

*Archaeological investigations at the
last Spanish Colonial mission
established on the Texas frontier:*

**Nuestra Señora del Refugio (41RF1),
Refugio County, Texas**

**Volume I-CD
Archaeological Investigations**

by
Cynthia L. Tennis

and Appendices by

**J. Philip Dering, Douglas S. Frink, David V. Hill, John G. Jones,
David R. McDonald, Timothy K. Perttula,
Hector Neff and Michael D. Glascock,
and Elizabeth J. Reitz**

Texas Department of Transportation
Environmental Affairs Division
Archeological Studies Program, Report No. 39

Center for Archaeological Research
The University of Texas at San Antonio
Archaeological Survey Report, No. 315

March 2002

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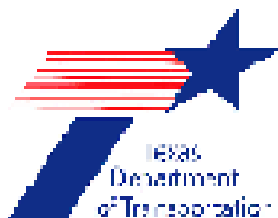
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Principal Investigators**

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The University of Texas at San Antonio (CAR-UTSA)

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Mission Nuestra Señora del Refugio

Volume Contents

Volume I:

Archaeological Investigations

Chapter 1: Introduction

Chapter 2: Environment

Chapter 3: Mission History

Chapter 4: The People of Mission Refugio

Chapter 5: Post-1830 History

Chapter 6: Previous Archaeology

Chapter 7: Methodology

Chapter 8: Findings: Trash and Midden; Architectural; Burial; and Skeletal Biology

Chapter 9: Artifacts: Non-Native Ceramics; Other Historic; Native Ceramics; Lithics; and Faunal I & II

Chapter 10: Summary and Conclusion

Volume I - CD:

Archaeological Investigations Appendices

Appendix A: Translations: 1796 Inventory; 1792–1810 Supply Inventories; and 1820 Inventory

Appendix B: Records: Baptismal; Burial; and Census

Appendix C: Artifact Data

Appendix D: Oxidizable Carbon Ratio Data

Appendix E: Botanical Remains Data

Appendix F: Pollen and Phytoliths Analysis

Appendix G: Petrographic Ceramic Analysis

Appendix H: Instrumental Neutron Activation Analysis–Non-Native Ceramics

Appendix I: Burial Artifact Data

Appendix J: Paste and Temper Analysis–Native Ceramics

Appendix K: Rim Sherds and Decorated Sherds–Native Ceramics

Appendix L: Instrumental Neutron Activation Analysis–Native Ceramics

Appendix M: Faunal Provenience and Measurements

Appendix N: Archaeological Form Samples

Volume II:

Osteological Analyses

Section A: Introduction

Section B: Preparation of Sample and Methods for Analysis

Section C: Individual Burials

Section D: Bone Inventory

Section E: Demography

Section F: Bone Pathology

Section G: Dental Pathology

Section H: Dental Metrics and Morphology

Section I: Metric Analysis of Postcranial Remains

Section J: Metric Analysis of Cranial Morphology

Section K: Dietary Variation, Ethnicity and Mobility

Section L: Summary and Conclusion

Volume II:

Appendices

Appendix IIA: Burial Descriptions

Appendix IIB: Inventory and Coding Forms

Appendix IIC: Individuals with Enthesophytosis

Appendix IID: Individuals with Antemortem Fractures

Appendix IIE: Isotopic Analysis

Table of Contents:

Mission Nuestra Señora del Refugio

Volume I - CD Archaeological Investigations

Figures	iii
Tables	iv
Appendix A: Translations <i>by</i> David R. McDonald	
Section 1: 1796 Inventory	2
Section 2: 1792–1810 Supply Inventories	12
Section 3: 1820 Inventory	26
Appendix B: Records	
Section 1: 1807–1828 Baptismal Records	34
Section 2: 1807–1825 Burial Records	46
Section 3: 1782–1836 Census Records	50
Appendix C: Artifact Data	
Introduction	54
Appendix D: Oxidizable Carbon Ratio Data <i>by</i> Douglas S. Frink	
Oxidizable Carbon Ratio Analyses	60
Appendix E: Botanical Remains Analysis <i>by</i> J. Philip Dering	
Laboratory Methods and Definition of Taxonomic Categories	66
Results of the Macrobotanical Analysis	66
Flotation Analysis	69
Conclusions	71
Appendix F: Pollen and Phytoliths Analyses <i>by</i> John G. Jones	
Introduction	74
Methodology	74
Summary	81
Appendix G: Petrographic Ceramic Analyses <i>by</i> David V. Hill	
Introduction	84
Methodology	84
Appendix H: Instrumental Neutron Activation Analysis <i>by</i> Hector Neff and Michael D. Glascock	
Introduction	106
Irradiation and Gamma-Ray Spectroscopy	106
Discussion	114
Appendix I: Burial Artifacts Record	
Appendix I-1	120
Appendix J: Paste and Temper Analysis <i>by</i> Timothy K. Perttula	
Appendix J-1	124
Appendix K: Rim Sherds and Decorated Sherds Analysis <i>by</i> Timothy K. Perttula	
Appendix K-1	140
Appendix L: Instrumental Neutron Activation Analysis Sherd Data <i>by</i> Timothy K. Perttula	
Appendix L-1	160
Appendix M: Faunal Provenience and Measurements <i>by</i> Elizabeth J. Reitz	
Appendix L-1	168
Appendix L-2	169
Appendix N: Sample Archaeological Forms	
CAR Archaeological Forms	171

Figures:

Mission Nuestra Señora del Refugio

Volume I – CD

Figure E-1. Wood frequency from Refugio (41RF1).	69
Figure F-1. Pollen grains identified in the samples (percentage).	78
Figure F-2. Phytoliths identified in the samples (percentage).	79
Figure H-1. PCA biplot of Principal Components 1 and 2 of the correlation matrix for 29 elements.	112
Figure H-2. PCA biplot of Principal Components 1 and 3 of the correlation matrix for 29 elements.	112
Figure H-3. Bivariate plot of lanthanum and samarium concentrations in Refugio and other Texas Colonial samples.	113
Figure H-4. Bivariate plot of tantalum and sodium concentrations in Refugio and other Texas Colonial samples.	113
Figure H-5. Bivariate plot of tantalum and scandium concentrations.	115
Figure N-1. Sample feature recording form.	172
Figure N-2. Sample non-feature recording form.	173
Figure N-3. Sample burial record form.	174
Figure N-4. Sample adult skeleton recording form.	175
Figure N-5. Sample burial log form.	176
Figure N-6. Sample bag log form.	177
Figure N-7. Sample bag label tag.	178
Figure N-8. Sample photographic log form.	179
Figure N-9. Sample catalog sheet.	180

Tables:

Mission Nuestra Señora del Refugio

Volume I – CD

Table E-1. Maize remains from 41RF1	67
Table E-2. Plant remains from flotation samples	68
Table F-1. Proveniences for pollen and phytolith samples	75
Table F-2. Pollen counts from the Mission Refugio samples	76
Table F-3. Taxa identified in phytolith samples from Mission Refugio	80
Table G-1. Paste and temper composition of unglazed Native American ceramic sherds from Mission Refugio	85
Table H-1. Group assignments and descriptive information for Mission Refugio ceramic samples	109
Table I-1. Inventory list of Burial-associated Items	120
Table M-1. Mission Refugio, faunal provenience	168
Table M-2. Mission Refugio, summary of measurements for large bovids.	169

Appendix A

Mission Refugio Inventory

Section 1

1796 Inventory

Appendix A: Inventory Section 1

1796 Inventory

David R. McDonald

Translated by David R. McDonald, March 2000
Several pages of listings of religious items have been omitted.

(Translators note: two copies of Refugio Mission's 1796 inventories were found. One is a contemporary, unsigned manuscript; the other, a typescript made by Fr. Rafael Cervantes', O.F.M. The MSS. he used was not found.¹ The two sources are very similar, but not identical, and each offers some advantages and certain difficulties. It was decided to utilize the manuscript copy for the present translation, since it seemed to involve less uncertainties than the Cervantes typescript. Numbers followed by two slashes (//) indicate page numbers in the MS.)

1// The Mission Nuestra Señora del Refugio was first founded on January 4, 1794 on the bay named Mosquitos. On January 10, 1795, It was moved to this site, located on Medio Creek, a distance of ten leagues from the Presidio of Our Lady of Loreto de la Bahía. The mission pertains to the province of the Tejas, and its lands were given in the name of the King, (our Lord, may God keep him). The land is defined by the four directions stated in the instrument of its foundation that is kept in the mission's archive. The mission has the following.

First, there is designated a church thirty varas in length and eight and one-half varas in width, with its transept, tower and baptistery. At the present time, only the foundations and corners have been laid, and it is enclosed by a stockade. In addition, there are three other structures. One fifteen varas in length, another of twelve varas, both being five varas in width; the third structure measures five and one-half varas square, and each building is five varas in height. They are built with stone and lime, being provided with good rafter beams, bricked [floors] and plastered [walls]. Two of the structures serve as the church; the other as the sacristy...

(Nine pages of descriptions of religious items omitted.)

//10 ...In addition, there are twelve jacals in this mission (not including those used by the soldiers, Indians, and servants). One is seventeen and one-half varas in length and six and one-half varas in width. Its walls are made of adobe and it has a grass roof—the others are medium-sized and made of posts.² These serve as the living quarters of the missionaries and as workshops. Inside the principal building is the following: Seven chests, five large and two medium, all of which are numbered. In No. 1 [are] two reams of paper and a telescope.

In No. 2 is the archive, containing the document of [the mission's] founding and other papers pertaining to it.

In box No. 5 there is the following: two large padlocks with lockplates and keys for the church, thirteen lock plates with keys for houses, eighteen door crossbars³ for doors and windows with their ___⁴, three rolls of wire—thick, medium and thin, two irons to make hosts,⁵ two iron shells,⁶ a basket⁷ containing a padlock, two lockplates and other old pieces of iron; two bronze stirrups, 180 nails, large and small, a cardboard box with two rolls of strings for guitar and violin, two *escarchados*⁸, a small box containing pitch,⁹ four pounds of tin, and a small bronze saddle tree head.¹⁰

(Translator's note: Additional pages of Religious items omitted. The following begins on page 11 of the MS, [next to last paragraph])

In Box No. 8 there is the following: fifteen fine napkins, a towel for the table, a metal mortar with pestle, three pots,¹¹ six very special *molinillos*,¹² seven plates, a wide cup, five *pozole* cups¹³, a gravy boat¹⁴—all made of china; a small crystal vessel, three sieves made of tin plate and wire; a tinned copper jar, a metal caldron cup, twenty-seven utility knives,¹⁵ five sagging packages of earthenware bowls,¹⁶ four table knives, four pair of pliers, large and small; five large knives for the servants, fifteen large wooden spoons for the kitchen and four small ones.

In Box No. 11 there are 135 pages of paper gilded in various colors; four reddish pages and one-half pliego of yellow; nine rolls of blue paper, thirty-one pieces of ribbon, wide and narrow in several colors, and of different types; another twenty-one rolls of the same, eight pieces of ribbon wide, fine, and colored and four rolls of narrow; one roll of cottons for lanterns, a paper of copperas,¹⁷ a small bag of marmasite,¹⁸ another paper with *pajuelas*,¹⁹ another with small ribbons with mother of pearl, a paper with ten [pieces of] mother of pearl with gold thread, another six silvered ribbons.

//12 A paper with a small rosary that was of Saint Francis upon which was put a new crown, and three *carretillas de escarcha*.²⁰

In [box] No. 12 there is the following: 389 ribboned necklaces, 552 pairs of ear rings, 418 crucifixes, 2,546 rings, 478 bells, fourteen tops, six whistles, three dozen and one whistling tops. In a medium trunk there is the following: two *tompiales* of accounts,²¹ and trade beads of all colors, sixty-eight dozen buttons of different types and sizes, 390 rosaries, ten pair of scissors, a paper having more than 400 needles, eighty-nine small brushes for the Indian women, a small cardboard box containing thirty small combs of china and four made of wood.²² Also, a medium box with the following items for Indian infants that are baptized: two mantillas, one blue and the other yellow; a little shirt, a half point of Brittany cloth, three ribboned skirts, a small decorated sheet,²³ a head covering, and a silk and gold rebozo for wrapping infants. In another container there are eighteen pairs of narrow coarse cotton cloth, four wide, and four pieces of duck cotton,²⁴ and 145 varas of braided ribbon²⁵ for the Indians' clothing,

In No. 4 are the carpenters' tools that consist of the following: five hooks two of them with heads, a jack plane,²⁶ a jointing plane,²⁷ four wood planes,²⁸ five augers,²⁹ nine chisels, eight gouges,³⁰ two wood chisels,³¹ three crow bars,³² a tapered punch,³³ four rasps, two large files, a large saw, a pair of iron pieces to assemble a hand saw, two carpenters' squares, two drawing triangles, a pair of handles,³⁴ two compasses [dividers], a drill, a vara measuring rod, a mason's trowel, a farm digging stick, a *pusabante*,³⁵ an iron tool for making pairs of glass panes for windows or doors.³⁶

Insert here the inventory of the books.³⁷

//12 continued

Outside this box are the blacksmith tools, consisting of the anvil, bellows, a vise,³⁸ three blacksmith hammers, a drill, two pair of tongs, two devices for dressing stone used by hand or foot,³⁹ a wheel,⁴⁰ five files, three chisels, two punches,⁴¹ a reamer, a mold for forming nail heads,⁴² drill bit.⁴³ There are also in this jacal five *tercios* of tobacco that are being used, three barrels of wine for saying mass, two large *tortera* -spoons⁴⁴, and two *pozole* makers⁴⁵—the former made of iron and the latter copper. A tin pump for extracting wine from the barrels, three tin funnels, large and small, a large copper pot with its lid; twenty-two small ones, nineteen small pots⁴⁶, a large frying pan, seven good metates, and one broken, twelve manos for metates, only two are good, the others are broken. Three *tercios* of blankets, two syringes.⁴⁷ one pewter the other of bronze, two pole lanterns.⁴⁸ A vara measuring rod, five bottles for wine for mass, including the one that is in the church; two glass bottles of oil, three *tercios* of sugar loaves as a gift,⁴⁹ a load of white soap, a low copper *basin*.⁵⁰

//13 A medium basket⁵¹ a wooden press with iron screws to press books and letters, a lantern with a graduated glass to illumine the Most Holy [*Santissimo*]⁵² when it is given to the sick, a guitar with its case for the church, a violin with case and lock, a chronological and genealogical tree of the descendents of Adam and Eve until Our Lord, Jesus Christ. There are maps of the world, Europe, Asia, Africa, and both Americas, a brass candlestick with steel candle snuffers. In this jacal there is a door with lock and a window. Each of the three other completed jacals has a door with lock. Also, there is a table with its box and lock lines with leather, a wooden chair with its seat of burlap, two stands with the books, a box with two Roman glass windows,⁵³ other large *vidrieras* ⁵⁴ for the forge.

In the padre's jacals are twelve chairs⁵⁵ with reed seats, another large wooden table; another small one; three more tables, two with canopy⁵⁶ and copper candlesticks with snuffers. Three inkwells, two made of pewter and screws, the other of lead with a crystal base, three *palbaderas*,⁵⁷ three containers for sealing wax.⁵⁸

In the jacal that serves as the office for the servants, there is the following: Five arrobas eight pounds of flat iron plate,⁵⁹ three arrobas 10 pounds of steel, ten bars, eleven hatchets, four scythes to cut grass, eleven hoes, fifteen large plow points⁶⁰ for plowing; one small one, a mason's trowel, two drill bits for [word illegible], an *atacador*,⁶¹ a small spoon for the same, an iron block and tackle to climb up stone, three cart chisels, two saws to dehorn bulls, three lances for weakening bulls, fish-gig for fishing, two copper comals, four small *cazitos*, two balances large and small, a mason's hammer, another of the same for [word illegible], a mason's plumb bob and level, six metates with manos, four branding irons that pertain to this mission, along with one that belongs to Don Juan Barrera, a razor case with ten razors, large scissors, a grinding stone with two axles, a bottle for oil, a bronze basin for shaving, two small pots, a base for a large shallow pan⁶² valued at eighty pesos, some balances with various weights—a half-pound weight, and its other weights, minus the two-ounce and the other small weights, two French pots with three legs, a box with six almuds of salt, sacks of corn ears and fanegas of corn.

Two barrel hoops, *apozole* pot, three cauldrons⁶³ large and small—one is at the ranch; two coppers [pots], one large and the other small; a large cross-cut saw lacking handles,⁶⁴ ninety-three straw hats, four basins⁶⁵ to go with those of the kitchen, an iron punch for [to make] a sieve for corn, a medium trunk with brown sugar for gifts, ⁶⁶ three arrobas of raw fat.

In this jacal there are three boxes; in the first a bottle containing flour for the hosts, three metal rings for those who marry, a [word illegible], to mix the flour to make the hosts, a small spoon, a pair of spurs, an iron for ironing, four small knives with bone handles, a utility knife, a small pair of fine quality scissors,⁶⁷ and another pair, for cutting the hosts, others for cutting the hosts, a [word illegible], to make the hosts, a tobacco duster,⁶⁸ a [word illegible] for the same purpose, eight thimbles for women, two dozen serrated buttons.

In the other box, No. 9, is the following: Two dozen and seven blue rebozos; nine of the same, fine quality, white and blue, with flames;⁶⁹ a dozen cotton pants, eight pair of stockings for women, four ordinary handkerchiefs, eight of the same, red and white, and fine quality, forty-three varas of blue shag cloth,⁷⁰ eleven pieces of Chinese ribbon [valued] at one real, three dozen and three pair of leather shoes, three saddle cushions,⁷¹ two rolls of ribbon [for] the beautiful union,⁷² one roll complete the other half used, a bit of white thread, a roll of weak

Century Plant thread⁷³, a dozen small wooden rosaries, nine ounces of colored twisted silk, twenty varas of blue ribbon, a narrow piece of coarse cotton cloth less than four varas.

In the [word illegible] jacal there are twenty harnesses with ropes and lariats and equipment for nineteen of them, ten [cart] loads of sacks of burlap,⁷⁴ ten blankets, a pile of blankets for coats. Outside the jacales are 8,000 bricks, eight casseroles, six barrels, seven basins, nine posts, two carpenter's benches, a [box] for soap. In two jacals that serve as the kitchen there is the following: five metates, one with its mano and four without; two *comales* one made of iron, the other of copper; three small pots, one large; two iron French pots, one large one small; two medium [word illegible], a large frying pan, a [chocolate] pot with two *molinillos*, a roaster⁷⁵ an iron spoon, a metal basin⁷⁶ for [washing] the hands, a wooden bowl, a table knife, a kitchen knife,⁷⁷ a machete, seventeen plates from Puebla, nine soup cups,⁷⁸ a large preservers maker,⁷⁹ two jars from Michoacan for drinking water.

Box No. 13, with key, [has] a mattress, four sheets, and four pillows, two with pillow slips, for guests, two jars made of tin. [change in handwriting] Also, in the said mission are sixty-five Indians; the others are at the coast. In the corral are ninety fowl, also a metal [word illegible] that serves as the lavatory for Holy Thursday.

[Also] In Box No. 13 are two pair of table cloths, a hand towel, a tin sieve for making *atole*, a copper candlestick with its snuffer, four and one-half arrobas of chocolate. For building supplies there are 8,000 bricks, eight carts, six barrels, nine tubs to carry mortar,⁸⁰ nine poles. Also, two kilns to burn lime for bricks.

//14 In the ranch are the following: 2,500 head of large livestock, large and small—mostly breeding cows; twenty-five head of oxen, forty tame horses, two droves of mares of twenty each, each with its stud horse and shepherd burro; twenty tame mules and a two-year old mule; fifteen head of pigs. For the dairy of the said ranch there are two barrels, one large and two small [*sic*], a sieve made of tin and wire, two troughs,⁸¹ large and medium for making whey, and another for making soap.

For the servants who have been employed for some time, there remain twenty pesos, three and one-half reals. The mission owes debts to no one. The accounts, adjusted in accord with our trustee⁸², Don Domingo de Outón, a resident of the Presidio of La Bahía, shows a balance of one hundred fifty pesos.

All of the above expressed inventory, with the Mission N. S. del Refugio, R. P. Commissioner of Missions, Fr. Manuel de Silva delivers to his College of N. S. de Guadalupe de Zacatecas, and in its name it is received by its two Father Missionaries, Fr. Antonio de Jesús Garavito

//15 and F. Jose María Saéñz, and it was signed by the said R.[everend] P.[adre] Comissionary. It was certified by Captain of la Bahía, Don Juan Cortés, who witnessed everything in the said mission of N.[uestra] S.[eñora] del Refugio, today September 8, 1796.

(Translators note:

This document is a copy; it contains none of the signatures of the participants.)

Endnotes

- ¹ Microfilm copies of both inventories, dated 9-8-1795, are at Our Lady of the Lake University, in the Old Spanish Missions Historical Research Library. The inventory manuscript is in the Zacatecas Microfilm Roll-3, frames 3861-3875; the Cervantes Typescript is also in the Zacatecas Microfilm, Roll-2, frames 1339-1366.
- ² *Los demas medianos y formados de palo.*
- ³ *Aldabas.*
- ⁴ Word illegible.
- ⁵ Eucharistic wafers.
- ⁶ *Caracoles.*
- ⁷ *Chiquihuite.*
- ⁸ Meaning uncertain—probably refers to gold or silver braid.
- ⁹ *Un cajoncito con pez.*
- ¹⁰ *Una cabezilla de bronze de silla.*
- ¹¹ *Calderetes.*
- ¹² *Molinillo*, a utensil with a beater on one end and a long stem on the other. It is spun between the hands to mix chocolate or other liquids. The name comes from the Mexican plant “*molinillo*” that the tool was traditionally made from and is derived from the Nahuatl, “*moloa*”-to mix or dissolve. *Santamaría Diccionario*, p. 133.
- ¹³ *Pozole* - a thick drink made from ground corn and various spices.
- ¹⁴ *Salsera.*
- ¹⁵ *Belduques.*
- ¹⁶ 15 *tecomates.*
- ¹⁷ *Alcaparossa* - variant of *caparrosa*. Also called vitriol. It is a salt mixed with Ferrous Sulphate that produces blue or green colors used in dyeing procedures. *Diccionario Manual e Ilustrado*, Madrid: Espasa-Calpe, S.A. , Segunda Edición, 1950, p. 302 (hence, DMI)
- ¹⁸ *Marmagita* - evidently used to blot written pages.
- ¹⁹ Could be guitar picks, or perhaps toothpicks.
- ²⁰ Meaning uncertain. Literally it means “wheel barrows of frost.”
- ²¹ Word not found in dictionaries.
- ²² 30 *peñecitos de china* - could be porcelain combs.
- ²³ *Una sabanilla de merlin enlistonada.*
- ²⁴ *Rayadillo.*
- ²⁵ *Cinta de reata.*
- ²⁶ *Garlopa.*
- ²⁷ *Juntera.*
- ²⁸ *Cepillos.*
- ²⁹ *Barrenas.*
- ³⁰ *Gurbias.*
- ³¹ *Formones.*
- ³² *Pies de cabra.*
- ³³ Could also be a translated as a burin, graver, punch or boring tool.
- ³⁴ “*Codales*” can refer to handles for a saw , or mason’s level.
- ³⁵ Word not found in any dictionary or encyclopedia.
- ³⁶ *Un fierro de emparejar vidrios.*
- ³⁷ This note is found in the MS and indicates that this copy of the MS was preliminary a draft of the mission’s inventory.
- ³⁸ *Tornillo.*
- ³⁹ *Tajaderas de pie y mano.*
- ⁴⁰ *Sortija.*
- ⁴¹ *Punzones.*
- ⁴² *Clavera.*
- ⁴³ *Broca.*
- ⁴⁴ Baking spoons.
- ⁴⁵ *Pozoleros.*
- ⁴⁶ *Cazitos.*
- ⁴⁷ *Geringas (jeringas).*
- ⁴⁸ 2 *faroles de palo.*

- ⁴⁹ *Tres tercios depanocha de regalo.*
- ⁵⁰ *Un bajo bazin de cobre.* *Bazin*, under any spelling, was not found in dictionaries or encyclopedias, and thus it does not seem to correspond to its apparent cognate "basin" in English.
- ⁵¹ *Chiquiguite.*
- ⁵² Fr. Cervantes' reading: the abbreviated word doesn't look like "Santissimo" in the MS.
- ⁵³ *2 vidries romanas.*
- ⁵⁴ *Vidrieras* - Glass for the forge?
- ⁵⁵ "Sauresitas" not found in dictionaries.
- ⁵⁶ *Pabelleon.*
- ⁵⁷ Word not found in dictionaries with this spelling or as "palvaderas."
- ⁵⁸ *Oblarios*, from "oblea": sealing wax.
- ⁵⁹ *Fierro platina.*
- ⁶⁰ *Gatos grandes de arar.*
- ⁶¹ No appropriate definition found; one example: an instrument to attack cannon.
- ⁶² *Un fondo grande para paila.*
- ⁶³ *Tres peroles.*
- ⁶⁴ *Una sierra grande bracera sin armas.*
- ⁶⁵ *Bateas.*
- ⁶⁶ "Panochas" a form of *piloncillo* (brown sugar cones) Santamaría-Diccionario, p. 797.
- ⁶⁷ Word illegible.
- ⁶⁸ *Despolvador de tabaco.*
- ⁶⁹ *...blanco y azul con llamas.*
- ⁷⁰ *Tripe.*
- ⁷¹ *Guruperas.*
- ⁷² Evidently the ribbon was used for marriages.
- ⁷³ *Pita.*
- ⁷⁴ *Guangoche.*
- ⁷⁵ *Asador.*
- ⁷⁶ *Bacia.*
- ⁷⁷ *Belduque de cocina.*
- ⁷⁸ *Tazas calderas.*
- ⁷⁹ *Una conservera grande.*
- ⁸⁰ *Bateas.*
- ⁸¹ *Canoas* - hollowed out logs or troughs.
- ⁸² *Sindico.* The *sindico* kept the mission's cash, and performed its cash transactions since missionaries were forbidden to.

Appendix A

Mission Refugio Inventory

Section 2

Supplies sent to Mission Refugio, 1792–1810

Appendix A: Inventory Section 2

Supplies Sent to Refugio Mission, 1792–1810

David R. McDonald

Translated by David R. McDonald, March 2000

(Translators note: Archives consulted:

Our Lady of the Lake University
Old Spanish Historical Research Library
Archivo Zapópan Roll-1 [frame numbers not visible])

“ Book of the Records of What Was Sent to the Missions of the Province of Texas, beginning with the year 1792. I was entrusted with the Service of these Missions for the best order and constancy of my accounts, which I Began on this November 19 of the year 1797 ”

Page 103

September 14, 1792

Apostolic College of Guadalupe

Memorandum that R.P.G. Fr. Ignacio Maria Lava remits to P.P. Fr. Francisco Mariano de la Garza, Minister of the Mission N.S. del Refugio de la Bahia

	No. 26	Pesos-Reals
1	Habit with capilla (hood) of sayal cloth	12-0
1	Another habit of <i>Saylalete</i> cloth with a hood	09-0
2	Pair underwear [<i>paños menores</i>] made of/from <i>lanquin</i> ¹ @ 20 reals [per vara]	05-0
2	Pair of sandals at 8 reals. and 2 dust cloths at 5 reals	03-2
1	[container] with spices and 1/2 pound of saffron	08-4
10	Bunches [<i>manojos</i>] of leaf tobacco	08-6
1	Container [bote] with 2 lb. of snuff (tobacco in polvo)	04-2
1	Ream of superior paper	03-4
1	Box with 75 lb. [3 arrobas] of fine chocolate	45-0
1	Box of grass mats [<i>petates</i>] and burlap [<i>arpillera</i>]	01-0
	Charge for the cost of two <i>tercios</i> ² [packs] from Mexico to the College @ 3 pesos 3 reals	06-3
	Charge of 43 pesos that, by his order, <u>was delivered to Juan Martin</u>	<u>43-0</u>
	Total Cost [importa]	150-0
	Credit of 150 pesos from a third of the salary of the supernumerary P.P. Vicar Fr. Jose Mariano Roxo	150-0
	Balance	000-0

October 19, 1792

Apostolic College of Guadalupe

Memorandum that P.P. Fr. Jose Mariano Roxo remits to P.P. Fr. Francisco Mariano de la Garza,
Minister of the Mission Nuestra Señora del Refugio de la Bahia

February 13, 1794

	Pesos-Reals
1 Box with 23 dozen dolls [<i>muñecas</i>]	12-4
4 Containers [vasos] of colored beads [<i>avalorios</i>]	4-4
2 pounds of vermillion @ 14 reals	3-4
38 Varas of shawls decorated with mother of pearl @9 reals and 2 pieces of <i>Camb.a</i> ¹ @ 6 pesos 2 reals	46-2
86 Varas of <i>Criolla</i> ribbon in 10 reals and 5 pieces of ribbon, of 7/8, @6 pesos 1 real	47-4
3 Dozen shawls from Puebla --- @ 11 pesos 4 reals	34-4
1 Dozen large knives [<i>navajas</i>]	2-0
10 Dozen rings [anillos] and 1 dozen toy tops [<i>trompos</i>]	2-0
6 Dozen dwarf-whistles [<i>pitos de enano</i>] @ 4 reals	3-0
[Transportation] charge for the cost of two mule packs from Mexico to the Missions	24-0
Charge of 14 pesos [to transport] two mule packs from the College to La Bahia	11-7
<u>Charge of 11 pesos 5 reals not paid by the College</u>	<u>11-5</u>
Amount [Importa]	214-5
Credit of 200-0 applied by Padre Vicario Roxo	
Credit of 14 pesos 5 reals remainder for Padre	
<u>Pedrajo to pay</u>	<u>214-5</u>
Balance	000-0

Apostolico College of Guadalupe
 Record of the supplies taken from the remnants by Padre Fr. Mariano Velasco and Fr. Francisco Puellas, Ministers of the Mission N.S. del Refugio de la Bahia

	Pesos-Reals
1 Box of 5 arrobas [125 pounds] of fine chocolate, @ 9 pesos	45-0
1 Box of 5 arrobas [125 lbs] ordinary chocolate @6 peso 4 reals	32-0
4 Habits with hoods and cords @ 9 pesos 2 reals	37-0
4 Pair underwear [<i>paños menores</i>] @ 20 reals	10-0
4 Small, fine, dust cloths from Puebla @ 7 reals	03-4
4 Pair Sandals @ 8 reals	04-0
1 Ream of paper	05-0
1 Mule pack of soap	25-0
1 Container [<i>bote</i>] with 6 lbs. snuff [tobacco powder] @2 pesos 4 reals	12-4
3 Boxes of grass mats and burlap 4 loads	04-4
Charge of 9 pesos for the repairs to a musket	09-0
Charge of 48 pesos for the freight on four mule packs	48-0
Amount due:	236-0
Charge for the mule packs brought to the R. Padre Commissary [Silva]; Charge for freight on one mule pack brought from Mexico to the missions	18-0
For 3 mule packs...@ 15 pesos from the College to the Missions	45-0
For 2 mule pack brought at 11 p.s from Saltillo to the Missions	22-0
For 3 mule pack of blankets, <i>zomts</i> ¹ and Chocolate @ 7 p.s to the college	21-0
For 2 mule pack from Saltillo to the missions @ 5 pesos	10-0
3 Boxes of grass mats [petates and burlap. . . .	05-4
Charge of 709 pesos and one real that this mission left unpaid <u>in the account of Fr. Jose Antonio Garcia of that mission</u>	<u>709-1</u>
Remainder to pass to the next account	1,066-5

February 13, 1795

Colegio Apostolico de Guadalupe

Record of the supplies entrusted to me by P. Comasario Fr. Manuel Julio Silva, which were taken by P. Fr. Francisco Puellas, Minister of the Mission N. S. del Refugio de la Bahia

		Pesos-Reals
4	Mule packs of leaf tobacco weighing 702 lb. net @ 3 reals	262-2
3	Funnel, a pump, and a venecian ¹ of tin plate	4-0
4	Habits with hoods and cords @ 10 p.s	40-0
3	Pair of underwear @ 22 reals	8-0
3	Pair shoes and sandals @ 9 reals	3-3
4	Fine small dust cloths from Puebla ²	3-4
2	Arrobas [50 lbs.] of spoiled bananas @ 3 p.s 2 reals	6-4
1	Arroba (25 lbs.) of sugar 4 p.s 2 reals	4-2
1½	<i>Almud</i> ³ of Garbanzos and 1/2 <i>arrobas</i> of rice ⁴	4-0
2	Boxes with 10 <i>arrobas</i> . ordinary chocolate @7 pesos 4 reals	75-0
1	Pound fine cinnamon	8-2
6	Varas Saya cloth red saya cloth @7 reals	5-2
30	Varas of color print cloth from Silecia ⁵ @ 5 pesos	20-5
1	Dozen of fruit preserves[<i>cajetas</i>]	8-0
2	Boxes of grass mats and burlap @ 12 reals	1-4
	Charge for the [freight] cost of six mule packs from Mexico to the missions @ 12 pesos	72-0
	Charge of 10 pesos for the silver flasks for the holy oils	10-0
	Charge of 13 pesos that I paid for freight for a box of relics	13-0
	Charge of 12 pesos, 4 reals for the [freight] cost of the said box from the College to the missions	12-4
	Charge of 6 pesos 5 reals owed by Padre Puelles from an old account	6-5
	Amount Due	568-7
	<u>Charge of 1,066-5 remaining from the previous account</u>	1,066-5
	Total	1,635-4

[Continuation of 2-13-1795 account]

		<u>Pesos-Reals</u>
	1,000-0 Credit, given to me by Jose Palacios	
	239-2 Credit given to me by Br. Joaquin Juanzli?	
	74-0 Credit given to me by Xavier Egua?	
	12-0 Credit given to me by Fr. Pablo Aguado	
	<u>74-0 Credit for some hides given to me at the mission</u>	
	<u>1,399-2</u>	1,399-2
	Balance to pass to the next account	236-2

Page 105

December 30, 1795

Apostolic College of Guadalupe

Record of the supplies that R. Padre Commisario, Fr. Manuel Julio Silva, put in my care, and those [supplies] Fr. Francisco Puellas, Ministers of the Mission N.S. del Refugio de la Bahia received in Boca de Leones

	Pesos-Reals
4 Mule packs of Tobacco weighing 715 lb. net @3 reals	268-1
For the freight of 29 arrobas 13 reals	
from Mexico to Boca de Leones ¹	45-7
1 Pair of pants [<i>calzones</i>] of sayal for Fr. Saenz	04-5
1 Pair of boots of sayal for the same	04-5
2 Small tunics of cotton cloth ² of <i>lanquin</i> from china for [Fr. Saenz].	06-2
1 Saddle with bridle and all the accessories	14-0
2 Boxes with 10 <i>arrobas</i> of fine chocolate @ 8 pesos 6 reals	87-4
3 Pieces of blankets [<i>manta</i>] of 7/8 @ 9 pesos 2 reals	27-6
2 Boxes of straw mats and burlap @ 12 reals	01-4
Charge for the [transportation] cost of 2 mule packs from Mexico to Boca de Leones @ 4 pesos 4 reals	<u>09-0</u>
Balance Due	468-1
Charge of 236 pesos 2 reals that remains from the previous account	236-2
Charge of 100 pesos that by his order I delivered to B.r Juanzli	100-0
<u>Charge of 10 peso that by my order was reduced from Jose Cruz's salary</u>	<u>10-0</u>
Total	814-3

[Continuation of account]

400-0 Credit, given me by Jose Palacio Romana	
50-0 Credit, given to me by the Sindico Miguel Calderon	
23-4 Credit, for a shroud and a tunic	
19-3 Credit, given me by Fr. Puelles in Boca de Leones	
55-0 Credit given me y the same Friar at the College	
20-4 Credit, given me by Don Ricardo	
97-3 Credit, paid by Fr. Puelles from his salary [<i>sinodo</i>]	
55-0 Credit that I put on account for the freight on two mule packs for hauling to the missions	720-6
720-6	Remainder due 93-5
Credit of 93 pesos 5 reals that I forgot that was not credited from the first that was received from B.r Juanzli	<u>93-5</u>
Zero Balance	000-0

Page 106

August 30, 1796

Apostolic College of Our Lady of Guadalupe

Record of what R. P. Guardian Francisco Gomarra sent to Padre Fr. Antonio Garavito and Fr. Diego¹² Saenz, Ministers of Mission N. S. del Refugio de la Bahia

		Pesos-Reals
1	Box with 5 arrobas of fine chocolate @13 pesos 2 reals	66-42
1	Box of grass mats and burlap @ 12 reals	01-4
4	Habits with hoods and cords @ 9 pesos	36-2
4	Pair of sandals and shoes @ 6 reals	04-2
8	Pair of Pueblan dust cloths ¹ @ 10 pesos	06-0
4	Pair of underware of <i>Lanquin</i> @ 2 reals	10-0
1	Box grass mats and burlap @ 14 reals	01-6
Charge of 27 pesos for the cost of 6 mule packs @ 4 pesos hauling to Saltillo		27-0
Charge of 24 pesos that I paid for freight of the glass ² <u>that Jose Palacios sent from Mexico with the order that it be paid 24-0</u>		<u>24-0</u>
Amount due		177-2
Credit of 177 pesos 2 reals that ---María Luiza Escalona <u>left as a donation</u>		<u>177-2</u>
Zero Balance		000-0

August 30, 1796

Apostolic College de N. S. de Guadalupe

Record of what R. P. Guardian Francisco Gomarra sent to Manuel Julio Silva, without prices, at the account of the College

	Pesos-Reals
4 Arrobas [100 lbs.] of fine chocolate	X
1 Habit of sayal cloth and two tunics with cords	X
2 Pair of sandals	X
2 Pair of underwear [<i>paños menores</i>]	X
4 Dust cloths [<i>pañuelos de polvos</i>]	X
2 Large blankets	X
1 Ream of paper	X
1 Container [<i>bote</i>] of snuff	X
5 Pounds of wax from Campeche, sent by Jose Palacios ¹	X
1 Small box and two shipments [<i>embios</i>] that Doña Narcisa sent	X
1 Small box that her brothers sent	X
1 Neck wrap [<i>emboltorio de garganta</i>], that Doña Ignacia Man.ro	X
All the above was shipped in the loads recorded in the previous account.	

September 3, 1797

Apostolic College of N. S. de Guadalupe

Record of what R. P. Guardian Francisco Gomarra sent to Antonio de Jesús Garavito, Minister of the Mission N. S. del Refugio de la Bahía

No. 5		Pesos-Reals
3	Arrobas [75 lbs] of fine chocolate @ 15 pesos 3 reals	46-2
2	Habits with hoods and cords @ 9 pesos 1 real	18-2
2	Pair underwear of <i>Lanquin</i> @ 23 reals	05-6
2	Pair dust cloths, poblanos ¹ @ 6 reals	01-4
2	Pair of shoes and sandals @ 8 reals	02-1
1	Pound of incense from Castilla @ 10 reals	01-2
	2 Mule packs of tobacco with 355 lbs. net @ 3 reals	133-1
1	<u>Box grass mats and burlap of 3/3</u>	<u>02-2</u>
	Amount Due	212-4
	Credit of 212 pesos 4 reals that Doña Maria	
	<u>Luiza Escalera donated</u>	<u>212-4</u>
	Zero Balance	000-0
 General Summary from 1792 to 1797 		
	Charges	2, 968-1
	<u>Credits</u>	<u>2, 968-1</u>
	Balance	0,000-0

Page 108

July 19, 1803

Notes of the supplies that R. P. Guardian Ignacio del Ríó sent to P. Friar Marcelo Gaitán [sic], Minister of the Mission N.S. del Refugio with Mark and Number.

	B. No. 2	Pesos-Reals
2	Habits with hoods and cords @ 9 pesos 4 reals	19-0
3	Pair of sandals @ 1 peso	03-0
3	Arrobas (75 lbs) good chocolate @ 12 pesos	36-0
3	Loads leaf tobacco with 462 lbs. net @ 20 reals	202-1
1	Box grass mats and burlap @ 7 pesos	07-0
	For freight on 4 mule packs from Saltillo @ 20 reals	70-0
	Amount Due	271-1

Page 108

August 16, 1805

Apostolico College of N. S. de Guadalupe

Today, R. P. Guardian Fr. Juan Bautista Larronda sent Fr. Manuel [sic] (Marcelo) Gaitan, Minister of Refugio the following supplies

F. with the mark "C No. 3"

	Pesos-Reals
3	Arrobas [75 lb] of common chocolate @ 14 pesos 42-4
2	Tunics, habits @ 9 pesos 4 reals 19-0
1	Ream of paper @ 13 pesos, 1/4 arroba of wax @ 4 pesos lb = 22 pesos 35-0
2	Pair small cloths (from the load of Father Noreña 08-2
2	Pair Sandals @ 1 pesos 02-0
1	Box of coats and tie-strings [lias] 01-4
	Total 108-2
	<u>Charge from the previous record</u> 271-1
	Subtotal 379-3
	Also, a charge of 4 pesos 4 reals freight paid from here to Saltillo from the interior 04-4
	Remainder 383-7
	<u>Credit of 271 pesos that was sent by Captain Francisco Pereira</u> 271-0
	Owed 112-1
	He also owes 14 pesos for a habit that was sent in the load of Padre Solorzano in May 1806 14-0
	In the mule pack of the same [Solorzano] he was sent two mule packs of tobacco with a net weight of 262 lbs. 114-5
	<u>Also [a charge] for freight paid at Boca de Leones and a ----</u> 10-0
	Remainder to passed to the following account 251-4

Page 108v

Apostolic College of N. S. de Guadalupe, August, 1807

Memorial remitted by R. P. Guardian Fr. Juan Bautista Larrondo to P.P. Fr. Jose Manuel Gaitan at the Refugio Mission.

<u>three loads [tercios], two tobacco and one box</u>		
2	Mule packs tobacco with 302 lbs. net at 3 reals	132-1
1	Habit, tunic and two hoods	23-4
	1984 Arrobas chocolate @ 14 pesos 6 reals;	
	1 ditto worked wax 39 pesos	68-4
1	Box, 2 reals; coats from the 3 mule packs, 2 pesos 7 reals	3-1
	Sum	227-2
	Owed from previous accounts	251-4
	Total to add to charges on the following account	478-6
	On the 27th of July, 1807, Antonio robledo remitted a pay-order [libranza] of 241 pesos 32 reals from the account of P. Padre Gaitan those he credited on August 13th of the same.	
		211-3
	Remainder	237-3

Apostolic College of N. S. de Gualalupe Agosto 15 1808

Memorial remitted by the R. Guardian, Fr. Francisco Puelles to Fr. Jose Manuel Gaitan, minister of Refugio Mission

2 Tercios		
1	Mule pack with 159 lbs. net Tobacco 3 1/2 reals	69-4
10	Varas silk cloth @ 3 pesos; 10 varas rough [rasa]	
	27 pesos 4 reals	57-4
4	Varas cloth [saya] @ 1 peso; 20 varas bright braid [galón brillante] 24 pesos 2 reals	28-2
24	Jesus' y Marías, gilded, 29 pesos 5 reals	29-5
1	Box. Coats and ties and two hats	8-0
	Total	193-0
	Owed from the previous accounts, as shown above	237-3
	Total owed to add to following accounts	430-3
	Credit remitted by Antonio Robledo	430-3
	Zero Balance	00-0

Apostolic College of N. S. de Guadalupe Augusto 1 1809

Memorial remitted by the R. Guardian, Fr. Francisco Puelles to Fr. Jose Manuel Gaitan, minister of Refugio Mission

2	Mule packs and a one extra	
<u>2</u>	<u>Mule packs of tobacco with 303 lbs. @ 3 1/2 reals</u>	<u>132-4</u>
	To the next page	132-4

Page 109

	Sum from the front	132-4
<u>2</u>	<u>Tunic habits @9 pesos; 2 pesos for coats and ties</u>	<u>21-0</u>
	Owed, to be added to the next account	153-4

Page 109

Apostolic College of N. S. de Gualalupe August 27, 1810

Memorial remitted by the R. Guardian, Fr. Saenz to Fr. Jose Manuel Gaitan, minister of Refugio Mission de la Bahia

Three mule packs and one extra, No. 4 to 7	
Two mule packs with 358 lbs. gross weigh that yields 292 lbs. net of tobacco in leaf.	127-6
Fifty lbs. of fine chocolate	42-4
One <i>arroba</i> of wax and 1 ream of paper	23-3
4 pesos of cigars, one shepherd's blanket, 9 reals, coats with tie-strings, 31 reals , and a box	9-6
	<u>203-3</u>
	<u>For Padre Sepulveda</u>
2 habits @ 14 pesos 4 pair of sandals @ 1 peso	
Also, 100 pesos he took when he sent from the college to the mission	32-0 + 100 =
	<u>132-0</u>
	Sum Owed
	333-3
Also charged is 153-4 pesos he owes from a past-due account above	<u>153-4</u>
	Total owed
	488-7
On October 24, 1812, for what Señor Robeledo sent by means of Fr. Huerta	<u>25-7</u>
	Remainder owed
	262-7
On January 24, 1816, thirteen pesos were charged for a habit and cape that the servants brought to Fr. Vallejo	<u>13-0</u>
	Owed
	275-7
<u>Padre Huerta paid the 275 pesos 7 reals</u>	<u>275-7</u>
	Zero Balance
	000-0

Endnotes

- ¹ Neither this word nor its variants are in the dictionaries. It was obviously a type of cloth - perhaps wool because of the prefix "*lan*" as in *lana*, or wool.
- ² Although "*tercio*" literally means "one third," in this context it means each of the two packs of cargo carried by mules, or other beasts of burden, in pack trains. *Encyclopedia Universal Ilustrado*, vol. 60, p. 1183. Hence, "*tercio*" is translated as "mule pack."
- ³ Probably "*cambray*," a type of white linen of Cambray, France.
- ⁴ Meaning of abbreviation uncertain.
- ⁵ *Beneciana de oja de lata*.
- ⁶ *Polvos finos Poblanos*.
- ⁷ Twelve almuds equals one fanega which equals 1.6 bushels.
- ⁸ Fractions are uncertain; 12 almuds equals 1.6 bushels
- ⁹ Silecia is an area of Poland.
- ¹⁰ Present town Villadama, north of Monterrey, in the state of Nuevo León.
- ¹¹ *Manta* - ordinary cloth made and used in Mexico (DMI, p. 971).
- ¹² José María Saénz, supernumerary at Refugio Mission, 1794-1799.
- ¹³ *Paños de polvos Poblanos*.
- ¹⁴ The abbreviation "*vid.s*" appears to refer to glass.
- ¹⁵ Word appears to be "*sera*," "*cera*" wax.
- ¹⁶ Poblanos—Made in Puebla.

Appendix A

Mission Refugio Inventory

Section 3

Inventory of Mission Refugio, 1820

Appendix A: Inventory Section 3

Refugio Mission Inventory, 1820

David R. McDonald

Church

In all of its construction, images, adornments, the church is as it was described in the preceding inventory, done in the year 1818.

Sacristy

Regarding its construction, the roof is missing a piece about a half-vara in width and length that resulted from the windstorm that happened in September 1818. In the line of cloth items and other things that used at the church: 8 small bells, 26 corporal cloths,¹ 7 works of sculpture,² everything else described the previous inventory, with the addition of a pair of altar cloths, an altar cloth or frontal, a solertera made of yellow silk for the altar of the Sma. Virgin del Refugio. Two veils of chambray for the niches of the Señores Arcangelas that are at the side of the Virgin. A diamond with its metal ring for cutting glass, six glass flasks, and eight glass bottles.

Ties³ for the Virgin that are not listed in the previous inventory, and another offered later of the most precious are the following: two *cuerpitos*,⁴ six *cabescos*, five eyes, one sharpening stone [*muela*], a bench, a hand doll, two legs, two feet, two hearts large and small made of gold, a complete body also of gold, a [word illegible] of [//2] silver for the small image of the Archangel Raphael and four stars of the same for the mantle of the Most Serene Virgin. There are also two quartz jars, large and medium⁵ and a [word illegible] made of the same. An arroba of wine to celebrate Mass; wax, both carved and uncarved, six arrobas six pounds.

