Three Farewells to Manzanar

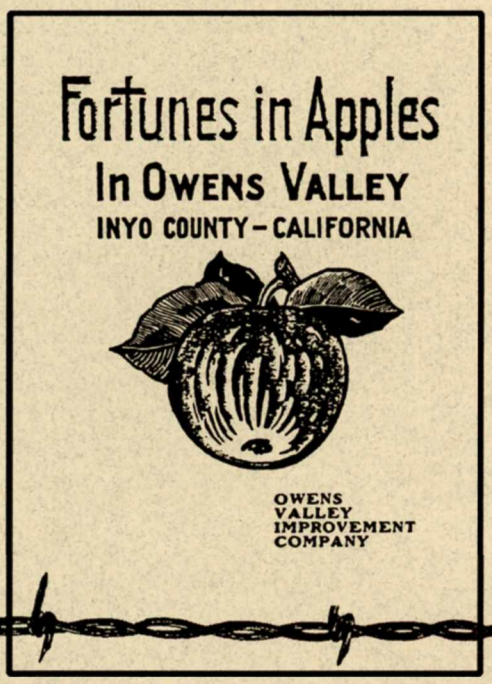
The Archeology of Manzanar National Historic Site, California

Part 3

by
Jeffery F. Burton

with
Irene J. Cohen
Lynne M. D'Ascenzo
Mary M. Farrell
Elaine A. Guthrie
Richard E. Hughes
Takeshi Inomata
Teresita Majewski
Roy Nash
Patti J. Novak
Thomas M. Origer
C. Lynn Rogers
Wilber Sato
Jennifer A. Waters
Jane C. Wehrey
Beta Analytic, Inc.
Historic American Buildings Survey
Los Angeles Department of Water and Power





Western Archeological and Conservation Center
National Park Service
U.S. Department of the Interior

Publications in Anthropology 67
1996

Appendix A

World War II-era Inscriptions

Takeshi Inomata and Jeffery F. Burton



Archeological survey at Manzanar National Historic Site by the Western Archeological and Conservation Center located and recorded over 175 World War II-era inscriptions. The large number of preserved inscriptions makes Manzanar unique among the relocation centers and provides a special insight into the people interned there. Of course, the inscriptions represent the work of only a small fraction of the internees.

The inscriptions were written on wet concrete, sometimes in a careless manner. Thus, some are hard to read. The inscriptions include over 40 dates (Table A.1), 50 different names, and numerous initials. Nearly all appear to have been made by Japanese Americans interned at the relocation center. They include both English and Japanese characters. English inscriptions include names and dates, expressions of love, present and former addresses, and whimsical sayings. Japanese inscriptions include expressions of hate for the government that interned them, militaristic slogans, poems, dates of construction with the names of groups and members, and simple graffiti.

Most of the pro-Japan inscriptions date to between February and March 1943. The expressions of hatred suggest a strong resentment against the United States as well as emotional attachment to Japan. However, one inscription presents a wish for peace. The intended meanings of some are difficult to understand without knowing the contexts and the people who wrote them. Further study of the inscriptions by native speakers, bibliographic and archival research, and interviews may clarify more hidden meanings and related contexts.

The earliest dated inscription (4/1/42) was by Ray Kubota, who must have arrived with the first volunteer internees. Kubota was still in the relocation center in August 1943; his name and that date are on a grill in North Park. Other inscribed names separated by time or space include "Fujisaki" at the hog farm (dated 1943) and at the north wells (1944), "Makio" at the north and south fields, "Yoshinaga" at the hog farm and the reservoir, and the initials "NOB" at the reservoir and the fire department.

Japanese Writing System

The Japanese writing system consists of three types of characters and letters: Chinese characters, *hiragana*, and *katakana*. Chinese characters carry meanings and some of them can represent more than one syllable. *Hiragana* and *katakana* are phonetic writings and each letter represents one syllable. These three types of writing can be used in the same sentence.

Japanese can be written both vertically and horizontally. Vertical writings read from top to bottom, right to left. Horizontal writings can go from left to right or from right to left.

Japanese and Western Calendars

The inscriptions at Manzanar use both Japanese and Western calendars. 1943 of the Western calendar corresponds to the 18th year of *showa* in the Japanese system.

Japanese Notation for Manzanar

In the inscriptions, "Manzanar" is written with three Chinese characters (Figure A.1). Although today Japanese usually use *katakana* to write foreign place names, the use of Chinese characters was more common in the 1940s. In such cases, Chinese characters with the closest phonetic values were usually chosen. However, Chinese characters convey meanings, which are often considered for their selection. The inscription of the cemetery memorial tower uses three characters with the meanings of "full," "sand," and "what." In other inscriptions, the second character is replaced with one meaning "seat." It is possible that the Japanese at Manzanar chose these characters just for their phonetic values rather than for their meanings, but "sand" and "full" might have been descriptive of the crowded, dusty conditions. Note that the reading of the characters is *manzana* instead of *manzanar*.

Relocation Center Central Area
(MANZ 1993 A-30)

Relatively few inscriptions remain in the central portion of the relocation center. Through the years many may have been removed as souvenirs.

Administration Block

At the north end of the Caucasian Mess Hall there is an 8 ft by 22 ft concrete slab (Feature A-2) with foot and boot prints and inscribed Japanese characters (Figure A.2a):

A-2a. Chinese characters transcribed as (?) *ju hou* (?). The first letter is illegible. The second character means celebration. The third is unclear but is probably treasure. It does not make sense as a Japanese word, and may be a transcription of a foreign place name. This inscription was scribbled over when wet.

A-2b. Japanese (*Katakana)* characters transcribed as *ehu* (or *efu*). It does not appear to be a Japanese word, and may represent the letter F.

A-2c. Finger mark transcribed as *mu*, "nothing." This character is often used in Buddhism and Zen.

Feature A-3, a small concrete slab of unknown function, has a shoe print and two inscriptions (Figure A.2b):

A-3a. KUBOTA

A-3b. KUBOTA 4-1-42

Feature A-5 is an 18-inch-high rock and concrete planter within a traffic circle that has numerous inscriptions (Figure A.2c-e):

A-5a. Paul TAKEUOHI "42"

A-5b. M MASY

A-5c. BUILT BY WADA AND CREW JUNE 10, 1942 A.D.

A-5d. MII

A-5e. Yosh YASUDA + B.N.

A-5f. MASY M

A-5g. Two Japanese characters translated as *ta* (rice field or paddy) and *yubari* (urine). It is not clear how the writer intended theese characters to be read, they are not a typical juxtapostion and there are at least three possible ways of reading this character compound. In addition, the character used for urine is not the form used in common conversational Japanese, its use is likely confined to formal writing.

A-5h. N..AMI

A-5i. Z (or N)

A-5j. YANK

A-5k. OKAMUDO

A-5l. GERD KEHIHARA GLENDALE CAL 6/10/42

A-5m. S KUMO

A-5n. ELK GROVE

A-5o. SM...

A-5p. OV Yosh

Camouflage/Mattress Factory

A 2-ft-by-3-ft concrete entry slab on the west side of the western-most camouflage building (Feature C-2) has a partial inscription:

C-2a. MAR. 30th 194-

Hospital Block

The hospital laundry room concrete slab (Feature H-11) has a partial inscription:

H-11a. Jed-

A sidewalk (Feature H-21) at the morgue has six scattered inscriptions (Figure A.3a-b):

H-21a. 1/4/... JACK
H-21b. BANZAII
H-21c. 9/10/43 Zero Boy's
H-21d. (unclear Japanese writing) 1943
H-21e. BUGS
H-21f. SAM 9/9/43

Service Station/Motor Pool Area

The concrete slab of the former service station (Feature Se-1) has the inscription (Figure A.3c):

Se-1a. M.F. 11-9-42

The west entry of the motor pool office (Feature Se-2) has a handprint, a possible child's footprint, and two inscriptions (Figure A.3d):

Se-2a. E. K. (? ?)
Se-2b. L I

Residential Blocks

Inscriptions were noted at 13 of the 36 residential blocks; names, dates, and barracks addresses were the most common.

Block 6

A manhole fragment lying on the laundry room foundation has a partial inscription:

6a. E KONI...

Block 9

A concrete entry at Barracks 6 has an address (Figure A.4a):

9-4a. 9=6=1= (shorthand for "Block 9, Barracks 6, Residence 1")

Block 10

A concrete overflow basin at a faucet at the southeast corner of Barracks 11 has a date (Figure A.4b):

10-1a. June 6, 1944

Block 11

A concrete entry to Barracks 6 has a name and date:

11-2a. Shintoni May 21, 1944

A concrete-lined faucet overflow basin at the northwest corner of Barracks 3 has a date:

11a. 1944

Block 13

At the Fire Department (Feature 13-1) the original concrete driveway has a few shoe imprints, and a driveway addition has several inscriptions (Figure A.4c):

13-1a. 19 NOB
13-1b. Oshita
13-1c. WANA ....A
13-1d. HIDEO JUN
13-1e. TOM TAKAHASHI "JERK"
13-1f. FRANK Ito
13-1g. SHO MATSUSHITA

An overturned concrete block (Feature 13-4) near Barracks 11 has careful block lettering:

13-4a AUDITORI... FEB. 12, 1944

Block 15

A concentration of concrete fragments (Feature 15-2) between Barracks 8 and 9 contains several inscriptions in poor condition:

15-2a. K. ONISHI
15-2b. M. NANISHI
15-2c. KAZAWI...
15-2d. ...S M 5
15-2e. ...r 5
15-2f. 114

A concrete entryway (Feature 15-5) at Barracks 13 has an address:

15-5a 15-13-4 (made with embedded pebbles; shorthand for "Block 15, Barracks 13, Residence 4")

Block 16

The laundry room grease trap has two sets of initials:

16a. G.T.
16b. M.K.

Block 17

One of the broken concrete slabs southeast of Barracks 1 has a dated inscription:

17-1a. 5.14.44. SA

Block 18

The south entry to Barracks 11 has two deliberate handprints; one is very small and must be that of a child.

Block 19

Inscription on the concrete overflow basin at a faucet at the southwest corner of Barracks 12:

19-2a. Feb. 25, 1943

Block 22

A large concrete pond (Feature 22-4) at the mess hall contains two dates (Figure A.4d-e):

22-4a. AUG. 9, 42 (on bridge)

22-4b. 8-7 1942 (within pond, made with embedded pebbles)

Block 34

A concrete stoop (Feature 34-5) south of Barracks 2 has a date:

34-5a. May 8, 1942

Block 36

A concrete bridge within a small pond and garden complex at the north end of Barracks 12 has an inscription:

36-1a. 36-12

Perimeter Area

Feature P-7, a 12 ft by 20 ft foundation has an inscription that would have been covered by construction:

P-7a. 1944

Feature P-10, a concrete well pad, has finger and hand prints and a set of initials inscribed on an added concrete skirting:

P-10a. BK

A rock and concrete barbecue grill (Feature P-14) at North Park has two inscriptions (Figure A.4f,h):

P-14a. August 1943 hi

P-14b. Ray Kobote

Feature P-61, a small concrete slab southwest of the former location of the Guayule Lath House, has an inscription (Figure A.4g):

P-61a 12-30-42

Cemetery

(MANZ 1993 A-33)

Monument front transcription: *ireitou*, "memorial tower." The direct translation is: "Monument to console the souls of the dead." It is a common term for this kind of monument.

Monument back transcription: *senkyuhyaku yonjusan nen hachigatsu. manzana nihonjin konryu*, "Erected by the Manzanar Japanese, August 1943."

Military Police Compound

(MANZ 1993 A-32)

Feature 4, a 20 ft by 25 ft concrete slab, is inscribed with three sets of initials, possibly of military personnel stationed there:

4a. E.H.

4b. W.C.W.

4c. W.E.C.

Reservoir

(MANZ 1993 B-29)

The relocation center water supply consisted of a large concrete reservoir built under contract; internees added a low rock and concrete wall to raise the water level and made other improvements in February and March 1943.

Features 1a-g are inscriptions made in the concrete of the low cap wall (Figure A.5):

1a. Japanese writing transcribed as *itaru* (unclear character) *manzana kokugun* (two unclear characters), "To Manzanar National Army" (?). The last two characters are not clear. They might represent a specific place name within Manzanar instead of National Army.

1b. Japanese writing transcribed as *showa juhachinen...*, "18th year ..." (corresponds to 1943).

1c. STONE WALL BY EMERGENCY CREW 2/25/43 (made of embedded pebbles).

1d. NS

1e. NOB 3-2-43

1f. E.S. MURAOKA 14-4-1 3-3-43

1g. Japanese writing transcribed as *chukun aikoku*, "loyal to the emperor and love the country." A motto favored by the Japanese military government.

Feature 2 is a large boulder plastered with a thin layer of cement and inscribed while wet with a single Japanese character (Figure A.6a):

2a. *heiwa*, "peace"

Features 3a-c are inscriptions on the settling basin sidewall (Figure A.6b-d):

3a. Japanese writing transcribed as *kougun senryouchi* 2/17 /43 *itaru*(?) *manzana* ..., "the army of the emperor occupied territory 2/17/43 to Manzanar ..."

3b. Japanese writing transcribed as *datou eibei*, "beat Great Britain and the USA."

3c. Japanese writing transcribed as *banbanzai*, "banzai"; *dainippon teikoku*, "The Great Japanese Empire"; *manzana kokuryukai honbu*, "Manzanar Black Dragon Group headquarter."

Features 5a-k are inscriptions on top of a ditch wall (Figures A.7 and A.8):

5a. TOMMY MIYAOKA TOM M.

5b. NOV. 1943 MANZANAR CALIF. Z. OGAWA TOMMY - NOV. 1943 K E - YOSHINAGA TOMMY M 1943

5c. Tommy Miyaoka 1943

5d. 1943 NOV OGAWA

5e. NOV 12 1943 MANZANAR WALL

5f. 1943 Y. & T. KOBATA KAI

5g. I LOVE MYSELF Tommy Miyaoka

5h. Japanese writing transcribed as *senkyuhyaku yonjusannen juichigatsu jurokunichi nakahama*, "November 16, 1943 Nakahama" (a family name).

5i. K. OGAWA

5j. Jiro Matsuyama 11/24/43

5k. CONSTRUCTED BY CHODO & INC. NOV. 9 '43

Water Delivery System
(MANZ 1993 B-11)

Features 6a-c are inscriptions on and around the chlorination tank slab (Figure A.9):

6a. 2-11-43 TOJO

6b. Japanese writing transcribed as (damaged letters) *hachi nen* (damaged letters) *kigensetsu*, "... eighth year ... National Foundation Day." *Kigensetsu* is an anniversary on February 11, that commemorates the accession of the first emperor in mythical times. It is similar to the concept of National Foundation Day, and was an important national holiday of Japan. Damaged letters in the first part are probably *showa* 1. With the legible letters, they make "*Showa* 18th year," that corresponds to 1943. Damaged letters in the second part are probably "February 11."

6c. T. YOTS 2-11-43

Chicken Ranch
(MANZ 1993 A-31)

The inscriptions here are on foundations and would have been covered when construction was complete. The exception is 3a-f which are on a rock and concrete retaining wall (Figure A.10):

1a. Japanese inscription transcribed as *toyo kisen gaisha*, "Oriental Steamship Company."

1b. N.Y.K. LINE

2. Japanese inscription transcribed as *datou beikoku*, "Beat the U.S.A." The word *beikoku* refers to the U.S. nation, not to the American people.

3a. IZUMI Dec 22 1943

3b. SHO with Japanese writing transcribed as *nakayama* (a family name).

3c. MINORU

3d. GIMP THE G... (with a possible Japanese character)

3e. GIMP

3f. MIN SHISHIDO

4. SHISHI K... ...

5. 1/28/44 DAVID ...

6. Japanese (*katakana*) inscription transcribed as *chinpo*, a colloquial word for "penis."

7. Frank Bakatare (in Japanese *bakatare* is analogous to stupid)

Hog Farm
(MANZ 1993 B-19)

Features 1a-i consists of a group of damaged inscriptions on a concrete ditch edge (Figure A.11):

1a. 194-

1b. Japanese writing transcribed as *no*(?) (a family name)

1c. Japanese writing transcribed as *matsu*(?) (a family name)

1d. Japanese writing transcribed as *ita*(?) (a family name)

1e. Japanese writing transcribed as *saura* (a family name)

1f. Japanese writing transcribed as *hirabayashi* (or *hiramatsu*) (a family name)

1g. Japanese writing transcribed as *yoshimura* (a family name)
1h. Japanese writing transcribed as *maeda* (a family name)
1i. Japanese writing transcribed as *butai bi*(damaged character), "Group or Unit B(?)."

Features 4a-c are three inscriptions on a concrete weir box:

4a. J L M
4b. Tom Fujisaki 9/22/43
4c. Mitsuru Morikawa

Feature 5a is an inscription on the southeast corner of a concrete loading ramp:

5a. YOSHINAGA

North Fields Irrigation System
(MANZ 1993 B-12)

Feature 1a and 1b are two inscriptions on a cap wall used to raise the height of a dam on Shepherd Creek (Figure A.12a):

1a. KO
1b. TK

Features 2a-2n are inscriptions in the concrete ditch system on the north side of Shepherd Creek (Figures A.12b-l and A.13a-c):

2a. Japanese writing transcribed as *hichigatsu muika ootsuki*(?), "July 6 Ootsuki" (a family name).
2b. SV 1944 MARK
2c. THE LOVER
2d. K.O.+ CH
2e. Timber
2f. Tommy /11/43
2g. Eichi + Michi Timber
2h. COMPLETED 3.26.43
2i. Japanese writing transcribed as *manzana dainip-ponkoku*, "Manzanar Great Japan."
2j. OUTT
2k. RI
2l. JACKSON NAKASHIMA
2m. Y.J.K. 1943
2n. // KJ JY

Features 3a-3e are inscriptions in the concrete ditch system on the south side of Shepherd Creek (Figure A.13d-h):

3a. 2nd 55 44
3b. MAKIO TOM
3c. NH
3d. (a geometric design)
3e. YOSH K

In addition to these inscriptions, apparently unintentional marks such as shoeprints and patterns created by fingers during the smoothing of the ditch walls can be seen.

South Fields Irrigation System
(MANZ 1993 B-15)

Features 2a and 2b are Japanese inscriptions on concrete supports for a pipeline where it crosses shallow washes (Figure A.14a-b):

2a was transcribed as:

kokoroyoku yagate mi(unclear character)*zara*
karitoran
hokoraba hokore
komeno shuhi

The translation is:

Pleasantly we will soon reap all spikes.
If you want to be proud, be proud for now.
Ugly rice (Americans?).

This is a Japanese poem or *tanka*. *Tanka* always consists of 5, 7, 5, 7, and 7 syllables. The Chinese character for rice is also used for the words of the U.S. or American. The poem carries double meanings, one about harvesting rice and the other beating the Americans. The last two characters are hard to read, but probably *shu-hi*. They do not make a common word, but the meaning of the characters is "ugly despicable people."

2b was transcribed as:

tawamurewa asaseno watashi
samo nitari
sawo nigi kawa(ri)
atti kotti

The translation is:

This play is like crossing a shallow stream.
Holding a stick.
(ramble) here and there.

This is another *tanka*. It appears to be describing some play in which a person (or people) holds a stick and moves around. Without knowing the context in which the poem was written, it is not clear whether it has deeper meanings. The last character of the third line is probably *kawa* (meaning river), followed by *ri* in *hiragana* in parenthesis. The writer may have intended to replace *kawa* with *ri*. With *ri*, the sentence makes better sense. It may refer to a river called something like *Sawonigi*, which might be in the

area the person came from. However, it does not sound like the name of a Japanese river. It is possible that the writer intended some double meaning, now unclear.

Features 3a-j are inscriptions on concrete sluice boxes and culverts of irrigation ditches (Figures A.14c-h and A.15a-c):

3a. SAT
3b. (unreadable)
3c. Japanese writing transcribed as *showa juhachinen sangatsu tsuitachiihi*(?) *butai*, "18th year (corresponds to 1943) March 1 E (?) Group (or Unit).
3d. 1943.2.28
3e. BANZAI NIPPON
3f. Japanese writing transcribed as *kuroiwa* (a family name) *gakusan*" (a pen name for a male?) *Gakusan* may be a *gagou*, a kind of pen name that poets, writers, and painters use. Many Japanese of this generation wrote traditional Japanese or Chinese poems and had *gagou*. *Gagou* are sometimes taken from old Chinese literature or made by combinations of Chinese characters with elegant meanings. The meanings of the characters in this *gagou* are "study" and "mountain."
3g. JOE + 1943
3h. Feb. 26 FARM
3i. Japanese writing transcribed as *harukaze* (damaged characters) *fuku manzana seikatsu* (unclear character), "Life in Manzanar where there is a spring breeze."
3j. March 10, 1943 M

Feature 5a is an inscription on a rock and concrete diversion box along a concrete pipeline (Figure A.15d):

5a. MAKIO

Far South Fields Irrigation System
(MANZ 1993 B-17)

Features 1a-1f are inscriptions in a retaining wall at a bridge and diversion dam on George Creek (Figure A.16):

1a. Japanese writing transcribed as *senkyuhyaku yonjuyonen sangatsu konryu*, "Built in March 1944."
1b. COMPLETE... MARC...
1c. Japanese writing transcribed as *senkyuhyaku yonjuyonen sangatsui* (?)*gumi konryu*, "Built by E Group in March 1944."
1d. TUCSON
1e. HARVEY NED
1f. TUCSON 3/6/44

Features 2a and 2b are inscriptions on a concrete weir box (Figure A.17a-b):

2a. Japanese writing transcribed as *fujisaki* (a family name) and *kumi* (a given name?).
2b. NOV 1 43

Feature 5a and 5b are inscriptions on a concrete sluice box in an open concrete ditch on the south side of George Creek (Figure A.17c-d):

5a. Japanese writing in poor condition transcribed as six possible family names (*mizoguchi* [?] *tamai* [?] ... ...*da*) and *senkyuhyaku yonjuyon konryu*, "Built 1944."
5b. MAR 19 1944

Bairs Creek Irrigation System
(MANZ 1993 A-34)

Feature 1a is an inscription on a cap wall used to raise the height of a dam on Bairs Creek.

1a. 1942

Feature 4 is a small concrete weir box with several inscriptions including four 1943 dates and a fallacious 1940 date (Figure A.18a-b):

4a. WILLY 3-30-43
4b. ITCH 3-30-43
4c. WILLY + ALYEE
4d. W.... ....
4e. WILLY + A
4f. S.M. 3-30-40
4g. M.Y. 3-30-43
4h. MAR. 30 1943

George Creek Ditch
(MANZ 1993 B-30)

Feature 3 is a concrete and rock U-shaped construction near the north end of the ditch before it enters Bairs Creek. It probably functioned as an anti-siphon pool for the transition from ditch to pipe. Inscribed on the pool wall are some of the few inscriptions definitely not done by internees (Figure A.18c):

3a. JAP. CAMP
3b. M.R.C. 1942
3c. FS (overlapped letters)
3d. Summers (formed with embedded pebbles). Charlie I. Summers was the local contractor from Lone

Pine who built the relocation center watch towers and apparently Feature 3.

3e. RALPH S...

3f. 1942

North Wells
(MANZ 1993 B-38)

Feature 3 is an upturned concrete pipeline support near Well 92 inscribed with (Figure A.18d):

3a. FINISHED BY TOM FUJISAKI CREW MAR. 23, 1944.

Manzanar Federal Airport
(MANZ 1993 B-27)

On a concrete slab between the airport hangar and apron there are three sets of initials and a date (Figure A.18e):

2a. SN

2b. IG

2c. RW

2d. 6-25-42

Table A.1.
Features with Dated Inscriptions.

1942	
unknown	George Creek Ditch (retaining wall)
unknown	Cap wall added to dam on Bairs Creek
April 1	Small slab at Administration Block
May 8	Blk 34, Barracks 2 entry
June 10	Traffic circle at Administration Block
June 26	Airport hangar apron
August 7-9	Blk 22 pond
Nov. 9	Service Station slab
Dec. 30	Feature P-61 slab
1943	
Feb. 11	Chlorination Tank improvements
Feb. 17	Reservoir Settling Basin improvements*
Feb. 25	Reservoir cap wall*
Feb. 25	Blk 19, Barracks 12 faucet overflow basin
Feb. 26-28	South Fields (ditch)*
March 2-3	Reservoir cap wall*
March 10	South Fields (ditch)*
March 26	North Fields (N. ditch)*
March 30	Bairs Creek Ditch (weir box)†
June 6-11	North Fields (N. ditch)
August	Cemetery Monument
August	P-14 grill
Sept. 9-10	Morgue sidewalk*
Sept. 22	Hog Farm (weir box)
Nov. 1	Far South Fields (weir box)
Nov. 12-24	Reservoir diversion ditch walls
Dec. 22	Chicken Farm (retaining wall)
1944	
unknown	P-7 foundation
Jan. 28	Chicken Farm (main building addition)
Feb. 12	Auditorium dedication block
March 6	Far South Fields (retaining walls)
March 19	Far South Fields (S. ditch)
March 23	North Wells pipeline
May 14	Blk 17 entry?
May 21	Blk 11, Barracks 6 entry
June 6	Blk 10, Barracks 11 faucet overflow basin

* associated pro-Japan or anti-U.S. statements

† includes a fallacious 1940 date

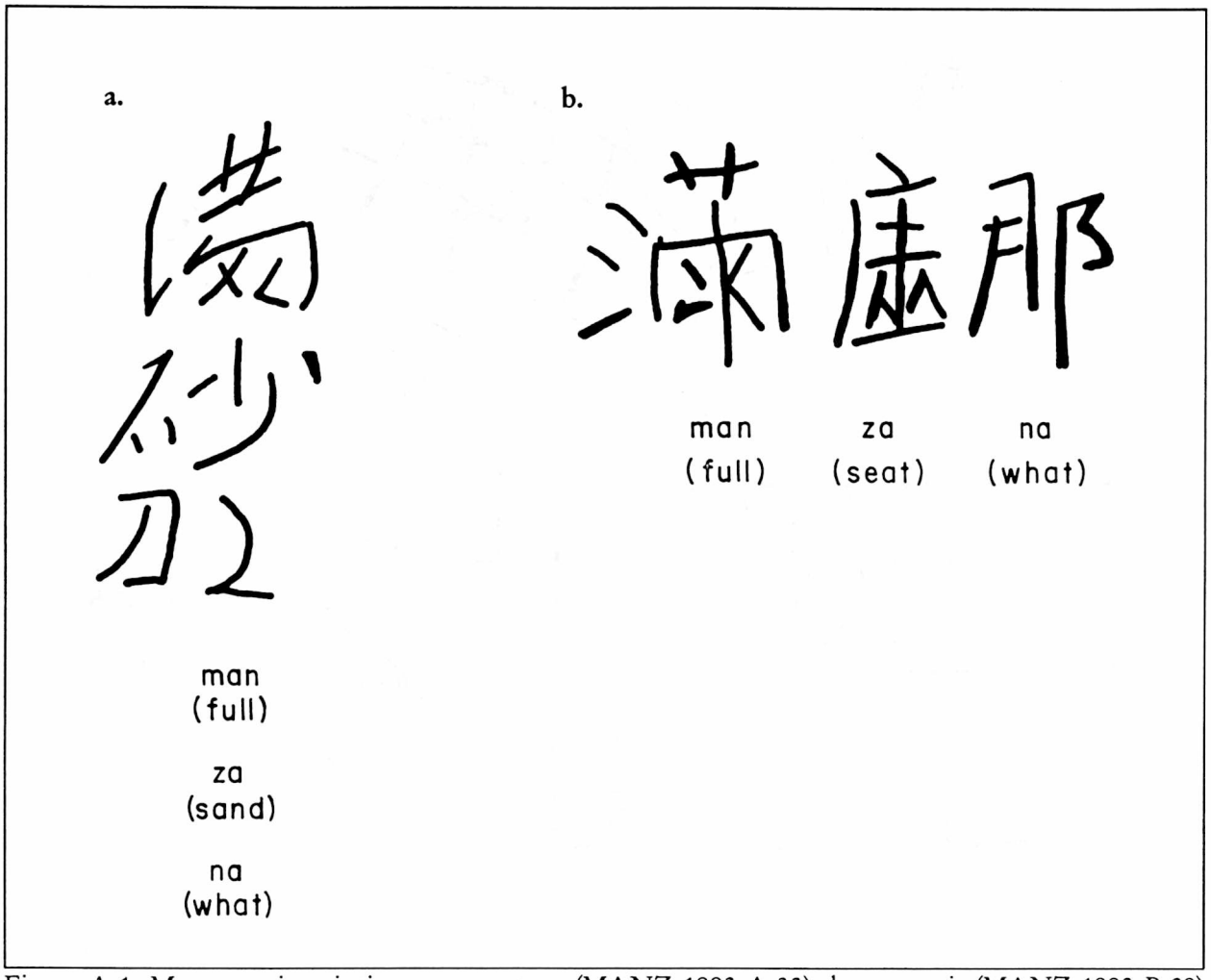


Figure A.1. Manzanar inscriptions; a. cemetery (MANZ 1993 A-33), b. reservoir (MANZ 1993 B-29) (scale varies).

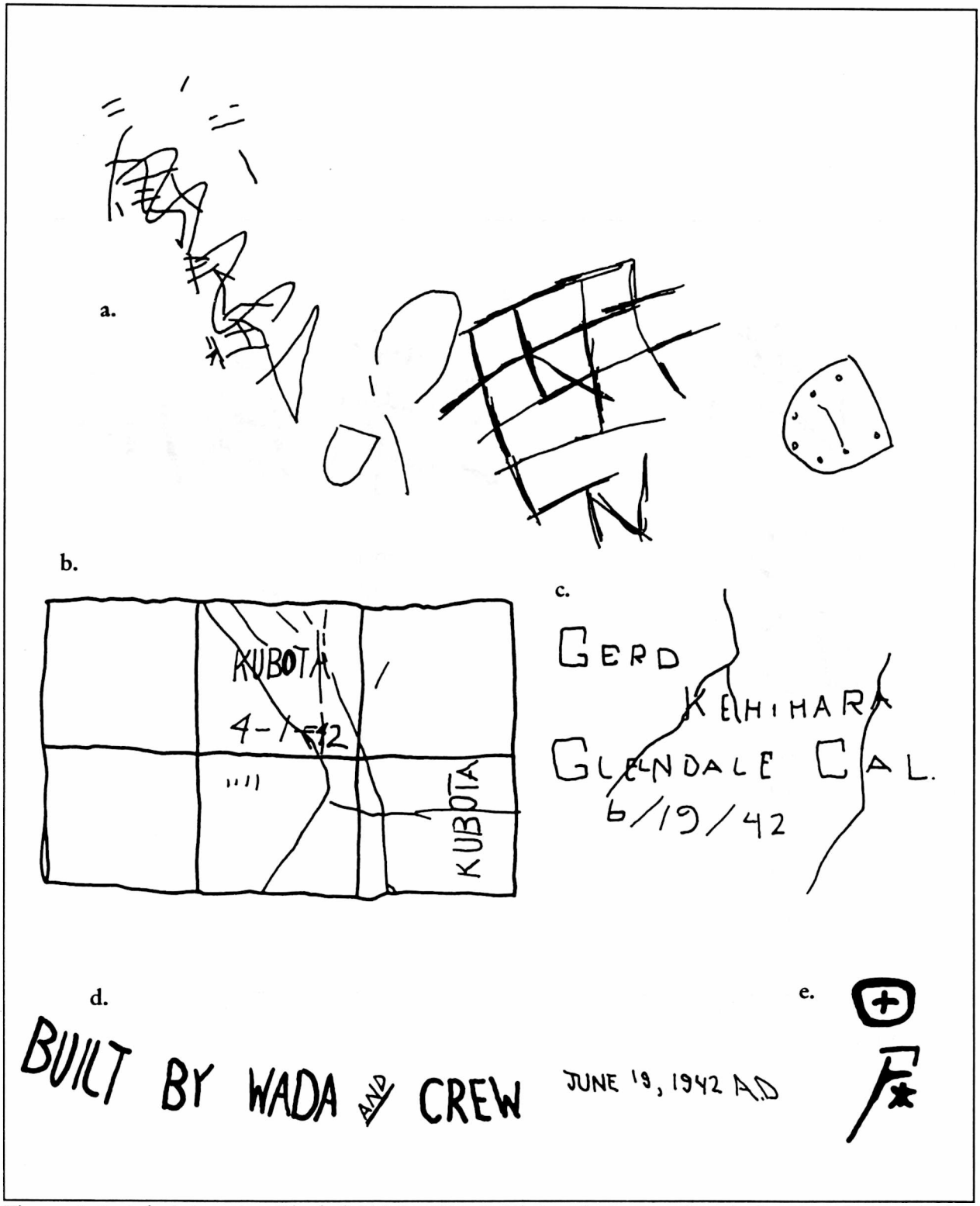


Figure A.2. Administration Block (MANZ 1993 A-30) inscriptions; a. Inscription 2a-c, b. Inscription 3a-b, c. Inscription A-5l, d. Inscription A-5c, e. Inscription A-5g (scale varies).

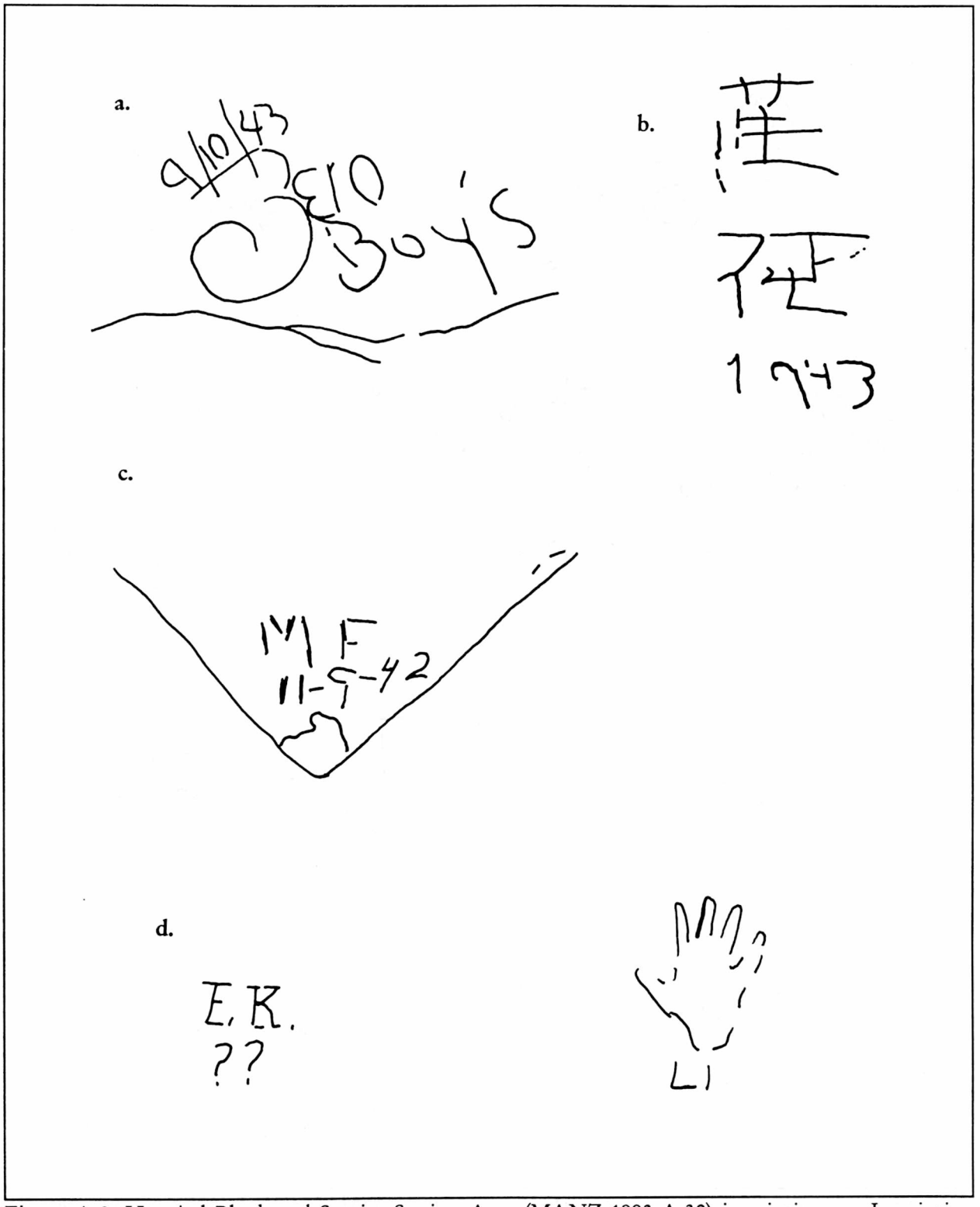


Figure A.3. Hospital Block and Service Station Area (MANZ 1993 A-30) inscriptions; a. Inscription H-21c, b. Inscription H-21d, c. Inscription Se-19, d. Inscription Se-2a-b (scale varies).

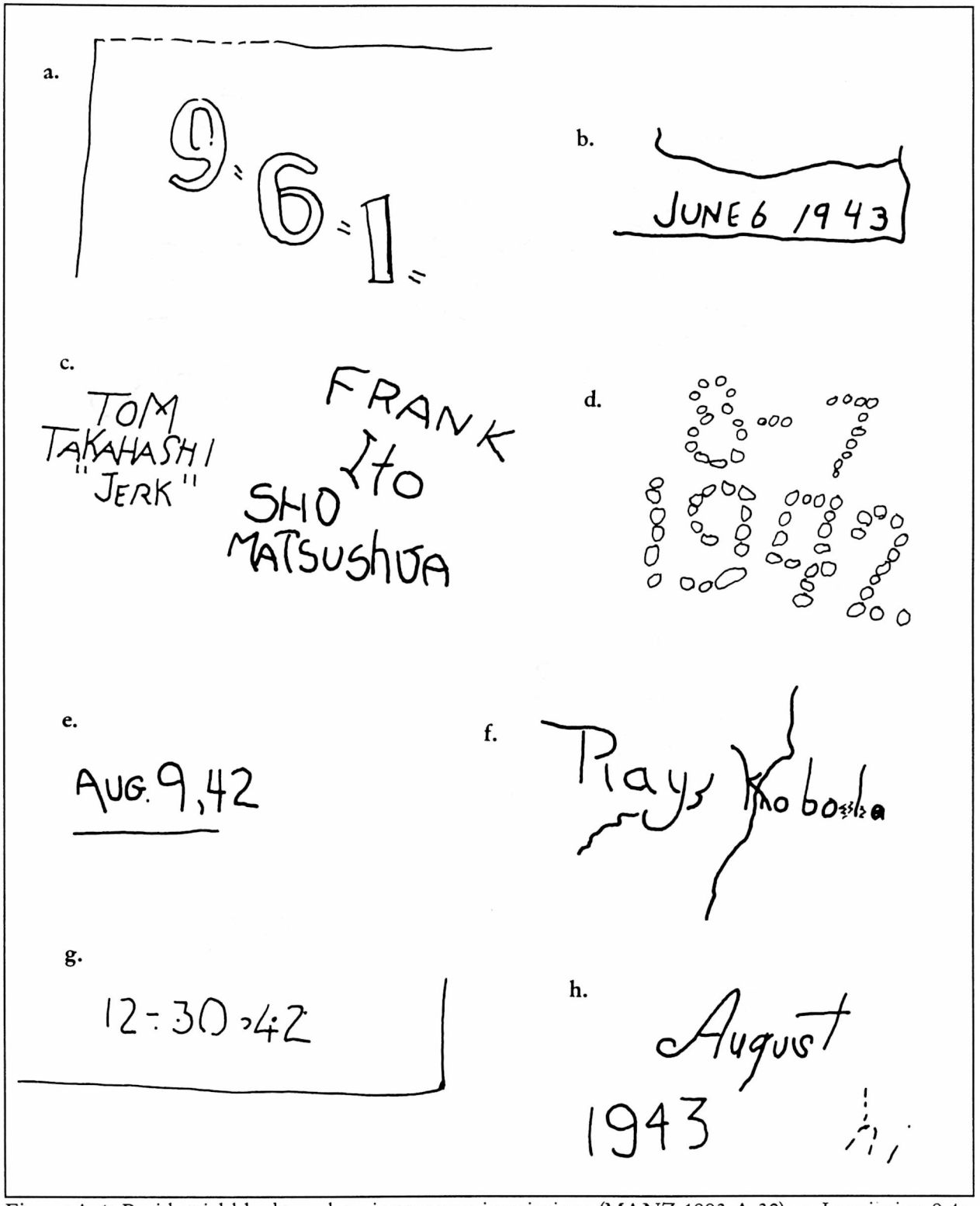


Figure A.4. Residential blocks and perimeter area inscriptions (MANZ 1993 A-30); a. Inscription 9-4a, b. Inscription 10-1a, d. Inscription 13-1a-g, d. Inscription 22-4b, e. Inscription 22-4a, f. Inscription P-14b, g. Inscription P-61a, h. Inscription P-14a (scale varies).

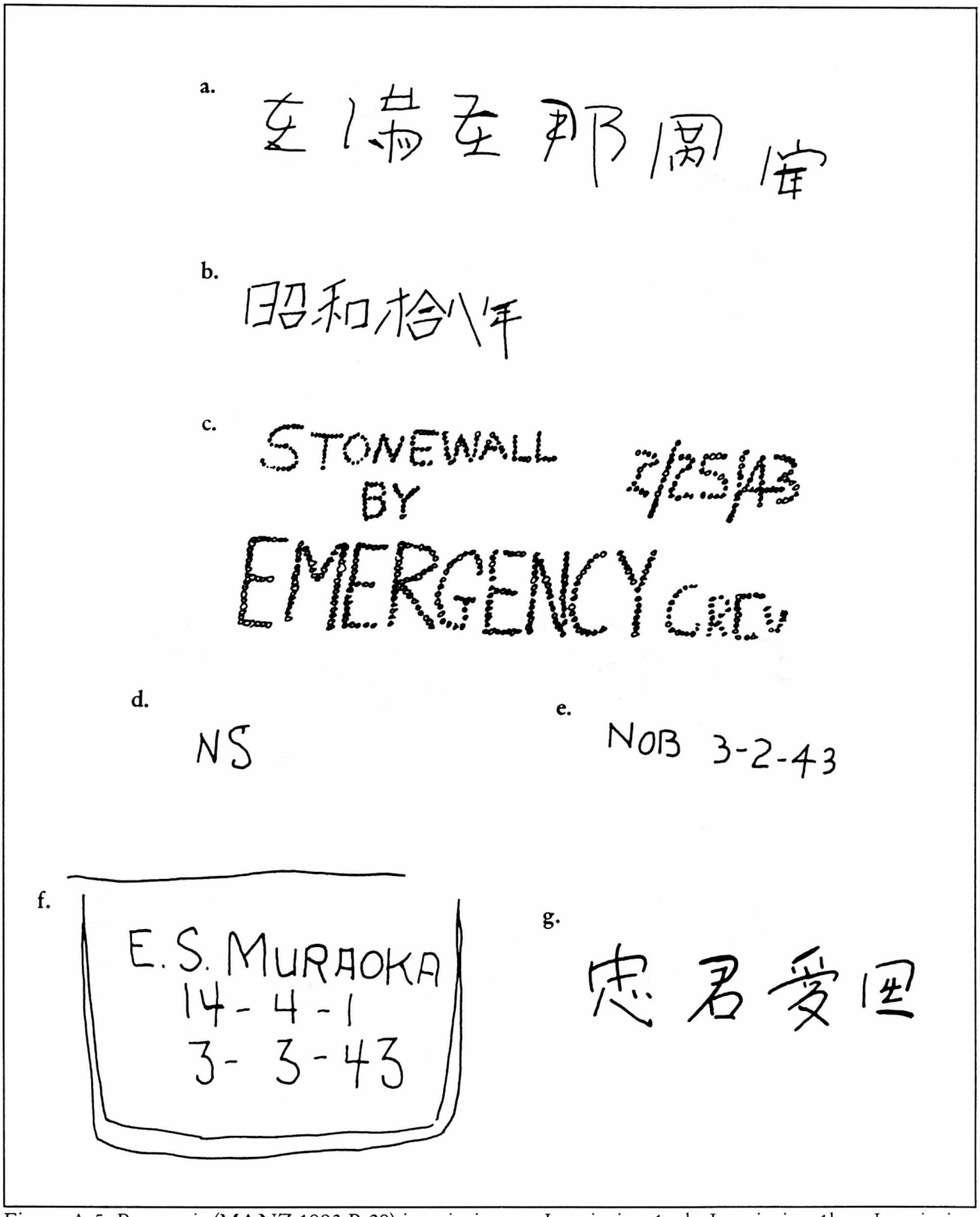


Figure A.5. Reservoir (MANZ 1993 B-29) inscriptions; a. Inscription 1a, b. Inscription 1b, c. Inscription 1c, d. Inscription 1d, e. Inscription 1e, f. Inscription 1f, g. Inscription 1g (scale varies).

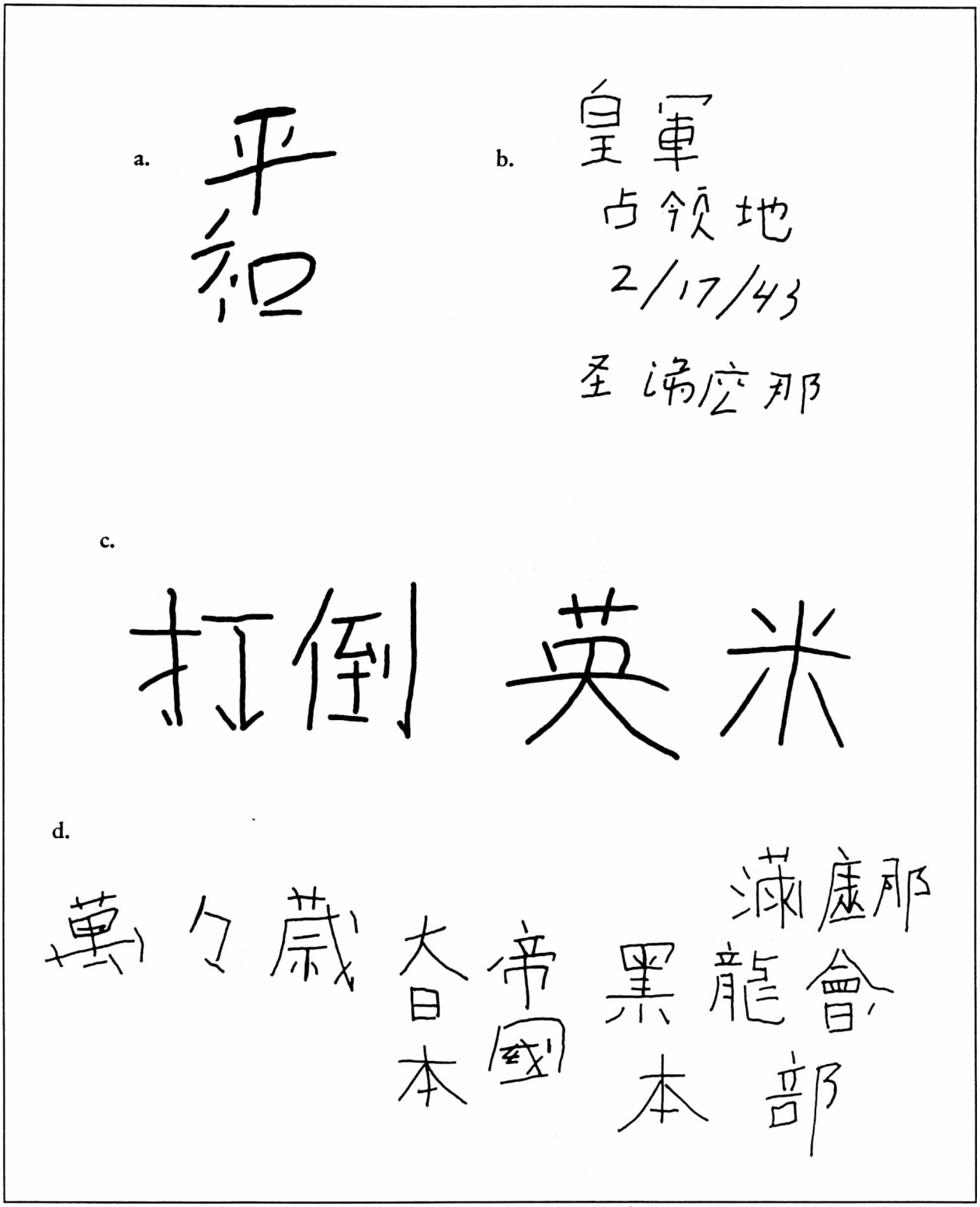


Figure A.6. Reservoir (MANZ 1993 A-29) inscriptions, continued; a. Inscription 2a, b. Inscription 3a, c. Inscription 3b, d. Inscription 3c (scale varies).

