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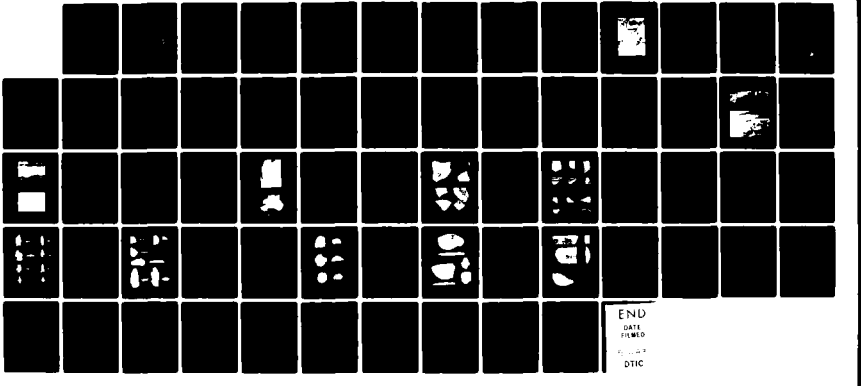

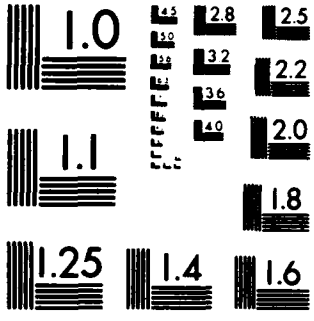

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PRELIMINARY FIELD REPORT ON THE FINDINGS AND RESULTS OF THE EVALUATION OF THE CULTURAL AND HISTORICAL RESOURCES OF THE SPILLWAY AREA OF THE RANGE DAM LYING WITHIN THE NORTHGATE NATIONAL REGISTRY SITE (EPCM 31:106:3:10) IN EL PASO, TEXAS

Prepared by

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University of Texas at El Paso

30 March 1973

Rex E. Gerald, Project Director

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16. Abstract (Limit: 200 words)

The purpose of this cultural and historical evaluation has been to predict the amount of damage to historic and prehistoric human remains lying within the proposed spillway area of the Range Dam in northeast El Paso. No further work was recommended for this area after evaluation.

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c. COSATI Field/Group

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This preliminary field report is submitted to the National Park Service Southwest Regional Office in Santa Fe, New Mexico, in accordance with contract No. CX 700030100

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ABSTRACT

The purpose of this cultural and historical evaluation has been to predict the amount of damage to historic and prehistoric human remains lying within the proposed spillway area of the Range Dam in northeast El Paso. Of major concern is the Northgate National Registry Site, El Paso Centennial Museum catalog number 31:106:3:10, the southwest corner of which encompasses the eastern portion of the spillway for the Range Dam. Based on the evaluation of potential cultural features in the spillway area it is not recommended that any further archaeological excavations be conducted in said area.

Figure 1 Dr. William S. Strain, T. Weber Greiser, and Thomas C. O'Laughlin investigating FR-1 (Hearth 1).

INTRODUCTION

In January of 1972 formal investigations of the Northgate National Registry Site, El Paso Centennial Museum catalog number 31:106:3:10, were conducted by the El Paso Centennial Museum with assistance by members of the El Paso Archaeological Society. A report of these activities and proposal for further investigations in the area was prepared and submitted by Rex E. Gerald, Director, El Paso Centennial Museum, on 10 April 1972 to the Arizona Archaeological Center. In March of 1972 a preliminary report of field work on the Northgate National Registry Site was submitted to the National Park Service by Lawrence E. Aten of the Texas Archaeological Salvage Project of the University of Texas at Austin. As a result of this report the Northgate Site (University of Texas at Austin site number 41 EP 6) was placed on the National Register of Historic Places on March 16, 1972.

The work covered under the present contract overlapped to a certain extent that done under the direction of Mr. Gerald in 1972, but also encompassed additional area to the south and west. All excavations, however, were undertaken in the proposed spillway area which previous to this time had not been tested beneath the surface.

Evaluation of Cultural and Historical Resources
of the Spillway Area of the Range Dam
Lying within the Northgate National Registry Site

A. Site Location and Environmental Setting

The Northgate National Registry Site is located on Castner Range of the Fort Bliss Military Reservation in northeast El Paso, Texas (Fig. 2). The occupation area is near the base of an alluvial fan originating from Fusselman Canyon, a major drainage system on the eastern slope of the Franklin Mountains (Fig. 6b). Soils on the site are unconsolidated pediment accumulations of alternating fluvial gravels and sand, and eolian sands with minor lag gravels (Anderson, 1972). Numerous dry braided arroyos cross the site from northwest to southeast, and during times of heavy rainfall, these arroyos once emptied into a small natural playa some 1,000 meters southeast of the site. These arroyos now drain into the Northgate and Range Dams, and the playa is no longer evident due to residential development of the area.

The vegetation on the site (Berrie, 1972) includes typical Chihuahuan Desert species. Creosotebush (Larrea divaricata) is the dominant shrub on the site with white thorn (Acacia constricta) and snake weed (Xanthocephalum sarothrae) occurring in minor quantities. The Franklin Mountains rise abruptly some five kilometers west of the site to a height of 2,040 meters or approximately 900 meters above the site. Larger arroyos near the site and the lower portion of Fusselman Canyon have a somewhat more diverse vegetation, and wait-a-minute (Mimosa biuncifera), mesquite

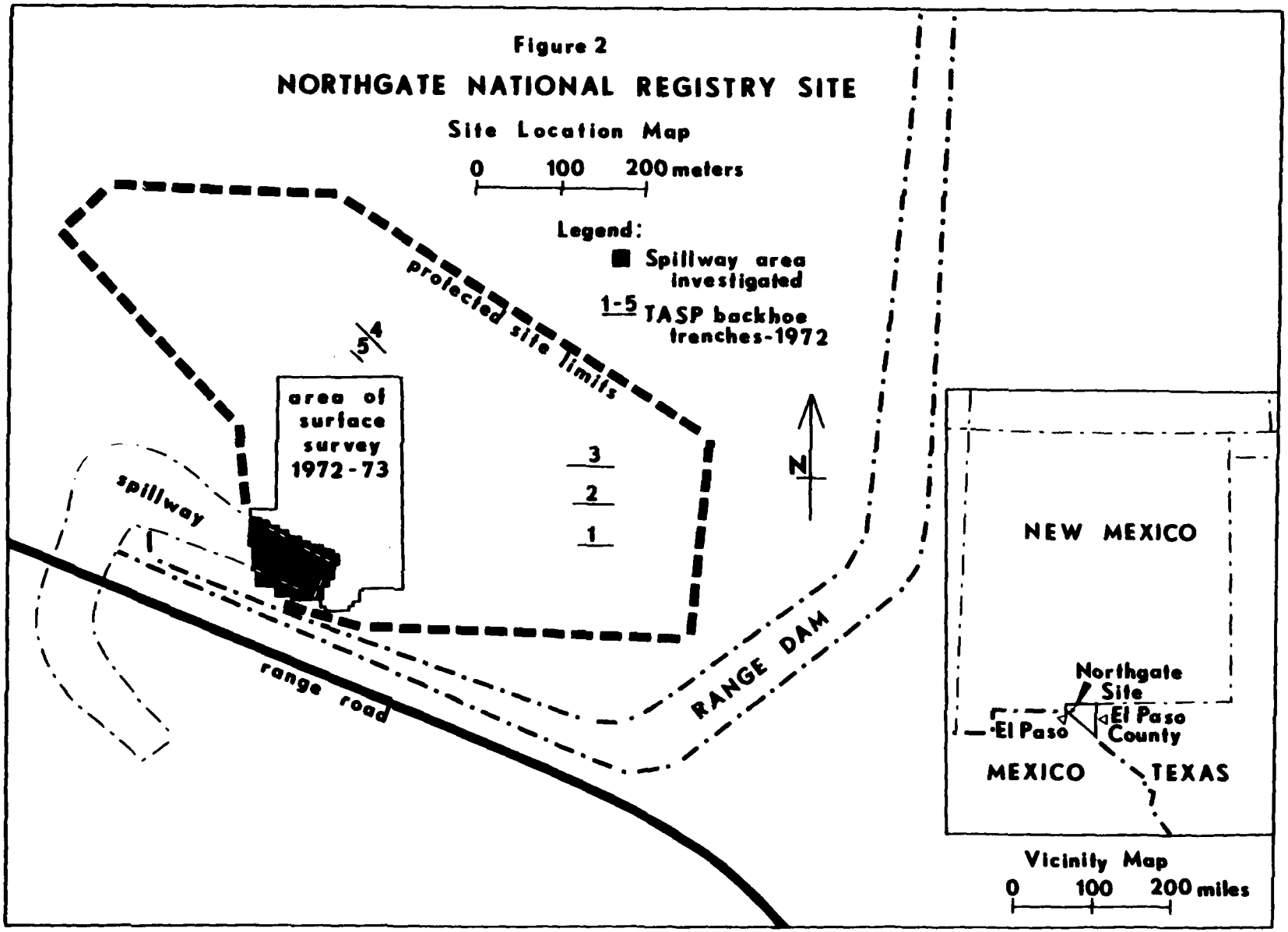


Figure 2
NORTHGATE NATIONAL REGISTRY SITE
Site Location Map
0 100 200 meters
Legend:
Spillway area investigated
1-5 TASP backhoe trenches-1972
protected site limits
area of surface survey 1972-73
spillway
range road
RANGE DAM
N
NEW MEXICO
Northgate Site
El Paso County
El Paso
MEXICO
TEXAS
Vicinity Map
0 100 200 miles

(Prosopis juliflora), desert willow (Chilopsis linearis), white thorn and small-leafed sumac (Rhus microphylla) are the most common plants (Ederhoff, 1971). The higher portions of Fusselman Canyon and other protected canyons on the east-facing slope on the Franklin Mountains are heavily vegetated with wait-a-minute, desert willow, hackberry (Celtis pallida), algerita (Berberis trifoliolata), beargrass (Nolina microcarpa), and some oak (Quercus spp.) and juniper (Juniperus monosperma). The drier east-facing slopes of the Franklin Mountains and lower piedmont slopes are sparsely covered with Lecheguilla (Agave lecheguilla), prickly pear cactus (Opuntia spp.), ocotillo (Fouquieria splendens), sotol (Dasylirion wheeleri), and creosotebush. Common mammals recorded for the area include desert cottontail (Sylvilagus auduboni), black-tailed jack rabbit (Lepus californicus), ground and rock squirrels (Spermophilus spp.), pocket mouse (Perognathus sp.), kangaroo rat (Dipodomys sp.), white throated wood rat (Neotoma abligula), coyote (Canis latrans), striped skunk (Mephitis mephitis), and mule deer (Odocoileus hemionus) (Ederhoff, 1971). Blair (1950) reviews other common faunal elements of the Chihuahuan Desert.