[Translators note: this inventory notes above that the description of the church was omitted, saying that it was the same as stated in the previous, 1817 inventory. The following is the description of the church taken from that 1817 inventory:]

It is built with stone and lime, being twenty-one varas long and eight in width, with its corresponding height. It has four doors, the principal of which had two wings is made of red cedar⁶ with boards of cedar and two iron security bolts. The door on the side is also made of red cedar boards, with a lock, key, and a security bolt below. The two doors of the sacristy...have one wing and are made of oak and cedar with lock plates, key and iron latch. The sacristy also has four windows...of the choir...boards of oak with a lock, security bolt and three with boards and wire screens...

The church is vaulted with wood upon which is an over-roof of double boards secured with iron nails. On the roof, toward the front, is a small, octagonal, shaped wooden tower. In front is a small cemetery made of stone with a wooden cross in the center. An arch stands at the cemetery's entrance and two smaller arches are positioned on the sides.

The choir of the church is formed by four beams that rest on mahogany brackets. Its floor is made of red cedar and cedar, its cross bar⁷ and bars of red cedar and oak, door that opens and closes and covered stairway, with crossbar. It is three varas wide, in it there is an [illegible] for the singers and a wooden ladder...that goes up to the bell loft, which has its door. Inside there are six bells of various sizes, even though all medium sized with their corresponding ringers.⁸ By the door of the side of the church, is a copper bowl for holy water that sits on a wooden pedestal.⁹

Convent

It is formed by a small portal made of stone and mortar that serves as the entrance of the house, with its door and key. On one side of it is a room five varas square roofed with beams and wooden planks that make up the upper floor, which is the same in height [five varas] and made of the same material [stone and mortar]. Its covered stair is made of wood planks and an corresponding crossbar. At the end is a wooden partition¹⁰ with a wooden door that has a lockplate, key, crossbar, latch all made of iron. The upper floor is roofed like the lower one except that it had wooden deck¹¹ sealed with pitch¹² with two long wooden canals that carry away rain water. Between the two dams [the wooden canals] are four doors, three of which are built with two wings and have locks and keys, except for one that only has an aldaba three windows, one with two wings and all have *aldabas*.¹³

Through the room below you enter the main room made of stone and mortar. It is twelve varas long and five wide with its corresponding height. It is roofed with beams and a deck with...[three words illegible] the deck fastened with iron nails begun to repair what was knocked down from the over-roof by the mentioned wind storm. In addition to the doors already described, this main room one door with two wings and a postern,¹⁴ with a platelock and key. There is a window with two wings and flying bars¹⁵ and *aldabas*. In these rooms are the following furniture.

First, there is a stand embedded in the wall. In the room is a table covered with black leather with a drawer, Iron *manigeras*,¹⁶ two iron screws for a letter press, a metal inkwell with a sand shaker¹⁷ and tin box for sealing wax.

In the said box is a disassembled telescope... A small box with three shaving razors with a stand, scissors, and bottle of oil for shaving. Also a wooden bench and stand that serves to hold the following books:

Library Books	Volumes	Library Books	Volumes
Beyfertudel	3	Fr. Luiz de la Puente	1
Biblia Saera	5	Description de la Indias Occidentales	1
Biegra	8	Montenegro	1
Piton	4	Padre Parra	1
Sintanemigo	4	Sumario de Indulgencias a los Cofrades de San Agustin	1
Leyes de Recopilacion de Indias	7	Homo Apostolicus	1
Politica Indiana	2	Sigilatio Ingratitudinis	1
Corega	3	Curia Ecclesiatica	2
Barcia	18	Benegas Medicina	
Ferrario	4	Florilegio Medicina	1
Sporer	2	Centinela Contratos	1
Potestas	2	Molina de Sacerdotes	1
Ligorio	2	Cronicon	1
Forresilla	2	Panegricos de San Francisco Xavier	1
Asemberger Sup.to de Teologia Moral	1	Paradoxas Físicas	1
Concina	1	Regla Serafica	1
Bocabularios de Castejon	2	Burdalue	1
//4 Oraciones varias Fr. Manuel Guerra	1	Arbol Manual de Sacerdotes	1
La V[enerabl]e Madre Agreda tres tomos grandes y quatro chicos	7	Larraga	2
Concordancia de la Biblia	3	Gobierno de Regulares de America	2
Calmet	1	Candeleros Bosco	1
Alamin	2	//5 Apologia de Confesores y Predicadores	1
Bocabulario de Nebrija	2	Antonio Natal de Celesti Conversatione	1
Nuevas Indias Alabansas de Maria	1	Escoto Moral	1

Library Books	Volumes	Library Books	Volumes
Kempis Religioso	2		
Acosta de Promulgando Evangelio	1		
Troxes Doctorum	1		
Martines Libreria de Jueces			
Resoluciones Morales y Canonicas	1		
Voz del Pastor	1		
Quaresma del Padre Seneri	2		
Flores Bibliorum	1		
Principios Geograficos	1		
Concilio de Trento	1		
Fabula Venistionum	1		
		de Nuestro Señor de la Luz	
		Carta Apologetica en Fefensa del Titulo	1
		Figuras de la Biblia	1
		El Sabio Prodigio	1
		Galindo Rubricas	1
		Ascargorta Compendio Moral	1
		Manual del Padre Garcia	1
		Opusculo Serafico	1
		Estatutos para los Misioneros de Pachuca	
		Explicacion de Terminos	1
		Epistolas p.a la Conversacion de Nuestro Padre Margil	1
		Llanto de las Aves	1
		Compendio de Resoluciones Morales	1
		Una Obra Año Christiano en dose Tomos	18
		Meses y Seis de Dominicus	
		Egercicios de San Ignacio	2

There is also a bottle, a large balance scale and another medium one with their weights. Two large padlocks with keys plus iron hobbles [or shackles] a large tambourine, a *xallo*¹⁸ of tin plate, an iron clock incomplete and inoperable, a brass container with four hundred twenty musket cartridges, and six for cannon with their corresponding bullets and shrapnel,¹⁹ that were authorized by Governor Antonio Martines (which record is preserved in the archive of the Presidio of La Bahia) which he delivered to me with the provision that the [armaments] be accountable to the number on record at the supply office of the Presidio, until such time as they may be removed to other places, and the record [of the armaments] changed to correspond to their new location. Two mattresses with benches and boards, two sheets, six pillows with pillowcases, and a cot. Two brass pitchers and one large copper receptacle, a large table made with boards of mahogany [*caoba*], a small table made with red cedar, two benches, a oak arm chair, and nine with reed seats, a wooden framework that is used as a “burro” to raise the chair [saddle]. Two vara bars for measuring, a small bronze balance with a iron pointer²⁰ and an incomplete set of weights, a wooden cross²¹

//7 another small cross from Jerusalem mounted on metal with a crucifix of the same. Four remainders of silk, six boxes, large and medium sizes, all with lock plates and keys, two boxes, a[word illegible] to keep colors, two medium bottles of Chi oil, four masons’ trowels, with two plumb bobs, and a masons’ stone hammer, six pair of shearing scissors, eight branding irons, [word illegible] six bars, ten hoes, two and one medium iron bars, an arroba and six pounds of iron for whatever use, three pounds eight ounces of steel, a dismantled loom with combs and other necessary parts for making blankets and cloth, a deteriorated table with *clapa*,²² an English saw for making boards, two of the same small—one an arm saw and two handsaws, a jack plane,²³ a jointing plane,²⁴ two carpenters’ squares,²⁵ a template pattern,²⁶ a box with a plane, another box with a grooving tool,²⁷ two adzes,²⁸ a wood rasp, three chisels, a crowbar, a rope-twist auger,²⁹ two carpenters’ gauge,³⁰ and seven hatchets for all purposes. Some tongs,³¹ , a pair of small [blacksmiths’] pincers for linking,³² a small machine to de-seed cotton a small stand, a load [*tercio*] of salt half from la Barra and the other half from Oso, fifty pounds of tobacco from exterior lands , a food stall,³³ a small box with a compass (mariners needle), another with eyes of all sizes for saints [statues], a silversmiths’ drill, an English triangular plow point, a bronze chamber [pot?].³⁴

The said room that enclosed all of the foregoing is built as a chamaquero on three sides, with a door and key—in which also is kept the six iron crowbars³⁵ and five points of the same for use in the field.

//8 Outside of these are nine structures that enclose the patio's square.

The first, a small one, serves as a commons.

The second is for weaving;

The third as a granary, in which the poles are kept that serve a the foot of the loom and two benches with their spinning wheels and another bench of the said little mill,³⁶ and six fanegas of lime. It has a door and lock.

The fourth serves as a dispensary, and it contains a somewhat deteriorated table with six drawers that hold the ornaments from Rosario Mission and a wooden stand.

The fifth structure functions as the kitchen and contains the following; a chest with key, two pair of mantels, three napkins, eleven covers, twelve forks with black handles; twenty with white handles, two large [forks] with three ladles, four table knives, a bronze platter and plates and quartz plates—twenty-one of the former from Puebla, a soup plate, a quartz jug³⁷ and cup of the same material, three [word illegible] sheathed with tin, a box with *piez*, four metates with manos, an iron frying pan with handle, seven pots made of strained iron³⁸ of all sizes, a small copper pot,³⁹ a iron comal and another of copper with strips of iron,⁴⁰ an iron roaster with a hook,⁴¹ four cauldrons⁴² some sound others deteriorated, two *casos*⁴³ one of which is sound, a large copper with a lid—all of copper and three small ones; a small pot made of copper; two trays in poor condition; a small hatchet to chop meat, a large iron shovel for coals and a

//9 bronze syringe, a *amires*⁴⁴ with handle all of copper, a wooden hoop⁴⁵ for candles, a small chest with odds and ends pieces of glass, a metal Christ, two barrels for water, a bronze [basin] for shaving, three wooden spoons, a copper brazier for bringing coals to the table, and two small crystal salt shakers. Like the storehouse, [the kitchen] has a plate lock and key.

The sixth structure is small and is the chicken coop⁴⁶ in which are kept about 100 boards.

The seventh, serves as the blacksmith shop. It has a fireplace or forge, a pair of bellows with their corresponding air pipes, anvil and vise, an iron lid three iron tongs, two medium hand hammers and another that the Indians have, two large hammers one of which is to pound iron, and the other of about 125 pounds for splitting stone, seven files large and small, a vise⁴⁷ —a tool to smooth holes made in iron,⁴⁸ a drill, three chisels, [the building has] a [lock]plate and key.

The eighth had a lock and key and is also used with the blacksmith shop.

The ninth, which has a door, lock and key, is for guests. It has a bedroom and window, with an iron lock, that looks outside. All nine structures are *chamaqueros*.

To one side of the square is a false door with a its door and iron lock. In a corner of the square there is a stone and mortar basin that has a bottom made of copper that is undamaged for making soap, it has its corresponding wooden channels for distilling and receiving lye [*legia*]. Next to the basin are two stone ovens used for the kitchen, and in the corner formed by the church and sacristy a small orange tree is planted.

//10 On one side of the convent is a an area enclosed by a wooden fence. One half is planted to tobacco; in the other half are fruit trees: grapes, pomegranates, peach, and figs. To one side is the corral, which is the same length as the garden, and is also closed by a wooden fence. Also there are two carts, equipped with yokes and traces. There are ten plows, seven more yokes, with six yokes of tame oxen.

The plaza of this mission is formed by fifteen *chamaqueros*, which are connected one to another by wooden stockades for protection against enemies.

Agriculture and Livestock

In the field are two and one half fanegas of my crops that are ripe and one fanega that is ripening.⁴⁹ In this mission's pasture, according to the determination of the corporal, there are 400 cows. Of these 100 have calves and 100 are bulls, and there are 200 that are somewhat manageable in the roundup.⁵⁰

Nineteen horses and one mule, all tame, and two wild⁵¹ horses that are in the remuda.

Sixteen more horses and mules, both tame and wild.⁵² These are on record as having been gathered by the good men of the Congregation of Refugio, who gave them to me as a donation.

A sow with two female piglets, and two mature males.

I note that

// 11 in the year 1818, the Reverend Friar Francisco Frejes, President of the Missions at the time, took thirty head of cattle with authorization from Fr. Francisco Jaudenes, or Father Pueyes, and he was to have paid this mission for the stock when he received his stipend, but the debt is still unpaid.

To what is in the fifth structure, I add thirty notebooks of blank writing paper, the four books of the parish, a book of accounts of the servants, a quartz jug,⁵³ four pounds of cotton, three cords [cordeles], and a shirt for processing tobacco,⁵⁴ five measures [*pesos*] of soap, two iron sickles for cutting grass.

The mission owe the servants thirty-four pesos three reals and two eighths, as recorded in the accounts of the said notebook.

Finally, there is a box that serves to keep the papers of the archive. Among which there are the following receipts in favor of this mission:

One for	1,035 [pesos]	
Another for	744	
Another for	344	
Another for	260	
Another for	700	
Another for	271	
		3,354 to the next page
//12 from the previous page		3,354
Another for		460
Another for		120
Another for		234-4
Another for		260
Another for 67 cows at a price of 10 pesos each for a total of 670 pesos minus a credit of 62 pesos		
6 reals gives a total of 606 pesos 1 real		606-1
Another for		12
		5,116-5 ⁵⁵

All that is contained and expressed above with the said Mission Nuestra Señora del Refugio Fr. José Antonio Díaz de León delivers up to his College of Our Lady of Guadalupe of Zacatecas, in whose name it is received by its Father Minister, Fr. Miguel Muro, and we signed [the inventory] at the said mission on the eighth day of August, of the year 1820.

[signed] *Fr. Miguel Muro*

[signed] *Fr. José Antonio Díaz de León*

[Translator's note: this addition made at the bottom of the page; change in handwriting.]

I removed the 12 Meses and G. Dominica there are other volumes of Año Christiamos that R. R. Fr. Manuel Gaitan gave me... April, 16-1830

[signed] *José Antonio Díaz de León*

Endnotes

- ¹ *Corporales* - cloth used in the Eucharist.
- ² *Tallas*
- ³ *Precintas*.
- ⁴ Probably small statues of Christ.
- ⁵ *Dos xaros [jarros] de pedernal*.
- ⁶ MS says “*sabino*” - savin.
- ⁷ *Pasamano*.
- ⁸ *Lenguas*.
- ⁹ Inventory of Nuestra Señora del Refugio Mission, 9-10-1817, Zapópan Microfilm Roll-1 Frames 425 ff.
- ¹⁰ *Cancel*.
- ¹¹ *Tablazon*.
- ¹² *Embetunada*.
- ¹³ *Aldaba* - can be a crossbar, bolt, or door knocker.
- ¹⁴ *Postigo* - can be a smaller door with a larger one.
- ¹⁵ *Rejas voladas*.
- ¹⁶ Meaning not clear. *Manijera* refers to a person whose job is to obtain workers.
- ¹⁷ *Salbadera*
- ¹⁸ *Xallo* (or *jallo*) - meaning uncertain.
- ¹⁹ *Válas y metralla*.
- ²⁰ *Fiel de fierro*.
- ²¹ *Una cruz de granadilla* - “*granadilla*” refers to wood that could be tamarind, ebony, or rosewood, black wood.
- ²² Name of a plant also called, *tlapate*. Meaning uncertain in this context.
- ²³ *Garlopa*.
- ²⁴ *Juntera*.
- ²⁵ *Codal* - can also refer to saw handle or a mason’s level.
- ²⁶ *Escantillon*.
- ²⁷ *Acanalador*.
- ²⁸ *Azuelas*.
- ²⁹ *Barrena de tor zal*.
- ³⁰ *Gramiles*.
- ³¹ *Alicates* - can also refer to pliers or pincers.
- ³² *Tenacitas para engarzar*.
- ³³ *Almuracero* - probably a variant of *almuceria*.
- ³⁴ *Una camera de bronze*.
- ³⁵ *Seis gatos de fierro*.
- ³⁶ *Dos bancos de los dos tornos con sus ruedas y mas un banco de dicho molinito...*
- ³⁷ *Un xarro [jarro] de pedernal*.
- ³⁸ *Siete oyas de fierro colado...*
- ³⁹ *Caldereta* - possibly refers to the small copper pots used to prepare chocolate to drink.
- ⁴⁰ *Otro de cobre afixando con sintas de fierro...*
- ⁴¹ *Garabato*.
- ⁴² *Peroles*.
- ⁴³ *Cazos*.
- ⁴⁴ Not found in dictionaries.
- ⁴⁵ *Un aro de madera para belas*.
- ⁴⁶ *Gallinera*.
- ⁴⁷ *Tornillo de marca*.
- ⁴⁸ *Escariador*.
- ⁴⁹ While the fanega was a dry measure(about 1.6 bushels), it was also used to indicate the area of land that a fanega of grain would plant.
- ⁵⁰ ...que algo obedecen el rodeo.
- ⁵¹ *Dos caballos correreras*.
- ⁵² ...caballares y mulares mansas y correreras,
- ⁵³ *Jarro de pedernal*.
- ⁵⁴ *Una camisa para beneficiar tobacco*.
- ⁵⁵ The correct total of these figures is 5,046 pesos, 5 reals.

Appendix B

Mission Refugio Baptismal Records

Section 1

Baptismal Records of Mission Refugio, 1807 to 1828

Note: Mission Refugio Baptisms, 1807 to 1828, located on Volume I - CD as 00B1-Ref App B1a.pdf.

Baptismal Reference

1. Volume II of Baptisms, Conferred at the Mission of Our Lady of Refuge (de la Bahía), from the year 1807 to 1828, Carlos E. Castañeda Transcripts. Used with permission.

Baptismal Records for Mission Refugio 1807 to 1828

Name	Date	Age	Sex	Ethnicity	Parents	Sponsors	Notes
Maria Joseph Yrison (Yrinoa?)	Apr. 12, 1807 ¹	16 days	female	Karankawa/Pihuique	Manuel (Karankawa) and Refugia (Christian Pihuique)	M. Juan Rosales and Eulogia Marin	(Re: parents "children of this Mission"), (Re: sponsors "from Nacogdoches")
Maria del Loretto	Sept. 5, 1807	8 days	female		Pedro Martinez and Maria Luisa Rangel	Antonio Vasques and Josefa Mora	(Re: parents "inhabitants of this Mission"), (Re: sponsors "from La Bahía")
Jose Maria de Pilar	Oct. 12, 1807	25 yrs	male	Karankawa	Karankawa (already deceased)	M. Juan Rosales	(Re: individual "first known among the Lipans") (Re: sponsor "from Nacogdoches")
Jose Crisanto	Oct. 25, 1807	3 days	male	Copan/Karankawa	Crisonomo (Copan) and Maria del Refugio (Christian Karankawa)	Faustino Salazas and Margarita Campa	(Re: parents "children of this Mission"), (Re: sponsors "inhabitants of this Mission")
Jose Martin Antonio	Jan. 19, 1808	2 mos	male	Karankawa	Jose de Jesus (Karankawa) and "a pagan of the same nation"	Martin Gomez and Trinidad Chirino	(Re: sponsors "inhabitants of this Mission")
Juan de la Cruz	May 12, 1808	9 days	male	Guapit/Karankawa	Francisco (Guapit) and Maria (Christian Karankawa)	M. Juan Rosales and Eulogia Morin	(Re: parents "children of this Mission"), (Re: sponsors "from Nacogdoches")
Jose Trinidad	June 12, 1808	6 days	male	Karankawa/Pihuique	Manuel (Karankawa) and Refugia (Pihuique)	M. Juan Rosales and Feliciana Ybarro	(Re: parents "christian children of this Mission"), (Re: sponsors "from Nacogdoches")
Jose Arborio(?)	June 12, 1808	3 days	male	Karankawa/Pamaque	Luna (pagan Karankawa) and Barbara (Christian Pamaque)	M. Juan Rosales and Feliciana Ybarro	(Re: parents "children of this Mission"), (Re: sponsors "from Nacogdoches")
Maria Manuela	June 20, 1808	5 days	female		Faustino Salazar and Margarite Campa	Mathiana de los Santos	(Re: individual "Died"), (Re: parents "inhabitants of this Mission"), (Re: sponsor "from La Bahía")
Maria Assumpcion	Aug. 16, 1808	40 yrs	female	Karankawa	Jose Rosaris (deceased) and Maria Dominga (both Christian Karankawa)	M. Juan Rosales	
Maria Pacifica	Sept. 25, 1808	1 yr	female	Karankawa	Juan Diego and his wife (both pagan Karankawa)	Faustino Salazar and Margarita Campa from the Mission	
Jose Lino	Sept. 25, 1808	4 yrs	male	Karankawa	Juan Diego and his wife (both pagan Karankawa)	M. Juan Rosales and Eulogia Morin of Nacogdoches	
Juan Jose	Oct. 15, 1808	4 mos	male	Copan/Karankawa	Pedro Antonio (Copan) and la Chata (pagan Karankawa)	Jose Chirino	
Juana Maria Barbara	Oct. 23, 1808	2 mos	female	Copan/Karankawa	Jose Miguel (Christian Copan) and "Gordita" (Gondita?) (pagan woman, daughter of Diego, Captain of the Karankawa nation)	Juan Francisco Alvarado and Maria Antonia Trevino	
Cecilio Antonio	Nov. 25, 1808	4 days	male		Ricardo Lopes and Maria Jacinta de Nava	Xavier Vasquez and Maria Trevino	(Re: parents "inhabitants of this Mission")
Pedro Alexandrino	Nov. 26, 1808	19 yrs	male	Karankawa/Copan	unnamed father (Christian Karankawa) and Maria Tacoba (Copan deceased)	M. Juan Rosales	
Maria Timothea	Feb. 2, 1809	11 days	female		Pedro de Luna and Serafina Trexo	Jose Manuel Nandin and Juana Maria de Leon of La Bahía	(Re: parents "servants of this Mission")
Maria Dorothea	Feb. 6, 1809	14 days	female	Karankawa/Copan	Jose Maria del Pilar (Karankawa) and Maria Concepcion (Copan)	Jose de Laso and Maria Dolores Sais of this Mission	(Re: parents "children of this Mission"), (Re: translation "Died on the coast")
Maria Bernarda	Feb. 16, 1809	17 yrs	female	Karankawa	Captain Diego (Christian Karankawa) and Josefa (pagan Karankawa)	M. Juan Rosales	Adult daughter of Captain Diego

Baptismal Records for Mission Refugio 1807 to 1828

Name	Date	Age	Sex	Ethnicity	Parents	Sponsors	Notes
Jose Hilario	Feb. 25, 1809	8 days	male	Karankawa/Cujan	Manuel (Karankawa) and Juana (Cujan)	Casimiro Morin and Elisia Morin	(Re: parents "children of this Mission"). of Nacogdoches
Maria Hilaria	Feb. 25, 1809	8 days	female	Karankawa	Leal and Larga (both pagan Karankawa)	Jose Dolores Benites and Maria Josefa Vasquez (servants of this Mission)	
Juan de la Santissima Trinidad	May 27, 1809	23 yrs	male	Karankawa	pagan Karankawa parents - deceased	Don Juan Antonio Espinosa	
Antonio	June 20, 1809	7 days	male	Malaguite/Pajalachi	Thomas (Malaguite) and Francisca (Pajalachi)	Vicente Zamora (corporal of the Villa de Honos and Quitarora Seballas)	(Re: parents "children of this Mission").
Maria Francisca Heduvigis	Oct. 30, 1809	3 days	female		Jose Laso and Bernarda Sais of La Bahia	Bartelo and Dolores Sais	
Maria Isabel	Nov. 5, 1809	6 yrs	female	Karankawa	unnamed pagan father and Maria Dominga (both Karankawa)	Pedro Tereda(?) (Texeda?) and Maria Catarina Villareal	
Jose Santos	Nov. 5, 1809	10 yrs	male	Karankawa	unnamed pagan father and Maria Dominga (both Karankawa)	Pedro Texeda and Maria Catarina Villareal	
Maria Leo(e?)adia	Dec. 30, 1809	4 days	female	Cujan	Pedro Alexandrino and Maria del Loreto (both Cujan)	Ricardo Lopes and Isidora Lopes	(Re: parents "children of this Mission").
Maria Petra	Jan. 27, 1810	10 days	female	Copan	Maria Dolores (widow, Copan) and father (unknown)	José Sais and Dolores Sais	
Juan Chrisostomo	Jan. 27, 1810	15 days	male	Karankawa	Vicente Antonio and Maria Gregoria (both Karankawa)	Ricardo Lopes and Isidora Lopes	
Jose Apolonio	Feb. 9, 1810	9 days	male		Faustino Garcia and Margarita Vasques	M. Juan Rosales and Maria Feliciana Ybarro	
Maria Petra	Mar. 14, 1810	16 years	female		Parents (pagan, already deceased)	M. Juan Rosales	(Re: individual "named Leolao in the language of her nation, signifies <i>squint-eye</i> ") (Re: sponsor "inhabitant of Nacogdoches").
Maria Ana Patricia	Mar. 17, 1810	9 days	female	Tobosa/Karankawa	Jose Maria (Tobosa) and Prudencio (Karankawa)	Antonio Vasques and Mariana de la Garza	(Re: parents "children of this Mission"). (Re: sponsors "of the Presidio of La Bahía")
Jose Patricio	Mar. 17, 1810	5 years	male	Karankawa	Mother "La Larga" (pagan Karankawa) father not named (pagan Karankawa)	Antonio Vasques and Mariana de la Garza	(Re: sponsors "of the Presidio of La Bahía")
Jose Francisco	April 12, 1810	5 days	male	Copan/Karankawa	Pedro Antonio (Copan) and la Chata (pagan Karankawa)	Juan Jose Albarado and Maria Agreda Martines	(Re: sponsors "of the Presidio of La Bahía")
Juan Augustin	May 6, 1810	4 mos	male	Karankawa	Juan Diego and his wife (both pagan Karankawa)	Dolores Sais	
Jose Simon	May 6, 1810	8 days	male	Karankawa	Jose de Jesus and Maria Assumpcion (both Karankawa)	Nicolas Caravajal and Catharina Falcon	
Jose Feliciano	June 9, 1810	adult	male	Coco/Karankawa	Cabozon (Indian chief of the Coco nation, deceased) and Karankawa woman ("Caral Halo" Hard-Heart)	M. Juan Rosales	
Maria Feliciana	June 9, 1810	adult	female	Karankawa	Captain Fresada Pinta (Karankawa, deceased) and Maria Tobosa (deceased)	Geronimo Huizar	(Re: individual "known before as La Chata")

Baptismal Records for Mission Refugio 1807 to 1828

Name	Date	Age	Sex	Ethnicity	Parents	Sponsors	Notes
Jose de la Cruz	July 17, 1810	1 days	male		Pedro de Luna and Serafina Trexo	Seronimo Huizar and Maria Elogia Morin	Members of this Mission
Maria Francisca	Oct. 31, 1810	27 days	female		Pio Quinto de la Garza and Maria Louisa Ramires	Victoriano Ramires and Maria Josefa Gutierrez	(Re: parents "living on Nueces River and inhabitants of the Villa de Meir").
Maria Gertrudia Ynes	Nov. 16, 1810	7 days	female		Nicolas Carbajal and Catarina Falcon	M. Juan Rosales and Maria Feliciana Ybarro	
Jose Guadalupe	Dec. 19, 1810	20 yrs	male	Karankawa	parents - pagan Karankawa already deceased	Geronimo Huizar	
Maria Gertrudis	Dec. 19, 1810	28 yrs	female	Karankawa	Vicente and Maria del Rosario (both Karankawa)	Geronimo Huizar	
Maria Gregoria	Dec. 17, 1810 ²	4 days	female	Karankawa/Cujan	Jose Eliseo (Karankawa) and Maria (Cujan)	Juan de Leon and Maria Francisca (Re: individual "Died") Rodriguez (servants of this Mission)	
Juana Maria	Dec. 27, 1810	6 yrs	female	Karankawa	Captain Diego and "a pagan woman" (both Karankawa)	M. Juan Rosales and Maria Feliciana Ybarro	
Jose Estevan	Dec. 27, 1810	9 yrs	male	Karankawa	Captain Diego and "a pagan woman already deceased" (both Karankawa)	M. Juan Rosales and Maria Feliciana Ybarro	
Maria Estefania	Dec. 27, 1810	3 yrs	female	Karankawa	Quinol "Cloudy" and Bahan "Foolish" (both pagan Karankawa)	Juan Francisco Reyes Alvarado and Ana Maria de la Cruz	
Juan Maria	Dec. 27, 1810	2 mos	male	Karankawa	Quinol "Cloudy" and Bahan "Foolish" (both pagan Karankawa)	Juan Francisco Reyes Alvarado and Ana Maria de la Cruz	
Maria Melchara	Jan. 7, 1811	9 days	female	Karankawa/Pamaque	Juan de la Sma. Trinidad (Karankawa) and Barbara (Pamaque)	Nicolas Carabajal and Catharina Falcon	
Maria Juana (Juana Maria)	Feb. 29, 1811	3 days	female		Enrique Gonzales and Maria Nicalosa Pabedano	Jose Casimiro Morin and Maria Elogia Morin	
Maria del Refugio Casimira	Mar. 4, 1811	7 days	female	Tobosa/Karankawa	Jose Maria (Tobosa) and Maria Petra (Karankawa)	Don Bernardo Amado	
Juan Jose	May 5, 1811	6 days	male		Vicente Ramos and Jesusa Cano	Jose Chirino and Trinidad Chirino	
Santiago	July 25, 1811	2 mos.	male	Cujan/Karankawa	Jose Miguel (Cujan) and Maria Barnarda (Karankawa)	Juan Francisco Alvarado and Maria Antonia Trevino	(Re: sponsors "servants of this Mission")
Maria Nieves	Aug. 7, 1811	3 days	female		Faustino Garcia and Margarita Vasquez	Manuel Flores and Concepcion Laso	
Maria Augustina	Aug. 28, 1811	2 mos	female	Karankawa	Jose de Jesus and Maria Concepcion (both Karankawa)	Jose Geronimo Huizar and Maria Catharina Huizar	(Re: individual "born on the coast")
Maria Estefana	Sept. 11, 1811	1 mo	female		Felipe Moreno and Nicolasa Sansoval	Maria Victoriana del Castillo	
Maria Merced	Sept. 20, 1811	10 days	female	(Native American)	Feliciano (----) and Maria Manuela (-- --)	Martin Gomez and Trinidad Chirino	
Maria Andrea	Oct. 28, 1811	12 days	female	Karankawa/Cujan	Prudencio (Karankawa) and Maria (Cujan)	Maria Josefa Salinas	
Jose Geronimo	Jan. 7, 1812	30 yrs	male	Karankawa	Both (pagan Karankawa) - father deceased	Jose Geronimo Huizar	

Baptismal Records for Mission Refugio 1807 to 1828

Name	Date	Age	Sex	Ethnicity	Parents	Sponsors	Notes
Maria Rafaela	Jan. 7, 1812	27 yrs	female	Karankawa	Both (pagan Karankawa) - both deceased	Jose Geronimo Huizar	
Jose Silvestre	Jan. 7, 1812	8 days	male	Karankawa/Cujan	Manuel (Karankawa) and Juana (Cujan)	Felis Galan and Maria Grande	
Maria Agapita	Mar. 17, 1812 ³	1 day	female		Ricardo Lopez and Jacinta de Nava	Casamiro Morin and Eulogia Morin	(Re: parents, "attaches of this Mission")
Maria Clea	Apr. 26, 1812	3 days	female		Jose Maria Mireles and Maria Caralina Villarreal	Faustino Garcia and Margarita Vasquez	(Re: parents, "servants of this Mission")
Pedro	Apr. 29, 1812	4 days	male	Copan/Karankawa	Pedro Antonio (Copan) and Maria Feliciana (Karankawa)	Jose Maria de la Garza (soldier) and Tomasa Gonzales	
Maria Magdalona	May 27, 1812	3 days	female		father unknown, mother Maria Francisca Gonzales	Domingo de Lara and Maria Quiteria ----	
Maria Magdalena	May 27, 1812	8 days	female	Copan/Karankawa	Christosino (Copan) and Maria del Refugio (Karankawa)	Pedro Tereda(?) (Texeda?) and Maria Catharina Huizar	
Maria Antonia	June 11, 1812 ⁴	3 days	female	Cujan	Pedro Alexandrino and Maria del Loreto (both Cujan)	Encarnacion Ortis	(Re: parents, "members of the Mission")
Manuela	June 15, 1812	2 mos	female	Karankawa	Leal and Larga (both pagan Karankawa)	Encarnacion Ortis	
Buenaventura	July 22, 1812	1 mo	male	Karankawa	Juan Diego and his woman (both pagan Karankawa)	Henrique Gonzales and Nicolasa Povedano	
Jose Panteleon	July 28, 1812	1 day	male		Lucas Reyna and Vicenta Martines	Casamiro Morin and Eulogia Morin	
Jose Augustin	Aug. 29, 1812	1 day	male		Juan Povedano and Maria Salarno Gonzales	Casamiro Morin and Eulogia Morin	
Maria Luisa(?) Maria Louisa(?)	Oct. 16, 1812	?	female	Karankawa	Jose Antonio and Maria del Rosario (both Karankawa)	Juan Povedano and Maria Salome Gonzales	
Maria Teresa	Oct. 22, 1812 ⁵	8 days	female	Malaquit/Pajalachi	Tomas (Malaquit) and Francisca (Pajalachi)	Mariana Aldreto	(Re: parents "children of this Mission")
Jose Santos	Nov. 3, 1812	1 day	female		Maria Mireles	Jose Geronimo Huizar and Maria Eulogia Morin	(Re: parent, "inhabitant of this Mission")
Jose Ysidro	Dec. 19, 1812	20 days	male		Vicente Ramos and Maria de Jesus Cartes	Martin Gomez and Trinidad Chirino	
Jose Gregorio	Dec. 20, 1812	1 mo	male		Pablo de la Garza and Rosaria ----	(Manuel?) Flores and Maria (de la Garza?)	
Jose de Jesus	Dec. 25, 1812	20 days	male	Toboso/Karankawa	Jose (Maria) (Toboso) and Maria Petra (Karankawa)	Manuel Flores and Concepcion Laso	
Maria de Jesus	Dec. 27, 1812	3 days	female		Henrique Gonzales and Nicolasa Povedano	Valentin de la Rosa and Rosa Bocanegra	(Re: parents, "servants of this Mission")
Jose Melchor	Jan. 31, 1813	25 days	male	Karankawa/Pamaque	Manuel (Karankawa) and Refugia (Pamaque)	Juan Povedana and Maria Salome Gonzales	(Re: parents, "children of this Mission")
Jose Matheo	Jan. 31, 1813	4 days	male	Karankawa/Pamaque	Juan de la Sma. Trinidad (Karankawa) and Bar(?)ara (Pamaque)	Juan Maria (Karankawa) and Jacinta de Nava	

Baptismal Records for Mission Refugio 1807 to 1828

Name	Date	Age	Sex	Ethnicity	Parents	Sponsors	Notes
Maria Manuela	Apr. 19, 1813	5 days	female		Jesusa Mexias	Jose Geronimo Huizar and Maria Eulogia Morin	
Maria Gordiana	May 10, 1813	7 days	female		Faustino Garcia and Margarita Vasques	Jose Nepomusceno Villarreal and Maria Feliciana Harbo	
Maria de Carmel(o?)	July 18, 1813 ⁶	1 day	female	Karankawa	Jose de Jesus and Maria (both Karankawa)	Francisco Golindo and Maria Jacinta de Nava	
Maria Petra	Sept. 3, 1813	1.5 mos	female	Copan/Karankawa	Pedro Antonio (Copan) and Maria Feliciana (Karankawa)	Bartolo Saez and Maria de los Dolores Saez	
Maria Ramona	Sept. 8, 1813	8 days	female		---?----- and --?--- Antonia Garcia	Jose Antonio de la Garza and Maria Josefa Quintanilla	
Maria Eugenia	Sept. 15, 1813	8 days	female		Jose Maria de los Santos and Maria Ensebia Cortez	Don Martin de Leon and Dona Particia de la Garza	
Maria Raf(a?)jela	Oct. 24, 1813	5 days	female		Quinto de la Garza and Maria Louisa Rodriguez	Jose Maria de la Garza and Maria Tomasa Gonzales	
Jose Manuel	Nov. 1, 1813 ⁷	5 days	male		Vicente Ramos and Maria de Jesus Cortes	Lino Rodriguez and Maria del Refugio Aguilar	
Maria del Refugio	Nov. 4, 1813 ⁸	2 yrs	female	Karankawa	Parents both (pagan Karankawa)	Dona Josefa Bar(r?)erra and her son Juan Nepomuceno Sequin	
Jose Carlos	Nov. 6, 1813 ⁹	3 days	male	Karankawa	Parents both (pagan Karankawa)	Dona Patricia de la Garza	
Maria de la Candelaria	Feb. 2, 1814 ¹⁰	11 days	female	Guapit/Karankawa	Francisco (Guapit) and Maria (Karankawa)	Dona Josefa Berer(r?)a	(Re: parents "Christians, both children of this Mission")
Jose Romaldo	Feb. 11, 1814	4 days	male		Juan Nepomusceno Villareal and Maria de la Luz Garcia	Antonio Sefuentes and Maria Antonia Monedo	
Maria Rafaela	Feb. 17, 1814	? days	female	Karankawa/Cujan	Pendencio (Karankawa) and Rosa Maria (Cujan)	Dona Josefa Barerra	(Re: parents "both Christian children of this Mission")
Jose Leandro	Feb. 27, 1814	2 mos	male	Coco/Pamaque	Felisiano (Coco) and Manuela (Pamaque)	Bartolo Saez and Isabel Maldonada	(Re: parents "both children of this Mission")
Jose Eulogio	Mar. 12, 1814	2 days	male		Joaquin de Luna and Maria Juana Garcia	Don Jose Antonio de la Garza and Dona Candelaria de Leon	
Jose	Mar. 19, 1814	11 days	male	Karankawa/Cujan	Jose Maria de Pilar (Karankawa) and Maria Concepcion (Cujan)	Antonio Barques and Mariana de la Garza	(Re: parents "children of this Mission")
Maria Felipa	May 4, 1814	4 days	female		Salvador Basan and Maria Visenta Chabes	Faustino Cortes and Anna Maria Rodriguez	
Maria Manuela	June 18, 1814 ¹¹	4 days	female		Gregorio Garcia and Maria de los Reyes Mireles	Santiago Basalduo and Maria Rodrigues	
Jose Paulo	July 6, 1814	1 mo	male	Cujan/Karankawa	Jose Miguel (Cujan) and Maria Bernarda (Karankawa)	Leandro --?--- and Maria Tomasa del Refugio Martinez	
Maria Paula del Refugio	July 12, 1814	3 days	female		Geronimo Huizar and Maria Eulogia Morin	Ancelmo de la Garza and Joachima de los Saez	
Jose Maciano	July 26, 1814	1 mo	male	Cujan	Pedro Alexandrino and Maria de Loreto (both Cujan)	Antonio Basquez and (H?)aciana de la Garza	(Re: parents "children of the Mission")
Clara Maria	Aug. 14, 1814	3 days	female		Benito Villarreal and Maria Antonia Saez	Pedro Texeda and Catarina Huizar	

Baptismal Records for Mission Refugio 1807 to 1828

Name	Date	Age	Sex	Ethnicity	Parents	Sponsors	Notes
Jose Lorenzo de la Asuncion	Aug. 10, 1814	3 days	male		Juan Pabedano and Maria Salome Gonzales	Manuel Bererra and Juana Cadena	
Maria Silvestre	Jan. 21, 1815	22 days	female	Cujan/Karankawa	Jose Guadalupe (Cujan) and Maria del Refugio (Karankawa)	Martin Gomez and Trinidad Chirino	
Maria Dorotea	Feb. 7, 1815	1 day	female		Ygnacio de Luna and ---?---	Leonarida Montalbo	
Francisco de Jesus	Apr. 2, 1815	6 mos	male	Guapit/Karankawa	Francisco (Guapit) and Maria (Karankawa)	Maria Candelaria de Leon	
Jose Trinidad	May 22, 1815	3 days	male		Henry Gonzales and Nicolosa Povedano	Casimiro Morin and Michaela Orrutia	
Jose Gabriel	June 6, 1815	6 mos	male	Malaquit/Pajalachi	Tomas (Maliquit) and Fransisca (Pajalachi)	Jose Lopez and Maria de Jesus Varera	
Jose Ygnacio	June 6, 1815	7 mos	male	Karankawa/Cujan	Manuel (Karankawa) and Juana (Cujan)	Geronimo Huizar and Eulogia Morin	
Jose Maria	June 6, 1815	5 mos	male	Karankawa	Juan Diego and Maria del Rosario (pagan Karankawa)	Geronimo Huizar and Eulogia Morin	
Jose Buenaventura	July 21, 1815 ¹²	1 day	male		Pedro Huizar and Ysidora Lopes	Leandro Sanchez and Maria Thomosa Martinez	
Jose del Refugio	July 28, 1815	?	male	Karankawa	Mariadel Rosario "Guilota" (Karankawa) and a pagan woman (Karankawa)	Lasaro Recendes and daughter Refugia Recendes	(Re: individual (infant) baptized in "immediate danger of death")
Maria Francisca Augustina	Aug. 28, 1815	1 day	female		Don Martin de Leon and Dona Patricia de la Garza	Dona Gertrudia Orintia	
Augustin	Aug. 28, 1815	2 days	male		Pedro Espinosa and Maria de Jesus Mexias	Jose Dolores Benites and Maria L(o?)uisa Benites	
Francisco Xavier	Dec. 3, 1815 ¹³	3 days	male		Casimiro Morin and Michaela Orruetia	Manuel Buerra	
Jose Manuel	Jan. 16, 1816 ¹⁴	11 days	male		Jose Marie de los Santos and Maria Calebral Cortez	Geronimo Huizar	
Juan Jose (Huizar)	Mar 31, 1816	2 days	male		Jose Geronimo Huizar and Maria Eulogia Morin	Manuel Becerra and Maria Niana Cadena	
Jose Gabriel	Apr. 1, 1816	5 mos	male	Karankawa/Pamaque	Manuel (Karankawa) and Refugia (Pamaque)	Juan Pavedano and Maria Salome Gonzales	(Re: parents "children of this Mission")
Jose Ancelmo	April 20, 1816	6 mos	male	Toboso /Karankawa	Jose Maria (Toboso) and Maria Petra (Karankawa)	Francisco Chirino and Maria Ynes Rangel	(Re: parents "children of this Mission")
Maria Ynes	Apr. 20, 1816	3 yrs	female	Copan/Karankawa	Christostino (Copan) and Refugia (Karankawa)	L(o?)uis Chirino and Catarina Huizar	(Re: parents "children of this Mission")
Jose Maria	May 4, 1816	3 mos	male	Pamaque	Maria Barbara, widow (Pamaque)	Jose Maria de la Garza and Maria Thomasa Gonzales	
Jose de la Cruz	May 4, 1816	4 mos	male	Pamaque/Copan	Juan Nicolas (Pamaque) and Maria Dolores (Copan)	Jose Maria de la Garza and Maria Thomasa Gonzales	
Maria Josefa	May 6, 1816	2 yrs	female	Guapit/Karankawa	Jose de Jesus (Gaupit) and Gertrudis (Karankawa)	Mariana de la Garza	

Baptismal Records for Mission Refugio 1807 to 1828

Name	Date	Age	Sex	Ethnicity	Parents	Sponsors	Notes
Maria Manuela	May 6, 1816	6 mos	female	Guapit/Karankawa	Jose de Jesus (Gaupit) and Gertrudis (Karankawa)	Catharina Huizar	
Maria Pascuala	May 17, 1816	3 mos	female	Karankawa/Cujan	Feliciano (Karankawa) and Manuela (Cujan)	Maria de Jesus Mexias	(Re: parents "children of this Mission")
Maria Gertrudis	May 26, 1816 ¹⁵	3 days	female		Luis Chirino and Maria Luisa Benites	Juan Povedano and Maria Nicolosa Povedano	
Jose Leon	June 27, 1816	1 yr	male	Karankawa	Jose de Jesus and Maria Assumpcion (both Karankawa)	Lorenzo Zepeda and Maria Josefa Zepeda	
Maria Clara	Aug. 12, 1816	15 days	female	Karankawa	Paulin and Maria Carnel (both Karankawa)	Manuel Gonzales and Maria Jaimo	
Maria Rosa	Aug. 30, 1816 ¹⁶	1 yr	female	Karankawa	Mother "La Cojita" (Karankawa), father unknown	Teresa Sarate	
Jose Maria	Sept. 11, 1816 ¹⁷	5 days	male		Juan Povedano and Maria Salome Gonzales	Faustino Cortes and Maria Antonia Laso	
Maria Petra	Nov. 26, 1816	9 days	female	Karankawa	Francisco Xavier and Maria del Loreta (both Karankawa)	Nicolosa Povedano	(Re: parents, "belonging to Mission Espiritu Santo")
Jose Ambrocio	Dec. 7, 1816	1 mo	male	Karankawa/Cujan	Jose Maria del Pilar (Karankawa) and Concepcion (Cujan)	Antonio Vasquez and Mariana de la Garza	
Jose Jacobo	Dec. 30, 1816 ¹⁸	5 days	female	Cujan/Karankawa	Jose Guadalupe (Cujan) and Maria del Refugio (Karankawa)	Manuel Becerra and Juana Maria Cadena	(Re: individual, "male not female?")
Maria Josefa	Jan. 23, 1817	4 days	female	Iaraname	Masario and Maria Eduarda (both Iaraname)	Maria Feliciano Ybaro and Marcelino Marin	(Re: parents both "children of the Mission Espiritu Santo")
Jose Valentin	Feb. 15, 1817 ¹⁹	1 day	male		Trinidad Ramon and Thomas (Tomas?) Vasques	Henrique Gonzales and Maria Concepcion Gonzales	(Re: father "a soldier of La Bahía")
Jose Marcelo de Jesus	Feb. 22, 1817	1 mo	male	Karankawa/Cujan	Prudencio (Karankawa) and Rosa(e?) Maria (Cujan)	Marcelino Morin and Feliciano Ybarro	
Maria Asencion	May 22, 1817	4 days	female		Henrique Gonzales and Maria Nicolosa Povedano	Geronimo Huizar and Eulogia Morin	
Maria del Refugio	Jun. 26, 1817	5 mos	female	Copan/Karankawa	Pedro Antonio (Copan) and Feliciano (Karankawa)	Teresa Sarato	
Juan Ban(u?)tista	July 1, 1817	3 mos	male	Karankawa	Juan Diego and Maria del Rosario (both pagan Karankawa)	Maria Nicolosa Povedano	
Jose Francisco	Aug. 29, 1817 ²⁰	3 days	male		Deciderio Avila and Maria Ygnacia Garcia	Battasar de Algeria and Josefa Garcia	
Jose Augustin	Aug. 31, 1817	4 days	male	(Native American?)	Hermonogildo and Margarita	Henrique Gonzales and Maria Concepcion Gonzales	(Re: parents "children of the Mission of Espiritu Santo")
Maria del Rosario	Oct. 8, 1817	4 days	female		Juan Pob(v?)jedano and Salome Gonzales	Manuel Beserra	
Jose Francisco del Refugio	Oct. 31, 1817	5-6 mos	male	Native American	Manuel Quenon and Juana	Mariana de la Garza	(Re: parents, "Indian children of this Mission")
Jose Maria de los Santos	Nov. 11, 1817	1 yr	male	Cujan	Pedro Alexandrino and Maria Loreta (both Cujan)	Encarnacion Ortis	(Re: parents, "Indians of this Mission")
Jose Teodoro	Nov. 13, 1817	6 days	male		Jose Antonio Arango and Maria Josefa Urrutia	Manuel Beserra and Jo(u?)ana Cadena	(Re: parents, "citizens of this Mission")