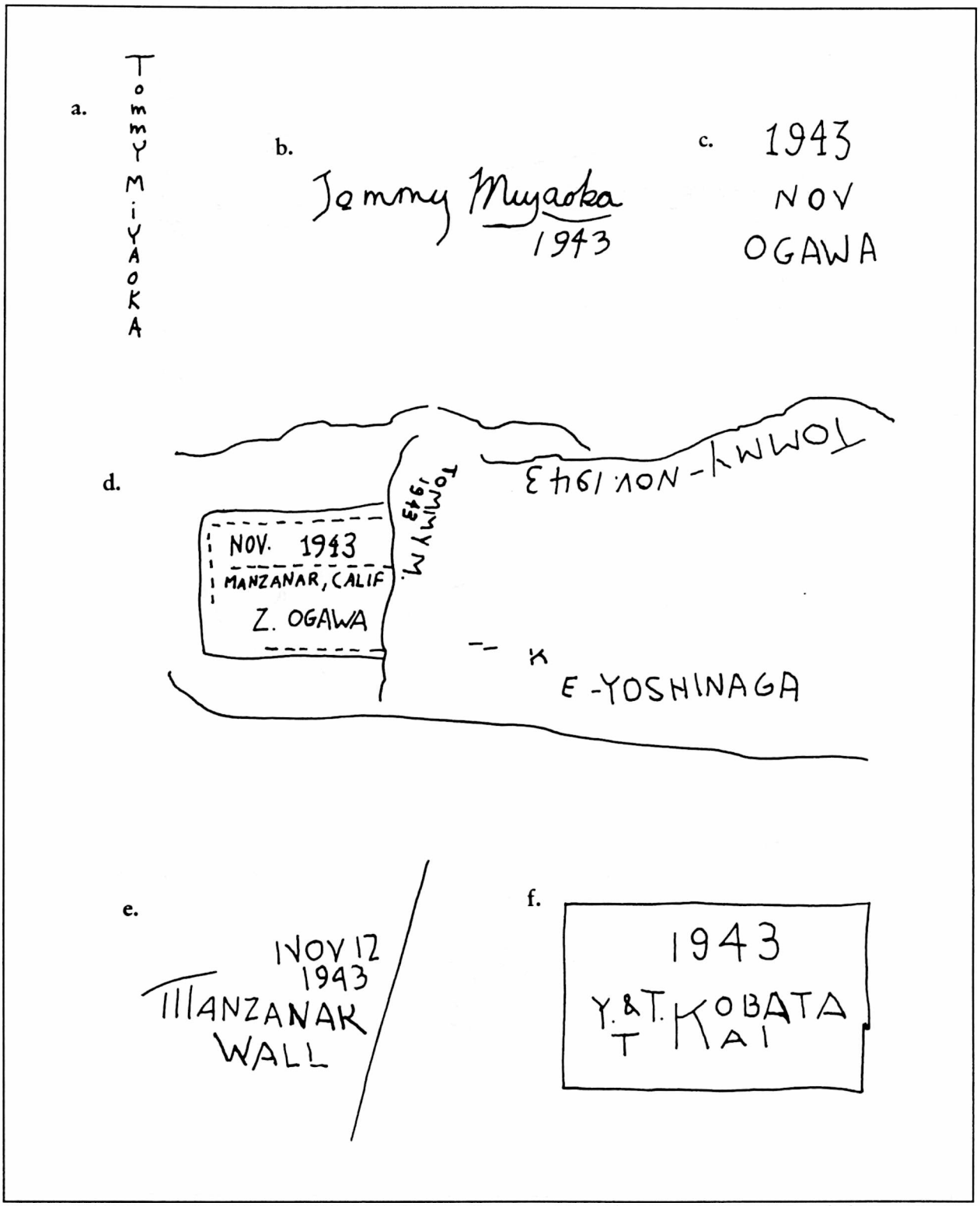


Figure A.7. Reservoir (MANZ 1993 A-29) inscriptions, continued; a. Inscription 5a (part), b. Inscription 5c, c. Inscription 5d, d. Inscription 5b, e. Inscription 5e, f. Inscription 5f (scale varies).

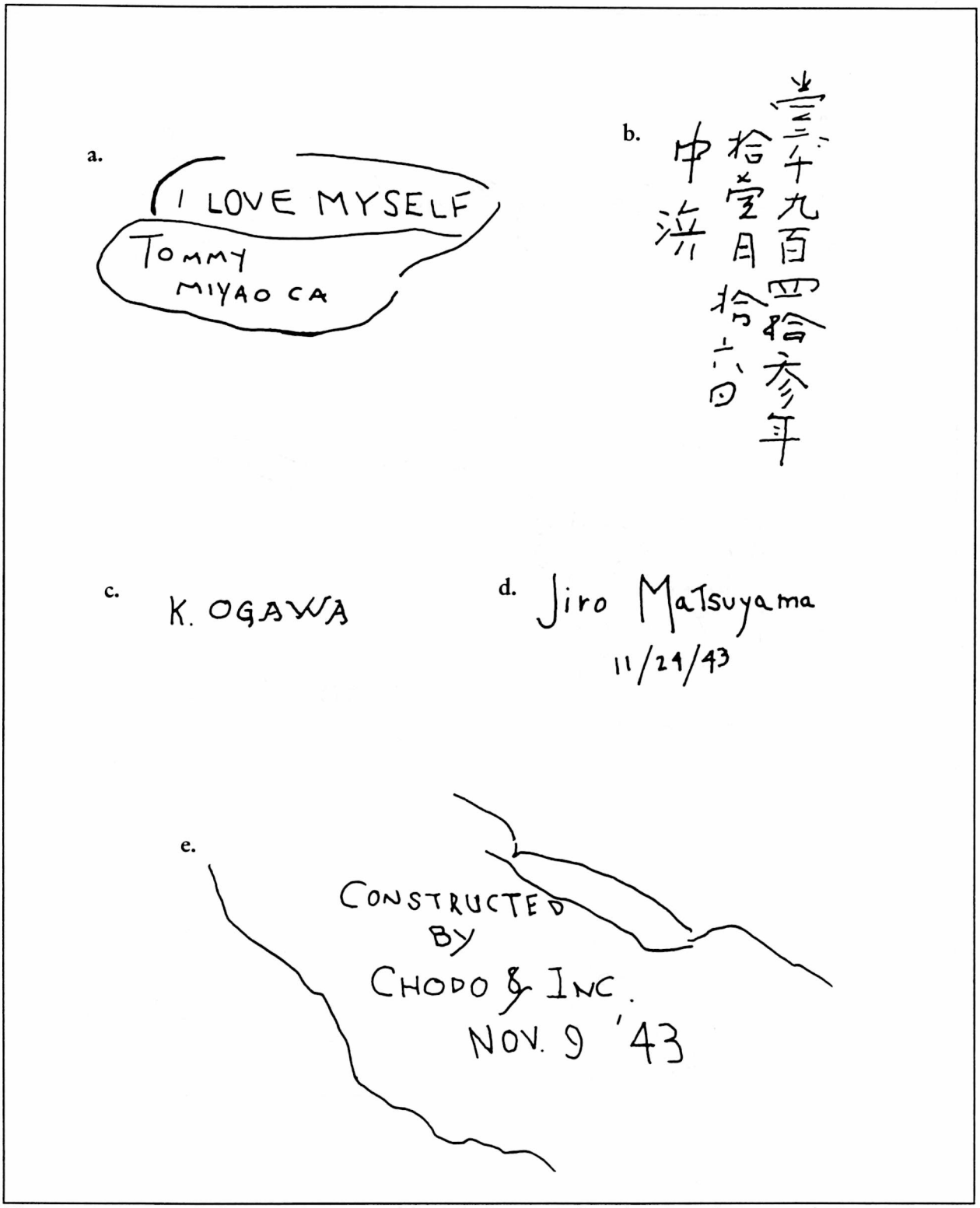


Figure A.8. Reservoir (MANZ 1993 A-29) inscriptions, continued; a. Inscription 5g, b. Inscription 5h, c. Inscription 5i, d. Inscription 5j, e. Inscription 5k (scale varies).

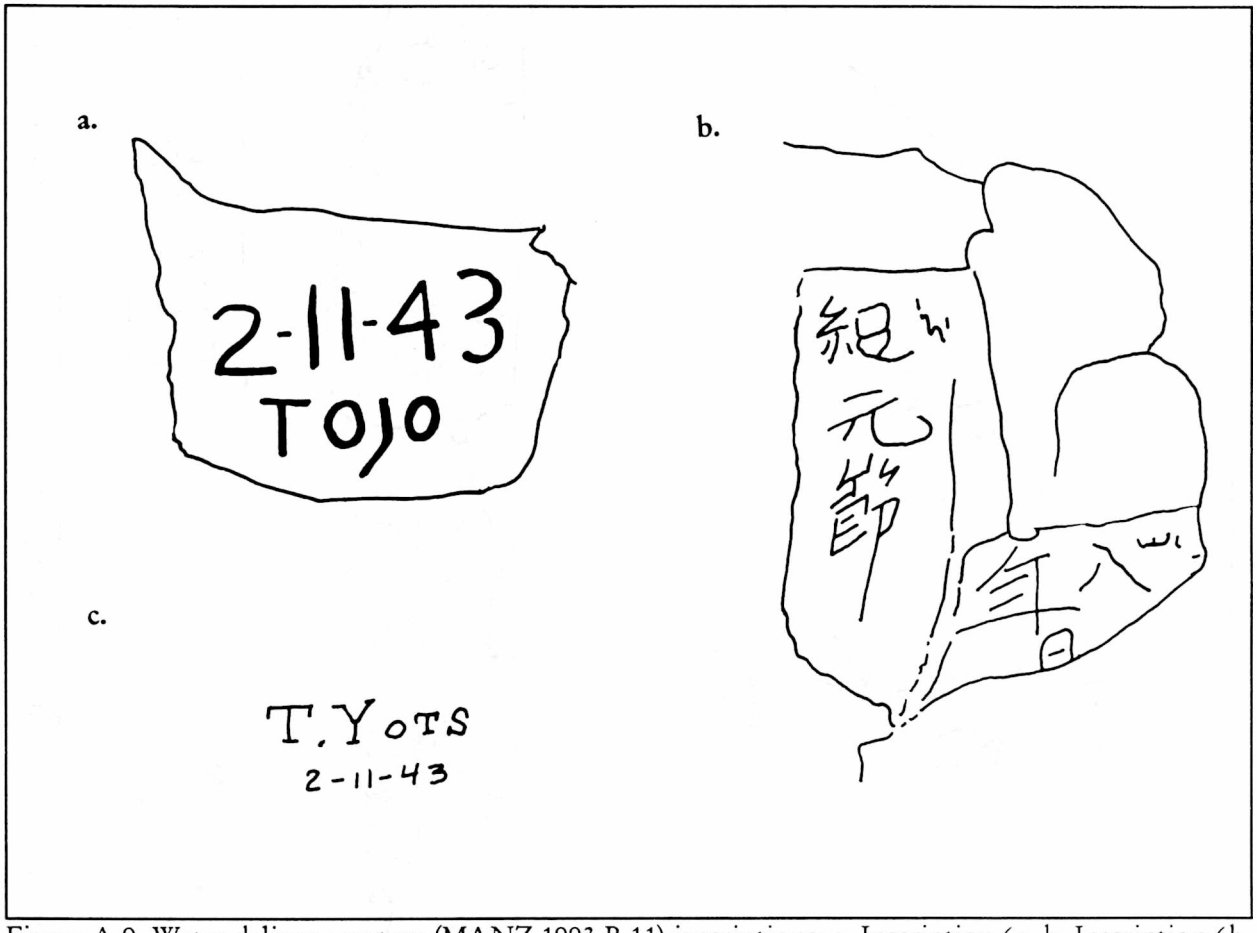


Figure A.9. Water delivery system (MANZ 1993 B-11) inscriptions; a. Inscription 6a, b. Inscription 6b, c. Inscription 6c (scale varies).

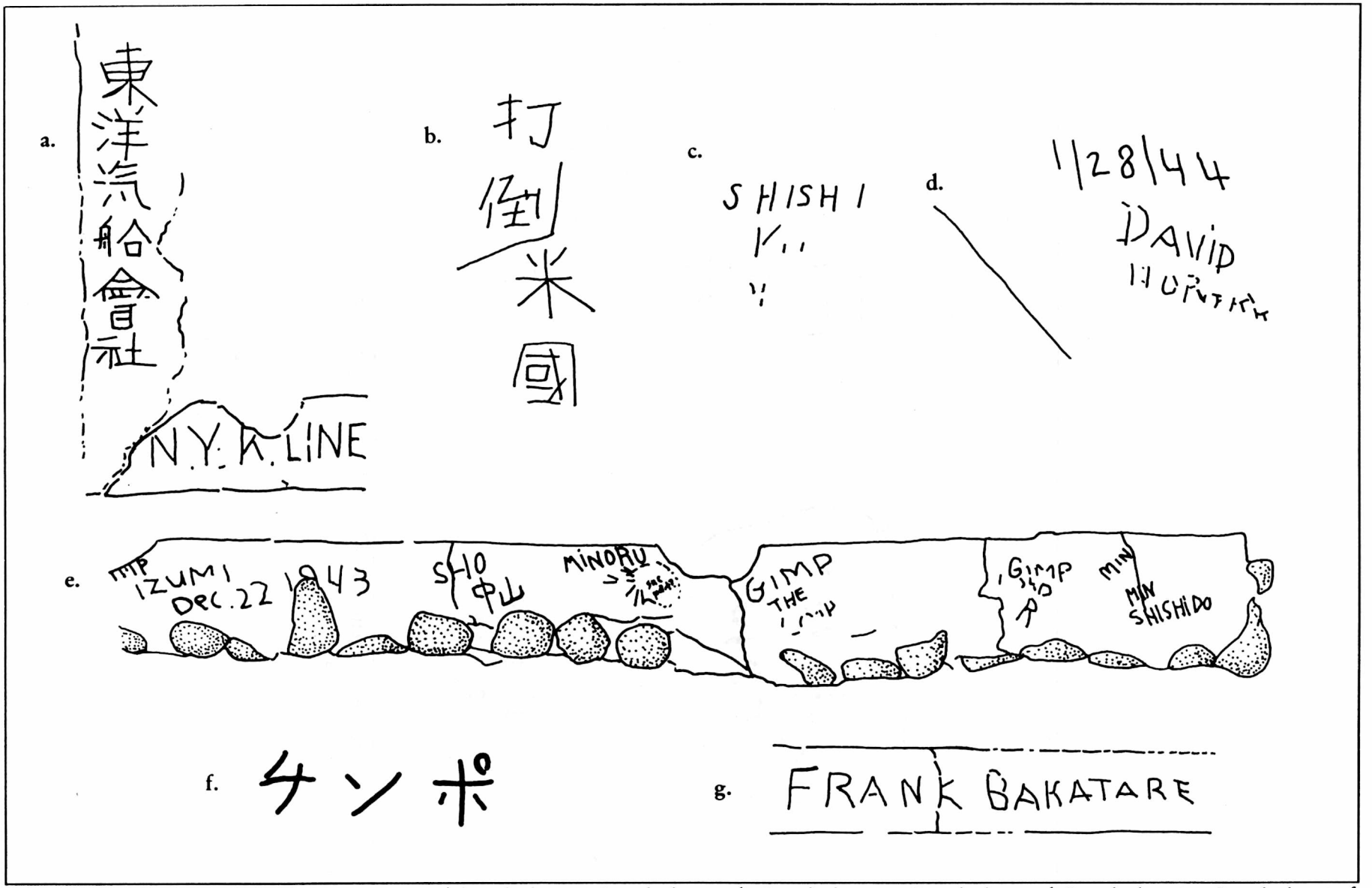


Figure A.10. Chicken Ranch (MANZ 1993 A-31) inscriptions; a. Inscription 1a, b. Inscription 2, c. Inscription 4, d. Inscription 5, e. Inscription 3a-f, f. Inscription 6, g. Inscription 7 (scale varies).

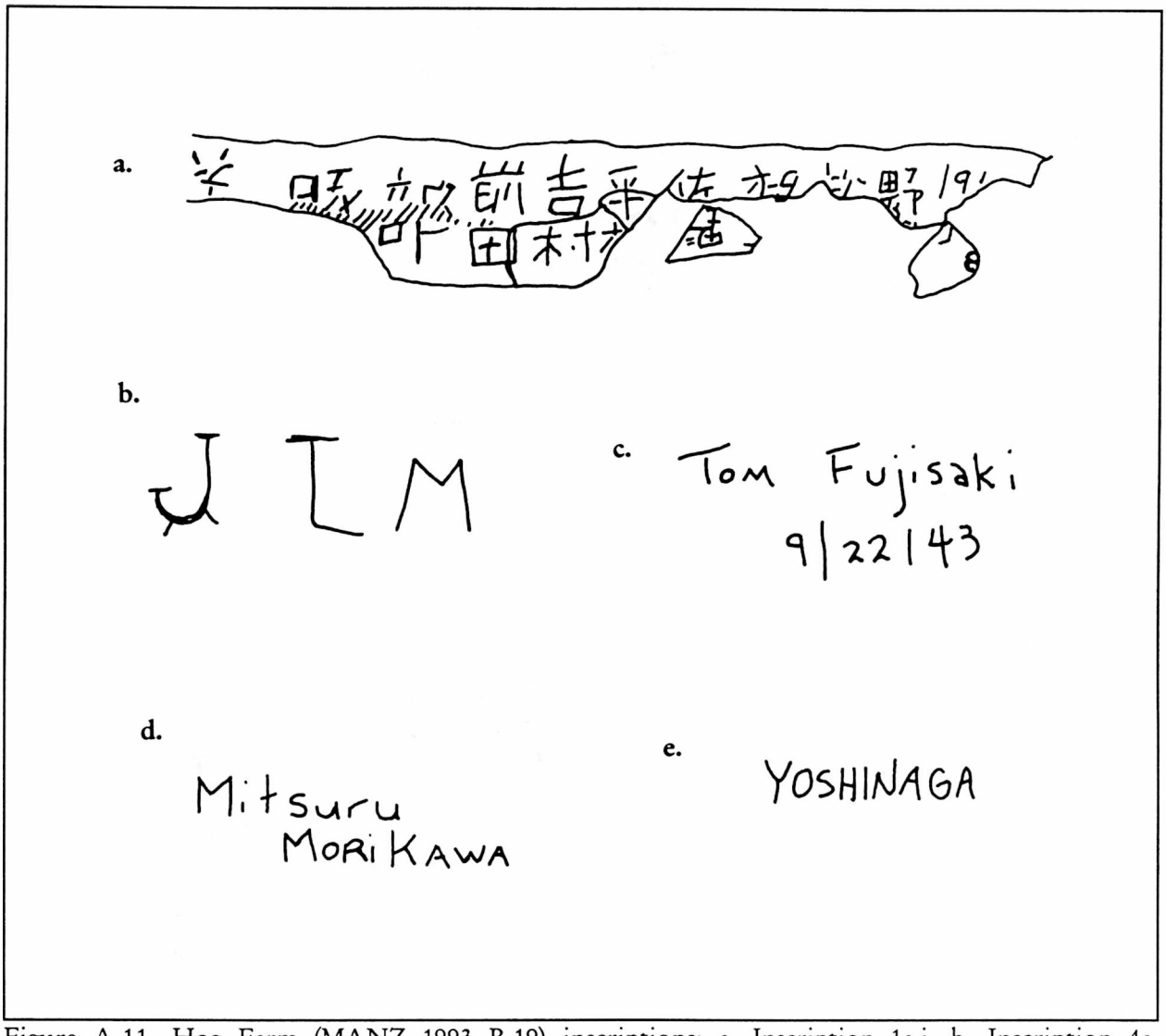


Figure A.11. Hog Farm (MANZ 1993 B-19) inscriptions; a. Inscription 1a-j, b. Inscription 4a, c. Inscription 4b, d. Inscription 4c, e. Inscription 5a (scale varies).

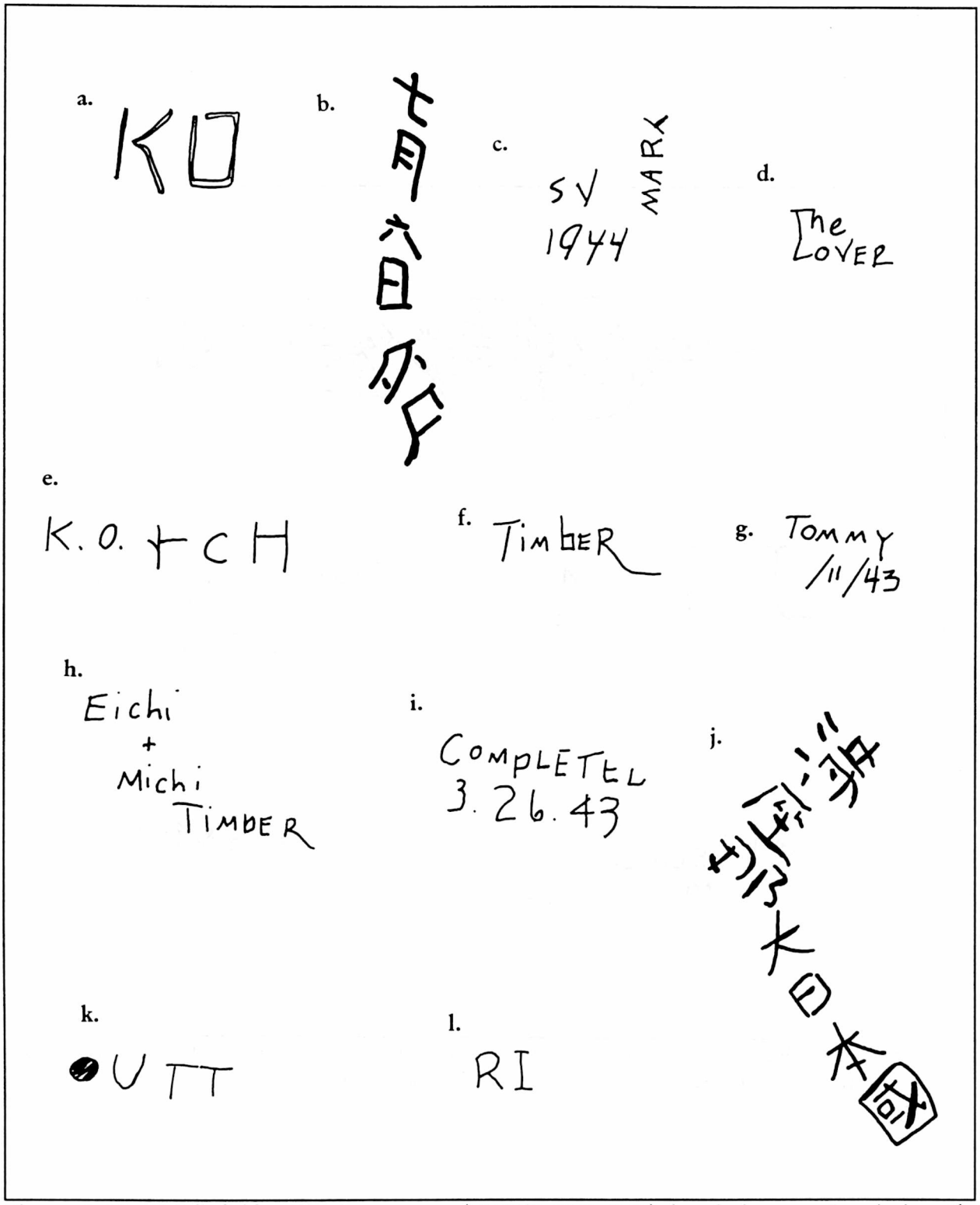


Figure A.12. North fields irrigation system (MANZ 1993 B-12) inscriptions; a. Inscription 1b, b. Inscription 2a, c. Inscription 2b, c. Inscription 2c, d. Inscription 2d, e. Inscription 2e, g. Inscription 2f, h. Inscription 2g, i. Inscription 2h, j. Inscription 2i, k. Inscription 2j, l. Inscription 2k (scale varies).

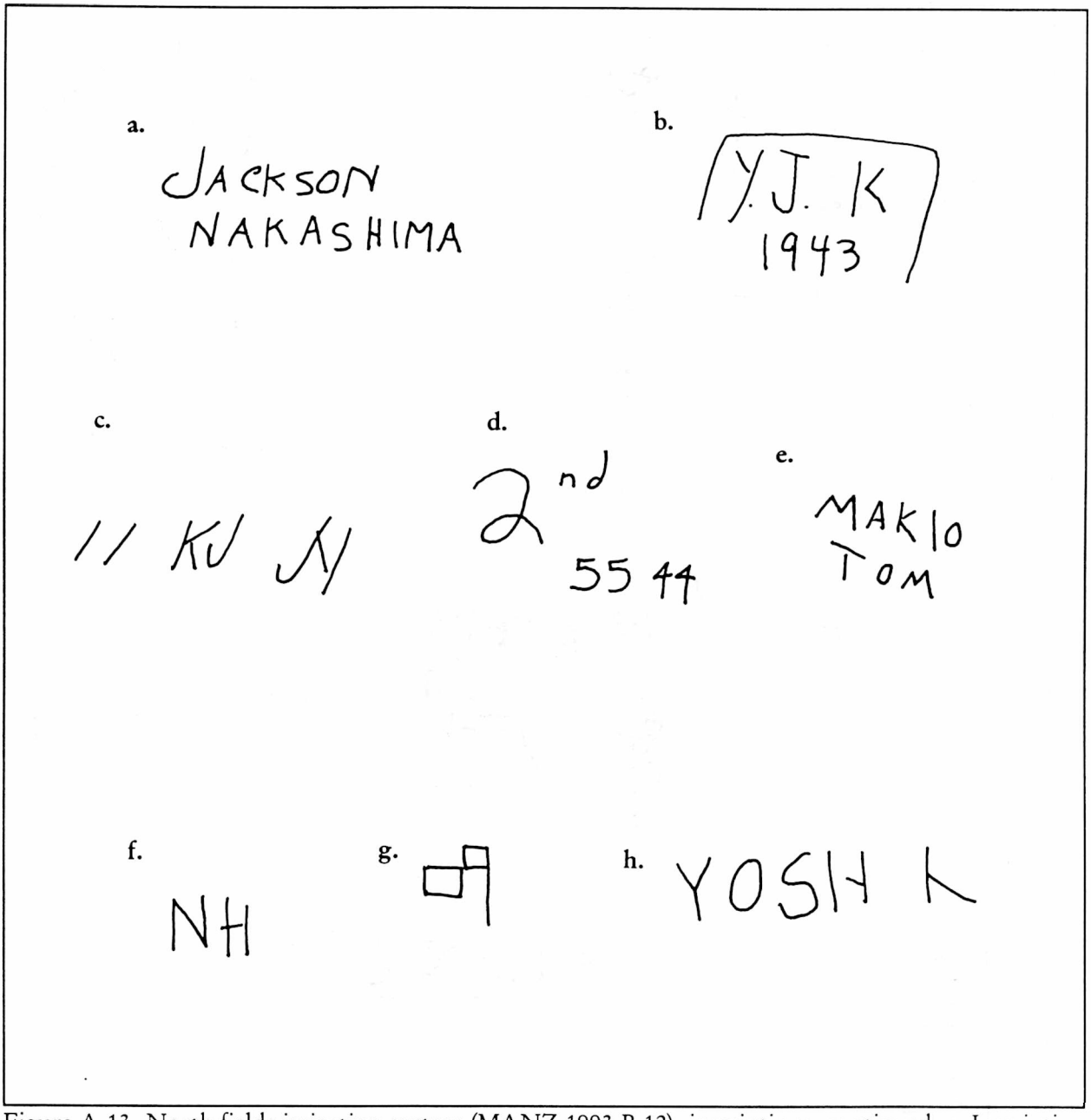


Figure A.13. North fields irrigation system (MANZ 1993 B-12), inscriptions, continued; a. Inscription 2l, b. Inscription 2m, c. Inscription 2n, d. Inscription 3a, e. Inscription 3b, f. Inscription 3c, g. Inscription 3d, h. Inscription 3e (scale varies).

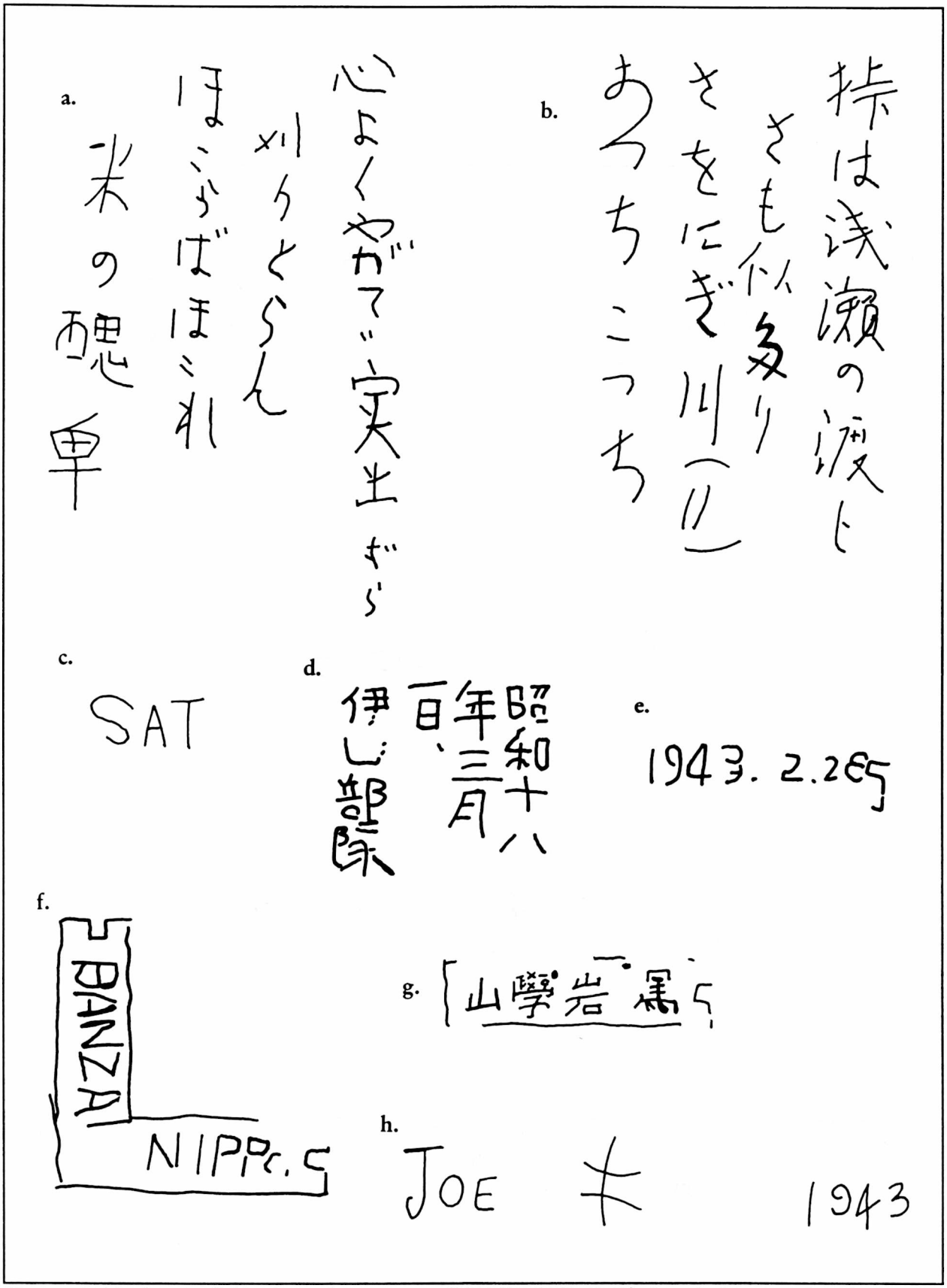


Figure A.14. South fields irrigation system (MANZ 1993 B-15) inscriptions; a. Inscription 2a, b. Inscription 2b, c. Inscription 3a, d. Inscription 3c, d. Inscription 3c, e. I3d, f. Inscription 3f, g. Inscription 3e, h. Inscription 3g (scale varies).

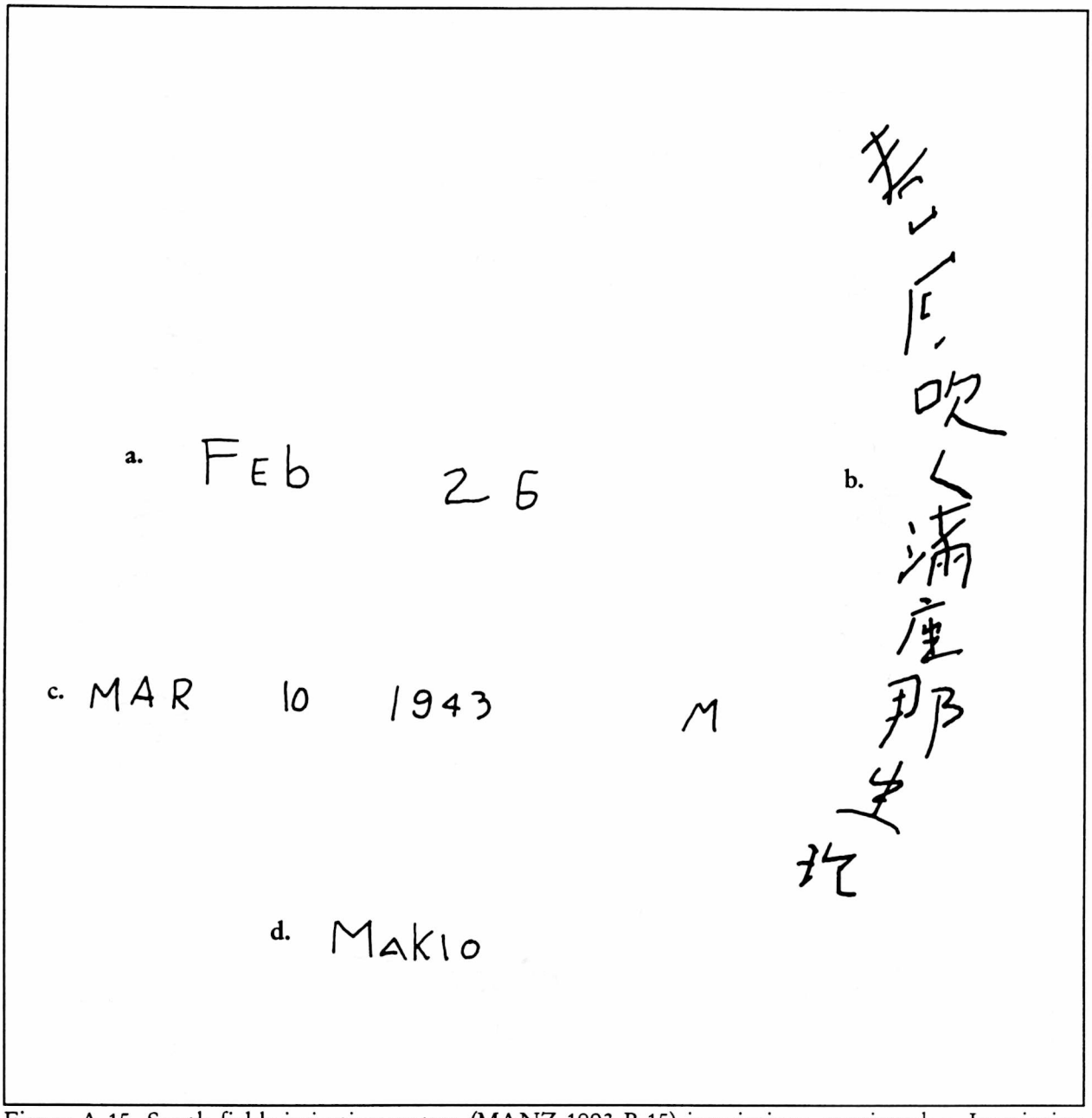


Figure A.15. South fields irrigation system (MANZ 1993 B-15) inscriptions, continued; a. Inscription 3h (part), b. Inscription 3i, d. Inscription 3j, e. Inscription 5a (scale varies).

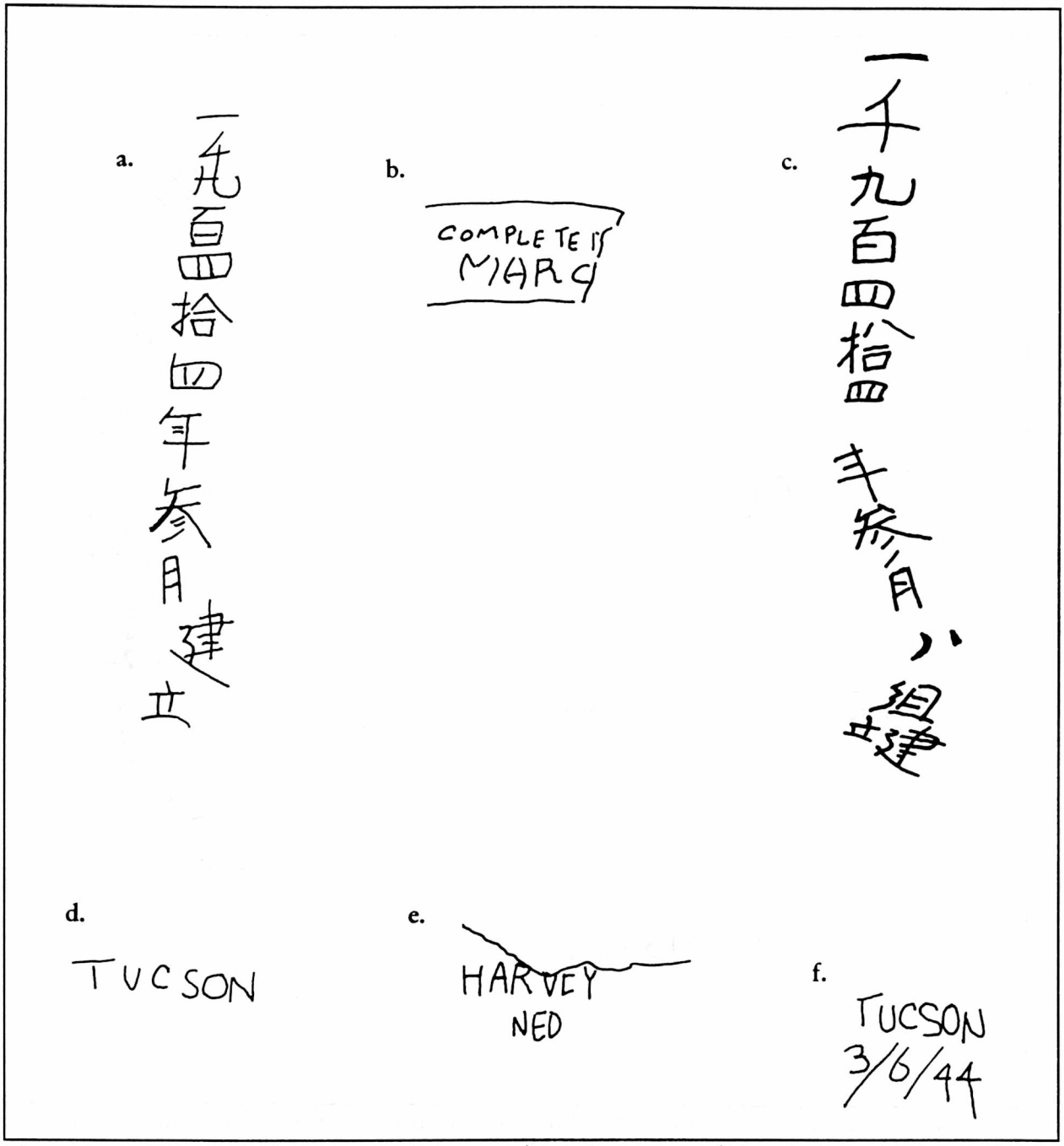


Figure A.16. Far south fields irrigation system (MANZ 1993 B-17) inscriptions; a. Inscription 1a, b. Inscription 1b, c. Inscription 1c, d. Inscription 1d, e. Inscription 1e, f. Inscription 1f (scale varies).

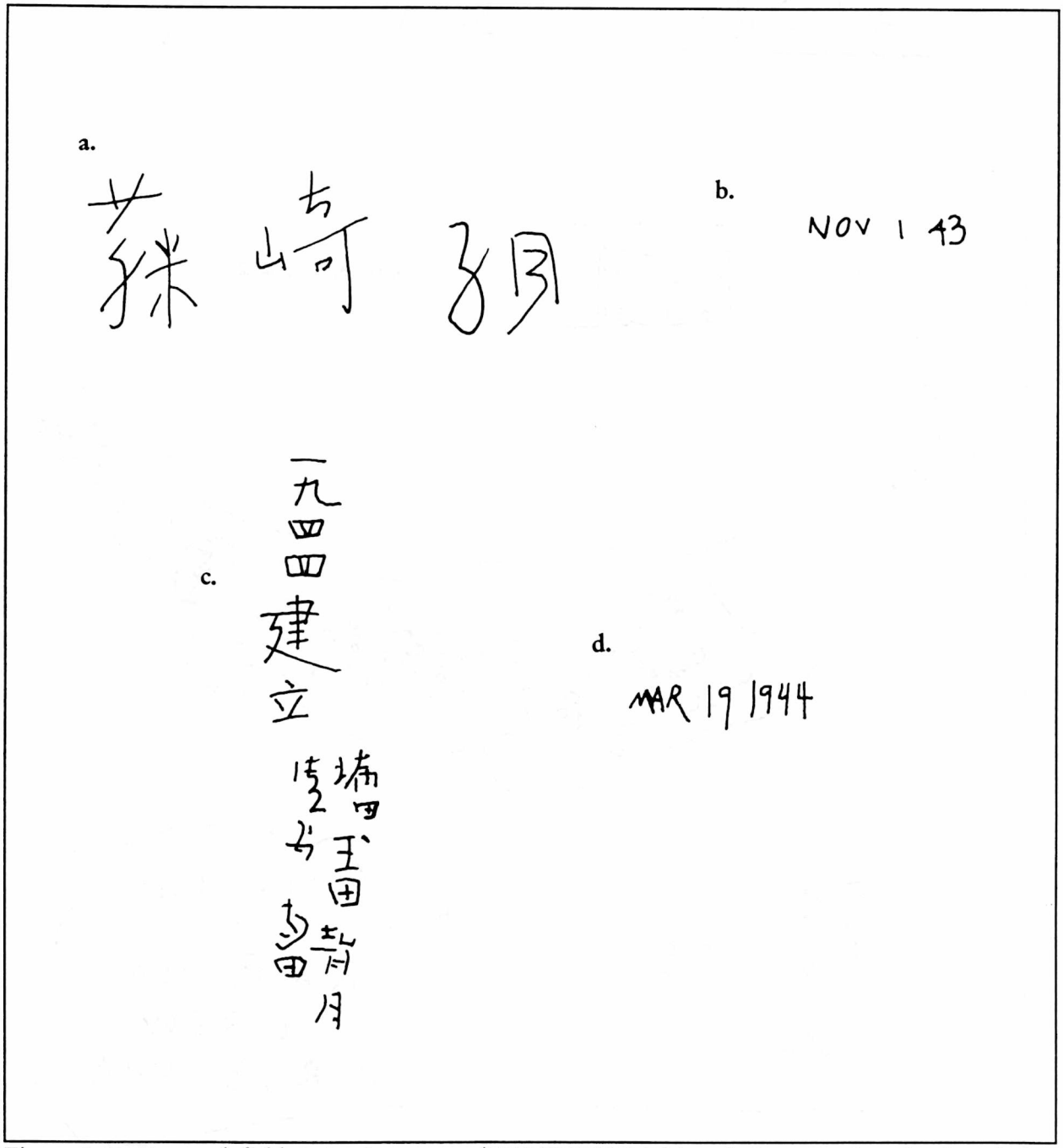


Figure A.17. Far south fields irrigation system (MANZ 1993 B-17) inscriptions, continued; a. Inscription 2a, b. Inscription 2b, c. Inscription 5a, d. Inscription 5b (scale varies).

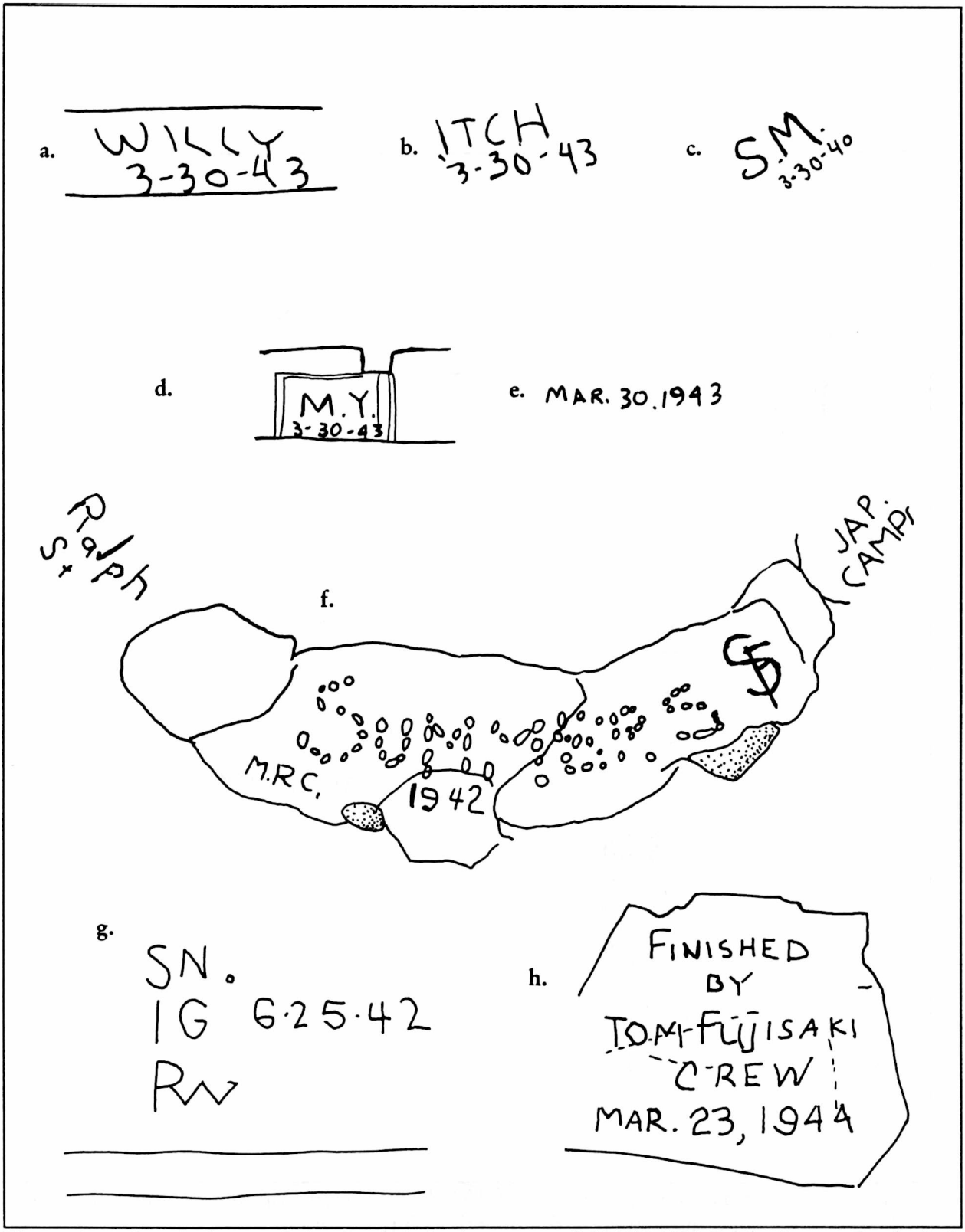


Figure A.18. Inscriptions at Bairs Creek irrigation system (MANZ 1993 B-34), George Creek ditch (MANZ 1993 B-30), North Wells (MANZ 1993 B-38), and Manzanar Federal Airport (MANZ 1993 B-27); a. MANZ 1993 A-34, Inscription 4a, b. MANZ 1993 A-34, Inscription 4b, c. MANZ 1993 A-34, Inscription 4f, d. MANZ 1993 A-34, Inscription 4g, e. MANZ 1993 A-34, Inscription 4h, f. MANZ 1993 B-30, Inscription 3a-e, g. MANZ 1993 B-38, Inscription 3a, h. MANZ 1993 B-27, Inscription 2a (scale varies).

Appendix B

Glass Artifacts

A total of 4,802 glass artifacts was collected by the National Park Service during field work at Manzanar. The majority, 4,195 items, were recovered during excavation, which was conducted only within the boundaries of the National Historic Site. All glass encountered during excavation was collected, except in Unit 26, located northwest of the relocation center hospital in a post-relocation center landfill. In that excavation unit, there was such an abundance of artifacts that only pieces that appeared diagnostic were collected.

The remaining 607 glass items were selectively collected during survey, site recording, and controlled surface collection both within the National Historic Site and in the surrounding area. Although numbers and types of glass artifacts or fragments were noted for each site, generally only those thought to be temporally diagnostic were collected. Glass was described following the terminology in Jones and Sullivan (1989). The glass has been grouped by temporal component (i.e., pre-relocation center, relocation center, and post-relocation center) and by general use or function.

Maker's marks and embossments on glass artifacts recovered during field work at Manzanar National Historic Site are listed in Table B.1. Many maker's marks, used for a documented period of time, give a range of potential manufacture dates; some marks, such as those for the Owens Illinois Bottle Company, often even include the year of manufacture (Figure B.1). From the Owens Illinois Bottle Company alone, 70 bottles or bottle fragments representing 14 different plants were collected from relocation center contexts (Table B.2). However, overall a wide variety of maker's marks were recovered.

Manufacturing techniques provide general date ranges as well (Lorrain 1968; Miller and Sullivan 1984; Newman 1970; Rock 1980). For example, sun-colored amethyst glass dates to before World War I: manganese was added to glass between the 1880s and 1915 to make it more clear and glass with manganese will turn purple when exposed to ultraviolet rays from the sun. In other cases the degree of machine manufacturing versus hand production provides a date range, since bottle manufacturing became more automated throughout the nineteenth and early twentieth centuries. For example, machine-made bottles with finishing-tool-turned lips (often called applied lips) tend to date to after 1870. These hand-finished lips disappeared by the mid 1920s when fully automatic bottle-making machines replaced the earlier semi-automatic machines (Figure B.2).