The climate for the area is semiarid mesothermal and the average annual precipitation is 20.1 centimeters with about half of that falling during July, August and September (U.S. Dept. Commerce, 1969). Summer precipitation usually takes the form of violent thunderstorms of short duration while winter precipitation tends to be slow and penetrating. Daytime and nighttime

temperatures often differ considerably. Average maximum temperatures range from 35.2°C in June to 13.5°C in January.

The Northgate Site is located slightly upslope from the desert floor and within a short distance of the Franklin Mountains. Several different ecosystems representative of the Chihuahuan Desert Biome and a transitional ecosystem somewhat drier than the Pinyon-Juniper Biome are within the range of hunting and gathering activities based at the Northgate Site. Agriculture may have been practiced on the alluvial fan or around a depression to the southeast. Rainfall is at present scant and probably marginal for most cultigens. It is possible that runoff from Fusselman Canyon was diverted to flood fields, but no water control devices have been noted. The canyon also provides easy access into the mountain area for food and raw materials. Water would also have been available from seep springs in the canyon area.

B. Methods of Excavation

Surface evidence of prehistoric occupation in the area to be disturbed by the construction of the spillway was manifest as a series of concentrations of fire-cracked rock hearths and sparsely scattered sherds and stone tools. A portion of the surface of the spillway area and a larger area to the north and east (Fig. 2) was previously grided into 5 x 5 meter squares, all surface material was collected from each square, and recognizible hearths were mapped (Gerald, 1972). The existing grid was extended to the west and south to encompass the proposed spillway

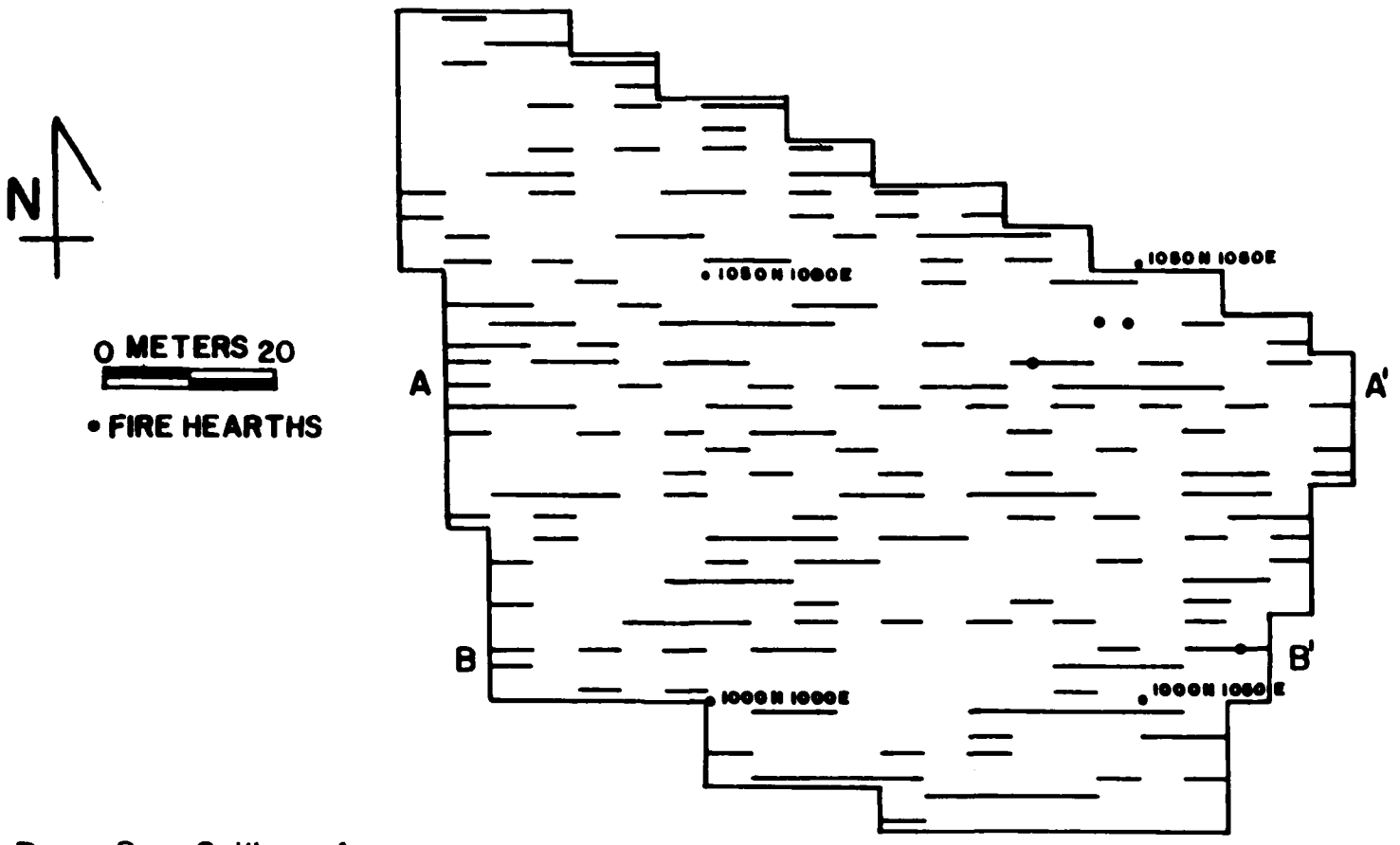
area, and the surface collection of all historic and prehistoric cultural material was undertaken using voluntary skilled and semi-skilled labor (see Appendix I). A total of 287 5 x 5 meter squares or 7,175 square meters fell within the proposed spillway area. The surface material collected from this area in both 1972 and 1973 is compared with surface collections from the adjoining grided area in Tables 1 and 2.

Previous work at the Northgate Site revealed the presence of buried hearths and pit houses that were not visible on the surface (Aten, 1972; Gerald, 1972; Bilbo, 1972). Since the possibility existed that these features could be found beneath the surface of the spillway area, it was decided that the subsurface would be randomly tested by a number of backhoe trenches for a reliable estimate of the variability and frequency of occurence of these features. Buried hearths and hearths visible on the surface varied from ca. 1.5 to ca. 10 meters in diameter (Gerald, 1972). Pit houses from the Northgate Site (Aten, 1972) and from Los Tules (Lehmer, 1948), the only other contemporaneous excavated site with pit houses, had diameters or widths of no less than three meters. In order to sample both large and small features, the 5 x 5 meter squares were halved to produce 574 2.5 x 5 meter rectangular squares. A random sample of 200 of these rectangular squares (for a confidence level of 95$\pm$2.5%)was bisected with 50 centimeter wide trenches by the backhoe. This sample size was chosen with the assumption that dwellings and hearths would have the probability of occurence of .05 or less and is based on the frequency of dwellings at Los

Tules (Lehmer, 1948), the frequency of hearths at the Northgate Site (Gerald, 1972), and the sampling technique described by Cochran (1963: 71-77). In addition, a stratified sample of two 2.5 x 5 meter squares was excavated in an area of concentrated fire-cracked rock. For each sampled rectangular square, any feature over one meter in diameter or extending more than one meter into the rectangle was detectable.

Two laborers were employed to expose stratigraphy and possible cultural remains on the sides and bottoms of the excavated trenches. The proposal called for four laborers to work two weeks; however, after six attempts to hire additional laborers without success, operations were completed with the two previously mentioned laborers and voluntary help. Stratigraphic transects of the excavated area were mapped along three main east-west lines (Figs. 3, 4). Cultural material was obtained from the excavated trenches by surface collecting after each dump of the backhoe and by collecting from the exposed walls.

The only features intersected by the excavated trenches were four fire-cracked rock hearths. The hearths and the areas immediately around them were hand excavated, mapped, and photographed. Pollen samples of at least 0.5 liters were taken from within and beneath each hearth following the method used by Freeman (1972). In addition, a pollen column was obtained from the area partially within and below FR-4 (Fig. 5). The samples were taken at 10 centimeter intervals and included material from all major soil zones. From all hearths charcoal fragments one centimeter in diameter or less were taken for radiocarbon



Range Dam Spillway Area

lying within the

NORTHGATE NATIONAL REGISTRY SITE

Map of Randomly Sampled Trenches

Figure 3

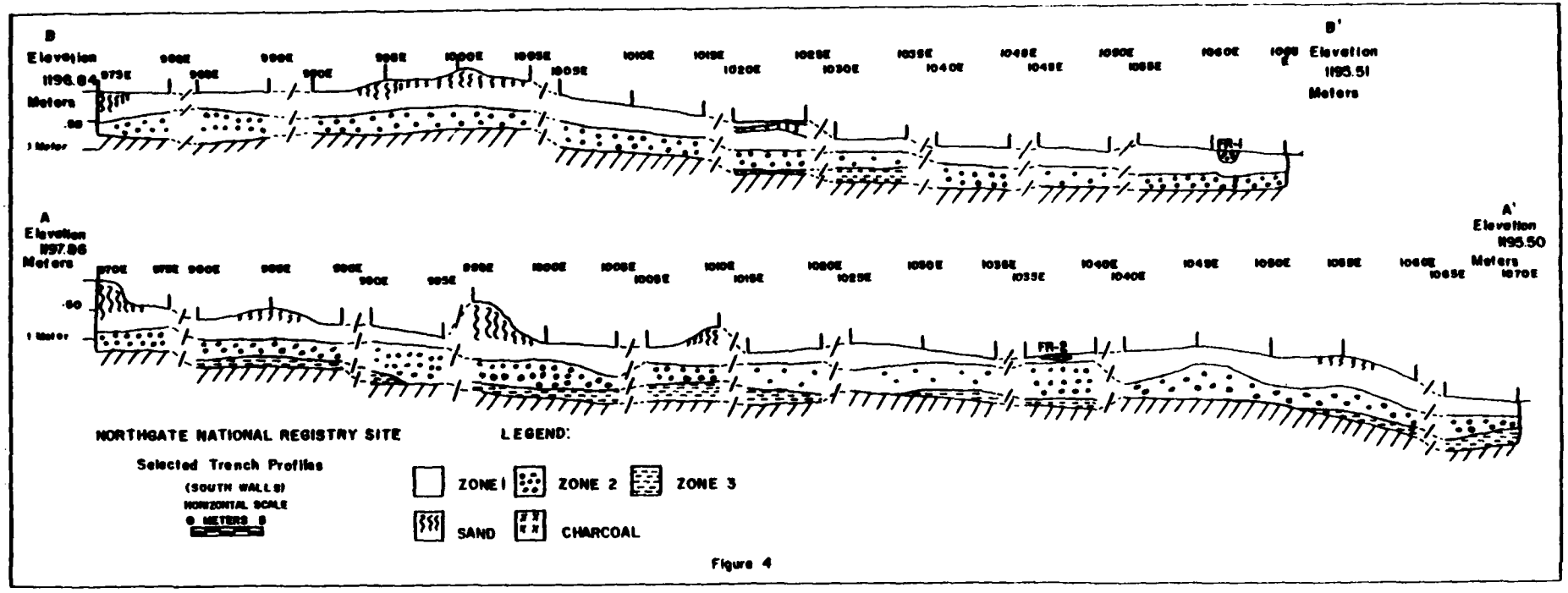

B
Elevation
1196.84
Meters
B'
Elevation
1195.51
Meters
A
Elevation
1197.86
Meters
A'
Elevation
1195.50
Meters
NORTHGATE NATIONAL REGISTRY SITE
Selected Trench Profiles
(SOUTH WALLS)
HORIZONTAL SCALE
0 METERS 8
LEGEND:
ZONE 1
ZONE 2
ZONE 3
SAND
CHARCOAL

Figure 4

samples. All remaining material from each of the hearths, except FR-2, was gathered and saved for the purpose of flotation. The contents of one hearth were subjected to the flotation procedures described by Struever (1965) and Wimberly and Eidenback (1972, 1973) and produced a small amount of carbonized material.