Baptismal Records for Mission Refugio 1807 to 1828

Name	Date	Age	Sex	Ethnicity	Parents	Sponsors	Notes
Maria del Refugio	Dec. 1, 1817 ²¹	aged	female	Lipan			(Re: individual "in extreme danger of death")
Maria Tomasa	Jan. 3, 1818 ²²	6 days	female		Leandro Sanchez and Maria Tomasa Martinez	Maria Tomasa Cordaba	
Maria Corpia	Jan. 29, 1818	4 days	female		Miguel Venites and Maria Rita Frejo	Juan Jose de la Crus(z?) and Maria Josefa de la Crus(z?)	
Maria Louisa	Feb. 3, 1818	4 days	female		Maria Mireles (mother), no father given	Marolino Morin and Maria Micheal --?---	
Pedro Jose	Feb. 26, 1818	5 days	male		Geronimo Huizar and Maria Eulogia Morin	Enrique Gonzales and Maria de la Concepcion Gonzales	(Re: individual "baptized on the same day of birth at home because of necessity"), (Re: parents "both Spanish citizens of this Mission")
Jose Angel	Mar. 4, 1818	11 days	male	Native American	Pedro and Juana	Manuel Beserra and Juan(a?) Cadena	(Re: parents "Indians of this Mission")
Jose Fan(u?)stino	Mar. 4, 1818	18 days	male	Native American	Manuel and Maria del Refugio	Leandro Sanchez and Maria Tomasa Cambero	(Re: parents "children of this Mission")
Jose Nicolas	Mar. 5, 1818	3 mos	male	Native American	Jesus and Maria de la Ascension	Ricardo Lopez and Maria del Refugio Lopes(z?)	(Re: individual "infant born in the forest"), (Re: parents "children of this mission")
Juan Jose	Mar. 5, 1818	3 mos	male	Native American?	Ana Maria (mother)	Enrique Gonzales and Maria Nicolosa Povedano	(Re: mother "child of this Mission")
Maria Gregoria	May 12, 1818	2 days	female		Cirildo Treb(v?)ino and Maria Tomasa Cordova	Casimiro Morin and Maria Michaela Orrutia	
Maria An---?--	July 25, 1818	infant	female	Toboso /Karankawa	Jose Morin (Toboso) and Maria Petra (Karankawa)	Casimiro Morin and Maria Michaela Orrutia	(Re: parents "children of this Mission")
Jose de Jesus	Aug. 8, 1818	3 days	male		Deciderio Dabila and Maria Ygnacia Garcia	B(?)rtolo Isaquerre and Maria Antonio(a?) Martinez	(Re: parents "inhabitants of this Mission")
Jose Gorgonio	Sept. 15, 1818	8 days	male		Ricardo Lopes and Jacinta (de Nava?)	Mariana Morin	
Jose Francisco	Oct. 5, 1818	2 days	male		Juan Povedano and Maria Salome Gonzales	Casimiro Morin and Michaela Orutia	
Jose Francisco	Oct. 5, 1818	2 days	male		Jose Maria de los Santos and Maria Eulogia Morin		(Re: duplication "on the same day, the fifth of October, year...")
Maria del Carmen	Oct. 6, 1818	1 mo	female	Native American	Chrisostimo and Maria del Carmen	Juan Jose Garcia and Maria de Jesus Mexias	(Re: parents "children of this mission")
Maria Ana	Dec. 8, 1818	1 mo	female	Karankawa?	Maria del Rosario (listed prev. as pagan Karankawa)	Francisco Trevino and Isabel Bererra	(Re: mother "child of this Mission")
Mariano	Dec. 8, 1818	1 day	male		Jose Chirino and Maria Gertrudis	Miguel Benites and Maria Rita Frejo	(Re: parents "children of this Mission")
Maria Timotea	Dec. 28, 1818	6 days	female		Francisco Lerma and Maria del Rosario	Miguel Benites and Maria Rita Frejo	
Maria Juana	Dec. 28, 1818	2 days	female		Blas Frejo and Josefa de la Garza	Maria Josefa Gonzales	(Re: parents "inhabitants of this Mission")
Maria Ygnes	Jan. 20, 1819	1 day	female		Juan de la Garza and Maria Estefena Lopes	Maria Feliciana Ybarbo	(Re: parents "inhabitants of this mission")
Maria Juana	Feb. 17, 1819	20 days	female	Malaquit/Pajalachi	Tomas (Malaquit) and Francisca (Pajalachi)	Jose Antonio Rodriguez and Maria del Refugio Alvarrado	(Re: parents "children of this Mission")

Baptismal Records for Mission Refugio 1807 to 1828

Name	Date	Age	Sex	Ethnicity	Parents	Sponsors	Notes
Maria del Refugio	Mar. 11, 1819	5 days	female	Cujan	Pedro and Maria Loreto (listed prev. as both Cujan)	Ricardo Lopez and Maria Jacinta Nava	(Re: parents "children of this mission")
Jose Luis	Aug. 27, 1819	3 days	male	Cujan	Guadalupe and Maria Refugio (both Cujan)	Dona Maria Jesus de Leon	(Re: parents "children of this Mission")
Maria Gertrudis	Sept. 30, 1819	6 mos	female	Native American	Pedro and Juana	Manuel Bererra and Juana Cadenas	(Re: parents "children of this Mission")
Jose Miguel	Oct. 20, 1819	2 mos	male	Karankawa	Jose Maria del Pilar (listed prev. with Concepcion as Karankawa) and Gertrudis (listed prev. with Jose de Jesus as Karankawa)	Jose Antonio Aranso and Josefa Orratin(?)	(Re: parents "children of this Mission")
Rafael	Oct. 20, 1819	?	male		Pedro Najar and Jesusa Alexia	Antonio Rodriguez and Maria Alvarado	(Re: parents "inhabitants of this Mission")
Ladislao	Oct. 27, 1819	6 days	male	Cujan/Karankawa	Miguel (Cujan) and Bernarda (Karankawa)	Mariana Barerra	(Re: parents "children of this Mission")
Maria Andrea	Nov. 30, 1819	20 days	female	Native American	Manuel ---?- and Juana	Concepcion Laso	(Re: parents "children of this Mission")
Maria Felipa	Feb. 10, 1820	5 days	female		Jose Antonio Aronso and Maria Josefa Orrutia	Don Jose Guadalupe de los Santos and Micaela Orrutia	(Re: parents "inhabitants of this Mission")
Jose Francisco	July 18, 1820	9 days	male	Cujan	Prudencio and Maria Rosa (both Cujan)	Manuel Barerra and Juana Cadena	
Jose Martin	Aug. 8, 1820	4 days	male	Native American	Jesus and Ascension	Pedro Flores and Maria de la Ascension Bontan(?)	(Re: parents "children of this Mission")
Maria Clara	Aug. 12, 1820	3 days	female		Santiago Dona and Maria Francisca Florez	Manuel Gomez and Maria Catarina Huizar	(Re: parents "inhabitants of this Mission")
Jose Miguel	Sept. 30, 1820	day of birth	male	Karankawa	Parents (pagan Karankawa)	Salome Gonzales	(Re: sponsor "inhabitant of this Mission")
Maria del Refugio	Sept. 30, 1820 ²³	about 22 yrs	female	Karankawa			(Re: individual "In ... danger of death")
Crisanto	Oct. 25, 1820	3 days	male		Cirilo Trevino and Maria Francisca Cardova	Casamiro Morin and M--?- de la Orrutia	(Re: parents "inhabitants of this Mission")
Maria Francisca	Mar. 10, 1821	8 days	female	Karankawa	Juan de Dios (Christian Karankawa), no mother given		(Re: individual "baptized in the field because of necessity")
Maria del Refugio	Mar. 10, 1821	8 days	female	Karankawa	Jesus and Maria Gertrudis (both Karankawa)		(Re: individual "baptized in the field because of necessity"), (Re: parents "children of this Mission")
Francisco	Mar. 29, 1821	4 days	male	Karankawa	Mother Jesusa (Karankawa), no father given	Dona Gertrudis Orrutia	(Re: Mother "child of this Mission")
Maria del Patricinio Domiga	June 29, 1822	8 days	female		Jose Antonio Aranso and Maria Josefa Orrutia	Marcelino Morin and Concepcion Gonzales	(Re: individuals "all inhabitants of this Mission")
Maria del Refugio	Oct. 30, 1822	5 days	female		Pedro Hasar(?) and Maria de Jesus Mexia	Casimiro Morin and Maria Miceala Orrutia	(Re: parents "inhabitants of this Mission")
Maria Antonia	Jan. 12, 1823	2 mos	female	Karankawa	Mother Jesusa (Karankawa), no father given	Feliz Mendoza and Maria Dolores Martinez	(Re: individual "living on(in?) the field")
Maria del Refugio	Jan. 12, 1823	2 mos	female	Native American		Sinforoza Liendo (soldier) and Maria Antonia de los Santos	(Re: individual "born on the field"), (Re: Mother "established herself nearby before giving birth")

Baptismal Records for Mission Refugio 1807 to 1828

Name	Date	Age	Sex	Ethnicity	Parents	Sponsors	Notes
Jose Antonio Mario	Jan. 12, 1823	2 mos	male	Native American	Manual Delgadito and Maria Refugio	Jose Antonio Aranso and Maria Josefa Orrutia	(Re: individual "both(?) on the field"), (Re: parents "children of this Mission"), (Re: sponsors "inhabitants of this Mission")
(Jose?) Maria del Refugio	May 17, 1823	4 mos	male	Native American	Prudencio and Rosa Maria	Jose Antonio Aranso and Maria Josefa Orrutia	(Re: parents "children of this Mission")
Jose Maria de los Dolores	July 9, 1824	1 yr	male	Cujan	Mijuel Senior (grande) and Bernarda (both Cujan)	Dona Mariana Aldrete	(Re: location "in the parish of La Bahía")
Jose de Jesus	Sept. 12, 1824	3 yrs	male	Coco	Parents (pagans of the Coco nation)	Ana Maria Garza	(Re: location "signed in La Bahía")
Bernardino	Sept. 28, 1824	2 yrs	male	Karankawa	mother Maria Petra (Karankawa), no father given	Anselmo Cruz and Maria Gertrudis Castro	(Re: location "signed in La Bahía")
Maria del Refugio del Carmen	Aug. 28, 1825	1 yr	male	Karankawa/Cujan	Feliciano (Karankawa) and Manuela (Cujan)	Maria del Rosario Hernandez	(Re: parents "children of this Mission"), (Re: location "signed in La Bahía")
Jose Francisco	Aug. 30, 1825	2 yrs	male	Cujan	Pedro Alejandrino and Maria Loreto (both Cujan)	Dona Gertrudis Barrera	(Re: parents "children of this Mission"), (Re: location "signed in La Bahía")
Juan Jose de San Miguel	Sept. 28, 1825	8 days	male	Karankawa	Maria Antonia (Karankawa), no father given	Manuel Hernandez and Eulogia Hernandez	(Re: location "signed in La Bahía")
Hilario	Oct. 21, 1825	1 mo	male	Cujan	Francisco and Maria (both Cujan)	Candolaria de Leon	(Re: location "signed in La Bahía")
Juan Jose	Oct. 24, 1825	3 yrs	male	Karankawa	Pedro and Juana (both Karankawa)	Dona Maria de Jesus Ybarbo	(Re: parents "children of the Mission"), (Re: location "signed in La Bahía")
Crisante(o?)	Oct 24, 1825	1 yr	male	Karankawa	Pedro and Juana (both Karankawa)	Dona Maria de Jesus Ybarbo	(Re: individual "on the field"), (Re: location "signed in La Bahía")
Maria del Refugio	Oct. 24, 1825	15 days	female	Cujan	Juana (Cujan), no father given	Dona Josefa Galan	(Re: location "signed in La Bahía")
Maria Antonia	Nov. 20, 1825	1 yr	female	Cujan	Guadalupe and Maria del Refugio (both Cujan)	Maria de Jesus Biojas	(Re: individual "baptized in the field because of necessity"), (Re: location "signed in La Bahía")
Maria Antonia de Jesus	June 24, 1827	3 mos	female	Cujan/Karankawa	Jesus (Cujan) and Maria Gertrudis (Karankawa)	Carlos de la Garza and Ana Maria de la Garza	(Re: parents "children of this Mission")
Jose Luis	July 27, 1827	17 mos	male	Cujan	Ana Maria (Cujan), no father given	Dona Mariana Aldrete	
Maria Josefa	July 27, 1827	4 yrs	female	Cujan/Karankawa	Jesus (Cujan) and Maria Gertrudis (Karankawa)	Romeraldo Asdo (of the 12th Batallion[sic]) and Maria Inocencia Morales	(Re: individual "baptized... while on the field")
Maria Pantaleone	July 27, 1827	15 days	female	Cujan/Karankawa	Pedro (Cujan) and Juana (Karankawa)	Maria de Jesus Riojas	
Maria Dolores	July 27, 1827	3 yrs	female	Cujan	Ana Maria (Cujan), no father given	Jose Lazascano de la Trinidad Alanzo (permanent bugler of the 12th Batallion[sic]) and Maria de la Luz Chavro	(Re: individual "baptized because of necessity on the field")
Juan Jose	July 27, 1827	9 mos	male	Native American	Manual Delgadito and Maria del Refugio	Dona Josefa Galan	(Re: individual "baptized because of necessity... by Don Juan Anaya"), (Re: parents "children of this Mission")
Maria Guadalupe	July 27, 1827	4 mos	male	Cujan/Karankawa	Jose Maria (Cujan) and Maria Petra (Karankawa)	Carried to the church by Maria Cy(?)riana Hillegas	(Re: individual "baptized because of necessity... by Don Narcisco Lopez")
Rafael	Jan. 3, 1828	3 yrs	male	Karankawa	Maria del Rosario (Karankawa), no father given	Rafael Manchola and Dona Jesusa de Leon	

Baptismal Records for Mission Refugio 1807 to 1828

Name	Date	Age	Sex	Ethnicity	Parents	Sponsors	Notes
Antonio	Jan. 3, 1828	8 days	male	Karankawa	Hilario (Karankawa), no father given	Dona Candelaria de Leon	
Nicaola	Jan. 3, 1827(8)	6 mos	female	Cujan	Leocadia (Cujan), no father given	Manuela Carabajal	
Jose Francisco	Jan. 3, 1828	1 yr	male	Cujan	Pedro Alexandrino and Maria de Loreto (both Cujan)	Dona Gertrudis Barrera	(Re: individual "child born on the field"), (Re: parents "children of the Mission")
Jose Maria	Feb. 21, 1828	1 yr	male	Coco	Parents (pagans of the Coco nation)	Ramon Munes and Maria Isabel de Abrego	(Re: parents "already deceased")

Note: ¹ Buried Feb. 24, 1808. ² Buried Feb. 20, 1812. ³ Buried Mar. 22, 1812. ⁴ Buried Jun 23, 1812. ⁵ Buried May 1, 1813.
⁶ Buried Sept. 15, 1813. ⁷ Buried Nov. 11, 1813. ⁸ Buried Jan. 28, 1814. ⁹ Buried Nov. 19, 1813. ¹⁰ Buried Oct. 22, 1814.
¹¹ Buried June 21, 1814. ¹² Buried Nov. 11, 1815. ¹³ Buried Dec. 12, 1815. ¹⁴ Buried Jan. 18, 1816. ¹⁵ Buried May 30, 1816.
¹⁶ Buried Sept. 3, 1816. ¹⁷ Buried Sept. 12, 1816. ¹⁸ Buried Jan. 1, 1817. ¹⁹ Buried Feb. 20, 1817. ²⁰ Buried Sept. 13, 1817.
²¹ Buried Dec. 2, 1817. ²² Buried Jan. 4, 1818. ²³ Buried Sept. 13, 1820 (burial date discrepancy noted).

Appendix B

Mission Refugio Burial Records

Section 2

Burial Records of Mission Refugio, 1807 to 1825

Note: Mission Refugio Burials, 1807 to 1825, located on Volume I - CD as 00B2-Ref App B2a.pdf.

Burial Reference

1. Catholic Archives of Texas. William H. Oberste Papers [1774] 1938–1982. The papers of Monsignor oberste (1899–1983), author of works on Irish colonists in Texas; parish priest at Our Lady of Refuge, Refugio, from 1933 to 1969. Our Lady of Refuge Church, Refugio, Texas. Burial Records, 1807–1825. (Castañeda Transcripts - Bexar Archives) [Box 5]. Used with permission.

Burial Records for Mission Refugio 1807 to 1825							
Name	Date	Ethnic Affiliation	Sex	Age	Relatives	Cause of Death	Notes
Ana Maria Leonarda	May 16, 1807		male	child	parents: Ricardo Lopez and Jacima (Jacinta) de Nava		parents: members of the mission
Jose Guadalupe Morin	July 19, 1807		male	11 yrs	parents: Jose Maria Morin (deceased) & Maria Feliciana Ybarro	fever	parents: inhabitants of Nacodoches
Margarita Maria Dolores	Feb. 8, 1807	Copan/Karankawa	female	9 mo.	parents: Manuel (Karankawan) & Maria del Refugio (Pihuique)		
Maria Yrinoa	Feb. 24, 1808	Karankawa/Pihuique	female	child	widow of Sebastian Maldonado	old age	husband: inhabitant of the mission
Maria Micaela Carrasco	Mar. 28, 1808		female	70+yrs	parents: Faustino Salamar and Margarita Campa		parents: servants of the mission
Maria Manuela	June 22, 1808		female	child	parents: Juan Antonio Carrillo and Maria Rita del Castillo of Escandon	very malignant fever	a soldier
Jose Maria Carrillo	Aug. 6, 1808		male	28 yrs	parents: Ricardo Lopez and Maria Jacinta de Nava		parents: servants of the mission
Cecilio Antonio Lopez	Dec. 1, 1808		male	9 days	wife: Maria Dolores (also Copan)		parents: children of the mission
Gil	Feb. 21, 1809	Copan	male	70 yrs	parents: Manuel and Miaoela (deceased)		
Pablo (Cabo) Reges	Mar. 4, 1809	Karankawa	male	20 yrs	widower of Gertrudis (Malaquitt)		
Jesus (Manoo)	Apr. 28, 1809	Copan	male	50 yrs			
Justo Rufino Zapata/ Justo Rufino de la Ira							
Trinidad	Oct. 1, 1809		male	23 yrs	parents: inhabitants of Saltillo	malignant fever	
Josefa Maria	Oct. 28, 1809	Karankawa	female	40 yrs	woman of General Diego of the Karankawa Nation		
Maria Antonia Trevino	Nov. 1, 1809		female	50 yrs	husband: Xavier Vasques		inhabitants of La Bahia
Maria del Refugio (Coue-Vec or Cabello Puesto meaning combed hair)	Nov. 4, 1809	Karankawa	female	15 yrs	parents: pagan parents of the Karankawa Nation		
Jose Lucas	Jan. 12, 1810		male	3 mo.	parents: Manoique Gonzales and Maria Nicolosa Povedano		parents: members (agradados) of this Mission
Mariana Patricia	Apr. 3, 1810	Karankawa/Toboso	female	22 days	parents: Prudencio (Karankawa) and Rosa Maria (Toboso)		parents: children of the Mission
Jose Simon	May 12, 1810	Karankawa	male	14 days	parents: Jose de Jesus and Maria Assumpcion (both Karankawa)		parents: children of the Mission
Vicente Antonio	May 28, 1810	Karankawa	male	40 yrs	wife: Maria Gregaria (Karankawa)		
Serafina Trexo	July 17, 1810		female	38 yrs	husband: Pedro de Luna		servants of the Mission
Jose de los Santos	July 25, 1810		male	infant	parents: Pedro de Luna and Serafina Trexo (deceased - see above)		parents: servants of the mission
Jose Francisco (Cono)	Aug. 22, 1810	Karankawa	male	26 yrs	parents: pagan (deceased)		
Infant	Nov. 16, 1810		female	newborn	parents: Ygnacio Olivares and Maria Encarnacion Ortis		
Maria Petra	Dec. 9, 1810	Karankawa	female	newborn	parents: pagan (Karankawa)		
Francisco Xavier	Dec. 11, 1810	Karankawa	male	newborn	parents: pagan (Karankawa)		
Silvestre	Jan. 26, 1811	Cujan	male	70 yrs	widower		
Joana Maria	Jan. 28, 1811	Karankawa	female	25 yrs	"woman of Juan, a soldier, and a pagan"		
Juan Chirino	July 6, 1811		male	23 yrs	parents: Jose Chirino and Maria Josefa Cabrera - deceased		
Joachin	Aug. 30, 1811	Toboso	male	28 yrs	widower of Josefa of the Phenque nation - deceased		
Jose Casimiro Gonzales	Sept. 8, 1811		male	61 yrs	wife: Leonarda Montalvo	apoplexy	
Juan Alvares	Sept. 18, 1811		male	40 yrs	wife: Vicente Martinez		
Maria Josefa	Oct. 26, 1811		female		there is a Maria Josefa Gomez (11 yrs old) on 1810 census - parents: Martin Gomez and Maria Trinidad		
Manuel Delgado	Nov. 24, 1811	Cujan	male	74 yrs	wife: Lula (also Cujan)		given private burial because of fever
Maria Agapita	Mar. 22, 1811		female	6 days	parents: Ricardo Lopez and Jacinta de Nava		parents: members of the Mission
Jose de los Santos	Jan 23, 1812		male	1 yr	parents: Jose Luciano de los Santos (deceased) and Maria Francisca Gonzales		
Maria Gregoria	Feb. 30(?), 1812	Karankawa/Cujan	female	14 mo	parents: Jose Eliseo (Karankawa) and Maria (Cujan)		
Maria Antonia	June 23, 1812	Cujan	female	10 days	parents: Pedro Ale-ndrino and Maria del Loreto (both of Cujan Nation)		parents: children of the Mission
Maria Luisa	Oct. 19, 1812	Karankawa	female	9 days	parents: Antonio and Maria del Rosario (both of Karankawa Nation)		parents: children of the Mission
Maria Caterina Falcon	Dec. 10, 1812		female	27 yrs	husband: Nicoloso Carabajal		
Jose Maria (Jota)	Dec. 17, 1812	Cujan	male	35 yrs	wife: Maria del Rosario (Karankawa)		
Maria Teresa	May 1, 1813	Malaquitt/Pahalachi	female	5.5 mo	parents: Tomas (Malaquitt) and Franciana (Pahalachi)		children of the Mission
Jose Antonio Garcia	Aug. 5, 1813		male	3 mo	parents: Faustino Garcia and Margarita Basques(z)?		
Coyotano Flores Falcon	Aug. 25, 1813		male	adult		(?)swelling	died about 1 league from Mission
Maria del Carmel	Sept. 15, 1813	Karankawa	female	1 mo	parents: Jesus and Asuncion (both Karankawa)		
Maria Ramona	Oct. 3, 1813		female	1 mo	parents: Enotaquio Cantu and Maria Antonia Garcia		
Jose Antonio	Oct. 19, 1813	(Native American)	male	4 days	parents: both pagan		
Jose Manuel	Nov. 11, 1813		male	17 days	parents: Vicente Ramos and Maria de Jesus Cartes		
Jose Carlos	Nov. 19, 1813	(Native American)	male	20 days	parents: both pagan		
Maria del Refugio	Jan. 28, 1814	Karankawa	female	3 yrs	parents: pagan of Karankawa Nation		
Benito Bela	Apr. 26, 1814	(Native American?)	male	infant	parents: Pio Quinto Bela and Maria Josefa Quintanilla		brought from the Nueces
Maria Manuella	June 21, 1814		female	6 days	parents: Jose Gregorio Garcia and Maria de los Reyes Mireles		
Pio Bela	July 12, 1814	(Native American?)	male	3 days	parents: Pio Quinto Bela and Maria Josefa de la Garza		father's name same as Benito Bela, different mother
Maria Margarita Basquez	July 25, 1814		female	25	husband: Faustino Garcia		3 mo. old son (Jose Antonio) died Aug. 15, 1813
Carmelo de Laso	Aug. 2, 1814		male	24 yrs	wife: Claudia Liendro	killed by Barbarian Indians	
Vicente	Aug. 2, 1814	Karankawa	male	20 yrs	parents: pagan Karankawa	killed by Barbarian Indians near Mission	
Jose Agapito de la Abra	Aug. 3, 1814		male	1 yr	parents: Perfecto de la Abra and Maria Ynes Moreno	killed by Barbarian Indians on the Nueces	
Francisco de la Sma. Trinidad (Luna)	Sept. 7, 1814	Karankawa	male	adult	wife: Anna Maria Barbara (Pamaque)	killed by Barbarian Indians	
Antonio Sefuentes	Sept. 8, 1814		male	adult	wife: Maria Anna Mireles	killed by Barbarian Indians	

Burial Records for Mission Refugio 1807 to 1825							
Name	Date	Ethnic Affiliation	Sex	Age	Relatives	Cause of Death	Notes
Clemente de la Carma known as Felipe Torres	Sept. 23, 1814		male	adult		killed by Barbarians	a servant
Manuel Flores	Oct. 8, 1814		male	49 yrs	wife: Maria Concepcion Lazo	Yoroperia	
Maria Candelaria	Oct. 22, 1814	Guapit/Karankawa	female		parents: Francisco (Guapit) and Maria (Karankawa)		parents: children of the Mission
Maria Sarape Lopez	Oct 30, 1814		female		wife of Cristobal Castillo	killed on the ranch of the Diermero (Diezmero – lithesman) on the banks of the Nueces by Barbarian Indians	"huesos" bones buried
Gartrudis del Castillo	Oct 30, 1814		female		parents: Cristobal Castillo and Maria Yllaria del Castillo	killed on the ranch of the Diezmero	
Maria Yllaria del Castillo	Oct 30, 1814		female		parents: Cristobal Castillo and Maria Yllaria del Castillo	killed on the ranch of the Diezmero	
Julian (Julinos) Alvarez	Oct 30, 1814		male		husband of Juana Alvarez	killed on the ranch of the Diezmero	
Juana Alvarez	Oct 30, 1814		female		wife of Julian Alvarez	killed on the ranch of the Diezmero	
Simon Barquez	Oct 30, 1814		male			killed on the ranch of the Diezmero	
Rafael Olivares	Oct 30, 1814		male			killed on the ranch of the Diezmero	
Arellano	Oct 30, 1814		male			killed on the ranch of the Diezmero	
Gerarido	Oct 30, 1814		male			killed on the ranch of the Diezmero	
Santiago Sanchez	Oct 30, 1814		male			killed on the ranch of the Diezmero	
Berna(n)cio Garcia	Oct 30, 1814		male			killed on the ranch of the Diezmero	
Morillo (a captive)	Oct 30, 1814		male			killed on the ranch of the Diezmero	
Nicolas Bocanegra	Oct 30, 1814		male			killed on the ranch of the Diezmero	
Jose Maria Oloya	Oct 30, 1814		female		father: Perfecto Oloya the shoemaker	killed on the ranch of the Diezmero	
Jose Eliseo	May 21, 1815	Karankawa	male	adult	wife: Maria (Karankawa)		
P.R. Fr. Juan Maria Sepulveda	June 28, 1815		male	34 yrs	Minister of the Mission of Espiritu Santo		buried in the Sanctuary of this Church
Maria Ysidra Lopez	July 21, 1815		female	adult	husband: Pedro Najar		
Victoriano Lambroras	July 28, 1815		male	adult	wife: Josefa Margarita	killed by Indians in the field	bones buried
Pedro Arrambido	Aug. 25, 1815		male	adult	wife: Petra Carter		
Diego Chirino	Oct. 9, 1815		male	adult	wife: Maria Luisa Rodriguez	killed in Oct. 1814 by Comanche Indians near the mission	bones buried with Tomas Torres
Tomas Torres	Oct. 9, 1815		male	adult		killed in Oct. 1814 by Comanche Indians near the mission	
Buenaventura Najar	Nov. 11, 1815		male	4 mo	father: Pedro de Najar, mother: Maria Ysidra Lopez (died July 21, 1815)		
Francisco Xavier Morin	Dec. 7, 1815		male	4 days	parents: Casimiro Morin and Michaela Orratia		
Jose Rafael de los Santos	Jan. 18, 1816		male	7 days	parents: Jose Maria de los Santos and Maria Cortes		
Martin Gomez	Jan. 19, 1816		male	40 yrs	wife: Trinidad Chirino		
Maria Gertrudis Chirino	May 30, 1816		female	8 days	parents: Luis Chirino and Maria Luian Benitas		
Pedro Espinosa	May 31, 1816		male	35 yrs	wife: Maria de Juana Maria	killed by Indians near the mission	
Jose Chirino	June 17, 1816		male	75 yrs	widower of Maria Josefa Cabrera		
Maria Barbara	July 12, 1816	Cujan/Karankawa	female	8 yrs	parents: Jose Miguel (Cujan) and Maria Bernarda (Karankawa)		
Maria Rosa	Sept. 3, 1816	Karankawa	female	1 yr	mother: pagan known as Cojita		
Jose Maria Povedano	Sept. 12, 1816		male	6 days	parents: Juan Povedano and Maria Salome Gonzales		inhabitants of the Mission
Pedro Texeda	Nov. 23, 1816		male	50 yrs	wife: Catarina Huizar		
Jose Jacobs(o?)	Jan. 1, 1817	Cujan/Karankawa	male	5 days	parents: Guadalupe (Cujan) and Maria del Refugio (Karankawa)		
Jose Melchor	Jan. 2, 1817	Karankawa/Pamaque	male	3 yrs	parents: Manuel (Karankawa) and Maria del Refugio (Pamaque)		
Gregoria	Jan. 6, 1817	Karankawa	female	40 yrs	widow by second marriage of Vicente Antonio (Cujan)		
Valentin Ramon	Feb. 20, 1817		male	6 days	parents: Trinidad Ramon (soldier at La Bahia) and Tomasa Vasquez		
Josefa Maria	Aug. 11, 1817	Lipan	female	adult			buried in cemetery (Campo Santo)
Jose Francisco Avila	Sept. 13, 1817		male	18 days	parents: Deciderio Avila and Maria Ygnacia Garcia		parents: inhabitants of the Mission
Maria del Rosa	Oct. 12, 1817		female	8 days	parents: Juan Povedano and Maria Salome Gonzales		parents: inhabitants of the Mission; lost 6 day old son Sept. 12, 1816
Antonio	Nov. 30, 1817	Karankawa	male	adult	buried in the cemetery of the Holy Kiss of Our Lady of Refugio		son of the Mission
Maria del Refugio	Dec. 2, 1817	Lipan	female	adult (old)			
Faustino Garcia	Dec. 31, 1817		male		wife: Maria Ra----gilda de la Carmen		caretaker of the tobacco warehouse (a Faustino Garcia is listed on 1810 census as Master Stone Mason, but has different wife)
Maria Tomasa	Jan. 4, 1818		female	6 days	parents: Edwardo Sanchez and Teresa Martinez		parents: inhabitants of the Mission
Desiderio Davila	Mar. 16, 1818		male	adult	wife: Maria Ygnacia Garcia	killed by hostile Indians	
Maria Lousia	Oct. 11, 1819		female	20 mo	mother: Maria Mireles	due to un dolar (a pain)	
Jose Luis	Oct. 25, 1819	Cujan/Karankawa	male	2 mo	parents: Guadalupe (Cujan) and Maria del Refugio (Karankawa)	fever	parents: children of the Mission
Rafael Najar	Oct. 28, 1819		male	9 days	parents: Pedro Najar and Maria de Jesus (Majions?)	swelling	
Teodoso Aranso	Mar. 10, 1820		male	2 yrs	parents: Jose Antonio Aranso and Maria Josefa Orrutia	fever	parents: inhabitants of the mission
Blas Trejo	June 22, 1820		male	adult	wife: Josefa de la Garza	killed by Barbarian Indians	a soldier
Jose Francisco	July 19, 1820	Karankawa/Cujan	male	10 days	parents: Prudencio (Karankawa) and Rosa Maria (Cujan)		
Maria Refugio	Aug. 15, 1820	Karankawa	female	80 yrs			

Burial Records for Mission Refugio 1807 to 1825							
Name	Date	Ethnic Affiliation	Sex	Age	Relatives	Cause of Death	Notes
Ricardo Lopez	Sept. 3, 1820		male	40 yrs	wife: Jacinta Nava (based on 1810 census his age would have been 50)	hernia	buried in cemetery of this church
Maria del Refugio	Sept. 13, 1820	Karankawa	female	22 yrs	Burial record error states "he"		
Jose Marcelo	Sept. 16, 1820	Karankawa/Cujan	male	3 yrs	parents: Prudencio (Karankawa) and Rosa Maria (Cujan)	fever	parents: children of the Mission
Jose Miguel	Sept. 19, 1820	Karankawa	male	7 days	parents: pagan Karankawa		
Jose Ygnacio	Sept. 20, 1820	Karankawa/Cujan	male	5 yrs	parents: Manuel (Karankawa) and Juana (Cujan)	fever	buried in cemetery of this church
Maria Dionigia Bologia	Nov. 15, 1820	Karankawa/Cujan	female	14 yrs	parents: Prudencio (Karankawa) and Rosa Maria (Cujan)	fever	parents: children of the Mission
Manuel Gomez	Feb. 25, 1821		male	30 yrs	wife: Catarina Huizar	died at the hands of Barbarian Indians	inhabitant of the Mission
Antonia Garcia	Mar. 23, 1821		female	71 yrs	widow of Jose de los Santos		on 1810 census
Francisco	Apr. 10, 1821	Karankawa	male	1 mo	mother: Maria de Jesus (Karankawa)		
Juan Maria	Sept. 24, 1821	Cujan	female	50 yrs		fever	
Bernardino	Sept. 29, 1825	Karankawa	male	3 yrs	mother: Maria Petra (Karankawa)	(born in the field)	buried in cemetery at La Bahia
Leandro	Oct. 8, 1825	Coco/Pamaque	male	11 yrs	parents: Feliciano (Coco) and Manuel (Pamaque)	fever	buried in cemetery at La Bahia
Maria del Refugio	Nov. 5, 1825	Cujan	female	27 days	mother: Juana (Cujan)		buried in cemetery at La Bahia

Appendix B

Mission Refugio General Census

Section 3

General Census of Mission Refugio 1810

**(under the jurisdiction of La Bahía del Espíritu Santo,
January 4th, 1810).**

Note: Mission Refugio Census, 1810, located on Volume I - CD as 00B3-Ref App B3a.pdf.

Census Reference

1. The University of Texas Institute of Texan Cultures at San Antonio, Residents of Texas, 1782–1836. San Antonio, TX: University of Texas Institute of Texan Cultures at San Antonio, 1984; distributed by Ericson Books. Used with permission.

1810 Census of Residents of Refugio Mission					
Name	Date Arrived	Arrived From	Household Members	Occupation	Property
Francisco Vasquez	Aug 3, 1807	Nueva Leon	Francisco Vasquez - native of La Punta de Lampazos - age 48 widower	farmer	2 horses
Martin Gomez		La Bahía	Martin Gomez - native of La Bahia - age 28 wife: Maria Trinidad Chirino - native of La Bahía - age 28 daughter: Maria Josefa - born in La Bahía - age 11 daughter: Maria Miguela - born La Bahía - age 8	farmer	3 yoke of oxen 4 horses, 3 cows
Jose Manuel Flores	July 4, 1789	La Bahía	Jose Manuel Flores - native of La Bahía - age 35 wife: Maria Josefa de la Garza - native of Bexar - age 25	herder	wooden house, 3 horses
Jose Antonio del la Garza	Oct. 2, 1794	Coahuila	Jose Antonio del la Garza - native of Rio Grande - age 58 wife: Barbara Texeda - native of La Bahía - age 23 son: Jesus de la Garza - native of La Bahía - age 5		wooden house, 2 horses
Jose Ricardo Lopes	Oct 8, 1784	San Luis Potosi	Jose Ricardo Lopes - native of Real de Cedros - age 40 wife: Jacinta Nava - native of Linares - age 28 daughter: Maria Isidora - native of La Bahía - age 14 daughter: Maria del Refugio - native of La Bahía - age 11 daughter: Mariana - native of La Bahía - age 3 (resides in La Bahía) servant: Jose Esmeregildo Ramirez - native of Queretaro - age 30 (arrived from Queretaro Aug. 8, 1807) servant: Jose Vicente Gonzalez - native of Camargo - age 25 (arrived from La Colonia Mar. 2, 1809)	farmer mule driver herder	wooden house, 2 yoke of oxen 4 horses
Juan Jose Chirino	Nov. 7, 1804	Bexar	Juan Jose Chirino - native of Bexar - age 52 widower son: Juan - native of Bexar - age 22	farmer farmer	wooden house, 5 horses, 2 mares
Jose Casimiro Gonzalez	Dec. 4, 1808	La Colonia	Jose Casimiro Gonzalez - native of Camargo - age 60 wife: Leonarda Montalvo - native of Camargo - age 40	herder	100 cows, 6 horses, 3 yoke of oxen
Ignacio Garcia	Oct. 8, 1789	Nuevo Leon	Ignacio Garcia - native of Monterrey - age 56 wife: Dolores Saenz - native of La Bahía - age 27	herder	wooden house, 60 cows, 5 yoke of oxen 9 horses

1810 Census of Residents of Refugio Mission					
Name	Date Arrived	Arrived From	Household Members	Occupation	Property
Maria Antonia Garcia		La Bahía	Maria Antonia Garcia - native of La Bahía - age 60 widow son: Jose Maria de los Santos - native of La Bahía - age 30 (later married Maria Cortez)	housewife farmer	wooden house, 2 yoke of oxen 3 horses
Juan Rosales	Aug. 8, 1802	Bordeaux	Juan Rosales - native of Bordeaux - age 35 wife: Maria Feliciano Ibarvo - native of Nacogdoches - age 34 daughter: Maria Elogia - native of Nacogdoches - age 15 son: Jose Casimiro - native of Nacogdoches - age 14 Marcelino - native of Nacogdoches - age 12 servant: Geronimo Huizar - native of Bexar - age 17 (arrived from Bexar Oct. 8, 1807) servant: Juan Povedano - native of Bexar - age 15 (arrived from Bexar Oct. 8, 1807) (later marries Nacia Salorno Gonzales) servant: Jose del Carmen Cruz - native of La Bahía - age 20	carpenter carpenter carpenter carpenter herder herder	30 mares
Manuel Flores	Oct. 8, 1802	San Savas	Manuel Flores - native of San Savas - age 52 wife: Maria Concepcion Lazo - native of La Bahía - age 38 boarder? - Ramon de los Santos - native of Real del Vallecillo - age 35	herder	none reported
Pedro de Luna	Oct. 4, 1796	Saltillo	Pedro de Luna - native of Saltillo - age 50 wife: Serafina Trexo - native of La Bahía - age 38 son: Teodoro - native of La Bahía - age 12 son: Jose Bautista - native of La Bahía - age 10 son: Jose Lazaro - native of La Bahía - age 7 daughter: Maria Petra - native of La Bahía - age 3 daughter: Maria Timotea - native of La Bahía - age 8 months	farmer farmer farmer farmer	none reported
Jose Esmeregildo Villa-Estribio	Oct. 4, 1807	Coahuila	Jose Esmeregildo Villa-Estribio - native of Monclova - age 30 Jose Zeferino Naxar - Native of La Bahía - age 23 Naxars wife: Maria Gertrudis Valdez - native of La Bahía - age 20 servant: Dolores Benitez - native of La Bahía - age 20	farmer herder farmer	none reported
Jose de los Reyes Alvarado		La Bahía	Jose de los Reyes Alvarado - native of La Bahía - age 60 wife: Guadalupe de la Cruz age 51 - native of Patos	tailor	none reported

1810 Census of Residents of Refugio Mission

Name	Date Arrived	Arrived From	Household Members	Occupation	Property
Jose de Dios Ramos	Aug. 7, 1805	Bexar	Jose de Dios Ramos - native of Bexar - age 38 wife: Maria Rubalcaba - native of Bexar - age 40 boarder: Jose Cayetano Falcon - native of Bexar - age 52	herder farmer	none reported
Jose Faustino Garcia	Aug. 7, 1805	Bexar	Jose Faustino Garcia - native of Bexar - age 33 wife: Margarita Vasquez - native of La Bahía - age 21 female servant: Trinidad Morin - native of Guadalajara - age 28	master mason	wooden house, 20 cows, 2 horses, 3 yoke of oxen
Juan de la Forcade	Oct. 8, 1803	Bordeaux	Juan de la Forcade - native of Bordeaux - age 40 servant: Juan Jose Ortiz - native of San Fernando - age 28 (arrived from Coahuila July 2, 1807)	herder herder	40 horses
Pedro Jose Texeda		La Bahía	Pedro Jose Texeda - native of La Bahía - age 44 wife: Catarina Huizar - native of Bexar - age 23 (arrived from Bexar Nov. 7, 1801)	herder	none noted

Appendix C

Mission Refugio (41RF1) Artifacts

Artifact Data

Appendix C: 4IRFI Artifacts

Mission Refugio Artifact Data

Information

The information assembled from the archaeological investigations conducted at Mission Refugio has been recorded on this CD-Volume as:

1. A cross-tabulation of proveniences by class in a spreadsheet format (Microsoft *.xls); and
1. A printable version of the Microsoft *.xls file as an (Adobe Acrobat *.pdf).

1. Mission Refugio cross-tabulation file is on Volume I - CD as— 00C1-Ref App C1.xls
2. Mission Refugio printable version is on Volume I - CD as— 00C2-Ref App C2.pdf

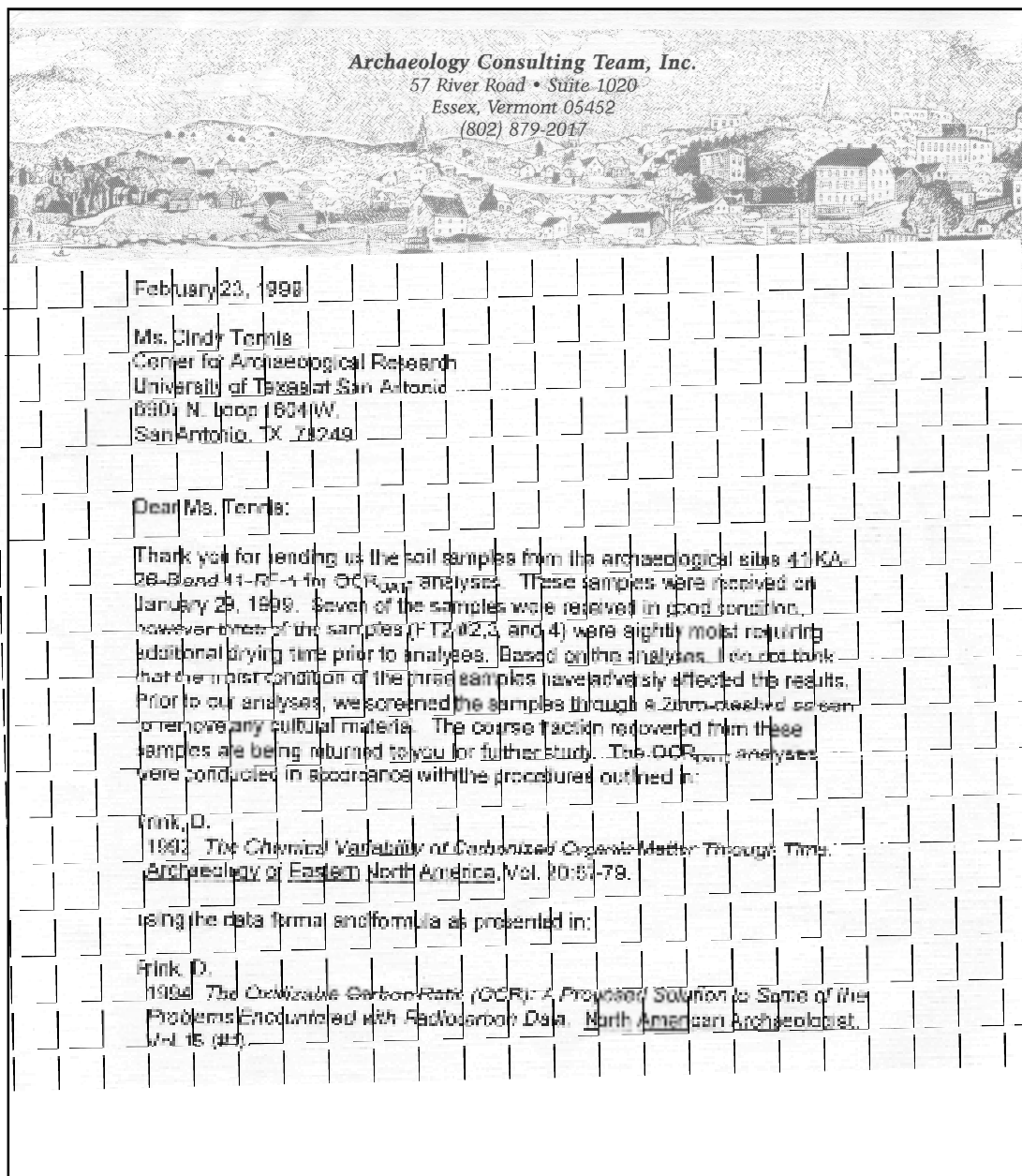
Appendix D

Mission Refugio

Oxidizable Carbon Ratio Analyses

Appendix D: Oxidizable Carbon Ratio Analyses

Douglas S. Frink



The results of the OCR analyses for your samples are presented on the separate computer printouts. The bottom line OCR_{DATE} and confidence interval has been rounded nearest year. Also, the expression of results has been adjusted to "years before present"—defined as 1950, to correspond with ¹⁴C radiocarbon data. For example, your sample from #2 Post B (ACT #3687) should read OCR_{DATE}: 173 ± 5 YBP. Further rounding may be prudent (e.g., 175 ± 10 YBP).

I hope that the OCR_{DATE} data provided will be helpful in your evaluation of your site. If you have further questions on the OCR procedure, please don't hesitate to give us a call. To aid us in improving this dating technique, we would appreciate it if you would send us information on how the OCR_{DATE} corresponds to other data classes for these samples.