Items with a broad time range, whose dates of manufacture overlap the pre-relocation center, relocation center, or post-relocation center periods, were considered in this analysis to date to the time period suggested by their context and associated artifacts. In only a few cases was there evidence of temporal mixing: a sun-colored amethyst fragment was recovered from the relocation center hospital landfill and recent beer bottles were found scattered around the relocation center, especially in the staff housing area and around the auditorium.

In this analysis each glass artifact was assigned to one of eight functional categories: non-alcoholic beverages, alcoholic beverages, food storage, household items, structural items (e.g. window glass, light bulbs, glass brick), pharmaceutical containers or equipment (including patent medicine and bitters bottles), other items, and non-diagnostic fragments. Because the use of metal was restricted during World War II, glass was used as a substitute packaging material for a number of staples. For instance, coffee and lard were sold in glass containers for the first time during World War II (Ward 1994). Functional category was determined primarily by shape (Putnam 1965; Wilson 1984; Zumwalt 1980) and embossing, if present, but color was also used to resolve ambiguous cases. Some bottle types, like the hobble-skirt Coca Cola bottle, are so distinctive that even small fragments could be identified. But much of the container glass recovered from the excavation units was too fragmentary to categorize further.

Fifty-six percent of the collected glass artifacts were from relocation center contexts, 38 percent from pre-relocation center contexts, and 6 percent from post-relocation center contexts. Tables B.3 through B.26 list the glass artifacts recovered. Representative artifacts are illustrated in Figures B.3 through B.22. Sampling and collection was designed to gauge the nature and extent of deposits, rather than to provide statistically reliable estimates of frequency and distribution. However, a brief summary of each functional category hints at potential differences and similarities between the temporal components.

Ten percent (n=137) of the identified glass artifacts are complete or fragmentary **non-alcoholic beverage bottles**. Milk and soft drink bottles were found in all three components. The 14 whole or fragmentary bottles from pre-relocation center contexts include an "Independence Dairy" milk bottle and bottles for "Coca Cola," "Cliquot Club," "Hollywood Dry," and "Nehi" soda. The 104 from relocation center contexts include milk from the "Lone Pine" and "Independence" dairies, apple juice, "Ben-Hur" coffee, and soda. Eleven soft drink brands are represented in the collection: "Antelope," "Cleo Cola," "Coca Cola," "LaVida," "Mission," "Mission Dry," "Nehi," "Pepsi-Cola," "Seven-Up," "Squirt," and "Wilshire Club Jr." Nineteen bottles or fragments from post-relocation center contexts include items from the "Lone Pine Dairy," and "Canada Dry" ginger ale, "Mission," and "Sunset" soda. Virtually all of the soft drinks were bottled locally (Bishop) or in southern California.

Seven percent (n=103) of the identified glass artifacts are whole or fragmentary **alcoholic beverage bottles.** The 40 bottles or bottle fragments from pre-relocation center contexts were mostly for beer, with some whiskey, brandy, wine, and one champagne bottle. Only 19 alcoholic beverage bottles or bottle fragments were collected from relocation center contexts, reflecting the prohibition against alcohol at the relocation center. These include a few whiskey and beer bottles, two sake bottles, and a wine bottle. Most of the 44 alcoholic beverage bottles or bottle fragments from post-relocation center contexts date to the late 1940s and were from areas associated with the veterans reuse of the relocation center. These include mostly beer bottles with a few whiskey bottles and a possible gin bottle.

Twenty-two percent (n=312) of the identified glass consist of complete or partial **food storage**

containers. The 125 whole or fragmentary containers from pre-relocation center contexts include many canning jars and lid liners, as well as bottles for commercial foods, condiments, extracts, and spices. Identifiable brand names include "Best Foods," "Durkee" salad dressing, "J.A. Folger," "H.J. Heinz," "A.S. Hinds," and "Lea and Perrins." The 135 whole or partial glass food containers from relocation center contexts were for ketchup, mustard, mayonnaise, "Karo" syrup, soy sauce, olive oil, baby food, and numerous other products. The few identifiable brand names include "Crown Products Corp.," "B.P. Ltd.," "Ben-Hur" mustard, "H.J. Heinz," "Karo" syrup, "Log Cabin" syrup, and "Pompeian" olive oil. The 52 glass food containers or fragments from post-relocation center contexts include canning jars, jelly jars, a "Karo" syrup bottle, a mayonnaise jar, a vinegar bottle, and a baby formula jar, among others.

Household glass items include food serving or cooking items (e.g. drinking glasses or glass baking dishes) as well as cleanser containers and other glass for household use; this category comprises 6 percent (n=84) of the identified glass in the collection. The 22 examples from pre-relocation contexts include fragments of "Clorox" bottles, bowls, drinking glasses, lamp glass, and pressed and painted glass fragments. The 44 glass household items from relocation center contexts include a salt shaker embossed on the base with "USQMC" and fragments of Japanese-style tea cups and saucers, pressed glass, "Purex" bottles, drinking glasses, and mugs. The 18 glass household items from post-relocation center contexts include a pitcher and fragments of drinking glasses, a pie plate, a cake platter, a punch cup, a "Purex" bottle, and pressed glass.

Twenty-one percent (n=301) of the identified glass artifacts were classified as **structural glass**, which includes window glass, light bulbs, and other glass integral to a building or its furnishings. Lamp and light bulb glass, whether from movable furniture or permanent fixtures, is included in this category. The 112 items from pre-relocation center contexts include fragments of glass brick, abundant window glass, lamp glass, and light bulb fragments. The 182 structural glass items from relocation center contexts include 132 window glass fragments, a piece of wire-reinforced glass from the staff housing area, and a beveled glass fragment. The remainder consist of light bulb and lamp glass fragments. The seven items collected from post-relocation center contexts include six light bulb fragments and a window pane fragment. All of the window glass collected, and most of the other structural glass collected, came from excavation units.

Twenty percent (n=284) of the identified glass was classified as **Pharmaceutical.** The 43 pharmaceutical items from pre-relocation center contexts include bottles and bottle fragments of bitters, patent medicines, "Milk of Magnesium," a drug store prescription bottle, and cough syrup. Bitters and patent medicines appear to be associated with earlier deposits (pre-1900). The great majority (n=239) of pharmaceutical items came from relocation center contexts. Many of these were from the excavation unit placed within the hospital landfill, but a fair number were collected from throughout the relocation center. The assemblage is dominated by prescription medicines, pharmacy bottles, medical equipment, and hospital waste (e.g. broken test tubes, pipettes, microscope slides). Only two pharmaceutical items came from post-relocation center contexts: a prescription pill bottle and a prescription cough syrup bottle.

The **"Other"** category, comprising 14 percent (n=192) of identified glass, includes personal items such as buttons and cosmetics, and miscellaneous items for specialized activities or tools (e.g. car parts, ink bottles, toys). The 48 glass artifacts in this category from pre-relocation center contexts include 16 beads associated with Native American Indian use and two other beads. Personal care items include complete and fragmentary perfume bottles, cold cream jars, hair care and "Vaseline" containers, and a nail polish bottle. Activities are represented by

bottles for "Three-in-one" oil, gun-cleaning fluid, ink, and nine marbles (most of them sun-colored amethyst). The 138 "other" glass artifacts from relocation center contexts include five beads, a ball button, a sunglasses lens fragment, and containers for perfume, cold cream, lotion, hair care products, tooth powder, liniment, "Vaseline," "Mentholatum," and "Listerine." Activities are represented by two small paint jars and 56 marbles[1], and vehicles by fragments of head and tail lights. Fragments of runway lights were collected from the World War II-era airport east of the relocation center. The nine "other" glass artifacts recovered from post-relocation center contexts consist of a sunglasses lens fragment, a tooth powder jar fragment, a "Lavoris" mouthwash bottle base, a perfume bottle, a lotion bottle fragment, a car light bulb, a push pin, and two marbles.

The 3,389 **non-diagnostic glass container fragments**, all from excavation units, represent 71 percent of all the glass collected. Of these, 1,415 were from six excavation units in pre-relocation center contexts. These were mostly aqua (46 percent; likely from canning jars), clear (37 percent; probably for food), amber (9 percent; for beer and whiskey), and olive (4 percent; for wine). Less than 2 percent (n=22) are sun-colored amethyst. A total of 1,840 non-diagnostic glass container fragments were recovered from relocation center contexts. Of these over 71 percent are clear, 24 percent are amber (mostly medicine bottle fragments from the hospital landfill), with the remaining aqua, white, cobalt, green, blue, and purple. From Unit 26, excavated within a post-relocation center trash feature, 134 out of thousands of non-diagnostic bottle glass fragments were collected. These were mostly clear and amber with some green and cobalt.

1. Playing marbles was a popular pastime among the evacuee children. Recently a former evacuee recounted that he and his brother, marble champs, had amassed a large collection of marbles by the time they left Manzanar. Unable to take all their marbles with them, they scattered the marbles about the relocation center. Years later, a county employee who worked at the vehicle maintenance shop reportedly filled a gallon-size jar with marbles he collected from around the auditorium.

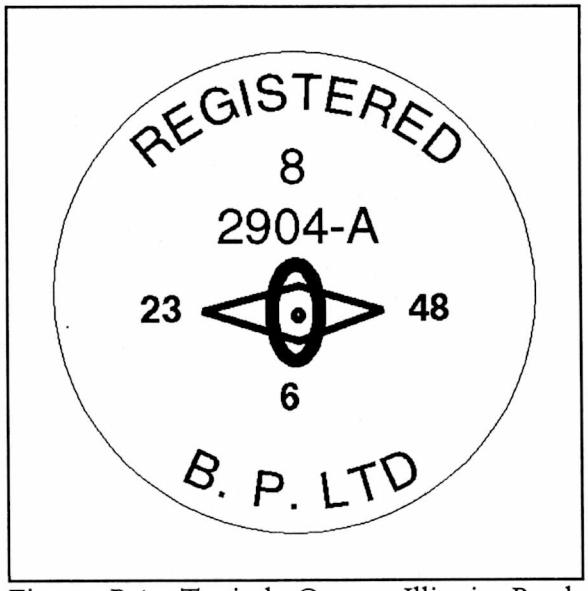


Figure B.1. Typical Owens Illinois Bottle Company basemark, plant number to left of mark, date to right, and mold code to bottom.

Table B.1.
Glass Container Marker's Marks and Embossments in Manzanar Collection with Manufacturer and Dating Information.

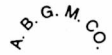
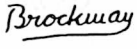
Company or Embossment	Mark	Date Range	Reference*
Ace (shoe polish)			
Adolphus Busch Glass Manufacturing Co.		1886-1928	a
American Glass Works	AGW	1908-1935	a
American Bottle Co.		1905-1929	a, b
Anacin			
Anchor Hocking Glass Corp.		1937-1977	c
Antelope Soda			
Aristocraft			
Armstrong Cork Co.		1938-1969	a
Aurelius S. Hinds (A. S. Hinds Co.)		1870-1925	a
Ball		ca. 1915-1969	a, b
Ben-Hur Coffee, Ben-Hur Mustard			
Best Foods		1930+	b
Boyd (Illinois Pacific Glass Co.)		1915+	a
Brockway Glass Co.		1933+	a
Brockway Glass Co.		1925+	a
California Fig Syrup Co. (Sterling Products Inc.)		1878-1970	a
California Packing Corp.		1916+	a
Canada Dry Ginger Ale, Inc.		1890+	d
Carter's Inks			
Celo Cola			
Chas. H. Fletcher's Castoria (Centair Drug Co.)		early 1890s-1947+	b
Chesebrough Mfg. Co. (Vaseline)		1887+ 1870-1947+	b
Cliquot Club		1881/9+	b
Clorox		1929-1963	b
Coca Cola, 6 oz hobble-skirt bottle with city on base		ca. 1900-1948	b
Bishop, Calif.		1917+	e
Safford, Ariz.		1910+	e
Tacoma, Wash.		1910+	e

Table B.1.
Glass Container Marker's Marks and Embossments in Manzanar Collection with Manufacturer and Dating Information.

Company or Embossment	Mark	Date Range	Reference*
Consolidated Fruit Jar Co.		1867+	a
Consolidated Fruit Jar Co.		1871-1882	a
Corning (Corning Glass Works)		1919+	a
Crown Products Corp.			
Cumberland Glass Mfg Co.	D & O	ca. 1890-1900	a
CUTEX (Northam Warren Corp, finger nail polish)		1912+	b
Cutter Standard			
Davis Vegetable Painkiller			
Diamond Glass Co.		1924+	a
DR A. BOSCHEE'S GERMAN SYRUP (L. M. Green)		1872-ca. 1940	f
Dr. Kilmer and Co.	DR. KILMER'S SWAMP ROOT ...	1888-1906	f
Dr. Lyon's Tooth Powder			
Duraglas (Owens-Illinois trademark)		1940-1963	b
E. R. Durkee & Co. (New York)		1877-1900	a
Elmo (cold cream)			
F. W. Fitch Co. (Youngstown, Ohio)	Fitch's	1892-ca. 1926	g
Fairmount Glass Co.		1898-1930	a
Fairmount Glass Co.		1945-1960	a
Federal Law Forbids Resale or Reuse of this Bottle		1933-1964	h
Ford			
Gebhardt Eagle Chili Powder (San Antonio, Texas)		1899+	g
General Electric	GE MAZDA		
Glass Containers Inc.		1945+	a
Golden Star Flavoring ★ Extract Tillman & Bendel S.F.		1879+	g
H. J. Heinz Co.	(H with number)	1888+	a
Hazel-Atlas Glass Co.		1920-1964	a
Herpicide	Herpicide Quality Products ...	1932-1943	f
Hollywood Dry Corporation			

Table B.1.
Glass Container Marker's Marks and Embossments in Manzanar Collection with Manufacturer and Dating Information.

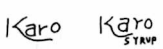
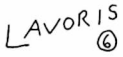
Company or Embossment	Mark	Date Range	Reference*
Illinois Pacific Glass Co.		1929-1930	a
Illinois Glass Co.		1916-1929	a
J. T. Hamilton		1900-1943	a
J. A. Folger and Co.		1850-1929	a
Jergens Lotion (Andrew Jergens Co.)		1894+	b
Johnson and Johnson		1887+	a
Karo Syrup (Corn Products Refining Co.)			
Kerr Glass Co.		1915-1946	a
Kimble Glass Co.		ca. 1947	a
Knox Glass Bottle Co.		1932-1953+	a
Knox Bottle Co.		1924-1968+	a
Latchford Glass Co.		1957+	a
Latchford-Marble Glass Co.		1939-1957	a
LaVita Mineral Springs Co. (Placentia, Calif.)			
Lavoris (Lavoris Chemical Co.)			
Lee and Perrins (John Duncan and Sons)		1879-1920	g
Lee S. Smith			
Listerine (Lambert Chemical Company)		1914+	b
Log Cabin Syrup			
Towle Maple Syrup Co.		1888-1926	g
General Foods Corp.		1926+	g
Long Beach Glass Co.		1920-1933	a
Lummis Glass Co.		1940-1955	a
M M & R MAGNUS (Magnus, Mabee & Reynard, Inc., New York)		1895+	i
Maywood Glass Co.		ca. 1940+	a
Mentholatum		1889/1906+	b, j
Millville Bottle Works	M B W	1903-1930	a
Mission Soda, Mission Dry		1933+	d
Musterole Cleveland (Musterole Co.)		1906+	b

Table B.1.
Glass Container Marker's Marks and Embossments in Manzanar Collection with Manufacturer and Dating Information.

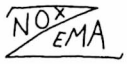
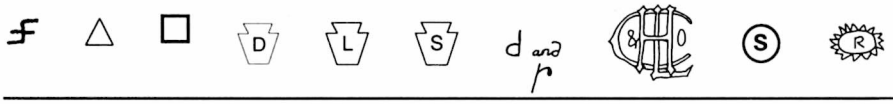
Company or Embossment	Mark	Date Range	Reference*
Nehi		1928+	k
red/yellow painted label		early 1940s-1956	k
red/white painted label		1956-1965	k
Newborn Glass Co.		pre-1924	a
Northwest Glass Co.	NW	1931+	a
Noxzema (Noxell Co.)			
O-Cedar (Channel Chemical Co.)		1908	b
Obear-Nester Glass Co.		1915+	a
Old Quaker Whiskey			
Owens Bottle Co.		1911-1929	a
Owens-Illinois Bottle Company		1932+	a
Paine's Celery Compound		1885-1921+	f
Parke, Davis and Co.	P. D. & CO.	1875+	a
Penick and Ford Ltd Inc.			
Pepsi-Cola		1898+/1940+	b, d
Perfect Mason		1900-1935	b, l
Pompeian Olive Oil			
Pond's (Pond's Extract Co.)			
Purex			
Pyrex (Corning Glass Works)		1912+/1915+	b
Rawleigh's (W.T. Rawleigh Co.)		1925-1936	b
Reed Glass Co.		1927-1956	a
Roth and Co.	ROTH & CO. R & CO	1880-1890	a
Sani-Glas ⊕ (Brockway Glass Co. trademark)			
Scott and Browne	SCOTT'S EMULSION	1870-1947	b
Seaboard Glass Bottle Co.		1943-1947	a
Self Sealing Mason		ca. 1920-1940	b
Seven-Up		1928+	d
Sloan's Liniment		1929-1954	f

Table B.1.
Glass Container Marker's Marks and Embossments in Manzanar Collection with Manufacturer and Dating Information.

Company or Embossment	Mark	Date Range	Reference*
Sparkletts			
Squirt		1938+	d
Sunset			
Thatcher Glass Manufacturing Co.		1900+	a
Three-in-one Oil		1907+	a
Triacol Alpers (Alpers Chemical Co.)			
Whitall-Tatum and Co.		pre-1935	a
Whitall-Tatum and Co.		1935-1938	a
William Franzen and Son, Milwaukee	W F & S MIL	1900-1926	a
Wm. McCully	McC	1832-1886	a
Woodbury (Andrew Jergens Co.)			
Unknown manufacturers:			
			

* references: a. Toulouse 1971; b. Hull-Walski and Ayres 1989; c. Anchor Hocking 1996; d. Bates et al. 1990; e. Bates et al. 1992; f. Fike 1986; g. Zumwalt 1980; h. Rock 1980; i. Cook 1948; j. Mentholatum 1996; k. Bates et al. 1989; l. Pullin 1986.

Table B.2.
Owens Illinois Manufacturing Plants Represented in Glass Artifacts from Relocation Center Contexts at Manzanar.

Manuf. Plant Location and Number	No. Coll.	Types Collected
Alton, Il (7)	14	7 pharmaceutical, 6 food storage, 1 other
Los Angeles, CA (23)	10	6 non-alcoholic beverage, 1 food storage, 1 pharmaceutical, 2 other
Oakland, CA (20)	9	5 food storage, 3 pharmaceutical, 1 alcoholic beverage
Clarksburg, WV (4)	8	3 pharmaceutical, 2 food storage, 3 other
Huntington, WV (2)	6	4 food storage, 2 other
Gas City, IN (12)	5	2 food storage, 1 pharmaceutical, 2 other
Streator, Il (9)	2	1 food storage, 1 other
Fairmont, WV (3)	2	1 non-alcoholic beverage, 1 other
Clarion, PA (17)	2	2 pharmaceutical
Tracy, CA (22)	1	1 other
Okmulgee, OK (15)	1	1 food storage
Charleston, WV (6)	1	1 pharmaceutical
Glassboro, NJ (8)	1	1 pharmaceutical
unknown	8	3 food storage, 3 pharmaceutical, 1 non-alcoholic beverage, 1 alcoholic beverage

Table B.3.
Non-alcoholic Beverage Glass Artifacts from Pre-Relocation Center Contexts.

Survey —

MANZ 1993 A-24 (FN A-120)

- clear milk bottle fragment with red painted lettering "W.../IND MILK..."

MANZ 1993 B-7, Locus A (FN B-751, B-764)

- aqua "Coke" bottle fragment with crown cap lip
- aqua "Cliquot Club" bottle fragment embossed on base with Eskimo figure holding bottle and on side with "...EGISTERED"

Surface Collection —

MANZ 1993 A-7, Locus F, Unit 2 (FN B-561)

- amber round bottle base embossed with "HOLLYWOOD/29 7/DRY CORPORATION"

MANZ 1993 A-15, Locus A, Unit 3 (FN B-566)

- aqua bottle fragment with crown cap finish
- clear bottle fragment with crown cap finish

MANZ 1993 A-15, Locus B, Unit 2 (FN B-568)

- aqua "Coke" bottle body fragment

Excavation —

Unit 17, 0-10 cm

- aqua bottle fragment with double bead applied lip, cork stopper, and "S" embossed on base.

Unit 17, 20-30 cm

- clear bottle fragment with tooled lip

Unit 21, surface

- three clear "Nehi" soda bottle body fragments

Unit 21, 0-10 cm

- clear "Nehi" soda bottle body fragment embossed with "Santa Mon..."

Unit 21, 10-20 cm

- clear "Nehi" soda bottle body fragment

Table B.4.
Alcoholic Beverage Glass Artifacts from Pre-Relocation Center Contexts.

Survey —

MANZ 1993 A-20, Locus E (FN A-62)

- complete clear oval-base whiskey bottle embossed on the base with "·/·/1" and on side with "1"

MANZ 1993 A-27 (FN A-30)

- amber round bottle base embossed with "AB /19" (American Bottle Co.)

MANZ 1993 A-30, NE perimeter (FN A-93)

- aqua round bottle bottle base embossed with "AB /L7." (American Bottle Co.)

MANZ 1993 B-1 (FN B-774)

- green champagne bottle base

MANZ 1993 B-2 (FN B-784)

- thick aqua bottle fragment with oil (brandy) finish applied lip

MANZ 1993 B-4 (FN B-805)

- amethyst bottle base with an embossed crown design

MANZ 1993 B-7, Locus A (FN B-751, B-764)

- three amber bottle fragments with crown cap finish
- amber round bottle base embossed with "WF & SMIL" (William Franzen and Son, Milwaukee)
- amber round bottle base embossed with "7413/164"

MANZ 1993 B-7, Locus B (FN B-766)

- thick brown round-base bottle fragment
- two amber bottle body fragments embossed with "MILLER/MILWAUKEE"
- amber round bottle base embossed with " FGW /23" (Fairmount Glass Co.)

MANZ 1993 B-10 (FN B-802)

- green bottle fragment with brandy-with-bead finish applied lip
- brown bottle fragment with brandy-with-bead finish applied lip

MANZ 1993 B-17 (FN B-1038)

- amethyst bottle side panel embossed with "... ROTH & CO./...AN FRANCISCO" (Roth and Co., whiskey)
- amber round bottle base embossed with "AGW/S" (American Glass Works)
- amber bottle fragment with oil (brandy) finish applied lip

MANZ 1993 B-22 (FN B-842)

- amber bottle fragment with oil (brandy) finish applied lip

MANZ 1993 B-32 (FN B-845)

- clear bottle fragment with brandy-with-bead finish applied lip
- aqua round bottle base embossed with "A.B.G.M. CO./B2" (Adolphus Busch Glass Manuf. Co.)
- amber round bottle base embossed with "R & CO/24" (Roth and Co., whiskey)
- amber bottle body fragment embossed with "...N FRANCISCO" (Roth and Co., whiskey)
- green bottle fragment with beer-finish applied lip
- olive green wine bottle fragment with applied lip

Table B.4.
Alcoholic Beverage Glass Artifacts from Pre-Relocation Center Contexts.

MANZ 1993 B-32 (FN B-847)

- aqua round bottle fragment embossed on base with "  " and on side with "REGISTERED"(Reed Glass Co.)
- amber round bottle base embossed with "  /23" (Fairmount Glass Co.)

MANZ 1993 B-34 (FN B-34)

- aqua round bottle base embossed with "  /V 15" (American Bottle Co.)
- aqua round bottle base embossed with "A.B.G.M. CO./A 2" (Adolphus Busch Glass Manuf. Co.)
- thick amber bottle fragment with oil (brandy) finish applied lip

Surface Collection —

MANZ 1993 A-15, Locus A, Unit 3 (FN B-566)

- amber round bottle base embossed with "WF & S MIL/73" (William Franzen and Son, Milwaukee)

Excavation —

Unit 17, 0-10 cm

- amber bottle fragment with oil (brandy) finish applied lip

Unit 17, 10-20 cm

- amber bottle fragment with double bead finish applied lip
- amber bottle fragment with (oil) brandy finish applied lip
- amber oval whiskey bottle base
- olive green champagne bottle base and lip fragment

Unit 17, 20-30 cm

- amber bottle fragment with short brandy-with-bead finish applied lip

Unit 21, surface

- amber full-machine-made beer bottle lip fragment

Table B.5.
Food Storage Glass Artifacts from Pre-Relocation Center Contexts.

Survey —

MANZ 1993 A-4 (FN B-329)

- clear bottle neck fragment with Perry Davis-type lip

MANZ 1993 A-7, Locus B (FN A-135)

- clear round jar base embossed with "KERR GLASS MFG' CO OKLA/PAT/AUG 31/5"

MANZ 1993 A-7, Area J1 (FN B-458)

- amethyst bottle fragment with extract-finish applied lip

MANZ 1993 A-11 (FN A-140)

- large clear round jar body fragment embossed with "Kerr SELF SEALING WIDE MO.. MASO.."
- clear round jar base embossed with "KERR GLASS MFG' CO SAND SPRINGS OKLA AUG...91"

MANZ 1993 A-13, Locus (Area N) (FN A-163)

- amethyst round bottle base fragment embossed with "...No. 5 MADE IN U.S.A."

MANZ 1993 A-13, Locus B (FN A-160)

- clear round jar base fragment embossed with "...ASS MFG' CO ...AT 5 ...G 31"

MANZ 1993 A-13, Locus G (FN 164)

- clear round jar base fragment embossed with "... 1915 ...AND SPRINGS..."

MANZ 1993 A-15, Locus A (FN A-86)

- amethyst round bottle base embossed with three dots in a circle
- clear "Kerr" canning jar (?) body fragment
- small clear round bottle base embossed with "CORNING/MADE IN USA/PAT. 5-27-19

MANZ 1993 A-15, Locus B (FN A-87)

- clear round-base embossed with "PACKED BY CA...ORP" (California Packing Corp.)
- blue body fragment embossed with "...ni.../...NN..."

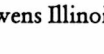
MANZ 1993 A-16, Locus C (FN A-90)

- clear round jar base embossed with "BEST/FOODS/REGISTERED"

MANZ 1993 A-20, Locus F (FN A-61)

- white canning jar lid liner fragment embossed with "1 . BOYD'S GENUINE PORCELAIN LINED CA.."

MANZ 1993 A-27 (FN A-30)

- aqua round-base embossed with "  " (Illinois Glass Co.)
- small clear round-base embossed with "12  9" (Owens Illinois Glass Co.)

MANZ 1993 A-30, Hospital Block (FN A-129)

- white canning jar lid liner embossed with "GENUINE BOYD CAP/FOR MASON JARS"

MANZ 1993 A-7, Locus J (FN A-142)

- reconstructable amethyst bottle embossed with "E.R. DURKEE & CO./SALAD DRESSING/NEW YORK" and on the base with "BOTTLE PATENTED/(British registry mark)/APRIL 17 1877"

Table B.5.
Food Storage Glass Artifacts from Pre-Relocation Center Contexts.

MANZ 1993 A-34 (FN B-459)

- clear bottle fragment with double-bead finish applied lip, front-panel embossed with "  " (J.A. Folger and Co.)

MANZ 1993 B-1 (FN B-774)

- clear bottle fragment with extract-finish applied lip

MANZ 1993 B-2 (FN B-784)

- deep amethyst body fragment with an embossed design

MANZ 1993 B-4 (FN B-797, B-805)

- amethyst oval-base fragment
- amethyst bottle fragment with double-bead finish applied lip
- clear bottle fragment with packer-finish applied lip

MANZ 1993 B-7, Locus A (FN B-751, B-752, B-764)

- amethyst fragment with continuous-thread lip
- amethyst round jar base embossed with "KERR GLASS MFG' CO/SAND SPRINGS OKLA/ WPA/AUG 31/1915/S"
- clear bottle fragment with packer-finish applied lip
- clear bottle fragment with continuous-thread lip
- clear ketchup bottle lip and neck fragment
- clear round-base embossed with " LB 5" (Long Beach Glass Co.)
- clear octagon bottle base embossed with "H.J. HEINZ CO./57/S [O] 2/PAT^{D}" (Owens Bottle Co.)
- clear octagon base fragment embossed with "H...CO./57/ [O] PAT^{D}"(Owens Bottle Co.)
- clear decagon bottle base embossed with "PACKED/BY/CAL. PACK. CORP." (California Packing Corp.)
- clear round jar base embossed with "KERR GLASS MFG' CO/SAND SPRINGS OKLA/WPA/ AUG 31/1915/S"
- clear jar body fragment embossed with "Kerr .../SEALING/TRADEMARK REG./... MOUT..."
- aqua bottle fragment with packer-finish applied lip
- aqua bottle fragment with packer-finish applied lip
- aqua round-base embossed with "EASTSIDE" in shield
- aqua octagon base embossed with "H.J. HEINZ CO./333/PAT^{D}"

MANZ 1993 B-10 (FN B-802)

- amethyst bottle side panel embossed with ornate overlapping letters: "  " (H L & CO ?)
- clear bottle side panel embossed with "...HE... / ...BR..."
- aqua bottle fragment with packer-finish applied lip, embossed with "NE..."
- small golden brown round-base bottle fragment (three-part mold)
- golden brown oval (?) bottle base fragment

MANZ 1993 B-15 (FN B-809)

- aqua round-base container fragment embossed on base with "A" and on side with "...APHANE / ...RERES & C^{O}"

MANZ 1993 B-16 (FN B-817)

- round bottle fragment with 20 fluted side panels embossed on base with "  " (Hazel-Atlas Glass Co.)

MANZ 1993 B-17 (FN B-1038)

- amethyst bottle fragment with collar-finish applied lip
- amethyst fragment with rectangular base and flat chamfered corners, embossed on base with "639/H" and on back with "...RAND"
- aqua bottle fragment with collar-finish applied lip
- aqua bottle fragment with packer-finish applied lip

Table B.5.
Food Storage Glass Artifacts from Pre-Relocation Center Contexts.

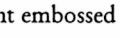
MANZ 1993 B-22 (FN B-842)

- aqua bottle fragment with packer-finish applied lip
- aqua bottle fragment with extract-finish applied lip

MANZ 1993 B-30 (FN B-771)

- amethyst bottle fragment with packer-finish applied lip

MANZ 1993 B-32 (FN B-845, B-847)

- amethyst bottle fragment with rectangular base and flat chamfered corners, embossed on base with "M^{C}C" (Wm McCully)
- amethyst oval bottle base
- amber bottle fragment with packer-finish applied lip
- clear rectangular bottle fragment embossed on base with "  " and on front with "Aurelius S. Hinds" logo (Illinois Glass Co.)
- white canning jar lid fragment embossed with "Consolidated Fruit Jar Co., New York"
- white canning jar lid fragment embossed with "Consolidated Fruit Jar Co., New York" and ornate logo "  "

MANZ 1993 B-34 (FN-845)

- amethyst bottle fragment with packer-finish applied lip
- amethyst side panel embossed with "GOLDEN STAR/FLAVORING ★ EXTRACT/TILLMAN & BENDEL, S.F.
- clear embossed body fragment

Surface Collection —

MANZ 1993 A-7, Locus F, Unit 1 (FN B-559)

- clear jar fragment with continuous-thread lip
- two clear neck fragments of two different same-style bottles
- clear round-base extract bottle with continuous-thread lip and aluminum cap impressed with "4  1./6" (Owens Illinois Glass Co.)
- amber jar fragment with discontinuous-thread lip

MANZ 1993 A-7, Locus F, Unit 2 (FN B-561)

- clear bottle fragment with continuous-thread lip and metal cap
- amber square base with rounded corners embossed with " F G W /6" (Fairmount Glass Co.)

MANZ 1993 A-15, Locus A, Unit 2 (FN B-565)

- clear embossed jar (?) fragment
- two aqua octagon bottle body fragments embossed with "...RIBUTION WITHOUT"

MANZ 1993 A-15, Locus A, Unit 3 (FN B-563, B-566)

- clear round bottle base embossed with a circle
- two clear "Kerr" jar base fragments
- clear jar fragment with continuous-thread lip
- clear round bottle base embossed with a circle
- clear front-panel bottle fragment with the "Aurelius S. Hinds" logo
- amber round bottle base embossed with "N 2/A" (Obear-Nester Glass Co.)
- two white canning jar lid liner fragments embossed with "... MASON JARS ..."

MANZ 1993 A-15, Locus B, Unit 1 (FN B-567)

- two jar fragments with continuous-thread lip
- round bottle base fragment embossed with "...SIGN..."

Table B.5.
Food Storage Glass Artifacts from Pre-Relocation Center Contexts.

MANZ 1993 A-15, Locus B, Unit 2 (FN B-568)

- aqua jar fragment with continuous-thread lip
- white "BOYD" canning jar lid liner fragment

MANZ 1993 A-15, Locus B, Unit 3 (FN B-570)

- clear round-base embossed with "O" (Owens Bottle Co.)
- "Gebhardt Chili Powder" bottle fragment, embossed on base with "DESIGN/4 ◇ / PATENTED" (Diamond Glass Co.)
- clear jar fragment with continuous-thread lip
- clear round-base fragment embossed with "...4"
- clear shoulder fragment embossed with "Prem..."

Excavation —

Unit 16, 0-10 cm

- clear extract-shape bottle fragment, embossed on base with "ADS 6005-S"
- clear body fragment embossed with "...GLYC... / ...M..."

Unit 17, surface

- clear body fragment embossed with "...NO..."
- clear body fragment embossed with "...ARK..."
- amber side panel fragment embossed with "TTE"
- amber body fragment with embossed design

Unit 17, 10-20 cm

- clear body fragment embossed with a design and "... ATE..."
- clear body fragment embossed with "...DA..."
- aqua body fragment embossed with "...S..."

Unit 17, 10-20 cm

- clear glass stopper embossed with "LEA & PERRINS"
- aqua round-base embossed with "84"
- amber octagonal base fragment

Unit 18, 0-10 cm

- amber body fragment embossed with "...CONT..."

Unit 18, 10-20 cm

- clear bottle fragment with machine-made extract-finish lip
- clear mayonnaise jar fragment

Unit 21, surface

- clear octagon ketchup bottle base embossed with "12 ◇ /0" (Owens Illinois Glass Co.)
- amber bottle fragment with extract-finish applied lip

Unit 21, 0-10 cm

- clear round-base embossed with " /5(backwards) S" (Hazel-Atlas Glass Co.)
- small clear base embossed with "8110," plus eight other clear fragments with lettering, likely from the same container
- clear extract shape bottle fragment embossed with "WINONA MEMPHIS" on side and "(I in square) 9" on base
- clear octagon base bottle fragment with extract-finish (?) applied lip
- clear body fragment embossed with "..wl Dr..."

Table B.5.
Food Storage Glass Artifacts from Pre-Relocation Center Contexts.

- clear round-base fragment embossed with "...  3/3" (Owens Illinois Glass Co.)
- three aqua "perfect mason" jar fragments
- two light blue body fragments embossed with "..S / ..T" and "O... / ILLI... / MP"
- cobalt blue side panel embossed with "ER"

Unit 21, 0-10 cm

- three clear "perfect mason" jar fragments

Unit 22, 0-10 cm (FN B-694)

- clear round-base fragment embossed with "  " (Owens Bottle Co.)

Table B.6.
Household Glass Artifacts from Pre-Relocation Center Contexts.

Survey —

MANZ 1993 A-13, Locus I (FN A-83)

- amber neck fragment embossed with "CLOROX"

MANZ 1993 B-7, Locus A (FN B-752)

- amber round-base bottle fragment embossed on base with " 

" and on side with " 

" (Illinois Pacific Glass Co.)

MANZ 193 B-16 (FN B-817)

- amethyst cut (?) glass fragment

Surface Collection —

MANZ 1993 A-15, Locus B, Unit 2 (FN B-568)

- clear drinking glass fragment
- clear bowl fragment

MANZ 1993 A-15, Locus B, Unit 3 (FN B-570)

- two clear bowl fragments

Excavation —

Unit 17, 0-10 cm

- amethyst drinking glass rim fragment
- two decorated frosted white lamp glass fragments (.06" thick)
- three fragments of layered green and white pressed glass (.11" thick)

Unit 17, 10-20 cm

- clear pressed glass fragment
- light green pressed glass fragment
- translucent gray pressed glass fragment

Unit 18, surface

- amethyst pressed glass fragment
- small green pressed glass tile with attachment holes

Unit 21, surface

- white painted glass fragment

Unit 21, 0-10 cm

- clear fluted drinking glass rim and base fragment

Unit 22, 0-10 cm

- two small painted fragments

Table B.7.
Structural Glass Artifacts from Pre-Relocation Center Contexts.

Survey —
MANZ 1993 B-7, Locus A (FN B-752)

- glass brick fragment

Surface collected —
none

Excavation —
window glass fragments:

Provenience	number	mean thickness
Unit 16, 0-10 cm	14	0.087"
Unit 16, 10-20 cm	1	0.100"
Unit 17, 0-10 cm	37	0.083"
Unit 17, 10-20 cm	11	0.087"
Unit 17, 20-30 cm	11	0.080"
Unit 17, 30-40 cm	3	0.078"
Unit 18, 10-20 cm	1	0.065"
Unit 21, 0-10 cm	3	0.098"
Unit 21, 10-20 cm	1	0.110"

other glass:
Unit 17, 0-10 cm

- two clear/frosted lamp glass fragments (.02" and .04" thick)

Unit 17, 30-40 cm

- frosted lamp glass fragment (.035" thick)

Unit 21, surface

- two frosted lamp glass fragments

Unit 21, 0-10 cm

- light bulb filament support and four other light bulb fragments, one painted with "89/4/A5"
- 32 lamp glass fragments

Unit 21, 10-20 cm

- four clear/frosted lamp glass fragments

Unit 22, surface

- glass brick fragment

Unit 22, 0-10 cm

- glass brick fragment

Table B.8.
Pharmaceutical Glass Artifacts from Pre-Relocation Center Contexts.

Survey —

MANZ 1993 A-7, Locus I (FN A-138)

- amethyst side panel embossed with "CALIFORN.../...FIG SY..." (California Fig Sryup)

MANZ 1993 A-10 (FN A-139)

- clear round-base embossed with "...S / CHEMICAL CO / MINNEAPOLIS"

MANZ 1993 A-11 (FN A-140)

- clear fragment embossed with "...igh's ...E MARK" (W.T. Rawleigh Co.)

MANZ 1993 A-15, Locus A (FN A-86)

- clear side panel embossed with graduations

MANZ 1993 A-20, Locus B (FN A-60)

- aqua side panel embossed with "...E. PINK H.../...TABLE CO..." (bitters?)

MANZ 1993 A-27 (FN A-30)

- amethyst side panel embossed with "...IFORNIA FIG / FRANC..." (California Fig Syrup)
- clear "Davis Vegetable Pain Killer" bottle fragment embossed with "3" on base

MANZ 1993 A-30 (FN A-48)

- aqua side panel embossed with "Rast" (Chas. H. Fletcher's Castoria, Centair Drug Co.)

MANZ 1993 B-7, Locus A (FN B-751, B-752, B-764)

- amethyst syrup bottle fragment embossed on front with "SERVICE ...'S PHARMACY ... COURTESY" and on base with "W.T. CO. USA" (Whitall-Tatum and Co.)
- amber bottle fragment with prescription-finish applied lip
- clear syrup bottle with graduations embossed on side and "6 O 6" on base (Owens Bottle Co.)
- clear bottle fragment embossed on front with "...RNIA FIG SYRUP CO/CALIFIG/...RLING PRODUCTS (INC.)/...UCCESSOR" (California Fig Sryup) and on base with "O" (Owens Bottle Co.)
- clear rectangular base embossed with "O - Cedar" (Channel Chemical Co., O-Cedar Corp)
- clear panel embossed with "...WATKIN..."
- clear syrup bottle base embossed with "ASEPTIC"
- clear front-panel embossed with "Rawleigh's TRADE MARK" (W.T. Rawleigh Co.)

MANZ 1993 B-17 (FN B-1038)

- amethyst bottle fragment embossed on sides and front with "Scott's Emulsion Cod Liver Oil with Lime and Soda" and on base with man and fish figure
- aqua bottle fragment with side panels embossed with "...DR. DYSPEPSIA" and "CHICAGO" (no basemark)
- amber square base "...ER'S/...ITTERS" (bitters)

MANZ 1993 B-22 (FN B-842)

- two amethyst bottle fragments with prescription-finish applied lips
- amethyst side panel embossed with "...HARMAC..."
- aqua front-panel embossed with "DR. ...ILMER'S SWAMP ROOT KIDNEY LIVER & BLADDER CURE"

Table B.8.
Pharmaceutical Glass Artifacts from Pre-Relocation Center Contexts.

MANZ 1993 B-32 (FN B-845, B-847)

- amethyst bottle fragment with prescription finish applied lip
- clear side panel embossed with "...^{R}Woo..."
- clear rectangular with flat chamfers container base embossed with "W T /2" (Whitall-Tatum and Co.)
- aqua patent medicine bottle fragment with rectangular base and flat chamfered corners, embossed on sides with "THE/...TED" and "1898/...MEDICINE" (The Celebrated HHH Medicine)
- amber rectangular base with flat chamfered corners embossed with "P.D. & CO./31" (Parke, Davis and Co., pharmaceuticals)
- amber syrup bottle fragment, back panel embossed with "...L ALPERS" (no basemark)

MANZ 1993 B-34 (FN B-845)

- aqua front-panel embossed with "...SCHEE'S / SYRUP" (Dr. A. Boschee's German Syrup)
- amber side panel embossed with "...ELERY COMPOUND ..." (Paine's Celery Compound)
- cobalt blue bottle fragment with rectangular base and flat chamfered corners, embossed with "...EE'S/...INE" (Nervine?)

Surface Collection —

none

Excavation —

Unit 16, 0-10 cm

- small clear syrup bottle with plastic cap, embossed with" ʒ ss" and graduations on front and on base with "14 ⊣ 900"
- two blue "Milk of Magnesium" bottle fragments

Unit 21, surface

- clear body fragment embossed with "O-Cedar/MADE IN USA" (Channel Chemical Co., O-Cedar Corp)

Unit 21, 0-10 cm

- clear body fragment embossed with "Fletc..." (Chas. H. Fletcher's Castoria, Centair Drug Co.)
- two clear "O-Cedar" bottle base fragments
- three clear side panel fragments

Unit 22, surface

- amethyst bottle fragment with prescription-finish applied lip

Table B.9.
Other Glass Artifacts from Pre-Relocation Center Contexts.

Survey —

MANZ 1993 A-4 (FN A-174, A-176, A-181, B-280, B-299, B-1052)

- two machine-made marbles
- 15 plain blue faceted beads (Meighan [1979] Type 149 or 154)

MANZ 1993 A-16, Locus C (FN B-461)

- small amber bottle with cork stopper, embossed on base with "Hoppes NO 9/6 ⊡ 8" and with a paper label fragment reading "...SOLVENT" (gun cleaning fluid) (Owens Bottle Co.)

MANZ 1993 A-13, Area N-2 (FN B-583)

- translucent green hexagonal bead (9 mm long)

MANZ 1993 A-16, Locus E (FN A-92)

- deep blue round-base embossed with "...TER'S 9 G-102" (Carter's Inks)
- blue round-base embossed with "U.S.A."
- three blue side panel fragments embossed with "D", "A", and "RT"
- light blue side panel embossed with "...AGN..."

MANZ 1993 B-1 (FN B-777).

- plain blue faceted bead (Meighan [1979] Type 149 or 154)

MANZ 1993 B-3 (FN B-786, B-851)

- amethyst machine-made marble
- machine-made marble

MANZ 1993 B-7, Locus A (FN B-764)

- amethyst rectangular perfume bottle base, front-panel embossed with "... CO. / PERFUMER'S/NEW YORK"

MANZ 1993 B-8 (FN B-794)

- deep amethyst machine-made marble

MANZ 1993 B-10 (FN B-802)

- eroded amethyst marble

MANZ 1993 B-16 (FN B-817)

- white side panel embossed with "...NCRAMS..."

MANZ 1993 B-22 (FN B-842)

- small clear rectangular bottle with "CUTEX" on plastic cap and (V and a S in circle) on base (Northham Warren Corp.)
- embossed white glass fragment
- white round-base jar fragment with continuous-thread lip, embossed on side with "DANDRUFF..."

MANZ 1993 B-34 (FN B-847)

- deep amethyst marble

MANZ 1995 A-1 (FN B-1059)

- machine-made marble

Table B.9.
Other Glass Artifacts from Pre-Relocation Center Contexts.

Surface Collection —

MANZ 1993 A-7, Locus F, Unit 1 (FN B-559)

- deep aqua rectangular bottle fragment embossed on side with "...REE IN ONE"" and on base with "C 3" (Three-in-one Oil)

Excavation —

Unit 15, 20-30 cm

- machine-made marble

Unit 16, 0-10 cm

- small clear perfume bottle (no marks)

Unit 17, 0-10 cm

- translucent green hexagonal bead (11 mm long)

Unit 18, surface

- two white cold cream jar fragments

Unit 21, surface

- three white cold cream jar fragments, one embossed with "...MA..."

Unit 21, 0-10 cm

- clear base fragment embossed with "CHESE.../...IAN" (Chesebrough Manuf. Co.)

Unit 21, 10-20 cm

- white cold cream base fragment embossed with "d and p/...DELL . NEW YORK"

Table B.10
Nondiagnostic Glass Container Fragments from Pre-Relocation Center Contexts.

Provenience	clear	amber	aqua	olive	white	bright green	cobalt	amethyst	green	light blue	brown	other	total
Unit 17, 0-10 cm	60	20	32	8	3			3				3	129
Unit 17, 10-20 cm	58	34	19	20						2		1	134
Unit 17, 10-20 cm	15	14	16	18						1			64
Unit 17, 20-30 cm	9	5	5	5								2	26
Unit 17, 30-40 cm	5		3									1	9
Unit 17, 40-50 cm	1												1
Unit 18, 0-10 cm	106	14	5		5		2	10					142
Unit 18, 10-20 cm	69	10	2										81
Unit 18, 50-6 cm	1												1
Unit 21, 0-10 cm	58	20	15		2	2	2	2	11	3		1	116
Unit 21, 10-20 cm	17	4								4			25
Unit 21, 20-30 cm	2												2
Unit 21, 30-40 cm	3												3
Unit 22, 0-10 cm	75		28					4	1				108
Unit 22, 10-20 cm	8		5					2					15
Unit 22, 20-30 cm	3												3
Unit 22, 30-40 cm	1												1
Unit 22, 50-60 cm	1												1
Unit 22, 60-70 cm	1												1
Unit 23, 0-10 cm	20		2					1					23
Unit 23, 10-20 cm	7		1										8
Unit 23, 20-30 cm	1		521										522
Total	521	121	654	51	10	2	4	22	12	10	0	8	1415

Table B.11.
Non-alcoholic Beverage Glass Artifacts from Relocation Center Contexts.

Survey —

MANZ 1993 A-30, Camouflage Factory Block (FN B-347)

- complete green "LaVida" soda bottle, white paint on green, embossed on base with "LAVIDA MINERAL SPRINGS CO/A 295C/24  7/4/PLACENTIA, CALIF" (Owens Illinois Bottle Co.)

MANZ 1993 A-30, Hospital Block (FN A-146)

- clear "Mission" soda bottle fragment, painted with black and white "MISSION BEVERAGES/NET CONTENTS 12 OZS," embossed on base with "MISSION/23  /3" (Owens Illinois Bottle Co.)
- clear "Nehi" bottle fragment, painted with red and yellow "...EHI/REG. U.S. PAT. OFF./...ERAGES/...ENTS 9 FLU. OZS."
- green "7-Up" bottle fragment painted with white "7 UP/REG. U.S. PAT. OFF." ...Los Angeles, Calif," embossed on side with "Duraglas 94-G"

MANZ 1993 A-30, Block 7 (FN A-15)

- clear soda bottle fragments painted with red and white "CLEO COLA/...GES 12 FL..."

MANZ 1993 A-30, Block 10 (FN A-14)

- clear "Antelope" soda bottle fragment

MANZ 1993 A-30, Block 14 (FN A-47)

- clear "Antelope" soda bottle fragment

MANZ 1993 A-30, Block 16 (FN A-37)

- four clear fragments of a soda bottle painted with orange "Wilshire Club Jr ... Calif"

MANZ 1993 A-30, Block 19 (FN A-97)

- clear "Mission" soda bottle fragment painted with black and white "Good Housekeeping seal Serial no 4346"

MANZ 1993 A-30, Block 25 (FN A-75)

- clear "Antelope" soda bottle fragment painted with blue "... Valley Produce Co., INC."

MANZ 1993 A-30, Firebreak C5 (FN A-31)

- clear "Antelope" soda bottle fragment

MANZ 1993 A-30, Feature P-19 (FN A-85)

- green "7-Up" bottle fragment painted with white "LOS ANGEL...," base embossed with "4285G/23  2" (Owens Illinois Bottle Co.)

MANZ 1993 A-30, MANZ 1993 A-36 (FN A-199)

- clear milk bottle fragment painted with red "...NPENCE"

MANZ 1993 B-7, Locus A (FN B-751)

- aqua "Coke" bottle base fragment embossed on base with "Bishop..." and "23  42" on side (Owens Illinois Bottle Co.)

MANZ 1993 B-8, Feature 1 (FN A-198, B-1041)

- clear apple juice (?) bottle embossed on base with "PENICK & FORD LTD INC/PAT NO/123631/1-2/NEW ORLEANS LA"

Table B.11.
Non-alcoholic Beverage Glass Artifacts from Relocation Center Contexts.