Although pollen and radiocarbon samples were taken, no attempt has been made to have these analyzed for a number of reasons. First, the radiocarbon samples are small and represent many small fragments pooled together to form one sample from each hearth. Second, no cultural material is definitely associated with these hearths. Third, no radiocarbon samples were obtained from within the three recognized soil zones or horizons which could be used to date the pollen column. Finally, no cultural material was associated with the pollen samples other than on the surface of the spillway area.

In order to gain further knowledge of the area of investigation numerous people from other fields were called upon for additional information (see Appendix I). E. Wynn Anderson (1972, 1973), Research Associate in Geology for the El Paso Centennial Museum, prepared a paper for the report by Gerald (1972) on the geology of the Northgate Site, and in addition he returned to the Northgate Site this year to confirm his conclusions. In the same report by Gerald (1972) is a paper based on floral transects of the Northgate Site by Kathleen Berrie of the Department of Biological Sciences at the University of Texas at El Paso. Dr. William S. Strain, paleontologist in the Department of Geological Sciences, U.T.E.P., visited the Northgate Site to

investigate the geological stratigraphy as well as a fossilized vertebra uncovered in the bottom of one of the trenches (Figs. 1, 8a). Dr. Arthur H. Harris, mammologist in the Department of Biological Sciences, U.T.E.P., identified all of the bones recovered. Three undergraduate students were also hired from the Department of Civil Engineering at U.T.E.P. to shoot in elevations on the site. In addition, time contributed by staff members of the El Paso Centennial Museum include Herbert C. Morrow, Curator of Exhibits; Tom O'Laughlin, Curator of Collections/Registrar; Dora Visconti, Secretary; and David Leibson, Museum Photographer who took the photographs used in Figures 1 and 6 through 15. There were also many hours of volunteer labor invested by members of the El Paso Archaeological Society and students from the University of Texas at El Paso (Fig. 6a).

C. Stratigraphy and Cultural Material Recovered

Excavations by the backhoe revealed two zones of soil stratigraphy throughout the spillway area and in most places a third zone (Fig. 4). Zone 1 starts at the surface and varies in depth from a few centimeters up to 90 centimerers, the greater depth usually indicating wind-deposited sand dunes. The surface may also include sheet wash deposited material usually consisting of fine-grained sands and gravel, with occasional braided arroyos caused by increased runoff from the Franklin Mountains, according to Dr. William S. Strain (1973) and E. Wynn Anderson (1972, 1973). The cultural features that did occur on the spillway area were located only in Zone 1, although at times

well within that zone thus suggesting that a considerable amount of deposition has occurred since the occupation.

Zone 2 is an alluvial deposit with indications of rainfall of varying intensities (Strain, 1973). Cobbles up to 25 centimeters in greatest length in this zone indicate instances of higher runoff because the sources for these materials are in the Franklin Mountains one to five kilometers away. Braided arroyos also occurred in this zone as evidenced by varying densities of cobbles as well as varying sizes of materials from fine-grained sands and gravels up to the cobble size mentioned above. The juncture of Zone 1 and Zone 2 varies from a few centimeters up to 125 centimeters beneath the surface.

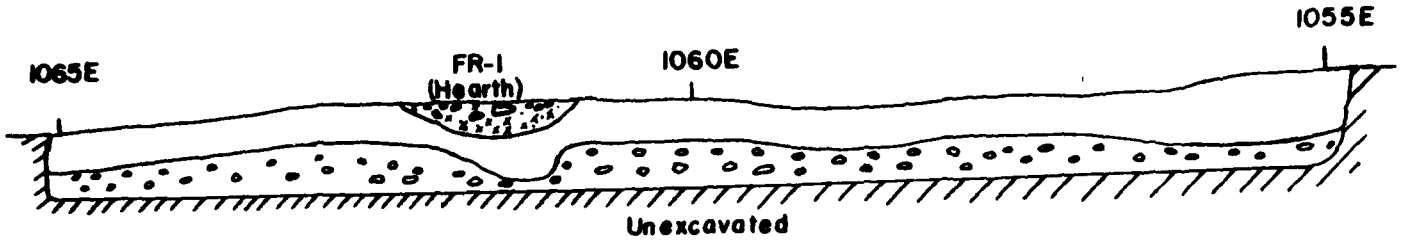
Zone 3 is another alluvial deposit; however, the decrease in amount of cobbles and the increase of clay in this zone make it easily separable from Zone 2 in most areas. The decrease in cobbles would indicate a period of more even, less intense rainfall (Strain, 1973). Anderson (1972, 1973) suggested the possibility of a lake causing the increase in clay or clay-like deposits; however, conclusive evidence is lacking. The contact of Zones 2 and 3 occurs between 35 and 150 centimeters beneath the surface. A partially (10-20%) fossilized lumbar vertebra of a Bison sp. (Harris, 1973) occurred in Zone 3 below the contact with Zone 2, but had obviously been redeposited since it was rather worn and was not associated with other bones (Fig. 8). The vertebra was not burned and showed no signs of butchering.

Four hearth areas (Figs. 5, 7) were located in the spillway area lying within the Northgate National Registry Site. Of these, only two occurred in the random sample, the other two occurring in the stratified sample. The two which were exposed in the random sample (FR-1:1005N-1055 to 1065E and FR-2:1035N-1035E) were not identified from surface indications. In the case of FR-2 this was partially due to the fact that the area had been disturbed when a maintenance or power line road was cut through the area. The remaining hearths (FR-3, FR-4: both from 1040N-1040 to 1050E) were exposed in the stratified sample which was based on surface indications of what was believed to be a single, large hearth.

FR-1 covered an area of 1.40 meters east-west and 1.55 meters north-south, with a large number of fire-cracked rocks in and around the actual depression which extended 30 centimeters below the surface at its deepest point. After FR-1 had been exposed in the trench walls a few fire fractured rocks were then noted scattered on the surface of the undisturbed portion.

FR-2 was visible only in the north wall of the trench in which it occurred. It covered an area 2.40 meters long in an east-west direction (north-south dimensions were indeterminable) and had a thickness of 10 centimeters. On the east half there was an overburden of 10 centimeters of fine sand and gravel and on the west half the hearth appeared to extend up to the surface. As stated above, this hearth had been disturbed by a roadcut on its western half and may even have been disturbed earlier

TRENCH 1005N-1055 to1065E (Elevation of 1055E is 1195.73 Meters)



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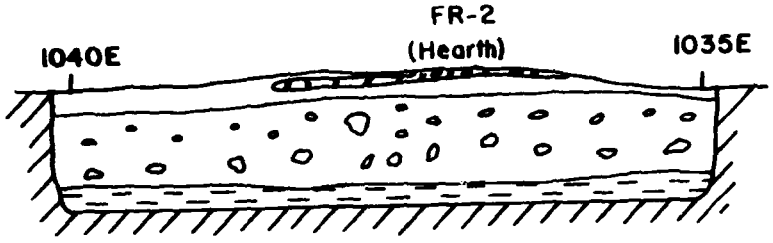
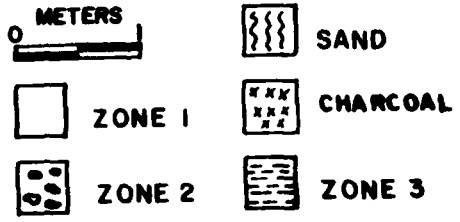


NORTHGATE NATIONAL REGISTRY SITE

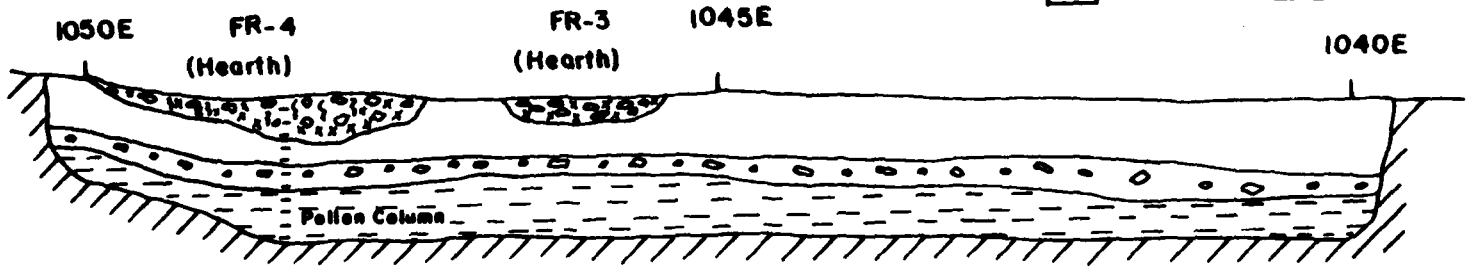
Selected Trench Profiles

(SOUTH WALL)[1]

LEGEND



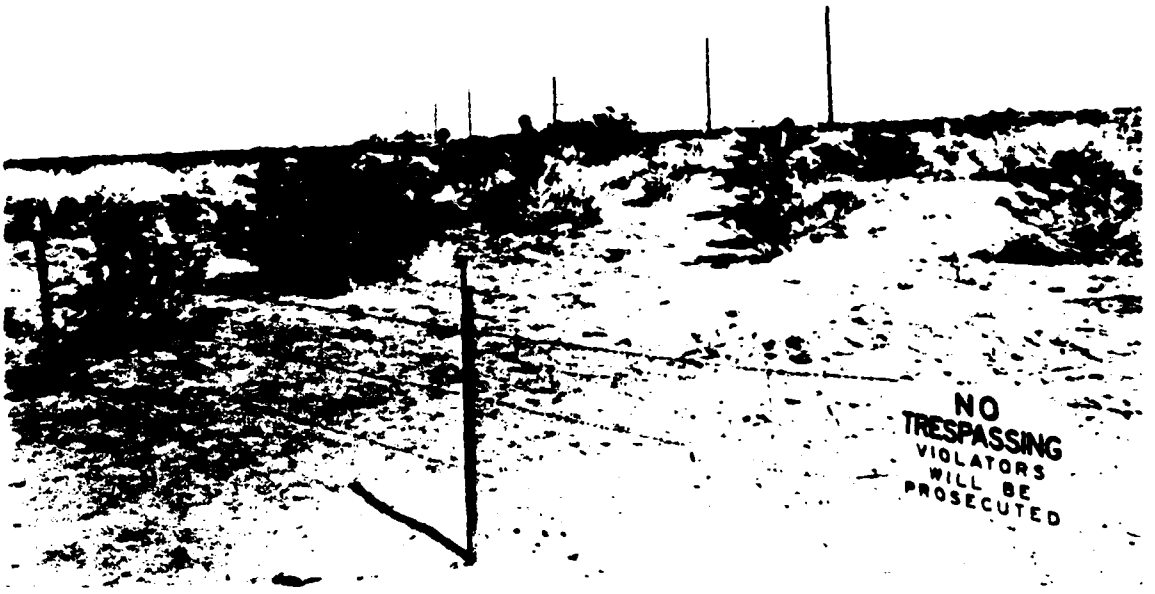
TRENCH 1040N-1040 to1050E (Elevation of 1050E is 1196.32 Meters)