Also please feel free to keep track of the OCR literature and data on our WEB-Site:

<http://members.aol.com/dsfrink/ocr/ocrpage.htm>

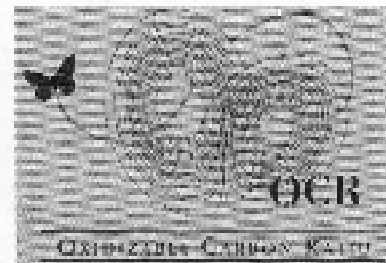
Sincerely,



Douglas S. Frink

Calculated OCR DATE Report
For Center for Archaeological Resear

23 Feb 99



Sample Id:	ACT # 3686
Site Id #:	41-KA-26-B
Location:	TU 21
Feature Type:	Cultural
Feature Designation:	#1 Post A
Sample Recieved:	1/29/99
Calculated OCR DATE:	187 YBP(1950) +/- 5

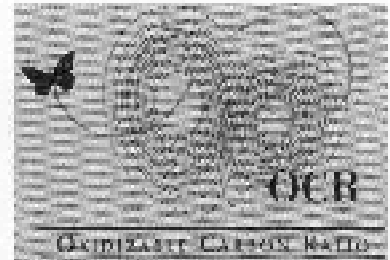
Sample Id:	ACT # 3687
Site Id #:	41-KA-26-B
Location:	TU 21
Feature Type:	Cultural
Feature Designation:	#2 Post B
Sample Recieved:	1/29/99
Calculated OCR DATE:	173 YBP(1950) +/- 5

Sample Id:	ACT # 3688
Site Id #:	41-KA-26-B
Location:	TU 18
Feature Type:	Cultural
Feature Designation:	#3 Post D
Sample Recieved:	1/29/99
Calculated OCR DATE:	169 YBP(1950) +/- 5

Sample Id:	ACT # 3689
Site Id #:	41-RF-1
Location:	75N/100E
Feature Type:	Cultural
Feature Designation:	Ft.2 #1
Sample Recieved:	1/29/99
Calculated OCR DATE:	213 YBP(1950) +/- 5

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23-Feb-99



Sample Id:	ACT # 3680
Site Id #:	41-RF-1
Location:	75N/100E
Feature Type:	Cultural
Feature Designation:	Ft.2 2
Sample Recieved:	1/29/99
Calculated OCR DATE:	168 YBP(1950) +/- 5

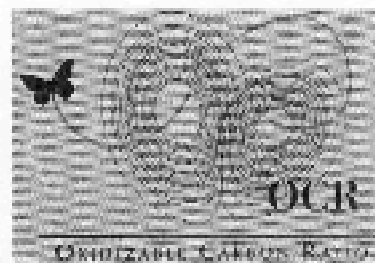
Sample Id:	ACT # 3691
Site Id #:	41-RF-1
Location:	75N/100E
Feature Type:	Cultural
Feature Designation:	Ft.2 3
Sample Recieved:	1/29/99
Calculated OCR DATE:	110 YBP(1950) +/- 3

Sample Id:	ACT # 3692
Site Id #:	41-RF-1
Location:	75N/100E
Feature Type:	Cultural
Feature Designation:	Ft.2 4
Sample Recieved:	1/29/99
Calculated OCR DATE:	156 YBP(1950) +/- 4

Sample Id:	ACT # 3693
Site Id #:	41-RF-1
Location:	84N/100E
Feature Type:	Cultural
Feature Designation:	Ft 1 1
Sample Recieved:	1/29/99
Calculated OCR DATE:	190 YBP(1950) +/- 6

Calculated OCR DATE Report
For Center for Archaeological Resear

29-Feb-99



Sample Id:	ACT # 3694
Site Id #:	41-RF-1
Location:	84N/100E
Feature Type:	Cultural
Feature Designation:	Ft. 1 2
Sample Recieved:	1/29/99
Calculated OCR DATE:	141 YBP(1950) +/- 4

Sample Id:	ACT # 3695
Site Id #:	41-RF-1
Location:	84N/100E
Feature Type:	Cultural
Feature Designation:	Ft. 1 3
Sample Recieved:	1/29/99
Calculated OCR DATE:	160 YBP(1850) +/- 4

Appendix E

Mission Refugio

Botanical Remains Analysis

Appendix E: Analysis of Botanical Remains

J. Philip Dering

This report presents results of the analysis of 10 flotation samples and 14 macrobotanical samples that were recovered during excavations conducted at Mission Nuestra Señora del Refugio (41RF1), Refugio County, Texas. Flotation samples are samples of archaeological sediment that have been floated in water to separate lighter charred plant remains from heavier material, or clays/silts that can be suspended in water and rinsed out of the sample. The sediment samples were floated by personnel from the Center for Archaeological Research at The University of Texas at San Antonio, and the light fractions were submitted to Texas A&M University for analysis. The macrobotanical samples consist of charred plant remains either point collected *in situ* or from screens.

Laboratory Methods and Definition of Taxonomic Categories

Standard archaeobotanical laboratory procedures were followed during analysis. Samples were usually opened and dried in an herbarium dryer. Each sample was then sorted through a series of four nested geological screens with mesh sizes of 4-mm, 2-mm, 1-mm, and 0.450-mm. The material caught on all of the sieve levels, including the pan, was scanned for floral parts, fruits, and seeds. Identification of all carbonized and uncarbonized wood was accomplished by using the “snap technique,” examining a newly exposed surface at 8 to 45 magnifications with a hand lens or a binocular dissecting microscope, and comparing them to samples in the herbarium at the Texas A&M University Archaeobotanical Laboratory. Charred seeds, fruit and nut fragments were counted. Identifications were made using reference collections at Texas A&M University.

The anatomy of many woods is difficult to identify to the species level, and the anatomy of some woods is so similar that it is very difficult to identify to the genus level. Often woods are identified as a “type” that includes several different species. In addition to several tree and shrub genera, this analysis refers to two wood types, the rose family wood type and the hard pine wood type. The hard pine wood type refers to pines in which the early wood–late wood transition in each annual ring is quite abrupt. This type includes loblolly pine, longleaf pine, ponderosa pine, slash pine, shortleaf pine, and pitch pine. Loblolly and longleaf are commercial

woods of eastern North America, and ponderosa pine of western North America. Most of these pine species produce commercial quality lumber that is utilized in construction. The rose family wood type (Rosaceae) includes hawthorns, and wild and domesticated plums and peaches. A final category, indeterminate wood, refers to any wood fragment that cannot be identified because diagnostic anatomical features are lacking. All of the identified plant material is carbonized. In most depositional contexts in southern Texas uncarbonized seeds or wood does not survive more than a few decades.

Results of the Macrobotanical Analysis

Overview of the Archaeobotanical Assemblage

Maize cob/cupule fragments and kernels, beans, squash rind, seeds, and wood were identified in the flotation and macrobotanical samples (Tables E-1 and E-2). The samples contained 20 plant taxa or wood types, and indeterminate wood. A total of 35 maize cob, cupule, and kernel fragments were noted in the samples. Other domesticated plants included two bean cotyledons, two peach pit fragments, three squash rind fragments, two wheat seeds, and four watermelon seeds. The wood analysis examined 241 wood fragments. Results are presented by sample number and provenience in Tables E-1 and E-2, and Figure E-1.

Analysis of Maize

A total of 26 cob fragments were examined. Six of the cob fragments were complete enough to allow a total row count. Row counts of the other 20 cob fragments had to be estimated. Of the six more complete cobs, four were medial sections and two were distal fragments. The two distal fragments had tapering tips.

Although most of the material from 41RF1 is 14-row maize, a few cobs exhibited 16 rows. Both of the distal cob fragments are tapered. The single whole kernel is a dented grain. The maize from 41RF1 is of the dent variety that was imported from Mexico and grown in Texas during the

Table E-1. Maize remains from 41RF1

Sample	Provenience		Type	# Ranks	Length x Width (mm)	Row Count
84	86N/100E	20-30 cmbd	cob fragment	2	11 X 7	14 (est)
219	87N/100E	50-60 cmbd (AL)	kernel fragment	--	--	—
224	87N/100E	60-70 cmbd (AL)	cob fragment	apical	27 X 14	14
			cob fragment	4	14 X 12	14 (est)
			burned kernel		4.3 X 6.9 6.1	—
274	86N/100E	115-120 cmbd	cob fragment	3	12 X 14	14 (est)
275	86N/100E	120-125 cmbd	cob fragment	4	2 X 7	—
267	86N/100E	80-85 cmbd Ft. 1 (BL)	cob fragment a	1	8 X 12	14 (est)
			cob fragment b	1	9 X 8	14 (est)
			cob fragment c	1	8 X 11	14 (est)
120	83N/100E	90-100 cmbd Ft. 1 (BL)	cob fragment - a	2	11 X 7	14 (est)
			cob fragment - b	2	10 x 9	14 - 16 (est)
			cob fragment - c	2	6 x 8	14 - 16 (est)
170	85N/100E	110-120 cmbd Ft. 1 (BL)	cob fragment a	2	29 X15	14 (est)
			cob fragment b	2	17 X 16	14 (est)
			cob fragment c	1	8 X 7	14 - 16 (est)
273	86N/100E	110-115 cmbd Ft. 1 (BL)	cob fragment a	4	18 X 13	14 (est)
			cob fragment b	2	9 X 8	—
			cob fragment c	6	23 X 18	14 (est)
169	76N/100E	70-75 cmbd Ft. 2 (BL)	cob fragment - a	2	26 x 7	14 - 16 (est)
			cob fragment - b	2	3 X 5	14 - 16 (est)
			cob fragment - c	2	8 X 7	14 (est)
234	74N/100E	75-80 cmbd Ft. 2 (BL)	cob fragment	apical	29 X 17	14
183	76N/100E	85-90 cmbd Ft. 2 (BL)	cob fragment	medial	38 X 21	16
240	74N/100E	80-85 cmbd Ft. 2 (BL)	cob fragment - a	medial	27 X 16	14
			cob fragment - b	medial	10 X 11	14
246	74N/100E	85-90 cmbd Ft. 2 (BL)	cob fragment - a	medial	25 X 14	14
			cob fragment - b	2	2.5 X 1.7	14 - 16 (est)

Table E-2. Plant remains from flotation samples

Sample	Unit	Level	Feature	Scientific	Common	Part	Count
216	85N/100E	80-90 cmbd	Ft. 1 (BL)	<i>Pinus</i> sp.	hard pine	wood	4
236	85N/100E	110-120 cmbd	Ft. 1 (BL)	<i>Zea mays</i>	maize	cupule	9
				<i>Pinus</i> sp.	hard pine	wood	25
211	85N/99E	80-90 cmbd	Ft. 1 (BL)	<i>Prosopis</i> sp.	mesquite	wood	19
				Indeterminate		wood	6
243	85N/99E	80-90 cmbd	Ft. 1 (BL)	<i>Prosopis</i> sp.	mesquite	wood	12
				<i>Quercus</i> sp.	white oak	wood	5
				<i>Acacia</i> sp.	acacia	wood	8
				<i>Phaseolus vulgaris</i>	common bean	seed	1
				Poaceae	grass family	stems	7
				<i>Cucurbita</i> sp.	squash	rind	2
104	86N/100E	80-90 cmbd	Ft. 1 (BL)	<i>Quercus</i> sp.	white oak	wood	12
				<i>Ilex vomitoria</i>	yaupon	wood	5
				<i>Condalia</i> sp.	bluewood	wood	7
				Rosaceae	hawthorn/wild plum	wood	4
				<i>Salix</i> sp.	willow	wood	3
				<i>Prunus persica</i>	peach	seed	2
				<i>Sporobolus</i> sp.	dropseed	seed	7
125	73N/100E	80-90 cmbd	Ft. 2 (BL)	<i>Prosopis</i> sp.	mesquite	wood	8
				<i>Platanus occidentalis</i>	sycamore	wood	10
				<i>Carya</i> sp.	hickory/pecan	wood	7
				Poaceae	grass family	stems	14
				<i>Citrullus vulgaris</i>	watermelon	seed	4
36	75N/100E	80-90 cmbd	Ft. 2 (BL)	<i>Acacia</i> sp.	acacia	wood	6
				<i>Prosopis</i> sp.	mesquite	wood	12
				<i>Celtis</i> sp.	hackberry	wood	5
				<i>Quercus</i> sp.	white oak	wood	2
				<i>Zea mays</i>	maize	cupules	4
				<i>Triticum</i> sp.	wheat	seed	2
173	76N/100E	80-90 cmbd	Ft. 2 (BL)	<i>Zea mays</i>	maize	cupules	3
				<i>Pinus</i> sp.	hard pine	wood	7
				<i>Celtis</i> sp.	hackberry	wood	7
				<i>Quercus</i> sp.	white oak	wood	5
				<i>Bumelia</i> sp.	ironwood	wood	6
175	76N/100E	80-90 cmbd	Ft. 2 (BL)	<i>Prosopis</i> sp.	mesquite	wood	5
				<i>Quercus</i> sp.	white oak	wood	7
				<i>Ulmus</i> sp.	elm	wood	13
				Poaceae	grass family	stems	14
73	85N/99E	40-50 cmbd	(AL)	<i>Quercus</i> sp.	white oak	wood	12
				<i>Ulmus</i> sp.	elm	wood	7
				<i>Prosopis</i> sp.	mesquite	wood	6

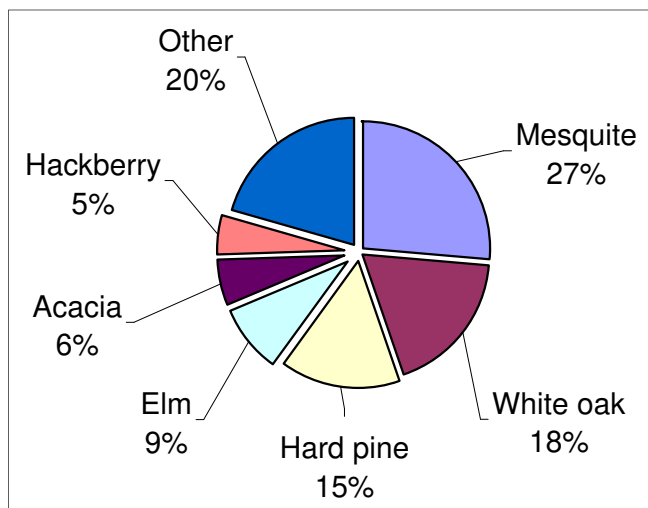


Figure E-1. Wood frequency from Refugio (4IRF1).

seventeenth and eighteenth centuries. By contrast, Eastern Complex or Northern flint maize, which was grown in North America prior to European contact has primarily 8 - 10 rows but can exhibit up to 12 rows (Wagner 1986).

Flotation Analysis

The 10 flotation samples yielded abundant quantities of charred wood and 34 fragments of charred cobs/cupules, seeds, and squash rind. Maize, beans, squash, watermelon, and wheat were identified in the plant material. All of the cultigens identified were recovered from below the lime layer.

Feature 1 seeds included maize, beans, peach pit fragments, dropseed grass, and squash rind. Hard pine, oak, willow, and mesquite wood, along with wild grass stem fragments also were present. Almost of the material was concentrated in the 80-90 cm level. Feature 2 contained wheat, watermelon, and maize. Wood and grass stems also were abundant, including pine, mesquite, oak, elm, and ironwood. The single sample from above the lime layer contained only wood charcoal, including mesquite, elm, and oak.

Although maize was the most abundant cultigen, the samples contained considerable evidence of other domesticated plants. Squash rind and beans are two American cultivars represented in the sample. However, there are more Old World domesticated taxa than the representatives from the New World. These include watermelon, wheat, cantaloupe, and fragments of peach pits.

Equally interesting is what is missing from the assemblage. There is little direct evidence of dependence on local plant resources for food. Dropseed grass, a known edible seed, was present in the assemblage, but it may have been associated with grasses used in adobe or thatch. Although absence of evidence should not be taken as evidence of absence, the data suggest that reliance on locally available wild plant food resources had waned at least around the mission. One would expect, for example, that mesquite bean pods, acorns, or hickory/pecan nut fragments would be present in the features. Thus, a hunter-gatherer lifeway was being modified to accept cultivated plant resources.

Wood

The charred wood assemblage is composed of 13 taxa or types. Of these 13 types, 12 represent woody plants that are locally available. Hackberry, sycamore, oak, willow, and elm are primarily river valley plants and reflect the location of the site near the Mission River. Ironwood, wild plum, and yaupon live in the understory or at the edge of stream valleys. Mesquite, acacia, and bluewood live primarily along the edge of stream valleys and other erosional breaks in the coastal prairies. All of these woody plants would have been abundant in the vicinity of the mission.

As noted in Figure E-1, mesquite and oak were the most abundant wood types, most likely reflecting both local availability and preference for use as fuel. The assemblage of cultigens and the hard pine wood, recovered from both Features 1 and 2, deserve special consideration. Hard pine was the next most abundant wood type. Hard pine was utilized extensively for construction at the Spanish missions, and the material in Features 1 and 2 would have been either discarded after a structure burned, or used as firewood after a structure was remodeled. Building construction ensured that fires were fairly common, and there are accounts of fires destroying houses (Schuetz 1980:289).

Pine is an exotic wood to the region and the closest extant hard pine stands in the area are located 120 miles (193 km) to the north near Bastrop, and 150 miles (242 km) to the east near Houston. The material had to be transported either from Mexico, southeastern Texas, or shipped from the southeastern United States.

Elm, hackberry, and acacia were also fairly common. Seven other wood types, including pecan, ironwood, yaupon, and wild plum, accounted for 20 percent of the wood charcoal

in the flotation samples. The taxon abundance of the wood assemblage is unusually diverse for just two features, a clear suggestion that these features were trash pits, a conclusion supported by many other lines of evidence including the faunal assemblage from these pits. Trash pits give a composite record, albeit somewhat mixed, of multiple activities occurring at the site.

Discussion

Features

The assemblage of both faunal (primarily *Bos* sp.) and botanical material indicates that the features contain trash pits, strengthening the argument that local Native American groups may have been extremely dependent on resources provided by the mission, at least while they were encamped nearby. Wild food resources were certainly locally available, and the types of wild food resources in the region, such as mesquite bean pods, and pecan or hickory nut fragments, are often visible in the archaeological record. I realize that the archaeobotanical record of southern Texas is very poor, but the young age and excellent preservation of botanical remains in the trash pits at 41RF1 suggest that if mesquite or other natural resources had been utilized, they would appear in the plant assemblage.

Colonial Period Maize

The largest comparable assemblage of maize from other colonial sites in Texas was recovered from Mission San Juan Capistrano (41BX5). A total of 98 cobs were recovered from two fire pits excavated at this site. These features were associated with a mission Indian occupation, and were dated between 1731, the date the mission was founded, and 1762, when remodeling covered the features. The average row count for the San Juan Capistrano specimens was 14.5, the median cupule width was 7.0 mm. The range of row counts varied from 10 (n=1) to 16 or higher (n=34). The most common row count was 14 (n=44). Most of the material had dented grains (kernels) and tapered ears.

The maize from San Juan Capistrano was considered to be very similar to races identified from western and central Mexico. Mexican dent corn was brought into northern New Spain, including Texas, during the seventeenth and eighteenth centuries. It spread into eastern North America

and hybridized with the northern flints, producing the seed stock from which much of today's Midwestern corn has been developed. Although a few cobs were considered to be similar to pre-Columbian types, the report does not specify how many, nor does it describe these cobs (Cutler and Blake 1980).

The maize from Mission Refugio is, therefore, quite similar to that from Mission San Juan Capistrano. It is a type which was developed in central or western Mexico and the seed stock was imported into southern Texas by the Spanish.

Structural Material

The most obvious structural material identified in the samples is pine. Although we lack direct documentation, pine was most likely utilized in the construction of buildings and fences. Historical and archaeological records indicate that doorways and windows were constructed with heavy wooden lintels, and ceiling beams, shutters, and doors were constructed with wood. Roofs were thatched with locally available grasses or reeds, and had to be gabled to repel water (Schuetz 1968:232-233). The type of wood was not specified, but pine would have been an ideal material for this application. Other items made of wood included carts, gates, and fences (Schuetz 1980:279). Other woods adequate for building construction include elm, hickory/pecan, and white oak, all hardwoods suitable for beams, doors, and shutters. Structures that were fashioned entirely from locally available materials were *jacales*, with walls constructed of sapling posts placed vertically into the ground. Multi-stemmed mesquite trees, which grow in areas that burn often, make ideal jacal posts. Willow branches are often used to weave among the vertical posts. Thus, local resources probably continued to contribute to the construction of these shelters.

Subsistence

There is currently no archaeological or ethnohistoric evidence to suggest that farming was conducted in coastal or southern Texas before the arrival of Europeans. The environment of the region was not conducive to Native American agriculture in North America. In fact, the western limits of Native American agriculture in eastern North America did not extend far beyond the Brazos River (Judjahn 1999:115).

The colonial period saw a major shift in the subsistence economy, particularly for those Indians directly associated with the missions. The presence of an economy based on agriculture is well-documented for the San Antonio missions (Almaraz 1989; de la Teja 1995; Schuetz 1968; 1980), yet little attention has been given to a detailed description of the nature of that agricultural system. Such a description is beyond the scope of a technical report, but a brief overview would serve to put the plant remains at Mission Refugio into perspective. We may cautiously assume that the agricultural economy present at Mission Refugio somewhat resembled, albeit on a smaller scale, that which was present at the San Antonio missions.

The agricultural system imported into southern Texas was primarily an Old World system modified for use in the Americas. The primary components that distinguish the Old World system from the Native North American system are cattle raised for both meat and as beasts of burden, sheep and goats for food and clothing, plows pulled by oxen, and several Old World cultigens including wheat, cantaloupe, sugarcane, watermelon, and fruit trees. American domesticates included maize, cotton, beans, sweet potatoes, and squash (de la Teja 1995:76; Schuetz 1968:40; 1980:269).

Southern Texas was not a particularly hospitable region for an agricultural economy and as a result, maize farming was consistently reliable only if the fields were irrigated. At Mission La Bahía where the landscape was not conducive to irrigation, maize farming was often unsuccessful, and La Bahía relied on the San Antonio missions for staples (de la Teja 1995:90). Efforts at dry-farming maize were probably limited both by the seasonal distribution of precipitation (spring–fall) and by extreme interannual variation of precipitation (Norwine 1995).

Wheat was an Old World cultigen that apparently was not grown successfully in southern Texas because the local environment was so poor for that crop. Attempts to grow wheat between 1778 and 1790 produced mixed results, and by 1790 it was reported that wheat was not grown at Béxar. It may be assumed that the missions also had problems with wheat production. Because the majority of wheat consumed in the region was imported from Coahuila (de la Teja 1995:93), the wheat identified in the garbage pits at 41RF1 may have been imported.

The seasonal agricultural cycle began by cleaning out the irrigation canals in February and burning the maize stalks left in the fields from the previous harvest (Schuetz 1980:275). Maize was planted from May to June, but an early crop was sometimes attempted as early as February or March. Cotton was planted along with chiles or beans in June. Hoeing, weeding and irrigating were carried out daily by the mission Indians. Maize could be harvested green, but mature cobs were usually not picked until August. Cotton was harvested in September, which made it particularly vulnerable to tropical storms. Cotton bolls were picked and dried on hides by women and girls. According to Schuetz (1980:276) children received 3 oz. of de-seeded cotton each day to spin into thread, women given 1.5-2 oz. with seeds to pick and spin. Thus, the mission Indians were involved in agricultural production from the planting of the produce to the manufacture of durable goods from that produce. Involving mission Indians in an agricultural and market system would restrict or completely eliminate indigenous subsistence patterns. This would keep Indians dependent on the Spanish for their livelihood, as long as they remained at the missions, and the signature of this subsistence shift would be a plant assemblage dominated by domesticated plants not previously seen in the archaeological record.

Conclusions

The examination of plant remains from flotation and macrobotanical samples has documented an assemblage dominated by domesticated plants. Maize, beans, and squash, were the primary cultigens. Garden cultigens included watermelon and cantaloupe, and peaches must have been cultivated in groves. Wheat was present in the archaeobotanical assemblage, but according to historical documents it may have been imported. Pine wood, another non-local plant common in the trash pits, was probably an important wood used in construction.

The plant remains reflect a subsistence system based on agriculture. Few wild plant seeds or other undomesticated foods such as roots or nuts were noted in the samples. The evidence indicates that the inhabitants of the mission relied primarily on agricultural resources. The only locally available plant resources identified in the samples were obtained from native trees and grasses, materials that would have been used for fire or shelter.

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Appendix F

Mission Refugio

Pollen and Phytoliths Analysis

Appendix F: Pollen and Phytoliths Analysis

John G. Jones

Introduction

A total of 10 sediment samples from Mission Refugio (41RF1), were submitted to the Palynology Laboratory at Texas A&M University for pollen and phytolith analysis. These samples were selected for analysis based on their strategic proveniences (Table F-1), as well as on the likelihood of successfully extracting well-preserved microfossil remains. The features examined in this study represent historic-period trash features associated with the historic mission (1794-1830). Feature 8, is a probable trash pit that may date to some period after mission activity ceased. It was anticipated that a detailed analysis of the fossil pollen and phytoliths in these sediments might provide clues as to past environmental conditions, early plant use, and offer information on past feature function.

Methodology

Recognizing that pollen and phytoliths may not be well-preserved in the highly oxidizing environment present at Mission Refugio, conservative microfossil extraction techniques were employed.

Pollen

The samples were first quantified (15 mls), placed in sterile beakers, and a known quantity of exotic tracer spores was added to each sample. Here, *Lycopodium* spp. spores were chosen as an exotic, because these spores are unlikely to be found in the actual fossil pollen assemblages from this region. Tracer spores are added to samples for two reasons. First, by adding a known quantity of exotic spores to a known quantity of sediment, fossil pollen concentration values can be calculated. Second, in the event that no fossil pollen is observed in the sediment sample, the presence of *Lycopodium* tracer spores verifies that processor error was not a factor in the pollen loss.

Following the addition of the tracer spores, the samples were washed with concentrated hydrochloric acid. This step removed carbonates and dissolved the bonding agent in the tracer spore tablets. The samples were then rinsed in distilled

water, sieved through 150 micron mesh screens and swirled to remove the heavier inorganic particles. Next the samples were consolidated, and 70 percent hydrofluoric acid was added to the residues to remove unwanted silicates. After the silicates had been removed, the residues were rinsed thoroughly, and sonicated in a Delta D-5 sonicator for 30 seconds. This step deflocculated the residues, effectively removing all colloidal material smaller than two microns.

Next, the samples were dehydrated in glacial acetic acid, and were subjected to an acetolysis treatment (Erdtman 1960) consisting of nine parts acetic anhydride to one part concentrated sulfuric acid. During this process, the samples were placed in a heating block for a period not exceeding eight minutes. This step removed most unwanted organic materials, including cellulose, hemi-cellulose, lipids, and proteins, and converted these materials to water-soluble humates. The samples were then rinsed until a neutral pH was achieved.

Following this treatment, the samples were next subjected to a heavy density separation using Zinc Bromide (Sp.G. 2.00). Here, the lighter organic fraction was isolated from the heavier minerals. After this treatment, the lighter pollen and organic remains were collected, and washed in 1% KOH to remove any remaining humates. The residues were then dehydrated in absolute alcohol, and transferred to a glycerine medium for curation in glass vials.

Slides were prepared using glycerine, and identifications were made on a Jenaval compound stereomicroscope at 400-1250x magnification. Identifications were confirmed by using the Palynology Laboratory's extensive pollen reference collection.

A standardized technique was employed in counting the fossil pollen, where a 200 or more grain count was made for each sample, as suggested by Barkley (1934). This technique is standard practice among most palynologists, and is thought to reflect past vegetation or economic plant use fairly well. Following the achievement of a 200+ grain count, the remainder of the slide was carefully scanned for economic pollen types or other significant taxa not recorded during the actual counting.

Table F-1. Proveniences for pollen and phytolith samples

Lab #	Sample #	Feature #	Provenience
1	281	2	73N/100E, 60-70 cmbs
2	282	2	73N/100E, 70-80 cmbs
3	283	2	73N/100E, 80-90 cmbs
4	278	2	73N/100E, 90-100 cmbs
5	279	1	85N/99E, 40-50 cmbs Above Lime
6	290	1	85N/99E, 40-50 cmbs Below Lime
7	293	1	85N/99E, 80-90 cmbs
8	297	1	85N/99E, 120-130 cmbs
9	349	8	Zone C
10	370	8	Zone J

Concentration values were calculated for all samples. Hall (1981) and Bryant and Hall (1993) note that concentration values below 2,500 grains/ml of sediment may not be well-reflective of past conditions, and usually record a differentially-preserved assemblage. As a result, counts with low concentration values should be viewed with caution.

Phytoliths

The samples were processed using techniques developed at the Texas A&M University Palynology Laboratory. Sediment samples were initially quantified (10 grams), and were placed in beakers for chemical treatment.

First, carbonates were removed with 10% HCl. The samples were next rinsed, screened through 150 micron mesh and a series of "short spins" was initiated to remove residual hydrochloric acid and to facilitate the removal of clay particles and the smallest of phytoliths. This step is necessary as phytoliths smaller than 2-3 microns are rarely identifiable or valuable. Following this step, the samples were sonicated in a Delta D-5 ultrasonic generator for a period of 30 seconds, and several additional short spins were performed. These steps removed most of the remaining fine clays.

The residues were next transferred to glass 100 ml tubes, and Schulze's solution (42% nitric acid and potassium chlorate) was added to the samples. The samples were placed in a boiling water bath for about three hours or until all organic traces had been removed. Next, the samples were centrifuged and rinsed until neutral. Following this treatment,

5% KOH was added to the residues to remove any additional humates. After additional rinsing in distilled water, the residue was transferred to a 300 ml glass beaker, and the samples were fractionated in a water column. Here, samples were separated into two size categories: 3-25 micron and 25-150 micron ranges. After fractionation, the residues were transferred to 15 ml tubes, and the remaining water was removed in preparation for heavy density separation. Here, zinc bromide (Sp.G. 2.38) was added to the samples, which were then spun at high speeds for about 10 minutes. The lighter phytolith fraction was collected, and the heavy density separation step was repeated, again collecting the lighter phytoliths. Abundant phytolith remains were noted in all samples.

The phytoliths were next rinsed and transferred to absolute ethanol for curation. A single drop containing phytoliths was added to a cover slip, and it was then allowed to dry. A drop of Meltmount adhesive (refractive index 1.539) was added to the cover slip, and a permanent slide was then made for each fraction of each sample.

Slides were examined at high magnification (1000-1250x) using oil immersion and differential interference contrast settings on a Jenaval compound stereomicroscope. Identifications were confirmed through the use of reference materials and published keys and descriptions.

Among phytolith researchers, there is no established procedure as to how many phytoliths should be counted to establish a representative record of past conditions. In the case of pollen analysis, most researchers count a minimum

Table F-2. Pollen counts from the Mission Refugio samples

Taxa	Common Name	Sample Number							
		281	282	278	290	293	297	249	370
Apiaceae	Celery fam.			1 (0.5)		2 (1.0)			
<i>Artemisia</i>	Sage		1 (0.5)					1 (0.5)	
Asteraceae Lig.	Dandelion, Chicory	1 (0.5)			1 (0.5)			2 (1.0)	1 (0.5)
Asteraceae HS	Sunflower	4 (2.0)		7 (3.5)	1 (0.5)	1 (0.5)			
Asteraceae LS	Ragweed	57 (28.5)	49 (24.5)	71 (35.5)	64 (32.0)	75 (37.5)	79 (39.5)	49 (24.5)	66 (33.0)
<i>Boerhaavia</i>	Spiderling			1 (0.5)					
Cheno-Am	Pigweed, Goosefoot	20 (10.0)	8 (4.0)	11 (5.5)	30 (15.0)	31 (15.5)	16 (8.0)	56 (28.0)	41 (20.5)
<i>Cirsium</i>	Thistle	3 (1.5)	1 (0.5)	1 (0.5)	1 (0.5)	3 (1.5)	2 (1.0)		
Convolvulaceae	Morning Glory fam.	1 (0.5)							
<i>Cucurbita</i>	Squash							1 (0.5)	
Cyperaceae	Sedge fam.	4 (2.0)	2 (1.0)	1 (0.5)	4 (2.0)	2 (1.0)	1 (0.5)	8 (4.0)	4 (2.0)
<i>Eriogonum</i>	Wild Buckwheat	1 (0.5)	1 (0.5)	2 (1.0)	1 (0.5)		3 (1.5)	3 (1.5)	1 (0.5)
Euphorbiaceae	Spurge fam.							1 (0.5)	
Fabaceae	Legume fam.	1 (0.5)	2 (1.0)	1 (0.5)	3 (1.5)	1 (0.5)	1 (0.5)		1 (0.5)
Gentianaceae	Gentian fam.		1 (0.5)				1 (0.5)		1 (0.5)
Lamiaceae	Mint fam.	1 (0.5)							
Liliaceae	Lily fam.		1 (0.5)	2 (1.0)					
Poaceae	Grass fam.	53 (26.5)	69 (34.5)	18 (9.0)	39 (19.5)	22 (11.0)	25 (12.5)	18 (9.0)	21 (10.5)
Polygonaceae	Knotweed fam.	1 (0.5)	2 (1.0)		1 (0.5)	2 (1.0)			
Cerealea	Dom. Old World Grains		1 (0.5)	3 (1.5)			2 (1.0)		
Solanaceae	Nightshade Fam.					1 (0.5)			
<i>Vicia</i>	Vetch			1 (0.5)					
<i>Zea mays</i>	Maize	1 (0.5)							
<i>Carya</i>	Hickory, Pecan	3 (1.5)	1 (0.5)						
<i>Celtis</i>	Hackberry	1 (0.5)					1 (0.5)		
<i>Cephalanthus</i>	Bottombush			1 (0.5)		1 (0.5)		2 (1.0)	
TCT	Juniper, Bald Cypress	27 (13.5)	28 (14.0)	7 (3.5)	27 (13.5)	20 (10.0)	15 (7.5)	18 (9.0)	20 (10.0)
<i>Pinus</i>	Pine		1 (0.5)	1 (0.5)	1 (0.5)		1 (0.5)		4 (2.0)
<i>Platanus</i>	Sycamore		1 (0.5)		1 (0.5)		2 (1.0)	2 (1.0)	
<i>Prosopis</i>	Mesquite				2 (1.0)	1 (0.5)			
<i>Quercus</i>	Oak	8 (4.0)	16 (8.0)	45 (22.5)	11 (5.5)	14 (7.0)	26 (13.0)	19 (9.5)	21 (10.5)
<i>Rhus</i>	Sumac		1 (0.5)						
<i>Salix</i>	Willow	1 (0.5)	1 (0.5)			1 (0.5)	3 (1.5)	2 (1.0)	1 (0.5)
<i>Ulmus</i>	Elm		1 (0.5)	7 (3.5)		6 (3.0)	10 (5.0)	2 (1.0)	5 (2.5)
<i>Viburnum</i>	Viburnum, Arrow-wood			1 (0.5)					
Indeterminate		12 (6.0)	12 (6.0)	18 (9.0)	13 (6.5)	17 (8.5)	12 (6.0)	16 (8.0)	13 (6.5)
Total Pollen		200 (100)	200 (100)	200 (100)	200 (100)	200 (100)	200 (100)	200 (100)	200 (100)
Concentration Value (grains/ml)		2081	2081	2500	3214	2813	2069	2707	2571

of 200 grains as suggested by Barkley (1934). Many phytolith researchers will count a specified number of slide scans, however, with this technique significant variations in phytolith numbers are frequently obtained. Rather, I decided to count a minimum of 300 phytoliths from each fraction. As each size fraction contains different phytolith types (bulliform cells, elongates, rods and hair cells in the coarse fraction; diagnostic grass short cells in the fine fraction), I considered it important to quantify each fraction separately. For graphic purposes, both the coarse and fine fraction assemblages have been included in the graphs. Percentages were calculated based on the total number of phytoliths identified within each size fraction.

Results

Fairly well preserved pollen was noted in all of the samples, and at least 35 different taxa were identified in the Mission Refugio samples (Table F-2). Two samples, however (Sample #283 and 279), contained very large quantities of charcoal which obscured the fossil pollen grains making the slides uncountable. Pollen grains identified in the samples are presented in Table F-2 and Figure F-1. Despite the highly oxidizing environment of Refugio County, a surprising array of fossil grains were identified in the samples. Pollen concentration values ranged from 2,069 to 3,214 fossil grains/ml of sediment. These values are fairly low, but are probably acceptable for gross interpretations. Among the identified pollen grains are several taxa which are generally thought to be fairly fragile and are infrequently found, including *Cucurbita*, Cyperaceae, Lamiaceae, Solanaceae, and *Vicia*. The presence of these pollen taxa confirms that preservation at 41RF1, although imperfect, is at least such that some interpretations from the pollen are possible. Still, it is important to realize that the pollen that was identified in the Mission Refugio sediments is probably quite different from those grains which were originally present, and that some taxa have been selectively lost through degradation.

Phytoliths from 41RF1, were very well preserved (Table F-3). While most phytoliths identified represent various grasses, a number of additional taxa were also noted, including *Cucurbita* cf. *foetidissima* (buffalo gourd), Arecaceae (palm family), *Celtis* (hackberry), and Cyperaceae (sedge family, including *Cyperus* and *Carex* types). Cultigens are represented in the assemblage by Cerealea-type Festucoid forms, and large diagnostic cross shaped phytoliths from *Zea mays*. Phytolith data is presented graphically in Figure F-2.

Discussion

Most of the pollen recovered from the Mission Refugio sediment samples is from wind-pollinated taxa representing local native plant communities. The arboreal taxa make up most of this category including *Carya* (hickory or pecan), *Celtis* (hackberry), *Cephalanthus* (buttonbush), *Pinus* (pine), *Platanus* (sycamore), *Prosopis* (mesquite), *Quercus* (oak), *Rhus* (sumac), *Salix* (willow), Taxodiaceae/Cupressaceae (Bald Cypress/Juniper), *Ulmus* (elm), and *Viburnum* (viburnum), and indicate that environmental conditions in the site area are similar to those found in the region today. The assemblages are dominated by oaks, junipers, composites, and grasses suggesting the region was a grassland with scattered mottes of trees. All arboreal taxa identified in the Mission Refugio samples are species likely to be found in this type of setting.

Human caused disturbance, however, is also apparent in the pollen record. Cultigens (Cerealea-type Poaceae grains, *Zea mays*, and *Cucurbita*) and field weeds (Cheno-Ams and Asteraceae) were common in the sediments signaling that the region was heavily modified by human activity.

Feature 2 is a trash deposit thought to be contemporaneous with the period of mission activity. Three samples from this feature yielded pollen present in sufficient quantities to warrant counting: Samples from 100, 80, and 70 cms bs. These samples are all dominated by LS Asteraceae, Poaceae, *Quercus* and *Juniperus* pollen, all species known to produce large quantities of durable pollen. The lowermost sample from Feature 2 exhibits a slightly greater amount of *Quercus* pollen which may indicate that more oak trees were in the area at that time. Cultigens were represented in the feature by the presence of Cerealea-type grass grains, and by *Zea mays*.

Feature 1 is also a trash pit that is thought to date to the period of mission use. Three samples from this feature yielded countable pollen; 50, 90, and 130 cm bs. Again, the pollen assemblages are dominated by LS Asteraceae, Poaceae, *Quercus* and *Juniperus* grains. As with Feature 2, there is a slightly larger quantity of *Quercus* pollen in the lowermost sample suggesting that oak trees may have been more common at an earlier time. Cultigens were represented in Feature 1 only by two Cerealea grains. It is interesting that Cerealea (wheat, oats, rye or barley) grains are slightly more common at the lower levels than in the upper zones of Features 1 and 2. Prior to the establishment of a local rail system, it would have been necessary to produce these grains

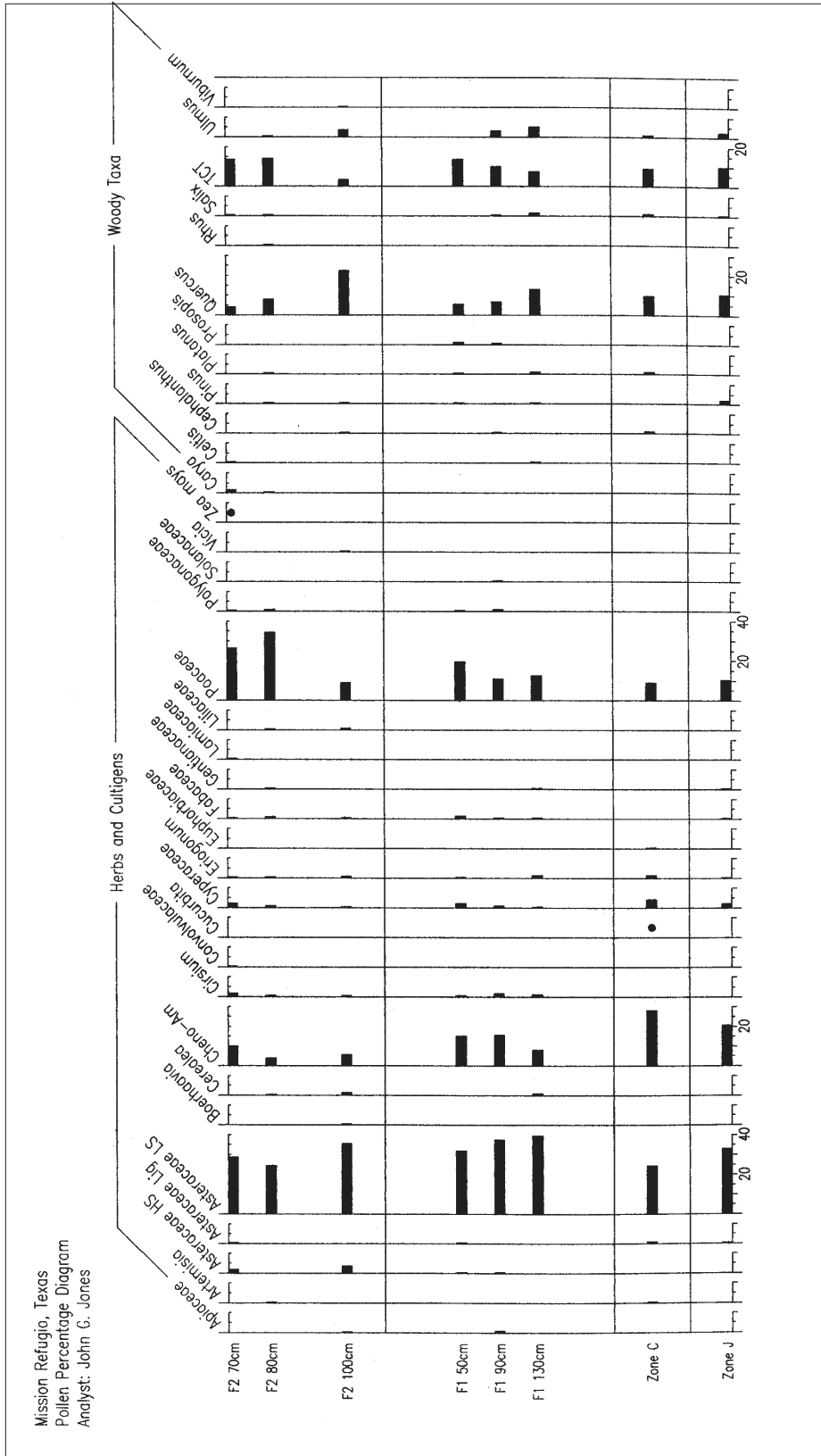


Figure F-1. Pollen grains identified in the samples (percentage).

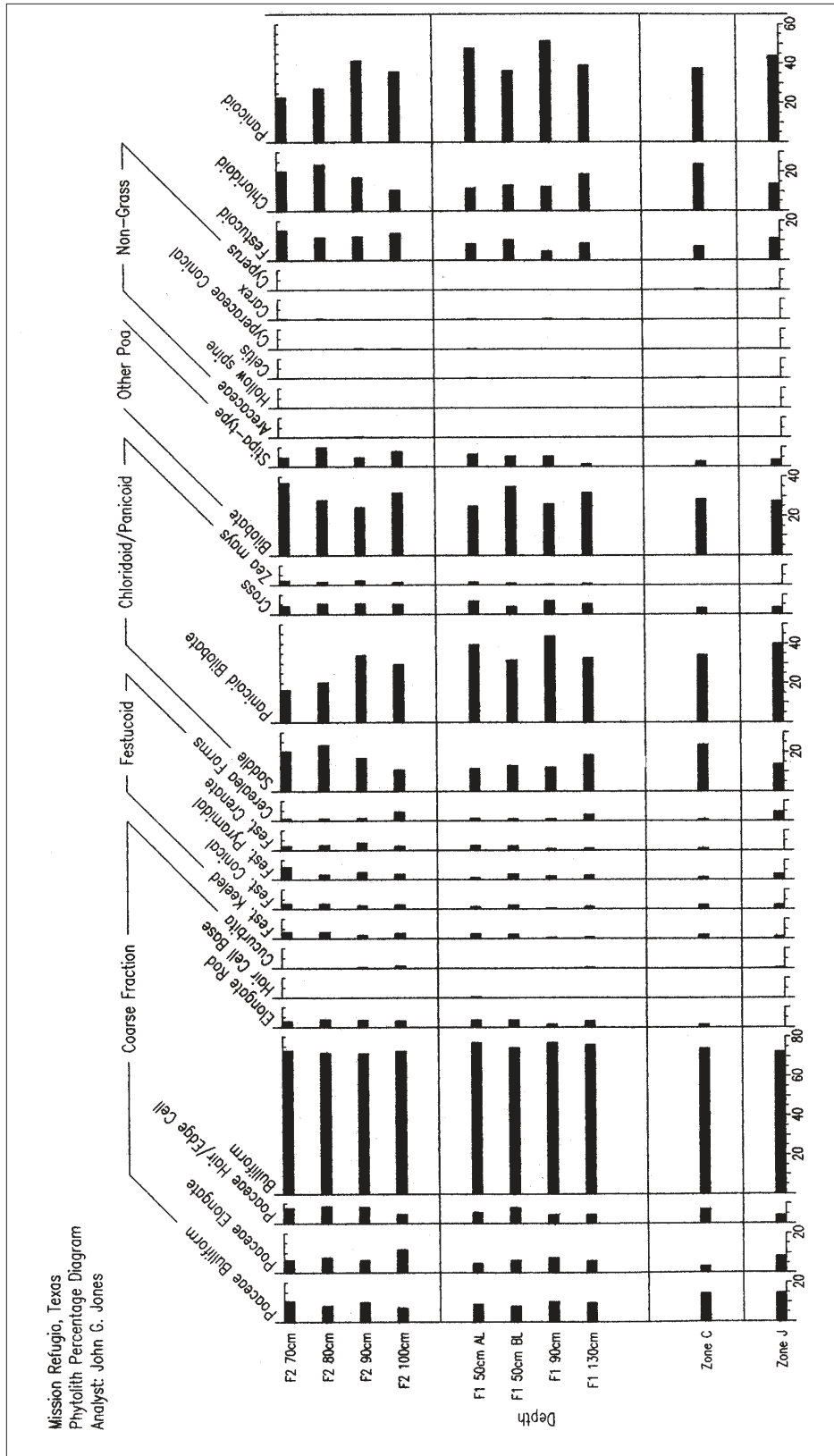


Figure F-2. Phytoliths identified in the samples (percentage).

Table F-3. Taxa identified in phytolith samples from Mission Refugio

Taxa	Sample Number									
	281	282	283	278	279	290	293	297	349	370
Coarse Fraction										
Poaceae Bulliform	33 (10.4)	25 (8.0)	30 (9.9)	21 (7.0)	28 (9.0)	25 (7.9)	31 (10.1)	31 (9.7)	44 (14.3)	45 (14.6)
Poaceae Elongate	20 (6.3)	24 (7.7)	19 (6.3)	35 (11.7)	15 (4.8)	20 (6.3)	23 (7.5)	20 (6.2)	10 (3.2)	26 (8.4)
Poaceae Hair/Edge	24 (7.6)	27 (8.7)	25 (8.3)	14 (4.7)	17 (5.4)	25 (7.9)	13 (4.2)	15 (4.7)	22 (7.1)	13 (4.2)
<i>Cucurbita</i>			1 (0.3)	3 (1.0)				1 (0.3)	1 (0.3)	
Bulliform	230 (72.8)	223 (71.7)	216 (71.5)	218 (72.2)	240 (76.9)	235 (74.4)	236 (76.9)	244 (76.0)	228 (74.0)	224 (72.5)
Elongated Rod	9 (2.8)	12 (3.9)	11 (3.6)	9 (3.0)	11 (3.5)	11 (3.5)	4 (1.3)	10 (3.1)	4 (1.3)	
Hair Cell Base					1 (0.3)					
Total Coarse	316 (100)	311 (100)	302 (100)	300 (100)	312 (100)	316 (100)	307 (100)	321 (100)	308 (100)	309 (100)
Fine Fraction										
Keeled	10 (3.1)	11 (3.3)	6 (1.8)	9 (2.8)	8 (2.4)	7 (2.2)	2 (0.6)	3 (0.9)	6 (1.9)	4 (1.2)
Conical	9 (2.8)	9 (2.7)	6 (1.8)	7 (2.1)	4 (1.2)	6 (1.9)	2 (0.6)	4 (1.3)	7 (2.2)	7 (2.2)
Pyramidal	20 (6.3)	8 (2.4)	12 (3.6)	9 (2.8)	3 (0.9)	9 (2.9)	5 (1.6)	7 (2.2)	4 (1.3)	9 (2.8)
Crenate	6 (1.9)	8 (2.4)	12 (3.6)	6 (1.8)	8 (2.4)	7 (2.2)	2 (0.6)	3 (0.9)	3 (1.0)	
Cerealea-typ	3 (0.9)	3 (0.9)	4 (1.2)	14 (4.3)	4 (1.2)	3 (1.0)	3 (1.0)	10 (3.2)	2 (0.6)	15 (4.7)
Saddle	64 (20.1)	79 (23.4)	56 (16.8)	35 (10.7)	38 (11.6)	41 (13.1)	38 (12.3)	59 (18.6)	74 (23.6)	44 (13.8)
<i>Stipa</i> -type	15 (4.7)	33 (9.8)	16 (4.8)	26 (8.0)	21 (6.4)	17 (5.4)	17 (5.5)	5 (1.6)	9 (2.9)	11 (3.4)
Bilobate	117 (36.8)	94 (27.9)	81 (24.3)	103 (31.5)	82 (25.1)	110 (35.0)	80 (26.0)	101 (31.9)	89 (28.4)	88 (27.5)
Panicoid Bilobate	52 (16.4)	68 (20.2)	113 (33.9)	96 (29.4)	129 (39.4)	99 (31.5)	135 (43.8)	104 (32.8)	107 (34.2)	128 (40.0)
Cross	13 (4.1)	18 (5.3)	18 (5.4)	17 (5.2)	22 (6.7)	12 (3.8)	22 (7.1)	17 (5.4)	10 (3.2)	11 (3.4)
<i>Zea mays</i>	7 (2.2)	5 (1.5)	7 (2.1)	4 (1.2)	5 (1.5)	3 (1.0)	1 (0.3)	2 (0.6)		1 (0.3)
Arecaceae			1 (0.3)							
Hollow Spine	1 (0.3)									
Cyperaceae Conical			1 (0.3)	1 (0.3)	1 (0.3)					
<i>Carex</i>	1 (0.3)	1 (0.3)			1 (0.3)		1 (0.3)	1 (0.3)		
<i>Cyperus</i>									1 (0.3)	1 (0.3)
<i>Celtis</i> Fruit					1 (0.3)			1 (0.3)	1 (0.3)	1 (0.3)
Total Fine	318 (100)	337 (100)	333 (100)	327 (100)	327 (100)	314 (100)	308 (100)	317 (100)	313 (100)	320 (100)
Total	634	648	635	627	639	630	615	638	621	629

locally. Later on, with better systems of transport, local farmers would have switched to more lucrative crops (such as maize) while abandoning less productive grains. A similar trend of this nature was noted at Mission San Juan Capistrano in San Antonio (Jones 2001), where Old World cereal grain phytoliths were most common in the earlier zones, while maize became more important in the later deposits.