Surface Collection —

Staff Housing Block, Area C (FN B-547)

- two clear milk bottle body fragments painted with red and white "Independence Dairy"
- clear round-base bottle fragment embossed with "MISSION DR..."

MANZ 1993 A-30, Staff Housing Blocks, Area A (FN B-544)

- two green bottle fragments painted with white and red "Bubble-Up"
- green bottle base embossed with "Canadian Club..."
- clear milk bottle fragment painted with green "Lone Pine Dairy"
- clear milk bottle body fragment painted with red and white

MANZ 1993 A-30, Staff Housing Blocks, Area B (FN B-546)

- clear body fragment painted with white and orange paint "...ES/...R/...ES/... OZ."
- two green "Squirt" soda bottle fragments
- clear body fragment painted with red "DEBS YA.../INDE..."

MANZ 1993 A-30, Block 13, Area A (FN B-509)

- green fragment painted with white

MANZ 1993 A-30, Block 13, Area B-1 (FN B-508)

- complete "Mission" soda bottle (Bishop, Calif. basemark)

MANZ 1993 A-30, Block 13, Area C (FN B-519)

- clear bottle fragment with crown cap lip

MANZ 1993 A-30, Block 14, Area A (FN B-520)

- green "7-Up" bottle fragment painted with white figure of woman driving

MANZ 1993 A-30, Block 14, Area B-1 (FN B-524)

- two clear "Mission" soda bottle fragments (one with Bishop, Calif. basemark)
- eight clear "LaVida" soda bottle fragments
- green "7-Up" bottle fragment embossed with "LOS AN..."

MANZ 1993 A-30, Block 14, Area B-2 (FN B-526)

- two clear "LaVida" soda bottle fragments
- green bottle fragment with crown cap lip
- green body fragment with faint white paint "A FRE.../OR THE STOMA.../DON'T SHAKE.../YOU LIKE/...IT LIKES/...NTENT..."

MANZ 1993 A-30, Block 21, Area B-1 (FN B-533)

- clear round jar base embossed with "BEN-HUR/ H /D-7349/7/ COFFEE" (Hazel-Atlas Glass Co.)

MANZ 1993 A-30, Block 21, Area B-2 (FN B-539, B-540)

- aqua "Coke" bottle fragment embossed on base with "SAFFORD ARIZ." and on side with "23 42" (Owens Illinois Bottle Co.)
- green bottle base embossed with "SEVEN UP BOTTLING CO/ 7-UP/3  3./LOS ANGELES (Owens Illinois Bottle Co.)

Table B.11.
Non-alcoholic Beverage Glass Artifacts from Relocation Center Contexts.

MANZ 1993 A-30, Block 21, Area B-1 (FN B-533)

- clear "Antelope" soda bottle base embossed with GN PAT/3/4402 G/ 12 FL. OZ./23  1/D-98026" (Owens Illinois Bottle Co.)
- clear bottle base embossed with "MISSION DRY"
- eight clear "LaVida" soda bottle fragments, one embossed on base with "4295-G/23  8/2/...EA, CALIFORNIA" (Owens Illinois Bottle Co.)
- clear "Antelope" soda bottle fragment
- clear neck fragment with crown cap lip
- aqua "Coke" bottle fragment
- green "7-Up" bottle fragment

Excavation —

Unit 20, surface

- aqua "Coke" bottle fragment
- green "7-Up" bottle fragment embossed on base with "21G"

Unit 20, 0-10 cm

- six green "7-Up" bottle fragments

Unit 20, 10-20 cm

- clear bottle fragment with crown cap lip
- three aqua "Coke" bottle fragments
- three green "7-Up" bottle fragments with white-painted logo

Unit 24, 0-10

- 13 green "7-Up" bottle fragments

Unit 24, 10-20

- two green "7-Up" bottle fragments

Unit 25, 0-10 cm

- two aqua "Coke" bottle fragments (one with Bishop, Calif. basemark)

Unit 25, 20-30 cm

- aqua "Coke" bottle fragment

Unit 25, 30-40 cm

- aqua "Coke" bottle fragment

Unit 25, 40-50 cm

- two aqua "Coke" bottle fragments

Unit 25, 50-75 cm

- two aqua "Coke" bottle fragments

Table B.12.
Alcoholic Beverage Glass Artifacts from Relocation Center Contexts.

Survey —

MANZ 1993 A-30, Block 19 (FN B-1053)

- aqua round one-gallon-size bottle base embossed with "SAKE BREWERY & ICE COMPANY LTD/20  1/3919E/HAWAII" (Owens Illinois Bottle Co.)

MANZ 1993 A-30, Feature P-28 (FN A-108)

- fragments of two different "Old Quaker" whiskey bottles both embossed with "Federal law forbids..."

MANZ 1993 B-8, Feature 1 (FN A-198)

- clear oval whiskey bottle embossed on base with "D-126  /67 43" and on front/back with "FEDERAL LAW FORBIDS SALE OR REUSE OF THIS BOTTLE" and "ONE PINT" (Anchor Hocking Glass Corp.)
- clear round-base bottle fragment embossed on side with "4/5 QUART" and on base with "1-4/  /K-4642" (Hazel-Atlas Glass Co.)

MANZ 1993 B-8, Feature 3 (FN B-789)

- clear bottle with flat side for lying bottle on side and groove on base, embossed on base with "MONK'S JUG/PATENTED/NO. 112387/REG. CAL"
- green champagne bottle base (machine made)

Surface Collection —

MANZ 1993 A-30, Staff Housing Block, Area C (FN B-547)

- amber bottle fragment with crown cap lip
- amber beer bottle body fragment

MANZ 1993 A-30, Staff Housing Blocks, Area B (FN B-546)

- clear beer bottle base embossed with "  5/3312" (Glass Containers Inc.)
- clear beer bottle base embossed with "  /4" (Knox Bottle Co.)

MANZ 1993 A-30, Block 12, Area B-1 (FN B-551)

- large amber round-base bottle fragment embossed on base with "MADE IN JAPAN/5" and on side with "AK"

Excavation —

Unit 20, 20-30 cm

- two clear body fragments embossed with "...T 4/5" and " .../ O ..."

Unit 25, 0-10 cm

- clear wine bottle base embossed with "9/  44/WINE" (Knox Bottle Co.)

Unit 25, 10-20 cm

- clear round whiskey bottle fragment embossed on base with "  /101 43/ 14 BD 2" and on side with "ONE PINT" (Owens Illinois Bottle Co.)

Unit 25, 40-50 cm

- amber beer bottle neck fragment
- amber beer bottle fragment with crown cap lip
- green wine bottle neck fragment

Table B.13.
Food Storage Glass Artifacts from Relocation Center Contexts.

Survey —

MANZ 1993 A-30, Block 13 (FN A-48)

- amber body fragment painted with "... ATTER/ ...ING CH..."
- amber body fragment embossed with "... CO."

MANZ 1993 A-30, Feature P-20 (FN A-88)

- clear oval-base embossed with "CROWN PRODUCTS CORP./310  8/REG CAL/S.F. & L.A." (Glass Containers Inc.)
- clear body fragment embossed with "...OG CABIN Syrup"

MANZ 1993 B-8, Feature 1 (FN A-198, B-1041)

- clear oval-base bottle with discontinuous-thread lip and embossed design, embossed on base with "CROWN PRODUCTS CORP/REG CAL/· · · · ·/DES PAT 3/108 592"
- clear oval-base bottle base embossed with "CROWN PRODUCTS CORP./...CAL./15...L.A./DES. PAT/108 592"
- clear bottle embossed on base with "  /4" and on side with "ONE PINT" (Maywood Glass Co.)
- clear jar embossed on base with "0-7348/  ③/4" (Hazel-Atlas Glass Co.)
- clear bottle embossed on base with "0-7248/  /38" (Hazel-Atlas Glass Co.)
- clear tabasco-style bottle embossed on base with "  " (Hazel-Atlas Glass Co.)
- clear bottle embossed on base with "DES. PAT. 127618/ 15  2/Karo/14/1½ LBS. NET WT." and on the side with "Duraglas" (Owens Illinois Bottle Co.)
- clear jar embossed on base with "3916-E 20  1/(W in circle)/(dot in triangle)/REG. CAL." (Owens Illinois Bottle Co.)
- clear bottle embossed on base with "ADS/  I (sideways)/3 (sideways)/516" (Owens Illinois Bottle Co.)
- clear bottle embossed on base with "20 2/2/3959-E" and on side with "FULL QUART" (Owens Illinois Bottle Co.)
- clear bottle embossed on base with "2904-A/20  1/B.P. LTD." (Owens Illinois Bottle Co.)
- clear jar embossed on base with "  /3176/1" (Glass Containers Inc.)
- clear jug embossed on base with "  3/3456" and on side with "ONE GALLON" (Glass Containers Inc.)
- clear bottle embossed on base with "  3/2580" (Glass Containers Inc.)
- clear bottle embossed on base with " /3174/7" (Glass Containers Inc.)
- clear bottle embossed on base with "  /1928/3" (Glass Containers Inc.)
- clear bottle embossed on base with "  /3174/2" (Glass Containers Inc.)
- clear bottle embossed on base with "  5/2518/8 FL. OZS" (Glass Containers Inc.)
- clear spice jar embossed on base with "  5/1389" (Glass Containers Inc.)
- clear bottle embossed on base with "  /2632/5" (Glass Containers Inc.)
- clear bottle with expanding body embossed on base with "3  3962" (Glass Containers Inc.)
- clear bottle embossed on base with "4"
- clear bottle embossed on base with "3/MADE IN U.S.A./DESIGN PAT. 103709"
- clear short jar embossed on side with "BEN-HUR MUSTARD" and on base with 6/  /09010" (Hazel-Atlas Glass Co.)
- clear bottle with plastic cap, embossed on base with "4  9/5" (Owens Illinois Bottle Co.)
- small amber extract bottle, rectangular with rounded corners embossed on base with "20  5/6/3152 S" (Owens Illinois Bottle Co.)
- clear olive oil bottle embossed on base with "  1/3304" (Glass Containers Inc.)
- clear jar embossed on base with "8/H340/2  A" (Hazel-Atlas Glass Co.)
- clear jar embossed on base with "20  4/3405-0/28" and on side with "Duraglas" (Owens Illinois Bottle Co.)
- clear jar embossed on base with "23  3/1/3771-C" and on side with "Duraglas" (Owens Illinois Bottle Co.)
- clear jar embossed on base with "9  4/E1595" and on side with "Duraglas" (Owens Illinois Bottle Co.)
- clear jar embossed on base with "4 3./75" and on side with "Duraglas" (Owens Illinois Bottle Co.)

Table B.13.
Food Storage Glass Artifacts from Relocation Center Contexts.

- clear jar embossed on base with "J/1/287" (Knox Bottle Co.)
- clear jar embossed on base with "S"
- clear jar embossed on base with "DES./PAT./R/4291"
- clear jar embossed on base with "1"
- clear jar embossed on base with "5-/ /DESIGN PAT'D/11" (Hazel-Atlas Glass Co.)
- clear jar embossed on base with " /2" (Hazel-Atlas Glass Co.)
- clear jar embossed on base with " /2" (Hazel-Atlas Glass Co.)
- clear jar embossed on base with " /1" (Hazel-Atlas Glass Co.)
- clear jar embossed on base with "20 I 1" and on side with "3-92A" (Owens Illinois Bottle Co.)
- clear jar embossed on base with "7 I 3/2" (Owens Illinois Bottle Co.)
- clear jar embossed on base with "10.7 I " (Owens Illinois Bottle Co.)
- clear jar embossed on base with "MADE IN/U.S.A./2 I 1." (Owens Illinois Bottle Co.)
- clear jar embossed on base with "1244 6" (Glass Containers Inc.)
- clear jar embossed on base with " /3192/3" (Glass Containers Inc.)
- clear jar embossed on base with " 5/3302" (Glass Containers Inc.)
- clear jar embossed on base with " 2554/2" (Glass Containers Inc.)
- clear jar embossed on base with " /3142/1" (Glass Containers Inc.)
- clear jar embossed on base with " /2" (Diamond Glass Co.)
- clear jar embossed on base with "/...1 8...008"
- clear jar embossed on base with "3½ FL OZ./7"
- small clear jar embossed on base with "4 I 8/4" (Owens Illinois Bottle Co.)
- small clear jar embossed on base with "A-S/12 I 3./17." (Owens Illinois Bottle Co.)
- small clear jar embossed on base with "2 I 2/5" (Owens Illinois Bottle Co.)
- small clear jar embossed on base with "7 I 3/6." (Owens Illinois Bottle Co.)
- small clear jar embossed on base with "2 I 2/12" (Owens Illinois Bottle Co.)
- small clear jar embossed on base with "3-K-4635/ /2½ OZ." (Hazel-Atlas Glass Co.)
- clear mustard jar embossed on base with "2/H-303/. A" (Hazel-Atlas Glass Co.)
- small clear jar embossed on base with " /1572/1" (Glass Containers Inc.)
- small clear jar embossed on base with "3"
- small clear jar embossed on base with "92"
- small clear jar embossed on base with "11"
- amber jar embossed on base with "·/ /3-5911" (Hazel-Atlas Glass Co.)
- amber jar embossed on base with "7 I 4" (Owens Illinois Bottle Co.)
- amber jar embossed on base with "7 I 2/8" (Owens Illinois Bottle Co.)
- amber jar embossed on base with "7 I 3/8./66SB" (Owens Illinois Bottle Co.)
- clear short round-base jar embossed on base with "2383C/20 I 2" (Owens Illinois Bottle Co.)
- clear short round-base jar embossed on base with "20 I 3/5/3758 G" (Owens Illinois Bottle Co.)

MANZ 1993 B-8, Feature 3 (FN B-1054)

- clear ketchup bottle embossed on base with "0-7195/ (1)/19" (Hazel-Atlas Glass Co.)

In Bairs Creek below relocation center landfill (FN B-792)

- clear soy sauce (?) bottle fragment with continuous-thread lip

Surface Collection —

MANZ 1993 A-30, Staff Housing Blocks, Area C (FN B-547)

- clear round-base embossed with "1/D D1044"

Table B.13.
Food Storage Glass Artifacts from Relocation Center Contexts.

MANZ 1993 A-30, Staff Housing Blocks, Area D (FN B-548)
- clear round-base embossed with "6716/  /0 22" (Hazel-Atlas Glass Co.)
- clear round-base embossed with "Dura..." (Owens Illinois Bottle Co.)

MANZ 1993 A-30, Staff Housing Blocks, Area A (FN B-544)
- thick clear round-base bottle embossed on base with "43  " and on side with "...SEALED K-14/...GISTED"
- amber one-gallon jug neck fragment

MANZ 1993 A-30, Block 12, Area B-1 (FN B-551)
- clear round-base embossed with "  /K6532/9-4" (Hazel-Atlas Glass Co.)
- clear round-base embossed with "WI..."
- clear round-base embossed with " (sideways)/D9/55-44" (Owens Illinois Bottle Co.)

MANZ 1993 A-30, Block 12, Area B-2 (FN B-553)
- clear round-base embossed with "20  2/11/3757-C" (Owens Illinois Bottle Co.)

MANZ 1993 A-30, Block 13, Area B-1 (FN B-501)
- clear round-base embossed with "U.104/  /6" (Hazel-Atlas Glass Co.)

MANZ 1993 A-30, Block 13, Area B-2 (FN B-512)
- melted clear jug handle
- aqua round-base fragment embossed with "...4 I..."
- amber bottle fragment with continuous-thread lip
- amber quart-size round bottle base embossed with "  /3" (Newborn Glass Co.)

MANZ 1993 A-30, Block 14, Area B-1 (FN B-514)
- clear round-base embossed with "  /3534/10" (Hazel-Atlas Glass Co.)
- round clear one-gallon jug base embossed with "7  .../2" (Owens Illinois Bottle Co.)
- clear continuous-thread lip with lug handle
- clear jar fragment with continuous-thread lip

MANZ 1993 A-30, Block 14, Area B-2 (FN B-526)
- clear round-base embossed with "  /K6532/11-1" (Hazel-Atlas Glass Co.)
- two clear fragments with continuous-thread lips
- clear octagon bottle base fragment
- amber round-base embossed with "20  44/4.1/...00-GB" (Owens Illinois Bottle Co.)

MANZ 1993 A-30, Block 14, Area C (FN B-530)
- 13 clear one-gallon jug fragments with handle
- two clear fragments with continuous-thread lips
- clear bottle fragment with collar-finish applied lip

MANZ 1993 A-30, Block 14, Area D (FN B-531)
- amber fragment embossed with "ONE GALLO..."

MANZ 1993 A-30, Block 21, Area B-1 (FN B-533)
- clear round-base embossed with "5/H-213/  C" (Hazel-Atlas Glass Co.)
- clear body fragment with crown cap lip

Table B.13.
Food Storage Glass Artifacts from Relocation Center Contexts.

MANZ 1993 A-30, Block 21, Area B-2 (FN B-539, B-540)

- clear fragment with continuous-thread lip
- clear gallon-size jug base embossed with "◇ 2/3456" (Glass Containers Inc.)
- clear round-base embossed with "6K 7732/6/ /A\ 2½ OZ" (Hazel-Atlas Glass Co.)
- clear round-base embossed with "A5124/ /A\ /1" (Hazel-Atlas Glass Co.)
- clear round-base embossed with "...3 ◁0▷ 3/4" (Owens Illinois Bottle Co.)
- clear round-base embossed with "THE .../12 ◁0▷ 3/9/COMPANY" (Owens Illinois Bottle Co.)

MANZ 1993 A-30, Block 21, Area D (FN B-543)

- aqua canning jar (?) fragment

Excavation —

Unit 19, 0-10 cm

- clear round-base embossed with "DES PAT./91898/5/POMPEIAN OLIVE OIL"
- restorable clear mustard jar embossed on side with "BEN-HUR MUSTARD" and on base with "3/ /A\ /D9010" (Hazel-Atlas Glass Co.)
- clear baby food jar embossed on base with "4"
- clear round-base embossed with "2 ◁0▷ 2/7" (Owens Illinois Bottle Co.)

Unit 20, surface

- very thick clear round-base fragment embossed with "...7-C"

Unit 20, 0-10 cm

- clear mayonnaise jar fragment

Unit 20, 10-20 cm

- round clear base embossed with "◇ /3542/6" (Glass Containers Inc.)

Unit 20, 30-40 cm

- clear fragment with portion of "Duraglas" embossing (Owens Illinois Glass Co.)
- amber fragment with continuous-thread lip

Unit 25, 20-30 cm

- mayonnaise jar fragment

Unit 25, 30-40 cm

- clear baby food jar embossed with "...NEW YORK . PARK R(backwards) R THREE FLOWER R (backwards) R ...TIANTIME RR RICHARD HUD..."

Table B.14.
Household Glass Artifacts from Relocation Center Contexts.

Survey —

MANZ 1993 A-30, Block 19 (FN A-97)

- two pieces of clear pressed glass
- white lid fragment
- clear pressed glass fragment with circular-hobnail exterior surface

MANZ 1993 B-8, Feature 1 (FN A-198, B-1041)

- clear salt shaker embossed on base with "USQMC 9"
- clear pressed glass fragment with rose design
- drinking glass fragment with red and green painted flowers
- amber round-base embossed with "(LM)/PUREX/6/DES. PAT. APP. FOR" (Latchford-Marble Glass Co.)

MANZ 1993 B-8, Feature 2 FN B-789)

- three fragments of small opaque green tea cups
- opaque white saucer fragment
- translucent red pressed glass lid handle

Surface Collection —

Staff Housing Blocks, Area C (FN B-547)

- three clear pressed glass fragments

MANZ 1993 A-30, Block 12, Area B-1 (FN B-555)

- clear pressed (?) glass decorative cap

MANZ 1993 A-30, Block 13, Area B-1 (FN B-501)

- two clear pressed glass fragments

MANZ 1993 A-30, Block 13, Area B-2 (FN B-513, B-514)

- fragment of small opaque green and white tea cup
- five fragments of small opaque white saucers

MANZ 1993 A-30, Block 13, Area D (FN B-523)

- opaque white vase fragment

MANZ 1993 A-30, Block 14, Area B-1 (FN B-524)

- opaque green saucer fragment

MANZ 1993 A-30, Block 21, Area B-1 (FN B-533)

- amber base fragment embossed with "...UREX/6/PAT. APP..."

MANZ 1993 A-30, Block 21, Area B-2 (FN B-540)

- clear fragment with embossed cross-hatching design

MANZ 1993 A-30, Block 21, Area C (FN B-541)

- thick clear pressed glass fragment with bubble-like design

Table B.14.
Household Glass Artifacts from Relocation Center Contexts.

Excavation —

Unit 20, surface
- clear pressed glass fragment with white circular-hobnail exterior surface
- clear drinking glass base fragment

Unit 20, 10-20 cm
- three clear pressed glass fragments with white circular-hobnail exterior surface
- clear pressed glass rim fragment

Unit 20, 10-20 cm
- clear pressed glass fragment with white circular-hobnail exterior surface
- clear drinking glass fragment painted with vertical orange stripes

Unit 20, 20-30 cm
- clear drinking glass rim fragment painted with vertical orange stripes

Unit 25, surface
- clear cup/mug fragment

Unit 25, 10-20 cm
- clear cup (?) fragment

Unit 25, 20-30 cm
- clear thick cup/mug fragment

Unit 25, 30-40 cm
- clear thick cup/mug base

Unit 25, 40-50
- clear drinking glass rim fragment

Table B.15.
Structural Glass Artifacts from Relocation Center Contexts.

Survey —
none

Surface collection —
MANZ 1993 A-30, Staff Housing Blocks, Area D (FN B-548)
- clear wire-reinforced flat glass, ribbed on one side

Excavation —
window glass fragments:

Provenience	number	mean thickness
Unit 19, 0-10 cm	87	0.085"
Unit 19, 10-20 cm	19	0.083"
Unit 19, 20-30 cm	10	0.087"
Unit 25, 0-10 cm	1	0.090"
Unit 25, 10-20 cm	5	0.105"
Unit 25, 20-30 cm	2	0.080"
Unit 25, 30-40 cm	5	0.104"
Unit 25, 40-50 cm	3	0.091"

other glass:
Unit 19, 10-20 cm
- clear beveled glass fragment

Unit 20, 20-30 cm
- two frosted lamp glass fragments (?)

Unit 25, 40-50 cm
- light bulb base with glass and filament
- 10 frosted/clear lamp glass fragments, most melted

Unit 25, 50-75 cm
- 11 light bulb fragments, one painted with "GE MAZDA 100W 120V"
- 24 frosted/clear lamp glass fragments

Table B.16.
Pharmaceutical Glass Artifacts from Relocation Center Contexts.

Survey —

MANZ 1993 A-30, Hospital Block (FN A-130)

- clear round-base embossed with "CUTTER LABORATORIES/5/...ERKELEY, CALIFORNIA"

MANZ 1993 A-30, Block 15 (FN A-42)

- green syrup bottle with plastic cap embossed on base with "4 ◁O▷ 3/3" (Owens Illinois Bottle Co.)

MANZ 1993 A-30, Block 20 (FN A-78)

- clear bottle fragment embossed on front side with " ℨ ii" and graduations and on base with "8 ⊰ 902"

MANZ 1993 A-30, Block 27 (FN A-105)

- clear multiple-dose vaccine bottle embossed on base with "PYREX/36" (Corning Glass Co.)

MANZ 1993 A-30, Block 32 (FN A-103)

- clear syrup bottle with plastic cap, embossed on front with " ℨ i," "cc," and graduations, and on base with "OWENS/17 ◁O▷ 1" (Owens Illinois Bottle Co.)

MANZ 1993 A-30, Block 33 (FN A-116)

- clear multiple-dose vaccine bottle embossed on base with "TC W CO/12/10-8 CLVIT/USA"

MANZ 1993 A-30, Firebreak C8 (FN A-65)

- clear multiple-dose vaccine bottle embossed on base with "PYREX 60" (Corning Glass Co.)

MANZ 1993 A-37, Locus A (FN A-122, B-902)

- clear round-base embossed with "6/HOSPITA.../LIQUIDS/1845/· · · ·/12 ◁O▷ 2" (Owens Illinois Bottle Co.)
- clear round-base fragment embossed on base with " *Brockway* /10" and on body with "⊕...-Glas" (Brockway Glass Co.)
- large thick amber round-base embossed with "4 ◁O▷ 1./6" (Owens Illinois Bottle Co.)

MANZ 1993 B-8 (FN A-198)

- amber jar embossed on base with " ⚓ /6 10/7304A" (Anchor Hocking Glass Corp.)
- amber jar embossed on base with "[N] 5/1" (Obear-Nester Glass Co.)
- amber jar embossed on base with "· ·/· ▽W T 9/.4" (Whitall-Tatum and Co.)
- amber jar embossed on base with "2-978/〈F〉/7" (Fairmount Glass Company)
- amber jar embossed on base with "8 □ 6"
- amber jar embossed on base with "7 ◁O▷ 1./7/455B" (Owens Illinois Bottle Co.)
- clear round-base fragment embossed with " ℨ iv OWENS/6 ◁O▷ 2/Duraglas" (Owens Illinois Bottle Co.)
- clear jar embossed on base with "ARISTOCRAFT 2" and on side with " ℨ ii," "cc," and graduations.
- clear bottle embossed on base with " *Brockway* /9" and on body with "⊕ Sani-Glas" and " ℨ iv" (Brockway Glass Co.)

MANZ 1993 B-27 (FN B-826, B-839)

- small clear bottle with 8± small white pills, cotton, and metal cap, embossed on base with "3."
- small amber bottle with metal cap, embossed on base with ".6"
- small amber bottle with metal cap, embossed on base with "./.13"
- small amber bottle with metal cap, embossed on base with "./24"
- small amber bottle with metal cap, embossed on base with "W 28"

Table B.16.
Pharmaceutical Glass Artifacts from Relocation Center Contexts.

Surface Collection —

MANZ 1993 A-30, Block 13, Area B-1 (FN B-501)

- clear syrup bottle base embossed with "ILLINOIS/8. 5" (Owens Illinois Bottle Co.)

Excavation —

Unit 20, 0-10 cm

- two melted pipette (?) fragments

Unit 25, surface

- amber round-base embossed with "L-55-A/675/6  2/U.S. PAT./2097912" (Anchor Hocking Glass Corp.)
- amber round-base embossed with "  7" (Obear-Nester Glass Co.)
- amber round-base embossed with "7 2/7" (Owens Illinois Bottle Co.)
- amber round-base embossed with "20 1" (Owens Illinois Bottle Co.)
- amber round-base embossed with "4 2/7/625" (Owens Illinois Bottle Co.)
- amber rectangular base (with rounded corners) embossed with "935/  5/¾ OZ." (Brockway Glass Co.)
- amber round-base embossed with "  /1375/3" (Glass Containers Inc.)
- clear rectangular base (with flat chamfered corners) embossed with "01/  " (Hazel-Atlas Glass Co.)
- clear rectangular base (with flat chamfered corners) embossed with "8/  " (Hazel-Atlas Glass Co.)
- clear round-base embossed with "  (Hazel-Atlas Glass Co.)/6754/12" (Hazel-Atlas Glass Co.)
- clear round-base embossed with "20 2/J/2881-A" (Owens Illinois Bottle Co.)
- clear rectangular base (with flat chamfered corners) embossed with " /3..." (Owens Illinois Bottle Co.)
- clear rectangular base (with flat chamfered corners) embossed with "Duraglas" (Owens Illinois Bottle Co.)

Unit 25, 0-10 cm

- amber large square (with rounded corners) bottle embossed with "  /4" (Anchor Hocking Glass Corp.)
- clear square (with rounded corners) bottle embossed with "  /5" (J.T. Hamilton)
- clear round bottle embossed with "N-51/ /U.S.A./5" (Kimble Glass Co.)
- clear round bottle embossed with "...NS/ 9" (Owens Illinois Bottle Co.)
- clear round bottle embossed with "...ER. INC./... 3/...928-A/MADE IN U.S.A/1/...LENDALE, CALIF." (Owens Illinois Bottle Co.)
- clear syrup bottle embossed on base with "OWENS/7 1" and on side with "Duraglas" (Owens Illinois Bottle Co.)
- clear test tube fragment
- 10 clear pipette fragments
- two clear oral thermometer fragments
- three clear microscope slide fragments
- three thin clear glass fragments (one marked with "List No. 1941 Procaine HO... 0% W/r Sc ..nott Lab")
- thin amber glass fragment
- clear single-dose ampoule fragment

Unit 25, 10-20 cm

- complete clear narrow-mouth partially melted jar embossed on base with "CUTTER ✚ STANDARD" in eight-sided frame design
- complete clear syrup bottle with metal cap and traces of paper label, embossed on base with "  /6" (Hazel-Atlas Glass Co.)
- clear base fragment embossed with "  (Hazel-Atlas Glass Co.)/73S"
- clear oval-base bottle embossed with "10/  41/142" (Whitall-Tatum and Co.)
- clear oval-base bottle embossed with "5/  41/142" (Whitall-Tatum and Co.)
- three clear fragments embossed with "Duraglas" (Owens Illinois Bottle Co.)
- clear fragment embossed with "FORBIDS/...RE-U..."

Table B.16.
Pharmaceutical Glass Artifacts from Relocation Center Contexts.

- complete amber round-base bottle with metal cap, embossed on base with "4  2/9"
- amber rectangular base (with round corners) fragment embossed with "...OZ/... 44"
- amber round-base embossed with "6500½/15/63"
- four clear test tube fragments
- eight clear pipette fragments
- clear oral thermometer fragment
- three clear microscope slide fragments
- six clear single-dose ampoule fragments

Unit 25, 20-30 cm

- complete amber wide-mouth bottle embossed on base with "6501/6 30  /4"
- complete amber narrow-mouth bottle with cork stopper embossed on base with "M M & R (in triangle)/MAGMUS"
- amber round-base embossed with "M/7  I/1" (Owens Illinois Bottle Co.)
- amber round-base embossed with "7  4/4./400" (Owens Illinois Bottle Co.)
- amber rectangular base embossed with "9/72" (Owens Illinois Bottle Co.)
- amber rectangular body fragment embossed with "ANACIN"
- complete clear wide-mouth jar embossed on base with "MBW/USA" (Millville Bottle Works)
- three clear fragments, all embossed with portions of "Duraglas" (Owens Illinois Bottle Co.)
- clear round-base embossed with "4 872"
- clear round-base embossed with "  -1" (Maywood Glass o.)
- clear round-base embossed with "(10-51/  /2" (Maywood Glass Co.)
- clear round-base embossed with "6/  (Hazel-Atlas Glass Co.)"
- clear round-base embossed with "  (Hazel-Atlas Glass Co.)/8K85"
- clear body fragment embossed with "...RAL LAW FOR.../USE OF..."
- clear body fragment embossed with "4 OUNCE"
- clear round-base embossed with "MUSTEROLE/A.../CL...ND"
- clear round-base embossed with "7  2 (Owens Illinois Bottle Co.)
- small clear octagon bottle with plastic dropper cap, embossed on based with "LEE S. SMITH/  //41/1"
- clear multiple-dose vaccine bottle with aluminum rim, embossed on base with "PYREX 27" (Corning Glass Co.)
- clear multiple-dose vaccine bottle with aluminum rim, embossed on base with "14 ... SOLV.T, TCW CO ..."
- cobalt blue narrow-mouth round bottle embossed on base with "X/D & O/1 (Cumberland Glass Co.)
- seven clear test tube fragments
- three clear pipette fragments
- clear dropper shaft with rubber cap (marked with "DAVOL RU ...")
- clear Luer-type hypodermic syringe made of Pyrex glass, marked on side with "B-D Yale 5cc LUER-LOK BECTON DICKINSON & CO."
- clear microscope slide fragment
- 13 clear single-dose ampoules/fragments
- three fragments of thin clear glass

Unit 25, 30-40 cm

- amber base, rectangular with rounded corners, embossed with "  1¼ 5" (Obear-Nester Glass Co.)
- clear round-base embossed with "...RODUCT..."
- two clear test tube fragments
- clear beaker fragment
- clear microscope slide fragment
- clear single-dose ampoule fragment

Table B.16.
Pharmaceutical Glass Artifacts from Relocation Center Contexts.

Unit 25, 40-50 cm

- clear base fragment embossed with "  /5 OUN..."
- complete clear octagon bottle embossed on base with "LEE S. SMITH/Ⓐ /41/3" (Armstrong Cork Co.)
- complete clear syrup bottle with plastic cap embossed on base with "OWENS/17  1" and on side with " 3 i," "cc," and graduations (Owens Illinois Bottle Co.)
- clear round-base embossed with "Duraglas" (Owens Illinois Bottle Co.)
- complete amber wide-mouth jar with potassium bromide paper label, embossed on base with "120/5"
- amber body fragment embossed with "...NE GAL..."
- six clear test tube fragments
- seven clear pipette fragments
- small clear funnel
- three clear capillary tubes/fragments
- clear dropper shaft and screw cap
- clear dropper shaft fragment
- seven thin clear and brown glass fragments
- clear multiple-dose vaccine bottle (no marks)
- nine clear single-dose ampoules/fragments

Unit 25, 50-75 cm

- complete clear wide-mouth jar with plastic cap embossed with "Baker's," embossed on base with "6406/6  /19" (Anchor Hocking Glass Corp.)
- clear round one-gallon bottle base embossed with "23  4/5-55-W/Duraglas" (Owens Illinois Bottle Co.)
- clear one-ounce syrup bottle embossed on base with "ARISTOCRAT/4"
- clear melted test tube with white-painted "REG/PYREX/US PAT (all in circle)/ MADE IN ..." (Corning Glass Co.)
- eight clear test tube fragments
- seven clear pipette fragments (two with marked graduations)
- clear dropper shaft with rubber cap and portion of label "DAVOL RU..."
- clear beaker fragment
- two clear cutting block fragments
- seven clear single-dose ampoules/fragments, two with portions of labels "...TARY EXTRACT," and "...USE"

Unit 25, sidewall

- complete large amber syrup bottle with white medical tape label, embossed on base with "8/  " (Hazel-Atlas Glass Co.)
- complete amber rectangular narrow-mouth jar with portion of blank red and white paper label and plastic cap, embossed on base with "2912A/20  1/3" (Owens Illinois Bottle Co.)
- complete clear wide-mouth jar with plastic cap embossed with "Mallinckrodt," embossed on base with "7 I/2/4" (Owens Illinois Bottle Co.)
- clear multiple-dose vaccine bottle embossed on base with "CUTTER ✚ STANDARD" in eight-sided frame design
- clear multiple-dose vaccine bottle with aluminum band, rubber cover, and portion of label "tetanus ...oid," embossed on base with "T C W CO/5 S 114/USA
- clear cutting block (3" by 6" by 3/4")

Table B.17.
Other Glass Artifacts from Relocation Center Contexts.

Survey —

MANZ 1993 A-30, Hospital Block (within pond) (FN B-1058)
- 10 complete machine-made marbles and five machine-made marble fragments

MANZ 1993 A-30, Root Cellar Block (FN A-155)
- machine-made marble

MANZ 1993 A-30, Staff Housing Block (FN A-192)
- machine-made marble

MANZ 1993 A-30, Block 11 (FN A-13)
- two machine-made marbles

MANZ 1993 A-30, Block 13 (FN A-49, A-66, A-68)
- clear perfume bottle embossed on base with "22  6" (6 is sideways) (Owens Illinois Bottle Co.)
- three machine-made marbles (two different sizes)

MANZ 1993 A-30, Block 14 (FN A-51)
- machine-made marble

MANZ 1993 A-30, Block 15 (FN A-43, A-45)
- clear perfume bottle embossed on base with "12  1/2" (Owens Illinois Bottle Co.)
- machine-made marble

MANZ 1993 A-30, Block 16 (FN A-38)
- machine-made marble

MANZ 1993 A-30, Block 17 (FN A-35)
- machine-made marble

MANZ 1993 A-30, Block 19 (FN A-97, B-211)
- small clear paint jar with continuous-thread lip, embossed surface texture, and traces of blue paint inside, embossed on base with "4  2/6" (Owens Illinois Bottle Co.)
- small clear paint jar with continuous-thread lip, embossed surface texture, and traces of yellow inside, embossed on base with "4 0/4" (Owens Illinois Bottle Co.)
- machine-made marble

MANZ 1993 A-30, Block 21 (FN A-44, A-143, B-178)
- light blue barrel bead (5.5 mm long)
- two machine-made marbles

MANZ 1993 A-30, Block 22 (FN A-40, B-145)
- three machine-made marbles

MANZ 1993 A-30, Block 22 (within pond) (FN B-152, B-153)
- three machine-made marbles

MANZ 1993 A-30, Block 23 (FN A-29)
- machine-made marble

Table B.17.
Other Glass Artifacts from Relocation Center Contexts.

MANZ 1993 A-30, Block 26 (FN A-102)
- clear perfume bottle embossed on base with "6853-AZ/23 ◁0▷ 0" (Owens Illinois Bottle Co.)

MANZ 1993 A-30, Block 29 (FN A-118)
- small clear round bottle base embossed with ".2 Ⓐ 43/TOOTH POWDE..." (Armstrong Cork Co.)

MANZ 1993 A-30, Block 31, NW 1/4 (FN B-620)
- machine-made marble

MANZ 1993 A-30, Block 32 (FN A-103)
- red disk bead (10 mm diameter)
- two machine-made marbles

MANZ 1993 A-30, Block 33 (FN A-116)
- three machine-made marbles

MANZ 1993 A-30, Block 34 (FN A--117)
- machine-made marble

MANZ 1993 A-30, Block 35 (FN A-145)
- light blue round bead fragment (6 mm diameter)

MANZ 1993 A-30, Block 36 (FN A-144)
- machine-made marble

MANZ 1993 A-30, Firebreak B9 (FN A-81)
- machine-made marble

MANZ 1993 A-30, Firebreak E6 (FN A-20)
- machine-made marble

MANZ 1993 A-30, Feature P-17 (FN A-84)
- small clear round-base jar embossed with "CHESEBROUGH/MFG./CO. CD./NEW YORK" (manufactured Vaseline)

MANZ 1993 A-30, Feature P-19 (FN A-85)
- small clear round-base embossed with "... 3/... OOTH POWDER"

MANZ 1993 A-30, Feature P-21 (FN A-858
- clear body fragment embossed with "LAMBERT/...AL COMPANY" (manufactured Listerine)

MANZ 1993 A-30, Feature P-46 (FN A-121)
- clear perfume bottle embossed on base with "12 = 4."

MANZ 1993 A-36 (FN A-199)
- red automobile taillight fragment painted with white "PLYMOUTH"
- automobile headlight fragment embossed with "Ford/TWOLITE HEADLAMP/...ENT BULBS 181 PATENTED NO 16C"

Table B.17.
Other Glass Artifacts from Relocation Center Contexts.

MANZ 1993 A-30, Block 26 (FN A-102)
- clear perfume bottle embossed on base with "6853-AZ/23 ◁0▷ 0" (Owens Illinois Bottle Co.)

MANZ 1993 A-30, Block 29 (FN A-118)
- small clear round bottle base embossed with ".2 Ⓐ 43/TOOTH POWDE..." (Armstrong Cork Co.)

MANZ 1993 A-30, Block 31, NW 1/4 (FN B-620)
- machine-made marble

MANZ 1993 A-30, Block 32 (FN A-103)
- red disk bead (10 mm diameter)
- two machine-made marbles

MANZ 1993 A-30, Block 33 (FN A-116)
- three machine-made marbles

MANZ 1993 A-30, Block 34 (FN A–117)
- machine-made marble

MANZ 1993 A-30, Block 35 (FN A-145)
- light blue round bead fragment (6 mm diameter)

MANZ 1993 A-30, Block 36 (FN A-144)
- machine-made marble

MANZ 1993 A-30, Firebreak B9 (FN A-81)
- machine-made marble

MANZ 1993 A-30, Firebreak E6 (FN A-20)
- machine-made marble

MANZ 1993 A-30, Feature P-17 (FN A-84)
- small clear round-base jar embossed with "CHESEBROUGH/MFG./CO. CD./NEW YORK" (manufactured Vaseline)

MANZ 1993 A-30, Feature P-19 (FN A-85)
- small clear round-base embossed with "... 3/... OOTH POWDER"

MANZ 1993 A-30, Feature P-20 (FN A-858)
- clear body fragment embossed with "LAMBERT/...AL COMPANY" (manufactured Listerine)

MANZ 1993 A-30, Feature P-46 (FN A-121)
- clear perfume bottle embossed on base with "12 = 4."

MANZ 1993 A-36 (FN A-199)
- red automobile taillight fragment painted with white "PLYMOUTH"
- automobile headlight fragment embossed with "Ford/TWOLITE HEADLAMP/...ENT BULBS 181 PATENTED NO 16C"

Table B.17.
Other Glass Artifacts from Relocation Center Contexts.

ANZ 1993 A-30, Block 21, Area B-1

- clear rectangular base embossed with "JERGENS LOTION/4"
- deep blue ribbed "Vicks" or "Vaseline" jar fragment

Excavation —

Unit 19, 0-10 cm

- small white jar fragment with red stain inside

Unit 20, surface

- clear cologne bottle fragment with embossed design and constricted opening
- white jar rim fragment with embossed "Woodbury" scroll

Unit 20, 0-10 cm

- three machine-made marbles (two different sizes, one melted)

Unit 20, 20-30 cm

- two machine-made marbles

Unit 23, 10-20 cm

- two machine-made marbles

Unit 25, 0-10 cm

- ball button

Unit 25, 10-20 cm

- clear body fragment embossed with "LISTERINE"
- machine-made marble

Unit 25, 50-75 cm

- white jar embossed on base with "WOODBURY/  " (Hazel-Atlas Glass Co.)

Table B.18.
Nondiagnostic Glass Container Fragments from Relocation Center Contexts.

Provenience	clear	amber	aqua	olive	white	bright green	cobalt	amethyst	green	light blue	brown	other	total
Unit 3, 0-10 cm			2										2
Unit 3, 30-40 cm			1										1
Unit 4, 0-10 cm	1												1
Unit 6, 0-10 cm	7												7
Unit 7, 0-10 cm								1					1
Unit 7, 10-20 cm			1										1
Unit 7, 20-30 cm									1				1
Unit 8, 0-10 cm	4	2											6
Unit 9, 9-10 cm	2												2
Unit 9, 10-20 cm	3												3
Unit 10, 0-10 cm	1	2	1			1							5
Unit 10, 10-20 cm		1											1
Unit 13, 0-10 cm	1												1
Unit 14, 90-100 cm	1												1
Unit 16, 0-10 cm	18		2		6								26
Unit 19, 0-10 cm	22	1								1			24
Unit 19, 10-20 cm	4												4
Unit 19, 20-30 cm	1												1
Unit 20, 0-10 cm	66	1	2		1					3	2		75
Unit 20, 10-20 cm	39	2	1		4								46
Unit 20, 20-30 cm	20												20
Unit 20, 30-40 cm	7												8
Unit 25, 0-10 cm	205	88	2	2	4	1	1			2			305
Unit 25, 10-20 cm	233	87	1		2	2	7	1					333
Unit 25, 20-30 cm	329	96	3		5	2	4			3			442
Unit 25, 30-40 cm	88	43				2	1						134
Unit 25, 40-50 cm	162	72	7		2				5	1			249
Unit 25, 50-75 cm	99	39			2	1							141
Total	1313	434	23	2	26	9	13	2	6	10	2	0	1840

Table B.19.
Non-alcoholic Beverage Glass Artifacts from Post-Relocation Center Contexts.

Survey —

MANZ 1993 A-37, Locus C (FN A-132)

- green round-base bottle fragment embossed on base with "SPARKLETTS/3  2/REGISTERED/...ER/...LA. CAL" and painted on side in white "Sparklett UP Lithinated 7 oz ..." (Owens Illinois Glass Co.)

Surface Collection —

none

Excavation —

Unit 26, surface

- clear "Mission" soda bottle fragment

Unit 26, 0-10 cm

- clear soda bottle fragment with white-painted "Los Ang.."

Unit 26, 20-30 cm

- green "Canada Dry" bottle fragment
- clear "Mission" soda bottle fragment
- clear milk bottle lip fragment

Unit 26, 30-40 cm

- green "Canada Dry" bottle fragment embossed on base with "23  1 / (C in upside down triangle) REG CAL/2273-68" and on body with "CANADA DRY GINGER ALE, INC./CONTENTS ONE PINT 12 FL. OZ."(Owens Illinois Glass Co.)
- three clear "Mission" soda bottle fragments
- clear soda bottle fragment embossed with "Santa M..." and painted orange with "Sunset..."
- clear bottle fragment with crown cap lip, embossed with "NO DEPOSIT NO ... FILLED"
- clear bottle fragment with crown cap lip
- clear milk bottle fragment painted green with the "Lone Pine Dairy" logo
- two clear milk bottle lip fragments

Unit 26, 40-50 cm

- clear base fragment embossed with "...INGE BOTTLING CO. CH.../G1375/Duraglas/...  1" (Owens Illinois Glass Co.)
- clear "Mission" soda bottle fragment painted with white "Naturall... Good"

Unit 26, sidewall

- clear milk bottle lip fragment

Table B.20
Alcoholic Beverage Glass Artifacts from Post-Relocation Center Contexts.

Survey —

MANZ 1993 B-7, Locus A (FN B-752)

- amber round bottle fragment embossed on base with "10  75/19/REG. U.S. PAT. OFF." and on body with "DON'T LITTER/NOT FO....FILL" (Anchor Hocking Glass Corp.)

Surface Collection —

MANZ 1993 A-30, Staff Housing Block, Area A (FN B-544)

- amber beer base "  1-WAY" (Glass Containers Inc.)
- clear body fragment embossed with "NOT TO BE REFILLE..."
- clear round-base embossed with "  /0-7549/2" (Hazel-Atlas Glass Co.)
- clear base "...ER BREWING CO./48/...CAL./  " (Latchford-Marble Glass Co.)

MANZ 1993 A-30, Staff Housing Blocks, Area C (FN B-547)

- clear base embossed with "87 4 84/  " (Latchford Glass Co.)

MANZ 1993 A-30, Staff Housing Blocks, Area D (FN B-548)

- clear round-base embossed with "...56/  /8 (Lummis Glass Co.)

MANZ 1993 A-30, Block 12, Area B-1 (FN B-551)

- clear beer bottle base embossed with "16  76/33" (Brockway Glass Co.)
- clear beer bottle base embossed with "16  83/14" (Brockway Glass Co.)
- aqua wine bottle fragment embossed with "630  82/A-9" on base and "750 ML (25.4 FL. O..."on side (Northwest Glass Co.)

MANZ 1993 A-30, Block 13, Area B-1 (FN B-505)

- amber long-neck refillable-type beer bottle embossed with "  /6" Brockway Glass Co.)
- amber beer bottle base fragment (recent?)

MANZ 1993 A-30, Block 13, Area B-2 (FN B-513)

- clear beer bottle base embossed with "10-51/  /16" (Maywood Glass Co.)

MANZ 1993 A-30, Block 13, Area B-2 (FN B-515)

- complete clear round-base whiskey bottle with rusted cap embossed on base with "20  48/8A/5762-W/4600-6B" and on body with "4/5 QUART" (Owens Illinois Glass Co.)

MANZ 1993 A-30, Block 13, Area C (FN B-519)

- amber beer bottle fragment embossed on base with "15/  48/1" (Owens Illinois Glass Co.)
- amber beer bottle fragment embossed on base with "15  48/5" (Owens Illinois Glass Co.)
- amber beer bottle fragment embossed on base with " 15  48/6" (Owens Illinois Glass Co.)
- amber beer bottle fragment embossed on base with " 15  48/2" (Owens Illinois Glass Co.)
- amber beer bottle fragment embossed on base with "20  4/6A/4600-GB" (Owens Illinois Glass Co.)
- amber beer bottle fragment embossed on base with "20 7/3" (Owens Illinois Glass Co.)
- amber beer bottle fragment embossed on base with "  /167"
- amber oval-base whiskey bottle fragment embossed on base with "D247/57-49/ " (Owens Illinois Glass Co.)
- amber whiskey bottle fragment with metal cap, embossed with "... LAW FOR.."
- three amber body fragments with crown cap lips

Table B.20.
Alcoholic Beverage Glass Artifacts from Post-Relocation Center Contexts.

MANZ 1993 A-30, Block 14, Area B-1 (FN B-524, B-525)

- amber long-neck refillable bottle neck fragment with crown cap lip
- complete amber beer bottle, base embossed with "4600 CR/20 ◁◯▷ 2/6" (Owens Illinois Glass Co.)
- clear round-base embossed with "REGAL AMBER BREWING CO./648/REG, CAL. Ⓛ Ⓜ "(Latchford-Marble Glass Co.)

MANZ 1993 A-30, Block 14, Area B-2 (FN B-527)

- clear oval whiskey bottle base embossed with "9 ⚓ /46" (Anchor Hocking Glass Corp.)
- amber long-neck beer bottle embossed on base with "20 ◁◯▷ 47/195/Duraglas/2 125-CX" (Owens Illinois Glass Co.)
- clear beer bottle base embossed with "2/20 ◁◯▷ 8/2" (Owens Illinois Glass Co.)

Excavation —

Unit 26, 20-30 cm

- amber whiskey bottle fragment with three-part seam
- amber bottle fragment with crown top lip
- amber bottle fragment embossed with "4/5 Quart"

Unit 26, 30-40 cm

- amber continuous-thread whiskey bottle lip and neck
- aqua whiskey bottle neck and lip
- clear oval whiskey bottle fragment embossed on base with "D-126 ⚓ /67 48" and on body with "HALF PINT" (Anchor Hocking Glass Corp.)