1-FR-2 & FR-4 Projected from North Walls

Figure 5

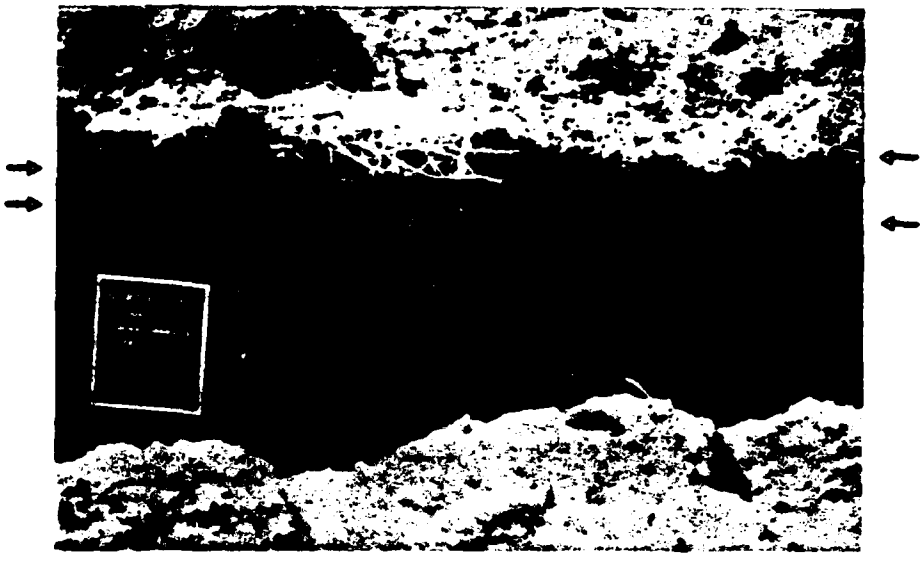
Figure 6 General Views of the Northgate National Registry Site. a, View from the Southwest corner of the site with surface collection in progress; b, View from the center of the spillway area with North Franklin Mountain and Fusselman Canyon in the background and laborers cleaning trenches in the foreground.



A

B

Figure 7 Fire-cracked rock hearths exposed in the backhoe trenches (arrows indicate the verticle location of hearths). a, FR-1 (Hearth 1) as it appeared in the south wall of Trench 1005N-1060E; b, FR-4 (Hearth 4) as it appeared in the north wall of trench 1040N-1045E.



A.

B.

after its use and prior to any of the sand and gravel being deposited on top of it, thus explaining its disbursed appearance.

FR-3 was visible on the surface, extended 1.30 meters east-west, at least 0.45 meters north-south (however, trenching destroyed the northern limits), and had a depth of 40 centimeters at the lowest part of the depression.

FR-4 was also visible on the surface, extended 2.70 meters east-west, a minimum of 3.50 meters north-south (southern limit absent), and had a depth of 40 centimeters at the lowest part of the depression.

With the exception of the disturbed hearth (FR-2), the hearths encountered are basin shaped and range from 1.30 to 2.70 meters in diameter and 20 to 40 centimeters in depth. All contained appreciable amounts of fire-cracked rhyolite, quartzite, and limestone which are naturally distributed along the present arroyos of the site (Anderson, 1972). In addition to the fire-cracked rocks, all hearths contained charcoal fragments one centimeter in diameter or less of what appeared to be the woody shoots of dicotyledonous plants. The contents of FR-1 were subjected to flotation, but produced very little due to lack of material originally associated with the hearth or decomposition of any organic materials that may have been present at the time of utilization. A small amount of plant material was recovered from FR-1, part of which has been tentatively identified as amaranth or pigweed seed (Amaranthus sp.).

Although amaranth seeds are edible, their presence in FR-1 is probably accidental in that they do not require the amount of heat that could be generated by these hearths for processing. They were probably gathered with the stalks and leaves of amaranth plants, along with other woody herbs and grasses for tender. With some moisture, amaranth could have grown on or near the site in disturbed areas.

In his account of the subsistence patterns of the Mescalero Apache to the east and north of El Paso in southern New Mexico, Basehart (1960) describes what he calls "hard foods" or "foods that have to be baked". These wild plant foods played a critical role in Mescalero subsistence patterns and included mescal (Agave parryi), narrow leaf yucca (Yucca elata), and sotol (Dasylirion wheeleri). The leaves or trunks of these plants were baked in pits filled with rocks and fired with wood and grass. Although there is no direct evidence for a similar use of the fire-cracked rock hearths at the Northgate Site, it is quite possible that they served the same function. Sotol and narrow leaf yucca are common in the foothills and east slopes of the Franklin Mountains, and lecheguilla (Agave lecheguilla), also an edible species, is found rather than mescal.

A total of 13 bones was found on the surface of the spillway area and previously collected area adjacent to the spillway area at the west end of the site (Gerald, 1972). In general, they were small, often fragmentary, bleached, and badly weathered. None showed signs of human use. Of the 13 found, only nine were identifiable (Harris, 1973). Five bones were of

Figure 8 Lumbar vertebra of Bison sp. Found in Zone 3. a, Dr. William S. Strain investigating the partially fossilized vertebra in site; b, Lateral view of the vertebra.

A

B

black-tailed jack rabbit (Lepus californicus) and represented three individuals. Two were of Gambel's quail (Lophortyx gambeli) and represented one individual. One was from a cottontail rabbit (Sylvilagus auduboni), and one was from a mule deer (Odocoilus hemionus). The mule deer specimen was a second phalange with some cartilage remaining. This along with the finding of several bones of the same individual suggest a recent age for these remains. With the exception of Gambel's quail, these species have previously been reported for the site by Aten (1972) and all are presently indigenous to the area (Ederhoff, 1971; Blair, 1950).

Sherds collected in the controlled surveys of the surface of the spillway area and the adjacent area previously collected (Gerald, 1972) are listed in Table 1. A chi-square test of the association between these two areas and the various pottery types reveals no significant difference in pottery types between the two areas at the probability level of .05 (Appendix II). The few sherds recovered from the backdirt of trenching are also listed in Table 1. A total of 10 different pottery types are represented. These pottery types are characteristic of the Mesilla, Dona Ana, and El Paso Phases of the Jornada Branch of the Mogollon (Lehmer, 1948) and date from ca. 900 A.D. to ca. 1350 A.D. However, except for the El Paso Polychrome, Chupadero Black-on-white, Ramos Polychrome, and Playas Red Incised sherds, all of these types, of known phase association, could be assigned to the Mesilla Phase. The high percentage (89.7%, 95.0%) of El Paso Brown and low percentage (0.0%, 2.2%)

Figure 9 Indigenous sherds. a, Worked El Paso Brown sherd from the surface collection; b, c, Worked El Paso Brown sherds from the spillway area trenches; d-g, El Paso Polychrome from the surface collection.

