publish their findings in a **final report.** This is essential so others can build on the research.

Several options are available to archaeologists and the public once a site has been excavated and its information recorded. What is left of the site may be destroyed to make way for a construction project. It can be turned into an interpretative site for the public. Parts of a site that have not been excavated may be preserved for future exploration. In the case of the City of Tucson's Rio Nuevo project, a combination of all the options will probably be used.

The Rio Nuevo archaeological excavations will provide a treasure chest of information and insight into Tucson's past. As archaeologists sift through the trash of the past, they will uncover the necessary information to piece together the story of Tucson. The Rio Nuevo project proves that Tucson's trash of the past may be its treasure for the future.

VOCABULARY

agriculture cultivating crops on a large scale.

Anasazi (a Navajo word for "ancient enemies") a culture that lived on the plateaus of the four corners area (northern New Mexico, northern Arizona, southern Utah, and southwestern Colorado) from about A.D. 200–1450.

anthropology the study of humans and human behavior. Can be divided into four subdivisions of study:

a. cultural the study of human societies often involving the comparison of one cultural system with another in an attempt to understand human nature;

b. physical the study of the human physical form, including the study of those changes over time;

c. linguistic the study of human language to discover what role language plays in the creation, transmission, and interpretation of daily life and culture;

d. archaeology the study of human culture using artifacts people left behind.

Archaic an early culture that lived in the Americas. In the southern Arizona area, it lasted from approximately 8,000 B.C. to about A.D. 200. The Archaic culture adapted to the changing climate by hunting small game and gathering plants from the land.

archaeologist one who studies human cultures by analyzing material objects cultures left behind.

archaeomagnetic dating archaeological dating technique based on the fact that the exact location of magnetic north changes over time. When clay from a hearth is heated to a high-enough temperature, the iron molecules realign to magnetic north. Thus, it is possible to determine an approximate date for when a structure such as a clay hearth was last heated.

artifact an object made or used by humans.

assemblage a grouping of like artifacts, or a group of artifacts found in the same location.

ceramic pertaining to anything made of clay that was fired to hardness.

coiling a weaving and pottery technique that involves making individual coils of material and placing them one on top of the last, constructing a finished product.

context interpretation of artifacts determined by the relationship in which they were found.

convento a religious administration building and/or dormitory.

crustacean an animal that has a shell for protection. Example: lobster, shrimp, crab, barnacle.

data interpretation to decipher information gathered.

dendrochronology archaeological dating technique developed by A.E. Douglass, a University of Arizona astronomer, most often used to compare tree growth rings to determine the age of wood roof beams.

early farmers a culture that lived in the Tucson basin area between 2,000 and 4,000 years ago.

ethnographic analogy using similar traits of living groups of people to interpret cultures of the past.