While the *Cerealea* pollen in Features 1 and 2 may represent grains blown into the features from nearby agricultural activities, alternative explanations are possible. The grains may also have been introduced into the sediments through the disposal of manure or hay.

Two additional pollen samples from Feature 8 were also examined. Feature 8 is a large excavated pit of unknown function, somewhat removed from the mission area. Two samples were examined from Zone C and Zone J. The pollen assemblages from these samples are similar to those from Features 1 and 2, although here there are slightly more Chenopods and no *Cerealea* or maize grains. Pollen from *Cucurbita* sp. (buffalo gourd or domesticated squash) was identified in the Zone C sample. Analysis of fossil pollen offers no real clues as to this feature's function.

Phytoliths

Well-preserved fossil phytoliths were identified in all of the samples from Mission Refugio. Not surprisingly, the assemblages are dominated by grasses, as these plants are both abundant in the site area, and are among the heaviest phytolith producers. Of the identifiable types, Chloridoid and Panicoid types are the most commonly encountered forms in the samples. Chloridoid phytoliths are from the C_4 bunch grasses (buffalo grass or grama grass). These plants are best represented in a warm and dry climate. Panicoids are mostly tropical and subtropical C_4 grasses favoring a warmer climate with more available moisture. Maize is a member of the Panicoid group of grasses. Both groups of grasses are well-represented in south and central Texas. Festucoid or Pooid grasses, on the other hand, are cool climate C_3 grasses, members of which are generally poorly represented in the Mission Refugio region. This group makes up the domesticated Old World grasses, including oats, rye, barley, and wheat. I suspect that many of the Mission Refugio phytoliths of this group were introduced into the sediments

through the processing or disposal of domesticated grains. One particular form (*Cerealea* type) is an irregular body frequently encountered in, but not exclusive to, domesticated *Cerealea* plants. These distinctive phytolith forms exhibit the same general pattern shown by *Cerealea* pollen, where there is a slightly greater number found in the deeper sediments of both Features 1 and 2. This too may support the hypothesis that domesticated grains were more commonly grown in earlier times, later to be replaced by more prolific taxa.

In the Mission Refugio samples, maize is better represented by phytoliths than pollen. Maize produces a distinctive and large cross shaped phytolith body. These forms were identified in nearly all samples attesting to the importance of this plant. A single maize phytolith was also noted in the sediment sample from Zone J of Feature 8.

Cucurbita cf. *foetidissima* (buffalo gourd) phytoliths were noted in samples from the lower portions of Features 1 and 2, and from Zone J of Feature 8. This plant is fairly common throughout much of Texas, and thrives in waste places and disturbed environments. The seeds of buffalo gourd are rich in oils and high in protein (Jacks et al. 1972) and it may have been encouraged or even cultivated in the Mission Refugio area.

Several other phytolith types were noted, including a single *Sabal*-type *Arecaceae* phytolith, *Celtis* fruit phytoliths, and several *Cyperaceae* (*Carex* and *Cyperus*) phytoliths. The presence of a single palm phytolith is curious, as palms are not known to occur in the site area. It is possible that ornamental palms may have been planted in the area in the past, or alternatively, the phytolith may have been reworked from Tertiary age sediments cropping out in the site vicinity. *Celtis* and *Cyperaceae* phytoliths are to be expected as normal background taxa.

Summary

A total of 10 sediment samples from Mission Refugio were examined for fossil pollen and phytoliths. These samples were selected from significant strata and represent fill from two trash pits and a pit of unknown function. It was anticipated that information on past plant use might be gained from this type of study.

Environmental pollen and phytoliths indicate that conditions during mission use were similar to those of today. The area was probably a grassland environment with scattered mottes of trees, including oaks, junipers, elms, hickory or pecans, and hackberry. Cultigens at the site are represented by pollen and phytoliths of maize and domesticated Old World Cerealea grains (wheat, barley, rye, or oats). There is an interesting trend towards the reduction of Cerealea pollen and phytoliths from earlier to later deposits, suggesting that these grains became less important to the local agricultural economy. With better means of transport and shipping, it likely became more profitable to import less productive Cerealea grains and concentrate agricultural efforts on maize and those plants better adapted to a Texas climate.

Buffalo gourd phytoliths and probable pollen were also noted in all of the features. It is not inconceivable that this plant was encouraged or even cultivated in the site area for its valuable protein and oil rich seeds.

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Appendix G

Mission Refugio

Petrographic Ceramic Analyses

Bone Tempered and Mexican Glazed Ceramics

Appendix G: Petrographic Ceramic Analyses

Bone Tempered Ceramics

David V. Hill

Introduction

A sample of 107 ceramic sherds from the Spanish Colonial site of Mission Refugio, 41RF1, were examined through petrographic analysis. Several compositional groups were identified based on the variation in the relative amount of sand and bone present in the sherds.

Methodology

The ceramics were analyzed using a Nikon Optiphot-2 petrographic microscope. The sizes of natural inclusions and tempering agents were described in terms of the Wentworth Scale, a standard method for characterizing particle sizes in sedimentology. These sizes were derived from measuring a series of grains using a graduated reticle built into one of the microscopes optics. The percentages of inclusions in untempered ceramics were estimated using comparative charts (Matthew et al. 1991; Terry and Chilingar 1955). Studies have been conducted regarding the reproducibility of determinations using these charts (Mason 1995). Given the limited amount of inclusions that may be present in ceramics and the small size of many of the sherds in the sample, the comparative method for assessing the amount and size of materials found in ceramics has been found useful for archaeological ceramic petrography as point counting (Mason 1995).

Analysis was conducted by first going through the total ceramic collection and generating a brief description of each of the sherds. A second phase identified groups based on the similarity of the paste and temper between sherds. The five classifications based on paste and temper composition are: 0 = high sand, no bone; 1 = 20-40 percent sand, 15 percent or less bone; 2 = very low sand, 10-15 Percent bone; 2A = low sand, abundant bone; and 2B = 15 percent or less sand, 10 percent or more bone (Table G-1).

A third check of the ceramics was made to identify patterns of similarities within, or differences between, the three analytical units identified in Chapter 8A, Volume I of this report. Additional comments about the composition of individual sherds were made at this time. A description of each analyzed sherd is given in the following section, arranged by analytical unit.

Description of Sample Sherds

Analytical Unit 1: Feature 1 Sherds

RFT-032

The paste of this sherd is light grayish brown in color and has a distinctive sandy texture resulting from the presence of 20 percent silt-sized to fine sub-rounded sand grains. Quartz makes up about 80 percent of the sand grains. Some of the quartz grains display undulose extinction. Also present are sparse potassium feldspar grains and a single fine microcline grain was also observed. Most of these grains display alteration to sericite and clay minerals. Bone makes up only about one percent of the ceramic matrix. The bone fragments are translucent under cross-polarized light. The bone fragments range in size from fine to medium. This is a Class 1 sherd.

RFT-040

The paste of this sherd is a medium to dark brown. The paste contains about 15 percent fine-sized, rounded sands. The composition of the sand is dominated by quartz with a trace amount of potassium feldspar, and plagioclase. Also present in the sherd are fine- to medium-sized fragments of bone. Bone makes up about an additional 10 percent of the ceramic body. The bone fragments appear to be translucent with slightly brownish edges under cross-polarized light. This is a Class 2B sherd.

RFT-042

The paste of this sherd is very dark brown and opaque. The paste contains about 35 percent silt-sized to fine, sub-rounded grains of sand dominated by quartz. Sparse potassium feldspar and microcline are also present, but in trace amounts. The feldspars are slightly altered to sericite and clay minerals. One microcline grain contains quartz poikilitically. Also present were two coarse-sized, rounded grains of fine-grained sandstone. A clay cement supports the sandstone. The paste also contains fine- to medium-sized fragments of bone. The bone fragments make up about one percent of the ceramic paste. The bone fragments appear to be translucent with slightly brownish edges under cross-polarized light. This is a Class 1 sherd.

Table G-1. Paste and temper composition of unglazed Native American ceramic sherds from Mission Refugio

Sample #	Provenience	AU #	Sand Size	Sand %	Bone Size	Bone %	Paste Group
RFT002	75N/99E 30-40cmbs	1	F	35	M-VC	15	1
RFT006	75N/99E 30-40cmbs	1	VF-F	35	F-M	15	1
RFT010	76N/100E 10-20cmbs	1	VF-F	20	F-C	15	1
RFT014	74N/100E 30-35cmbs	1	VF-F	20	F-C	15	1
RFT015	73N/99E 40-50cmbs	1	St-F	5	F-C	15	2
RFT019	75N/100E 50-55cmbs	1	VF-F	5	C	15	2
RFT021	74N/100E 50-55	1	St-F	25	F-C	7	1
RFT041	86N/100E 40-50cmbs	1	F	3	F-C	15	2
RFT044	84N/100E 20-30cmbs	1	St-F	35	F-C	3	1
RFT049	86N/100E 20-30cmbs	1	St-F	25	M	3	1
RFT059	87N/100E 20-30cmbs	1	St-F	10	F-C	10	2B
RFT062	85N/99E 20-30cmbs	1	F	1	F-C	10	2
RFT063	87N/100E 0-20cmbs	1	VF-M	35	C-VC	5	1
RFT064	86N/99E 0-20cmbs	1	St-F	25	F-C	15	1
RFT074	85N/100E 20-30cmbs	1	St-F	25	F-C	7	1
RFT075	83N/100E 0-20cmbs	1	St-F	40	0	0	0
RFT076	83N/100E 0-20cmbs	1	St-F	30	F-C	10	1
RFT077	86N/100E 40-50cmbs	1	St-F	35	F-C	3	1
RFT081	85N/99E 0-20cmbs	1	F-M	1	C	10	2
RFT090	87N/100E 20-30cmbs	1	VF-F	35	F-C	10	1
RFT094	85N/99E 30-40cmbs AL	1	St-F	25	F-C	10	1
RFT095	86N/100E 40-50cmbs AL	1	VF-F	10	F-VC	15	1
RFT098	71N/100E 0-20cmbs	1	St-F	30	F-C	10	1
RFT099	86N/99E 40-50cmbs AL	1	St-F	30	F-C	10	1
RFT102	TxDOT TP1 0-10cmbs	1	St-F	30	F-C	10	1
RFT103	TxDOT TP1 10-20cmbs	1	St-F	25	M-VC	10	1
RFT106	TxDOT Gradall Tr. # 1	1	St-F	20	F-C	10	1
RFT108	95N/100E 20-30cmbs	1	St-F	15	F-C	3	2B
RFT111	78N/100E 20-30cmbs	1	St-F	35	C-VC	5	1
RFT119	71N/100E 0-20cmbs	1	St-F	25	F-C	10	1
RFT120	90N/100E 0-11cmbs BL	1	St-F	15	F-C	10	1
RFT123	79N/100E 20-30cmbs	1	St-F	40	M	1	1
RFT126	60N/100E 20-30cmbs	1	St-M	15	F-C	5	1
RFT127	95N/100E 0-20cmbs	1	M	1	F-C	10	2
RFT130	71N/100E 0-20cmbs	1	St-F	30	F-C	10	1
RFT131	81N/100E 0-15cmbs AL	1	VF-F	20	F-C	15	1
RFT136	95N/100E 30-40cmbs	1	St-F	25	F-C	10	1
RFT138	71N/100E 20-30cmbs	1	VF-F	20	F-C	10	1
RFT140	78N/100E 0-20cmbs	1	F	10	F-C	20	2B
RFT141	71N/100E 0-20cmbs	1	St-F	15	F-M	10	1
RFT032	75N/100E 50-60cmbs	2	St-F	20	F-M	1	1
RFT040	86N/100E 65-70cmbs	2	F	15	F-M	10	2B
RFT042	85N/99E 100-110cmbs	2	St-F	35	F-M	1	1
RFT043	85N/100E 100-110cmbs	2	St-F	30	M-VC	7	1
RFT045	86N/99E 100-110cmbs	2	St-F	30	M-VC	7	1
RFT047	85N/100E 90-100cmbs	2	VF	1	M	15	2
RFT048	86N/99E 100-110cmbs	2	St-F	15	F-M	10	2B
RFT050	85N/100E 100-110cmbs	2	St-F	25	F-M	10	1
RFT051	85N/100E 120-130cmbs	2	F	1	M-VC	20	2A
RFT055	85N/99E 70-80cmbs	2	F-M	3	F-C	15	2
RFT056	83N/100E 20-30cmbs	2	St-F	25	F-C	10	1
RFT060	86N/99E 60-70cmbs	2	St-F	35	F-M	1	1
RFT061	86N/100E 70-75cmbs	2	VF	25	F-C	3	1
RFT067	85N/99E 90-100cmbs	2	F	1	F-C	15	2

Table G-1. Continued...

Sample #	Provenience	AU #	Sand Size	Sand %	Bone Size	Bone %	Paste Group
RFT068	85N/99E 50-60cmbs	2	F	1	M-VC	15	2
RFT070	84N/100E 90-100cmbs	2	St-F	3	F-C	15	2
RFT073	86N/100E 75-80cmbs	2	St-F	15	F-M	10	2B
RFT078	85N/100E 80-9-cmbs	2	F	1	F-VC	10	2
RFT079	83N/100E 60-70cmbs	2	F	1	F-VC	10	2
RFT085	84N/100E 60-70cmbs	2	F	1	M	10	2
RFT087	85N/100E 70-80cmbs	2	St-F	35	F-M	1	1
RFT088	86N/99E 50-60cmbs	2	F	10	F-VC	15	2B
RFT096	85N/99E 20-30cmbs	2	F-M	5	F-M	15	2B
RFT097	85N/99E 50-60cmbs	2	St-F	1	F-C	15	2
RFT109	81N/100E 30-40cmbs	2	F	1	F-C	10	2
RFT110	81N/100E 20-30 cmbs BL	2	F	1	F-C	15	2
RFT112	81N/100E 30-40cmbs	2	F-M	3	F-C	15	2
RFT113	81N/100E 20-30 cmbs BL	2	F	1	M	15	2
RFT114	81N/100E 30-40cmbs	2	St-F	1	F-C	15	2
RFT116	82N/100E 30-40cmbs	2	St-F	30	F-C	10	1
RFT124	82N/100E 40-50cmbs	2	VF-F	35	F-M	1	1
RFT125	80N/100E 20-30cmbs	2	St-F	1	F-C	15	2
RFT132	82N/100E 30-40cmbs	2	VF	25	F-C	10	1
RFT133	82N/100E 30-40cmbs	2	VF	25	F-C	3	1
RFT135	82N/100E 20-30cmbs	2	VF-F	35	F-M	3	1
RFT137	90N/100E 20-30cmbs BL	2	St-F	20	F-M	5	1
RFT144	82N/100E 30-40cmbs	2	VF-F	25	F-C	5	1
RFT145	80N/100E 30-40cmbs	2	St-F	3	F-C	15	2
RFT146	80N/100E 20-30cmbs	2	St-F	25	F-C	10	1
RFT001	75N/99E 60-70cmbs	3	St-F	25	F-M	1	1
RFT003	73N/100E 60-70cmbs	3	St-F	25	F-M	3	1
RFT008	76N/100E wall cleaning	3	M	1	F-C	10	2
RFT009	76N/100E 50-55cmbs	3	St-F	20	F-C	3	1
RFT011	75N/99E 50-60cmbs	3	M	1	F-C	10	2
RFT012	75N/99E 40-50cmbs	3	St-F	20	F-M	1	1
RFT013	75N/99E 80-90cmbs	3	F-M	1	F-C	10	2
RFT016	76N/100E 40-45cmbs	3	F-M	1	F-C	10	2
RFT017	75N/100E 70-80cmbs	3	St-F	25	F-M	3	1
RFT018	75N/99E 80-90cmbs	3	VF-F	10	F-C	15	1
RFT020	75N/99E 80-90cmbs	3	F-M	1	F-C	10	2
RFT022	74N/100E 65-70cmbs	3	F-M	1	F-C	10	2
RFT023	73N/99E 70-80cmbs	3	F-M	1	F-C	10	2
RFT024	75N/99E 40-50cmbs	3	F-M	1	F-C	10	2
RFT025	75N/99E 60-70cmbs	3	St-F	30	F-C	7	1
RFT027	74N/100E 70-75cmbs	3	F-M	1	F-C	10	2
RFT028	74N/100E 65-70cmbs	3	St-F	20	F-M	1	1
RFT029	75N/100E 60-70cmbs	3	F-M	20	F-M	1	1
RFT030	73N/100E 80-90cmbs	3	F-M	1	F-C	10	2
RFT031	76N/100E 70-75cmbs	3	F-M	1	F-C	10	2
RFT033	75N/100E 70-80cmbs	3	F-M	1	F-C	10	2
RFT034	76N/100E 30-35cmbs	3	St-F	20	F-M	1	1
RFT035	75N/99E 40-50cmbs	3	F-M	1	F-C	10	2
RFT036	74N/100E 80-85cmbs	3	F-M	1	F-C	10	2
RFT037	73N/100E 50-60cmbs	3	St-F	20	F-M	1	1
RFT038	72N/100E 70-80cmbs	3	St-F	20	F-M	1	1
RFT039	74N/100E 70-75cmbs	3	St-F	20	F-M	1	1
RFT053	85N/100E 90-100cmbs	3	St-M	35	F-M	7	1

RFT-043

This sherd has a sandy, dark brown paste. The paste contains moderately well sorted, silt-sized to fine, rounded quartz sands, which make up 30 percent of the ceramic matrix. Two light tan siltstone grains, one very coarse and one coarse were present. Bone was the added tempering agent. Bone temper ranges in size from medium to very coarse and makes up about seven percent of the ceramic body. The bone fragments are dark brown. This is a Class 1 sherd.

RFT-045

The paste of this sherd is dark yellowish-brown, mottled with very dark brown. The paste contains moderately well sorted silt-sized to fine round quartz sands. These quartz sands make up 30 percent of the ceramic matrix. Also present in the paste were coarse-sized, rounded, very-fine grained sandstone grains. A coarse-sized soil pisolite was also present. Bone was the added tempering agent. Bone temper ranges in size from medium to very coarse and makes up about seven percent of the ceramic body. The bone fragments display abundant yellow calcite crystals around the gray margins of the bone. This is a Class 1 sherd.

RFT-047

The paste of this sherd is a light yellowish brown color with very sparse, very fine, rounded quartz sands present. The paste also contains fine- to medium-sized fragments of bone that make up about 15 percent of the ceramic matrix. The bone is dark brown and slightly birefringent. This is a Class 2 sherd.

RFT-048

The paste of this sherd is a dark brown color. The paste has about 15 percent moderately well sorted, silt-sized to fine sands predominantly composed of quartz. Sparse potassium feldspar and plagioclase are also present. The feldspars are slightly altered to sericite and clay minerals. Fine- to medium-sized fragments of bone are also present, making up about 10 percent of the ceramic matrix. The bone is translucent with little alteration. The sherd is similar to sample RFT-073. This is a Class 2B sherd.

RFT-050

The paste of this sherd is very dark brown and opaque. The paste contains about 25 percent silt-sized to fine, sub-rounded grains of sand dominated by quartz. Sparse potassium feldspar and microcline are also present, but in trace amounts. The feldspars are slightly altered to sericite and clay minerals. A single fine-grained rounded tan

sandstone grain was observed in the current specimen. A clay cement supports the sandstone. The paste also contains fine- to medium-sized fragments of bone. The bone fragments make up about 10 percent of the ceramic paste. This is a Class 1 sherd.

RFT-051

The paste of this sherd is a medium brown color. The paste contains fine, sparse, rounded quartz sand grains, making up about one percent of the ceramic body. The paste contains bone fragments that are transparent with gray opaque cores under cross-polarized light. The bone fragments also display considerable calcic alteration. The bone fragments make up about 20 percent of the ceramic body and range in size from medium to very coarse. This is the only sherd in the sample classified as Class 2A.

RFT-055

The paste of this sherd is a light yellowish brown with a distinctive silty texture. The paste contains about 3 percent fine- to medium-sized rounded quartz grains. A few weathered potassium feldspar grains were also observed. The bone temper ranges in size from fine to coarse and makes up about 15 percent of the ceramic body. The bone fragments are dark brown and slightly birefringent. This is a Class 2 sherd.

RFT-056

The paste of this sherd has a medium brown color and a particularly sandy texture. The paste contains about 25 percent silt-sized to fine sand dominated by quartz. Sparse potassium feldspar and microcline are also present in the sand. The feldspars are slightly altered to sericite and clay minerals. Bone temper is also present. The bone fragments range in size from fine to coarse and make up about 10 percent of the ceramic paste. The bone fragments are translucent with slightly gray cores under cross-polarized light. This is a Class 1 sherd.

RFT-060

The paste of this sherd is a light yellowish brown color and has a particularly sandy texture. The paste contains about 35 percent sub-rounded grains of sand dominated by quartz. Sparse potassium feldspar and microcline are also present, but in trace amounts. The feldspars are slightly altered to sericite and clay minerals. The paste also contains fine- to medium-sized fragments of bone. The bone fragments make up about one percent of the ceramic paste. The bone fragments range in size from coarse to very coarse and are translucent with gray centers. This is a Class 1 sherd.

RFT-061

The paste is a dark brown color and contains about 25 percent very fine rounded quartz sand. Bone fragments make up about three percent of the ceramic matrix and range in size from coarse to fine. The bone fragments are a dark brown to opaque gray color. This is a Class 1 sherd.

RFT-067

The paste of this sherd is a light tannish color and has a silty texture. Less than one percent of the ceramic matrix contains fine rounded quartz sands. The paste contains about 15 percent fine to coarse bone temper that is translucent. This is a Class 2 sherd.

RFT-068

The paste of this sherd is a light yellowish brown mottled with a light reddish brown. The ceramic body contains about one percent round, fine quartz sand. Also present in the sherd is about 15 percent medium to very coarse sided angular fragments of bone that are a light gray color. This is a Class 2 sherd.

RFT-070

The paste of the sherd is a medium brown color and has a silty texture. The paste contains about three percent silt-sized to fine, rounded quartz sand. Sparse weathered potassium feldspar is also present and is altered to sericite and clay minerals. One fine-sized microcline grain was observed. The paste contains about 15 percent bone fragments, which range in size from fine to coarse. The bone is light gray color to dark brown and is slightly birefringent. Calcite is present surrounding and in-filling some of the bone fragments. This is a Class 2 sherd.

RFT-073

The paste of this sherd is a medium brown color. The paste has a sandy texture resulting from the abundance of silt-sized to very fine quartz sands. These sand grains, that range in size from silt-sized to medium, make up only about 15 percent of the ceramic body, but the concentration of the finer particles in the paste makes the sample appear to have more sands than are actually present. Also present are bone fragments. The bone fragments make up about 10 percent of the ceramic body. Bone fragments in the ceramic paste range from fine- to medium-sized. The bone is black and opaque or very dark brown in color under cross-polarized light. This is a Class 2B sherd.

RFT-078

The paste of this sherd is virtually identical to sample RFT-109. The paste of this sherd is medium brown color, and has a silty texture. Less than one percent of the paste contains subangular, fine quartz sand. Bone fragments make up about 10 percent of the paste that range in size from fine to very coarse. The bone fragments are dark brown and slightly birefringent. This is a Class 2 sherd.

RFT-079

Due to the small size of sample number RFT-079, only a limited amount of material is available for description. The paste is a light yellowish-brown color and contains about one percent fine, rounded quartz sand. Also present in the paste are about 10 percent fine- to medium-sized fragments of bone. The bone is translucent or slightly gray in color. This is a Class 2 sherd.

RFT-085

The paste of this sherd is medium yellowish-brown and has a distinctive silty texture. About one percent of the ceramic matrix is made up of fine- to medium-sized quartz sand. Fine- to very coarse-sized bone temper constitutes 15 percent of the ceramic matrix. The bone is either translucent or a light gray color. This is a Class 2 sherd.

RFT-087

The paste of this sherd is very dark brown and opaque. The paste contains about 35 percent sub-rounded grains of sand dominated by quartz. Sparse potassium feldspar and microcline are also present, but in trace amounts. The feldspars are slightly altered to sericite and clay minerals. The paste also contains fine- to medium-sized fragments of bone. The bone fragments make up about one percent of the ceramic paste. The bone is translucent with brownish edges. This is a Class 1 sherd.

RFT-088

The paste of this sherd is a dark brown color and is almost opaque. The paste contains about 10 percent rounded, fine sand grains. The sands consist of about 90 percent quartz with additional weathered potassium feldspar grains. The paste also contains about 15 percent bone fragments that range in size from fine to coarse. The bone fragments are optically opaque and were surrounded by rims of recrystallized calcite. Calcite also fills voids in the bone fragments. This is a Class 2B sherd.

RFT-096

The paste of this sherd is a moderate brown color and has a distinctive silty texture. The paste contains about five percent fine- to medium-sized, rounded quartz sands. The quartz grains display an undulose extinction. Also present are fragments of bone. The bone fragments make up about 15 percent of the paste and range in size from fine to medium. The bone is gray with rims of calcite crystals on some of the bone fragments. This is a Class 2B sherd.

RFT-097

The paste of this sherd is a light yellowish-brown with a distinctive silty texture. The paste contains less than one percent rounded quartz grains. The paste contains about 15 percent fine to coarse bone fragments that are dark brown to black and opaque. The paste of this sherd resembles RFT-145. This is a Class 2 sherd.

RFT-109

The paste of this sherd is medium brown color, and has a silty texture. Less than one percent of the paste contains subangular, fine quartz sand. Bone fragments make up about 10 percent of the paste. The bone fragments range in size from fine to very coarse. The bone fragments are light gray to dark brown and the dark brown bone fragments are slightly birefringent. This is a Class 2 sherd.

RFT-110

The paste of this sherd is a moderate brown color and has a distinctive silty texture. The paste contains about one percent fine- to medium-sized rounded quartz sands. The quartz grains display an undulose extinction. Also present are fragments of bone. The bone fragments make up about 15 percent of the paste and range in size from fine- to coarse-sized. The bone is dark brown and slightly birefringent. This is a Class 2 sherd.

RFT-112

The paste of this sherd is a light yellowish-brown with a distinctive silty texture. The paste contains about three percent fine- to medium-sized rounded quartz grains. Two medium sized chert grains were also observed. Also present were two very coarse areas where the clay did not appear to have been well wedged, as these areas were lighter in color and lacked the added bone temper. The bone temper ranges in size from fine to coarse and makes up about 15 percent of the ceramic body. This is a Class 2 sherd.

RFT-113

The paste of this sherd is light yellowish-brown color with a distinctive silty texture. The paste contains about one percent rounded, fine to medium quartz sand grains. Also present in the sherd are about 15 percent fine- to medium-sized fragments of bone. The bone fragments are dark brown or opaque and birefringent. This is a Class 2 sherd.

RFT-114

The paste of this sherd is a medium brown color and has a silty texture. The paste contains about one percent silt-sized to fine, rounded quartz sand. The bone present makes up about 15 percent of the ceramic matrix. Bone fragments range in size from fine to coarse. The bone is a light yellow color under plain polarized light. A single coarse-sized rounded fragment of poorly wedged clay containing sparse quartz sand grains is also present. This is a Class 2 sherd.

RFT-116

The paste of this sherd is a dark brown mottled with an opaque black. The paste contains about 30 percent silt-sized to fine sand grains, predominately quartz. Sparse potassium feldspar is also present, but has been altered partly to sericite and clay minerals. Also present in the ceramic body are fine- to coarse-sized fragments of bone. The bone makes up about 10 percent of the ceramic body. The bone is a light brown color under plain polarized light. This is a Class 1 sherd.

RFT-124

The paste of this sherd is dark brown in color. The paste contains 35 percent moderately well sorted sub-rounded sands, dominated by quartz. A few of the quartz grains display undulose extinction or occur as multi-grain aggregates. Sparse grains of potassium feldspar with a fresh appearance and three grains of chert are also present. The sand grains are moderately well sorted and range from very fine- to fine-sized. Bone is present in a sparse amount making up about one percent of the total ceramic body. The bone fragments range from fine- to medium-sized and are a light yellow color under plain polarized light. This is a Class 1 sherd.

RFT-125

The paste of this sherd is almost identical to that observed in RFT-114. The paste is a medium brown color with a silty texture and contains about one percent rounded quartz sand. Bone temper makes up about 15 percent of the paste and ranges in size from fine to coarse. The bone is a light yellow color under plain polarized light. This is a Class 2 sherd.

RFT-132

The paste of this sherd is black and opaque. The paste contains about 25 percent very fine, rounded quartz sand. Bone fragments make up about 10 percent of the ceramic matrix and range in size from coarse to fine. The bone is a light gray color under cross-polarized light. This is a Class 1 sherd.

RFT-133

The paste of this sherd is black and opaque and contains about 25 percent very fine, rounded quartz sand. Bone fragments make up about three percent of the ceramic matrix and range in size from coarse to fine. It is likely that the parent vessel of this sherd utilized the same paste as RFT-132. The bone is a dark gray color under cross-polarized light. This is a Class 1 sherd.

RFT-135

The paste of this sherd is an opaque black color. The paste contains 35 percent moderately well sorted, sub-rounded sands, dominated by quartz. A few of the quartz grains display undulose extinction or occur as multi-grain aggregates. Sparse grains of potassium feldspar with a fresh appearance are also present. The sand grains are moderately well sorted and range from very fine to fine in size. Bone is present in a sparse amount making up about three percent of the total ceramic body. The bone fragments range from fine to medium in size and are a light grayish-brown in color. This is a Class 1 sherd.

RFT-137

The paste of this sherd is a light yellowish-brown color and has a silty texture. The paste contains 20 percent rounded, silt-sized to fine sands. The predominate mineral in the sands is quartz. Potassium feldspar and one fragment of microcline are also present in the sands. The sands are moderately well sorted. A single fragment of a banded agate is also present in the paste. Also present in the paste of this sherd are fragments of bone. The bone fragments range in size from fine to medium and account of about five percent of the ceramic paste. The bone is a light gray or yellow color under plain polarized light. This is a Class 1 sherd.

RFT-144

The paste of this sherd is a dark brown color that contains 25 percent moderately well sorted, sub-rounded sands, dominated by quartz. A few of the quartz grains display undulose extinction or occur as multi-grain aggregates. Sparse grains of potassium feldspar with a fresh appearance

are also present. The sand grains range from very fine to fine in size. Bone is present in a sparse amount making up about five percent of the total ceramic body. The bone fragments range from fine to coarse in size and are either dark brown or translucent. This is a Class 1 sherd.

RFT-145

The paste of this sherd is a light yellowish-brown with a distinctive silty texture. The paste contains less than three percent rounded quartz grains. The paste does contain about 15 percent fine to coarse bone fragments. The yellow color is likely the result of the vessel having been fired at a higher temperature than the other sherds from this assemblage rather than from the use of a different clay body. This is a Class 2 sherd.

RFT-146

The paste of this sherd is a medium brown color and contains about 25 percent silt-sized to fine, rounded, quartz rich sand. Potassium feldspar is also present in trace amounts. The potassium feldspar is usually altered to sericite and clay minerals. Also present in the paste are angular bone fragments. The bone is a light gray color under cross-polarized light. The bone fragments range in size from fine to coarse and make up about 10 percent of the ceramic body. This is a Class 1 sherd.

Analytical Unit 2: Feature 2 Sherds

RFT-001

The paste of this sherd is a medium brown color. The paste contains about 25 percent sub-rounded to rounded sand grains dominated by quartz. Sparse weathered potassium feldspar and plagioclase are also present but in trace amounts. Fine- to medium-sized fragments of bone temper are also present. The bone temper fragments make up less than one percent of the ceramic matrix and are translucent. This is a Class 1 sherd.

RFT-003

The paste of this sherd is light yellowish-brown color and has a distinctive sandy texture resulting from the presence of 25 percent silt-sized to fine, sub-rounded sand grains. Quartz makes up about 80 percent of the sand grains. Some of the quartz grains display undulose extinction. Also present are potassium feldspar grains. Most of these feldspar grains display alteration to sericite and clay minerals. Bone fragments are present in the paste as well. Bone makes up only about three percent of the ceramic matrix. The bone

fragments range in size from fine to medium. The bone fragments are dark brown and slightly birefringent. One coarse-sized bone fragment was also present. This is a Class 1 sherd.

RFT-008

The paste of this sherd is medium brown in color and slightly birefringent. The paste also has a silty texture. Medium sized rounded quartz sand is present, but makes up less than one percent of the ceramic matrix. Fine- to coarse-sized bone temper makes up about 10 percent of the ceramic matrix. The bone is dark brown and birefringent. The paste and inclusions observed in this sherd are quite similar to samples, RFT-011, RFT-020, RFT-022, RFT-024, and RFT-036. This is a Class 2 sherd.

RFT-009

The paste of this sherd is quite similar to sample RFT-003 in terms of color, the occurrence of quartz sands and the sparse amount of bone temper present in this specimen. The paste of this sherd is light yellowish-brown color and has a distinctive sandy texture resulting from the presence of 20 percent silt-sized to fine, sub-rounded sand grains. Quartz makes up about 80 percent of the sand grains. Some of the quartz grains display undulose extinction. Also present are potassium feldspar grains. Most of these grains display alteration to sericite and clay minerals. Bone fragments are present in the paste as well. Bone makes up only about three percent of the ceramic matrix. The bone fragments range in size from fine to medium. One coarse-sized bone fragment was also present. The bone fragments are opaque with gray cores. This is a Class 1 sherd.

RFT-011

The paste of this sherd is medium brown in color and slightly birefringent. The paste also has a silty texture. Medium sized rounded quartz sand is present, but makes up less than one percent of the ceramic matrix. Fine- to coarse-sized bone temper makes up about 10 percent of the ceramic matrix. The bone is opaque and light gray in color with abundant calcite rhombs surrounding the particles under cross-polarized light. This is a Class 2 sherd.

RFT-012

The paste of this sherd is quite similar to sample RFT-003 and RFT-009 in terms of color, the occurrence of quartz sands, and the sparse amount of bone temper present in this specimen. The paste is light grayish-brown in color and has

a distinctive sandy texture resulting from the presence of 20 percent silt-sized to fine, sub-rounded sand grains. Quartz makes up about 80 percent of the sand grains. Some of the quartz grains display undulose extinction. Also present are potassium feldspar grains. Most of the feldspar grains display alteration to sericite and clay minerals. Bone makes up only about one percent of the ceramic matrix. The bone fragments range in size from fine to medium. The bone fragments are a light gray color and surrounded by rhombs of calcite. One coarse-sized bone fragment was also observed. This is a Class 1 sherd.

RFT-013

The paste of this sherd is dark brown and has a distinctive silty texture. Fine to medium sized rounded quartz sand is present, but makes up less than one percent of the ceramic matrix. Fine- to coarse-sized bone temper makes up about 10 percent of the ceramic matrix. The bone fragments are dark and opaque under cross-polarized light. The paste and inclusions observed in this sherd are quite similar to samples RFT-016, RFT-022, RFT-024, and RFT-036. This is a Class 2 sherd.

RFT-016

The paste of this sherd is medium brown in color and slightly birefringent. The paste also has a silty texture. Fine- to medium-sized rounded quartz sand is present, but makes up less than one percent of the ceramic matrix. Fine- to coarse-sized bone temper makes up about 10 percent of the ceramic matrix. The bone fragments are dark and opaque under cross-polarized light. The paste and inclusions observed in this sherd are quite similar to samples RFT-013, RFT-020, RFT-022, RFT-024, and RFT-036. This is a Class 2 sherd.

RFT-017

The paste of this sherd is quite similar to that of RFT-003 and RFT-009 in terms of color, abundance of quartz sands and sparse bone fragments. The paste of this sherd is light yellowish-brown color and has a distinctive sandy texture resulting from the presence of 25 percent silt-sized to fine sub-rounded sand grains. Quartz makes up about 80 percent of the sand grains. Some of the quartz grains display undulose extinction. Also present are potassium feldspar grains. Most of these grains display alteration to sericite and clay minerals. Bone makes up about three percent of the ceramic matrix. The bone fragments range in size from fine to medium. One coarse-sized bone fragment was also present. This is a Class 1 sherd.

RFT-018

The paste of this sherd is a medium brown color. The paste contains 10 percent well-sorted, very fine to fine quartz sands. These sands are likely natural inclusions in the ceramic paste. Three rounded coarse- to very coarse-sized pellets of calcium carbonate were also observed in the paste of this sherd. Also present in the paste are about 15 percent fine- to coarse-sized angular fragments of bone temper. The bone temper fragments are a very dark brown color. This is a Class 1 sherd.

RFT-020

The paste of this sherd is medium brown in color and slightly birefringent. The paste also has a silty texture. Fine- to medium-sized rounded quartz sand is present, but makes up less than one percent of the ceramic matrix. Fine- to coarse-sized bone temper makes up about 10 percent of the ceramic matrix. The bone fragments are dark gray under cross-polarized light. The paste and inclusions observed in this sherd are quite similar to samples RFT-022, RFT-024, and RFT-036. This is a Class 2 sherd.

RFT-022

The paste of this sherd is quite similar to sample RFT-036 in terms of the amount of quartz sand present and percentage of fine- to coarse-sized bone temper. The paste of this sherd is medium brown in color and slightly birefringent. The paste also has a silty texture. Fine- to medium-sized rounded quartz sand is present, but makes up less than one percent of the ceramic matrix. The bone fragments are very dark brown and slightly birefringent. Fine- to very coarse-sized bone temper makes up about 10 percent of the ceramic matrix. This is a Class 2 sherd.

RFT-023

The paste of this sherd is medium brown in color and slightly birefringent. The paste also has a silty texture. Fine- to medium-sized rounded quartz sand is present, but makes up less than one percent of the ceramic matrix. Fine- to coarse-sized bone temper makes up about 10 percent of the ceramic matrix. The bone fragments are dark and slightly birefringent or opaque under cross-polarized light. The paste and inclusions observed in this sherd are quite similar to samples RFT-020, RFT-022, RFT-024, RFT-030, RFT-031, and RFT-036. This is a Class 2 sherd.

RFT-024

The paste of this sherd is medium brown in color and slightly birefringent. The paste also has a silty texture. Fine- to medium-sized rounded quartz sand is present, but makes

up less than one percent of the ceramic matrix. Fine- to coarse-sized bone temper makes up about 10 percent of the ceramic matrix. The bone fragments are dark brown and slightly birefringent. The paste and inclusions observed in this sherd are quite similar to samples RFT-036 and RFT-022. This is a Class 2 sherd.

RFT-025

The paste of this sherd is a dark brown mottled color with an opaque black. The paste contains about 30 silt-sized to fine sand grains, predominately quartz. Sparse potassium feldspar is also present, but has been altered partly to sericite and clay minerals. Also present in the ceramic body are fine- to coarse-sized fragments of bone. The bone makes up about seven percent of the ceramic body. The bone fragments display a light gray color and contain some calcite rhombs. This is a Class 1 sherd.

RFT-027

The paste of this sherd is medium brown in color and slightly birefringent. The paste also has a silty texture. Fine- to medium-sized rounded quartz sand is present, but makes up less than one percent of the ceramic matrix. Fine- to coarse-sized bone temper makes up about 10 percent of the ceramic matrix. The bone fragments are bright yellow in plain polarized light. This is a Class 2 sherd.

RFT-028

The paste of this sherd is quite similar to samples RFT-003, RFT-009, and RFT-017 in terms of color, the occurrence of quartz sands, and the sparse amount of bone temper present. The paste of this sherd is a light grayish-brown color and has a distinctive sandy texture resulting from the presence of 20 percent silt-sized to fine sub-rounded sand grains. Quartz makes up about 80 percent of the sand grains. Some of the quartz grains display undulose extinction. Also present are potassium feldspar grains. Most of these grains display alteration to sericite and clay minerals. Bone makes up only about one percent of the ceramic matrix. The bone fragments range in size from fine to medium. One coarse-sized bone fragment was also present. The bone fragments are light yellow under plain polarized light. This is a Class 1 sherd.

RFT-029

The paste of this sherd is quite similar to samples RFT-003, RFT-009, and RFT-028 in terms of color, the occurrence of quartz sands, and the sparse amount of bone temper present. The paste of this sherd is a light grayish-brown color and has a distinctive sandy texture resulting from the presence of 20 percent silt-sized to fine sub-rounded sand grains.

Quartz makes up about 80 percent of the sand grains. Some of the quartz grains display undulose extinction. Also present are sparse potassium feldspar grains. Most of these grains display alteration to sericite and clay minerals. Bone makes up only about one percent of the ceramic matrix. The bone fragments range in size from fine to medium and are light yellow under plain polarized light. This is a Class 1 sherd.

RFT-030

The paste of this sherd is medium brown in color and slightly birefringent. The paste also has a silty texture. Fine- to medium-sized rounded quartz sand is present, but makes up less than one percent of the ceramic matrix. Fine- to coarse-sized bone temper makes up about 10 percent of the ceramic matrix. The bone is dark brown and birefringent under cross-polarized light. The paste and inclusions observed in this sherd are quite similar to samples RFT-020, RFT-022, RFT-024, and RFT-036. This is a Class 2 sherd.

RFT-031

The paste of this sherd is medium brown in color and slightly birefringent. The paste also has a silty texture. Fine- to medium-sized rounded quartz sand is present, but makes up less than one percent of the ceramic matrix. Fine- to coarse-sized bone temper makes up about 10 percent of the ceramic matrix. The bone is dark brown and birefringent under cross-polarized light. The paste and inclusions observed are quite similar to samples, RFT-020, RFT-022, RFT-024, RFT-030, and RFT-036. This is a Class 2 sherd.

RFT-033

The paste of this sherd is medium brown and slightly birefringent. The paste also has a silty texture. Fine- to medium-sized rounded quartz sand is present, but makes up less than one percent of the ceramic matrix. Fine- to coarse-sized bone temper makes up about 10 percent of the ceramic matrix. The bone fragments are translucent under cross-polarized light. The paste and inclusions observed in this sherd are quite similar to samples RFT-020, RFT-022, RFT-024, RFT-030, and RFT-036. This is a Class 2 sherd.

RFT-034

The paste of this sherd is medium brown and has a distinctive sandy texture resulting from the presence of 20 percent silt-sized to fine sub-rounded sand grains. Quartz makes up about 80 percent of the sand grains. Some of the quartz grains display undulose extinction. Also present are sparse potassium feldspar grains. Most of these grains display alteration to sericite and clay minerals. Bone makes up only

about one percent of the ceramic matrix. The bone fragments range in size from fine to medium and are translucent with gray cores. This is a Class 1 sherd.

RFT-035

The paste of this sherd is medium brown and slightly birefringent. The paste also has a silty texture. Fine- to medium-sized rounded quartz sand is present, but makes up less than one percent of the ceramic matrix. One very coarse-sized quartz grain is present as is a medium-sized rounded grain of chert. A weathered, coarse-sized potassium feldspar is also present. Fine- to coarse-sized bone temper makes up about 10 percent of the ceramic matrix. The bone fragments are translucent under cross-polarized light with gray cores. This is a Class 2 sherd.

RFT-036

The paste of this sherd is medium brown in color and slightly birefringent. The paste also has a silty texture. Fine- to medium-sized rounded quartz sand is present, but makes up less than one percent of the ceramic matrix. Fine- to coarse-sized bone temper makes up about 10 percent of the ceramic matrix. The bone fragments are dark brown and slightly birefringent. This is a Class 2 sherd.

RFT-037

The paste of this sherd is light grayish brown in color and has a distinctive sandy texture resulting from the presence of 20 percent silt-sized to fine sub-rounded sand grains. Quartz makes up about 80 percent of the sand grains. Some of the quartz grains display undulose extinction. Also present are sparse potassium feldspar grains and a single fine microcline grain. Most of these grains display alteration to sericite and clay minerals. Bone makes up only about one percent of the ceramic matrix. The bone fragments range in size from fine to medium and are translucent under cross-polarized light. This is a Class 1 sherd.

RFT-038

The paste of this sherd is light brown color and has a distinctive sandy texture resulting from the presence of 20 percent silt-sized to fine sub-rounded sand grains. Quartz makes up about 80 percent of the sand grains. Some of the quartz grains display undulose extinction. Also present are sparse potassium feldspar and plagioclase grains. Most of the feldspar grains display alteration to sericite and clay minerals. Bone makes up only about one percent of the ceramic matrix. The bone fragments range in size from fine to medium and are translucent with gray cores under cross-polarized light. This is a Class 1 sherd.

RFT-039

The paste of this sherd is a light grayish brown color and has a distinctive sandy texture resulting from the presence of 20 percent silt-sized to fine sub-rounded sand grains. Quartz makes up about 80 percent of the sand grains. Some of the quartz grains display undulose extinction. Also present are sparse potassium feldspar grains. Most of the feldspar grains display alteration to sericite and clay minerals. Bone makes up only about one percent of the ceramic matrix. The bone fragments range in size from fine to medium. The bone fragments were either opaque or transparent under cross-polarized light or, very light yellow with opaque centers under plain polarized light. This is a Class 1 sherd.

RFT-053

The paste of this sherd is a very dark brown and opaque and contains about 35 percent sub-rounded grains of sand dominated by quartz. Sparse potassium feldspar and microcline are also present, but in trace amounts. The feldspars are slightly altered to sericite and clay minerals. One microcline grain contains quartz poikilitically. Also present were two coarse-sized rounded grains of fine-grained sandstone. A clay cement supports the sandstone. The paste also contains fine- to medium-sized fragments of bone. The bone fragments make up about seven percent of the ceramic paste. The bone fragments are a dark gray with calcareous rims around the bone particles. This is a Class 1 sherd.