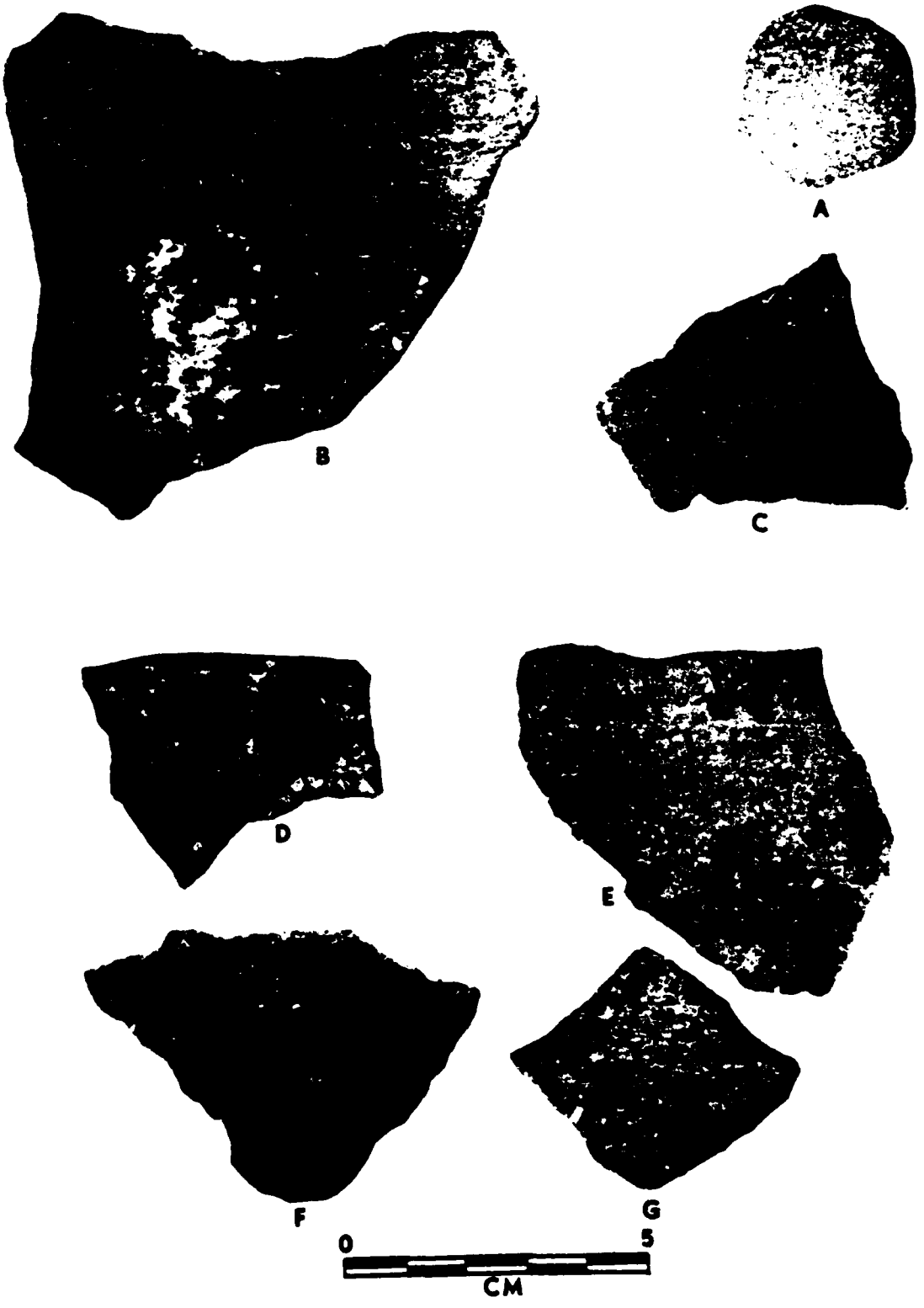

A
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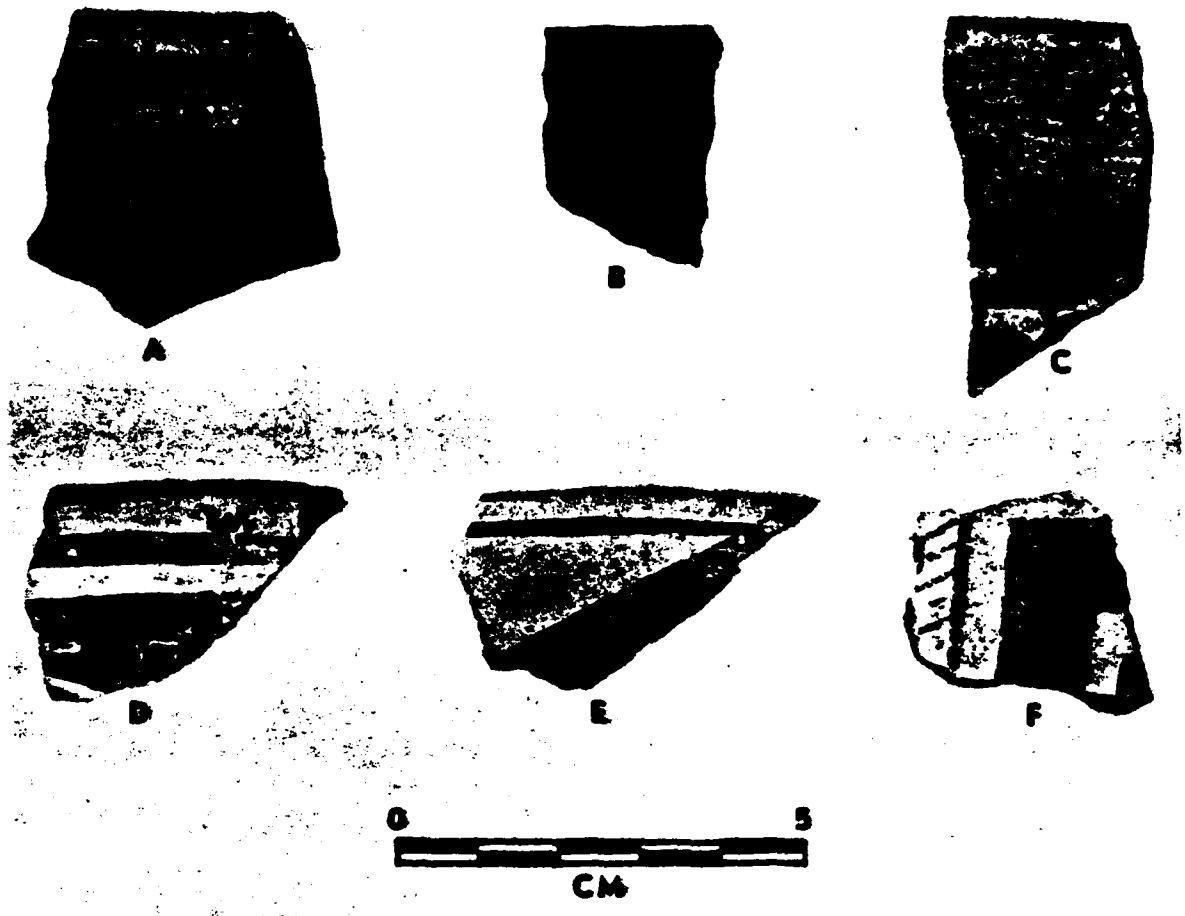
Figure 10 Intrusive sherds and fragments of Glycymeris shell bracelet from the surface collection. a-c, Mimbres Classic Black-on-white; d-f, Mimbres Boldface Black-on-white; g-j, Chupadero Black-on-white; k, Glycymeris shell bracelet fragment.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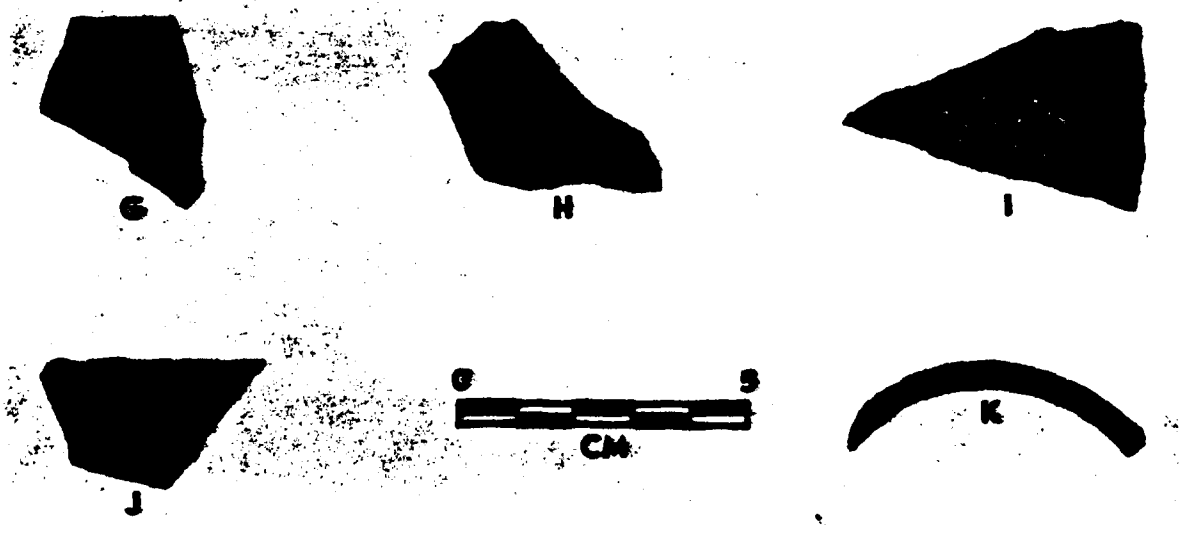
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end of the site (Gerald, 1972) is listed in Table II. This table is based upon a lithic analysis form developed by Frank J. Broilo and Dick Chapman (Broilo, 1973) for possible adaptation by others working in the area. The table presented here is an abbreviated version adapted to emphasize technique, with function indicated through typology.

Casual examination of the materials utilized suggests that virtually all raw material was taken from the immediate vicinity of the site. This had also been noted by Anderson (1972) and Gerald (1972). Rhyolite and quartzite were used extensively, especially for larger artifacts such as choppers, scrapers and hammerstones. These were also the most common rocks along the arroyos of the site (Anderson, 1972). In addition to rhyolite and quartzite, granite and sandstone were also used for grinding tools and could be obtained from the Franklin Mountains a few kilometers to the west (Anderson, 1972). Smaller tools were made primarily from rhyolite and quartzite, but those with substantial retouching were often made of chert, chalcedony, agate or obsidian. Obsidian nodules could have been gathered a few kilometers to the north (Anderson, 1972), but the remaining materials were probably imported due to their limited presence in the alluvium around the site.

The lithic material is sparsely scattered throughout the spillway and remaining area at the west end of the site. Of the 455 specimens of stone, some 66% consist of spent cores and unutilized flakes. Chi-square tests of the associations between sherds and the total lithic assemblage and spent cores

and unutilized flakes indicate that there is less than one chance in a thousand that the associations are accidental (Appendix II). This suggests that the ceramic and lithic material are contemporaneous. Chi-square tests of the association between hearths and the total lithic assemblage and spent cores and unutilized flakes indicate no significant associations at the probability level of .05 (Appendix II). This suggests that activities occurring around the hearths do not involve lithic material, and that the hearths and lithic material are independently distributed. This does not rule out the possible presence of activity areas with lithic material away from the hearths, but this phenomenon was not observed or tested. Testing the association of each of the various lithic artifact types (Scrapers, choppers, etc.) with the hearths reveals two significant associations at the probability level of .01 or less (Appendix II). These are the associations of hearths with grinding implements and with utilized flakes. If the fire cracked rock hearths were used to bake "hard foods" such as sotol, lecheguilla, and yucca, it is possible that these grinding stones and utilized flakes were used to process these foods after baking. It is also possible that the grinding stones were used as hearth stones since most are broken; however, there is no direct evidence of fire-fracturing. Basehart (1960) does report the pounding, maceration, grinding, and cutting of these foods after baking by the Mescalero Apache, but does not describe the particular tools used for these activities.

Facially retouched lithic specimens are rare and consist of projectile points and knives. In general, imported chert, chalcedony, and agate were probably used because of their good conchoidal fracturing characteristics. Nearly all of the specimens exhibit bifacial flaking and the absence of cortex or striking platforms. Figure 11a is a Desert Culture point which may indicate an earlier occupation in the area. It has weakly developed shoulders, a slightly expanding stem, concave base, and serrated edges of the blade; the sides and base of the stem are ground smooth. Figure 11g is a point characteristic of the Livermore Focus of the Texas Big Bend and has previously been found in association with the Jornada Branch, particularly the Mesilla Phase (Lehmer, 1948:30: Bell, 1960: 68-69). The diagnostics of this point are prominent lateral barbs, serrated blade, and straight base. The remaining projectile points are not diagnostic and have been found in association with all four phases of the Jornada Branch; however, their large size and the prominence of corner notching suggest an early rather than a late ceramic phase.

Of the remaining points, three (Fig. 11, c, d, h) are corner notched with expanding stems and convex bases, one (Fig. 11e) has prominent shoulders and a straight stem, one (Fig. 11b) has weakly developed lateral notches, and the last (Fig. 11f) has a triangular shape and an indented base. The bifacially worked knives (Fig. 12, e, f) are ovoid or leaf-shaped with convex bases. Some show marginal retouch along the lateral edges and most show minute flaking or dullness

Figure 11 Projectile points from the surface collection. a, Desert Culture point; b, Laterally notched point of unknown phase association; c-e, h, corner notched points of unknown phase association; f, Triangular indented base projectile of unknown phase association; g, Livermore point.