Unit 26, 40-50 cm

- amber beer bottle fragment embossed on base with "23 ◁◯▷ 48/GN/Duraglas/1 WAY/11-GB" (Owens Illinois Glass Co.)
- amber beer bottle fragment embossed on base with "5582/ⓂⒼ 48/DES PAT APP" (Maywood Glass Co.)
- amber beer bottle fragment embossed on base with "...05/ⓂⒼ 1 48/44" (Maywood Glass Co.)
- amber beer bottle fragment embossed on base with " Ⓛ Ⓜ 48/8"(Latchford-Marble Glass Co.)
- amber beer bottle fragment embossed on base with "700-D/ Ⓛ Ⓜ 48/12"(Latchford-Marble Glass Co.)

Unit 26, sidewall

- clear gin (?) bottle fragment with square base (with concave-chamfered corners), base embossed with "4 ◁◯▷ 7/1" (Owens Illinois Glass Co.)

Table B.21.
Food Storage Glass Artifacts from Post-Relocation Center Contexts.

Survey —

MANZ 1993 A-37, Locus C (FN A-132)

- clear round-base embossed with "8/PYRAMID/3 8"

Surface Collection —

none

Excavation —

Unit 26, surface

- clear canning jar fragment

Unit 26, 0-10 cm

- clear round-base embossed with "9 ◁O▷ 8/6/E-1594" (Owens Illinois Glass Co.)
- three fragments with red-painted logo "...VE," "...EST," and "...ETY"

Unit 26, 10-20 cm

- amber fragment with continuous-thread lip
- clear body fragment with black-painted logo "Joes/CALIFO.../190..."
- clear round-base fragment embossed with "...0/3242"
- two clear body fragments with red painted logo "K/..., ...-FH..."
- clear bottle fragment with packer-finish-with-bead lip (machine-made)
- melted clear bottle stopper

Unit 26, 20-30 cm

- clear round jar base embossed with" /6705/6" (Hazel-Atlas Glass Co.)
- clear round jar base embossed with "20 ◁O▷ 8/3769-1" (Owens Illinois Glass Co.)
- clear round jar base embossed with "20 ◁O▷ 8/Duraglas/...EP" (Owens Illinois Glass Co.)
- clear round jar base embossed with"PYRAMID/PAT'D"
- clear "Ball" mason jar fragment
- clear bottle fragment with flat-lip-with-bead finish
- four clear fragments with continuous-thread lips
- clear fragment with discontinuous-thread lip and portion of jug handle

Unit 26, 30-40 cm

- small clear bottle embossed on base with " " (Anchor Hocking Glass Corp.)
- clear round-base embossed with "73/ /...22" (Hazel-Atlas Glass Co.)
- clear round-base embossed with "7357/ /...37" (Hazel-Atlas Glass Co.)
- clear round-base embossed with"...4/ /0 5" (Hazel-Atlas Glass Co.)
- clear round-base embossed with " ◁O▷ " (Owens Illinois Glass Co.)
- clear "Karo" syrup bottle base embossed with "...27,618/7 ◁O▷ 8/REG US PAT OFF Karo 23/SYRUP/1½ LBS. NET" (Owens Illinois Glass Co.)
- clear base fragment embossed with "817/(LM)" (Latchford-Marble Glass Co.)
- clear body fragment with orange-painted baby with bottle
- three clear fragments with continuous-thread lips
- four clear body fragments with orange-painted squares
- clear fragment with discontinuous-thread lip

Unit 26, 40-50 cm

- clear jelly jar embossed on base with " /16" (Glass Containers Inc.)
- clear round-base embossed with "M-32/ (B) /1" (Brockway Glass Co.)

Table B.21.
Food Storage Glass Artifacts from Post-Relocation Center Contexts.

- clear round-base embossed with ".154.../  17" (Lummis Glass Co.)
- clear round-base embossed with "D.7.../  /11" (Hazel-Atlas Glass Co.)
- clear round discontinuous-thread jar embossed on base with "AB 35/5/  /2½ OZ" (Hazel-Atlas Glass Co.)
- clear round-base embossed with "  46" (Owens Illinois Glass Co.)
- clear round-base embossed with "4412 (T in keystone) 14"
- clear round-base embossed with "...HHK/...8/804"

Unit 26, sidewall

- clear mayonnaise jar embossed on base with "10-51/6  /27" (Anchor Hocking Glass Corp.)
- amber round-base embossed on base with "15  9/7/5-1602/W6" and on side with "Duraglas" (Owens Illinois Glass Co.)
- complete clear jelly jar embossed on base with "  /6 (6 is backwards) (Hazel-Atlas Glass Co.)
- vinegar (?) bottle embossed on base with "2483/  /E6" (Thatcher Glass Manuf. Co.)

Table B.22.
Household Glass Artifacts from Post-Relocation Center Contexts.

Survey —
none

Surface Collection —
none

Excavation —
Unit 26, 20-30 cm

- large clear pitcher
- clear pressed glass fragment
- clear plate fragment
- four clear drinking glass fragments with painted decoration

Unit 26, 30-40 cm

- clear drinking glass base
- clear pie plate rim
- clear cake platter embossed on base with "USA/GLAST..."
- amber body fragment embossed with "PUREX"

Unit 26, 40-50

- eight clear pressed glass fragments from three separate objects (platter, tray, unknown item)

Unit 26, sidewall

- small clear punch cup
- melted blob of clear pressed glass

Table B.23.
Structural Glass Artifacts from Post-Relocation Center Contexts.

Survey —
none

Surface Collection —
none

Excavation —
window glass fragments:

Provenience	number	thickness
Unit 26, 0-10 cm	1	0.085"

other glass:
Unit 26, 10-20 cm
- light bulb fragment

Unit 26, 20-30 cm
- four light bulb fragments

Unit 26, 30-40 cm
- light bulb filament support (melted)

Table B.24.
Pharmaceutical Glass Artifacts from Post-Relocation Center Contexts.

Survey —
none

Surface Collection —
Staff Housing Blocks, Area C (FN B-547)
- green bottle with square base and rounded corners embossed on base with "3 ◁◯▷ 8/3 OZ/4" and on side with "Duraglas" (Owens Illinois Glass Co.)

Excavation —
Unit 26, sidewall
- rectangular bottle fragment embossed on front with "3 OZ," "CC," and graduations and on base with "41Ⓐ 47/U.S.A." (Armstrong Cork Co.)

Table B.25.
Other Glass Artifacts from Post-Relocation Center Contexts.

Survey —

MANZ 1993 A-32 (FN A-196)

- clear square base bottle fragment embossed with "LAVORIS/®" (recent?)

MANZ 1993 A-37, Locus C (FN A-132)

- clear body fragment painted with black (?) "M.../HEL.../TEETH H.../ THR" (burned)

Surface Collection —

none

Excavation —

Unit 26, 0-10 cm

- machine-made marble

Unit 26, 20-30

- clear square base embossed with "JERGENS/LOTION"
- complete clear oval-base perfume bottle embossed on base with "3  " (Owens Illinois Glass Co.)
- sunglasses lens fragment

Unit 26, 20-30 cm

- car light bulb fragment

Unit 26, 40-50

- push pin top
- machine-made marble

Table B.26.
Nondiagnostic Glass Container Fragments from Post Relocation Center Contexts.

Provenience	clear	amber	aqua	olive	white	bright green	cobalt	amethyst	green	light blue	brown	other	total
Unit 26, 0-10 cm	38	21											59
Unit 26, 10-20 cm	8	5				2	1						16
Unit 26, 20-30 cm	23	6				2	7		3				41
Unit 26, 30-40 cm	12	1				4	1						18
Total	81	33	0	0	0	8	9	0	3	0	0	0	134

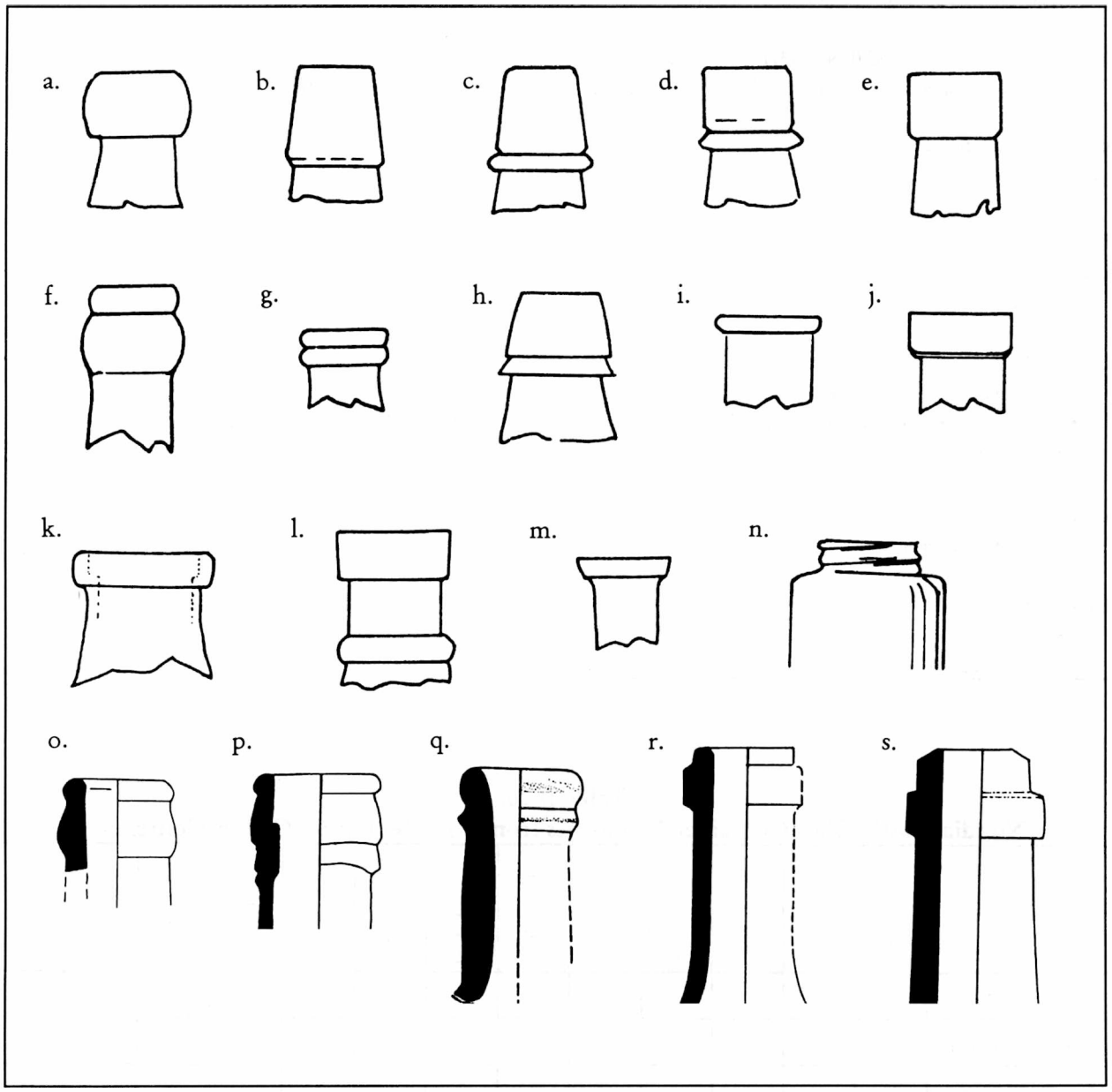


Figure B.2. Bottle lip morphology; a. beer finish, b. brandy or oil finish, c. brandy with bead finish, d. short brandy with bead finish, e. collar finish, f. crown finish, g. double bead or ring finish, h. double collar finish, i. extract finish, j. packer finish, k. packer milk bottle finish, l. packer with bead finish, m. prescription lip finish, n. continuous thread finish, o. crown cap finish, p. club sauce finish, q. Perry Davis-type finish, r. champagne, flat top finish, s. champagne, sloped top finish (adapted from Blee 1988, Jones and Sullivan 1989).



Figure B.3. Beverage, food storage, and household glass artifacts from pre-relocation center contexts; a. "Cliquot Club" soda bottle base fragment; b. "Roth and Co." whiskey bottle fragment; c. "American Bottle Co." basemark; d. oval base whiskey bottle; e. "Durkee" salad dressing bottle; f. "Eastside" basemark; g. "H.J. Heinz Co." basemark; h. "California Packing Corp." basemark; i. extract (?) bottle; j. "Clorox" basemark. a, f, h, j. MANZ 1993 B-7 (FN B-752); b. MANZ 1993 B-17 (FN B-1038); c, i. MANZ 1993 A-27 (FN A-30); d. MANZ 1993 A-20, Locus E (FN A-62); e. MANZ 1993 A-7, Locus J (FN A-142).



Figure B.4. Pharmaceutical and other glass artifacts from pre-relocation center contexts. a. "Scott's Emulsion Cod Liver Oil" bottle fragment; b. pharmacy bottle fragment; c. "Davis Vegetable Pain Killer" bottle fragment; d-e. "California Fig Syrup" bottle fragments; f. "Rawleigh's" bottle fragment; g. small clear syrup bottle; h. gun solvent bottle; i. ink bottle; j-l. perfume bottles. a. MANZ 1993 B-17 (FN B-1038); b, d, f, j. MANZ 1993 B-7 (FN B-752, B-764); c, e. MANZ 1993 A-27 (FN A-30); g, k. Unit 16, 0-10 cm (FN B-467, B-468); h. MANZ 1993 A-16 (FN B-461); i. Unit 17, 0-10 cm (FN B-488); l. MANZ 1993 B-22 (FN B-842).

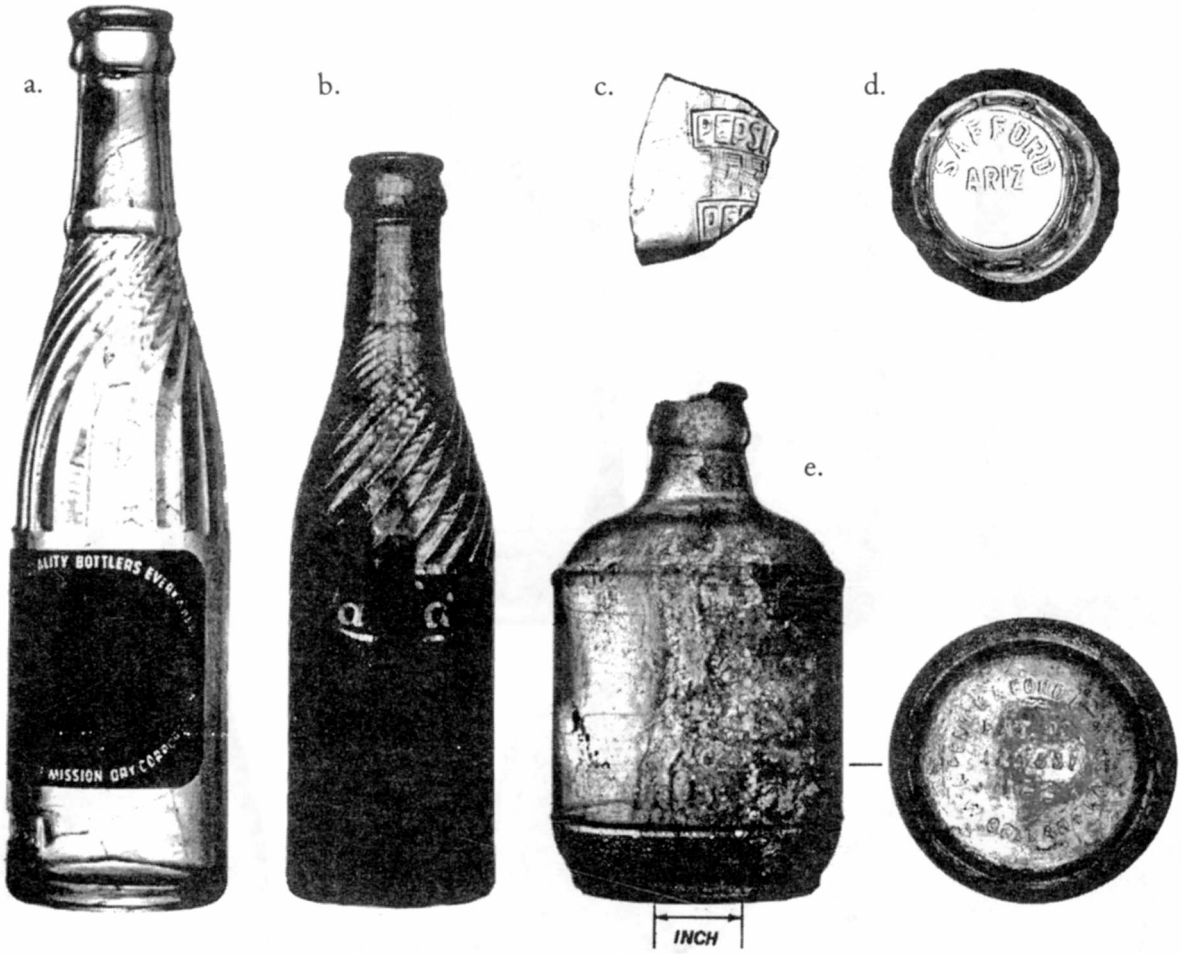


Figure B.5. Non-alcoholic beverage glass artifacts from relocation center contexts; a. "Mission" soda bottle; b. "LaVida" soda bottle; c. "Pepsi-cola" bottle fragment; d. "Coke" bottle base with "Safford, Ariz." basemark; e. apple juice (?) bottle. a. MANZ 1993 A-30, Block 13, Area B1 (FN B-508); b. MANZ 1993 A-30, Camouflage Factory Block (FN B-347); c. MANZ 1993 B-8, Feature 1 (FN A-198); d. MANZ 1993 A-30, Block 21 (FN B-539); e. MANZ 1993 B-8, Feature 1 (FN B-1041).



Figure B.6. Alcoholic beverage glass artifacts from relocation center contexts; a-c. whiskey bottles; d. "Old Quaker" whiskey bottle fragments; e-f. sake bottle bases; g. "Monk's Jug" wine bottle. a-c. MANZ 1993 B-8, Feature 1 (FN A-198); d. MANZ 1993 A-30, Feature P-28 (FN A-108); e. MANZ 1993 A-30, Block 19 (FN B-1053); f. MANZ 1993 A-30, Block 12 (FN B-551); g. MANZ 1993 B-8, Feature 3 (FN B-789).

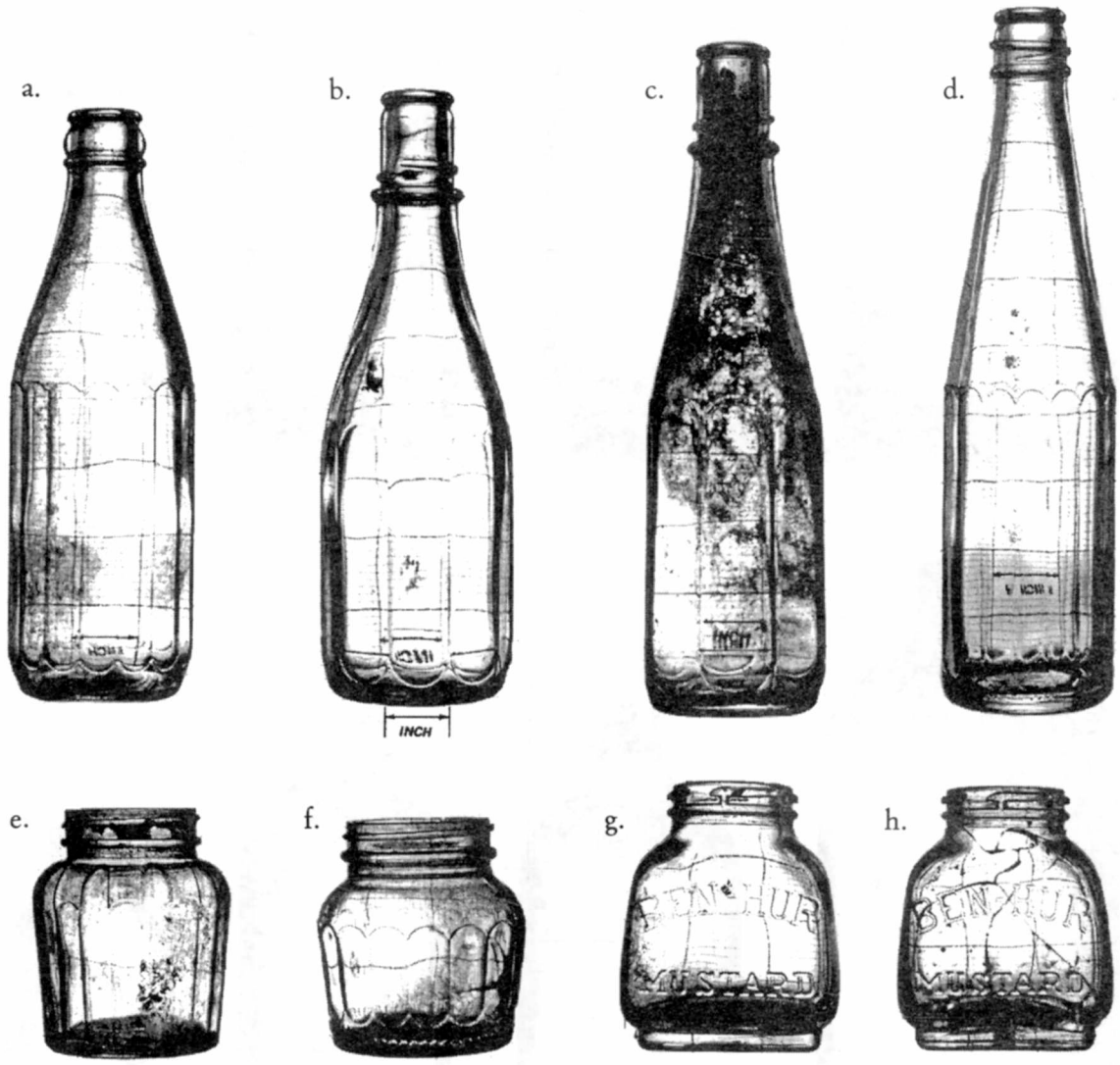


Figure B.7. Food storage glass artifacts from relocation center contexts; a-d. ketchup bottles; e-f. mustard jars; g-h. "Ben-Hur" mustard jars. a-g. MANZ 1993 B-8, Feature 1 (FN A-198, B-1041); h. Unit 19, 0-10 cm (FN B-605).

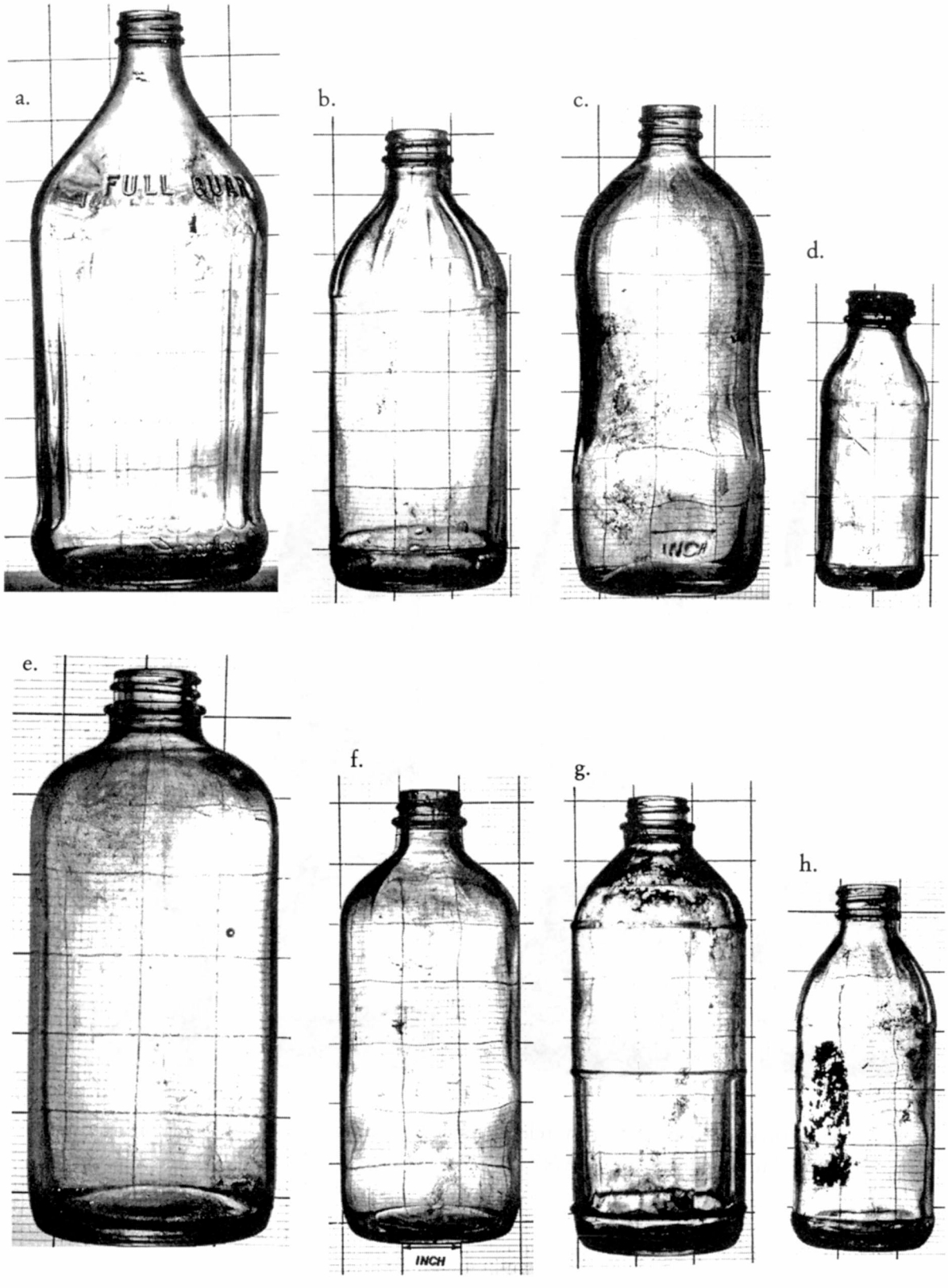


Figure B.8. Clear narrow-mouth food storage glass artifacts from relocation center contexts. a-h. MANZ 1993 B-8, Feature 1 (FN A-198).

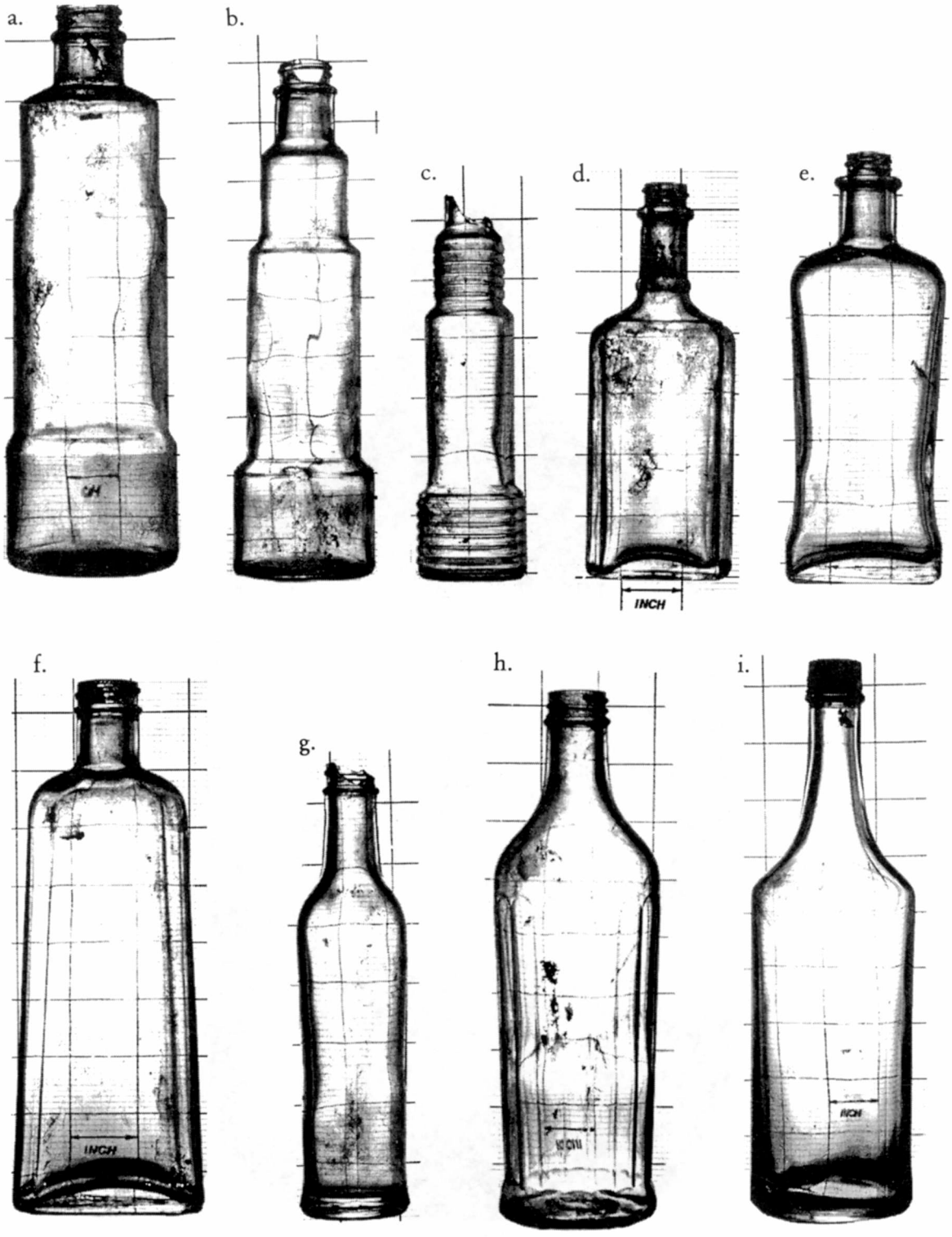


Figure B.9. Clear narrow-mouth food storage glass artifacts from relocation center contexts; a-c. multiple shouldered bottles; d-e. constricted opening (sprinkler top) bottles; f-i. tapered bottles. a-i. MANZ 1993 B-8, Feature 1 (FN A-198).



Figure B.10. Clear one-gallon glass jug from relocation center landfill (MANZ 1993 B-8, Feature 1 [FN A-198]).

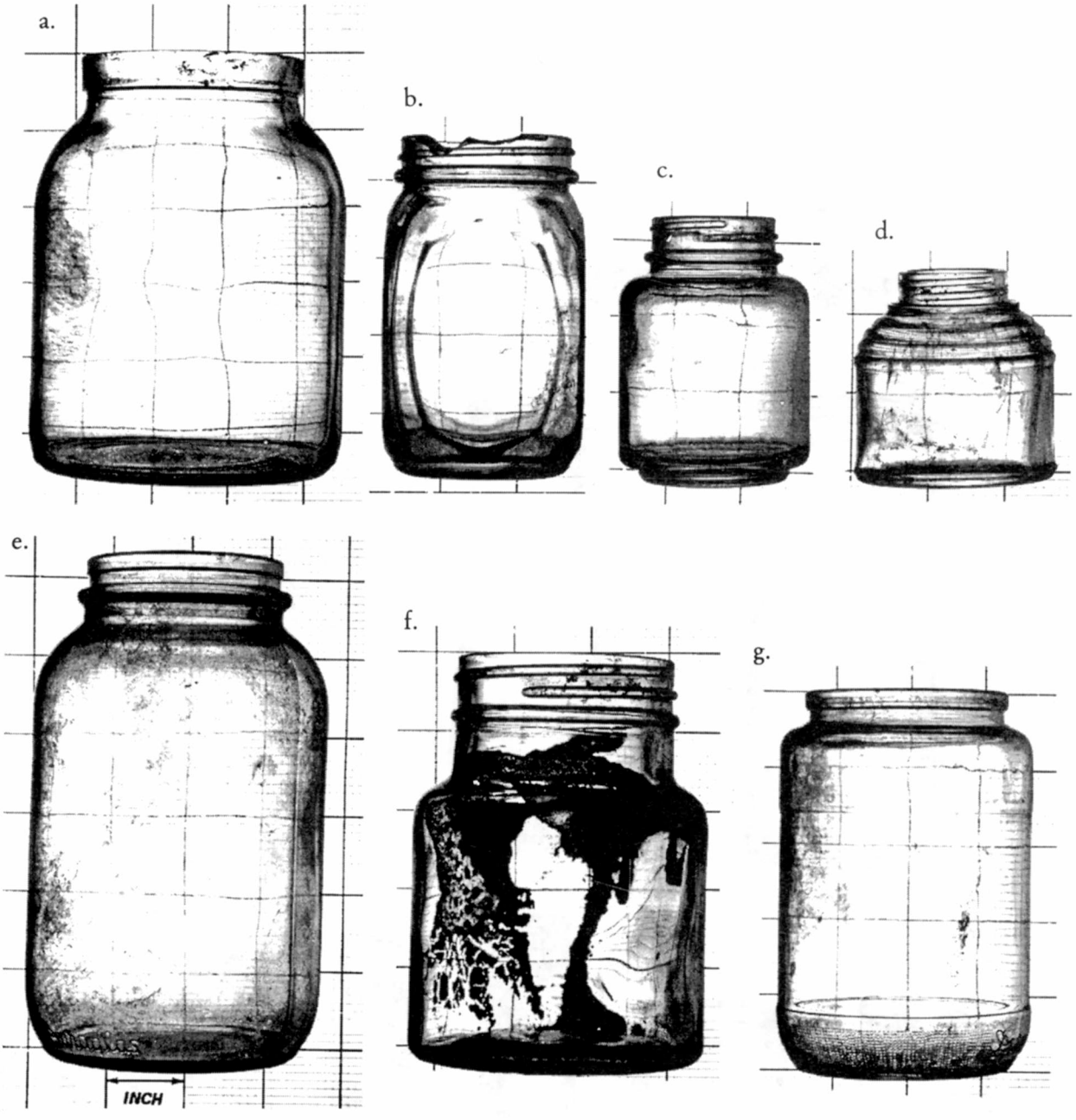


Figure B.11. Clear wide-mouth food storage glass artifacts from relocation center contexts. a, b, d-g. MANZ 1993 B-8, Feature 1 (FN A-198); c. Unit 19, 0-10 cm.

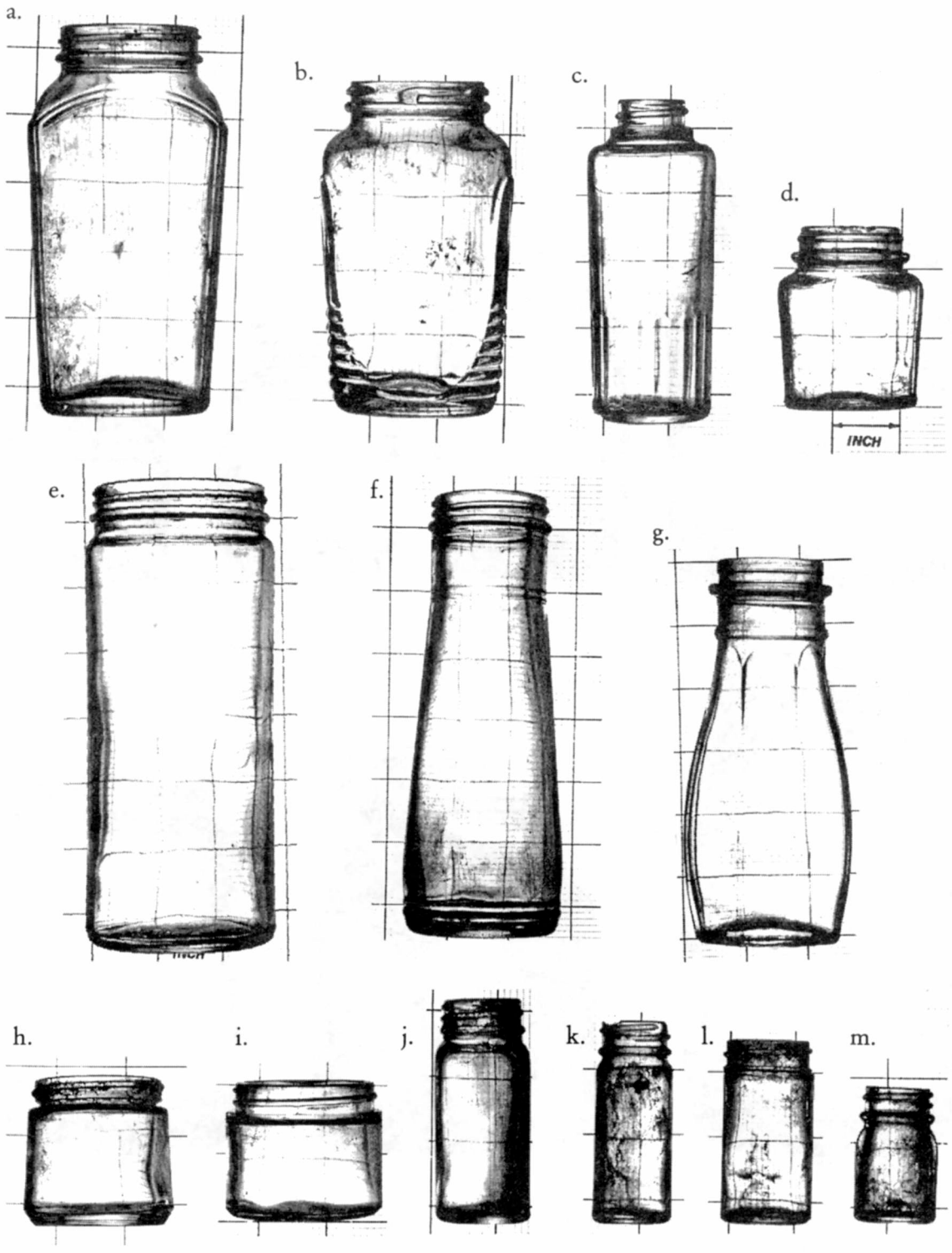


Figure B.12. Clear wide-mouth food storage glass artifacts from relocation center contexts; a. "H.J. Heinz Co.," b. "Crown Products Corp.," c-m. miscellaneous shapes. a-m. MANZ 1993 B-8, Feature 1 (FN A-198).

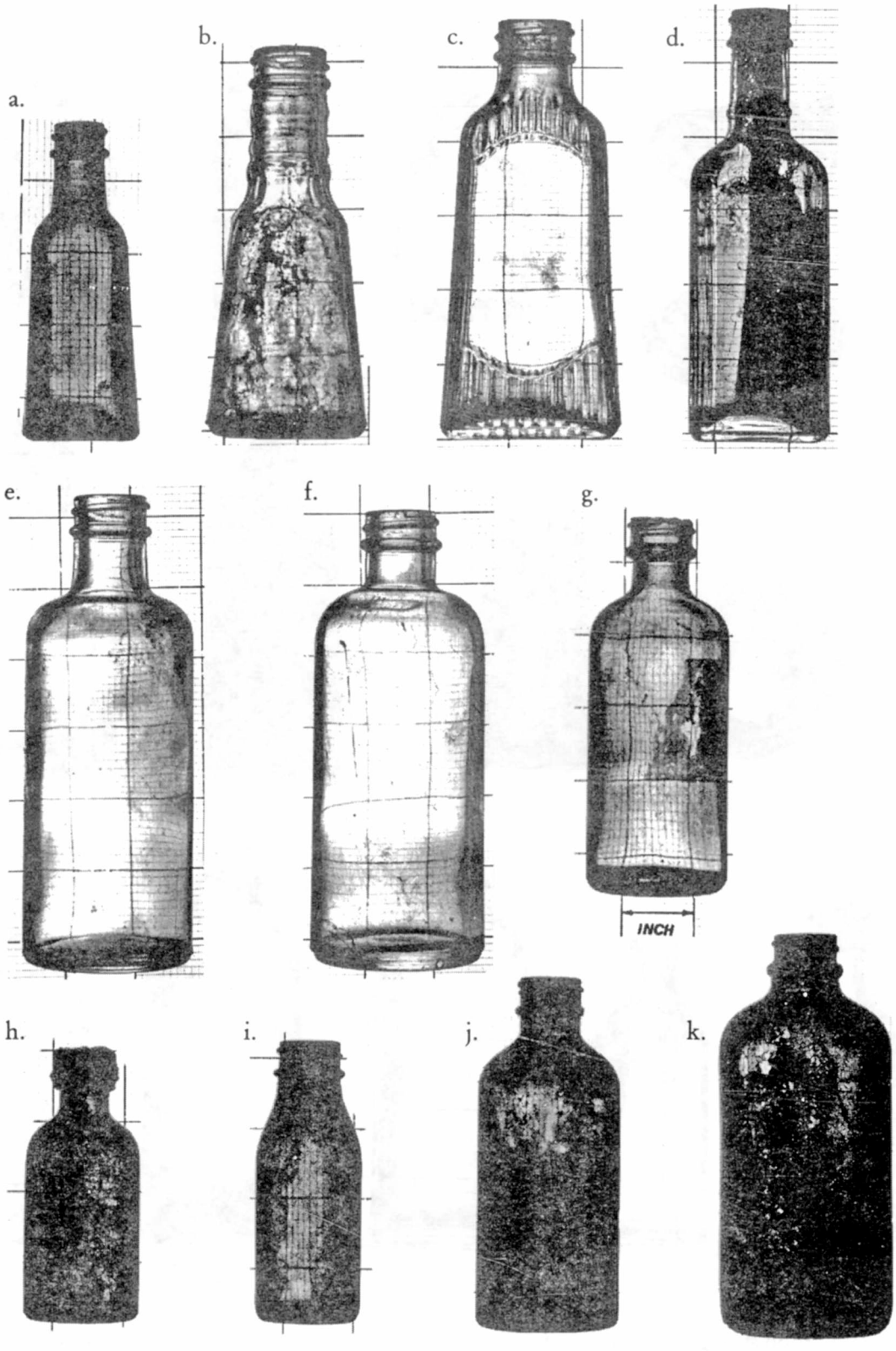


Figure B.13. Amber and clear narrow-mouth food storage glass artifacts from relocation center contexts; a. amber extract bottle; b-d. clear extract bottles; e-f. clear narrow-mouth bottles; g-k. amber narrow-mouth bottles. a-k. MANZ 1993 B-8, Feature 1 (FN A-198).



Figure B.14. Food storage, household, and pharmaceutical glass artifacts from relocation center contexts; a. "Log Cabin" syrup bottle fragment; b. "R in sun" basemark; c-e. small clear bottles; f. "USQMC" salt shaker; g-m. clear syrup bottles. a. MANZ 1993 A-30, Feature P-20 (FN A-88); b-m. MANZ 1993 B-8, Feature 1 (FN A-198).

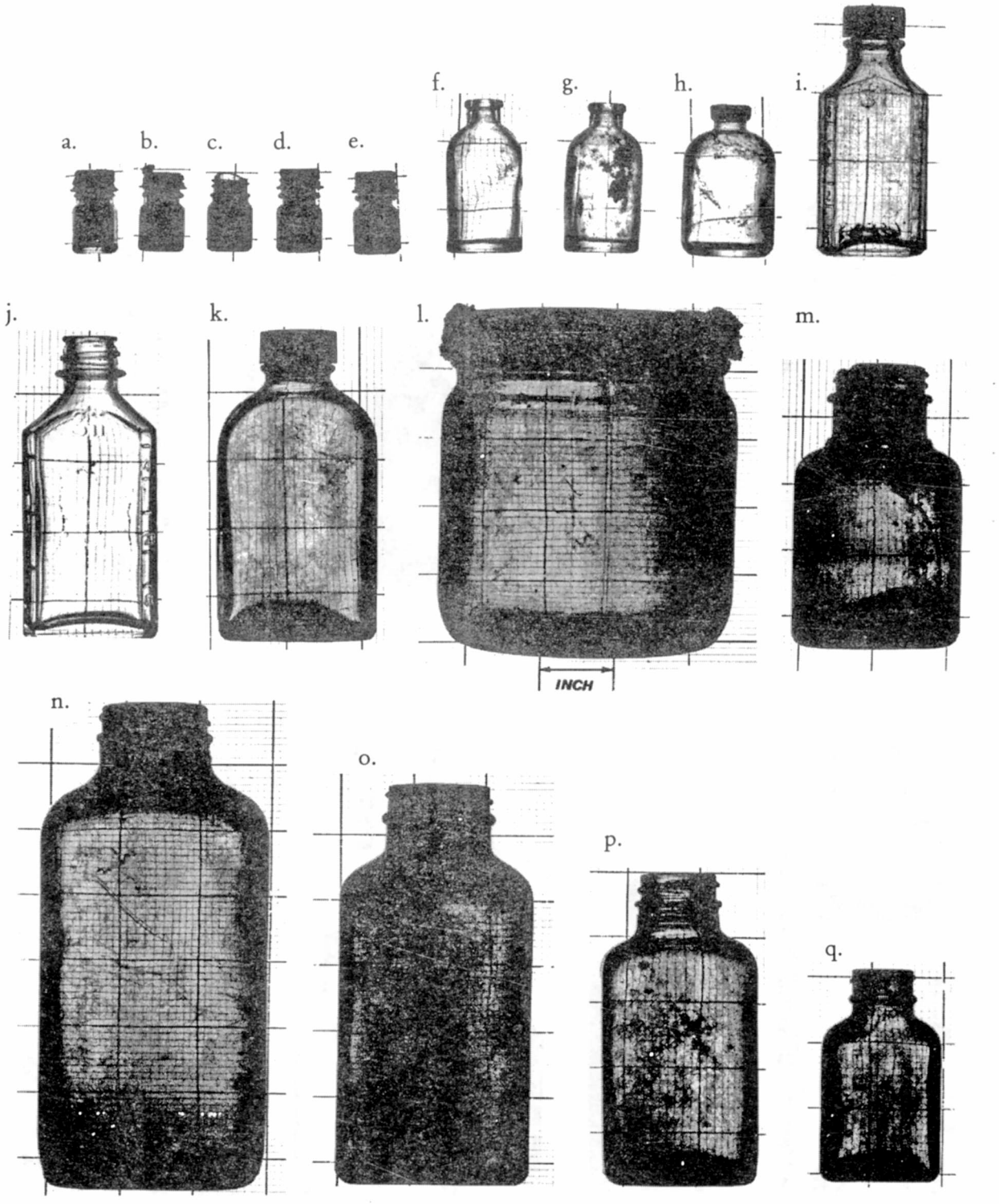


Figure B.15.Pharmaceutical glass artifacts from relocation center contexts; a. clear pill bottle; b-e. amber pill bottles; f-h. clear multiple dose vaccine bottles; i-j. clear syrup bottles; k. green syrup bottle; l-m. amber wide-mouth jars with round bases; n-q. amber wide-mouth jars with square bases with rounded corners. a.-e. MANZ 1993 B-27 (FN B-826, B-839); f. MANZ 1993 A-30, Firebreak C8 (FN A-65); g. MANZ 1993 A-30, Block 27 (FN A-105); h. MANZ 1993 A-30, Block 33 (FN A-116); i. MANZ 1993 A-30, Block 32 (FN A-103); j. MANZ 1993 A-30, Block 20 (FN A-78); k. MANZ 1993 A-30, Block 15 (FN A-42); l-m. MANZ 1993 B-8, Feature 1 (FN A-198).



Figure B.16. Pharmaceutical glass artifacts from excavation Unit 25; a-c. clear round base containers; d-e. clear round base stopper finish bottles; f. clear narrow-mouth bottle; g-h. clear multiple-dose vaccine bottles; i-j. plain hermetically sealed single-dose ampoules; k-p. clear syrup bottles.

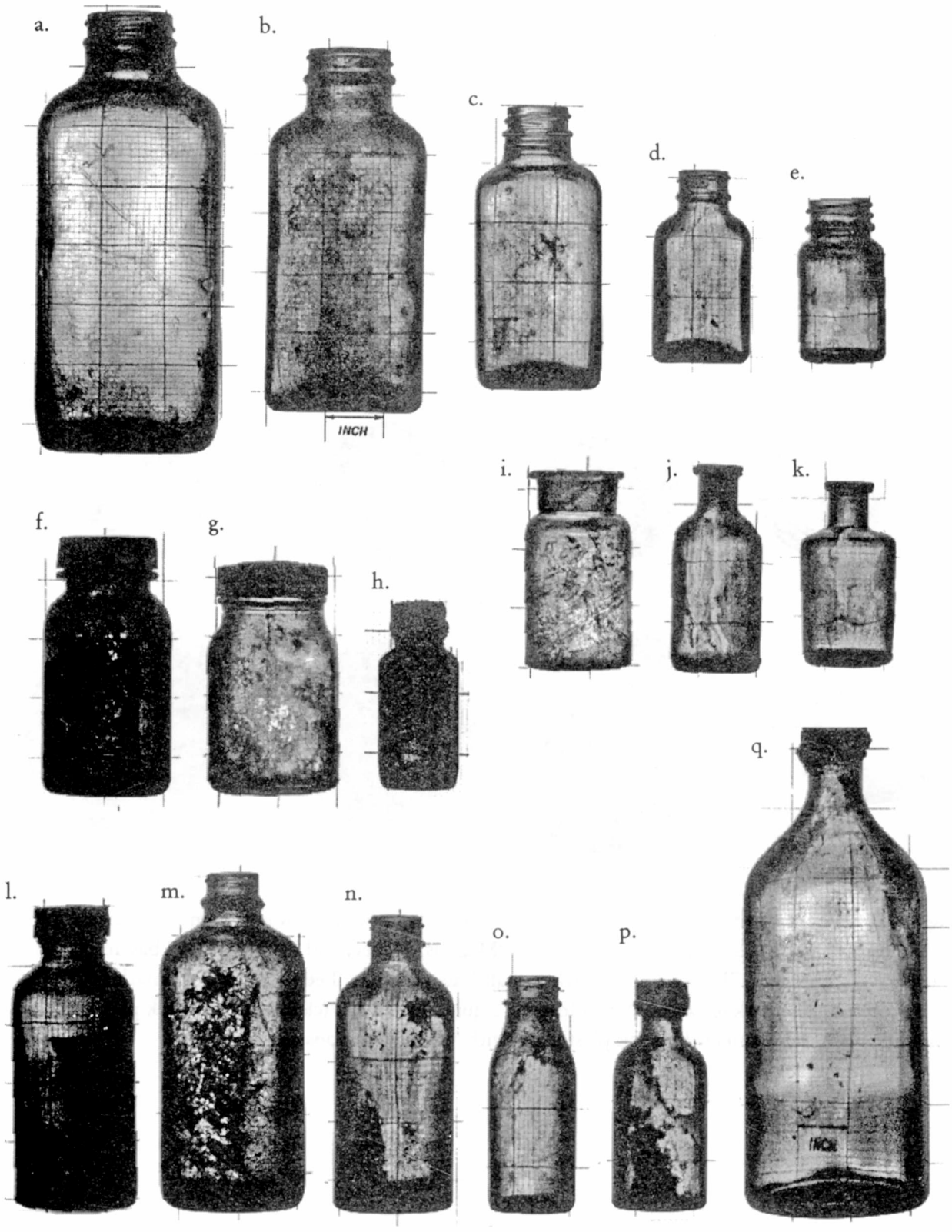


Figure B.17. Amber pharmaceutical glass artifacts from excavation Unit 25; a-e. wide-mouth bottles with square with rounded corners bases; f-h. wide-mouth with round base bottles; i-k. round base with stopper finish bottles; l-q. narrow-mouth with round base bottle.