Analytical Unit 3: Non-Feature Sherds*RFT-002*

The paste of this sherd is dark brown in color. The paste contains 35 percent sub-rounded sands, dominated by quartz. A few of the quartz grains display undulose extinction or occur as multi-grain aggregates. Sparse grains of potassium feldspar with a fresh appearance are also present, as well as three grains of chert. The sand grains are moderately well sorted and range from very fine- to fine-sized. Bone is present in a sparse amount making up about one percent of the total ceramic body. The bone fragments are a dark brown color. The bone fragments range from fine- to medium-sized. This is a Class 1 sherd.

RFT-006

The paste of this sherd is dark brown in color. The paste contains 35 percent sub-rounded sands, dominated by quartz. A few of the quartz grains display undulose extinction or occur as multi-grain aggregates. Sparse grains of potassium

feldspar with a fresh appearance are also present. The sand grains are moderately well sorted and range from very fine- to fine-sized. Bone is present in a sparse amount making up about five percent of the total ceramic body. The bone fragments range from fine- to coarse-sized. The bone fragments are a light gray color and contain abundant calcite. With the exception of the slightly greater percentage of bone in this specimen, RFT-006 strongly resembles the paste of RFT-002. This is a Class 1 sherd.

RFT-010

The paste of this sherd is a medium brown color. The paste contains 20 percent well-sorted, very fine to fine quartz sands. These sands are likely natural inclusions in the ceramic paste. Also present in the paste are five medium-sized rounded grains of calcium carbonate and about 15 percent fine- to coarse-sized angular fragments of bone temper. The bone fragments are a dark brown color, although a few light gray bone fragments are also present. This is a Class 1 sherd.

RFT-014

The paste of this sherd is a medium brown color. The paste contains 20 percent well-sorted, very fine to fine quartz sands. These sands are likely natural inclusions in the ceramic paste. Also present in the paste is about 15 percent fine- to coarse-sized angular fragments of light gray bone temper. With the exception of the lower amount of bone temper in the present specimen, the paste is quite similar that of samples RFT-131 and RFT-138 in terms of paste color and the size and amount of rounded quartz sand grains present. This is a Class 1 sherd.

RFT-015

The paste of this sherd is a medium brown color. The paste contains about five percent silt-sized fine quartz grains. Also present in the paste is about 15 percent fine- to coarse-sized bone fragments. The bone fragments range from translucent to very light gray in color. Calcareous inclusions rim the bone fragments. This is a Class 2 sherd.

RFT-019

The paste of this sherd is a medium yellowish-brown color and has a distinctive silty texture. The paste contains about five percent silt-sized to medium rounded quartz sand grains. Also present are about 15 percent fine- to coarse-sized angular pieces of bone temper. The bone ranges in color from translucent to a light yellow. This is a Class 2 sherd.

RFT-021

The paste of this sherd is a medium brown color and contains 25 percent natural sand. The sand is moderately well sorted ranging continuously from silt-sized to fine. The majority of the grains are quartz, occasionally displaying undulose extinction. About 10 percent of the sands are potassium feldspar and sparse plagioclase and microcline. The feldspars are often so altered to sericite clay minerals that their optical characteristics are obscured. Bone temper is present, making up about seven percent of the ceramic body. The bone fragments range from fine to coarse in size. The bone fragments are mostly light gray or are slightly translucent. This is a Class 1 sherd.

RFT-041

The paste of this sherd is a dark yellowish-brown with a distinctive silty texture. The paste contains about three percent fine rounded grains of quartz sand. Also present is 15 percent fine- to coarse-sized fragments of bone temper. The bone fragments are mostly a dark brown and slightly birefringent. A few light gray bone fragments are also present. This is a Class 2 sherd.

RFT-044

The paste of this sherd is a dark brown color. The paste contains about 35 percent well sorted silt-sized to fine sub-rounded sands, dominated by quartz. A few of the quartz grains display undulose extinction and occur as multi-grained aggregates. Sparse grains of potassium feldspar with a fresh appearance are also present, as well as two fragments of chert. Bone fragments make up only about three percent of the total ceramic fabric. Bone fragments range from fine to coarse in size. The bone fragments appear pale yellow in plain polarized light and light gray to translucent in cross-polarized light. This is a Class 1 sherd.

RFT-049

The paste of this sherd is a medium brown color. The paste contains 25 percent well sorted quartz sand. The sand grains range from silt-sized to fine. Also present are two coarse-sized rounded grains of calcium carbonate or very fine-grained limestone. Medium-sized bone temper is present but makes up only about three percent of the ceramic body. The bone fragments are a dark brown color. This is a Class 1 sherd.

RFT-059

The paste of this sherd is very dark brown colored. The paste contains about 10 percent silt-sized to fine quartz sand.

A fine-sized fragment of siltstone is also present. The paste also contains about 10 percent fine- to coarse-sized bone temper. The bone is a dark brown in color. This one of only three Class 2B sherds in Analytical Unit 3.

RFT-062

The paste of this sherd is medium brown colored, and has a silty texture. Less than one percent of the paste contains subangular fine quartz sand. Bone fragments make up about 10 percent of the paste. The bone fragments range in size from fine to coarse. The bone fragments are dark brown and opaque or display faint birefringence. This is a Class 2 sherd.

RFT-063

The paste of this sherd is light yellowish-brown. The paste contains about 35 percent moderately well sorted sand, predominately quartz. The sand grains range in size from very fine- to medium-sized. Bone temper is also present and accounts for about three percent of the ceramic matrix. The bone fragments are all very coarse in size. The bone fragments are dark brown and birefringent. This is a Class 1 sherd.

RFT-064

The paste of this sherd is a medium brown color and has a sandy texture resulting from the 25 percent silt-sized to fine sands that are natural constituents of the ceramic body. The majority of the sand grains are quartz. Sparse, highly weathered feldspars are also present. The bone temper ranges from fine to coarse and makes up about 15 percent of the ceramic paste. The bone fragments are light gray and contain very fine calcite rhombs. This is a Class 1 sherd.

RFT-074

The paste of this sherd is a medium brown color and contains abundant natural sand. The paste of this sherd is quite similar to sample RFT-021. The sand is moderately well sorted, ranging continuously from silt-sized to fine, making up 25 percent of the ceramic matrix. The majority of the grains are quartz, occasionally displaying undulose extinction. About 10 percent of the sands are potassium feldspar and sparse plagioclase and microcline. The feldspars are often so altered to sericite and clay minerals so as to obscure their optical characteristics. Bone temper is present. The bone makes up about seven percent of the ceramic body. The bone fragments range from fine to coarse in size and are a light gray color. This is a Class 1 sherd.

RFT-075

The paste of this sherd is a medium brown color. The paste has a distinctive sandy texture resulting from the presence of 40 percent silt-sized to fine sands. The composition of the sand is predominately quartz with about 10 percent potassium feldspar. The potassium feldspar grains are usually weathered to clay minerals and sericite obscuring their optical characteristics. Two rectangular coarse-sized voids are present in the paste. Based on the carbonaceous halos surrounding the voids, it is likely that their contents were organic and combusted during firing. No bone was observed in the paste of this sherd. This sherd could be a product of the local ceramic industry, but lacked bone. This is the single Class 0 sherd in the sample.

RFT-076

The paste of this sherd is medium brown in color. The paste contains about 30 percent silt-sized to fine quartz sand. The sand consists predominately of quartz with about one third of the grains slightly weathered potassium feldspar. Bone temper makes up an additional five percent of the ceramic paste. The bone fragments range in size from fine to coarse. An equal amount of dark brown and light gray bone fragments are present. This is a Class 1 sherd.

RFT-077

The paste of this sherd is a dark brown color. The paste contains about 35 percent silt-sized to fine well-sorted sub-rounded sands, dominated by quartz. A few of the quartz grains display undulose extinction and occur as multi-grained aggregates. Sparse grains of potassium feldspar with a fresh appearance are also present. Two fragments of chert are present. Bone makes up only about three percent of the total ceramic fabric. Bone fragments, light gray in color, range from fine to coarse in size. This is a Class 1 sherd.

RFT-081

The paste of this sherd is a light yellowish-brown in color. The paste contains less than one percent fine- to medium-sized rounded quartz sands. Also present in the paste is about 10 percent fine- to coarse-sized angular fragments of bone. The bone fragments appear to be translucent or slightly opaque under cross-polarized light. This is a Class 2 sherd.

RFT-090

The paste of this sherd is an opaque black with a sandy texture. Sand makes up about 35 percent of the ceramic body. The sands are arkosic with about one third of the grains made up of potassium feldspar. Most of the feldspars have

been altered to sericite and clay minerals. A few grains of plagioclase and microcline were also observed, but in trace amounts. The major constituent of the sands is quartz. Most of the quartz grains display undulose extinction. Bone represents an added material in the ceramic body. Fine- to coarse-sized bone fragments make up about 10 percent of the paste of this sherd. The bone fragments range from light gray to transparent. This is a Class 1 sherd.

RFT-094

The paste of this sherd is a medium brown color and contains about 25 percent moderately well sorted quartz sands. The sands range in size continuously from silt-sized to fine. The sands also contain about 10 percent potassium feldspar. Many of the feldspar grains have altered to sericite and clay minerals. Sparse plagioclase and microcline were also observed. A single coarse-sized subangular fragment of a very fine-grained, calcareous silty sandstone is present in the paste. The paste was tempered using fine to coarse angular bone fragments. The bone fragments make up about 10 percent of the ceramic paste. The bone fragments are mostly dark brown with few light gray fragments that are calcite rich. This is a Class 1 sherd.

RFT-095

The paste of this sherd is a medium brown color. The paste contains about 10 percent rounded very fine- to fine-sized quartz sand. The paste also contains about 15 percent fine- to very coarse-sized fragments of bone temper. The bone fragments are medium gray and contain abundant calcite rhombs. This is a Class 1 sherd.

RFT-098

The paste of this sherd is medium brown in color. The paste contains about 30 percent silt-sized to fine quartz sand. The sand consists predominately of quartz with about one-third of the grains slightly weathered potassium feldspar. Bone temper makes up an additional 10 percent of the ceramic paste. The bone fragments range in size from fine to coarse and are a uniform brown color. This is a Class 1 sherd.

RFT-099

The paste of this sherd is a medium brown color. The paste contains about 30 percent silt-sized to fine quartz sand. The sand consists predominately of quartz with about one-third of the grains slightly weathered potassium feldspar. A single medium polycrystalline quartz grain, derived from a plutonic or metamorphic source, is present in the specimen. Also present in the paste are five medium sized rounded grains

of very fine-grained calcium carbonate. Bone temper makes up an additional 10 percent of the ceramic paste. The bone fragments range in size from medium to very coarse. Many of the bone fragments are unusually highly birefringent. This is a Class 1 sherd.

RFT-102

The paste of this sherd is medium brown in color. The paste contains about 30 percent silt-sized to fine quartz sand. The sand consists predominately of quartz with about one-third of the grains slightly weathered potassium feldspar. Four rounded, medium sized grains of calcium carbonate were also observed in the paste of this sherd. Bone temper makes up an additional 10 percent of the ceramic paste. The bone fragments range in size from medium to very coarse. This is a Class 1 sherd.

RFT-103

The paste of this sherd is a medium brown color. The paste contains about 25 percent silt-sized to fine quartz sand. The sand consists predominately of quartz with about one-third of the grains slightly weathered potassium feldspar. Bone temper makes up an additional 10 percent of the ceramic paste. The bone fragments range in size from medium to very coarse. The bone fragments range in color from light brown to gray with a translucent example. This is a Class 1 sherd.

RFT-106

The paste of this sherd is a medium brown color. The paste contains about 20 percent silt-sized to fine quartz sand. The sand consists predominately of quartz with about one-third composed of grains of slightly weathered potassium feldspar. A single medium polycrystalline quartz grain, derived from a plutonic or metamorphic source is present in the specimen. Also present in the paste are five medium sized rounded grains of very fine-grained calcium carbonate. Bone temper makes up an additional 10 percent of the ceramic paste. The bone fragments are either dark brown or dark brownish-gray. The bone fragments range in size from fine to coarse. One bone fragment ranges into the very coarse fraction. This is a Class 1 sherd.

RTF-108

The paste of this sherd is a light yellowish-brown color. The paste contains moderately well sorted sands consisting of predominately quartz with sparse potassium feldspar. The potassium feldspar grains are slightly altered to sericite and clay minerals, somewhat clouding their optical

characteristics. The sands range in size from silt-sized to fine and constitute 15 percent of the paste. Also present in the paste are five coarse-sized rounded silty pellets. Bone temper is present but constitutes only about three percent of the ceramic matrix. The bone fragments are either translucent or dark brownish-gray in color. The angular bone fragments fall in the medium to very coarse size range. This is one of three Class 2B sherds in Analytical Unit 3.

RFT-111

The paste of this sherd is dark brown mottled with opaque black. The paste contains about 35 percent silt-sized to fine sands. The major constituent of the sand is quartz. Sparse weathered grains of potassium feldspar are also present. Bone temper makes up only about five percent of the ceramic matrix. The bone fragments range in size from coarse to very coarse. The bone fragments are dark brown and slightly birefringent. This is a Class 1 sherd.

RFT-119

The paste of this sherd is medium brown in color and contains about 25 percent moderately well sorted quartz sands. The sands range in size continuously from silt-sized to fine. The sands also contain about 10 percent potassium feldspar. Many of the feldspar grains have altered to sericite and clay minerals. Sparse plagioclase and microcline were also observed. A single very coarse-sized subangular fragment of a very-fine grained calcareous silty sandstone was present in the paste. The paste was tempered using fine to coarse angular bone fragments. The bone fragments have a light gray to slightly yellow color and make up about 10 percent of the ceramic paste. This is a Class 1 sherd.

RFT-120

The paste of this sherd is medium brown in color. The paste contains about 15 percent rounded sand grains. The sands range from silt-sized to fine. Sparse weathered potassium feldspars are present in the paste. Also present in the paste are about 10 percent fine- to coarse-sized bone fragments. The bone fragments are mostly light gray in color. Only about five percent of the bone fragments are dark brown. This is a Class 1 sherd.

RFT-123

The paste of this sherd is a light yellowish-brown color. The paste contains moderately well sorted quartz sand. The sand ranges in size from silt-sized to fine. This sand makes up about 40 percent of the ceramic paste. Medium-sized bone temper is also present in the current specimen but

accounts for only about one percent of the ceramic body. The bone is a mottled gray with light yellow under cross-polarized light. This is a Class 1 sherd.

RFT-126

The paste of this sherd is a medium brown color. The paste contains about 15 percent silt- to medium-sized moderately sorted quartz sand. One very coarse-sized and two coarse-sized rounded calcium carbonate grains are present in the paste. The paste also contains about five percent fine- to coarse-sized bone. The bone fragments are predominately dark brown with sparse gray fragments. This is a Class 1 sherd.

RFT-127

The paste of this sherd is a medium brown color with a silty texture. Sparse medium-sized sands are present but make up less than one percent of the ceramic matrix. Two very coarse-sized, rounded, silty inclusions are also present in the ceramic body. Bone temper makes up about 10 percent of the ceramic body. The bone fragments range in size from fine to coarse and are dark brown in color. This is a Class 2 sherd.

RFT-130

The paste of this sherd is medium brown in color. The paste contains about 30 percent silt-sized to fine quartz sand. The sand consists predominately of quartz with about one-third of the sand grains slightly weathered potassium feldspar. Also present in the paste is a single medium sized rounded fragment of fine-grained calcareous sandstone. Bone temper makes up an additional 10 percent of the ceramic paste. The bone fragments range in size from medium to very coarse and are a medium yellow color with gray cores. This is a Class 1 sherd.

RFT-131

The paste of this sherd is a medium brown color. The paste contains 20 percent well-sorted, very fine to fine quartz sands. These sands are likely natural inclusions in the ceramic paste. Also present in the paste is about 15 percent fine- to coarse-sized angular fragments of bone temper. The bone fragments are a dark grayish-brown and are slightly birefringent. This is a Class 1 sherd.

RFT-136

The paste of this sherd is a medium brown color and contains about 25 percent moderately well sorted quartz sands. The sands range in size continuously from silt-sized to fine. The sands also contain about 10 percent potassium feldspar. Many of the feldspar grains have altered to sericite and clay minerals. Sparse plagioclase and microcline were also observed. A single very coarse-sized subangular fragment and two coarse-sized fragments of a very fine-grained calcareous silty sandstone are present in the paste. The paste was tempered using fine to coarse angular bone fragments. The bone fragments make up about 10 percent of the ceramic paste. The bone fragments are rimmed with abundant calcite rhombs and possess dark gray cores. This is a Class 1 sherd.

RFT-138

The paste of this sherd is a medium brown color. The paste contains 20 percent well-sorted, very fine to fine quartz sands. These sands are likely natural inclusions in the ceramic paste. Also present in the paste are about 10 percent fine- to coarse-sized angular fragments of bone temper. With the exception of the lower amount of bone temper in the present specimen, the paste of sample RFT-138 is quite similar to the paste of RFT-131 in terms of the color of the paste and the size and amount of rounded quartz sand grains present. The bone fragments are a dark brownish-gray color. This is a Class 1 sherd.

RFT-140

The paste of this sherd is very dark brown. The paste contains moderately well sorted fine-sized quartz-rich sands. Sparse weathered feldspars are also present. The sands make up about 15 percent of the ceramic body. Bone was intentionally added to the ceramic body making up about 20 percent of the observed inclusions with the fragments ranging in size from fine to coarse. The bone fragments are very dark brown and are rimmed with calcite rhombs. This is one of three Class 2B sherds in Analytical Unit 3.

RFT-141

The paste of this sherd is a light yellowish-brown color. The paste contains about 15 percent silt-sized to fine sand grains. While quartz is the predominate mineral present in the sands, about 10 percent of the grains consist of highly weathered potassium feldspar grains. The bone temper accounts for about 10 percent of the ceramic body. The bone is a dark brown color and ranges from fine to coarse in size. This is a Class 1 sherd.

Discussion and Conclusions

Compositional groups were identified primarily by the amount of bone relative to the amount of sand present in the sherds. Sand represents a natural constituent of the sources of clay used in making all of the ceramics examined during the project. Bone represents an added material to the ceramic body.

The most commonly observed paste group consisted of ceramics that contained 20–40 percent silt-sized to fine sands, usually with a potassium feldspar component. These are listed as Class 1 in Table G-1. These sands are likely to represent natural inclusions in the ceramic clay. The percentage of bone temper is low, 15 percent or less. The paste color is variable. Fifty-seven percent (n=61) of the sherds in this sample fell into this category.

Thirty-four percent (n=36) of the sherds contained only a very limited amount of quartz sand. These sherds are listed as Class 2 in Table G-1. These sherds also contained 10–15 percent bone temper. The paste of these sherds was a dark brown and the bone fragments were a dark brown color and often slightly birefringent.

A third group, Class 2B, was distinguished based on the limited amount of sand present and abundant bone temper in the paste. This group accounts for seven percent (n=8) of the total sample. These sherds contained 15 percent or less quartz sand and 10 percent or more bone. The bone fragments in the paste are rimmed with calcite rhombs. All of these sherds have a dark brown paste except for RFT-011, which has a light brown paste. The difference in the color of the pastes is likely to represent differences in firing rather than in composition of the clay body. It is likely that these sherds represents variability within the class above. These sherds are listed as Class 2B on Table G-1.

A single sherd was placed in Class 2A in Table G-1 based on the very limited amount of sand present and abundant bone temper in the paste. This sherd is similar to those in Class 2B but has only one percent sand and 20 percent bone in the paste.

The final group, Class 0, is also represented by single sherd. This sherd has a very high sand content and no bone.

Sands present in sherds examined during the current project represent natural inclusions present in the source of the ceramic clay. The bone fragments are an added aplastic selected to control shrinkage of the ceramic clay. The amount of bone varies inversely to the amount of sand present in the ceramic paste. If a ceramic body has a sandy paste, then little bone will be present. Conversely ceramics containing a sparse amount of sand will contain a greater percentage of bone temper. This patterned variation within the sand and bone fragments demonstrates the knowledge that native potters had regarding the properties of the clays they used in producing their ceramics.

Mexican Glazed Ceramics

Introduction

Twenty sherds of late eighteenth/early nineteenth century lead-glazed pottery recovered from Mission Refugio (41RF1) were examined using petrographic analysis. The analysis was oriented toward identifying the range of compositional variability within the collection and for the purposes of comparison with the Instrumental Neutron Activation Analysis (INAA) by Neff and Glascock (Appendix H).

Methodology

The ceramics were analyzed by the author using a Nikon Optiphot-2 petrographic microscope. The sizes of natural inclusions and tempering agents were described in terms of the Wentworth Scale, a standard method for characterizing particle sizes in sedimentology. These sizes were derived from measuring a series of grains using a graduated reticle built into one of the microscope's optics. The percentages of inclusions in untempered ceramics were estimated using comparative charts (Matthew et al. 1991; Terry and Chilingar 1955). Given the limited amount of inclusions that may be present in ceramics and studies conducted regarding the reproducibility of determinations using these charts, the comparative method has been found to be useful for archaeological ceramic petrography as point counting (Mason 1995).

Analysis was conducted by first going through the total ceramic collection and generating a brief description of each of the sherds. A second phase created classification groups based on the similarity of the paste and temper between sherds. This process also allowed for the examination of the variability within each grouping. Additional comments about the composition of individual sherds were made at this time.

Analysis of the Ceramic Samples

LG 1

The paste of this sample is a light brown color and has a distinctive silty texture. Two types of inclusions are present in the paste, soil pisolites and mineral grains. The soil pisolites are a bright brownish-red and have distinct boundaries between the pisolite and the ceramic body. These pisolites make up about 10 percent of the matrix and range continuously in size from fine to coarse. The pisolites are rounded.

The inclusions consist of isolated mineral grains and rock fragments. The rock fragments and mineral grains observed indicate a volcanic origin for the sediments. Isolated medium- to coarse-sized fragments of welded glassy pumice are present. One coarse fragment of tuff was stained by iddingsite. These pumice fragments make up only a trace amount of the overall inclusions. However, the grains range in size from medium to very coarse. Two coarse-sized fragments of volcanic chalcedony were observed as well.

In terms of isolated grains, very fine to fine glass shards make up about three percent of the total paste. A single medium-sized grain of trachytic basalt is present. This basalt grain contains ophitic augite. Also present are isolated grains of quartz and sanidine. These isolated grains make up about five percent of the matrix. Some brown biotite, often altered to hematite was also observed. All of the types of isolated grains and glass shards are present in the matrix of the ceramic and in the soil pisolites.

LG 2

The paste of this sherd is a light grayish-brown. The past contains 30 percent well-sorted sub-arkosic sands. These sands are medium-sized and rounded to sub-rounded. Quartz predominates over the potassium feldspar in about a 3:1 ratio. The quartz grains often display an undulose extinction. The potassium feldspar appears fresh and unweathered. Sparse grains of plagioclase are also present among the sands.

LG 3

The paste of this sherd is a medium brown color and contains about 25 percent silt-sized mineral grains giving the sample a sandy texture. The silt-sized particles are too small for identification by optical means. The inclusions form a continuous size distribution from these silt-sized grains up to a few coarse-sized rock fragments. These larger grains make up about 20 percent of the total ceramic matrix. The major identifiable inclusions in the paste are potassium feldspar grains. These grains range in appearance from fresh to slightly altered to sericite and clay minerals. Plagioclase is also present, making up about five percent of the grains. Quartz is sparse and is present only in trace amounts as is microcline, green-brown hornblende, and brown biotite. Most of the biotite has altered to clay minerals and hematite.

LG 4

The paste of this sherd is a light brown color. The silty texture of the paste and the types and amounts of inclusions present in this specimen are very similar to those observed in sample LG 1. The current specimen contains about 10 percent reddish soil pisolites along with fragments of glassy pumice, and isolated grains of quartz and sanidine.

LG 5

The paste of this sherd is a light grayish-brown and contains about 30 percent sub-rounded to rounded sands. The paste of this sherd is like that of sample LG 2 in terms of texture and types of inclusions and their amounts present.

LG 6

The paste of this sherd is very similar to that of LG 1 and LG 4. The present specimen contains 10 percent reddish soil pisolites. Also present are very fine glass shards and larger glassy pumice fragments. Trace amounts of isolated grains of sanidine and quartz are present as well, and a medium-sized grain of volcanic chalcedony.

LG 7

The paste of this specimen is quite similar to that of LG 1, LG 4, and LG 6. The paste contains 10 percent reddish soil pisolites. The paste of the present specimen lacks chalcedony and basalt fragments but does possess fragments of light grayish glassy pumice and fine glass shards.

LG 8

The paste of this sherd is a light grayish-brown color and contains about 30 percent sub-rounded to rounded sub-arkosic sands. The paste of this sherd is very much like samples LG 2 and LG 5. Very sparse brown biotite is also present in this specimen.

LG 9

The paste of this sherd is a medium brown with a silty texture. The paste of this sherd is quite similar to samples LG 1, LG 4, LG 6, and LG 7. This sherd contains only pisolites, pumice fragments, glass shards, biotite, quartz, and sanidine, but no basalt or chalcedony.

LG 10

The paste of this sherd is a dark brown color. The paste has a sandy texture due to the abundance of silt-sized grains. The particle size distribution is continuous from silt-sized to coarse. The paste of this sherd is quite similar to sample LG 3. The most common inclusion is potassium feldspar. The feldspars appear slightly more weathered in the current specimen than in LG 3. The inclusions make up about 20 percent of the ceramic matrix. Sparse plagioclase and microcline are also present. A coarse-sized highly weathered grain of andesite porphyry is also present in this specimen. The groundmass was composed of weathered plagioclase and opaque minerals. Biotite is present replacing hornblende laths. Other rock fragments include two fine-grained aggregates of potassium feldspar and sparse plagioclase and two coarse-sized rock fragments that consisted of a few large potassium feldspar grains.

LG 11

The paste of this sherd is a light yellowish-brown and has a distinctive silty texture. Some areas of the paste are slightly more birefringent than others, possibly as the result of incipient vitrification of the ceramic body. The paste contains only about five percent inclusions. These inclusions consist of silt-sized to very fine isolated mineral grains and glass shards. Medium- to coarse-sized rock fragments are present but uncommon. The most common rock type is a welded glassy pumice. The pumice is clear to light gray in color. Vesicular texture is visible in some of the pumice grains.

The paste of this sherd, in terms of inclusions and silty texture, resembles that of LG 1, LG 4, LG 6, LG 7, and LG 9. However, the current specimen lacks the abundant brownish-red soil pisolites present in the other sherds.

LG 12

The paste of this sherd is a light yellowish-brown and has a silty texture. The ceramic matrix resembles that of LG 11. This sherd lacks the vitrified areas of the previous sherd. The paste contains about five percent inclusions consisting mostly of glass shards and isolated mineral grains. A few glassy pumice fragments are present. Two fragments of chalcedony are also present. One coarse-sized red birefringent soil pisolite was observed.

LG 13

The paste of this sherd is a light yellowish-brown color. The ceramic matrix resembles that of LG 12 and LG 13. The paste contains five percent inclusions ranging from silt-sized to a few medium- and coarse-sized grains. The most common coarse inclusions were reddish soil pisolites. These pisolites are a brownish-red, but otherwise resemble the matrix of the ceramic body. A distinctive boundary exists between the pisolite and the ceramic matrix. Sparse fine brown biotite is also present. Also present in the paste of this sherd are sparse fragments of glassy pumice. A single medium-sized chert fragment was also observed.

LG 14

The paste of this sherd is a light yellowish-brown color. The ceramic matrix resembles that of LG 12 as it lacks the brownish red soil pisolites but does contain silt-sized to medium-sized grains of quartz or sanidine and fine glass shards. Sparse fragments of glassy pumice or tuff are also present. One tuff grain contains porphyritic sanidine. A few black, coarse inclusions which could represent pisolites were observed. Their opaque nature and dark color suggests a different composition than the reddish pisolites.

LG 15

The paste of this sherd is a light orange brown color. The paste contains about 20 percent shards of glassy pumice. The pumice shards range from silt-sized to fine. A few medium- and one coarse-sized pumice grain were also present. Sparse fine-sized flakes of brown biotite were also observed.

LG 16

The paste of this sherd is dark opaque brown. The paste contains about 40 percent silt-sized to very fine glass shards. There are two coarse and several smaller sized fragments of tuff present in the sample. A coarse-sized soil pisolite is also present.

LG 17

The paste of this sherd is a light yellowish-brown and has a silty texture. The paste is similar to LG 1, LG 4, LG 6, LG 7, LG 9, and LG 11. The paste contains about five percent silt-sized to coarse inclusions, including glass shards, quartz, and sanidine. A very coarse-sized fragment of scoria is present as well as a few medium- to coarse-sized fragments of tuff.

LG 18

The paste of this sherd is a light brown and has a silty texture. The paste contains about 10 percent silt-sized to fine glass shards. A trace amount of brownish-red soil pisolites are present. The pisolites are all of medium size. Sparse fine brown biotite is also present.

LG 19

The paste of this sherd is a light yellowish-brown color and has a silty texture. The paste contains about 10 percent silt-sized to fine glassy pumice. Sparse fine to medium-sized rounded grains of quartz and sanidine were observed. Also present is a single very coarse-sized fragment of welded tuff. The paste is similar to LG 18 in terms of the color and texture of the paste, and the presence of glass shards.

LG 20

The paste of this sherd is a light gray. Areas of the paste have become birefringent, possibly due to incipient vitrification of the clay body. The paste contains five percent silt-sized to fine quartz and sanidine grains, glass shards, and black opaque inclusions. These black opaques could represent alteration of soil pisolites during firing of the vessel. A trace amount of isolated potassium feldspar laths are present in the paste.

Discussion

Two types of inclusions were observed in the lead-glazed ceramics from 41RF1 representing two different sources of glazeware production. The most common inclusions were derived from sediments from an extrusive volcanic source. These fifteen sherds share a silty light yellowish-brown paste that contains sparse glass sherds. These sherds also contain larger grains of quartz and sanidine. Within this group of sherds, considerable variation exists in the amount of distinctive reddish soil pisolites, a reflection of localized differences in the makeup of the source clay. There is variation in trace rock types, including the presence or absence of fragments of glassy pumice, or other extrusive volcanic rock. Volcanic chalcedony is also occasionally present among these rock fragments.

Some variation in the types and sizes of the volcanic inclusions was observed within this composition group. Samples LG 15 and LG 16 contained coarse-sized fragments

of tuff. Sample LG 19 has a silty paste similar to the paste of the previously described fifteen sherds. It also contains silt-sized to fine glass shards, sparse larger quartz and sanidine grains, and fine brown biotite. With the exception of one large soil pisolite, the sherd is remarkably free from other larger inclusions. These three sherds probably represent variation for the above grouping of ceramics and thus compositional differences in the sources of ceramic clay.

Five samples contain sediments derived from a plutonic rock source. Samples LG 2, LG 3, LG 5, LG 8, and LG 10 contain sands dominated by quartz grains that display an undulose extinction indicative of a plutonic or subsequent metamorphic history. The feldspars consist primarily of potassium feldspar with less plagioclase and microcline. Patch perthites were occasionally observed within some of the potassium feldspar grains.

Samples LG 3 and LG 10 have very sandy pastes that contain abundant potassium feldspar. Plagioclase, quartz, biotite, and green-brown hornblende are present in trace amounts in these sherds. Like the variation within the volcanic specimens, the compositional differences and the amount of mineral grains present in these five sherds represent the use of multiple procurement locations within a single source of ceramic clay.

Few petrographic studies of Spanish Colonial ceramics have been conducted, so little comparative data are available either for production centers in Mexico or from other eighteenth century sites in the Spanish borderland. A single petrographic study of sixteen glazeware sherds from four Spanish Mission sites in Texas has been conducted. This study includes the location under our present study along with 41BX5, 41GD2, and 41SA25 (Malicse 1994). Previous analysis of a brown lead-glazed ceramic from 41RF1 resembles that of samples LG 3 and LG 10. Without comparative analysis of ceramics from known sources of lead-glazed ceramics such as Guanajuato and Michocan, the origins of lead-glazed ceramics recovered from Spanish Colonial sites will remain speculative.

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Appendix H

Mission Refugio

Instrumental Neutron Activation Analysis of Ceramics

Appendix H: Instrumental Neutron Activation Analysis

Ceramics

Hector Neff and Michael D. Glascock

Introduction

Instrumental neutron activation analysis (INAA) was recently completed on a sample of 126 ceramics and a single raw clay sample from southern Texas. Samples were selected by researchers at the Center for Archaeological Research, University of Texas, San Antonio from collections produced by archaeological research at Mission Refugio (41RF1). The analyses were undertaken at the University of Missouri Research Reactor Center (MURR). Here, we describe sample preparation and analytical techniques used at MURR and report the subgroup structure identified through quantitative analysis of the complete ceramic compositional data set.

Background

Two basic kinds of ceramics were analyzed for this study, unglazed Native American pottery and lead glazed pottery from Mission Refugio. The question being addressed, therefore, is whether there was any overlap in the raw materials used for the two types of pottery. The Native American pottery is assumed to be local, and, if glazed pottery matches the Native American pottery, it too must be local. Glazed pottery that falls outside the range of variation of south Texas Native American pottery may be assumed to have been imported.

The present report focuses on the Mission Refugio sample, although data from 41KA26 are included in the presentation of data. Additional comparative data come from an in-progress project from a Colonial site in eastern Texas that will be reported elsewhere.

Sample Preparation

The ceramics were prepared for INAA using standard MURR procedures. The clay sample was fired to 700 degrees for one hour in air before being prepared for analysis. Pieces of each sherd were burred with a silicon carbide burr to remove painted or slipped surfaces and adhering soil. The burred sherd samples and the clay test tile were then washed with deionized water and allowed to dry in air. These were then crushed in an agate mortar to yield a fine powder. Part of each specimen was retained, unpowdered, for the MURR archive of analyzed ceramic fabrics.

The powder samples were oven-dried at 100 degrees C for 24 hours. Portions of approximately 150 mg were weighed and placed in small polyvials used for short irradiations. At the same time, 200 mg of each sample were weighed into high-purity quartz vials used for long irradiations. Along with the unknown samples, reference standards of SRM-1633a (coal fly ash) and SRM-688 (basalt rock) were similarly prepared, as were quality control samples (i.e., standards treated as unknowns) of SRM-278 (obsidian rock) and Ohio Red Clay.

Irradiation and Gamma-Ray Spectroscopy

Neutron activation analysis of ceramics at MURR, which consists of two irradiations and a total of three gamma counts, constitutes a superset of the procedures used at most other laboratories (Glascock 1992; Neff 1992). As discussed in detail by Glascock (1992), a short irradiation is carried out through the pneumatic tube irradiation system. Samples in the polyvials are sequentially irradiated, two at a time, for five seconds at a neutron flux of 8×10^{13} n/cm²/s. The 720-second count yields gamma spectra containing peaks for the short-lived elements aluminum (Al), barium (Ba), calcium (Ca), dysprosium (Dy), potassium (K), manganese (Mn), sodium (Na), titanium (Ti), and vanadium (V). The samples encapsulated in quartz vials are subjected to a 24-hour irradiation at a neutron flux of 5×10^{13} n/cm²/s. This long irradiation is analogous to the single irradiation utilized at most other laboratories. After the long irradiation, samples decay for seven days, then are counted for 2,000 seconds (the "middle count") on a high-resolution germanium detector coupled to an automatic sample changer. The middle count yields determinations of seven medium half-life elements, namely arsenic (As), lanthanum (La), lutetium (Lu), neodymium (Nd), samarium (Sm), uranium (U), and ytterbium (Yb). After an additional three- or four-week decay, a final count of 9,000 seconds is carried out on each sample. The latter measurement yields the following 17 long half-life elements: cerium (Ce), cobalt (Co), chromium (Cr), cesium (Cs), europium (Eu), iron (Fe), hafnium (Hf), nickel (Ni), rubidium (Rb), antimony (Sb), scandium (Sc), strontium (Sr), tantalum (Ta), terbium (Tb), thorium (Th), zinc (Zn), and zirconium (Zr).

Elemental concentration data from the two irradiations and three counts (a total of 33 elements) are assembled into a single tabulation and stored in a Excel file (Volume I - CD: 00H2-Ref App H2.xls) along with descriptive information available for each sample.

Quantitative Analysis of the Chemical Data

The analyses at MURR described previously produced elemental concentration values for 32 or 33 elements in most of the analyzed samples. (Some elements, especially nickel, were below detection in some samples.) Quantitative analysis was subsequently carried out on base 10 logarithms of concentrations for these data. Use of log concentrations instead of raw data compensates for differences in magnitude between major elements, such as iron, on one hand and trace elements, such as the rare earth or lanthanide elements, on the other hand. Transformation to base 10 logarithms also yields a more nearly normal distribution for many trace elements.

In the present case, an additional transformation was necessary because of the presence of large amounts of bone temper in many of the analyzed specimens, especially the Native American pottery from Refugio Mission. Assuming that bone is composed largely of calcium carbonate, a correction developed for shell-tempered pottery by Blackman (Steponaitis, Blackman, and Neff 1996; Cogswell, Neff, and Glascock 1998) removes the effect of bone temper from heavily tempered specimens. The correction is:

$$e' = (10^e)(10^{-2.5c})$$

where e' is the corrected concentration of any element in ppm, e is the measured concentration of that element in ppm, and c is the amount of calcium in ppm. This correction obviously does not apply to elements that are present in high concentrations in calcium carbonates, including strontium and barium. In the present case, calcium, strontium, and barium were excluded from the quantitative data analysis after correcting the other data for addition of temper. It is also worth noting that this transformation will always over-correct because some calcium is naturally present in all clay. Nonetheless, experiments by Cogswell, Neff, and Glascock (1998) demonstrate that the true clay chemical similarities of calcium carbonate tempered ceramics can be recovered very confidently after applying this correction.

The goal of quantitative analysis of the chemical data is to recognize compositionally homogeneous groups within the analytical database. Based on the “provenance postulate” (Weigand, Harbottle, and Sayre 1977), such groups are assumed to represent geographically restricted sources or source zones. The location of sources or source zones may be inferred by comparing the unknown groups to known (source raw materials) or by indirect means. Such indirect means include the “criterion of abundance” (Bishop, Rands, and Holley 1982) arguments based on geological and sedimentological characteristics (e.g., Steponaitis, Blackman, and Neff 1996) and identifying similarities to other ceramics whose sources may be inferred with some confidence.

Initial hypotheses about source-related subgroups in the compositional data can be derived from non-compositional information (e.g., archaeological context, decorative attributes, etc.) or from application of pattern-recognition techniques to the chemical data. In the present case, for instance, a reasonable starting hypothesis is that the glazed and unglazed ceramics form compositionally distinct groups. The hypothetical groups can be evaluated by several means, the most intuitively accessible of which is to inspect bivariate plots on which the specimens are identified as to presumed group affiliation. Failure to find projections of the data that differentiate the hypothetical groups casts doubt on their validity.

Principal components analysis (PCA) is one technique that can be used to recognize patterns (i.e., subgroups) in compositional data. PCA provides new reference axes that are arranged in decreasing order of variance subsumed. The data can be displayed on combinations of these new axes, just as they can be displayed relative to the original elemental concentration axes. PCA can be used in a pure pattern-recognition mode, i.e., to search for subgroups in an undifferentiated data set, or in a more evaluative mode, i.e., to assess the coherence of hypothetical groups suggested by other criteria (archaeological context, decoration, etc.). Generally, compositional differences between specimens can be expected to be larger for specimens in different groups than for specimens in the same group, and this implies that groups should be detectable as distinct areas of high point density on plots of the first few components.

One seldom exploited strength of PCA discussed by Baxter (1992) and Neff (1994) is that it can be applied as a simultaneous R- and Q-mode technique, with both variables (elements) and objects (individual analyzed samples)

displayed on the same set of principal component reference axes. The two-dimensional plot of element coordinates on the first two principal components is the best possible two-dimensional representation of the correlation or variance-covariance structure in the data: Small angles between vectors from the origin to variable coordinates indicate strong positive correlation; angles close to 90° indicate no correlation; and angles close to 180° indicate negative correlation. Likewise, the plot of object coordinates is the best two-dimensional representation of Euclidean relations among the objects in log-concentration space (if the PCA was based on the variance-covariance matrix) or standardized log-concentration space (if the PCA was based on the correlation matrix). Displaying objects and variables on the same plots makes it possible to observe the contributions of specific elements to group separation and to the distinctive shapes of the various groups. Such a plot is called a “biplot” in reference to the simultaneous plotting of objects and variables. The variable interrelationships inferred from a biplot can be verified directly by inspection of bivariate elemental concentration plots.

As discussed above, source-related compositional groups are expected to be discernible on the first several principal components. Although visual inspection of data is limited to two dimensions (principal components or elemental concentrations) at a time, calculation of Mahalanobis distance (or generalized distance) makes it possible to describe how well-separated the groups are on multiple dimensions. The Mahalanobis distance of a specimen from a group centroid (Bieber et al. 1976; Bishop and Neff 1989; Harbottle 1976; Sayre 1975) is:

$$D_{y,x}^2 = [y - \bar{X}]' I_X [y - \bar{X}]$$

where y is 1 x m array of logged elemental concentrations for the individual point of interest, X is the n x m data matrix of logged concentrations for the group to which the point is being compared with being its 1 x m centroid, and I is the inverse of the m x m variance-covariance matrix of group X . Because Mahalanobis distance takes into account variances and covariances in the multivariate group it is analogous to expressing distance from a univariate mean in standard deviation units. Like standard deviation units, Mahalanobis distances can be converted into probabilities of group membership for each individual specimen (e.g., Bieber et al. 1976; Bishop and Neff 1989; Harbottle 1976). For relatively small sample sizes, it is appropriate to base probabilities on Hotelling's T^2 , which is a multivariate extension of the univariate Student's t .

With small groups, Mahalanobis distance-based probabilities of group membership may fluctuate dramatically depending on whether or not each specimen is assumed to be a member of the group to which it is being compared. Harbottle (1976) calls this phenomenon “stretchability” in reference to the tendency of an included specimen to stretch the group in the direction of its own location in the elemental concentration space. This problem can be circumvented by cross-validation (or “jackknifing”), that is, by removing each specimen from its presumed group before calculating its own probability of membership (Baxter 1994; Leese and Main 1994). This is a conservative approach to group evaluation that may sometimes exclude true group members. All probabilities discussed below are cross validated.

Results

The southern Texas sample is dominated by Native American ceramics assigned to the “Refugio Mission Reference Group” (Table H-1). This group is recognizable as a compact cluster of data points on virtually every projection of the data e.g., Figures H-1–H-4). Specimens assigned to the group also form a coherent cluster in the full, 29-dimension compositional space as well, as indicated by the Mahalanobis distance-based probabilities of group membership shown in the last column of Table H-1. Specimens assigned to the group all have greater than 1% jackknifed probability of membership in the group, while those not assigned to the group have less than 1% probability. In fact, specimens assigned to other groups (Galera and Lead Glaze-1) all have less than 0.0005% probability of membership in the Refugio Mission Group. The southern Texas data also include 24 unassigned Native American Specimens and five unassigned lead glazed specimens. Group assignments for all of the analyzed specimens are listed in Table H-1.

The inference that the Refugio Mission Reference Group consists at least partly of ceramics made at or near Mission Refugio is justified both by the dominance in the group of Mission Refugio Native American ceramics and by the presence of one raw clay sample collected at Mission Refugio (Table H-1). The resulting 83-specimen reference group probably represents the range of compositions produced by Native American potters working within the Mission Refugio region.

The chemical basis of separation among the three southern Texas groups is indicated by a biplot of the first two principal components of the data (Figure H-1). Principal Component 1 expresses enrichment of a large number of elements,

Table H-1. Group assignments and descriptive information for Mission Refugio ceramic samples

Chemical Group	Analytical I.D.	Site	Provenience	Context	Description	Ref. Group Probability*
Refugio Ref. Group	KAT202	41KA26-B	52-E		Unglazed Native American	15.406
Refugio Ref. Group	KAT203	41KA26-B	29-B		Unglazed Native American	92.795
Refugio Ref. Group	KAT204	41KA26-B	29-E		Unglazed Native American	98.584
Refugio Ref. Group	KAT205	41KA26-B	13-D		Unglazed Native American	97.647
Refugio Ref. Group	KAT207	41KA26-B	13-D		Unglazed Native American	87.476
Refugio Ref. Group	KAT208	41KA26-B	31-D		Unglazed Native American	36.040
Refugio Ref. Group	KAT209	41KA26-B	51-C		Unglazed Native American	1.716
Refugio Ref. Group	KAT210	41KA26-B	43-F		Unglazed Native American	80.519
Refugio Ref. Group	KAT211	41KA26-B	VIII-3		Unglazed Native American	94.480
Refugio Ref. Group	KAT212	41KA26-B	50-C		Unglazed Native American	93.673
Refugio Ref. Group	KAT214	41KA26-B	3B-B		Unglazed Native American	83.547
Refugio Ref. Group	KAT215	41KA26-B	57-C		Unglazed Native American	46.238
Refugio Ref. Group	KAT216	41KA26-B	56-E		Unglazed Native American	28.328
Refugio Ref. Group	KAT217	41KA26-B	47-B		Unglazed Native American	9.373
Refugio Ref. Group	KAT218	41KA26-B	47-B		Unglazed Native American	71.387
Refugio Ref. Group	KAT219	41KA26-B	47-B		Unglazed Native American	99.416
Refugio Ref. Group	KAT220	41KA26-B	44-C		Unglazed Native American	20.422
Refugio Ref. Group	KAT221	41KA26-B	35-C		Unglazed Native American	11.970
Refugio Ref. Group	RFT001	Mission Refugio, 41RF1	75N/99E	Feature 2	Unglazed Native American	35.446
Refugio Ref. Group	RFT002	Mission Refugio, 41RF1	75N/99E	Non-feature	Unglazed Native American	1.940
Refugio Ref. Group	RFT006	Mission Refugio, 41RF1	75N/99E	Non-feature	Unglazed Native American	63.349
Refugio Ref. Group	RFT008	Mission Refugio, 41RF1	76N/100E	Feature 2	Unglazed Native American	89.703
Refugio Ref. Group	RFT010	Mission Refugio, 41RF1	76N/100E	Non-feature	Unglazed Native American	52.063
Refugio Ref. Group	RFT011	Mission Refugio, 41RF1	75N/99E	Feature 2	Unglazed Native American	43.324
Refugio Ref. Group	RFT012	Mission Refugio, 41RF1	75N/99E	Feature 2	Unglazed Native American	25.491
Refugio Ref. Group	RFT013	Mission Refugio, 41RF1	75N/99E	Feature 2	Unglazed Native American	23.889
Refugio Ref. Group	RFT015	Mission Refugio, 41RF1	73N/99E	Non-feature	Unglazed Native American	36.747
Refugio Ref. Group	RFT016	Mission Refugio, 41RF1	76N/100E	Feature 2	Unglazed Native American	22.444
Refugio Ref. Group	RFT017	Mission Refugio, 41RF1	75N/100E	Feature 2	Unglazed Native American	95.971
Refugio Ref. Group	RFT018	Mission Refugio, 41RF1	75N/99E	Feature 2	Unglazed Native American	97.222
Refugio Ref. Group	RFT019	Mission Refugio, 41RF1	75N/100E	Non-feature	Unglazed Native American	34.846
Refugio Ref. Group	RFT020	Mission Refugio, 41RF1	75N/99E	Feature 2	Unglazed Native American	95.355
Refugio Ref. Group	RFT021	Mission Refugio, 41RF1	74N/100E	Non-feature	Unglazed Native American	95.428
Refugio Ref. Group	RFT022	Mission Refugio, 41RF1	74N/100E	Feature 2	Unglazed Native American	85.274
Refugio Ref. Group	RFT023	Mission Refugio, 41RF1	73N/99E	Feature 2	Unglazed Native American	58.860
Refugio Ref. Group	RFT024	Mission Refugio, 41RF1	75N/99E	Feature 2	Unglazed Native American	51.488
Refugio Ref. Group	RFT025	Mission Refugio, 41RF1	75N/99E	Feature 2	Unglazed Native American	92.904
Refugio Ref. Group	RFT027	Mission Refugio, 41RF1	74N/100E	Feature 2	Unglazed Native American	10.210
Refugio Ref. Group	RFT028	Mission Refugio, 41RF1	74N/100E	Feature 2	Unglazed Native American	65.241
Refugio Ref. Group	RFT029	Mission Refugio, 41RF1	75N/100E	Feature 2	Unglazed Native American	36.597
Refugio Ref. Group	RFT030	Mission Refugio, 41RF1	73N/100E	Feature 2	Unglazed Native American	99.139
Refugio Ref. Group	RFT031	Mission Refugio, 41RF1	76N/100E	Feature 2	Unglazed Native American	42.891
Refugio Ref. Group	RFT032	Mission Refugio, 41RF1	75N/100E	Feature 2	Unglazed Native American	99.545
Refugio Ref. Group	RFT034	Mission Refugio, 41RF1	76N/100E	Feature 2	Unglazed Native American	99.761
Refugio Ref. Group	RFT035	Mission Refugio, 41RF1	75N/99E	Feature 2	Unglazed Native American	72.969
Refugio Ref. Group	RFT036	Mission Refugio, 41RF1	74N/100E	Feature 2	Unglazed Native American	66.891
Refugio Ref. Group	RFT037	Mission Refugio, 41RF1	73N/100E	Feature 2	Unglazed Native American	87.415
Refugio Ref. Group	RFT039	Mission Refugio, 41RF1	74N/100E	Feature 2	Unglazed Native American	79.194
Refugio Ref. Group	RFT040	Mission Refugio, 41RF1	86N/100E	Feature 1	Unglazed Native American	92.471
Refugio Ref. Group	RFT041	Mission Refugio, 41RF1	86N/100E	Non-feature	Unglazed Native American	53.463
Refugio Ref. Group	RFT042	Mission Refugio, 41RF1	85N/99E	Feature 1	Unglazed Native American	83.795
Refugio Ref. Group	RFT043	Mission Refugio, 41RF1	85N/100E	Feature 1	Unglazed Native American	35.351
Refugio Ref. Group	RFT045	Mission Refugio, 41RF1	86N/99E	Feature 1	Unglazed Native American	85.303
Refugio Ref. Group	RFT047	Mission Refugio, 41RF1	85N/100E	Feature 1	Unglazed Native American	66.651
Refugio Ref. Group	RFT048	Mission Refugio, 41RF1	86N/99E	Feature 1	Unglazed Native American	21.773
Refugio Ref. Group	RFT049	Mission Refugio, 41RF1	86N/100E	Non-feature	Unglazed Native American	28.270
Refugio Ref. Group	RFT050	Mission Refugio, 41RF1	85N/100E	Feature 1	Unglazed Native American	43.074
Refugio Ref. Group	RFT051	Mission Refugio, 41RF1	85N/100E	Feature 1	Unglazed Native American	52.942
Refugio Ref. Group	RFT053	Mission Refugio, 41RF1	85N/100E	Feature 1	Unglazed Native American	58.104
Refugio Ref. Group	RFT055	Mission Refugio, 41RF1	85N/99E	Feature 1	Unglazed Native American	14.820

Table H-1. Continued...