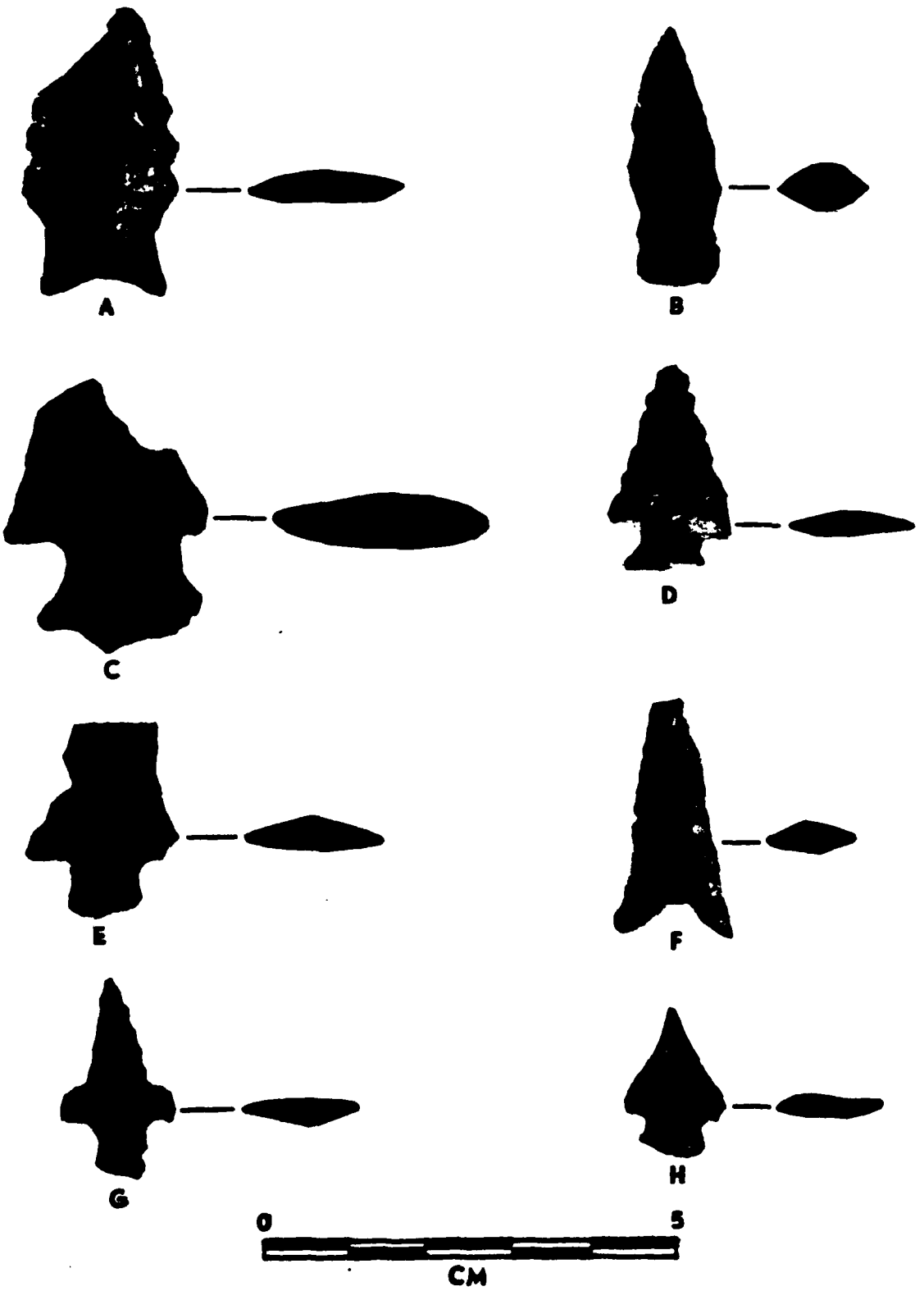
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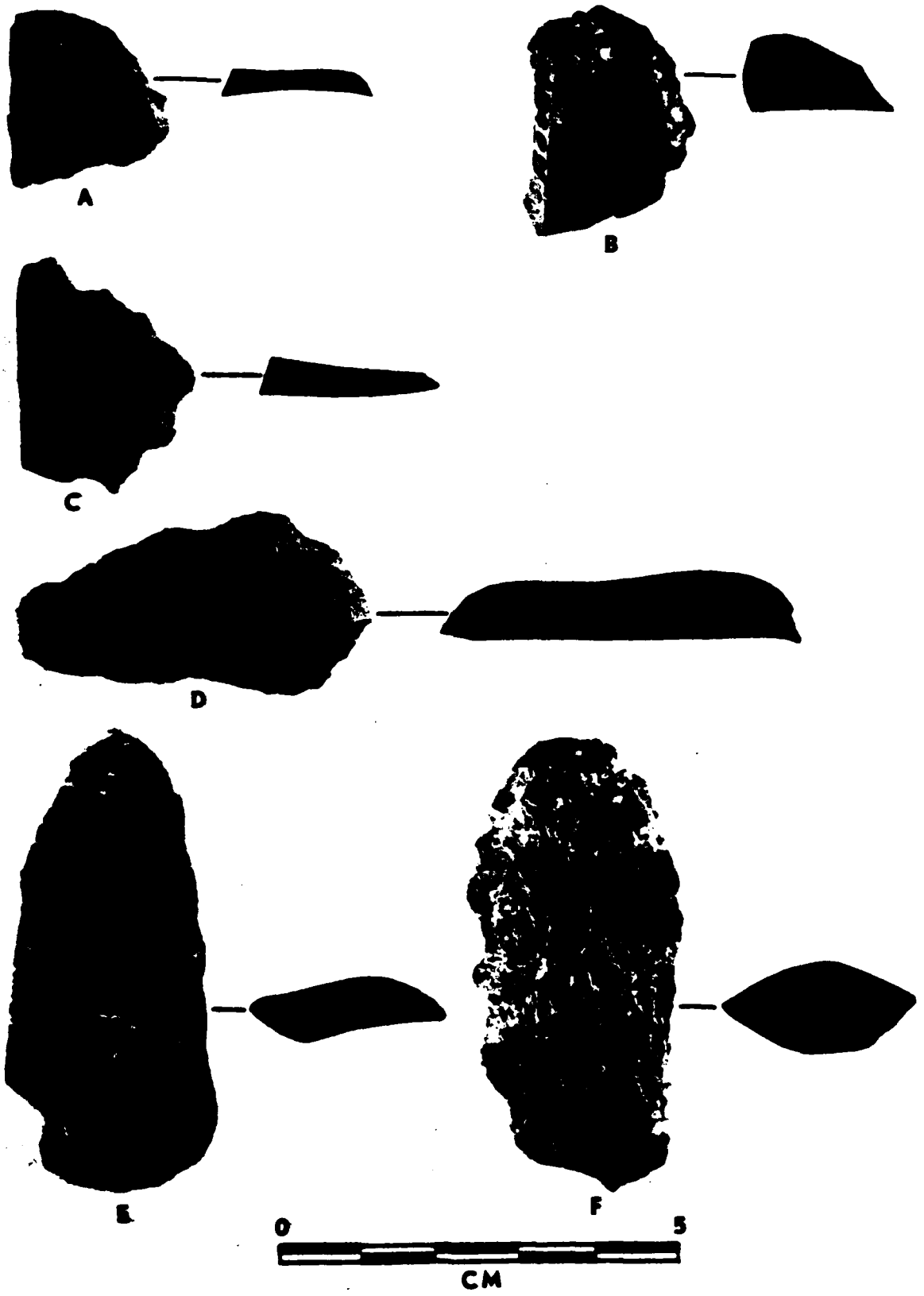
Figure 12 Scrapers, knives, and denticulate from the surface collection. a, b, d, Marginally retouched scrapers; c, Marginally retouched denticulate; e, f, Bifacially retouched knives.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from use along one or both lateral edges.

Marginally retouched specimens are generally large flakes with the lateral, or less often the lateral and distal, edges intentionally worked. Cortex and the striking platforms are present on most specimens, and retouching is usually confined to one surface. Most of the specimens are scrapers (Fig. 12, a, b, d) or denticulates (Fig. 12c), but a few large choppers (Fig. 13, a, b) are present. A few drills and knives are also encountered.

Utilized flakes do not appear to have been intentionally reworked, but exhibit minute flakings from use on one or both surfaces and most often along the lateral edge. Both cutting and scraping activities are evidenced. Cortex and the striking platforms are invariably present.

Only 11 fragments of manos and metates were found. Of the six mano fragments, one (Fig. 15a) is bifacial, two (Fig. 15b) are unifacial, and three are too small to permit the determination of the number of grinding surfaces. Most are well worked and pecked and ground into shape. Of the metate fragments, three (Fig. 15c) are from basin metates and two are from flat metates. None show extensive pecking or grinding to a desired form, and most appear to be from large rocks with naturally flat, easily worked faces.

A considerable number of core tools were found which exhibit edges battered or dulled from use as hammerstones or choppers (Fig. 13c). Unworked and generally round rocks were also used as hammerstones (Fig. 14c). Two questionable specimens

Figure 13 Choppers from the surface collection.
a, b, Marginally retouched choppers;
c, Chopper produced from a core.

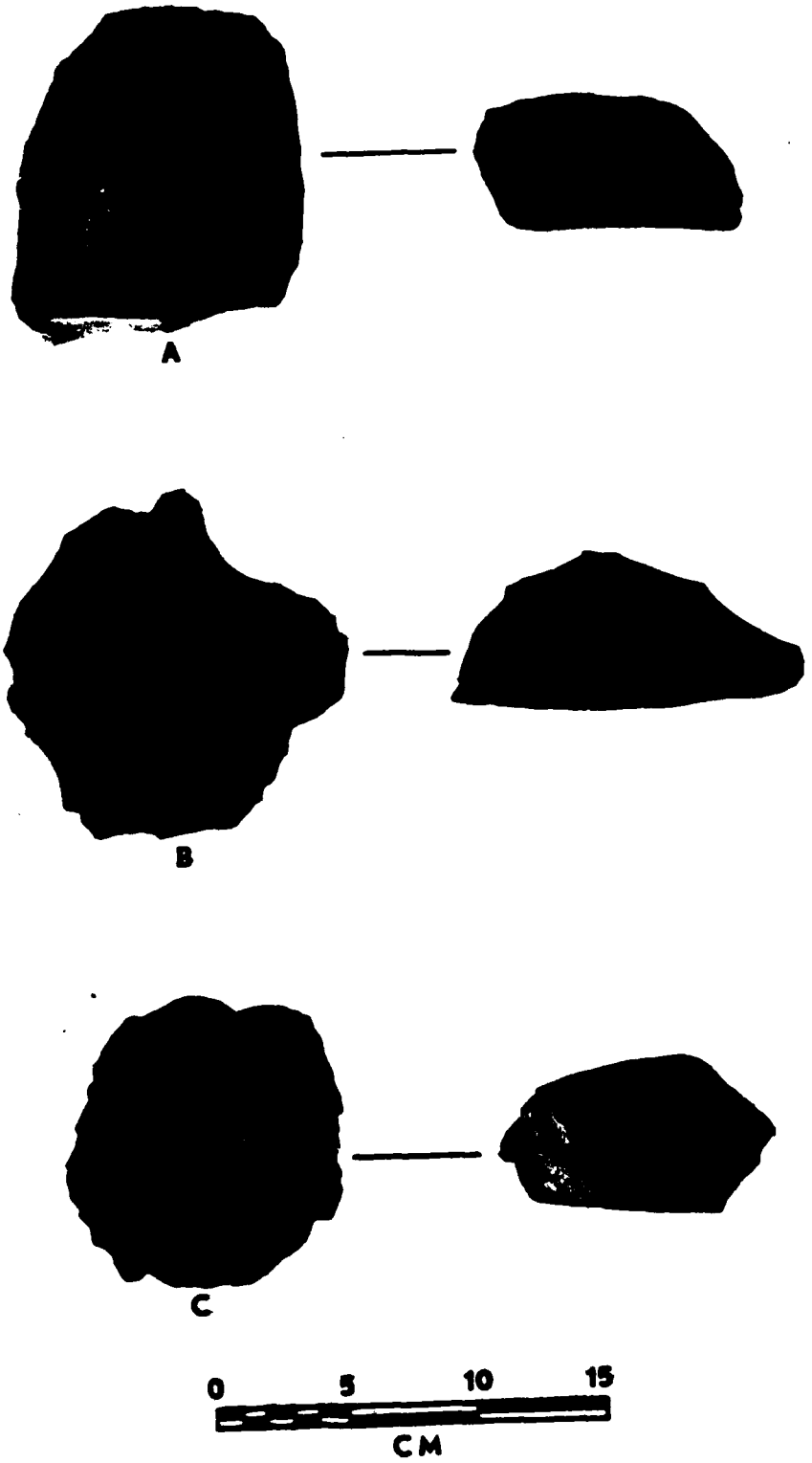
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Figure 14 Hoes and a hammerstone from the surface collection. a, b, Possible hoes or shovels; c, Hammerstone.