Figure B.18. Pharmaceutical glass basemarks and embossed plastic caps on jars from excavation Unit 25; a. "Cutter ✚ Standard basemark (clear glass); b. "Magnus, Mabee, and Reynard, Inc" basemark (amber glass); c. "Cumberland Glass Co." basemark (cobalt blue glass); d. "Lee S. Smith" basemark (clear glass); e. "Brockway" basemark (clear glass); f. "Hospital Liquids" basemark (clear glass); g. black plastic cap with "Mallinkrodt" embossment; h. black plastic cap with "Baker's" embossment.

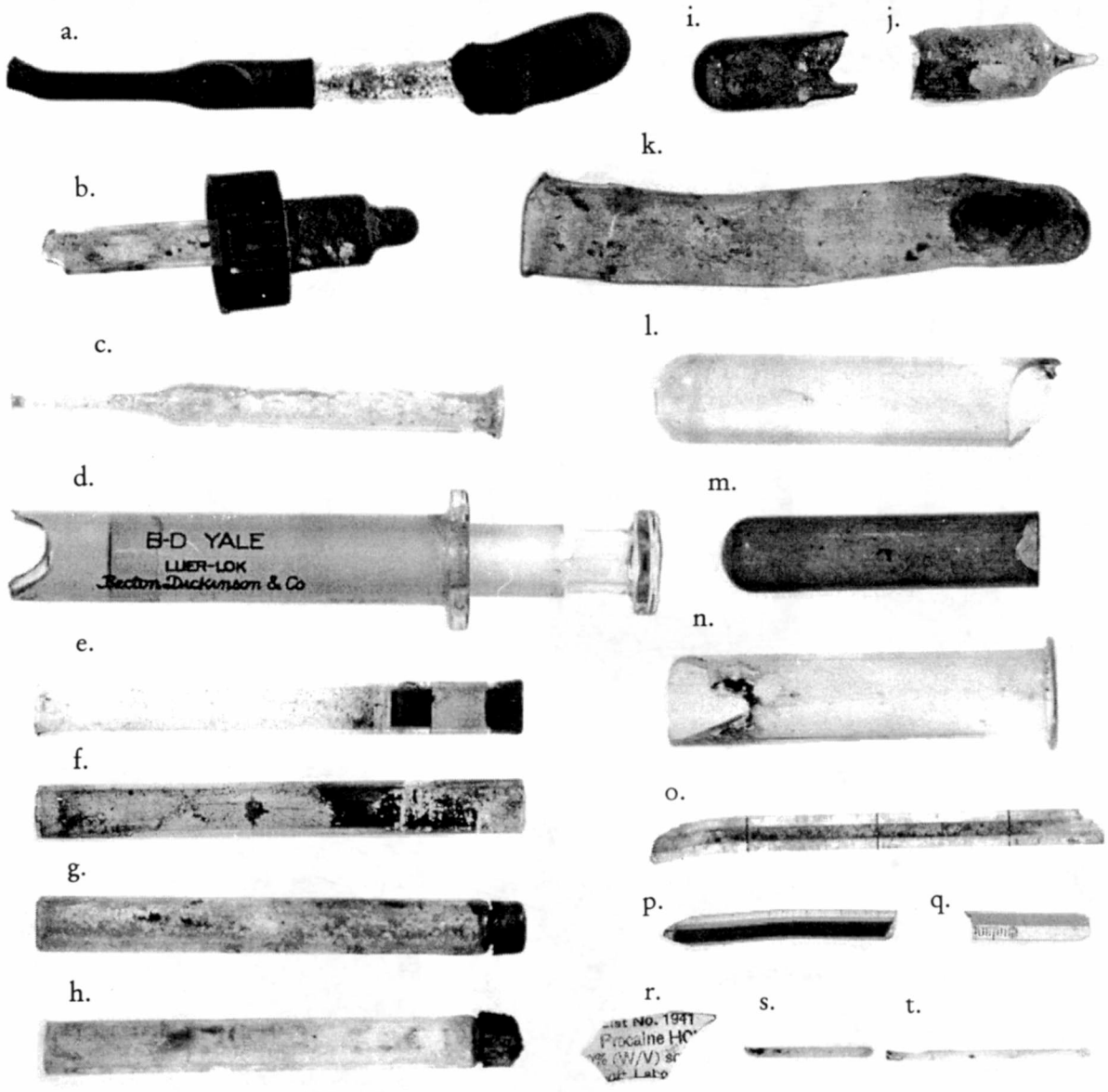


Figure B.19. Miscellaneous small pharmaceutical glass artifacts from excavation Unit 25; a-c. droppers; d. hypodermic syringe; e-h. automatic injection ampoules; i-j. hermetically sealed single dose ampoule fragments; k. melted test tube; l-n. test tube fragments; o-q. oral thermometer fragments; r. thin clear glass fragment; s-t. capillary tubes.



Figure B.20.Other glass artifacts from relocation center contexts; a-g. perfume bottles; h-j. shampoo bottles; k. "Mar·O·Oil" shampoo bottle fragment; l. "Herpicide" bottle fragment; m. "Listerine" bottle fragment, n. "Dr. Lyon's Tooth Powder" basemark; o-p. lotion bottles; q. "Ace" shoe polish bottle. a, f-k, n-q. MANZ 1993 B-8, Feature 1 (FN A-198); b. MANZ 1993 A-30, Block 26 (FN A-102); c. MANZ 1993 A-30, Feature P-46 (FN A-121); d. MANZ 1993 A-30, Firebreak C8 (FN A-65); MANZ 1993 A-30, Block 15 (FN A-45); l. MANZ 1993 B-8, Feature 3 (FN B-789); m. MANZ 1993 A-30, Feature P-20 (FN A-88).

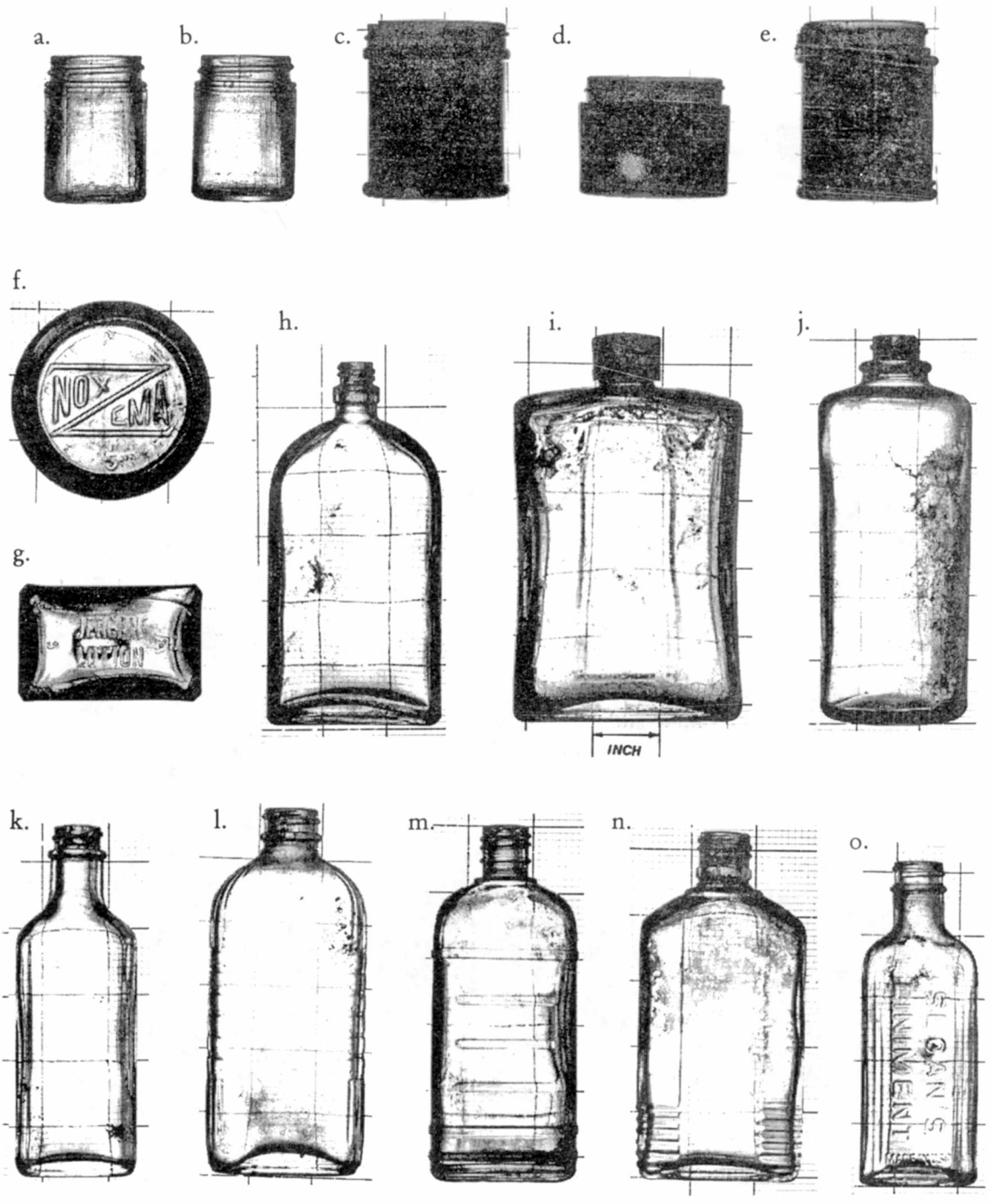


Figure B.21. Other glass artifacts from relocation center contexts; a-b. clear paint jars; c-e. white cold cream jars; f. "Noxzema" basemark; g. "Jergens Lotion" basemark; h-j. after shave (?) bottles; k-m. lotion/cream bottles; n. "Hinds Hand Cream" bottle; o. "Sloan's Liniment" bottle. a-b. MANZ 1993 A-30, Block 19 (FN B-211); c-o. MANZ 1993 B-8, Feature 1 (FN A-198).



Figure B.22. Glass artifacts from post-relocation center contexts; a. "Lone Pine Dairy" milk bottle fragments; b. clear perfume bottle; c. clear narrow-mouth bottle; d. clear syrup bottle; e. clear narrow-mouth vinegar (?) bottle; f. green "Sparkletts Up" soda bottle fragment. a-b. Unit 26, 30-40 cm (FN B-1011); c. Unit 26, 20-30 cm (FN B-1000); d-e. Unit 26, sidewall (FN B-1029, B-1031); f. MANZ 1993 A-37, Locus C (FN A-132).

Appendix C

Metal Artifacts

Lynne M. D'Ascenzo

A total of 1,870 metal artifacts were collected by the National Park Service during field work at Manzanar. The majority, 1,575 items, were recovered during excavation while the remaining 295 items were collected during survey, site recording, and controlled surface collection within the National Historic Site and surrounding area. Excavations were conducted only within the authorized boundaries of the National Historic Site.

This appendix is divided into two parts. The first part identifies and describes artifacts collected during survey, site recording, and controlled surface collection. The specific provenience of each item is provided in the tables, as is the field number (FN) assigned to the item. The second part of this appendix is a detailed list of metal artifacts recovered during excavation. Selected artifacts are illustrated in Figures C.1-C.10.

Survey and Surface Collections

Of the 295 metal artifacts collected from the surface, 202 were collected from within the National Historic Site and 93 were from outlying areas. This assemblage represents the entire occupational sequence of the Manzanar area, from early ranching to townsite to relocation center, to local recreation area, beginning in the late 1880s and continuing to the present day. The relocation center era is best represented by metal collected from the National Historic Site, the town era from collections within the National Historic Site and outlying areas, and the ranching era by items from outlying areas.

Metal artifacts collected are identified, measured, and briefly described below. Where possible, details and dates of manufacture are provided. Artifacts are grouped by type or general use into seventeen categories for the purpose of description in this appendix. Two of the categories, hardware and electrical parts, are associated with buildings. Categories embracing domestic artifacts are represented by cans, reused can fragments, lids and closures, utensils (flatware), and household items. Personal items are represented by four categories: jewelry, buttons, coins, and other personal items. Activities are represented by five categories: toys, musical instruments, cartridges, machinery parts, and tools. The final category includes artifacts that do not readily fit into the categories above.

Artifacts appear in the following tables in order of site number. Within each site listing, the artifacts are further arranged by block and/or block area (for sites in the relocation center) or by locus (for sites outside of the relocation center). Artifacts were selectively collected during inventory of the relocation center and

perimeter areas. Surface collections were made within five relocation center blocks, numbers 12, 13, 14, and 21 and the staff housing block (see Figure 8.10). Provenience control for the blocks was maintained by dividing the blocks into areas, labeled A, B1, B2, C and D, as shown in Figure 8.11.

Hardware

Eleven of the collected artifacts were categorized as hardware (Table C.1). These include: nails, cable, a latch, hinges, a bracket, a piece of sheet metal and an antenna. Seven of the hardware pieces are from relocation center contexts. Items from earlier contexts include hand-wrought hardware, probably produced locally.

Electrical

Three electrical items were collected: an element of a transformer core, a single prong from an electrical plug, and a light cover (Table C.2). The transformer core part is an E-shaped piece of flat metal with a hole at the central intersection. A stack of these pieces would have formed the core. The light cover is from a runway at the airport where a series of lights with metal covers lined the runways. The center of the cover has the "W" over a bar "Westinghouse" symbol.

Cans

One hundred and twenty-two cans were collected from the surface during survey and inventory. Thirty-two are from blocks of the relocation center, 48 are from the perimeter areas, and 42 are from outlying sites. Can dimensions (measured when possible), shapes, embossed lettering, and details of manufacture are listed in Table C.3. Contents were determined from sizes and shapes of cans and from the type of opening.

The majority of the cans date to the twentieth century. The term sanitary is used to indicate crimped seam (or double seamed) cans. Few of the collected cans can be definitely dated to the relocation center era. Metal was assiduously recycled during the war and those cans that were found that could date to the 1940s mostly have a broad time range (e.g. 1935-1960). Contexts suggest many may have been deposited after the relocation center occupation.

Some cans are transitional, using crimped seams along with earlier manufacturing techniques. These include hole-and-cap cans incorporating double seaming, which indicates that they were made after 1895 (Rock 1980) and those with a crimped side seam and flanged and/or soldered ends. Flanged ends (also called folded or stamped) are those that are bent to fit over the can body. The term resealable is used to indicate a can with a finished opening for a pry-off lid. Dates of evaporated milk cans are based on Simmon's (n.d.) milk can typology. Dates of other can-types are based on descriptions by Rock (1978, 1980, 1984), Busch (1981) and Maxwell (1993).

A wide range of dates is represented by the can collection, covering all periods of occupation of the property. The earliest cans, found at outlying sites, date to the late 1800s, and probably relate to early ranching and settlement. Cans dating from the early 1900s into the 1920s were primarily recovered from old town dumps on the west and northwest sides of the relocation center, at outlying sites. Can assemblages dating to the 1920s-30s were collected primarily in perimeter areas near the old downtown section of the town of Manzanar. Cans from sites associated with the town of Manzanar date to no later than about 1935, when the last town occupants left the area. Relatively few cans dating to the relocation center era were collected, probably due to recycling of these materials for the war effort. Several can parts have nail holes, indicating reuse, perhaps to patch holes in the barracks siding (see below). Several cans dating to the 1960s and 1970s were collected within the

central area of the relocation center and from along outlying roads.

Can Ends and Can Fragments

Ten can ends and can fragments were collected (Table C.4). Seven of these had nail holes or nails in their edges and may have been used as patches. Stories about patching the newly built relocation center barracks have been told and recorded by more than one evacuee.

Lids and Closures

Fifty-six lids and closures were collected (Table C.5). Dates, listed when possible, are derived from Lief (1965) and Hull-Walski (1989). Slip-fit lids are flanged, with edges bent down so that they fit over the body of a can. Lids and other closures are round unless otherwise noted. Pry-off or press-fit lids, often used on containers for cocoa and other dry foods, are round to oval discs that fit into the flat top surface of a resealable can. Some of the lids were integral parts of metal cans (e.g., key-opened cans), while others were made for glass bottles or jars (e.g., canning or condiment jars). Crown caps, developed after 1903, were most often used for beverage bottles, but were also used on cone-top beer cans.

Utensils

Seven eating utensils (four spoons and three forks) were collected (Table C.6). All three forks have four tines and all but one spoon are teaspoons. Two of the utensils are missing their handle tips. One fork and a spoon are patterned and silver-plated (FN B-288 and B-501). One spoon (FN B-803) from an outlying site was found associated with artifacts from the late 1800s. The spoon is unusual in that it is composed of two parts that are joined by rivets and solder. One fork (FN B-566) has protruding metal rivets, for attaching wood or other material to the handle.

Household

Seventeen artifacts are related to household activities (Table C.7). They include bakeware, tableware (except for flatware, see above), infant formula measuring cups, container openers, stove parts, and furniture parts.

Jewelry

Two pieces of jewelry were found in blocks of the camp (Table C.8). One is an adjustable gold-colored ring with a moveable sizer on the interior. It has an openwork setting with a heavy interwoven branch motif, and the stone is missing. The other is a coated brass pin with a nautical motif of an oar and a life preserver.

Buttons

Four metal buttons were found in blocks of the camp (Table C.9). All were collected from relocation center contexts. Detailed analysis of these buttons is included in Appendix E.

Coins

Seven copper pennies, a nickel, a dime, and a half dollar were found (Table C.10). Dates range from 1854 to 1951. Six were struck at the San Francisco mint ("S" mark) and four, including the 1854 half dollar, were struck at the Philadelphia mint (no mark). All were in fair to good condition.

Other Personal Items

Nineteen artifacts are personal items that do not fit into the above categories (Table C.11). Included are seven artifacts related to shaving, and three other self-care items. Five objects may be related to luggage, two are from clothing accessories, and two are recreational items. The toothpaste and shaving cream tubes are made of soft metal (possibly lead), with raised lettering on the shoulder around threaded openings. One of the shaving cream tubes (FN B-763) has a wire loop attached to the shoul-

der, and a lead cap with a loop handle embossed with a "W."

Toys

Eight toys, or portions of toys, were found. All but one were from relocation center contexts (Table C.12). Four complete toys include two jacks and two whistles. The jacks are iron, each with four knobbed and two pointed ends. The whistles are composed of two pieces of metal that are crimped together. One side of each whistle has two tone cavities of different lengths (2¼ inches long and 1$^{15}/_{16}$ inches long) pressed into the metal. The opposite (top) side is perforated by a rectangular hole (¾ inch long) near the mouthpiece.

Four toy fragments were collected including: half of a toy pistol (minus the handle that was probably of some other material), the head of a toy shovel, a toy wheel, and a pry-off lid with a central slot that may be from a toy bank.

Musical Instruments

Portions of two harmonicas, both inscribed, were found at outlying sites associated with occupations prior to establishment of the relocation center (Table C.13). Both are of German origin. One is a side plate inscribed with barely visible fancy script, while the other is a fragment, probably of a side plate.

Cartridges

Four cartridges were collected (Table C.14). Three are shotgun shells and one is a military shell.

Machine Parts

Thirteen pieces of machinery, or machinery parts, were collected (Table C.15). Most were from the Manzanar Federal Airport (MANZ 1993 B-27).

Tools

Ten tools were collected (Table C.16). Two are round-nosed shovel heads, one with a 3¼-inch-by-3-inch rectangular piece cut from one edge. Six fish hooks in three sizes and two styles were found near the mess hall location in residential Block 9. Two have barbed ends and measure 2¾ inches long and 1⅞ inches long; both have looped line-attachment ends. The other four hooks are 1$^{7}/_{16}$ inches long. One of these has a looped line-attachment end while the other three have T-shaped line attachments. All four have straight pointed ends without barbs. A twist auger drill bit in the Russell Jennings pattern and a wire calf weaner were also collected. The calf weaner is composed of a woven basket and an attached wire circle with two moveable side loops. This contraption would fit over the muzzle of a calf and is somewhat adjustable.

Unclassified/Other

Seven artifacts do not fit in any of the above categories (Table C.17). One is a stencil (FN A-191) made of sheet metal with the letters "WRA" stamped into it. WRA is the acronym for the War Relocation Authority, responsible for administration of the relocation center. The stencil measures 12¾ inches by 6½ inches with the letters covering an area 5⅛ inches by 1½ inches. The stencil was apparently re-used as a sign. Ten nails protrude from the top edge and holes for four more are along the left edge, as if it had been attached to something (possibly a window or door frame). A larger single hole at the right end, ¾ inch in diameter, is original to the stencil and may have been for hanging/storage purposes.

Excavation Collection

A total of 1,575 pieces of metal was recovered from 23 of the 26 units excavated at Manzanar National Historic Site. The count and identification of metal artifacts recovered from the units are listed below by site, unit and level (Table C.18). Artifacts by unit are quantified by functional categories in Chapters 9, 11, and 13.

Metal recovered from each unit was identified, counted, and any marks or pertinent attributes were briefly described. Much of the metal was fragmented and corroded, especially artifacts recovered from excavation Units 25 and 26, located in the dump of the relocation center hospital. Few whole cans were recovered from excavation units. Much more common were remnant seam and body fragments.

Over a third of the artifacts (582 items) were nails, tacks, and staples, which are listed in Tables C.19 and C.20. Four hundred and eighty-five were common (or box) nails and nail fragments. Most of the whole wire nails (n=306) are common sizes ranging from 20d (4 inches) to 2d (1 inch). There are 179 wire nail fragments. Other types of wire nails recovered include: one casing nail, 21 finishing nails and 46 roofing nails. Six machine-cut nails were also recovered, as were 21 staples and two tacks.

Nails were measured by laying them against a template and matching shank length to a corresponding size. Nails that did not match a template size were measured. Standard sizes are expressed in pennyweight, indicated by a "d," which is the size designation standing for "penny." Teague (1980: 91) breaks down common uses for nails by size. Smaller nails, sizes 2-5d, are used for roofing, lath work, and finishing. Nails in sizes 6-10d are used for utility carpentry, especially siding, flooring, light framing and interior fitting. Sizes 12-16d are used for light framing, and stud wall construction, while 20d and larger are used for heavy framing.

Table C.1.
Metal Hardware Collected During Survey and Surface Collection.

PROVENIENCE	FN	DIMENSIONS	OBJECT
MANZ 1993 A-13	A-163	3⅞" x 1⅝"	hand wrought hinge, hook or latch
MANZ 1993 A-15, Locus A	B-565	5⅛" x 3⅞"	piece of sheet metal
MANZ 1993 A-30, Block 14, Area C	B-529	1 1/16" long	wire nail
MANZ 1993 A-30, Block 35	A-145	7 3/16" long	latch handle: "STANLEY SW MADE IN U.S.A."
MANZ 1993 A-30, Firebreak C5	A-53	3" long	square finishing nail
MANZ 1993 A-30, Firebreak C9, north half	A-96	13" long	wire cable with clip and nut
MANZ 1993 A-30, Root Cellar Block	A-154	10½" long	antenna with U-shaped mounting bracket and screw
MANZ 1993 B-27	B-823	1¾" x 1¾"	half a hinge
		3¼" x 1"	bracket
MANZ 1993 B-32	B-844	4" long	hand wrought iron nail
		2" long	square cut nail

Table C.2.
Metal Electrical Parts Collected During Survey and Surface Collection.

PROVENIENCE	FN	DIMENSIONS	OBJECT
MANZ 1993 A-30, Block 36	A-144	1" x 7/32"	single prong from electrical plug:"ARROW H&H U.S.A."
MANZ 1993 A-32	A-195	4¼" x 3⅞"	element from a transformer core
MANZ 1993 B-27	B-824	original dia. approx. 7"	two fragments of a runway light cover: "REMOVE T.../ (Westinghouse logo)/PATENT NO 2.184.0/...STYLE ..."

Table C.3.
Cans Collected During Survey and Surface Collection.

PROVENIENCE	FN	TYPE	SHAPE/CONTENT	DIMENSIONS H X DIA or H X L X W	COMMENTS/DESCRIPTION	DATE
MANZ 1993 A-6	A-134	resealable sanitary	log cabin syrup	3⅝" x 3⅝" x 2½"	on cap: "PULL OFF BY HAND"	ca. 1900+
		sanitary	long rectangular/ meat (fish)	6" x 1¾"	with key	1914+
		hole-in-top	cylinder/ evaporated milk	3 13/16" x 2 13/16"	opened with two knife slits	manufactured 1917-1929
MANZ 1993 A-7	B-562	early sanitary	tall rectangular/ liquid	5½" x 3 3/16" x 2"	embossed letters at one end, "Punch holes in opposite corners"	ca. 1900
		sanitary	cylinder	1 13/16" x 2 11/16"	embossed: "ORTEGA CHILES"	ca. 1900+
		resealable sanitary	cylinder	1 1/16" x 3"	pry-off lid opening, 2⅜"	ca. 1900+
		resealable sanitary	cylinder	4⅝" x 3"	pry-off lid opening, 2 7/16" dia.	ca. 1900+
		resealable sanitary	cylinder	3¾" x 3⅜"	pry-off lid opening, 2½" dia.	ca. 1900+
		hole-in-top	cylinder/ evaporated milk	4 5/16" x 2 13/16"	opened with two opposing slits	manufactured 1915-1930
		hole-in-top	cylinder/ evaporated milk	2½" x 2½"	-	manufactured 1915-1925
		resealable transitional	cylinder	3⅝" x 1½"	pry-off lid opening, 1½" dia., flanged top, crimped bottom and side seam	1910- 1918
		sanitary	cylinder/food	5⅞" x 2⅝"	ragged cut edges of opening	ca. 1900+
		resealable sanitary	cylinder	6 7/16" x 3¾"	pry-off lid opening 2⅞" dia. - embossed on bottom:"o ★ JJ"in three concentric rings	ca. 1900+
	B-561	sanitary	rectangular/meat (fish)	13/16" x 4¼ x 3"	embossed on bottom: "NORVEGE"	1914+
	B-556	sanitary	cylinder/food	4½" x 3⅜"	embossed on bottom: "6043"	ca. 1900+
		sanitary	cylinder/food	2 7/16" x 2⅝"	-	ca. 1900+
		sanitary	cylinder/food	3 13/16" x 2 11/16"	lid removed	ca. 1900+
		sanitary	cylinder/food	4⅝" x 3"	embossed on bottom: "S 6 8"	ca. 1900+
		sanitary	cylinder/food	3 13/16" x 2 11/16"	embossed on bottom: "ESTAB."	ca. 1900+

Table C.3.
Cans Collected During Survey and Surface Collection.

PROVENIENCE	FN	TYPE	SHAPE/CONTENT	DIMENSIONS H X DIA or H X L X W	COMMENTS/DESCRIPTION	DATE
MANZ 1993 A-7	B-556	hole-in-top	cylinder/ evaporated milk	4 3/8" x 2 13/16"	opened with punched opposing holes	manufactured 1915-1930
		hole-in-top	cylinder/ evaporated milk	4 1/4" x 2 13/16"	-	?
		resealable transitional	cylinder	4 3/16" x 3 3/16"	offset pry-off lid opening, 2 1/16", indented line behind hole, flanged top and bottom, crimped side seam	late 1890s-1918
MANZ 1993 A-7	B-557	sanitary	cylinder/food	4 5/8" x 4"	smoothly opened, lid attached	ca. 1900+
		sanitary	cylinder/food	4 5/8" x 4"	embossed on bottom: "TJ ZL"	ca. 1900+
		sanitary	rectangular/meat (fish)	13/16" x 4 1/8" x 2 7/8"	key-opened, lid rolled to one side, embossed on bottom: "NORVEGE"	1914+
		resealeble sanitary	rectangular/spice	3 1/4" x 2 1/4" x 1 5/16"	-	ca. 1900+
		sanitary	cylinder/oil	1 7/8" x 3"	2" spout, threaded cap ½" X 2" dia.	ca. 1900+
		sanitary	rectangular/meat	2 13/16" x 2 1/16"	top removed with key, embossed on bottom: a large "1" encircled by "... OY APROGADO ..."	ca. 1900+
		sanitary	cylinder/food	2" x 2 5/8"	embossed on top: "ORTEGA CHILES"	ca. 1900+
		resealeble sanitary	cylinder/coffee?	3 3/8" x 4 1/4"	key-opened, top and bottom rusted together	ca. 1900+
	B-558	resealeble sanitary	cylinder	3 3/16" x 3 3/8"	pry-off lid opening, 2 3/4"	ca. 1900+
		resealeble sanitary	cylinder	4 5/8" x 3"	pry-off lid opening, 2 3/8"	ca. 1900+
		hole-and-cap	tall rectangular/ liquid	2" x 5 5/16" x 3 3/16"	embossed on top: "PUNCH HOLES IN OPPOSITE CORNERS", cap soldered onto hole on bottom, dates	ca. 1900
		sanitary	oval/meat	1½" x 6½" x 4 3/8"	embossed rings top and bottom, three unreadable symbols on top, one-piece bottom, crimped top.	ca. 1900+
	B-567	sanitary	cylinder/food	4" tall	flattened	ca. 1900+
MANZ 1993 A-15 Locus A	B-564	sanitary	cylinder/food	4 1/4" x 3"	-	ca. 1900+
		sanitary	cylinder/food	4½" x 3 3/8"	-	ca. 1900+
		hole-in-top	cylinder/ evaporated milk	4 5/16" x 2 13/16"	-	-
		sanitary	rectangular	4 3/4" tall	flattened	ca. 1900+
		sanitary	bucket/lard	5 3/4" tall	-	ca. 1900+
	B-565	hole-in-top	cylinder/ evaporated milk	2½" x 2½"	-	manufactured 1915-1925

Table C.3.
Cans Collected During Survey and Surface Collection.

PROVENIENCE	FN	TYPE	SHAPE/CONTENT	DIMENSIONS H X DIA or H X L X W	COMMENTS/DESCRIPTION	DATE
MANZ 1993 A-15 Locus A	B-565	sanitary	pocket tobacco	-	-	1913+
MANZ 1993 A-15 Locus A	B-566	hole-in-top	cylinder/ evaporated milk	2¾" dia.	fragment	-
		hole-in-top	short, wide cylinder/meat?	4¼" dia.	end with solder hole, embossed lines radiating from hole, lapped/soldered seam	1820-1890
		sanitary	oval	-	attached lid remnant	ca. 1900+
	B-571	sanitary	cylinder	6½" tall	rusted rivets as if a handle were attached	ca. 1900+
MANZ 1993 A-30 Staff Housing, Area A	B-544	sanitary	squat cylinder/paint or grease?	1½" x 4¼"	concentric circles stamped on bottom, pry-off opening, gutter around rim	1940s
		sanitary	cylinder/food	4¾" x 2½"	-	ca. 1900+
		resealable sanitary	cylinder	7" tall	multifriction opening	ca. 1900+
Area B	B-546	sanitary	cylinder/beverage	5½" x 4⅞"	holes poked opposite on top and sides	ca. 1900+
		sanitary	cylinder/beverage	6" x 2¾"	opened with church key	1935-1960s
		sanitary	cone-top/beverage	flattened	notched side seams	late 1950s - 1960s
Area C	B-547	sanitary	rectangular/meat (fish)	4" x 3¼" x ¾"	opened with key, "... RODU ... ORW ..." (product of Norway)	1914+
		sanitary	cone-top/beverage	5⅜" x 2¾"	low profile, notched side seams, concave base	1937+
		hole-in-top	cylinder/ evaporated milk	-	smashed	-
Area D	B-548	sanitary	cylinder/beverage	6$\frac{3}{16}$" x 2⅝"	notched side seams, opened with church key	1960s
		sanitary	cylinder	6" x 2½"	-	ca. 1900+
MANZ 1993 A-30 Block 12, Area B1	B-552	sanitary	cylinder/food	9¼" tall	-	ca. 1900+
	B-554	sanitary	cylinder	3⅜" dia.	-	ca. 1900+
		hole-in-top	cylinder/ evaporated milk	3⅞" x 2$\frac{13}{16}$"	-	manufactured 1935-1945
	B-555	sanitary	pocket tobacco	3$\frac{13}{16}$" x 2$\frac{7}{16}$ (flattened)	top half of a collapsible tin with hinged lid	patented 1930
MANZ 1993 A-30 Block 13, Area B1	B-506	sanitary	cylinder/beverage	4¾" x 2⅝"	opened with church key	1935-1960s
	B-507	sanitary	cylinder/beverage	4$\frac{13}{16}$" x 2½"	opened with churchkey, "WHITE ROCK LEMON GINGER ALE, White Rock Bottlers Co. ... Los Angeles, CA., By Authority of White Rock Corp. ... REG. U.S. PAT.", notched side seam	1960s

Table C.3.
Cans Collected During Survey and Surface Collection.

PROVENIENCE	FN	TYPE	SHAPE/CONTENT	DIMENSIONS H X DIA or H X L X W	COMMENTS/DESCRIPTION	DATE
MANZ 1993 A-30 Block 13, Area Area C	B-517	sanitary	cylinder/beverage	6 13/16" x 4¼"	opened by opposing church key holes, four circumference indents on body, four embossed circles on bottom	1950s1960s
	B-518	sanitary	cylinder/beverage	5½" x 4"	two crudely punched opposing holes in top	ca. 1900+
	B-519	sanitary	cylinder/beverage	4¾" tall	one end cut open, screened design: eagle and leaf and an obliterated figure enclosed in an oval "...Brewing CO. 1947"	1947
	B-521	sanitary	cone-top/beverage	5⅛" x 2¾"	high profile, concave base, straight soldered seam	1945-1958
MANZ 1993 A-30 Block 14, Area A	B-520	hole-in-top	cylinder/ evaporated milk	3⅞" x 2 13/16"	-	-
Area B1	B-524	sanitary	cylinder/beverage	4⅝" x 2½"	aluminum top, pull tab hole	1960s-1970s
Area B2	B-526	sanitary	cone-top/beverage	(smashed)	notched side seam, concave base	1935-late 1950s
		sanitary	cylinder	2½" tall	smashed	ca. 1900+
Area C	B-529	sanitary	cylinder	2 13/16" x 2 1/16"	top removed cleanly, a "9" or "6" embossed on bottom	ca. 1900+
		sanitary	oval/meat	1¼" x 6½ x 4¼"	-	ca. 1900+
MANZ 1993 A-30 Block 21 Area B1	B-533	sanitary	cylinder/beverage	5" x 2¾"	one church key hole	1935-1940s
Area B2	B-536	sanitary	cylinder	3 3/16" x 2⅝"	opened with churchkey, embossed on top: "3OUT", an oval in two rings embossed on bottom	1935-1960s
		hole-in-top	cylinder/ evaporated milk	3⅞" x 2 13/16"	embossed "PUNCH ... E"	manufactured 1931-1945
MANZ 1993 A-30 Block 31	B-620	hole-in-top	cylinder/ evaporated milk	3 13/16" x 2⅞"	opened with 2 long slits	?
MANZ 1993 A-30 Block 19	B-211	sanitary	tall oval	2⅛" x ⅞" x 1 11/16"	-	ca. 1900+
MANZ 1993 B-1 Locus A	B-722	sanitary	cone-top/beverage	-	flattened	1935-1950s
MANZ 1993 B-2	B-783	sanitary	round/shoe polish	¾" x 3⅛"	embossed: "PATENTED DEC.7.86 PATENTED MCH.22.8"	1908+
		sanitary	short cylinder/ meat?	2 9/16" x 2 11/16"	embossed: "CUT OFF OTHER END TAYLORS"	ca. 1900+
		hole-in-cap, thick solder, 3 piece	wide cylinder/meat?	2¼" x 4⅝"	flanged top and bottom opening strip unused -opened with opener three-quarters of the way around	1895-1900

Table C.3.
Cans Collected During Survey and Surface Collection.

PROVENIENCE	FN	TYPE	SHAPE/CONTENT	DIMENSIONS H X DIA or H X L X W	COMMENTS/DESCRIPTION	DATE
MANZ 1993 B-2	B-783	hole-in-cap	tall rectangular/ meat	3" x 2" x 4⅜"	three-piece, machine soldered	1890 - 1900
MANZ 1993 B-4	B-807	transitional	cylinder with wide-shouldered opening in top and reinforced bottom	5⅛" x 5¼"	thick gauge metal, flanged ends, lapped and crimped seams, machine soldered, extra strip soldered around base	ca. 1900
		hole-in-top	cylinder/ evaporated milk	2½" x 3½"	-	manufactured 1915 - 1925
		sanitary	cylinder	4½" x 3 3/16"	embossed: "PATD ..." top seam is exaggerated, can opened in a swirl pattern with opener	ca. 1900+
		sanitary	tall rectangular	3¾" tall	embossed: "4 OZ. of MGH ENERGIES"	ca. 1900+
MANZ 1993 B-5	B-801	sanitary	cone-top/beverage	-	high profile	1945-1958
		hole-in-top	cylinder/ evaporated milk	2½" x 2½"	opened with two opposing slits	manufactured 1915 - 1925
MANZ 1993 B-7 Locus A	B-757	sanitary	pocket tobacco	4¼" x ⅞"	red paint visible, hinged lid, curved (concave) front	1913+
		sanitary	pocket tobacco	⅞" x 2¾" top ⅞" x 7/16" bottom	collapsible	1930+
	B-759	hole-in-cap	cylinder	4 13/16 x 4"	flanged top and bottom, machine soldered seam, opened half way around with punch-type opener, protruding stick in hardened contents	1895-1910
	B-758	hole-in-top	cylinder/ evaporated milk	2 7/16" x 2½"	-	manufactured 1920 - 1930
MANZ 1993 B-7 Locus A	B-758	hole-and-cap	cylinder	3¼" x 3"	flanged top and bottom, cap with raised edge	1890s-early 1900s
		hole-in-top	cylinder/ evaporated milk	3⅞" x 2 13/16"	-	manufactured 1917 - 1929
MANZ 1993 B-7 Locus A	B-761	early sanitary, resealable	cylinder	3 13/16" x 3⅞"	embossed: "TO POUR SYRUP PUNCH TWO HOLES TO CLOSE TURN COVER"	1900-1910
		resealable transitional	cylinder	3 9/16" x 3 7/16"	pry-off lid opening 2¾" dia., flanged ends, crimped side seams	late 1890s - 1918
	B-760	resealable? transitional	cylinder	4¾" x 3 1/16"	flanged top and bottom, pry-off lid or vent cap opening 1/16" dia., crimped side seam	late 1890s - 1918
		hole-in-top	cylinder/ evaporated milk	4⅜" x 2 13/16"	pry-off lid opening 1 7/16" dia.	manufactured 1915 - 1930
MANZ 1993 B-7 Locus B	B-768	sanitary	rectangular/spice?	3¼" x 2¼ x 1 1/16"	opening on top 1 5/16" dia.	ca. 1900+

Table C.3.
Cans Collected During Survey and Surface Collection.

PROVENIENCE	FN	TYPE	SHAPE/CONTENT	DIMENSIONS H X DIA or H X L X W	COMMENTS/DESCRIPTION	DATE
MANZ 1993 B-7 Locus B	B-768	hole-and-cap	cylinder/food		flanged top and bottom	1880s - 1918
MANZ 1993 B-8	B-822	hole-in-top	cylinder/ evaporated milk	-	smashed	-
		hole-in-top	cylinder/ evaporated milk	-	smashed	-
MANZ 1993 B-10	B-803	resealable soldered	cylinder	3 7/8" x 2 1/4"	lapped and soldered seams, flanged bottom, slip-fit lid	1880s
		resealable soldered	lard bucket	5" x 16 1/4" circumference (flattened)	press fit lid, lapped soldered seams, oval with embossed words: "N.K. FAIRBANK & CO. LARD COMPOUND CHICAGO ST. NEW YORK HUTCHINSON" and a boar's head design in center	1880s-1910
MANZ 1993 B-15 Locus A	B-808	sanitary	cylinder	4 5/8" x 4 1/4"	screened label: "IMITATION MOTHER's MILK" square hole punched in bottom, top cut-off (possibly reused as plant container)	1940s
Locus C	B-856	hole-in-top	cylinder/ evaporated milk (fragments)	2 13/16" dia.	-	-
MANZ 1993 B-16	B-815	hole-in-top	cylinder/ evaporated milk	2 5/16 x 2 1/2"	opened with church key	?
MANZ 1993 B-24		hole-in-top, flanged	cylinder/meat	1 3/16" x 4 1/4"	flanged top and bottom, embossed: "STAB. 22"	1800s-early 1900s
MANZ 1993 B-27	B-830	re sealable sanitary	cylinder/sterno?	1 1/4" x 2 1/2"	pry-top opening, gutter around rim and lid	1940s
MANZ 1993 B-26	B-770	repeatable transitional	tall oval flask	4 1/8" x 3 1/4" x 1 1/4"	interior lead alloy threads for cap, flanged and machine soldered ends, crimped side seam	1800s - early 1900s
MANZ 1993 B-34	B-849	sanitary	pocket tobacco	4 1/4" x 2 3/4" x 1 1/16"	press fit lid	1913+
		sanitary	pocket tobacco	4 3/8" x 3" x 1"	hinged lid, flat sides	1913+
		sanitary	tall square/spice tin	3 3/16" x 1 13/16"	round shaker insert 1/2" dia.	ca. 1900+
		sanitary	square	1 3/16" x 2 7/8" sides	protruding threaded opening 1 5/8"dia. with threads 7/16" high	ca. 1900+
		hole-in-top	cylinder/ evaporated milk	2 1/16" x 2 1/2"	-	manufactured 1920 - 1930
		hole-in-top	cylinder/ evaporated milk	4 3/8" x 2 13/16"	-	manufactured 1917 - 1929
		hole-in-top	cylinder/ evaporated milk	3 7/8" x 2 13/16"	-	manufactured 1917 - 1929

Table C.3.
Cans Collected During Survey and Surface Collection.

PROVENIENCE	FN	TYPE	SHAPE/CONTENT	DIMENSIONS H X DIA or H X L X W	COMMENTS/DESCRIPTION	DATE
MANZ 1993 B-34	B-849	hole-and-cap	rectangular	4½" x 4⅜" (front)	flanged ends, machine soldered seam, sloppy soldered cap, embossed: "AMERICAN FISH AND OYSTER CO PACKERS (front) ECLIPSE BRAND TRADE MARK (back) CUT OUT SOFT TIN END (end)"	1800s-early 1900s
		sanitary	oval/powder flask	4½" x 3½"	1" dia. cap. top part of can fitted over bottom part	ca. 1900+
Reservoir Road (1993 A), isolate	B-769	soldered	tall oval	4 3/16" x 3¾" x 1 5/16"	bottom embossed: "PAT. 1859"	1859+
Bairs Creek (1993 B), isolate	B-813	sanitary	cylinder	¾" x 2 11/16"	government issue c-ration	probably 1940s

Table C.4.
Can Ends and Can Fragments Collected During Survey and Surface Collection.

PROVENIENCE	FN	TYPE	DIA	COMMENTS/DESCRIPTION
MANZ 1993 A-30 Staff Housing, Area B	B-546	removed can end	3¼"	bent in half
MANZ 1993 A-30 Block 12, Area A	B-549	removed can end	3¾"	unreadable embossed letters, four nail holes (one with nail) around edge
MANZ 1993 A-30 Block 12, Area B1	B-552	half of a removed can end	6"	three nail holes spaced around edge
MANZ 1993 A-30 Block 12, Area D	B-548	removed can end	2¼"	-
MANZ 1993 A-30 Block 12, Area C	B-555	removed can end	5¾"	seven nail holes around edge
MANZ 1993 A-30 Block 14, Area B1	B-524	removed can end	3¼"	three nail holes around edge
		triangular piece cut from a can end	originally 5½"	three nail holes at the points, one nail still attached
MANZ 1993 A-30 Block 14, Area C	B-529	can end	3"	single embossed letter or number, four nail holes around edge
MANZ 1993 A-30 Block 14, Area D	B-531	can end	6"	three nail holes in edge
MANZ 1993 A-15, Locus A	B-565	removed can end	3 3/16"	embossed: "6 8"

Table C.5.
Lids and Other Closures Collected During Survey and Surface Collection.

PROVENIENCE	FN	TYPE	SIZE L x W or DIA	COMMENTS/DESCRIPTION
MANZ 1993 A-7, Locus F	B-561	can key	1⅞" long	strip rolled-up on key
		can key with lid rolled-up on it	3 3/16" x 2 7/16"	key is 4" long
MANZ 1993 B-7, Locus F	B-561	rectangular can top removed with key	3½" x 2½"	meat tin top embossed: "R ... AREITY ... US ..."
	B-557	square slip-fit	3¼"	embossed: "LIPTON'S TEA THE MOST DELICIOUS THE WORLD PRODUCES"
		round can top removed with key	3⅜"	embossed: "BB★", sanitary can
	B-558	round can top removed with key	5⅛"	from a sanitary can, possibly a coffee can
		pry-off	2¾"	from a can
		pry-off	3¼"	from a can
	B-563	crown cap	-	from a bottle (or possibly a cone-top can)
		round can top removed with key	2¾"	crimped seam
MANZ 1993 A-15 Locus A	B-566	rectangular can top removed with key	3⅛" x 2½"	from a meat tin
		crown cap		with cork insert; 1907- 1955
		spout	1⅛" X½"	from oil can, made of lead alloy, embossed in circle at base of spout: "PAT. PENDING 3 IN 1 OIL CO."; 1922-1923
	B-566	?	2 11/16" dia. ½" long post	lead alloy cap with central protruding post
MANZ 1993 A-16 Locus F	A-91	screw cap	2¼"	aluminum, embossed: "HARRIETT HUBBARD AYER. FAMOUS BEAUTY PREPARATIONS U.S.A."
(MANZ 1993 A-22)	A-110	screw cap	1"	¾" tall, from a bottle, early continuous thread
MANZ 1993 A-30 Staff Housing, Area A	B-544	crown cap	-	from bottle (or possibly a cone-top can)
MANZ 1993 A-30 Staff Housing, Area B	B-546	canning lid	2½"	from jar
		screw cap	2½"	interrupted thread, knurls on side, curled edge - from jar
		screw cap	2½"	interrupted thread, knurls on side, curled edge - from jar
MANZ 1993 A-30 Staff Housing, Area C	B-547	pry-off lid	2¼"	embossed: "KEEP COVER TIGHTLY CLOSED" - from can
		roll-on cap	2½"	knurled side - from jar
		reuseable cap	½"	cap with interior rubber gasket around lip - for bottle
		oval pry-off lid	2" x 1"	from can
MANZ 1993 A-30 Staff Housing, Area D	B-548	roll-on	1½"	curled edge — for wide mouth bottle
MANZ 1993 A-30 Block 12, Area B2	B-554	screw cap	1 1/16"	-
MANZ 1993 A-30 Block 12, Area C	B-555	"shaker" top	3⅛	from cardboard container, embossed "...er ....ases Dirt/PUSH...../Old Dutch Cleanser"
MANZ 1993 A-30 Block 14, Area B1	B-535	top of a small drum-container	10¼"	opening in center 1¾" dia. with a ¾" lip, crimped, possibly for a spout, from a fuel can
	B-524	battery end?	1½"	flanged edges, thin gauge, central opening¼"

Table C.5.
Lids and Other Closures Collected During Survey and Surface Collection.