Chemical Group	Analytical I.D.	Site	Provenience	Context	Description	Ref. Group Probability*
Refugio Ref. Group	RFT056	Mission Refugio, 41RF1	83N/100E	Feature 1	Unglazed Native American	73.056
Refugio Ref. Group	RFT059	Mission Refugio, 41RF1	87N/100E	Non-feature	Unglazed Native American	76.889
Refugio Ref. Group	RFT062	Mission Refugio, 41RF1	85N/99E	Non-feature	Unglazed Native American	8.122
Refugio Ref. Group	RFT063	Mission Refugio, 41RF1	87N/100E	Non-feature	Unglazed Native American	8.348
Refugio Ref. Group	RFT064	Mission Refugio, 41RF1	86N/99E	Non-feature	Unglazed Native American	7.220
Refugio Ref. Group	RFT067	Mission Refugio, 41RF1	85N/99E	Feature 1	Unglazed Native American	4.795
Refugio Ref. Group	RFT068	Mission Refugio, 41RF1	85N/99E	Feature 1	Unglazed Native American	3.349
Refugio Ref. Group	RFT074	Mission Refugio, 41RF1	85N/100E	Non-feature	Unglazed Native American	2.732
Refugio Ref. Group	RFT075	Mission Refugio, 41RF1	83N/100E	Non-feature	Unglazed Native American	17.835
Refugio Ref. Group	RFT078	Mission Refugio, 41RF1	85N/100E	Feature 1	Unglazed Native American	92.441
Refugio Ref. Group	RFT085	Mission Refugio, 41RF1	84N/100E	Feature 1	Unglazed Native American	39.453
Refugio Ref. Group	RFT087	Mission Refugio, 41RF1	85N/100E	Feature 1	Unglazed Native American	11.801
Refugio Ref. Group	RFT088	Mission Refugio, 41RF1	86N/99E	Feature 1	Unglazed Native American	4.306
Refugio Ref. Group	RFT094	Mission Refugio, 41RF1	85N/99E	Non-feature	Unglazed Native American	49.774
Refugio Ref. Group	RFT095	Mission Refugio, 41RF1	86N/100E	Non-feature	Unglazed Native American	83.155
Refugio Ref. Group	RFT096	Mission Refugio, 41RF1	83N/99E	Feature 1	Unglazed Native American	3.282
Refugio Ref. Group	RFT099	Mission Refugio, 41RF1	86N/99E	Non-feature	Unglazed Native American	1.945
Refugio Ref. Group	RFT102	Mission Refugio, 41RF1	TxDOT TP1	Non-feature	Unglazed Native American	56.788
Refugio Ref. Group	RFT103	Mission Refugio, 41RF1	TxDOT TP1	Non-feature	Unglazed Native American	95.941
Refugio Ref. Group	RFT108	Mission Refugio, 41RF1	95N/100E	Non-feature	Unglazed Native American	2.062
Refugio Ref. Group	RFT109	Mission Refugio, 41RF1	81N/100E	Feature 1	Unglazed Native American	44.402
Refugio Ref. Group	RFT110	Mission Refugio, 41RF1	81N/100E	Feature 1	Unglazed Native American	2.111
Refugio Ref. Group	RFT113	Mission Refugio, 41RF1	81N/100E	Feature 1	Unglazed Native American	7.759
Refugio Ref. Group	RFT114	Mission Refugio, 41RF1	81N/100E	Feature 1	Unglazed Native American	24.083
Refugio Ref. Group	RFT116	Mission Refugio, 41RF1	82N/100E	Feature 1	Unglazed Native American	84.553
Refugio Ref. Group	RFT120	Mission Refugio, 41RF1	90N/100E	Non-feature	Unglazed Native American	52.427
Refugio Ref. Group	RFT125	Mission Refugio, 41RF1	80N/100E	Feature 1	Unglazed Native American	27.159
Refugio Ref. Group	RFT126	Mission Refugio, 41RF1	60N/100E	Non-feature	Unglazed Native American	3.101
Refugio Ref. Group	RFT127	Mission Refugio, 41RF1	95N/100E	Non-feature	Unglazed Native American	28.122
Refugio Ref. Group	RFT131	Mission Refugio, 41RF1	81N/100E	Non-feature	Unglazed Native American	72.650
Refugio Ref. Group	RFT132	Mission Refugio, 41RF1	82N/100E	Feature 1	Unglazed Native American	16.222
Refugio Ref. Group	RFT133	Mission Refugio, 41RF1	82N/100E	Feature 1	Unglazed Native American	44.788
Refugio Ref. Group	RFT135	Mission Refugio, 41RF1	82N/100E	Feature 1	Unglazed Native American	87.081
Refugio Ref. Group	RFT137	Mission Refugio, 41RF1	90N/100E	Feature 1	Unglazed Native American	71.867
Refugio Ref. Group	RFT138	Mission Refugio, 41RF1	71N/100E	Non-feature	Unglazed Native American	65.402
Refugio Ref. Group	RFT140	Mission Refugio, 41RF1	78N/100E	Non-feature	Unglazed Native American	40.909
Refugio Ref. Group	RFT141	Mission Refugio, 41RF1	71N/100E	Non-feature	Unglazed Native American	5.843
Refugio Ref. Group	RFT144	Mission Refugio, 41RF1	82N/100E	Feature 1	Unglazed Native American	34.127
Refugio Ref. Group	RFT145	Mission Refugio, 41RF1	80N/100E	Feature 1	Unglazed Native American	14.733
Refugio Ref. Group	RFT146	Mission Refugio, 41RF1	80N/100E	Feature 1	Unglazed Native American	82.501
Refugio Ref. Group	RFT147	Mission Refugio, 41RF1	Feature 2	Feature 2	Clay	23.282
Galera	LGS311	Mission Refugio, 41RF1	84N/100E		Lead glazed, galera	0.000
Galera	LGS312	Mission Refugio, 41RF1	79N/100E		Lead glazed, galera	0.000
Galera	LGS313	Mission Refugio, 41RF1	75N/100E		Lead glazed, galera	0.000
Galera	LGS314	Mission Refugio, 41RF1	73N/100E		Lead glazed, galera	0.000
Galera	LGS315	Mission Refugio, 41RF1	86N/100E		Lead glazed, galera	0.000
Galera	LGS316	Mission Refugio, 41RF1	86N/100E		Lead glazed, galera	0.000
Galera	LGS317	Mission Refugio, 41RF1	78N/100E		Lead glazed, galera	0.000
Galera	LGS318	Mission Refugio, 41RF1	87N/100E		Lead glazed, galera	0.000
Galera	LGS319	Mission Refugio, 41RF1	87N/100E		Lead glazed, galera	0.000
Galera	LGS320	Mission Refugio, 41RF1	72N/100E		Lead glazed, galera	0.000
Lead Glaze-1	LGS301	Mission Refugio, 41RF1	75N/100E		Lead glazed, sandy paste	0.000
Lead Glaze-1	LGS304	Mission Refugio, 41RF1	75N/100E		Lead glazed, sandy paste	0.000
Lead Glaze-1	LGS306	Mission Refugio, 41RF1	73N/100E		Lead glazed, sandy paste	0.000
Lead Glaze-1	LGS307	Mission Refugio, 41RF1	75N/100E		Lead glazed, sandy paste	0.000
Lead Glaze-1	LGS309	Mission Refugio, 41RF1	75N/100E		Lead glazed, sandy paste	0.000

Table H-1. Continued...

Unassigned	KAT201	41KA26-B	52-E		Unglazed Native American	0.000
Unassigned	KAT206	41KA26-B	13-D		Unglazed Native American	0.000
Unassigned	KAT213	41KA26-B	14-D		Unglazed Native American	0.000
Unassigned	LGS302	Mission Refugio, 41RF1	74N/100E		Lead glazed, sandy paste	0.000
Unassigned	LGS303	Mission Refugio, 41RF1	85N/100E		Lead glazed, sandy paste	0.000
Unassigned	LGS305	Mission Refugio, 41RF1	75N/100E		Lead glazed, sandy paste	0.000
Unassigned	LGS308	Mission Refugio, 41RF1	75N/99E		Lead glazed, sandy paste	0.000
Unassigned	LGS310	Mission Refugio, 41RF1	86N/100E		Lead glazed, sandy paste	0.000
Unassigned	RFT003	Mission Refugio, 41RF1	73N/100E	Feature 2	Unglazed Native American	0.000
Unassigned	RFT009	Mission Refugio, 41RF1	76N/100E	Feature 2	Unglazed Native American	0.027
Unassigned	RFT014	Mission Refugio, 41RF1	74N/100E	Non-feature	Unglazed Native American	0.000
Unassigned	RFT033	Mission Refugio, 41RF1	75N/100E	Feature 2	Unglazed Native American	0.000
Unassigned	RFT038	Mission Refugio, 41RF1	72N/100E	Feature 2	Unglazed Native American	0.000
Unassigned	RFT044	Mission Refugio, 41RF1	84N/100E	Non-feature	Unglazed Native American	0.000
Unassigned	RFT060	Mission Refugio, 41RF1	86N/99E	Feature 1	Unglazed Native American	0.000
Unassigned	RFT061	Mission Refugio, 41RF1	86N/100E	Feature 1	Unglazed Native American	0.025
Unassigned	RFT070	Mission Refugio, 41RF1	84N/100E	Feature 1	Unglazed Native American	0.375
Unassigned	RFT073	Mission Refugio, 41RF1	86N/100E	Feature 1	Unglazed Native American	0.000
Unassigned	RFT076	Mission Refugio, 41RF1	83N/100E	Non-feature	Unglazed Native American	0.018
Unassigned	RFT077	Mission Refugio, 41RF1	86N/100E	Non-feature	Unglazed Native American	0.004
Unassigned	RFT079	Mission Refugio, 41RF1	83N/100E	Feature 1	Unglazed Native American	0.001
Unassigned	RFT081	Mission Refugio, 41RF1	85N/99E	Non-feature	Unglazed Native American	0.002
Unassigned	RFT090	Mission Refugio, 41RF1	87N/100E	Non-feature	Unglazed Native American	0.002
Unassigned	RFT097	Mission Refugio, 41RF1	85N/99E	Feature 1	Unglazed Native American	0.026
Unassigned	RFT098	Mission Refugio, 41RF1	71N/100E	Non-feature	Unglazed Native American	0.125
Unassigned	RFT106	Mission Refugio, 41RF1	TxDOT Gradall Tr. #1	Non-feature	Unglazed Native American	0.179
Unassigned	RFT111	Mission Refugio, 41RF1	78N/100E	Non-feature	Unglazed Native American	0.001
Unassigned	RFT112	Mission Refugio, 41RF1	81N/100E	Feature 1	Unglazed Native American	0.000
Unassigned	RFT119	Mission Refugio, 41RF1	71N/100E	Non-feature	Unglazed Native American	0.000
Unassigned	RFT123	Mission Refugio, 41RF1	79N/100E	Non-feature	Unglazed Native American	0.000
Unassigned	RFT124	Mission Refugio, 41RF1	82N/100E	Feature 1	Unglazed Native American	0.005
Unassigned	RFT136	Mission Refugio, 41RF1	95N/100E	Non-feature	Unglazed Native American	0.000

* Probabilities of membership in the Refugio Mission Reference Group, based on 29 elements retained for quantitative analysis.

including rare earth elements (REEs or lanthanide) and many transition metals. The Refugio Mission Reference Group is elongated along Component 1, reflecting the variable but correlated concentrations of many of these elements. Most of the rare earth elements (REEs) together with tantalum, uranium, and thorium pull the two main glazed ware groups, Galera and Lead Glaze-1, toward the high end of Component 1 and toward the low end of Component 2. The alkali elements (sodium, potassium, cesium, and rubidium), meanwhile, together with europium, vanadium, and manganese tend to be enriched in the Refugio Mission sample.

Another aspect of structure in the southern Texas data is evident on a biplot of the first and third principal

components (Figure H-2). Although the glazed and Native American groups overlap completely on Component 3, two unassigned glazed specimens have anomalously high scores on this component. High concentrations of sodium, potassium, and manganese are especially important in creating this separation.

Bivariate plots (Figures H-3 and H-4) confirm that the Galera and Lead Glaze-1 groups fall well outside the range of compositional variation of southern Texas Native American ceramics. As inferred from the biplot (Figure H-1), Galera and Lead Glaze-1 are relatively enriched in REEs (Figure H-3) as well as tantalum (Figure H-4). The fact that they lie along different REE correlation lines compared to the Refugio Mission Reference group reinforces the inference

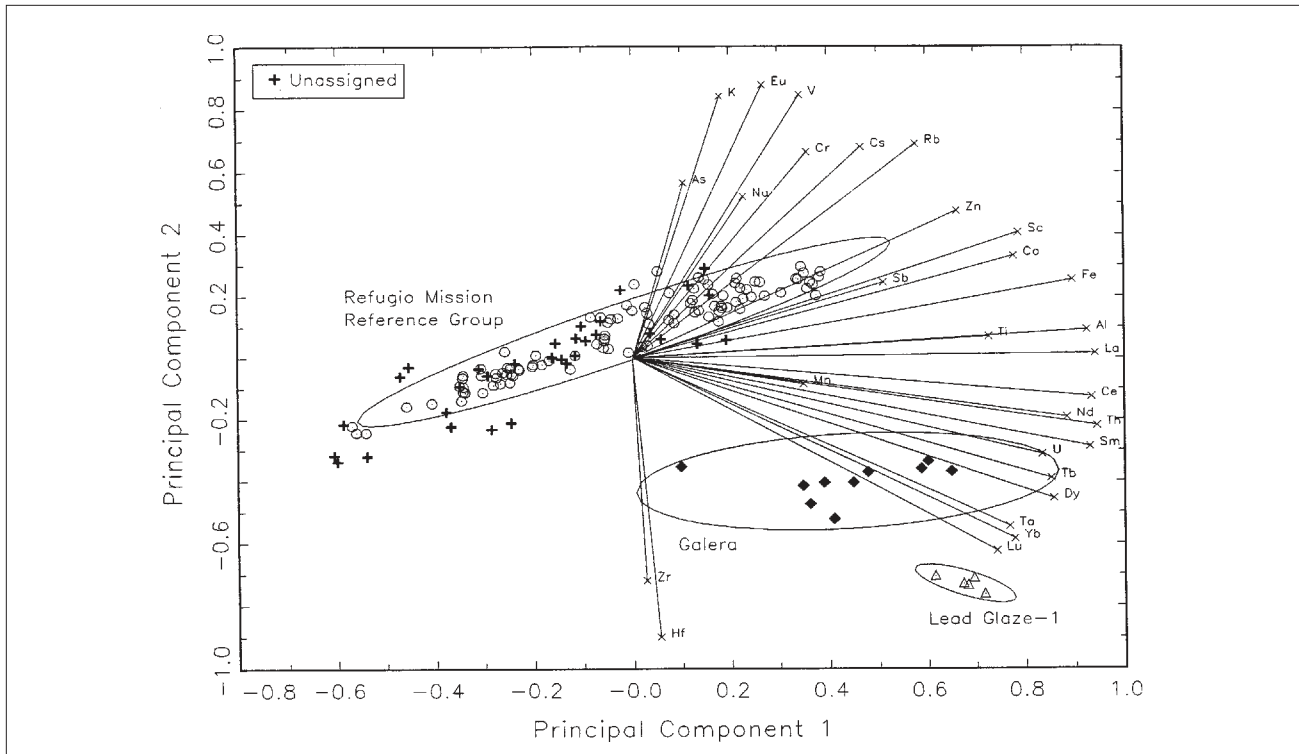


Figure H-1. PCA biplot of Principal Components 1 and 2 of the correlation matrix for 29 elements determined in the Mission Refugio samples. Ellipses represent 90% confidence level for membership in the groups.

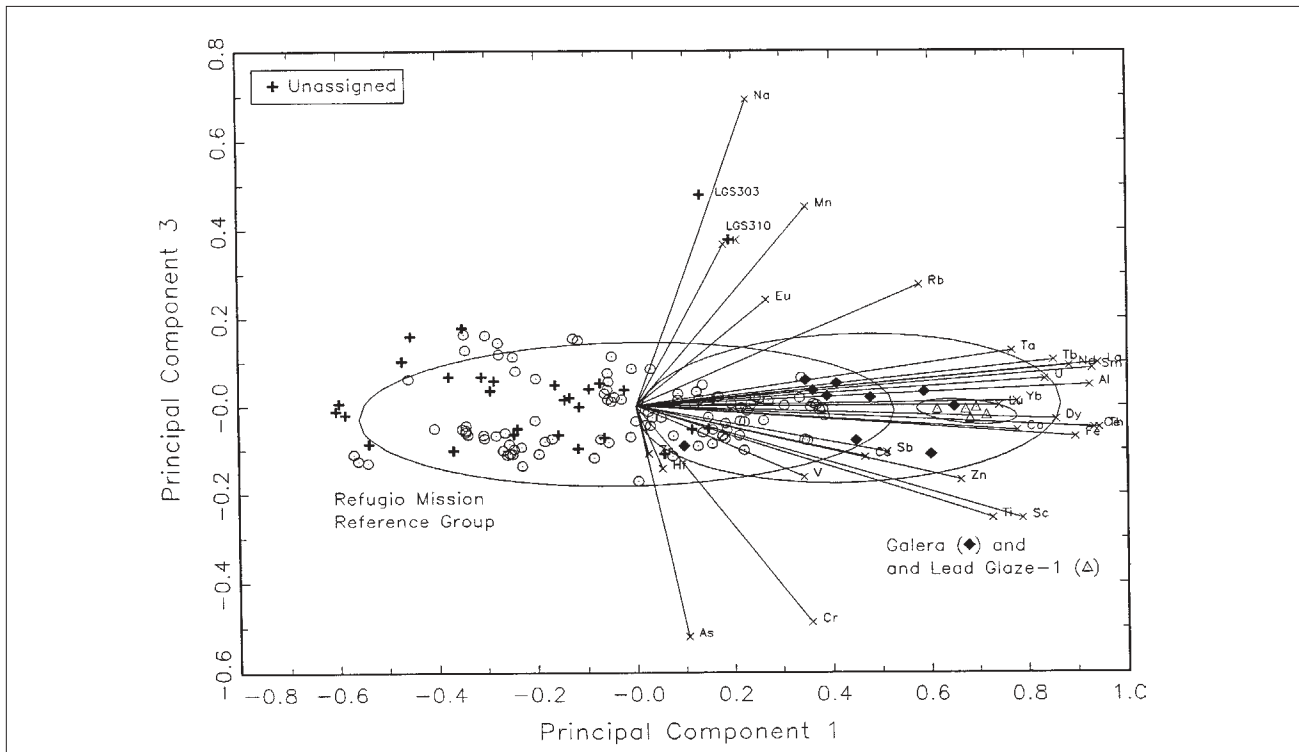


Figure H-2. PCA biplot of Principal Components 1 and 3 of the correlation matrix for 29 elements determined in the Mission Refugio samples. Ellipses represent 90% confidence level for membership in the groups.

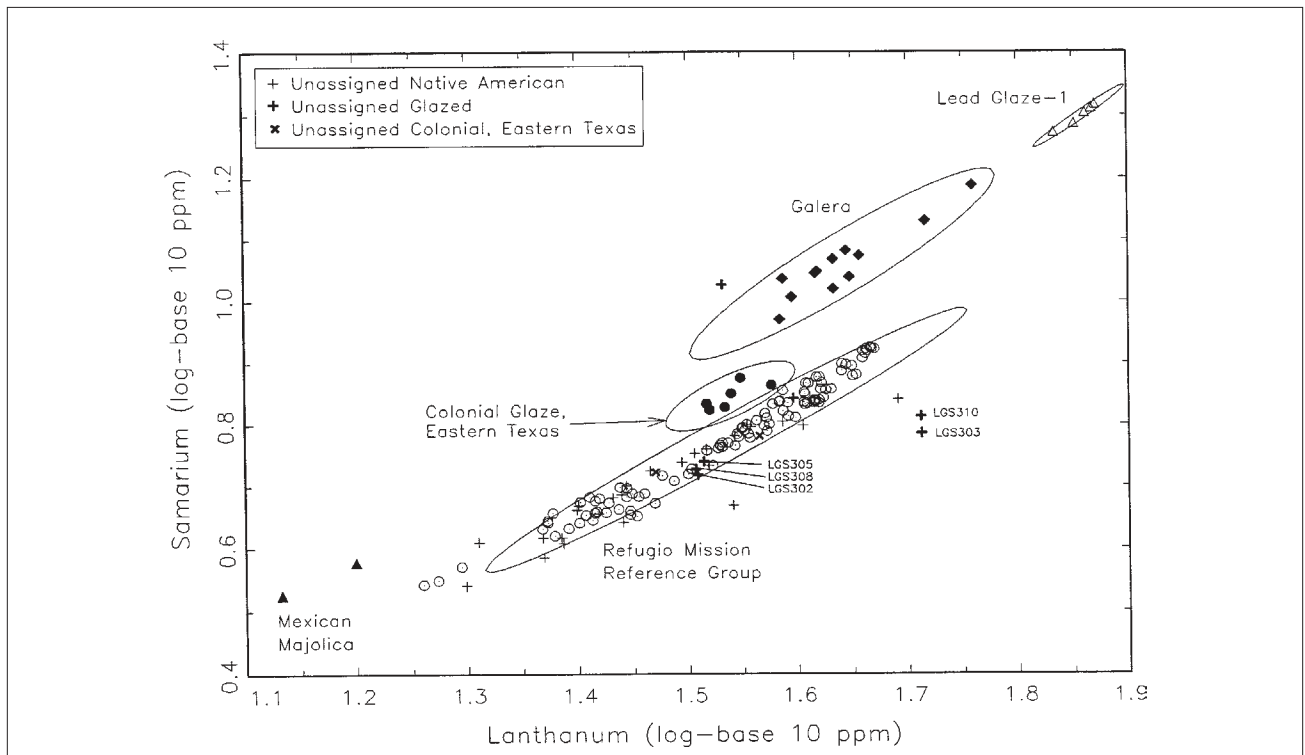


Figure H-3. Bivariate plot of lanthanum and samarium concentrations in the Mission Refugio samples and other Colonial pottery from Texas. Ellipses represent 90% confidence level for membership in the groups.

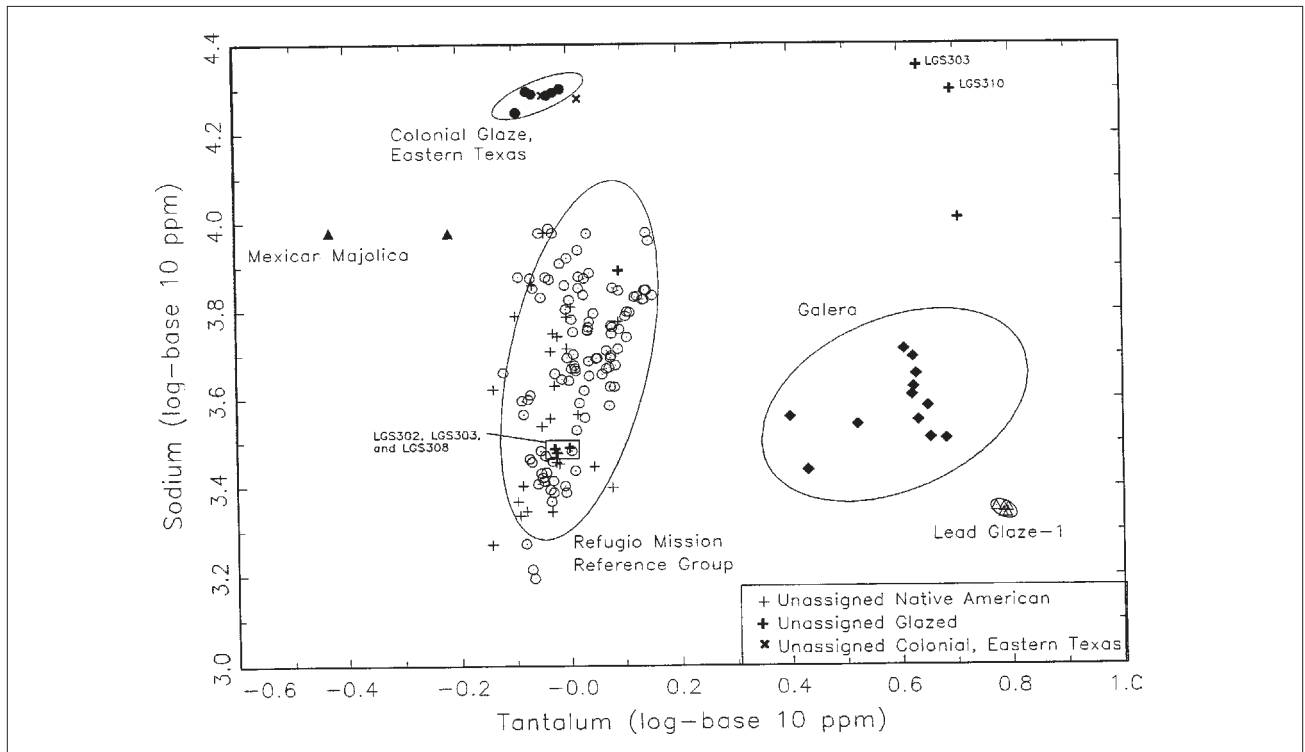


Figure H-4. Bivariate plot of tantalum and sodium concentrations in the Mission Refugio samples and other Colonial pottery from Texas. Ellipses represent 90% confidence level for membership in the groups.

that different ceramic resource bases are represented. Two unassigned glazed specimens, LGS303 and LGS310, are identified as quite divergent from the local southern Texas compositional profile on both the lanthanum-samarium plot (Figure H-3) and the tantalum-sodium plot (Figure H-4). The other unassigned lead glazed specimens, LGS302, LGS305, and LGS308, together with the remaining unassigned Native American specimens group with the Refugio Mission Reference Group on Figures H-3 and H-4 and many other projections of the data, so a non-local source would seem less probable for them.

Also plotted in Figures H-3 and H-4 are the data from fourteen specimens from a Colonial site in eastern Texas. Including these additional analyses adds two members to the Galera Group and defines another compositional group that is not present in the southern Texas sample. In addition, two different varieties of Mexican Majolica are present in the eastern Texas sample.

Discussion

The results presented above imply that there was little if any overlap between the ceramic resources bases of Native American and glazed ware potters who made the ceramics consumed at Refugio Mission. All but three of the glazed specimens clearly fall outside the range of chemical variation of southern Texas Native American pottery on numerous projections of the data. The most plausible interpretation of this evidence is that these glazed sherds originate outside of southern Texas. The three remaining glazed sherds fall within the Refugio Mission Reference Group on most projections of the data but cannot be assigned to the group statistically. Thus, the latter specimens may have been produced in southern Texas, but their producers evidently did not perceive and exploit the southern Texas ceramic environment in the same way as did Native American potters.

Currently there is no direct evidence available that might indicate where the imported glazed pottery at Refugio Mission might have come from. Euclidean searches of the entire MURR databank did not reveal any very closely matching specimens, although prehistoric ceramics from the southwest tended to be best represented in the case of unassigned specimens LGS303 and LGS310. The Galera and Lead Glaze-1 groups show some similarities to the elemental concentration means of a group designated "Cluster 1" by Carlson and James (1995:Table 1) in another INAA study of Texas Mission pottery. Carlson and James

suggest that their Cluster 1 group derives from Mexico. However, as shown in Figure H-5, the Refugio Mission glazed specimens fall well outside the range of variation of Mexican pottery and raw materials in the MURR databank. The MURR databank is heavily biased in favor of the Mexico City region, the specific source zone named by Carlson and James; the MURR database also includes Colonial as well as Prehispanic pottery. The high tantalum values in the Texas glazed samples (Figure H-5) differentiate them not only from the Mexican material, but also from most other data in the MURR databank.

More definitive comparisons between the data reported here and the Texas A&M Texas database amassed by Carlson and James (1995) would certainly be useful. The published data (Carlson and James 1995) consist of elemental concentration means, and these are inadequate for determining whether any of the groups defined here represent the same ranges of compositional variation as those identified in the Texas A&M study.

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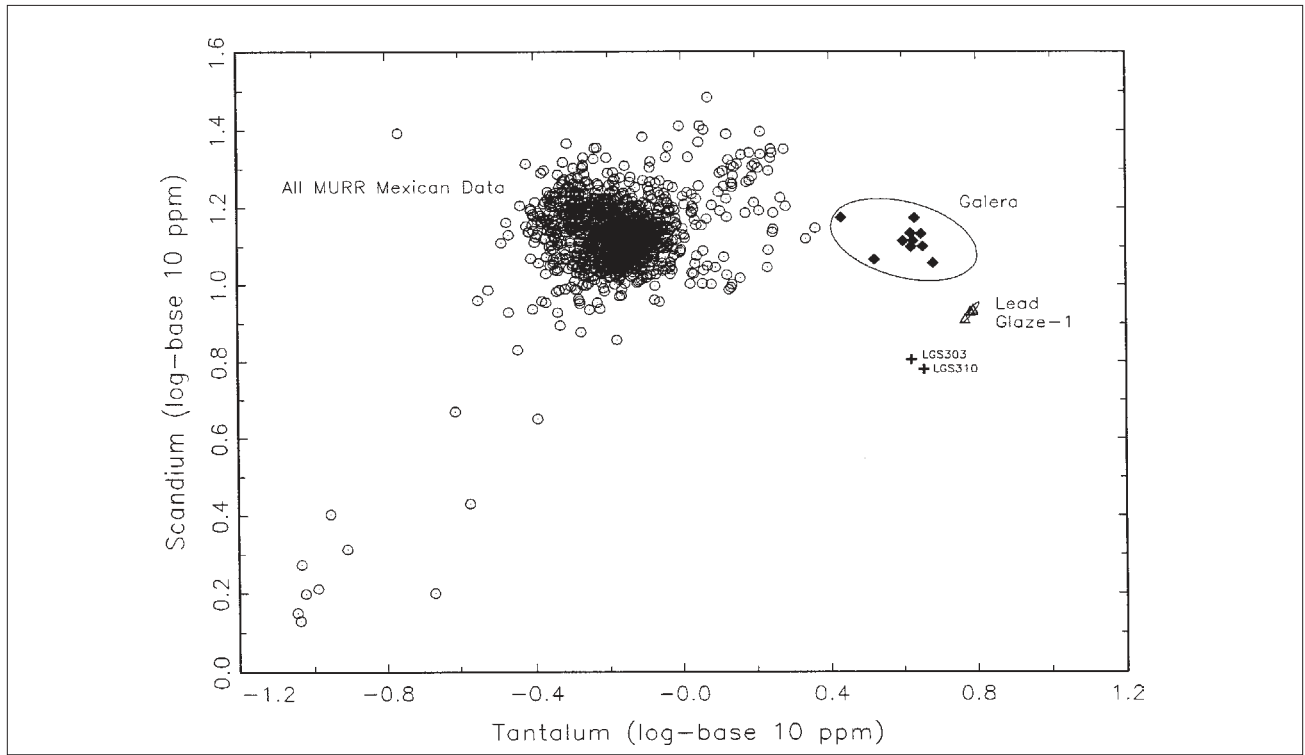


Figure H-5. Bivariate plot of tantalum and scandium concentrations in all MURR Mexican samples together with the Galera and Lead Glaze-1 groups from Refugio Mission. Ellipses represent 90% confidence level for membership in the two glazed ware groups.

Note: Chemical component table is contained on Volume I - CD as 00H2-Ref App H2.xls.

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Table 1-7.2. Chemical components - Mission Refugio

Table with columns: and, prov, context, cat_type, chem1, chem2, as, la, nd, sm, ai, co, cr, cu, fe, nf, ni, rs, ab, sc, si, t, ba, ca, dy, k, m, na, ti, v. The table contains a large number of rows with numerical data for various chemical components.

Appendix I

Mission Refugio

Burial Artifacts

Appendix I: Burial Artifacts

Table I-1. Inventory list of Burial-associated Items

41RF1 - Mission Refugio		
Inventory List of Items Associated with Burials		
BF #	Burial #	Item Description
2	15	1 metal cross
2	15	1 wooden bead
2	15	1 metal medallion
4	8	1 metal button
4	8	1 unidentified metal object
4	14	copper button fragments
5	17	1 copper button & fragments of another
5	27	small copper fragment
5	39	2 metal arrow points
5	----	copper fragments
5	----	1 small blue glass bead
8	20	1 possible coffin nail
9	42	10 coffin nails & 2 large spikes
10	43	wood fragments
11	44	4 clear glass beads
11	44	5 dark blue glass beads
12	46	18 clear glass beads & 2 black glass bead
13	57	possible coffin nail
14	56	fiber or root?
14	56	2 small blue glass beads
14	56	2 unidentified metal fragments
14	56	1 black glass bead
14	56	1 square nail
14	56	2 medium sized white glass beads
15	48	cloth covered metal object
15	81	small fragment of cloth from proximal end of ulna
16	60,67,72	large, clear glass bead
19	65	red stain in soil, possibly ochre
20	2	cloth with brass or copper sequins
20	2	wood fragment
20	2	possible coffin nail
22	4	red ochre
22	28	1 lead shot, 1 lead piece
22	77	large unidentified flat metal object
22	82	3 metal buttons - 2.6 cm (1 inch) in diameter
22	97	wood fragments
22	97	289 med. sized white glass beads

Table I-1. Continued...

41RF1 - Mission Refugio		
Inventory List of Items Associated with Burials		
BF #	Burial #	Item Description
22	97	8 small blue glass beads
22	107	5 cloth covered metal buttons
22	129	2 small copper beads, 2 small lapis beads, 2 red glass beads
22	107 & 109	worked shell
24	68	1 copper or brass bell
24	68	1 metal ring
24	68	3 long, cylindrical bone beads
24	68	1 shell pendant
24	68	1 bone bead with metal object
24	80, 85, & 37	shell pendant
26	92	5 flat bone beads or buttons
26	92	copper fragment
26	95	1 bone bead
26	125	1 marine shell
26	125	1 animal tooth pendant
26	113 & 114	3 large pieces of gypsum
27	98	red ochre
28	99	red pigment (ochre?)
30	102	7 small white glass beads
30	102	2 unidentified metal objects
30	102	1 metal arrow point
30	24 & 102	15 forged nails (coffin?)
34	134	10 small brass buttons, 8 medium brass button, 3 large iron buttons, cylindrical lead bullet, cloth from shoulders

Appendix J

Mission Refugio

Paste and Temper

Key for abbreviations used in the Appendix J:

NA=not analyzed, sherdlet;
Bs=sparse bone temper;
Bm=moderate bone temper;
Bp=profuse bone temper;
Ss=sparse sandy paste;
Sm=moderate sandy paste;
Sp=profuse sandy paste;
Ss-Bs=sparse bone temper in a sparse sandy paste;
Sp-Bs=sparse bone temper in a profuse sandy paste;
Sm-Bs=sparse bone temper in a moderate sandy paste;
Sm-Bm=moderate bone temper in a moderate sandy paste;
Sp-Bm=moderate bone temper in a profuse sandy paste;
None=no apparent temper;
Ss-Bm=moderate bone temper in a sparse sandy paste.
+ 1/1=number of sherds; sherds with asphaltum

Note: Paste and temper data located on Volume I - CD as 00J2-Ref App J2.pdf.

Paste and Temper, Analysis Unit 1, Feature 1 Units

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	Sm-Bm	Sp-Bm	None	N
24	1	1	1		1/1+	2				1/1				7
29	3		3								1			7
30	2	3	3	4		1/1	2			1				16
35	3	2	3			1		1						10
40	1	1	2	1										5
89	4	2	2		1/1	1								10
94	1	1	7	1		2/1								12
98	1		2		1									4
102	2		6			3								11
104	1	1	2											4
105	3	1	1			1								6
110		1		1				1						3
118	3	1								1/1				5
120						1								1
121			1											1
124	9	7	3		1	5	1		1	1				28
129		1				1		1						3
130	4	4	2			3	3							16

Paste and Temper, Analysis Unit 1, Feature 1 Units

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	Sm-Bm	Sp-Bm	None	N
133	10	6/1	9	2	3/1				1	3				34
139	3	4	5	2	2/2	2/1								18
141	8	53	2	1/1	1									65
147		1	1											2
154	2	3/1	5											10
155		4/1	2	1										7
158	6	5	15	2	1/1	3								32
159		3	7	4										14
160	1	3	9			4/3				1				18
161	1	4			1									6
163			1											1
170		8	3					2				1		14
171	1	1	2		1		1							6
172			1											1
182	2	5												7
184	4	10	2	1	1	4/1			1/1					23
187		1												1
188	8	8	20	2		3/3	1/1				1/1			43

Paste and Temper, Analysis Unit 1, Feature 1 Units

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	Sm-Bm	Sp-Bm	None	N
189	11	18/2	25		1									55
195	1													1
197	1	1								1				3
198	4		2			1								7
200		2												2
201	3		1			1								5
202	4	6/1	10	1/1	2	5	1							29
206	11	3	11		1/1	2/1	5	2		5				40
211	4	5	1			1/1	1		2	2				16
212	4	4	10		1				1	1				21
216	2	1	1											4
217			1											1
222	1													1
223	3		4	1		2/2								10
227	1	1	5	2/1										9
229	1		2			2/2								5
230			1											1
231	2	2												4

Paste and Temper, Analysis Unit 1, Feature 1 Units

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	Sm-Bm	Sp-Bm	None	N
232	1	2	4				2	1						10
235		2	7		1/1	1								11
236	1													1
237							1/1							1
238	2		4								1			7
239			2			1								3
242	2					1/1				1				4
244	2		1			1								4
245	2					1/1								3
253	9		1		1	3		3/1		3				20
254	6	3	8/2	9		3	2		1			1		33
255		1	2			4/1	1							8
256		4	4			2	1							11
257			4											4
258			1			1/1								2
259		2/1						2						4
261							1							1
264	3	4	4					1/1						12

Paste and Temper, Analysis Unit 1, Feature 1 Units

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	Sm-Bm	Sp-Bm	None	N
265	2	5/2	2			1			1	1				12
266			1			1								2
267	1	2	4		1	1								9
268	5		3				1							9
269	3	1												4
270	1						1			1				3
271		1				1/1					1			3
272	1		2											3
273	1		1							1				3
274	1		1											2
275	1	1	9							1/1				12
276			1											1
AU 1 Totals	181	216/9	262/2	35/3	22/8	73/21	25/2	14/1	8/1	25/3	4/1	0	2	867

Paste and Temper, Analysis Unit 2, Feature 2 Units

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	N
10	12	2	2			1					17
13	6	1			1/1+						8
20	16	4	11	1/1	1	2	2		2	1/1	40

Paste and Temper, Analysis Unit 2, Feature 2 Units

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	N
26	3	6	27			3	3			1/1	43
32	4	2	8/1			1/1				2/1	17
36		1	2								3
37			7				1				8
63	13	1	12/1	4	1/1	1/1	1			1/1	34
91	1		7								8
92	1		1								2
99	11	5	4/1			1	1				22
103	2		5	3	1/1	2/1					13
106	11	3	7		1	2/1		1		1	26
107	1		3						2		6
111			5	2							7
112	2	2	5			1					10
116			6								6
119		5/1	9/2	1			1		1		17
123			1								1
125	6	1			1/1						8
126	4		4	3	2/2						13

Paste and Temper, Analysis Unit 2, Feature 2 Units

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	N
127	3	1	7/1	4/1	2/2	3/3				1/1	21
128	6	1	2		2/2	2/1					13
131	3		2		1	1					7
132	4		4	2/1	1/1	5/2	2/1				18
135	2	1	2	1	1/1						7
136	4	2	8	1			1				16
137			1								1
138	3	2	3				1/1				9
140	3		3	1							7
143	7	4	4			1/1					16
145								1			1
157	8		6								14
162	2	1	2								5
164	1	1	4								6
165						2/1					2
166		1	1	1							3
169	3		1								4
173			8/1		2/1						10

Paste and Temper, Analysis Unit 2, Feature 2 Units

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	N
175				1							1
177		1	1								2
181			1	1		1/1					3
208	3	2	7	2		1	1/1				16
213		1	2		2	1					6
220	5	2	10	1	1/1		2/1		1	1	23
228		2	1	1				1/1		1	6
233		1	6	1	1					1	10
234			6	2		1	1/1				10
240	1	5	12	5							23
246			3							2	5
260		1	3		1/1						5
262			2								2
AU2 Totals	151	62/1	238/7	38/3	22/15	32/13	17/5	3/1	6	12/5	581

Paste and Temper, Analysis Unit 3, Non-feature Units

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	Sp-Bm	None	Sm-Bm	Ss-Bm	N
1	5	2	15	1											23

Paste and Temper, Analysis Unit 3, Non-feature Units

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	Sp-Bm	None	Sm-Bm	Ss-Bm	N
2	3	2	1												6
3	5		2												7
4	12	7	6												25
5	6	6/1+	7		1/1	1									21
6	23	15/1	1			3/1				1					43
7	8	3/1	7/2		1	1				2					22
8		1	1												2
9	12	4/1	7												23
11	7	11	13	2/1	1/1	1									35
12	28	8	10			4	1					1	1		53
14	4	3	7/1		2/1										16
15	5	4	4/1	2											15
16	21	11	8	1	4	8/1		1		1					55
17	1	2	4												7
18	8	10	15	2	1	3/1	1	1		2					43
19	2	3	1												6
21			2												2
22	8	6/1	13			5	3								35
23	5	5	7/1		1	2				1					21

Paste and Temper, Analysis Unit 3, Non-feature Units

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	Sp-Bm	None	Sm-Bm	Ss-Bm	N
27		3/1	4												7
28	3	1	5/1			2		1							12
33		2/1		1											3
34	3	4	2			1	1								11
42	1			1						1					3
45	1		2	2			1								6
47	19	11	12	5	1	10/1	6/1								64
49	15	7	9/1		1/1	3	1		1						37
51	6		1	1								1			9
52		3	2					1/1							6
53	11	4	6												21
54	11	4	7			2/1	1			1/1					26
55	3	1				1									5
56		1	1												2
57	3	1	7	1	1	3/3	2								18
58		2													2
59	18	10	14				2		1	2					47
60	10	4	9/1	9		2									34
61	3		2	1		1/1									7

Paste and Temper, Analysis Unit 3, Non-feature Units

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	Sp-Bm	None	Sm-Bm	Ss-Bm	N
62	3		1	2											6
64	11	20/1	12		1/1	5/1	1			1					51
65	28	19	7	1		2/1	1			4					62
66	2	1	3		2	1									9
69	11	9	12	3		2/1	1								38
70				1/1		1									2
72	13	17/1	17			2	4/1								53
73	6	5				1									12
74	6	8	10			2	1								27
75	8	4	1												13
76	1	6	17	1	1	1/1									27
77	15	14/1	9	1/1	1	2/1	1/1	1		3					47
78	20	10	27	2	1	4/2	2			3/1					69
79		1	4	2	1/1										8
80	5		5/1												10
81	4	3	4			1									12
82	2		5							1					8
83	5		8			1									14
84	57	26	18	1	2/1	2		1		3			1		111

Paste and Temper, Analysis Unit 3, Non-feature Units

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	Sp-Bm	None	Sm-Bm	Ss-Bm	N
86	3			1		1/1									5
87		1													1
88			2												2
90	28	15/1	16		3	4	3		1	1			1		72
93	9	6	5			2									22
95	6	12/1	13	1	4/3	4/2	5	5/3	1	2					53
96	6	6/1	12/2	1/1						1					26
97	3	2	2/1			2									9
100	4	1				5/1		4/4	1	3					18
101	5	4	4	1	1/1	1/1									16
115	5		5	1											11
117	7	7	3			1/1	3/1								21
134	2	4	2	1								1			10
149	1	3	3			1				1					9
150		1			1/1	1	1								4
152			3		1	5/3									9
156				1											1
179		1	2												3
180	4		11	2		2/1	1		1						21

Paste and Temper, Analysis Unit 3, Non-feature Units

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	Sp-Bm	None	Sm-Bm	Ss-Bm	N
185	2		2												4
190	1	6	5		1	2	1								16
191	9	5	1	1	1	3/1									20
193	12	7	6			1/1									26
194	11	5/1	8/1			6/1	1		1						32
196	2		5							1/1					8
199	1		1				1/1								3
203	48	69/3	25/1	2	1/1	4/2	2/1		1	2		1		1	156
204	2	1/1	10	1	2	1/1									17
205	8	3	7	2											20
207	6		5			2/2	2		1	1					17
209	19	16/1	16/1			9/6	13/3			1					74
210	2	1	3		1/1	1/1	3/3								11
214	11	7	8		4/1	4/1		2		1			1		38
215			2												2
218		2	3		1										6
219	2	1	2	1/1	1	1									8
221	7	6/1	16	3		2		2							36
224	1	1	3	1	1/1										7

Paste and Temper, Analysis Unit 3, Non-feature Units

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	Sp-Bm	None	Sm-Bm	Ss-Bm	N
226	1	1	2	1											5
250	9	20	11/1		4	3				1			2		50
251	24	18	19	1	2/1	4	1								69
252	13	14/2	19/1	1	4/2	5/1	2	1		1				1	61
AU 3 Totals	741	550/22	636/17	66/5	56/19	157/43	69/12	20/8	9	42/3	0	4	6	2	2358

Paste and Temper, TxDOT Excavations

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	N
1	1	3		1							5
2	28	10	8	1		2					49
3	48	15	33	5	1	2/1+				1	105
4	15	4	9	1	1					1	31
5	11	3	8	1		1/1					24
8	7	4	14	2	1	1	1				30
9	25	9/1	23/1	1		3/1	1				62
10	18	5	8	1		7/2					39
11	34	19	9	2	1	5/2	4/1		1		75
12	5	3	2	1	2			1			14

Paste and Temper, TxDOT Excavations

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	N
13	1	3	2								6
14					2/2	2					4
16	2				2						4
17	12	1	8	1	2	1/1				1	26
18	12	3	4		1/1					1/1	21
19	28	3	11	1			1/1		1		45
20			2								2
22		1/1		1							2
TxDOT Totals	247	86/2	141/1	19	13/3	24/8	7/2	1	2	4/1	544

Paste and Temper, Miscellaneous Gradall Scraping

Lot #	NA	Bs	Bm	Bp	Ss	Sm	Sp	Ss-Bs	Sp-Bs	Sm-Bs	Sm-Bm	N
109	10	6							1			17

Appendix K

Mission Refugio

Rim Sherds and Decorated Sherds

* Rim and/or decorated sherds submitted for Instrumental Neutron Activation Analysis, see Appendix L

** Oxidation conditions follow Teltser (1993:Figure 2)

+Bs=sparse bone temper, Bm=moderate bone temper; Bp=profuse bone temper

Note: I=interior sherd surface; E=exterior sherd surface

Note: Rim sherds and decorated sherds located on Volume I - CD as 00K2-Ref App K2.pdf.