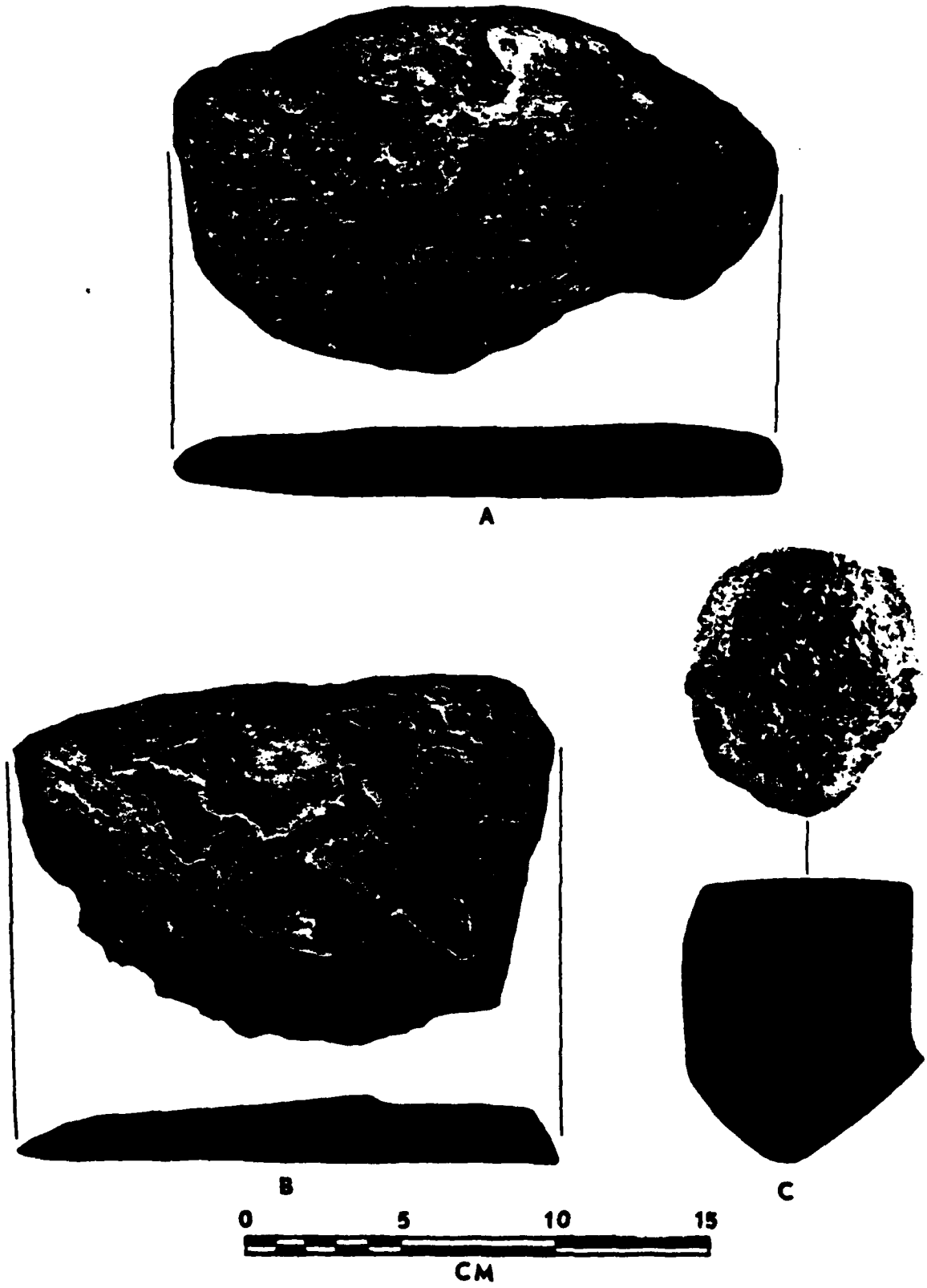
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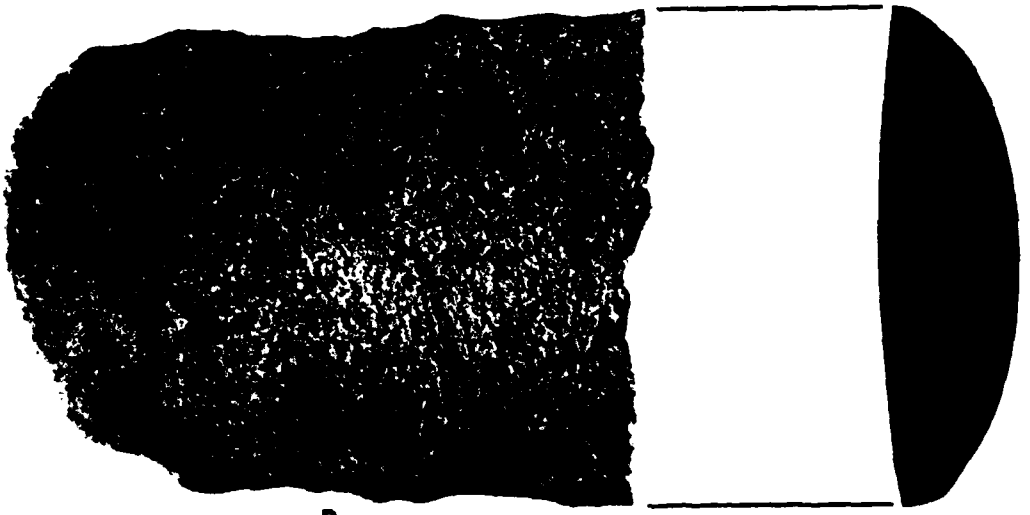
Figure 15 Grinding tools from the surface collection. a, Bifacial mano; b, Unifacial mano; c, c' Fragment of a basin metate.

A



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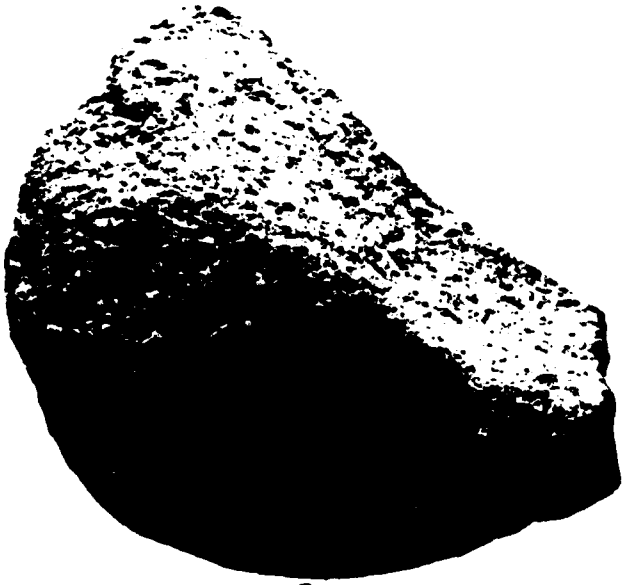
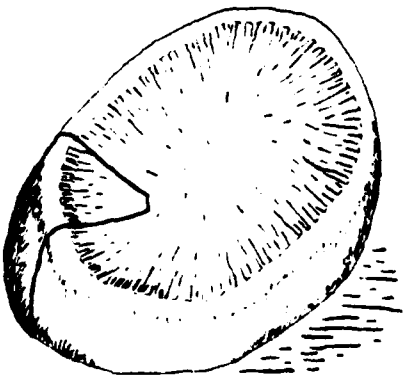


C



were found that may be hoes or shovels. Both are thin with respect to their lengths and widths. One exhibits edges smooth from use (Fig. 14a), and the other has been retouched along one edge (Fig. 14b).

A total of 15 historic objects were found on the surface of the spillway and remaining area at the west end of the site (Gerald, 1972). One piece of a purple glass bottle may date before 1917, but the remaining material is probably the result of more recent and contemporary military and civilian activity in the area. The other objects found include a clear glass bottle bottom, two variegated glass marbles, a fragment of a grey stoneware jar cover, a red fired brick, two brass 12 guage shotgun shell bases, two .30 caliber bullets, a combination tool for an M1 rifle, the bottom of a tin plated toy car, a chrome or nickle automobile axel cap, a brass rivet, and an unidentified iron object that may be a clasp of some sort.

D. Evaluation of Cultural and Historical Resources

Cultural materials recovered from the spillway area indicate that the primary use of the area was during the Mesilla Phase (900-1100 A.D.) and that the remains consist primarily of fire-cracked rock hearths, sherds, and lithic debris sparsely scattered over the surface. Hearth areas were defined with significant associations of pottery, grinding tools, and utilized flakes. These appear to be activity areas for the processing of "hard foods" if the comparison

with Mescalero Apache subsistence patterns is valid. The processing of "hard foods" by the Mescalero Apache was a task of the women (Basehart, 1960). This suggests that a division of labor may be observable at the Northgate National Registry Site.

Sampling of the spillway area was accomplished by bisecting with backhoe trenches 200 randomly selected 2.5 x 5 meter rectangles out of a possible 574. This sample size was selected in order to obtain a confidence level of 95±2.5% for features over one meter in diameter occurring with an estimated frequency of one in 20 rectangles or less. Based on the two hearths which occurred in the random sample, a reevaluation of the sample size revealed that it was more than adequate with the probability that hearths greater than one meter in diameter occur only once in each 100 rectangles on the average at a confidence level of 99±1.5%. The estimated mean number of hearths for the spillway area was 5.7, and at the 95% confidence level, no more than 12.5 hearths should occur in the spillway area. There was also a 95±2.5% probability that no pit houses or any other culturally related structures of one meter or greater diameter would be destroyed in this same area.

It is concluded that the cultural and historical resources lying within the spillway area of the Northgate National Registry Site have been amply sampled and are not of sufficient significance to merit further excavation or the alteration of construction plans.