PROVENIENCE	FN	TYPE	SIZE L x W or DIA	COMMENTS/DESCRIPTION
MANZ 1993 A-30 Block 14, Area B1	B-524	"shaker" top	2 3/16"	once topped a cardboard container, double/turnable insert - hole in one side 3/8", central ridge for easy turning
		hollow cap	1/2"	two pieces, holes on underside - two across from one - probably had a wire hinge
MANZ 1993 A-30 Block 14, Area B2	B-526	screw cap	2 9/16"	interrupted thread, thick gauge metal
MANZ 1993 A-30 Block 14, Area C	B-529	quarter-turn cap	1 1/2"	knurled sides, rolled edge
MANZ 1993 A-30 Block 21, Area B1	B-533	pry-off lid	2 13/16"	from can
	B-534	pry-off lid	5 1/4"	from can
MANZ 1993 A-30 Block 21, Area B2	B-540	rectangular, exterior- friction lid	3 1/4 5/8"	rounded corners and top, green paint still adhering to surface - from a decorative box
MANZ 1993 A-36		countersunk threaded oil drum cap	2 3/8" in dia. by 1 1/32" tall	stamped letters: "USE MONKEY WRENCH (A in a circle) TRI SURE REG. U.S. Pat. Off. CHICAGO & NEW YORK 1982144 1982 145 FOREIGN PATS. ISSUED & PEND.", has a perforated tab (with an embossed 9), apparently for attaching a chain
MANZ 1993 B-1, Locus B	B-775	round convex	4"	attached to a 7" long metal strip by a wire hinge
MANZ 1993 B-7, Locus A	B-756	resealable, coffee can?	5"	originally separated from can with key, crimped seam
		slip-fit lid	5"	embossed: (cup design) "100% PURE GOOD TO THE LAST DROP", Maxwell House Coffee; dates 1914-1928
		slip-fit lid	5"	embossed: "FOR DRIP OR VACUUM MAKERS"; 1900+
MANZ 1993 B-7, Locus A	B-756	canning lid	3 1/4"	embossed: "KERR SELF SEAL WIDE MOUTH MASON JAR"
		slip-fit lid with rounded edge	5"	embossed: "HILLS BROS (standing man drinking)" coffee can lid; 1906+
		square slip-fit lid	3 5/16"	embossed: "LIPTON'S TEA THE MOST DELICIOUS THE WORLD PRODUCES"; 1920s-1940s
		slip-fit lid	4 1/4"	embossed: "CALUMET 2 1/2 lbs. BAKING POWDER FULL WEIGHT ABSOLUTELY PURE", since 1889, especially since 1927
		screw cap	1/2"	central hole 1/16"dia., embossed: "SANFORD'S PREMIUM WRITING FLUID"
MANZ 1993 B-7, Locus B	B-768	slip-fit lid	5"	embossed: "COFFEE SHILLINGS BEST"
		"shaker" top, 8 holes	3 1/8"	embossed: "OLD DUTCH/CLEANSER TO SIFT PUSH IN/ PLUGS CHASES DIRT"
		slip-fit lid	2 15/16"	embossed: "CALUMET BAKING POWDER 1 lb ABSOLUTELY PURE"; since 1889, especially since 1927
MANZ 1993 B-10	B-803	slip-fit lid	2 1/4"	embossed: "Cuticura REGISTERED 1878 POTTER DRUG & CHEMICAL CO. PROP'S BOSTON U.S.A."
MANZ 1993 B-34	B-459	slip-fit lid	2 1/4"	embossed: "SCHILLINGS BEST PIONEER 6 oz. NET WEIGHT GUARANTEED PURE BAKING POWDER"
	B-844	slip-fit lid	2 5/8"	embossed: "PIONEER BAKING POWDER 8 OZ. NET WEIGHT"
	B-854	oval pry-off	3 1/8" x 2 1/8"	embossed: "HERSHEY'S COCOA"

Table C.5.
Lids and Other Closures Collected During Survey and Surface Collection.

PROVENIENCE	FN	TYPE	SIZE L x W or DIA	COMMENTS/DESCRIPTION
MANZ 1993 B-34	B-854	rectangular can top removed with key	4¼" x 2⅞"	embossed: "LIBBY'S VEAL LOAF PORK & MEAT BY-PRODUCTS U.S. INSPECTED & PASSED ESTAB.22."
		rectangular can top removed with key	3$\frac{3}{16}$" x 2½"	meat tin top embossed: "R.ARGENTNA M.DEA. NO.6 INSPE CCIONIADO INDUSTRIA ARGENTINA"; 1907- ?
		rectangular slip-fit lid	3¼" x 2$\frac{1}{16}$"	embossed with a design of a woman carrying a tray and: "WALTER BAKER Co & Ltd ½ lb Net BREAKFAST COCOA"

Table C.6.
Utensils Collected During Survey and Surface Collection.

PROVENIENCE	FN	LENGTH	OBJECT
MANZ 1993 A-4	B-288	5½" (tip of handle missing)	fork - silver plate with engraved scroll pattern
MANZ 1993 A-15, Locus A	B-566	6½"	fork
MANZ 1993 A-30, Block 13	A-67	6"	teaspoon - raised floral design on handle
MANZ 1993 A-30 Block 13, Area B1	B-501	5$\frac{13}{16}$"	teaspoon - silver plate with Art Deco design on handle
MANZ 1993 A-30, Block 20	A-78	6"	teaspoon
MANZ 1993 A-30, Block 21, Area B2	B-540	7$\frac{3}{16}$"	fork
MANZ 1993 B-16	B-803	5¾" (portion of handle missing)	tablespoon - composed of two parts soldered/riveted together, embossed design on handle

Table C.7.
Metal Household Items Collected During Survey and Surface Collection.

PROVENIENCE	FN	DIMENSIONS	OBJECT
MANZ 1993 A-7, Locus A	B-755	3⅛" x 3⅝" x 1¼"	clock gears
MANZ 1993 A-7, Locus F	B-561	1" long	three upholstery nails, one piercing a metal disk
MANZ 1993 A-7, Locus I	B-458	3$\frac{3}{16}$" tall, 3" dia.	tin cup, white enamel body with a blue handle
MANZ 1993 A-13	B-463	-	wire clothes hanger
MANZ 1993 A-30, Block 13, Area B1	B-513	4$\frac{9}{16}$" dia., 2" high	strainer basket for coffee pot, blue enameled,
MANZ 1993 A-30, Block 13, Area B1	B-542	8" x 11" x 1"	rectangular baking pan
MANZ 1993 A-30, Block 20	A-78	1$\frac{1}{16}$" dia. with a 1" long handle	measuring cup for baby formula embossed: "ALWAYS PACK/S-M-A/TIGHTLY IN CUP"
MANZ 1993 A-30, Block 21, Area B1	B-534	4½" dia., 2⅜" dia. center hole	coffee pot lid - blue enameled with opening in top for glass perk window, wire hinge
MANZ 1993 A-30, Block 25	A-72	5¼" x ⅝"	punch-type can opener
MANZ 1993 A-30, Hospital Block	A-149	1$\frac{1}{16}$" dia. with a 1" long handle	measuring cup for baby formula embossed: "ALWAYS PACK/S-M-A/TIGHTLY IN CUP"
MANZ 1993 A-30, Staff Housing Area Area D	B-548	7⅛" tall	thermos body, embossed on bottom: "THE AMERI... THERMOS REG US PAT 0 VACUUM BOTTLE B 3 4 NORWICH CONN"

Table C.7.
Metal Household Items Collected During Survey and Surface Collection.

MANZ 1993 A-36	A-199	1 1/16" in dia.	upholstery button with edges curved over a wire form. Pattern of hatched squares, of alternating orientation, covering surface. Sharp end of wire from protrudes from back
MANZ 1993 B-16	B-814	6½" square	door from a stove, has a latch on back side, and central handle 1 1/16" in dia.. Raised letters "Planet Jr. No. 300 A U.S.A."
MANZ 1993 B-34	B-854	6¾" x 7/8"	label/logo from a kerosene stove: "NEW PERFECTION No 3"
Bairs Creek Survey Area (1993 B) isolate	B-813	3 5/8" x 5/8"	church key can opener: "LUCKY LAGER THE REAL LAGER BEER"

Table C.8.
Jewelry Collected During Survey and Surface Collection.

PROVENIENCE	FN	DIMENSIONS	OBJECT
MANZ 1993 A-30, Block 9	B-1048	3 1/8" long	pin
MANZ 1993 A-30, Block 24	A-17	ladies size 6-7	ring

Table C.9.
Metal Buttons Collected During Survey and Surface Collection.

PROVENIENCE	FN	TYPE	DESIGN
MANZ 1993 A-30, Block 13, Area B2	B-512	top half of two-part	intersecting lines
MANZ 1993 A-30, Block 19	A-97	two-part with shank, military	eagle
MANZ 1993 A-30, Root Cellar Block	A-157	two-hole	plain, no design
MANZ 1993 A-30, West Warehouse	A-172	four-hole, military	"U.S. ARMY"

Table C.10.
Coins Collected During Survey and Surface Collection.

PROVENIENCE	FN	COIN	DATE	COMMENTS
MANZ 1993 A-4	B-300	half dollar	1854	liberty design with eagle on reverse , worn
MANZ 1993 A-30, Block 20	B-213	nickel	1925	Indian head design with buffalo on reverse, worn
MANZ 1993 A-30, Block 22	A-40	penny	1944 S	wheat ears design on reverse
		penny	1939 S	wheat ears design on reverse
MANZ 1993 A-30, Firebreak	A-1	penny	1945 S	wheat ears design on reverse
MANZ 1993 A-30, Firebreak	A-4	penny	1937 S	wheat ears design on reverse
MANZ 1993 A-30, Firebreak B3, west half	A-57	penny	1930 S	wheat ears design on reverse
MANZ 1993 A-30 Judo Block	A-12	penny	1929 S	wheat ears design on reverse
Bairs Creek Survey Area (1993 B), isolate	B-813	penny	1920	wheat ears design on reverse, found with 1951 dime
		dime	1951	found with 1920 penny

Table C.11.
Metal Personal Items Collected During Survey and Surface Collection.

PROVENIENCE	FN	DIMENSIONS	OBJECT
MANZ 1993 A-4	B-277	2 13/16" long	brass zipper pull with lock
MANZ 1993 A-7, Locus B	B-460	approx. 4¾" x 1½"	toothpaste tube: "★ IODENT ★ CHEMICAL CO."
MANZ 1993 A-7, Locus F	B-563	(crumpled)	shaving cream tube: "THE J.B. WILLIAMS CO. U.S.A."
MANZ 1993 A-15, Locus B	A-87	1⅞" x 1½"	brass oval logo with an open grill-like pattern formed of elongated diamond shapes
MANZ 1993 A-20	A-63	1 3/16" long, 1" dia.	lipstick tube: "POND'S EXTRACT CO. N.Y. MADE IN U.S.A." on flat end
MANZ 1993 A-30, Block 16	A-136	3" x 7 1/16"	"Schick" razor blade dispenser
MANZ 1993 A-30, Block 19	A-97	1 x ¾"	razor blade fragment: "...LET"
		1½" x ¾"	oval brass plaque: "N.Y.A. 20063 CALIF."
MANZ 1993 A-30, Block 21	A-44	¾" x ⅞"	female half of a brass snap
MANZ 1993 A-30, Block 21 Area B2	B-540	2" x ⅞"	shoe heel tap, part of one end missing
		2 7/8" long	aluminum hair curler
MANZ 1993 A-30, Block 25	A-71	1⅝" long, end missing	flat key for a small padlock, two pair of side teeth and a prong end (broken at hole for hanging)
MANZ 1993 A-30, Block 35	A-145	1⅝" long	pen nib: "MARK FERO... CHILLED STEEL MADE ...A."
MANZ 1993 A-30 Feature P-18	A-111	1 9/16" x 13/16"	razor head
MANZ 1993 A-30 Camouflage Factory Block	A-170	1 9/16" x 7/16"	end of razor strop: "VALET AUTO STROP"
MANZ 1993 B-7, Locus A	B-763	(crumpled)	shaving cream tube: "THE J.B. WILLIAMS CO. U.S.A.", with cap
MANZ 1993 B-7, Locus B	B-768	1¾" dia.	round tin pill box
MANZ 1993 B-8	B-795	1 11/16" tall, 1⅜" dia.	steel film canister with twist-off cap: "KODAK"
Bairs Creek Survey Area (1993 B), isolate	B-800	1⅛" long (bent in half)	suspender buckle

Table C.12.
Metal Toys and Toy Fragments Collected During Survey and Surface Collection.

PROVENIENCE	FN	DIMENSIONS	OBJECT
MANZ 1993 A-15, Locus A	A-87	⅞" dia.,⅛" thick	small wheel
MANZ 1993 A-30, Block 12, Area B2	B-512	1¾" x ¾"	head of a toy shovel
MANZ 1993 A-30, Block 13	A-70	7¼" x 2¾"	toy pistol
MANZ 1993 A-30, Block 13, Area B1	B-509	2" x 1"	lid to toy bank
MANZ 1993 A-30, Block 21	A-44	⅞" long	jack
MANZ 1993 A-30, Block 22	A-40	⅞" long	jack
		2⅝" x 1"	whistle
MANZ 1993 A-30, Block 35	A-145	2⅝ x 1"	whistle

Table C.13.
Harmonica Fragments Collected During Survey and Surface Collection.

PROVENIENCE	FN	DIMENSIONS	OBJECT/MARK
MANZ 1993 B-2	B-804	7/8" x 5/8"	harmonica fragment, inscribed: "...er Reed ...E IN GERMANY"
MANZ 1993 B-7, Locus A	B-763	1 1/8" x 4 3/4"	harmonica side plate, inscribed:"Mein Jeronioen REGISTER ...912...042"

Table C.14.
Cartridges Collected During Survey and Surface Collection.

PROVENIENCE	FN	TYPE	HEADSTAMP
MANZ 1993 A-13, Locus A	B-548	shotgun shell	.30 .30
MANZ 1993 A-30, Staff Housing Area, Area D	A-159	military 2-23 shell	L L C 6
MANZ 1993 B-6	B-798	shotgun shell	AJAX U 8 No. 12
Bairs Creek Survey Area (1993 B), isolate	B-799	shotgun shell	PETERS H.V.

Table C.15.
Metal Machinery Parts Collected During Survey and Surface Collection.

PROVENIENCE	FN	DIMENSIONS	OBJECT
MANZ 1993 A-19, Locus A	A-54	2 7/16" long, tapering from 1 7/16" to 7/8"	truncated triangular-shaped mower blade fragment, slanting file-toothed edges
MANZ 1993 A-30, Block 13 Area B1	B-516	8" x 4 1/2" dia.	oil filter for motor vehicle
MANZ 1993 A-30 Camouflage Factory Block	A-168	4 3/4" x 2 7/8"	shaped sheet embossed: "KLOCKNER DUSIBURG TRICON 80 ROD 2 4 LOT 5-51"
MANZ 1993 A-30 Camouflage Factory Block	A-169	2 3/4" x 2 3/4"	machined engine part, flat with holes
MANZ 1993 B-27	B-823	-	nut and bolt, pipe ring, bent tube with one flared end
		2" dia.	flange
		8 1/4" long	pulley end
		1 1/4" long, 3/4" dia.	spring with hook at one end
	B-827	4 1/8" long, 1 1/4" interior dia.	hose coupling
	B-830	9" x 4 1/2"	riveted metal - airplane body fragment
MANZ 1993 B-32	B-844	3 1/4" dia.	toothed iron gear with a central and an offset hole

Table C.16.
Metal Tools Collected During Survey and Surface Collection.

PROVENIENCE	FN	DIMENSIONS	OBJECT
MANZ 1993 A-30	B-1048	2¾"	fish hook with a looped and a barbed end
		1⅞"	fish hook with a looped and a barbed end
		1 7/16"	fish hook with a looped end
		1 7/16"	fish hook with a T end
		1 7/16"	fish hook with a T end
		1 7/16"	fish hook with a T end
MANZ 1993 B-1	B-779	10" x 9¾"	round-nosed shovel head
		11½" x 9½"	round-nosed shovel head, 3¼" by 3" rectangle cut from edge
MANZ 1993 B-20	B-833	7½" long	⅜" drill bit
MANZ 1993 B-34	B-849	roughly 8" x 8"	calf weaner

Table C.17.
Uncategorized Metal Artifacts Collected During Survey and Surface Collection.

PROVENIENCE	FN	DIMENSIONS	OBJECT
MAN 1993 A-16, Locus E	A-92	⅝" dia.	brass disk with curved edges, stamped "126" along one edge
MANZ 1993 A-20	A-64	3" x 1¼"	rectangular brass plaque: "MANUFACTURED BY STANDARD GARAGE WORKS INC. 757-763 SAN PEDRO ST. LOS ANGELES"
MANZ 1993 A-30, Block 21, Area A	B-529	2¼" dia.	film spool for projector?
MANZ 1993 A-30, Block 21, Area B1	B-534	5" x 6"	horseshoe
MANZ 1993 A-30, East Warehouse	A-191	12¾" x 6½"	"WRA" stencil
MANZ 1993 A-30, Staff Housing, Area C	B-547	⅞"ia.	thin gauge aluminum disk
MANZ 1993 B-16	B-812	2⅝" x 1 13/16"	"Buick" logo

Table C.18.
Metal Artifacts Recovered From Excavation Units (number recovered in parentheses).

Unit 1, 0-10 cm
(1) nail

Unit 2, 0-10 cm
(1) bowl of a spoon

Unit 3, 0-10 cm
(1) .22 shell

Unit 4, 0-10 cm
(50) nails
(1) bobby pin

Unit 4, 10-20 cm
(35) nails

Unit 4, 20-30 cm
(5) nails

Unit 5, 0-10 cm
(3) nails
(1) bailing wire

Unit 5, 10-20 cm
(1) wire

Unit 5, 70-80 cm
(1) nail

Unit 6, 0-10 cm
(4) nails

Unit 7, 0-10 cm
(10) nails

Unit 8, 0-10 cm
(21) nails

Unit 8, 10-20 cm
(3) nails

Unit 9, 0-10 cm
(1) nail

Unit 9, 20-30 cm
(1) wood screw

Unit 10, 0-10 cm
(1) clothing rivet
(1) piece of looped wire
(1) lead bullet

Unit 10, 10-20 cm
(2) nails
(2) can body fragments
(1) screw cap fragment

Unit 10, 20-30 cm
(1) can body fragment

Unit 10, 40-50 cm
(1) can body fragment

Unit 14, 0-10 cm
(2) nails

Unit 15, 0-10 cm
(1) nail

Unit 15, 10-20 cm
(1) nail
(1) small bundle of wire

Unit 16, 0-10 cm
(19) nails
(1) heavy staple
(6) can body fragments
(3) crimped seam fragments
(1) door knob latch
(1) large screw with square nut
(1) electrical fuse
(1) unidentified hardware
(1) unidentified fragment

Unit 16, 10-20 cm
(1) nail
(1) machine screw
(5) can body fragments

Unit 16, 20-30 cm
(3) nails
(1) unidentified fragment

Unit 17, 0-10 cm
(1) nail
(3) can crimped seam fragments
(1) shoe eyelet
(1) clothing snap: "PAT. 7689 MADE IN FRANCE"
(1) clothing rivet: "L.S. & Co. S.F.", dates from 1850 to present
(2) cartridges, headstamps: "32 WRA CO. W5" and "W WRA 06 32W"
(1) 12" metal rod
(8) unidentified fragments

Unit 17, 10-20 cm
(2) can body fragments
(1) can crimped seam fragment
(1) aluminum cap fragment
(2) shoe eyelet
(1) button fragment
(3) clothing rivets
(1) wood screw
(1) flattened lead pipe
(2) pieces of melted metal

Unit 17, 20-30 cm
(3) nails
(14) unidentified fragments

Unit 17, 30-40 cm
(1) nail

Unit 18, surface
(1) drill bit
(1) safety pin
(1) cast iron pipe fitting fragment, threaded interior
(1) .22 cartridge: diamond headstamp

Unit 18, 0-10 cm
(2) can body fragments
(1) light bulb fragment
(1) .22 cartridge
(1) wire
(1) rectangular metal fitting

Unit 18, 10-20 cm
(1) nail
(1) can body fragment

Unit 19, 0-10 cm
(11) nails
(1) wire staple
(1) cut off bolt segment
(1) piece of aluminum scrap
(1) fragment of large chain link
(1) small flat rivet
(2) fragments of machined bronze
(1) aluminum washer
(1) threaded iron fastener
(1) cut pipe segment
(1) brass bead
(4) shoe eyelets

Table C.18.
Metal Artifacts Recovered From Excavation Units (number recovered in parentheses).

(5) screw cap fragments
(4) can crimped seam fragments
(4) can body fragments
(1) flat strip

Unit 18, 10-20 cm
(10) nails
(2) brass electrical gauge attachment fragment
(1) iron washer
(2) can body fragments
(3) screw lid fragments
(1) can crimped seam fragment

Unit 18, 20-30 cm
(3) corrugated fastener fragments
(1) 2" long square shank rivet with 1" dia. burr

Unit 20, surface
(1) undergarment strap fastener
(2) wire
(3) unidentified fragments

Unit 20, 0-10 cm
(33) nails
(1) wire staple
(5) screen door spring fragments
(1) ring screw
(1) 1¼" countersunk wood screw
(1) shoe eyelet
(1) band from pencil
(4) can crimped seam fragments
(1) crown cap
(6) screw lid fragments
(2) lead foil - cork cover
(1) dime: 1935

Unit 20, 10-20 cm
(23) nails
(1) wood screw
(5) wire
(2) strap
(1) corrugated fastener
(2) pieces of an in-frame screen latch
(1) screen door spring fragment
(1) wire from campaign-style button
(8) screw lid fragments
(3) unidentified fragments

Unit 20, 20-30 cm
(5) nails
(1) shoe eyelet
(1) clothing snap
(1) decorative brass cap
(5) screw lid fragments

Unit 20, 30-40 cm
(4) nails
(1) wood screw
(1) shoe hook

Unit 20, 40-50 cm
(2) nails

Unit 21, surface
(1) cartridge, headstamp: "Western 30 - 30"
(1) can body fragment
(2) can crimped seam fragments
(1) melted lead - cork cover

Unit 21, 0-10 cm
(30) nails
(8) wire staples
(1) .30-.30 cartridge
(3) wire
(1) strap
(1) small spring
(1) copper fragment
(1) garter clip: "PAT 9-20-16"
(1) butterfly strap fastener
(4) shoe eyelets
(2) light bulb base
(1) aluminum cap: "SMA 1"
(1) lead tube cap: "NORWICH"
(1) thumbtack
(1) carbon rod from battery
(1) band from pencil
(1) paper staple
(3) can keys with attached rolled strips
(20) can body fragments
(3) can crimped seam fragments
(3) screw lid fragments

Unit 21, 10-20 cm
(2) nails
(1) wire staple
(3) dish fragments
(1) battery with paper label
(1) can crimped seam fragment

Unit 21, 20-30 cm
(1) nail

Unit 21, 30-40 cm
(1) nail

Unit 22, surface
(5) nails
(1) base of can
(3) can body fragments
(1) sardine can
(1) pocket tobacco tin and lid fragment
(1) garter clip fragment
(1) wire from campaign-style button
(1) wire fragment
(1) homemade grommet (two tin circles on clinched nail)

Unit 22, 0-10 cm
(75) nails
(5) wire staples
(1) can base
(1) key with opener strip
(1) can body fragment
(1) can crimped seam fragment
(1) clothes pin spring
(1) crown top bottle opener
(1) pocket tobacco tin and 2 lid fragments
(2) garter clip: "Boston Garter Velvet Grip Made in U.S.A."
(1) eyelet
(1) undergarment strap slide
(1) wood screw
(5) wire fragments
(1) wire circle
(2) metal straps

Unit 22, 10-20 cm
(10) nails
(1) can key with metal strip
(1) can body fragment
(1) push-pin head?
(1) eyelet
(1) clothes fastener?

Unit 22, 20-30 cm
(3) nails
(6) can body fragments

Unit 22, 40-50 cm
(3) nails

Table C.18.
Metal Artifacts Recovered From Excavation Units (number recovered in parentheses).

Unit 22, 50-60 cm
- (1) nail
- (1) can crimped seam fragment

Unit 23, 0-10 cm
- (8) nails
- (5) can body fragments
- (2) can crimped seam fragments
- (1) locking washer

Unit 23, 10-20 cm
- (9) nails
- (3) pieces of wire
- (1) wire staple

Unit 24, 0-10 cm
- (4) nails
- (1) straight pin

Unit 24, 10-20 cm
- (3) nails

Unit 25, surface
- (1) nail fragment
- (1) can crimped seam fragment
- (1) fragment of a thin aluminum disk

Unit 25, 0-10 cm
- (11) nails
- (3) twist cap fragments
- (1) can body fragments
- (3) can crimped seam fragments
- (1) lead ointment tube
- (1) aluminum tag from saline solution: "5% DEXTROSE IN SALINE"
- (1) thumbtack
- (1) wood screw
- (1) screw fragment
- (2) carbon brushes for electric motor
- (1) valve stem
- (1) perforated drain grate
- (1) barbed wire fragment
- (29) unidentified fragments
- (1) ½" copper tube
- (1) copper scrap
- (1) metal casting of two hearts with loops for hanging at tops

Unit 25, 10-20 cm
- (11) nails
- (7) can crimped seam fragments
- (2) twist caps
- (1) screw lid
- (1) light bulb base
- (1) paper clip
- (2) paper fastener fragments
- (1) aluminum tag from blood: "Tear Off"
- (2) rolls of cloth tape on metal tube
- (3) fragments of cloth tape dispenser
- (1) small wrench
- (1) shoe eyelet
- (1) valve bib
- (2) wire
- (26) unidentified fragments

Unit 25, 20-30 cm
- (44) nails
- (9) lid fragments
- (1) crown cap
- (4) twist caps
- (19) can crimped seam fragments
- (6) can body fragments
- (6) pry top lid fragments
- (3) other lid fragments
- (1) light bulb base
- (1) paper clip
- (3) paper fastener fragments
- (1) aluminum blood tag: "Transfuso-Vac for 500cc of Blood"
- (1) hypodermic
- (1) screw-on ampule cover
- (1) small measuring scoop
- (2) aluminum bases
- (3) small springs
- (1) adjustable screw from equipment
- (1) aluminum strip: "...res No Heat ★ No. CH-1"
- (1) fuse end

Unit 25, 30-40 cm
- (7) nails
- (1) twist cap fragment
- (1) snap on lid fragment
- (3) lid fragments
- (1) can key fragment
- (5) large can lid fragments
- (1) paper fastener fragment
- (1) wire fragment
- (20) unidentified fragments

Unit 25, 40-50 cm
- (53) nails
- (1) wire staple
- (2) can body fragments
- (1) base fragment
- (3) crown caps
- (3) crown cap fragments
- (1) screw cap
- (6) cap fragments
- (4) paper clips
- (7) paper fasteners
- (1) battery
- (1) metal plate
- (1) toothpaste tube: "COLG..."
- (1) thick metal pipe
- (1) short piece of metal bar
- (1) corrugated fastener
- (1) hardware fastener
- (1) pipe fitting
- (1) pipe fragment
- (1) hose fitting
- (2) wire fragments
- (1) misc. hardware
- (1) short copper tube
- (74) unidentified fragments
- (1) piece of wire
- (1) carbon brush with pin

Unit 25, 50-75 cm
- (22) nails
- (1) wire staple
- (2) crown caps
- (3) crown cap fragments
- (1) can body fragments
- (1) twist cap
- (15) can crimped seam fragments
- (1) lid fragment
- (1) paper clip
- (1) paper fastener fragment
- (1) light bulb base
- (1) pipe
- (1) misc fastener
- (1) electrical wire and connector
- (1) pipe cap
- (2) carbon brushes with copper wire
- (1) wire staple
- (2) fuses: "Pyrex GE CO USA"
- (1) barbed wire fragment
- (75) unidentified fragments

Table C.18.
Metal Artifacts Recovered From Excavation Units (number recovered in parentheses).

Unit 26, surface
- (2) can body fragments
- (1) can base
- (4) unidentified fragments

Unit 26, 0-10 cm
- (7) can crimped seam fragments
- (1) top of can
- (1) crown cap
- (1) sauce pan handle
- (1) square bolt through melted metal
- (1) pipe fragment
- (15) unidentified fragments

Unit 26, 10-20 cm
- (2) nails
- (1) "Spam" lid
- (1) crown cap
- (3) can crimped seam fragments
- (1) snap cap
- (2) can body fragments
- (1) brass? plated teaspoon
- (1) aluminum coffee filter basket
- (1) pot handle
- (1) aluminum curler
- (5) eyelets
- (2) unidentified
- (1) wire
- (2) barbed wire
- (1) aluminum foil
- (1) carbon rod from battery

Unit 26, 20-30 cm
- (2) nail
- (3) can body fragments
- (3) crown caps
- (1) snap on jar lid
- (1) twist cap
- (8) can crimped seam fragments
- (2) beer tops
- (1) ointment tube
- (1) cloth tape dispenser
- (1) enameled sauce pan
- (1) tobacco can fragment
- (2) snaps
- (7) eyelets
- (3) zipper pulls
- (1) buckle
- (1) wood screw
- (1) unidentified hardware
- (1) thin wire
- (1) barbed wire
- (1) 4" dia. toy wheel
- (5) unidentified fragments

Unit 26, 30-40 cm
- (1) top of beer can
- (1) cap fragment
- (1) snap on cap
- (1) twist cap
- (12) crown cap fragments
- (4) can body fragments
- (2) can crimped seam fragments
- (1) battery carbon rod
- (1) lamp part
- (1) electrical gauge
- (4) light bulb bases
- (3) small push-in light bulbs
- (1) safety pin
- (3) eyelets
- (1) earring (screw-on)
- (1) snap
- (1) lipstick tube
- (2) fountain pen covers
- (1) faucet valve
- (1) knob handle
- (1) compressed air valve
- (2) .22 cartridge
- (1) shotgun shell
- (81) unidentified fragments
- (7) wire
- (1) small tubing

Unit 26, 40-50 cm
- (1) light bulb base
- (1) jingle bell
- (11) eyelets in 3 sizes
- (1) gang-nailed plate with a central depressor
- (1) shotgun shell

Unit 26, 80-145 cm
- (2) nails

Unit 26, sidewall
- (1) hubcap: "OAKLAND" in diagonal letters across a central shield design (Oakland Automobile Co., ca. 1907-1908; acquired by General Motors in 1926 and renamed Pontiac).

Table C.19.
Nail and Staple Totals Recovered During Excavation by Type.

Common/box wire nails (n=485):

size	20d	16d	12d	10d	9d	8d	7d	6d	5d	4d	3d	2d	frag
count	9	26	1	8	3	70	7	54	25	47	39	15	179

plus one 4½"and one ¾"

Wire roofing nails (n=46):

size	1¾"	1¼"	1"	¾"
count	1	11	30	4

Wire finishing nails (n=21):

size	2½"	2"	1¾"	1½"	1"	¾"
count	9	6	1	1	3	1

Machine cut nails: (n=6)

size	3"	1¾"	1¼"	8d	4d
count	1	1	1	2	1

Wire staples (n=21):

size	1¼"	¾"	½"	1"	frag
count	4	12	1	3	1

Other (n=3):

size/type	2½" casing nail	frag/tack
count	1	2

Table C.20.

Size and Number of Nails, Staples, and Tacks Recovered During Excavation (all nails are wire unless otherwise indicated).

Unit 1, 0-10 cm
common: 9d -1

Unit 4, 0-10 cm
common: 16d - 12
8d - 22
6d - 4
3d - 1
finishing: 2½" - 1
roofing: 1" - 6
1¼" - 4

Unit 4, 10-20 cm
common: 16d - 4
8d - 19
6d - 3
5d - 1
roofing: 1" - 5
1¼" - 3

Unit 4, 20-30 cm
common: 8d - 4
roofing: 1¼" - 1

Unit 5, 0-10 cm
cut: 1¾" - 1
roofing: ¾" - 2

Unit 5, 70-80 cm
roofing: 1¼" - 1

Unit 6, 0-10 cm
common: 3d - 1
frag - 1
finishing: 2" - 1

Unit 7, 0-10 cm
common: 16d - 1
10d - 3
2d - 1
frag - 3
roofing: 1" - 2

Unit 8, 0-10 cm
common: 8d - 1
6d - 5
4d - 1
2d - 3
roofing: 1" - 10
1¼" - 1

Unit 8, 10-20 cm
common: 9d - 1
6d - 1
roofing: ¾" - 1

Unit 9, 0-10 cm
common: frag - 1

Unit 10, 10-20 cm
cut: 1¼" - 1
3" - 1

Unit 14, 0-10 cm
common: 3d - 2

Unit 15, 0-10 cm
common: 4d - 1

Unit 15, 10-20
common: 12d - 1

Unit 16, 0-10 cm
common: 16d - 1
10d - 1
8d - 3
7d - 1
6d - 1
4d - 3
3d - 3
frag - 4
finishing: 2½" - 2
staple: ¾" - 1

Unit 16, 10-20 cm
common: 8d - 1

Unit 16, 20-30 cm
common: frag - 2
finishing: 1½" - 1

Unit 17, 0-10 cm
common: frag - 1

Unit 18, 10-20 cm
common: 10d - 1

Unit 19, 0-10 cm
common: 8d - 1
6d - 1
4d - 2
2d - 3
frag - 3
finishing: 2" - 1
staple: frag - 1

Unit 19, 10-20 cm
common: 8d - 3
6d - 1
3d - 4
frag - 1
finishing: 1¾" - 1

Unit 20, 0-10 cm
common: 16d - 1
8d - 2
7d - 1
6d - 7
5d - 1
4d - 4
frag - 13
finishing: 2' - 3
roofing: 1" - 1
staple: ½" - 1

Unit 20, 10-20 cm
common: 7d - 1
6d - 2
4d - 8
3d - 3
2d - 2
frag - 3
finishing: 2½" - 1
1" - 1
roofing: 1" - 1
1¾" - 1
staple: ¾" - 1

Unit 20, 20-30 cm
common: 8d - 1
6d - 2
5d - 2

Unit 20, 30-40 cm
common: 8d - 1
3d - 2
frag - 1

Table C.20.

Size and Number of Nails, Staples, and Tacks Recovered During Excavation (all nails are wire unless otherwise indicated).

Unit 20, 40-50 cm
common: 7d - 1
roofing: 1¼" - 1

Unit 21, 0-10 cm
common: 4½" - 1
20d - 1
16d - 3
10d - 1
8d - 4
6d - 4
5d - 2
2d - 5
frag - 6
finishing: 2" - 1
tack: frag - 2
staple ¾" - 2
1¼" - 1
¾" - 5

Unit 21, 10-20 cm
common: 6d - 1
staple: 1" - 1

Unit 21, 20-30 cm
common: frag - 1

Unit 21, 30-40 cm
common: frag - 1

Unit 22, surface
common: 16d - 1
9d - 1
5d - 1
3d - 1
casing: 2½" - 1

Unit 22, 0-10 cm
cut: 8d - 2
common: 20d - 3
16d - 1
10d - 2
8d - 5
6d - 11
5d - 10
4d - 16
3d - 13
frag - 4
finishing; 2½" - 4
1' - 2
¾" - 1
staple: 1¼" - 3
¾" - 2
roofing: 1" - 1

Unit 22, 10-20 cm
cut: 4d - 1
common: 8d - 1
7d - 2
5d - 3
4d - 1
3d - 1
frag - 1

Unit 22, 20-30 cm
common: 3d - 2
frag - 1

Unit 22, 40-50 cm
common: 4d - 2
2d - 1

Unit 22, 50-60 cm
common: 3d - 1

Unit 23, 0-10 cm
common; 16d - 2
6d - 4
frag - 1
roofing: 1" - 1

Unit 23, 10-20 cm
common: 20d - 1
8d - 1
6d - 1
4d - 1
3d - 2
frag - 3
staple: ¾" - 1

Unit 24, 0-10 cm
common: 6d - 3
roofing: ¾" - 1

Unit 24, 10-20 cm
common; 6d - 1
roofing: 1" - 1
common: frag - 1

Unit 25, surface
common: frag - 1

Unit 25, 0-10 cm
common: 8d - 1
6d - 1
¾" - 1
frag - 8

Unit 25, 10-20 cm
common: 20d - 1
7d - 1
5d - 1
frag - 7
roofing: 1" - 1

Unit 25, 20-30 cm
common: 6d - 1
4d - 2
frag - 40
finishing: 2½" - 1

Unit 25, 30-40 cm
common: 4d - 1
3d - 1
frag - 5

Unit 25, 40-50 cm
common: 5d - 4
4d - 5
frag - 44
staple: 1" - 1

Unit 25, 50-75 cm
common: 3d - 1
frag - 21
staple: 1" -1

Unit 26, 10-20 cm
common: 20d - 1
frag - 1

Unit 26, 20-30 cm
common: 3d - 1
frag - 1

Unit 26, 80-145 cm
common: 20d - 2

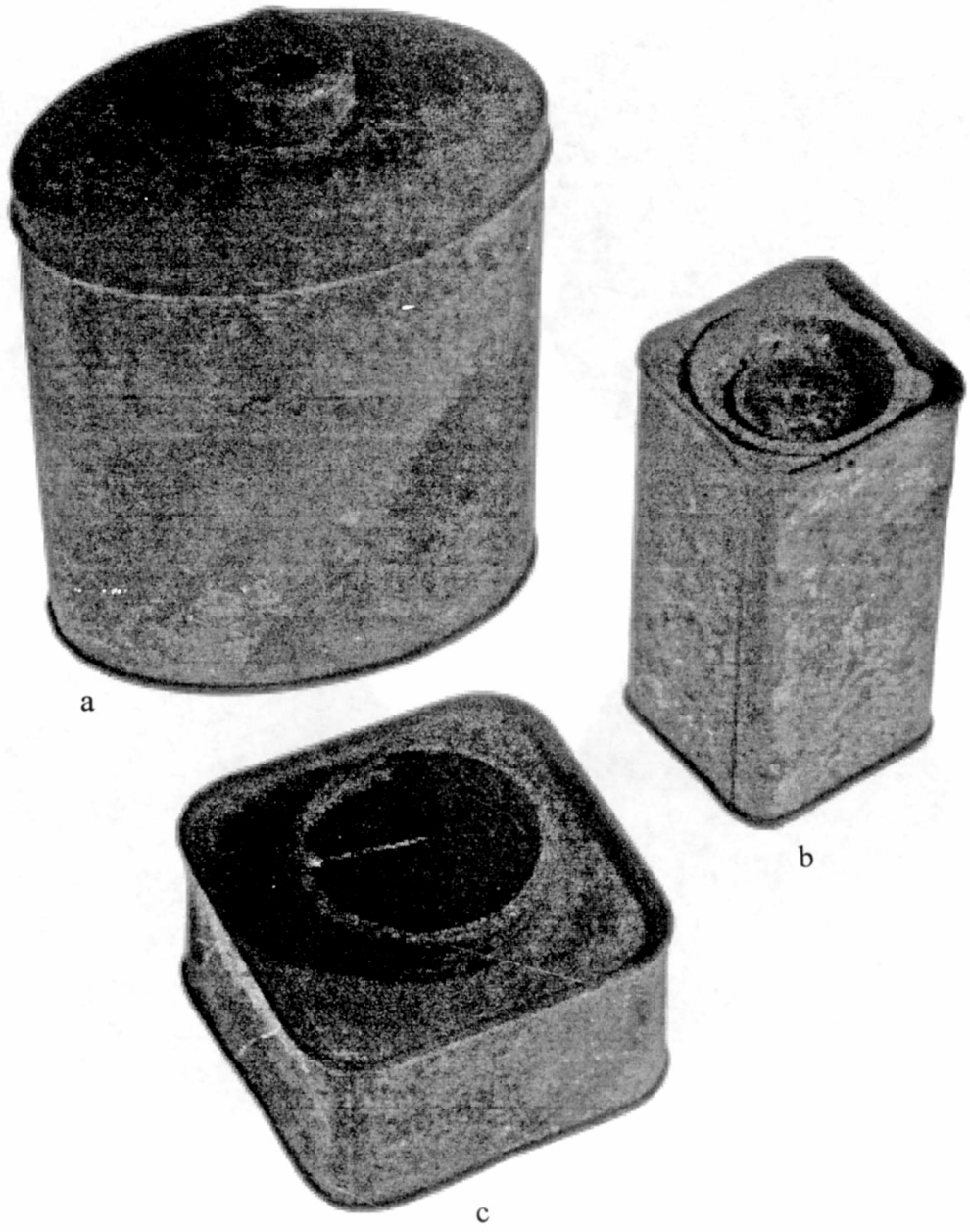


Figure C.1. Assorted cans; a. powder flask from MANZ 1993 B-34 (4½ inches high, FN B-849); b. spice can from MANZ 1993 B-34 (FN B-849); c. square can with threaded opening from MANZ 1993 B-34 (FN B-849).



Figure C.2. Coffee can lids; a. MANZ 1993 B-7, Locus B (FN B-768); b-d. MANZ 1993 B-7, Locus A (FN B-756).



Figure C.3. Container lids; a. tea can lid from MANZ 1993 B-7, Locus A (FN B-756); b. cleanser container top from MANZ 1993 B-7, Locus B (FN B-756); c. canning jar lid from MANZ 1993 B-7, Locus A (FN B-756); d. ink bottle cap from MANZ 1993 B-7, Locus A (FN B-756); e. baking powder lid from MANZ 1993 B-7, Locus A (FN B-756); f. baking powder lid from MANZ 1993 B-7, Locus B (FN B-768); g. baking powder lid from MANZ 1993 B-34 (FN B-459).

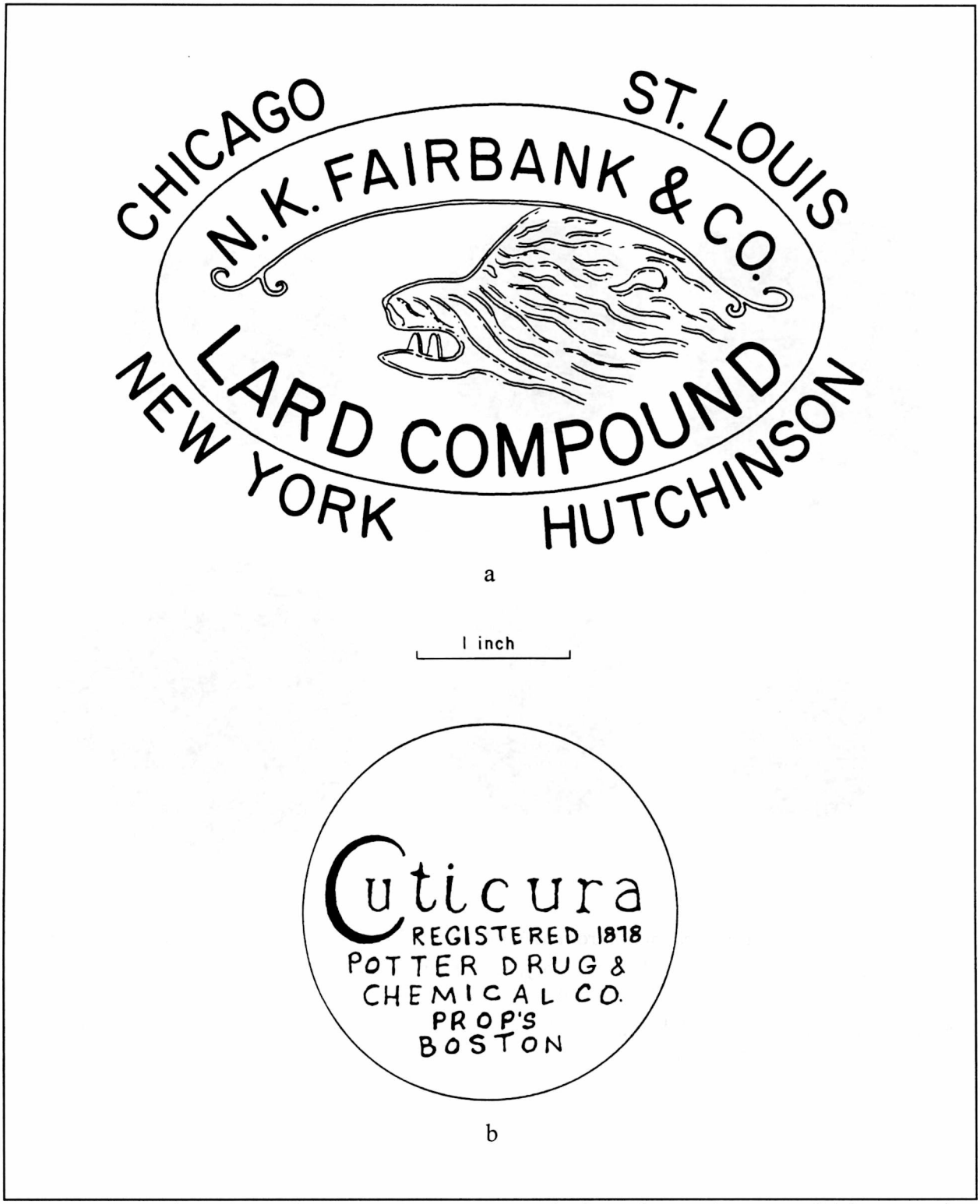


Figure C.4. Embossed cans from MANZ 1993 B-10; a. lard can, b. "Cuticura" can lid (FN B-803).

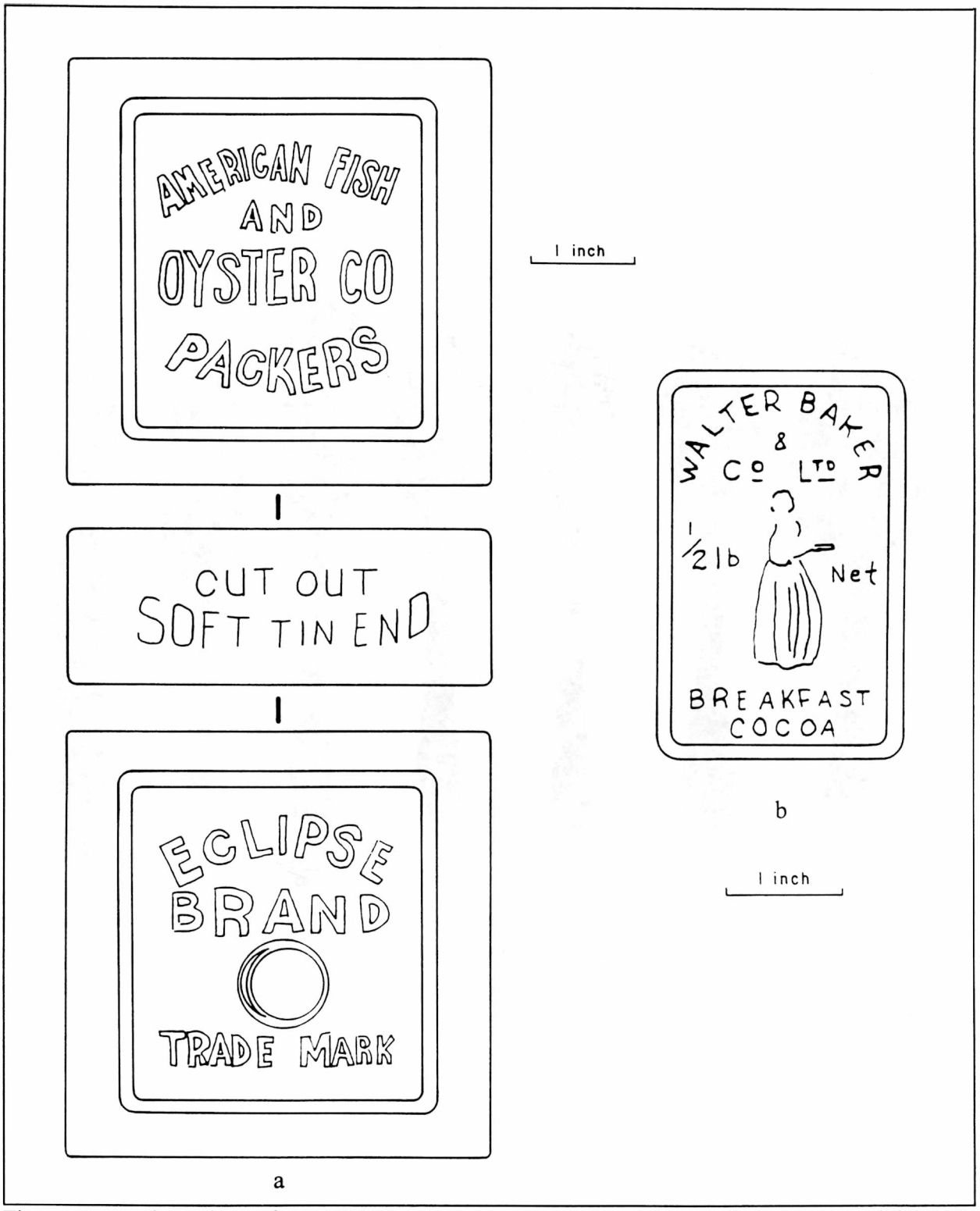


Figure C.5. Embossed cans from MANZ 1993 B-34; a. oyster can (FN B-849), b. cocoa can lid (FN B-854).