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
Analytical Unit 3, Non-Features Deposits									
lot 1	-	?	Rounded	F	Bs	Clay	E Wiped	5.4	
lot 4	-	?	Rounded	B	Bm	Clay	-	6.9	
lot 4	-	?	Rounded	B	Bs	Clay	I Burnished	4.9	
lot 4	-	?	Flat	B	-	Sandy	-	5.4	
lot 4	-	?	Rounded	B	Bm	Clay	-	5.9	
lot 4	-	?	Rounded	F	Bm	Clay	E Wiped	3.6	
lot 5	-	?	Rounded	F	Bs	Clay	-	6.1	
lot 6	Interior red-painted band	?	Rounded	F	Bs	Clay	-	6.1	
lot 6	Interior red-painted band	-	-	F	Bs	Clay	-	4.9	
lot 6	-	?	Pointed	F	Bs	Clay	-	5.6	
lot 6	Rockport Black on Gray II	Direct	Flat	E	-	Sandy	-	6.7	Jar or Olla
lot 6	Rockport Black on Gray I	Inverted	Flat	C	Bs	Sandy	-	5.9	Jar or Olla
lot 6/77	-	Inverted	Rounded	G	Bs	Clay	E Burnished	6.1	Bowl or Olla?
lot 9	Exterior red-painted band	-	-	F	Bs	Clay	-	5.4	Bowl

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
lot 10	Asphaltum on Lip	Direct	Flat	F	-	Sandy	I Asphaltum	6.1	
lot 11	-	?	Rounded	F	Bs	Clay	I/E Wiped	4.4	
lot 12	Interior red-painted band	Direct	Rounded	F	Bs	Clay	-	3.3	
lot 12	Rockport Black on Gray II	-	-	A	Bm	Clay	-	7.7	Jar
lot 12	ceramic disk	-	-	F	Bm	Clay	-	5.6	
lot 12	-	Direct	Flat	E	Bm	Clay	-	4.6	Bottle
lot 12	-	?	Rounded	F	Bm	Clay	-	5.9	
lot 15	Interior red-painted band	-	-	F	Bs	Clay	-	8.2	
lot 16	-	Direct	Rounded and Thickened	A	Bs	Clay	I/E Smoothed	7.4	Bowl
lot 16	-	Inverted	Rounded	G	Bm	Clay	-	6.1	Bowl
lot 16	-	Direct	Rounded	C	Bm	Clay	-	4.2	
lot 17	-	Everted	Rounded	C	Bs	Clay	I/E Smoothed	4.6	Bowl
lot 17	-	Direct	Rounded	C	-	Sandy	E Wiped	6.7	Bottle
lot 18	-	Inverted	Rounded	F	Bm	Clay	I/E Smoothed	4.9	Bowl
lot 18	-	?	Rounded-	B	Bs	Clay	I Wiped	7.4	

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
			E Beveled						
lot 18	-	?	Rounded	F	Bs	Clay	-	5.4	
lot 18	possible loop handle fragment	-	-	F	Bs	Clay	-	6.7	
lot 22	-	Direct	Flat	C	Bs	Sandy	-	6.7	Bowl
lot 22	-	?	Rounded	F	Bs	Clay	I Wiped	5.6	
lot 22	-	Direct	Rounded	C	Bs	Sandy	-	6.1	
lot 23	-	Inverted	Flat	F	Bs	Clay	-	5.6	Bowl
lot 27	-	?	Rounded	A	Bs	Sandy	-	5.4	
lot 28	Rockport Black on Gray I	Direct	Flat	B	-	Sandy	-	4.2	Jar or Olla
lot 28	-	Direct	Rounded	B	-	Sandy	-	6.9	
lot 34	-	?	Flat	B	Bm	Clay	E Burnished	4.4	
lot 42	-	?	Rounded	F	Bs	Clay	I Wiped	6.1	
lot 47	E sphaltum blob	-	-	C	-	Sandy	-	6.7	
lot 47	-	Direct	Rounded	B	Bs	Clay	E Smoothed	4.1	Bowl
lot 49	-	?	Flat	B	-	Sandy	-	4.1	
lot 51	-	?	Flat	B	-	Sandy	E Burnished	5.6	
lot 52	-	Everted	Flat	F	Bs	Clay	I/E	5.1	Bowl

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
							Smoothed		
lot 53	-	?	Rounded	B	Bs	Clay	I Burnished	5.4	
lot 54	Rockport Black on Gray I	Direct	Flat	F	Bs	Sandy	E Wiped	6.4	Jar/Olla
lot 54	loop handle	-	-	F	Bm	Clay	-	28 x 22 x 14	Jar
lot 54	-	Direct	Flat	G	Bs	Clay	E Wiped	7.1	Bowl
lot 57	loop handle	-	-	F	Bs	Clay	-	23 x 25 x 19	Jar
lot 57	-	?	Pointed	B	-	Sandy	-	5.9	
lot 59	Rockport Black on Gray I	Direct	Flat	C	Bs	Sandy	E Wiped	6.4	Jar Olla
lot 59	-	?	Rounded	B	Bs	Sandy	-	5.9	Bowl
lot 59	loop handle	-	-	F	Bm	Clay	-	26 x 20 x 10	Jar
lot 60	E asphaltum line	-	-	F	Bs	Sandy	I Asphaltum	6.7	
lot 64	-	?	Rounded	F	Bm	Clay	I/E Burnished	5.6	
lot 64	-	Everted	Rounded	E	-	Sandy	I Smoothed	3.6	Bowl
lot 64	-	?	Rounded	F	Bs	Clay	I Wiped;	5.6	
							E Burnished		
lot 65	Brown painted band	-	-	C	Bs	Sandy	-	4.6	

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
lot 65	-	?	Rounded		Bm	Clay	I Smoothed	5.6	
lot 69	-	Direct	Rounded		-	Sandy	-	7.1	
lot 69	-	Direct	Flat	H	Bs	Clay	I Smoothed	5.6	Bowl
lot 72*	E asphaltum blob	-	-	A	Bs	Sandy	-	8.4	Jar
lot 72	-	Direct	Flat	A	Bs	Sandy	-	7.4	Bottle
lot 73	E asphaltum line	-	-	C	Bs	Clay	-	5.6	
lot 74	E asphaltum line	-	-	F	-	Sandy	-	4.6	
lot 74	E asphaltum line	-	-	G	Bs	Sandy	-	5.6	
lot 74	-	Everted	Rounded	F	Bm	Clay	-	7.7	Jar
lot 74	-	Direct	Rounded	B	Bp	Clay	-	7.4	Bowl
lot 74	-	?	Flat	B	Bs	Sandy	-	5.1	
lot 77	-	?	Rounded	F	Bm	Clay	-	4.1	
lot 77	-	?	Rounded	A	Bp	Clay	-	3.8	
lot 78	-	Inverted	Rounded	F	Bm	Clay	E Smoothed	7.4	Bowl
lot 82	E asphaltum line	-	-	F	-	Sandy	-	5.4	
lot 84	ceramic foot	-	-	A	Bs	Sandy	-	24 x 14 x 12	
	Rockport								

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
lot 84	Black on Gray I	Direct	Flat	F	Bs	Sandy	-	5.6	Jar/Olla
lot 84	Interior red-painted band	Direct	Rounded	F	Bm	Clay	-	4.1	
lot 84	Interior red-painted band	Direct	Flat	F	Bs	Clay	-	4.9	Bowl
lot 84	Interior red-painted band	Direct	Flat	F	Bm	Clay	I/E Smoothed	4.6	Bowl
lot 84	-	Direct	Rounded	B	Bs	Sandy	-	5.4	
lot 84	-	Inverted	Rounded	A	Bm	Clay	-	9.2	Bowl or Olla?
lot 84	-	?	Rounded	F	Bm	Clay	E Burnished	4.4	
lot 84	-	?	Rounded	B	Bm	Clay	I Wiped	4.1	
lot 84	-	Direct	Rounded	G	Bm	Clay	I/E Smoothed	5.6	
lot 84	-	?	Flat	F	Bm	Clay	E Wiped	6.1	
lot 84	-	?	Flat	C	Bs	Clay	E Smoothed	4.9	
lot 86	-	?	Rounded	C	Bs	Sandy	-	3.8	
lot 90	Esphaltum line	-	-	G	-	Sandy	-	6.4	
lot 90	-	Direct	Flat	F	-	Sandy	E Burnished	6.4	Bowl
lot 95	Esphaltum line	-	-	G	-	Sandy	E Burnished	5.6	
lot 95	Brown	-	-	E	Bs	Sandy	-	5.6	

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
	Painted band								
lot 95	-	Direct	Flat	F	Bm	Clay	E Smoothed	6.9	Deep bowl
lot 95	-	?	Rounded	G	Bm	Clay	-	4.6	
lot 95	-	Inverted	Flat	C	Bs	Sandy	I/E Wiped	5.6	Bowl
lot 96	-	?	Rounded	B	Bm	Clay	-	5.6	
lot 97	Brown painted squiggles	-	-	E	Bs	Sandy	-	5.1	
lot 97	-	?	Rounded	C	Bm	Sandy	-	5.4	
lot 101	Parallel brushed	-	-	A	Bs	Clay	-	7.1	Jar
lot 101	-	Direct	Rounded	B	Bp	Clay	I/E Smoothed	5.9	Bowl
lot 109	-	?	Rounded	F	Bs	Clay	E Smoothed	6.1	
lot 115	-	Direct	Rounded	G	Bp	Clay	E Smoothed	4.4	
lot 117	E asphaltum line	-	-	F	Bs	Clay	E Scraped	7.4	Jar
lot 117	-	Everted	Flat	G	Bm	Clay	-	5.1	Bowl
lot 150	-	Direct	Rounded	E	Bs	Clay	-	7.7	
lot 151	-	Direct	Flat	F	Bs	Clay	E Burnished	4.4	Bowl
lot 176	E asphaltum line	-	-	F	Bs	Clay	-	5.6	

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
lot 176	E asphaltum line	-	-	F	Bs	Clay	-	6.7	
lot 180	-	Direct	Flat	A	-	Sandy	-	7.4	Bottle
lot 189	-	Direct	Flat	B	-	Sandy	-	4.6	
lot 191	E asphaltum line	-	-	F	Bs	Sandy	-	6.7	
lot 194	E asphaltum line	-	-	H	Bm	Clay	I/E Smoothed	4.6	
lot 194	E asphaltum line	-	-	C	-	Sandy	-	4.6	
lot 194	-	Direct	Flat	B	-	Sandy	-	5.4	Bowl
lot 199	-	Everted	Rounded	H	Bs	Clay	-	6.7	Jar
lot 203	E asphaltum line	-	-	G	Bs	Clay	-	7.9	Jar?
lot 203	E asphaltum line	-	-	F	Bs	Clay	I Asphaltum band	8.2	Jar
lot 203	I Asphaltum line?	-	-	G	Bs	Clay	-	7.4	
lot 203	Broad horizontal Incised lines	-	-	H	Bs	Clay	-	5.9	
lot 203	-	Direct	Rounded	H	Bs	Clay	-	6.1	Bowl
lot 203	-	Direct	Flat	G	Bs	Clay	E Burnished	5.9	Bowl

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
lot 203	-	?	Rounded	F	Bs	Sandy	I Asphaltum	5.1	
lot 203	-	?	Flat	E	Bs	Sandy	-	5.9	
lot 204	E asphaltum lines	-	-	G	Bs	Clay	I Asphaltum blob	6.1	
lot 204	Overlapping brushed	-	-	F	Bs	Clay	-	6.9	Jar?
lot 204	Parallel Incised lines	-	-	F	Bs	Sandy	-	5.6	
lot 204	loop handle	-	-	F	Bs	Clay	-	23 x 17 x 16	Jar
lot 204	-	?	Flat	A	-	Sandy	-	4.9	
lot 209	-	Inverted	Flat	F	Bs	Clay	E Burnished	6.1	Bowl
lot 209	-	?	Flat	F	Bs	Clay	E Burnished	4.1	
lot 215	I Asphaltum line?	-	-	F	Bs	Clay	E Burnished	6.1	
lot 221	-	Direct	Flat	F	Bs	Clay	-	5.4	Bowl
lot 221	-	Direct	Expanding	G	Bs	Clay	I Smoothed	3.8	
lot 250	Rockport Black on Gray I	Direct	Flat	F	Bs	Sandy	E Wiped	6.9	Jar/
lot 250	Rockport Black on Gray I	Direct	Flat	C	Bs	Sandy	-	6.1	Jar or Olla
lot 250	-	Direct	Rounded	A	Bs	Clay	-	4.9	Bowl

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
lot 250	-	Direct	Rounded	G	Bs	Clay	I/E Burnished	5.4	Bowl
lot 250	-	?	Rounded	F	Bs	Clay	-	5.4	
lot 251	E asphaltum line	-	-	F	Bs	Clay	E Scraped	7.2	
lot 251	-	Direct	Pointed	G	Bs	Clay	-	5.6	
lot 251	-	Inverted	Rounded	B	Bm	Clay	I/E Burnished	5.6	Bowl
lot 251	-	Direct	Rounded	F	Bs	Clay	-	7.7	Bowl
lot 251	-	Direct	Rounded	D	Bm	Clay	I Smoothed	5.1	Bowl
lot 251	-	Inverted	Rounded	G	Bs	Clay	E Smoothed	4.1	
lot 251	-	?	Rounded	G	Bs	Clay	-	4.4	
lot 252	-	Direct	Rounded	E	Bs	Clay	-	6.9	Bowl
lot 252	-	Everted	Rounded	G	Bs	Clay	E Smoothed	4.9	Bowl
lot 252	-	?	Pointed	A	Bm	Sandy	-	5.1	
lot 252*	E asphaltum line	-	-	G	Bs	Sandy	-	7.4	Jar?
Analytical Unit 1, Feature 1									
lot 30	E asphaltum line	-	-	F	Bs	Clay	-	6.4	

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
lot 30	-	Inverted	Rounded		Bs	Clay	-	5.9	
lot 35	-	?	Flat	A	-	Sandy	-	4.9	
lot 89	E darkbrown painted line	-	-	F	Bm	Clay	E Smoothed	7.7	
lot 89	-	Everted	Rounded	G	Bs	Clay	-	5.6	
lot 102	-	Direct	Rounded	F	Bs	Clay	-	6.7	
lot 105	Rockport Black on Gray II	Inverted	Flat	F	-	Sandy	-	4.9	Bottle
lot 108	-	Direct	Flat	H	Bp	Clay	E Smoothed	7.1	Bowl
lot 130	E asphaltum squiggle	-	-	F	-	Sandy	E Burnished	3.8	Bowl
lot 130	-	?	Flat	F	-	Sandy	-	3.8	
lot 133	-	Inverted	Rounded	F	Bs	Sandy	-	6.9	
lot 134	E asphaltum line	-	-	E	Bs	Sandy	I Asphaltum	5.6	
lot 134	-	Direct	Rounded	F	Bs	Clay	-	3.8	Bowl
lot 140	-	Everted	Rounded	G	-	Sandy	I Scraped	6.9	Jar
lot 141	-	Everted	Rounded	F	Bs	Clay	-	5.6	Jar
lot 141	-	Everted	Rounded	F	Bs	Clay	E Smoothed	7.7	Jar
lot 141	I brown paint?	Everted	Rounded	F	Bs	Clay	E Burnished	6.4	Jar

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
lot 141	-	Everted	Flat	F	Bm	Clay	E Smoothed	7.1	Jar
lot 141	-	Direct	Rounded	H	Bm	Clay	-	7.9	Jar
lot 141	-	Everted	Rounded	F	Bs	Clay	E Burnished	6.7	Jar
lot 147	E asphaltum line	-	-	F	-	Sandy	E Burnished	4.1	Bowl
lot 158	-	?	Rounded	F	Bm	Clay	E Burnished	6.9	
lot 159	-	Inverted	Rounded	B	Bs	Sandy	-	4.1	
lot 160	-	?	Rounded	B	-	Sandy	-	4.6	
lot 160	-	Direct	Rounded	D	Bm	Clay	-	5.6	Jar
lot 171	-	Everted	Rounded	H	Bs	Clay	-	4.6	
lot 171	-	Direct	Flat	F	-	Sandy	-	5.6	
lot 184	-	Inverted	Rounded	H	Bs	Clay	E Burnished	5.6	
lot 188	-	?	Rounded	F	Bs	Clay	-	7.1	
lot 188	-	?	Rounded	F	Bm	Clay	I Smoothed	4.4	
lot 188	-	Direct	Rounded	B	Bs	Sandy	-	5.4	Bowl
lot 188	-	Everted	Rounded	F	Bs	Clay	-	6.4	Jar
lot 189	E asphaltum line	-	-	C	-	Sandy	-	3.8	
lot 189	-	Everted	Rounded	G	Bm	Clay	E Smoothed	6.7	Jar
lot 189	-	Direct	Flat	G	Bs	Sandy	-	4.6	
lot 189	Rockport	-	-	F	Bs	Clay	-	6.9	

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
	Black on Gray II								
lot 202	-	Everted	Rounded	F	-	Sandy	-	6.9	
lot 202	-	Direct	Flat	F	Bs	Sandy	-	3.8	
lot 206	-	Direct	Rounded	B	-	Sandy	-	7.1	Jar
lot 206	-	Inverted	Flat	C	Bs	Sandy	-	6.7	Bowl?
lot 206	-	Direct	Flat	E	-	Sandy	-	3.8	
lot 207	-	Direct	Flat/Beveled	B	Bs	Clay	I/E Burnished	4.6	Bowl
lot 207	-	Direct	Rounded	F	Bs	Clay	-	6.1	Bowl
lot 211	-	Direct	Rounded	B	Bs	Clay	I Scraped	7.4	
lot 212	Rockport Black on Gray II	Direct	Flat	F	-	Sandy	-	4.1	
lot 223	Rockport Black on Gray II	Direct	Flat	B	-	Sandy	-	3.8	Olla
lot 229	E asphaltum line	-	-	C	Bs	Sandy	I Asphaltum	3.8	
lot 231	-	?	Rounded	H	Bm	Clay	E Burnished	6.1	
lot 235	Rockport Black on Gray II	?	Flat	B	-	Sandy	-	3.6	
lot 235	-	Inverted	Flat	G	Bm	Clay	E Smoothed	6.1	Bowl

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
lot 235	-	Inverted	Flat	F	Bs	Clay	I/E Burnished	4.2	Bowl
lot 235	-	Direct	Rounded	F	Bm	Clay	E Smoothed	6.7	Bowl
lot 235	-	Direct	Rounded	H	Bs	Clay	E Smoothed	7.1	Bowl
lot 235	E asphaltum lines	-	-	B	Bm	Sandy	-	6.1	
lot 242	loop handle	-	-	F	Bm	Clay	-	-	
lot 245	-	Everted	Rounded	F	Bs	Clay	-	7.4	Jar
lot 253	-	?	Rounded, beveled	F	Bs	Clay	E Smoothed	6.4	
lot 254	-	?	Flat	G	Bs	Clay	-	3.6	
lot 254	-	Everted	Rounded	F	Bm	Clay	-	4.8	Jar
lot 254	-	Everted	Rounded	B	Bm	Clay	I Smoothed	7.1	Jar
lot 254	-	Everted	Rounded	F	Bm	Clay	-	7.1	Jar
lot 254	-	?	Rounded	H	Bp	Clay	-	6.7	
lot 255	-	?	Rounded	F	Bs	Clay	E Smoothed	5.6	Bowl?
lot 255	-	Direct	Flat	F	Bs	Clay	E Smoothed	8.7	Bowl
lot 257	E asphaltum line	-	-	G	Bs	Sandy	I Asphaltum	5.6	
lot 257	-	?	Rounded	F	Bs	Clay	-	5.1	
lot 258	Rockport Black on	-	-	B	Bs	Clay	I Asphaltum	6.9	

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
	Gray II								
lot 258	-	Direct	Flat	B	Bs	Clay	-	4.9	Bowl
lot 259	disk	-	-	F	Bp	Clay	I Smoothed	5.9	
lot 259	-	Direct	Rounded	G	Bs	Clay	-	4.4	Bowl
lot 259	-	Direct	Rounded	B	Bs	Clay	I/E Smoothed	4.1	Bowl
lot 259	I Asphaltum blob	Direct	Rounded	B	Bs	Clay	E Burnished,I Scraped	3.3	Bowl
lot 259	E asphaltum squiggles	Direct	Rounded	B	Bs	Clay	I Scraped	4.1	Bowl
lot 264	E asphaltum line	-	-	B	Bm	Clay	-	4.9	
lot 264	-	Direct	Rounded	C	Bs	Sandy	-	4.1	
lot 270	-	Direct	Flat, exterior folded	F	Bs	Clay	E Burnished	4.9	Bowl
Analytical Unit 2, Feature 2									
lot 10	-	?	Flat and Beveled	B	Bm	Clay	-	6.4	
lot 20	-	Direct	Rounded	B	Bm	Clay	I Smoothed	4.6	Bowl
lot 26	-	Everted	Rounded	F	Bm	Clay	E Smoothed	5.6	

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
lot 63	-	Direct	Flat	F	Bs	Clay	-	6.7	
lot 63	-	Everted	Rounded	F	Bm	Clay	E Burnished,I Smoothed	6.7	
lot 110	loop handle	-	-	F	Bm	Clay	-	-	Jar
lot 119	foot	-	-	B	-	Sandy	-	-	Jar
lot 119	E asphaltum blobs	Direct	Rounded	B	Bm	Sandy	E Burnished	6.9-7.9	Jar
lot 119	-	Everted	Rounded	F	Bm	Clay	I/E Burnished	7.9	Jar
lot 127	-	Everted	Flat	A	Bp	Clay	E Smoothed	6.9	Jar
lot 127	-	?	Rounded	G	Bm	Clay	-	3.6	Bowl
lot 127	-	?	Rounded	B	Bm	Clay	-	5.4	
lot 132	-	?	Flat	F	-	Sandy	E Smoothed	3.6	
lot 143	-	Everted	Rounded	F	Bp	Clay	-	8.4	Jar
lot 143	-	Direct	Flat	F	Bs	Sandy	I Burnished	4.6	Bowl
lot 157	-	Direct	Rounded	B	-	Sandy	-	2.3	Pipe?
lot 169	-	-	Flat	B	Bm	Clay	E Smoothed	6.9	
lot 173	-	Direct	Rounded	G	Bm	Clay	I/E Smoothed	7.1	Jar?
lot 213	-	?	Flat	F	Bs	Clay	E Burnished	6.1	
lot 213	-	Inverted	Rounded	F	Bm	Clay	E Smoothed	3.3	Bowl

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
lot 220	-	?	Rounded	G	Bs	Clay	-	7.4	
lot 233	-	Everted	Rounded	F	Bs	Clay	-	6.4	Jar
lot 234	-	Direct	Flat	C	Bs	Clay	E Smoothed	4.4	Bowl
TxDOT Excavations									
2	E asphaltum line	-	-	A	-	-	E Burnished	5.1	
2	I red-painted or slipped?	Direct	Rounded	F	Bs	Clay	-	4.1	
2	-	Everted	Flat	F	Bm	Clay	I Burnished	7.7	Jar
2	-	Direct	Rounded	F	Bs	Clay	E Smoothed	4.6	Bowl
2	-	Everted	Rounded	H	Bs	Clay	E Smoothed	5.1	
3	E asphaltum lines and red painted lines	-	-	G	Bm	Clay	I Scraped	4.4	Bottle?
3	-	?	Rounded	F	-	Sandy	-	5.6	
3	-	?	Flat	F	Bm	Clay	-	5.6	Bowl
3	--	Direct	Rounded	F	Bs	Clay	I/E Smoothed	6.9	Bowl
3	-	Inverted	Pointed	F	Bs	Clay	E Burnished	6.4	Bowl
3	-	Everted	Rounded	F	Bs	Clay	E Burnished	5.6	Jar

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
8	-	?	Rounded	B	Bs	Clay	I/E Burnished	5.4	Bowl
8	-	?	Rounded	F	Bm	Clay	I/E Burnished	4.9	Bowl
8	-	?	Pointed	B	Bs	Clay	I Smoothed	3.8	
9	-	?	Rounded	E	Bm	Clay	-	5.6	
9	-	?	Flat and E Folded	G	Bs	Sandy	-	4.4	
9	-	Inverted	Flat	F	Bs	Clay	I/E Smoothed	4.6	Bowl
9	-	?	Flat	F	Bs	Clay	-	5.1	
9	-	?	Flat	G	Bs	Clay	I Burnished	5.6	
9	E asphaltum line	-	-	G	Bs	Sandy	-	5.4	
9	E asphaltum line	-	-	?	Bm	Sandy	-	?	
10	-	?	Flat	F	Bs	Clay	E Smoothed	5.9	
10	-	Direct	Flat	F	Bs	Clay	I/E Smoothed	8.4	Bowl
10	E asphaltum line	-	-	C	-	Sandy	-	5.4	
10	E asphaltum line	-	-	F	-	Sandy	-	4.6	
11	-	Everted	Flat	C	Bs	Sandy	-	6.7	Jar

Lot #	Decoration	Rim profile	Lip	Oxidation Conditions**	Temper +	Paste	Surface Treatment	Thickness (mm)	Vessel Form
17	-	?	Flat	B	Bs	Sandy	-	4.6	
18	-	Direct	Flat	B	Bs	Clay	I Smoothed	6.7	

Appendix L

Mission Refugio

Sherds for INAA

(Instrumental Neutron Activation Analysis)

Key for abbreviations used in Appendix L:

- * Oxidation conditions follow Teltser (1993:Figure 2)
- ** Bs=sparse bone temper;
- ** Bm=moderate bone temper;
- ** Bp=profuse bone temper;
- +I=interior; E=exterior

Note: Sherds for INAA data located on Volume I - CD as 00L2-Ref App L2.pdf.

Provenience	NAA #	Sherd Type	Oxidation Conditions*	Temper**	Paste	Surface Treatment+	Thickness (mm)
Lot 111	1	body	D	Bp	Clay	-	9.2
Lot 101	2	body	F	Bs	Sandy	E Asphaltum	6.7
Lot 126	3	body	B	-	Sandy	I/E Asphaltum	5.4
Lot 86	4	body	F	Bp	Clay	-	4.9
Lot 140	5	body	F	Bp	Clay	I/E Smoothed	5.9
Lot 101	6	body	C	Bs	Clay	I/E Smoothed	5.9
Lot 131	7	body	B	-	-	Black glaze (Mexican)	6.7
Lot 181	8	body	G	Bp	Clay	Burnished E	7.9
Lot 143	9	body	C	Bs	Clay	I/E Smoothed	4.6
Lot 96	10	body	F	Bp	Clay	I/E Asphaltum	8.4
Lot 111	11	body	F	Bp	Clay	-	7.4
Lot 103	12	body	D	Bp	Clay	-	8.2
Lot 119	13	body	G	Bs	Clay	-	8.2
Lot 193	14	body	F	Bs	Clay	-	6.1
Lot 45	15	body	F	Bp	Clay	E Scraped; E Asphaltum	4.4
Lot 136	16	body	G	Bp	Clay	E Burnished	6.9
Lot 32	17	body	C	Bm	Clay	-	6.1
Lot 119	18	body	B	Bs	Clay	I/E Smoothed; I Asphaltum	6.1
Lot 208	19	body	F	Bp	Clay	-	7.9
Lot 119	20	body	B	Bs	Clay	I/E Smoothed, I/E Asphaltum	5.6
Lot 208	21	body	C	Bs	Clay	I/E Smoothed	5.6
Lot 228	22	body	F	Bp	Clay	I Burnished	6.9
Lot 166	23	body	F	Bp	Clay	I Wiped	6.7
Lot 103	24	body	F	Bp	Clay	-	6.7
Lot 26	25	body	C	Bs	Clay	E Smoothed	5.4
Lot 260	26	body	B	-	Sandy	I/E glaze (Mexican)	4.4
Lot 234	27	body	G	Bp	Clay	I/E Smoothed	6.1

Provenience	NAA #	Sherd Type	Oxidation Conditions	Temper	Paste	Surface Treatment	Thickness (mm)
Lot 228	28	body	C	Bs	Sandy	E Asphaltum	6.4
Lot 26	29	body	C	Bs	Sandy	-	5.9
Lot 132	30	body	G	Bp	Clay	I/E Asphaltum	7.7
Lot 173	31	body	G	Bm	Clay	-	7.4
Lot 20	32	base	C	Bs	Clay	-	13.3
Lot 32	33	body	F	Bs	Clay	E Smoothed	4.6
Lot 112	34	body	C	Bp	Clay	I/E Smoothed	5.4
Lot 103	35	body	F	Bp	Clay	-	7.2
Lot 240	36	body	G	Bp	Clay	I/E Smoothed	5.6
Lot 63	37	body	C	Bp	Clay	-	5.6
Lot 145	38	body	E	Bs	Sandy	-	6.9
Lot 233	39	body	D	Bs	Clay	-	8.9
Lot 264	40	body	G	Bs	Sandy	E Smoothed, I Asphaltum	7.4
Lot 95	41	body	F	Bp	Clay	-	8.2
Lot 229	42	body	B	-	Sandy	E Asphaltum	6.7
Lot 160	43	body	D	Bs	Sandy	I Burnished	7.2
Lot 78	44	body	G	Bs	Sandy	E Scraped, I Asphaltum	6.1
Lot 259	45	body	C	Bs	Clay	I Wiped	4.1
Lot 250	46	body	F	Bs	Clay	E Burnished	7.4
Lot 154	47	body	F	Bs	Clay	I/E Smoothed	7.2
Lot 259	48	body	F	Bs	Clay	E Asphaltum	4.1
Lot 84	49	body	F	Bs	Clay	I/E Smoothed	7.9
Lot 160	50	body	B	-	Sandy	I/E Asphaltum	4.9
Lot 184	51	body	F	Bp	Clay	E Burnished	6.7
Lot 69	52	body	F	Bs	Clay	E Burnished	5.9
Lot 154	53	body	G	Bs	Clay	I/E Asphaltum	6.1
Lot 12	54	body	B	-	Sandy	-	6.9
Lot 212	55	body	F	Bm	Clay	I/E Smoothed	8.7
Lot 94	56	body	C	Bp	Clay	E Wiped, I Smoothed	7.4

Provenience	NAA #	Sherd Type	Oxidation Conditions	Temper	Paste	Surface Treatment	Thickness (mm)
Lot 76	57	body	A	Bp	Clay	E Smoothed	7.6
Lot 77	58	body	F	Bm	Clay	I Smoothed	6.4
Lot 209	59	body	G	Bs	Sandy	-	7.7
Lot 255	60	body	A	-	Sandy	-	6.7
Lot 265	61	body	B	Bs	Clay	I/E Asphaltum	7.7
Lot 59	62	body	F	Bm	Clay	E Smoothed, I Wiped	6.7
Lot 203	63	body	F	Bm	Clay	E Smoothed, I Asphaltum	5.9
Lot 250	64	body	G	Bs	Clay	-	8.9
Lot 72	65	body	A	Bs	Clay	E Asphaltum	8.4
Lot 203	66	body	F	Bp	Clay	-	6.7
Lot 223	67	body	F	Bp	Clay	-	6.1
Lot 202	68	body	H	Bs	Clay	E Burnished	6.7
Lot 74	69	body	F	Bs	Clay	I/E Burnished	5.9
Lot 155	70	body/base	F	Bp	Clay	-	6.7-9.9
Lot 251	71	base	G	Bp	Clay	-	11.5
Lot 203	72	body	F	Bs	Clay	I Smoothed	5.9
Lot 266	73	body	B	-	Sandy	-	6.1
Lot 12	74	body	G	Bs	Clay	-	6.1
Lot 76	75	body	H	-	Sandy	-	4.6
Lot 90	76	body	C	Bs	Clay	E Smoothed, E Asphaltum	7.4
Lot 95	77	body	F	Bs	Sandy	E Asphaltum	5.1
Lot 141	78	body	F	Bp	Clay	E Smoothed, E Asphaltum	7.9
Lot 110	79	body	F	Bp	Clay	E Smoothed	8.7
Lot 64	80	body	F	Bm	Clay	I Smoothed	5.1
Lot 54	81	body	H	Bs	Clay	-	6.4
Lot 221	82	body	B	Bm	Clay	I Scraped	7.2
Lot 252	83	body	G	Bs	Sandy	E Asphaltum	7.5
Lot 221	84	body	B	Bs	Clay	I/E Asphaltum	7.7

Provenience	NAA #	Sherd Type	Oxidation Conditions	Temper	Paste	Surface Treatment	Thickness (mm)
Lot 134	85	body	F	Bp	Clay	I/E Burnished	8.4
Lot 224	86	body	F	Bp	Clay	-	7.6
Lot 133	87	body	B	Bs	Clay	E Asphaltum	8.4
Lot 254	88	body	B	Bs	Clay	E Smoothed	7.4
Unknown	89	body	B	-	Sandy	-	7.9
Lot 209	90	body	H	Bm	Clay	I Asphaltum	4.9
Lot 18	91	body	H	Bp	Clay	I/E Smoothed	7.2
Lot 203	92	body	F	Bs	Clay	E Burnished	6.4
Lot 77	93	body	G	Bp	Clay	E Burnished, E Asphaltum	6.4
Lot 65	94	body	B	Bs	Clay	I/E Smoothed	9.7
Lot 219	95	body	G	Bp	Clay	E Smoothed, I Asphaltum	7.9
Lot 227	96	body	B	Bp	Clay	I Asphaltum	6.4
Lot 202	97	body	B	Bp	Clay	I/E Smoothed	7.9
Lot 204	98	body	G	Bs	Clay	I Asphaltum	5.4
Lot 252	99	body	F	Bp	Clay	-	6.9
TxDOT, Lot 12	100	body	H	Bs	Sandy	-	7.6
TxDOT, Lot 3	101	body	H	Bs	Clay	Burnished E, I Smoothed	5.6
TxDOT, Lot 3	102	body	F	Bp	Clay	E Smoothed, I Burnished	6.9
TxDOT, Lot 2	103	body	F	Bs	Clay	I/E Burnished	5.9
TxDOT, Lot 11	104	body	G	-	Sandy	-	7.4
TxDOT, Lot 5	105	body	F	Bs	Clay	-	4.6
TxDOT, Lot 22	106	body	H	Bs	Clay	E Asphaltum, I wiped	4.9
TxDOT, Lot 1	107	body	B	Bp	Clay	-	8.4
Lot 5	108	body	C	Bs	Clay	E Smoothed, I Asphaltum	5.4
Lot 159	109	body	F	Bp	Clay	E Burnished	7.9

Provenience	NAA #	Sherd Type	Oxidation Conditions	Temper	Paste	Surface Treatment	Thickness (mm)
Lot 158	110	body	F	Bs	Clay	I Smoothed	8.2
Lot 49	111	body	F	Bm	Clay	E Burnished, I Asphaltum	5.9
Lot 159	112	body	F	Bp	Clay	I/E Smoothed	7.9
Lot 158	113	body	F	Bp	Clay	I Burnished	9.2
Lot 159	114	body	F	Bs	Clay	-	6.7
Lot 47	115	body	F	-	Sandy	-	5.9
Lot 189	116	body	F	Bs	Clay	E Scraped	5.9
Lot 149	117	body	C	-	Sandy	I/E Scraped	6.9
Lot 5	118	body	C	Bm	Clay	E Scraped	5.4
Lot 204	119	body	F	Bp	Clay	-	7.9
Lot 23	120	body	F	Bs	Clay	I Scraped	9.4
Lot 17	121	body	F	Bm	Clay	-	7.1
Lot 40	122	body	F	Bp	Clay	-	7.7
Lot 152	123	body	C	-	Sandy	-	7.1
Lot 194	124	body	C	-	Sandy	I/E Smoothed	4.1
Lot 30	125	base	F	Bs	Clay	I Burnished	9.9
Lot 8	126	body	F	Bs	Clay	I/E Smoothed	5.4
Lot 4	127	body	F	Bs	Clay	E Smoothed, I Wiped	6.9
Lot 33	128	body	H	Bs	Clay	-	6.9
Lot 52	129	body	C	Bs	Sandy	-	6.7
Lot 204	130	body	E	Bs	Clay	E Asphaltum	6.1
Lot 149	131	body	G	Bs	Clay	I/E Burnished	7.4
Lot 189	132	body	B	Bs	Clay	E Asphaltum	6.9
Lot 189	133	body	B	Bm	Clay	-	5.9
Lot 11	134	body	C	Bp	Clay	I/E Smoothed, I Asphaltum	4.9
Lot 188	135	body	G	Bm	Clay	-	6.7
Lot 15	136	body	G	Bs	Clay	-	6.9
Lot 24	137	rim	F	-	Sandy	I Asphaltum, Lip Asphaltum	6.1

Provenience	NAA #	Sherd Type	Oxidation Conditions	Temper	Paste	Surface Treatment	Thickness (mm)
Lot 210	138	body	B	Bs	Clay	E Scraped	7.9
Lot 194	139	body	H	Bm	Clay	I/E Smoothed, E Asphaltum	4.6
Lot 47	140	body	B	Bp	Clay	-	8.4
Lot 204	141	body	F	-	Sandy	E Smoothed, I Wiped	5.9
Lot 23	142	body	F	Bs	Sandy	-	5.9
Lot 188	143	body	B	Bm	Sandy	E Asphaltum	6.1
Lot 189	144	body	F	Bs	Clay	E Burnished, I Asphaltum	6.1
Lot 35	145	body	G	Bs	Clay	E Smoothed	8.2
Lot 30	146	body	G	Bp	Clay	-	8.2

- * Oxidation conditions follow Teltser (1993:Figure 2)
- ** Bs=sparse bone temper
- ** Bm=moderate bone temper
- ** Bp=profuse bone temper
- +I=interior; E=exterior

Appendix M
Mission Refugio

Faunal Proveniences and Summary of Measurements

Appendix M: Faunal Provenience and Summary of Measurements

Table M-1. Mission Refugio, faunal provenience

ANALYTICAL UNIT 3, NON-FEATURE – Late-Colonial Period:						
1	21	56	74	95	191	224
2	22	57	75	96	193	226
3	23	58	76	97	194	250
4	27	59	77	100	196	251
5	28	60	78	101	199	252
6	33	61	79	115	203	
7	34	62	80	117	204	
8	41	64	81	149	205	
9	42	65	82	150	207	
11	45	66	83	151	208	
12	47	67	84	152	209	
14	49	68	85	156	210	
15	51	69	86	176	214	
16	52	70	87	179	215	
17	53	71	88	180	218	
18	54	72	90	185	219	
19	55	73	93	190	221	
ANALYTICAL UNIT 1, FEATURE 1 AND NON-FEATURE BELOW LIME:						
24	114	159	198	232	256	275
25	118	160	200	235	257	276
29	120	161	201	236	258	
30	121	163	202	237	259	
35	124	170	206	238	261	
40	129	171	211	239	264	
48	130	172	212	241	265	
89	133	182	216	242	266	
94	134	184	217	243	267	
98	139	185	222	244	268	
102	141	186	223	245	269	
104	142	187	225	247	270	
105	147	188	227	248	271	
108	154	189	229	253	272	
110	155	192	230	254	273	
113	158	197	231	255	274	
ANALYTICAL UNIT 2, FEATURE 2:						
10	106	138	175			
13	107	140	177			
20	111	143	178			
26	112	144	181			
32	116	145	183			
36	119	146	213			
37	122	148	220			
38	123	153	228			
39	125	157	233			
44	126	162	234			
46	127	164	240			
50	128	165	246			
63	131	166	260			
91	132	167	262			
92	135	168	263			
99	136	169				
103	137	173				

Table M-2. Mission Refugio, summary of measurements for large bovids
(Bovinae, *Bison* cf. *bison*, *Bos* cf. *taurus*).

Element, dimension	Range	x	NISP	Archaeological Context
Astragalus, Bd	40.25-44.88	42.97	4	Refugio, AU 3
	40.47-48.81	44.03	8	Refugio, AU 1
	41.65-49.08	44.52	6	Refugio, AU 2
	49.10	49.10	1	Spanish Florida
	41.30-54.20	48.98	24	Puerto Real
Astragalus, GLI	68.37-70.53	69.72	4	Refugio, AU 3
	67.69-79.02	70.98	7	Refugio, AU 1
	65.69-78.07	70.44	6	Refugio, AU 2
	61.9-75.3	70.5	9	Espíritu Santo, Goliad
	73.2-75.0	74.1	4	Mission Rosario
	68.00-70.50	69.25	2	Spanish Florida
	67.60-89.80	74.90	26	Puerto Real
Metacarpus, Bp	56.14-60.48	58.31	2	Refugio, AU 3
	48.27-71.08	58.60	7	Refugio, AU 1
	50.48-69.67	60.16	10	Refugio, AU 2
	55.3-56.4	55.9	2	Espíritu Santo, Goliad
	55.0-66.5	58.2	4	Mission Rosario
	60.20-65.70	62.95	2	Spanish Florida
	58.80-71.80	66.20	3	Puerto Real
Metacarpus, Bd	58.05	58.05	1	Refugio, AU 3
	58.19-73.32	62.65	5	Refugio, AU 1
	55.80-66.64	61.43	7	Refugio, AU 2
	71.1	71.1	1	Mission Rosario
	57.00-60.60	58.80	2	Spanish Florida
	58.00-64.60	60.90	3	Puerto Real

Note: Spanish Florida and Puerto Real data are from Reitz and Ruff (1994). Data from Espiritu Santo de Zuñiga at Goliad (41GD1) and Mission Nuestra Señora del Rosario (41GD2) are from deFrance (1999).

Appendix N
Mission Refugio

Sample Archaeological Forms

The University of Texas at San Antonio - Center for Archaeological Research

BURIAL RECORD

Site _____
Record No. _____

Subject: _____

Horizontal location: _____

Skull elev.: _____ From surface: _____ Pelvis elev.: _____ From surface: _____

Stratigraphic relationships: _____

Evidence of being intrusive: _____

Grave fill: _____

Fill into which grave was dug: _____

Grave dimensions: _____

Type of burial: _____ Preservation: _____

Position of skeleton: _____

Orientation: _____ Direction of skull: _____ Facing: _____

Posthumous shifting of bones: _____

Bones absent (or present): _____

Age: _____ Sex: _____ Pathology: _____

Associated objects (itemize): _____

Remarks: _____

Exposed by: _____

Disposal of specimens: _____

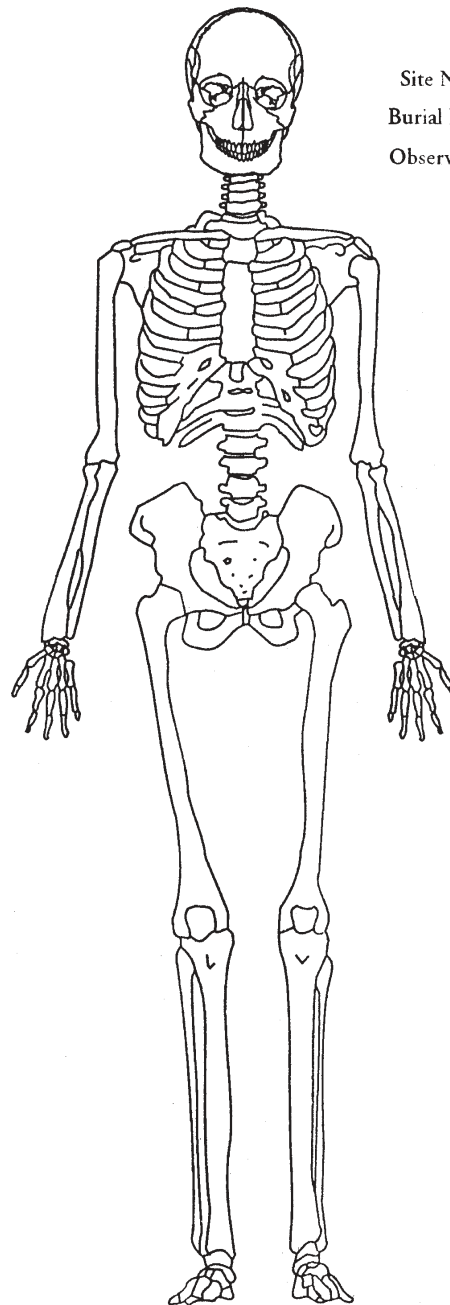
Cat. nos.: _____

Reference: _____

Photo ref.: _____ Recorded by: _____ Date: _____

Figure N-3. Sample burial record form.

ADULT SKELETON RECORDING FORM: ANTERIOR VIEW



Site Number _____
Burial Number _____
Observer/Date _____

Figure N-4. Sample adult skeleton recording form.

BAG LOG

Page ____ of ____

PROJECT NAME: _____
 SITE NAME: _____ # _____

Bag No.	Unit/Feature	Level	Depth	Excavator(s)	Date

Figure N-6. Sample bag log form.

Center for Archaeological Research
The University of Texas at San Antonio
 Mission Refugio Project (41RF1)
 Catalog Sheet

Bag # Unit: North East Depth (BD) Feature

Other Provenience Line? Above Below

Date Excavated Excavated by

Date Cataloged Cataloged by

Ceramics

Unglazed Native

Tin Glazed

Lead Glazed

Whiteware

Stoneware

Other Ceramics

Describe Other

Glass

Clear

Brown

Green

"Black"

Other Glass

Describe Other

Lithics

Debitage

Tools

Ornaments

Bullans

Beads

Shell

Organics

Total Bone Bone Weight (g) Burned Bone

Marine/Riverine Shell

Other Organics

Describe Other

Metal

Identifiable Metal Items

Describe

Square Nails

Round Nails

Copper alloy scrap

Iron scrap

Other metal

Miscellaneous

Brick/Tile

Mortar

Slag

In computer

Figure N-9. Sample catalog sheet.

The following information is provided in accordance with the General Rules of Practice and Procedure, Chapter 41.11 (Investigative Reports), Texas Antiquities Committee:

1. Type of investigation: Mitigation, data recovery, exhumation, analysis, and interpretation
2. Project name: Refugio Burials II
3. County: Refugio
4. Principal investigators: Raymond P. Mauldin and Cynthia L. Tennis
5. Name and location of sponsoring agency: Texas Department of Transportation, 125 East 11th Street, Austin, TX 78701-2483
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