TABLE 1: Sherd Collections from the West End of the Northgate National Registry Site

	Spillway Surface Area		Remaining Surface Area at West End of Site (Gerald, 1972)		Trenches	
	No.	%	No.	%	No.	%
El Paso Brown	87	89.7	1744	95.0	7	100.0
(modified)	(0)	-	(32)	-	(2)	-
El Paso Polychrome	-	-	27	1.5	-	-
El Paso R/B	1	1.0	4	.2	-	-
Chupadero B/W	1	1.0	7	.4	-	-
Playas Red Incised	-	-	4	.2	-	-
Ramos Polychrome	-	-	2	.1	-	-
Mimbres B/W	3	3.1	15	.8	-	-
Mimbres Bold Face B/W	-	-	3	.2	-	-
Mimbres Classic B/W	-	-	12	.7	-	-
Rubbed Corrugated	-	-	9	.5	-	-
Alma Plain	1	1.0	6	.3	-	-
Unknown	4	4.1	2	.1	-	-
Totals	97	99.9	1835	100.0	7	100.0

TABLE 2: Lithic Material and Miscellaneous Material from the West End of the Northgate National Registry Site

	Spillway		Remaining		Trenches	
	No.	%	No.	%	No.	%
I. Cores:	11	10.6	38	10.8	-	-
Cortex: Present	10		37		-	
Absent	1		1		-	
Flaking: Unifacial	5		18		-	
Bifacial	3		14		-	
Multifacial	3		6		-	
Tools: Choppers	2		12		-	
Scrapers	2		2		-	
Hammerstones	1		-		-	
Chopper-Hammerstones	-		2		-	
Denticulates	-				-	
Hoes (?)	-		1		-	
II. Unutilized Flakes:	55	52.9	219	62.4	4	100.0
Cortex: Present	31		149		4	
Absent	24		70		-	
Platform: Present	47		184		4	
Absent	8		35		-	
Size: Small *	23		70		-	
Large	32		149		4	
III. Utilized Flakes	12	11.5	22	6.3	-	
Cortex: Present	6		13		-	
Absent	6		9		-	
Platform: Present	9		20		-	
Absent	3		2		-	
Size: Small	2		4		-	
Large	10		18		-	
Edge Utilized:						
Distal	1		4		-	
Lateral	7		17		-	
Distal & Lateral	4		1		-	
Tools: Scrapers	1		4		-	
Choppers	0		1		-	
IV. Marginal Retouch	14	13.5	47	13.4	-	
Cortex: Present	9		34		-	
Absent	5		13		-	
Platform: Present	11		32		-	
Absent	3		15		-	

Table 2 (Cont.)

	No.	%	No.	%	No.	%
Size: Small	2		3		-	
Large	12		44		-	
Edge Retouched:						
Distal	5		8			
Lateral	3		24			
Distal & Lateral	6		14		-	
Proximal	-		1			
Tools: Scrapers	4		18		-	
Denticulates	6		13		-	
Choppers	3		4		-	
Drills	-		3		-	
Knives	-		2		-	
Miscellaneous	1		7		-	
V. Facial Retouch	6	5.8	7	2.0	-	-
Cortex: Present	-		2		-	
Absent	6		5		-	
Platform: Present	-		1		-	
Absent	6		6		-	
Flaking: Unifacial	-		1		-	
Bifacial	6		6		-	
Tools: Points	4		3		-	
Knives	2		3		-	
Knife-Scraper	-		1		-	
VI. Ground or Pecked:	6	5.8	18	5.1	-	-
Mano Fragments	2		4		-	
Metate Fragments	-		5		-	
Hammerstones	3		8		-	
Grinding Pallete	-		1		-	
Hoe (?)	1		-		-	
Totals:	104	100.1	351	100.0	4	100.0
VII. Miscellaneous:						
Glycymeris Shell Fragment	-		1		-	
Clam Shell	-		1		-	
Animal Bone	7		6		-	
Historic Artifacts	2		13		-	

* Small size is defined as having no dimension greater than 2 centimeters.

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APPENDIX 1: Labor and Services Contracted for Under Contract No. CX 700030100 and Contributed by the El Paso Centennial Museum of the University of Texas at El Paso

	Hours	Hourly Wage	Salary
A. Contracted Labor			
T. Weber Greiser, Field Archaeologist	240	$ 4.10/hr.	$ 1075.00
Backhoe and Operators	42.5	15.00 "	637.50
Backfill Grader and Operators	8	37.50 "	300.00
Unskilled Laborers	143	2.07 "	296.01
UTEP Civil Engineering Students	7.5	2.07 "	15.54
		Total	$ 2324.05
B. Institutional Contributions			
1. Salaries			
Rex. E. Gerald, Project Director	1/6 time for	1-1/2 Mos.	360.00
Skilled Labor, EPCM Staff	231.5	3.25/hr.	752.38
Dr. William S. Strain, Paleontologist & Geologist	4	5.80 "	23.20
E. Wynn Anderson, Geologist	1.5	3.25 "	4.88
Dora Visconti, Secretary	1/6 time for	1-1/2 "	93.75
Semi Skilled Laborers			
UTEP Anthropology Students	39	2.00/hr.	78.00
EPCM Volunteers	9.5	2.00 "	19.00
El Paso Archaeological Society Members	20	2.00 "	40.00
2. Equipment			
EPCM Vehicle	956 miles @ 10¢ mile plus rental and insurance		350.00
		Total	$ 1721.21

APPENDIX II.

CHI-SQUARE ANALYSIS OF CULTURAL REMAINS

Statistical Test: The chi-square test for two independent samples is chosen and the counts in each observation are frequencies in discrete categories (presence or absence in the five meter squares).

Significance Level: If there are less than five chances in a hundred (p=0.05) that the associations occurred by chance, the null hypothesis will be rejected. These are 2 x 2, 2 x 5, and 2 x 9 tables; therefore, these are one, four and eight degrees of freedom respectively. According to the Table of Critical Values of Chi-Square (Siegel, 1956), the null hypothesis may be rejected if the chi-square value obtained is more than 3.84, 9.49, and 15.5 respectively.

A. Null Hypothesis: The association between the spillway and adjacent areas (Gerald, 1972) and frequencies of the various pottery types is accidental.

Frequencies of Sherds	Areas: Spillway Area	Areas: Adjacent Area	
El Paso Brown	(92) * 87 #	(1739) 1744	1831
El Paso Polychrome	(1) 0	(26) 27	27
El Paso R/B	(0) 1	(5) 4	5
Chupadero B/W	(0) 1	(8) 7	8

* Expected frequency

\# Observed frequency

(Cont.)

(Cont.)

	Areas: Spillway Area	Adjacent Area	
	(0)	(4)	
Playas Red Incised	0	4	4
	(0)	(2)	
Ramos Polychrome	0	2	2
	(2)	(31)	
Mimbres B/W	3	30	33
	(0)	(9)	
Rubbed Corrugated	0	9	9
	(0)	(7)	
Alma Plain	1	6	7
	97	1835	1932

X^2 = 8.2
p = greater than 0.30

The null hypothesis is not rejected; the association of the two collection areas and frequencies of pottery types is probably accidental.

B. Null Hypothesis: The association of hearths and sherds within five meter squares is accidental.

		Hearths: Present	Absent	
		(56)	(480)	
Sherds	present	94	442	536
		(120)	1027	
	absent	82	1065	1147
		176	1507	1683

X^2 = 42.1
p = less than 0.001

The null hypothesis is rejected; the association of sherds and hearths in the same five meter squares is probably not accidental.

C. Null Hypothesis: The association within five meter squares of hearths and various frequencies of sherds is accidental.

Sherd Frequencies	Hearths: Present	Hearths: Absent	
over 19	(1) 5	(10) 6	11
10-19	(2) 3	(17) 16	19
5-9	(10) 23	(89) 76	99
1-4	(43) 63	(364) 344	407
0	(120) 82	(1027) 1065	1147
	176	1507	1683

X^2 = 56.6
p = less than 0.001

The null hypothesis is rejected; the association of hearths and various frequencies of sherds in the same five meter squares is probably not accidental.

D. Null Hypothesis: The association of hearths and late wares (El Paso Polychrome, Chupadero Black-on-white, Ramos Polychrome, and Playas Red Incised) within five meter squares is accidental.

Late Wares	Hearths: Present	Hearths: Absent	
present	(3) 4	(30) 29	33
absent	(173) 172	(1477) 1478	1650
	176	1507	1683

X^2 = 0.001 (with Yates Correction)
p = greater than 0.95

The null hypothesis is not rejected; the association of hearths and late wares within five meter squares is accidental.

E. Null Hypothesis: The association of sherds and total lithics within five meter squares is accidental.

Total Lithics	Sherds: Present	Sherds: Absent	
	(96)	(206)	
present	167	135	302
	(440)	941	
absent	369	1012	1381
	536	1147	1683

X^2 = 93.3
p = less than 0.001

The null hypothesis is rejected; the association of sherds and total lithics within five meter squares probably is not accidental.

F. Null Hypothesis: The association of sherds and spent cores and unutilized flakes within five meter squares is accidental.

Spent Cores and Unutilized Flakes	Sherds: Present	Sherds: Absent	
	(68)	(148)	
present	118	96	214
	(468)	(1001)	
absent	418	1051	1469
	536	1147	1683

X^2 = 61.3
p = less than 0.001

The null hypothesis is rejected; the association of sherds and spent cores and unutilized flakes within five meter squares is probably not accidental.

G. Null Hypothesis: The association of hearths and total lithics within five meter squares is accidental.

Total Lithics	Hearths: Present	Hearths: Absent	
	(32)	(270)	
present	29	273	302
	(144)	(1237)	
absent	147	1234	1381
	176	1507	1683

X^2 = 0.3
p = greater than 0.50

The null hypothesis is not rejected; the association of hearths and total lithics within five meter squares is probably accidental.

H. Null Hypothesis: The association of hearths and spent cores and unutilized flakes within five meter squares is accidental.

Spent Cores and Unutilized Flakes	Hearths: Present	Hearths: Absent	
present	(22) 18	(192) 196	214
absent	(154) 158	(1315) 1311	1469
	176	1507	1683

X^2 = 1.1
p = greater than 0.20

The null hypothesis is not rejected; the association of hearths and spent cores and unutilized flakes within five meter squares is probably accidental.

I. Null Hypothesis: The association of hearths and grinding tools within five meter squares is accidental.

Utilized Flakes	Hearths: Present	Hearths: Absent	
present	(1) 5	(10) 6	11
absent	(175) 171	(1497) 1501	1672
	176	1507	1683

X^2 = 11.0 (with Yates Correction)
p = less than 0.001

The null hypothesis is rejected; the association of hearths and grinding tools within five meter squares is probably not accidental.

J. Null Hypothesis: The association of hearths and utilized flakes within five meter squares is accidental.

Utilized Flakes	Hearths: Present	Hearths: Absent	
present	(3) 7	(24) 20	27
absent	(173) 169	(1483) 1487	1656
	176	1507	1683

X^2 = 5.4 (with Yates Correction)
p = less than 0.025

The null hypothesis is rejected; the association of hearths and utilized flakes within five meter squares is probably not accidental.


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