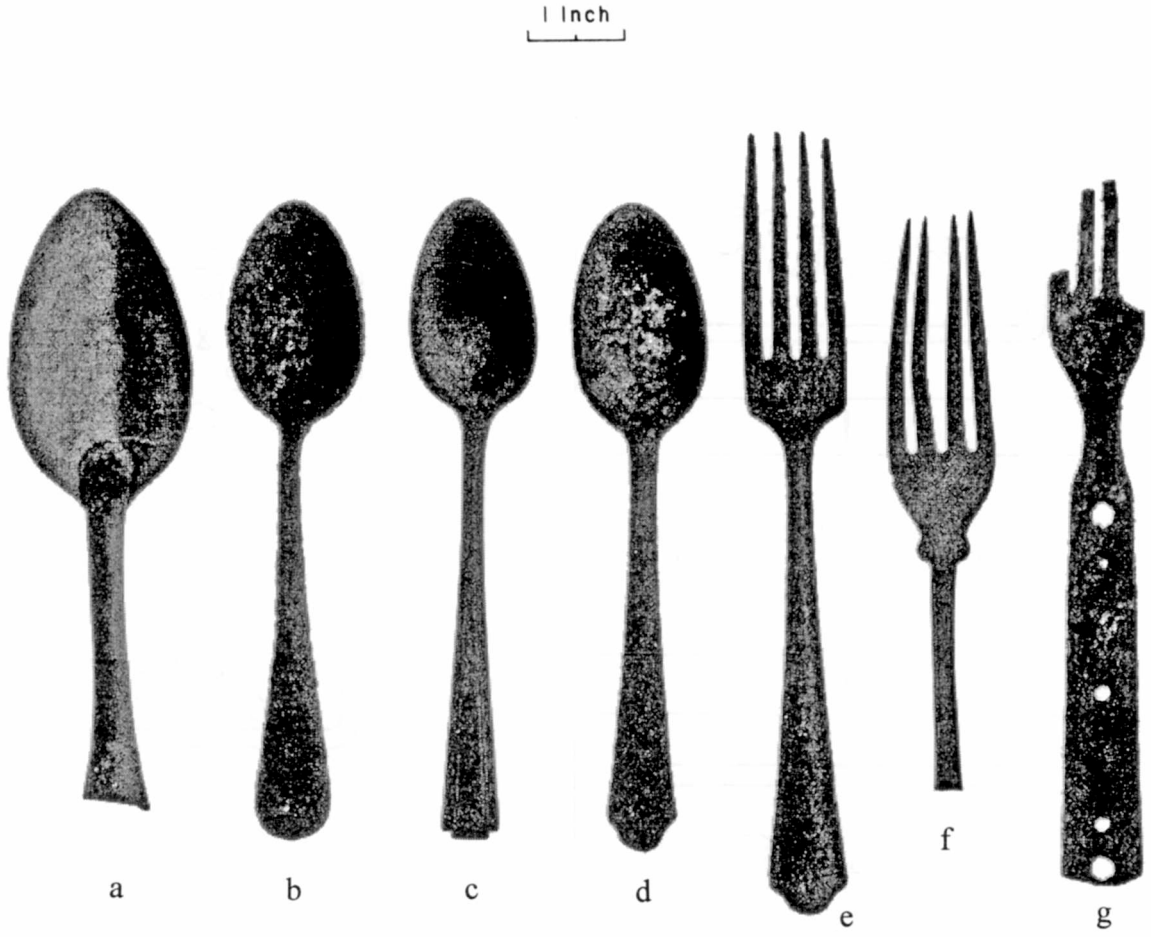


Figure C.6. Utensils; a. MANZ 1993 B-16 (FN B-803); b. MANZ 1993 A-30, Block 13 (FN A-67); c. MANZ 1993 A-30, Block 13 (FN B-501); d. MANZ 1993 A-30, Block 20 (FN A-78); e. MANZ 1993 A-30, Block 21 (FN B-540); f. MANZ 1993 A-30, southwest perimeter (FN-288); g. MANZ 1993 A-15, Locus A (FN B-566).

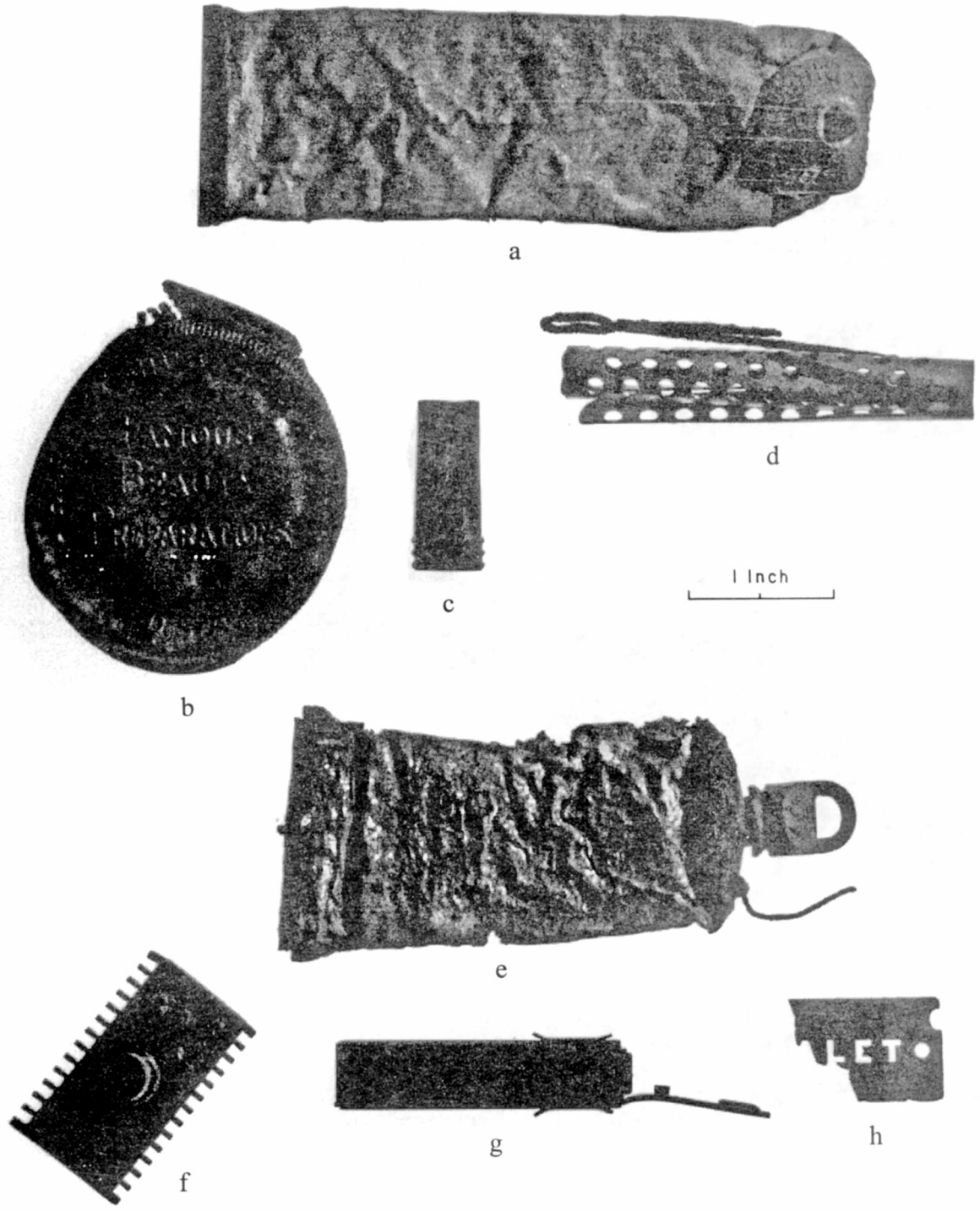


Figure C.7. Self-care products and shaving paraphernalia; a. "IODENT CHEMICAL CO" toothpaste tube from MANZ 1993 B-7, Locus B (FN B-460); b. jar lid from MANZ 1993 A-16, Locus F (FN A-91); c. lipstick tube from MANZ 1993 A-20 (FN A-63); d. aluminum curler from MANZ 1993 A-30, Block 21 (FN B-540); e. shaving cream tube from MANZ 1993 B-7, Locus B (FN B-763); f. razor head from MANZ 1993 A-30, Feature P-18 (FN B-111); g. "Schick" razor blade dispenser from MANZ 1993 A-30, Block 16 (FN A-136); h. razor blade fragment from MANZ 1993 A-30, Block 19 (FN A-97).

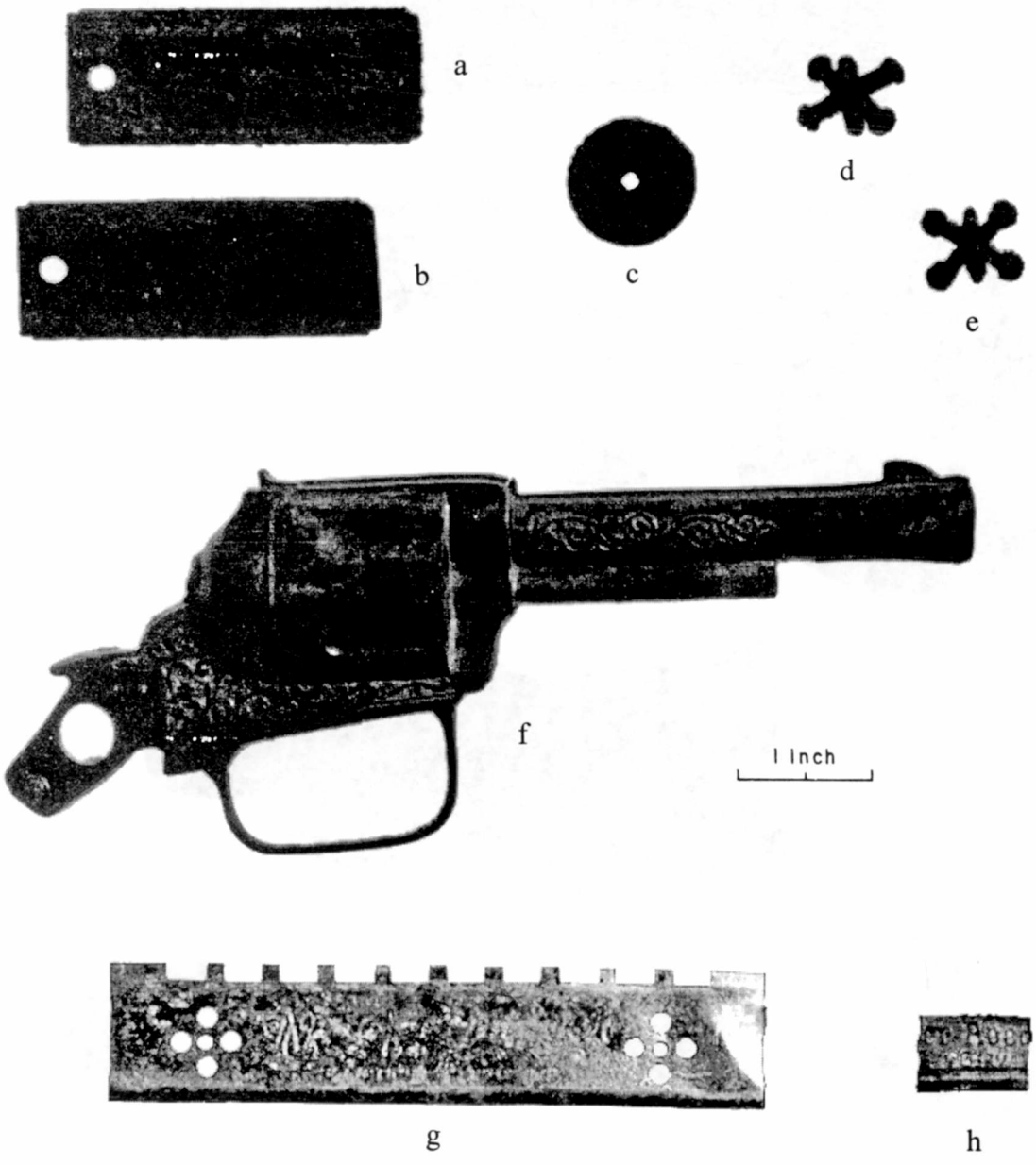


Figure C.8. Toys and musical instruments; a-b. whistles from MANZ 1993 A-30, Blocks 22 and 35 (FN A-40 and A-145); c. wheel from MANZ 1993 A-15, Locus A (FN A-87); d-e. jacks from MANZ 1993 A-30, Blocks 21 and 22 (FN A-40 and A-44); f. pistol from MANZ 1993 A-30, Block 13 (FN A-70); g. harmonica part from MANZ 1993 B-2 (FN B-804); h. MANZ 1993 B-7, Locus A (FN B-763).

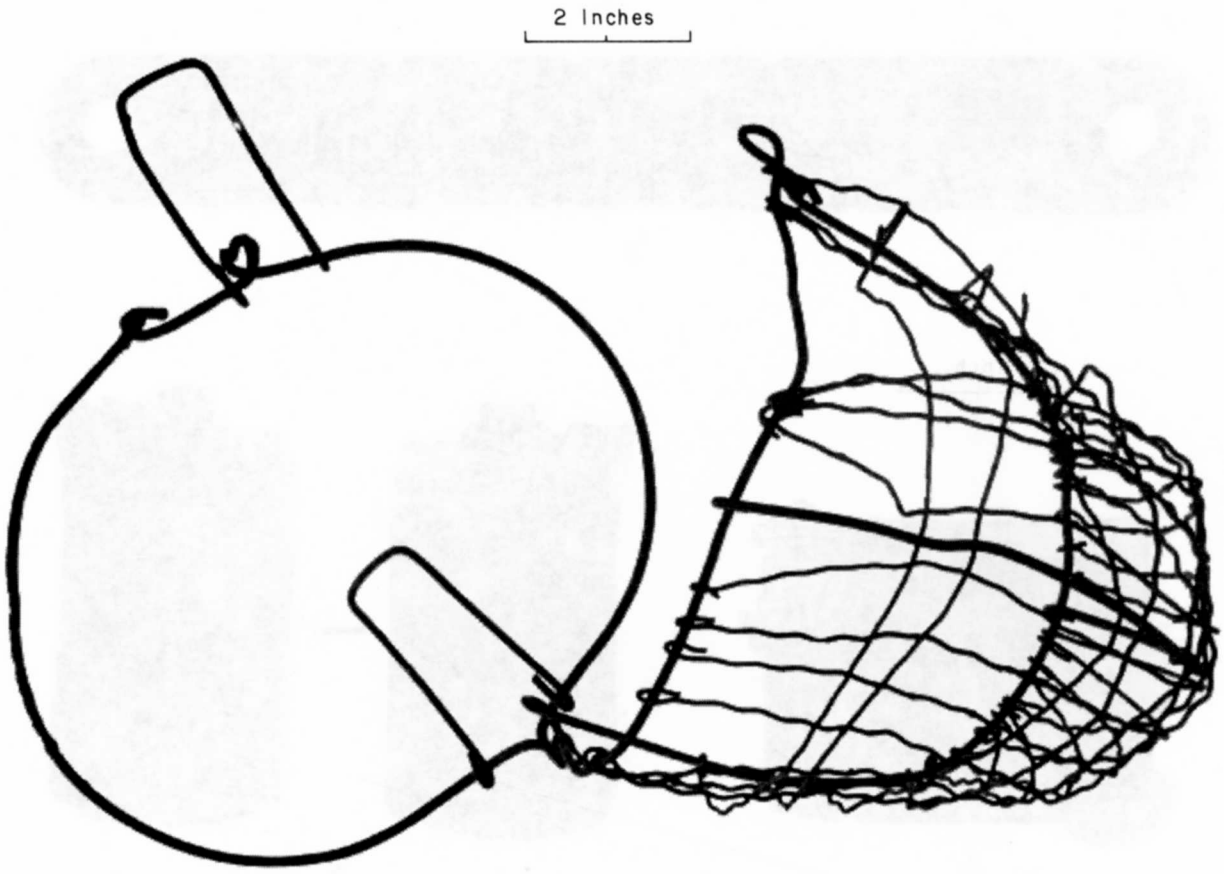


Figure C.9. Calf weaner from MANZ 1993 B-34 (FN B-849).



Figure C.10. Miscellaneous metal artifacts; a. kerosene stove label from MANZ 1993 B-34 (FN B-854); b. "Buick" automobile logo from MANZ 1993 B-16 (FN B-812); c. dry-cell battery from MANZ 1993 A-16, Unit 21, 10-20 cm (FN B-679).

Appendix D

Historical Ceramics

Teresita Majewski

A total of 818 historical-period ceramics was recovered during archeological survey, controlled surface collection, and subsurface testing at Manzanar National Historic Site and environs in 1993 and 1994 by the Western Archeological and Conservation Center (WACC). The collection, representing over 550 separate vessels, reflects the residential aspect of life at Manzanar throughout three periods of occupation: ca. 1860-1910, when ranching was occurring in the area; ca. 1910-1935, when Manzanar was a thriving agricultural settlement, and 1942-1945, during construction and occupation of the Manzanar Relocation Center, which was one of ten camps at which Japanese-American citizens and Japanese immigrants were interned during World War II.

The general objectives of the archeological work at Manzanar were to obtain sufficient data to assess the research potential of both historical and prehistoric resources, and make informed recommendations about future management of these resources. Specifically, the ceramics recovered are one of the primary material classes that made it possible to (1) ascertain the horizontal and vertical extent of the sites, (2) investigate site structure and assess integrity, (3) provide chronological information about the deposits, and (4) determine each site's ability to provide information relevant to history and prehistory in order to assess that site's potential for eligibility in the National Register of Historic Places under criterion D.

Analysis of historical-period ceramics can contribute significantly to both the general and specific objectives stated above. Material recovered from surface collection can aid in definition of the horizontal extent of a site, help investigate site structure, and provide chronological information. Materials obtained through subsurface testing provide information on the vertical extent of a site, site structure, chronology, and allow an assessment of the integrity and the ability of a particular site to address pertinent research questions. Incorporation of functional assessments into artifact analysis provides insight into the cultural system of which the artifacts were an integral part.

Research questions to which the historical-ceramic data might contribute include those relating to frontier urbanism and economics and land use for the Manzanar townsite. For the Manzanar Relocation Center one might address issues relating to the behavior of the confined and dominant groups in internment situations. It is important to accurately assess the limitations of the materials recovered from the surface vs. those recovered from subsurface testing in terms of how well suited each context is for different

analytical purposes. Analysis should thus be geared to the "information potential" of each part of a collection.

Methods

The historical-period ceramics examined for this analysis derived from survey collections, controlled surface collections, and manually excavated test units (see Chapter 8). Survey and surface collection guidelines for ceramics involved collecting only those sherds considered "diagnostic," i.e., sherds with the overt potential to provide temporal or functional information. Sediments excavated from 1 m by 1 m test units were screened through 1/4-inch or 1/8-inch mesh hardware cloth, and for ceramics, all materials recovered were collected. For the purposes of this analysis, ceramic materials recovered from surface contexts will be used for "characterization" only, i.e., for general dating and descriptive information. Distributional data and information on other artifact classes can be used together with chronological assessments from ceramics to maximize the information derived from both surface and excavated contexts.

Underlying all analysis is the adequate characterization or description of the collection under study. As a first step, therefore, the same observations were recorded for all ceramic materials recovered from Manzanar (Table D.1). Categories included provenience, number of sherds, vessel form, body, decoration, and remarks. Each data-collection category is discussed in detail below. Collected terra cotta flowerpot fragments and electrical porcelain are not included in this analysis.

Provenience and Number of Sherds

For each provenience ceramics were organized and recorded according to a "minimum vessel" (MV) sort. This entails physically organizing all fragments that appear to belong to the same vessel, using the analyst's assessments of similarities in ware, form, and decoration. The number of sherds in each MV grouping is then recorded under "Number of Sherds." Using this approach enables the analyst to relate real material categories (entire vessels or approximations thereof, rather than sherds alone) to higher-level analytical constructs such as functional groups. In addition, the analyst noted the degree of completeness of a vessel (where possible) and if sherds refit or were good candidates for belonging to the same vessel. Information on refitting and completeness of vessels has been used for studies investigating the horizontal and vertical distribution of materials across sites and to assess the degree of postdepositional alteration of deposits (e.g., Garrow 1984; Miller and Moodey 1986; Moodey 1988).

Vessel Form

The "Vessel Form" category includes information on the form of the MV as well as the rim and/or base diameters when known. Several layers of description are incorporated here. First, a general description of the form of the MV is given, e.g., handled cup, plate, saucer, platter, bowl, figurine, flowerpot, indeterminate (cannot determine, e.g., if piece too small, burned, etc.), unknown (piece large enough to evaluate, but analyst cannot identify), etc. This actually represents the assessment of what the sherds would look like if they were joined in a complete vessel. Second, following this assessment, is a "shorthand" description of all the parts of the MV actually observed, using the names of the vessel portions present, joined by dashes (-) to show their continuity. For example, "cup rim-body-ftrng-base" would indicate that the portion of the vessel present in the MV grouping was a cup with the rim, body, foot ring, and base present. The key to Table D.1 lists the abbreviations used for vessel parts, and additional information is provided for less-familiar terms. Finally, diameters in inches are given for rims and bases, when possible. Measurements are given in inches and fractions

of inches, rather than in centimeters and millimeters, because ceramic tableware was made and marketed in inches and is thus the most relevant scale here.

Body

The "Body" of a ceramic item reflects what prehistorians often refer to as "paste," and is roughly equivalent to "ware" as understood by historical archeologists. A useful definition is "the clay part of a pot as opposed to any additional parts such as slips, glazes and colours" (Hamer and Hamer 1986:30). Body types encountered in this analysis include white-bodied earthenware, yellowware, redware, stoneware, and porcelain.

Nineteenth and early twentieth-century white-bodied earthenwares are often referred to by analysts as "whitewares" "white granite," or "ironstone," but this can lead to confusion in terminology. I prefer to use degree of vitrification of the body as a more accurate means for subdividing white-bodied ceramics into "wares," particularly for a collection that spans the late nineteenth century to approximately 1950. The discussion below is based primarily on Majewski and O'Brien (1987).

Nonvitreous, white-bodied earthenwares that we know as "whitewares" were first produced early in the nineteenth century in England, but continue in various guises to the present day. These bodies are highly absorbent (10-15%) and are fired at a maximum temperature of 1,100-1,150 degrees centigrade for the biscuit firing (i.e., when the unglazed ceramic body is fired). The glost, or glaze firing, is done at a lower temperature. The relatively low firing temperatures used allow for the use of a wide range of underglaze decorative techniques that are very diagnostic temporally. The fact that decoration could be applied *under* the glaze renders it more permanent, and thus more likely to be found in archeological contexts. Decoration will be discussed in more detail in a subsequent section. In addition to decoration, other clues to the identification of nonvitreous wares including "crazing" or discolored areas on the glazed surface.

Beginning in the 1840s, ceramic manufacturers in England (and later in the United States) were producing semivitreous, white-bodied earthenwares for the American and other export markets. Manufacturers marketed these wares under a variety of names, including white granite (also see Miller [1980] and Wetherbee [1985]), whereas collectors and archeologists commonly refer to them as ironstone, which is really a misnomer because ironstone and stone china refer to specific ceramic bodies made in England in the early nineteenth century. Biscuit firing temperatures for these wares ranged from 1,150 to 1,250 degrees centigrade, and absorbency from 4 to 10 percent, and again, glost firings had a lower temperature range. Due to the higher biscuit-firing range, underglaze decorative possibilities were more limited. Semivitreous sherds found archeologically often have "spalled" or "popped off" areas resulting from post-depositional stresses such as repeated freezing and thawing of the substrate in which they were deposited.

The vitreous "end" of the white-bodied earthenware continuum is represented by "hotelware," which developed as a branch of the American semivitreous ware industry sometime in the late nineteenth century (ca. 1880s per Ketchum [1971:122]). Made almost exclusively in the United States, it has been widely used in hotels, restaurants, railroad dining cars, hospitals, ships, military camps, lodges and fraternities, and other public and semipublic eating places (Newcomb 1947:227). Absorption ranges from 0 to 0.3 percent, and firing temperatures begin at 1,250 degrees centigrade and range upward to 1,520 degrees. Like the other white-bodied earthenwares, hotelwares are subjected to a glost firing at lower temperatures. Hotelwares are characterized by minimal decoration and are often very thick; examples in this assemblage range from

1/4-inch to 7/16-inch in thickness. Although hotelwares are vitreous, they are not translucent, due to their thickness.

Glazes used on white-bodied earthenwares dating from the late nineteenth century were generally still lead based, but other, less-toxic glazes were developed and began to be used more commonly after the turn of the century (Majewski and O'Brien 1987:111). Other surface treatments, such as slip glazing, will be discussed as a decorative technique.

Minor types of nonvitreous earthenwares found in this assemblage include redwares, yellowwares, stonewares, and possibly some examples of late-nineteenth-century or early twentieth-century tin-glazed earthenwares. Whereas white-bodied earthenwares are typically used for tablewares or "toilet wares" (i.e., basins and ewers), the less-refined, and lower-fired redwares and yellowwares generally have more utilitarian functions such as use in food preparation and storage (kitchenware).

Redwares, or red-bodied earthenwares, commonly had a clear lead glaze or were decorated with colored slips (liquid suspensions of clay or other materials and water) and have a long history of production, both in England and in North America (Turnbaugh 1985:12). A variant of very low-fired redware, known as terra cotta, occurs in the Manzanar collection in the form of flowerpots, but it is difficult to assign specific dates to this form, other than twentieth century. Yellowwares are yellowish to tan earthenwares made from naturally occurring clays, which are commonly found with either a clear alkaline glaze or colored slip glazes such as the mottled brown "Rockingham" variety. As shown in Leibowitz (1985), common forms made in yellowware include kitchen items such as bowls, milk pans, jugs, pie plates, molds, colanders, and vessels for other uses such as chamber pots and spittoons.

Tin-glazed earthenwares differ from lead-glazed earthenwares primarily in terms of glaze composition (see Turnbaugh 1985:13). A tin glaze can contain only tin, or alternatively be mixed with lead and other compounds. Sometimes a clear lead glaze is used overall. The result is generally a very opaque milky glaze that "sits" on top of the earthenware body; the juncture of the body and glaze are quite evident to the observer examining the interior of a sherd. Researchers are familiar with eighteenth-century and earlier Spanish majolicas, English and Dutch delft, French faience, and Italian faenza, but little is known archeologically about tin-glazed wares dating to the nineteenth and twentieth centuries. They did, however, persist, and continue to be made (e.g., Talavera wares from Puebla, Mexico, and Spanish examples from Seville, Spain).

Stoneware is made from coarser clays than those used for porcelain, and are capable of fusing by slowly melting together (vitrifying) at high temperatures (1,200 and 1,400°C) without losing their original form (Greer 1981:15). Porosity ranges from 2 to 5 percent (Hamer and Hamer 1986:305). Many stoneware forms are thrown on a wheel, for which a high degree of plasticity and long workability range of the clay mixture are required (Hamer and Hamer 1986:306). (Note that late-nineteenth- and early twentieth-century stonewares were often produced in molds.) Ball clays, which are very plastic, often make up a major portion of a stoneware body. Stoneware does not need a glaze to prevent leaking, and thus many vessels have unglazed interiors. However, poorly vitrified stonewares, particularly some of those made by nineteenth-century "country potteries," do leak, and the interiors can be slightly rough. Glazing both surfaces renders them impermeable and easy to clean, and most stonewares found on historical-period sites will have been glazed for this very reason (Greer 1981:16). Common glaze types used from the late nineteenth century to ca. 1930 include salt glaze; clear, alkaline glaze; slip glazes, including Albany slip; and Bristol glaze (Greer 1981:263-264). One of the major differences between earthenwares

and stonewares is that with stonewares, glazes are applied to the raw clay pot rather than to an already fired biscuit body, as with earthenware (Greer 1981:179). During firing, the body and glaze mature at the same temperature, forming a durable, integrated body-glaze layer (Hamer and Hamer 1986:305). These properties make stoneware preferable to earthenware for kitchen and storage use. Common historical-period forms include beverage bottles, ink bottles and wells, jugs, pitchers, jars, churns, bowls, colanders, bakingwares, and milk pans. Underglaze decoration is limited on stonewares due to the high temperatures at which they are fired.

Porcelain refers to a variety of dense, highly vitreous and translucent white-bodied wares (see Majewski and O'Brien [1987:124-129] for a more in-depth discussion), which have not been adequately treated to date from an archeological perspective. While porcelain was manufactured in China as early as the Tang Dynasty (A.D. 618-907), technological development of the ware "took off" in the Ming Dynasty (A.D. 1368-1644). Attempts to duplicate hardpaste porcelain in Europe began in the fifteenth century, but the formula for true porcelain was not recreated until 1710 (in France) and 1782 (in England). It is beyond the scope of this report to discuss the history of porcelain, and the focus here will be on the kinds of porcelains characteristic of the period ca. 1875-1945 and thus likely to be present in the Manzanar collection.

Grimshaw (1971:334) notes that true, or hardpaste, porcelain contains a large portion of clay and forms one end of a continuum, with the other end represented by softpaste porcelain, which consists primarily of an opaque glass and in some cases very little clay. The very fine-grained kaolin clays used to make hardpaste porcelain are inherently nonplastic, thus most porcelains are cast in molds or made by using a jiggering wheel (Rhodes 1973:43, 54). Hardpaste porcelains are usually fired twice, though some of the early Chinese porcelain was fired only once, the glaze being applied to the dry body (as with stonewares). The first firing is at a low temperature (815-900°C) to allow handling of the body for glazing (usually with an alkaline glaze). The second firing (ca. 1,350-1,550°C) fuses the body and the glaze, resulting in a completely vitrified, usually very translucent body (absorbency 0%; Watts 1939:315). Most of the hardpaste porcelains found in the Manzanar assemblage are of Asian (primarily Japanese) and Continental European origin.

By the early nineteenth century, the English concentrated on the production of bone china, which differs from hardpaste porcelain in several important ways. Bone china, first marketed in Great Britain by Josiah Spode during the 1790s, is a kind of porcelain intermediate in properties between hardpaste and softpaste, glass-frit porcelains. Bone china is highly translucent due to the formation of a glassy material that results from combining bone ash and silica. Whereas both bone china and hardpaste porcelain are nonplastic, the firing regimes of both bone china and softpaste, glass-frit porcelains (e.g., Belleek and Lenox products) are more similar to those for refined earthenware (higher biscuit firing [1,205-1,315°C], lower glost firing [900-1,095°C]). Absorbency of bone china ranges from 0.3 to 2 percent (Watts 1939:315). Lead-based glazes were used on early bone chinas.

How, then, can archeologists distinguish between hardpaste porcelain and bone china? One of the distinctive features is that the surfaces of hardpaste sherds have a clear, thick, glassy glaze that is absent on the bottom of the foot ring, which is left unglazed so that vessels do not stick to the saggars (clay boxes used to hold ceramic bodies) during the glost firing (see Garrow 1982:236; McNamara 1948:483). The surfaces of Continental hardpaste porcelains are usually stark white, whereas those of Asian porcelains can be milkier and even have a grayish cast. Bone china surfaces range from cream to an ivory white tint, and translucency is greater in bone china than with hardpaste porcelain. Bone china sherds are more likely to be stained where

broken than are hardpaste porcelain sherds. Both display "flintlike" surfaces when broken.

Actual appearance of the paste in cross section (e.g., hardpaste being less granular than bone china) is not a reliable distinguishing characteristic, because pastes tend to look glassier and more granular as the amount of quartz (SiO_2) in the body increases. Most Continental European hardpaste porcelains have a SiO_2 content ranging from 2.8 to 5.3 percent, whereas Asian examples range from 5.5 to 7.4 percent (Grimshaw 1971:335). Lynne Sussman (personal communication to T. Majewski, cited in Majewski and O'Brien 1987:128) suggests a definitive test for separating bone china from hardpaste porcelain: under ultraviolet light bone china floureses blue-white and hardpaste porcelain floureses magenta.

Decoration

Descriptions of underglaze and overglaze decorative treatments provide the analyst with the bulk of the temporal and cultural information used in historical-period ceramic analysis. In order to contextualize much of the observed decoration, it is essential to understand how the major decorative-arts styles from ca. 1870 to World War II were expressed in the ceramic medium, and this section begins with a brief summary of those styles, based primarily on Cameron (1986).

Styles in the Decorative Arts

The Aesthetic Movement (1870s-1890s), which came about as a reaction against Victorian "excesses," is one of the most original art movements in British history. The opening up of Japan in the 1850s revitalized artistic taste in Europe. Japanese or pseudo-Japanese motifs were widely adopted, often superimposed on traditional European forms. Sprays of cherry blossoms, sparrows, diaper patterns, fan shapes, sunflowers, etc., were placed with casual asymmetry. The movement was also influenced by the work of designers such as Eastlake and Morris; artists such as the Pre-Raphaelites; and Greek, Egyptian, and Middle Eastern styles. The choice of motifs used in late-nineteenth-century transfer printing was heavily influenced by this movement.

Art Nouveau (1890s-ca. 1910) was touted at the Paris Exhibition of 1900, and appears to be an outgrowth in some ways of the Aesthetic Movement. The design focus was on curvilinear rather than linear representation, and many elements found in European, Middle Eastern, and Oriental decoration were incorporated. It is essentially typified by the use of natural forms, and on ceramics is characterized by the use of coiled or meandering linear ornament—e.g., abstract or stylized plant forms, flowing hair, cloud formations, moving water, draped fabric, as well as glistening, iridescent surfaces, often with cloudy, shaded effects, and symbolic motifs (birds, plants, insects, serpents). The style was widely adopted in ceramics, especially in art pottery. On tablewares, relief molding, aerography, and decals were used to express the style.

Art Deco (1910s-1930s) is a group of eclectic styles in European design that reached a peak after the 1925 Paris Exhibition. Emphasis in decoration changes from ornament, that would complement and accentuate form, to surface patterns that would contradict or negate it. Broken or interrupted contours were used, along with primary colors and stark contrasts. Elements from other cultures were incorporated, such as zigzags and other elements of primitive and ancient art. Plant motifs were used, but instead of the sinuous, flowing, asymmetrical foliage of Art Nouveau, those expressed through Art Deco were abstract and repetitive. Imagery of the 1920s was dynamic, vivid, and diverse, while that of the Depression-era 1930s was more restrained and symmetrical.

During the 1920s and into the 1930s, Art Deco was expressed on ceramics through handpainting and the use of decals. There is also Art Deco influence in the slip-glaze-decorated wares (e.g.,

Fiesta, Harlequin, Bauer Ringwares) so popular in the 1930s, although they overlap with some aspects of Modernist design. All of these items, including the plates, typically bore a decorative motif of incised concentric circles, or parallel encircling lines. Colors were intensely bright.

Modernist design (ca. late 1930s+) is stark, characterized by minimal decoration, stylized themes, and the use of form to express style. Prior to World War II, modernism in ceramics was probably best expressed by the use of more muted colored slip glazes on undecorated or molded bodies (e.g., Fiesta).

In summary, one should keep in mind that two basic kinds of decorative styles will prevail at any one time: (1) decoration in the prevalent style of the moment (e.g., Art Nouveau, Art Deco), and (2) traditional designs (particularly floral motifs and classic transfer prints such as the "willow" pattern). There are always markets for items produced in these two categories, and ceramics recovered in archeological contexts will usually contain examples representative of both styles.

Methods of Ceramic Decoration

For more detail on the methods of ceramic decoration, the reader should consult Drakard and Holdway (1983), Fryman and Majewski (1995), Hannah (1986), Litts (1988), Majewski and O'Brien (1987), Miller (1980), and Stitt (1974).

Handpainting is one of the most universal means of ceramic decoration. It can be simple or crude, and can be executed over or under the glaze. Technically, overglaze painting is referred to as "enameling," but for the sake of simplicity, painting on either surface is referred to here as handpainted. The notation of whether or not the painting is over- or underglaze will give the reader more information. Painting can also be done to accent other decorative techniques, such as handpainted fill-in of decals or "touch-up" of transfer prints.

Overglaze handpainting, or enameling, is used most frequently on porcelains (all varieties), because the high firing temperatures used limit underglaze applications (on porcelain) to relatively few colors. Enameling is also costly, because a separate, low-temperature firing in a "muffle" kiln, or "decorating oven," must be done for each overglaze enamel color added. Although certainly present in the nineteenth century, gilding continued to be a popular accenting technique used in conjunction with other decorative techniques well into the twentieth century.

The range of colors used for underglaze decoration is generally limited by how well a particular metallic oxide, which is the basis for the color, can withstand the heat of the glost firing. One of the most stable colors under high firing conditions is blue, made from cobalt oxide. It is not surprising, then, that underglaze handpainting in blue is widespread on earthenwares, stonewares, and even porcelains. By the late nineteenth century, however, a wide range of underglaze colors were available for use, primarily on earthenware bodies. Style and form are generally the keys to dating handpainted wares.

Aerography is a decorative technique through which color is applied to earthenware or porcelain by means of an atomizer. The technique was developed in America in 1884 and in Britain in 1892. In America it was used to apply underglaze ground color and eventually glazes. In England it was used for laying large areas of color on low-priced porcelain and earthenware that also may have had handpainted or transfer-printed areas (Cameron 1986:10; Freeman 1977).

Underglaze transfer printing was first used in the late eighteenth century. First, copper plates were engraved, often using published sources with woodcuts or prints as a model. Specially prepared ceramic colors were worked into the plate. A paper uniquely suited for the process was laid over the plate and an impression of the motif came off. The paper was then laid on an unfired

ceramic body (biscuit state), smoothed on, and then removed. The design was then "dried on" prior to glazing and firing. The first underglaze transfer printing was done in blue, but by the mid-1800s, the use of other colors had been perfected. Beginning ca. 1840, white-bodied, semivitreous, molded ironstones eclipsed transfer printing as the most popular decorative medium, until the technique resurged in popularity from ca. 1870 to 1910.

The hues of the colors used in late-nineteenth-century transfer prints differ from those used earlier in the century, and include brown, olive and other greens, blackish blue, bright blue, and red. Transfer prints from earlier in the nineteenth century are generally "scenic" motifs with border and center motifs, placed symmetrically. At the end of the century, some border motifs were still used, but interior designs included simpler designs, such as floral sprays, placed asymmetrically around the vessel. Although the asymmetric placement of designs went against the stylistic sensibilities of British ceramic manufacturers, the influence had filtered into ceramic design from the Aesthetic Movement interest in Japan and Japanese decorative styles. During the 1870s and 1880s many transfer motifs were created in deliberate Japonesque style (i.e., Japanese motifs and placement with a "European" touch), but floral transfer prints remained popular, often in flow blue (where a vessel was fired in an atmosphere into which volatile chlorides had been introduced [Majewski and O'Brien 1987:143]). Also common late in the century were well-executed floral transfer prints with underglaze and overglaze handpainted fill-in.

Both Japanese and Chinese porcelains were decorated by transfer printing, most usually in underglaze blue. Recent work by Alison Stenger (1993:324) has shown that at least for the blue-and-white transfer-printed wares, the blue used on Japanese wares is deeper, while that used on Chinese wares is less intense and generally grayer. She has shown that the cobalt used to create the blue color on the Japanese wares is purer, and came from a different source, than that used for the Chinese blue-on-white printed wares. This would likely also be the case for blue-and-white handpainted wares.

Another form of transfer printing is used on Japanese export porcelain "Kaga" wares decorated in "Geisha girl" style, first made beginning in the 1890s, but very popular from ca. 1900 to 1940s. Litts (1988:16) describes what she calls a "stencil" (taken from *kigata*, wooden pattern):

> Linear designs were carved into wood blocks, which were then "inked" with special enamels. The enamel was wiped off the surface of the block and allowed to remain only in the grooves or cuts. Specifically treated paper was then pressed onto the block. Upon removal of the paper, the enamel left the wood and clung to the sheet. The inked paper would then be placed upon a glazed porcelain surface, wetted and removed. The enamel would remain on the porcelain body which would then be fired to harden and assure permanence of the enamels. This stencil process, commonly called transfer in the U.S. and England, formed what is called the "underlying design" on stenciled Geisha Girl Porcelain. The vast majority of extant examples have a red-orange underlying design. ... The second step in the application process was the completion of the pattern with colored enamels, in most cases ones of a very bright hue. Thin washes were applied for grass, water and sky. Thicker enamels were used for flowers, leaves, kimonos, etc.

Although not technically correct, Litt's term "stencil" is used to describe the decoration for Kaga wares in Table D.1. A more correct usage of stencil would be to characterize a method of application similar to silk screening, except that the desired pattern is cut into a template made of sheet rubber, waxed paperboard, or other flexible material. The color is then forced onto the ware by the action of a rubber squeegee (Newcomb 1947:200). Some lower-quality gilt accent appears to have been applied in this way.

By the early 1900s, transfer printing was on its way to being replaced by the decal, or litho-transfer, as it is known in the British ceramic industry. Despite the fact that the most popular

ceramics from the first half of the twentieth century were decorated with decals, little research has been conducted on the subject. Fryman and Majewski (1995), using information on early American, English, and Continental European decal manufacturers, have established that decals were being introduced on both earthenware and porcelain ceramic lines prior to 1900. The "decalcomania" process facilitates the decoration of ceramic bodies with intricate polychrome designs that mirrored fine hand-painting and enameling, but at prices within the means of the average consumer. The development of decalcomania in the late nineteenth century is directly related to advances in the art of lithography (Adams 1951; Haggar 1967).

Lithography provided a means of producing polychrome designs based on the repulsion between grease and water. The pattern to be printed begins with drawing the design in a greasy medium on the surface of a flat, absorbent stone, after which water and special printing inks are successively applied. The grease design absorbs the inks, while the wet areas do not. The inked design is then transferred to a specially treated (duplex) paper and allowed to dry. During the early development of decals, the lithographed pattern was enhanced by dusting with enamel colors (in oxide form). Offset printing, screening, and photolithography are also methods of creating the decal. The finished decals are then applied to an already glazed and fired ceramic object as follows. The tissue paper bearing the colored pattern is first stripped from its paper backing, then it is applied to the ware and rubbed with a hard, dry brush or other implement to make it adhere firmly. It is finally washed off, leaving behind an impression of the colored design (Great Britain Home Office, Departmental Committee on Lead, Etc., in Potteries 1910:93).

In contrast to transfer prints, decal patterns visually imitate handpainted designs through the used of polychrome elements and shading, at a fraction of the cost of fine enameling. Furthermore, cost savings are realized because the decals are applied overglaze, after the ceramic body is complete. Early nineteenth-century decals tend to be limited to rim applications (continuous and discontinuous), discontinuous floral border accents, and central motifs featuring a flower or floral spray and occasionally a woman's head. Decals from this period are most commonly found on porcelains and nonvitreous or nonvitreous/semivitreous earthenwares. They can be distinguished from transfer prints by their polychrome nature; level of detail; use of color shading; the use of bright, clear, natural colors; and by the fact that one can feel slight relief when touching the edge of a decal design (Majewski and O'Brien 1987:146).

Decoration is uncommon on hotelwares in general, except for simple banding, used in conjunction with a crest or monogram for custom services. Newcomb (1947:198) notes that a mechanical device was often used to apply the banded decoration. Some crests and monograms appear to have been handpainted, while others could have been applied as decals or by means of a silk-screen process.

Relief molding is considered a form of decoration, but one that is incorporated earlier in the manufacturing process. According to Majewski and O'Brien (1987:153, 155), the modified surfaces and associated relief decoration found on these vessels are usually produced by press molding. This technique was used throughout the nineteenth century on porcelain and other white-bodied wares in a wide range of tableware forms. By 1880, relief decoration tended to be more delicate, and included finely executed floral and abstract motifs with bosses on thinner semivitreous white-bodied wares.

The final decorative technique to be considered is slip glazing. Although some wares that used overall colored slip glazes on plain or molded bodies were developed in the late 1920s (e.g., Bauer Ringware in 1929 [Baldinger 1995]), the technique achieved maximum popularity in the

1930s with wares such as Homer Laughlin's Fiesta and Harlequin lines and Russell Wright's American Modern line (also see Hannah 1986; Huxford and Huxford 1992; Kerr 1985; and Lehner 1988). The earliest Fiesta colors included red, cobalt blue, yellow, and green (Hannah 1986:69). Through time, other colors added by Fiesta and copied by others included turquoise, ivory, light green, medium green, rose, forest green, chartreuse, and gray. Fiesta red had been discontinued in 1943 because the uranium used in the glaze was needed for military uses. It is important to remember that colored slip glazes were popular both in tablewares and kitchenwares. The manufacturers encouraged the consumer to mix and match their table settings, so it is entirely possible that when slip-glazed wares occur in an archeological context, they may be quite varied.

Remarks

This category includes information on vessel thickness and other observations about unique characteristics of the item. These observations might include whether or not the footring is unglazed (indicative of porcelain); descriptions of manufacturers' marks and temporal ranges; evaluation of postdepositional alterations of the sherd(s); whether there are cross-fitting ceramics in the collection; and for porcelain, whether an item can be identified as Japanese, or less specifically, as Asian. If a porcelain sherd did not have a Japanese manufacturers' mark, or if it did not match another marked example in the collection, it was categorized as "Asian." In many cases, the analyst was able to use stylistic or other information noted and recorded in the "Decoration" category to make estimates regarding the manufacturing date of an item or its country of origin. These assessments are often not accompanied by a citation, which indicates that the determination was made based on the analyst's experience with collections dating to the same time period or on the artifact's similarity to specimens in the analyst's type collection.

Thickness

Thickness is a measurement that can be used in many ways. One of the best reasons for documenting thickness is to provide a check for assessments of "body" type and vessel form. Within a particular body type, e.g., porcelain, clearcut differences in modal values for thickness can indicate important differences in form not recognizable if thickness measurements had not been taken. For hotelware, thickness differences translate into differences in "grade": (1) thick (5/16 to 3/8-inch walls), used for the more severely handled service, typically at lunch counters and enlisted men's Army messes; (2) hotel (rolled edge) (5/32 to 1/4 inch) is the normal type for hotel and restaurant service; while (3) medium-weight (less than 1/4 inch) is furnished for high-class eating establishments where the service is handled with reasonable care (Newcomb 1947:228). Newcomb also notes that (as of 1947) more elaborately decorated medium-weight "china" (hotel-type ware, china being reserved in this discussion for bone china) was finding an increasing market for home use.

Miscellaneous Observations

Observing whether or not the footring is glazed on a porcelain sherd (if it is indeed present on the sherd[s] being analyzed) can help to sort out if the item in question is hardpaste porcelain or bone china, particularly for the analyst who lacks familiarity with the two and does not have a type collection at hand. Making an assessment of whether a porcelain sherd is definitely or "probably" Japanese allows for the most complete characterization of this unusually large collection of Japanese sherds that had actually been used by people of Japanese descent, rather than Euroamerican consumers. Noting if a sherd is burned, stained, spalled, etc. can aid in characterization of a deposit or provide clues regarding postdepositional alteration of artifacts. Finally, ceramics that refit between levels of an excavation or between units on a site provide information about the depositional history of a site.

Dating

Whenever possible, attempts were made to provide a manufacturing date or date range for each entry. As mentioned above, in the absence of manufacturers' marks, stylistic evidence was used when possible to make date-range estimates. When manufacturers' marks were encountered, the mark was described as to form and content. When possible, additional information on the manufacturer and on the date range for a particular mark was provided when the mark could be identified in reference works such as DeBolt (1994), Gates and Ormerod (1982), Godden (1964), and Lehner (1988). English marks from the period ca. 1870 through the first quarter of the twentieth century tend to be underglaze black transfer prints, although toward the end of the 1900s some occur in other colors. Some American marks dating to the late nineteenth century and early twentieth century are also printed under the glaze, but American marks are usually stamped rather than printed. Marks of American manufacturers of hotelware are very explicit, and often contain the exact day a particular item came from the kiln. Japanese marks can be handpainted over the glaze or the mark might have been applied as a paper label. None of the latter were observed, but an occasional impressed mark was noted. Majewski and O'Brien (1987:165-170) provide background on how to "read" backmarks. Additional general information can be found in Godden (1964, 1993) and Litts (1988).

Results

The entire Manzanar historical-period ceramic collection was analyzed using the methods outlined above, and the detailed findings are presented in Table D.1. In this section, an overview of the ceramics from Manzanar will be presented by temporal component, focusing particularly on the Japanese porcelains. Date ranges by provenience, based on manufacturers' marks, ware, and decorative style are summarized in Table D.2.

Ranching Period (ca. 1860-1910)

Ceramics manufactured during the ca. 1860-1910 date range, and most likely associated with this period of occupation in the Manzanar area, were recovered from the Abernathy Ranch (MANZ 1993 B-20), Lacey Farm (MANZ 1993 B-22), Paget Farm (MANZ 1993 B-16), OVI Headquarters/Shepherd Ranch (MANZ 1993 A-13), and seven dumps or trash scatters (MANZ 1993 A-4, MANZ 1993 A-7, MANZ 1993 A-27, MANZ 1993 A-36, MANZ 1993 B-2, MANZ 1993 B-7, MANZ 1993 B-32). Within the central portion of the relocation center (MANZ 1993 A-30) ceramics dating to this period were found in Block 15 and 26, and Firebreak E6. In addition, a single early sherd was found in the road east of Block 35. Excavated contexts containing early ceramics were limited to Unit 17 at the OVI Headquarters/Shepherd Ranch (MANZ 1993 A-13).

Most of the recovered ceramics dating to this period are tablewares (plates, cups, saucers, small bowls), with a few utilitarian vessels (kitchenwares—bowls, storage vessels) and other vessels (ewer, chamberpot) and miscellaneous ceramic items (bisque doll parts) included. They almost certainly represent domestic ceramic items discarded as household refuse. Examples of the earliest ceramics, dated either by backmark or decorative attributes between 1842 and the 1860s, include two British examples. One is an undecorated, white-bodied earthenware plate or saucer (Figure D.1a), and the other is a molded, semivitreous, white granite plate (from excavation Unit 17). The presence of these items does not necessarily indicate an occupation dating to this period, but can also represent "heirlooms" brought to the area later in the nineteenth century and broken and discarded many years after they were originally manufactured.

Most of the ceramics dating to the "ranching" period cluster in the date range ca. 1880-1900, and primarily include nonvitreous and transitional nonvitreous-semivitreous white-bodied

earthenware tablewares decorated with transfer-printed floral motifs in flow blue, green, and brown (Figure D.1b-f); delicate relief-molded floral decoration (see Figure D.1e); and underglaze handpainted tea-leaf-luster motifs. Decoration is traditional, rather than characteristic of the Aesthetic Movement. Many of the examples, particularly the transitional bodies, are completely undecorated on both the interior and exterior surfaces. Miscellaneous items include two bisque doll fragments, and fragments of a ewer and a chamberpot, the latter two items (from excavation Unit 17) providing clues to the sanitary practices of this period. Few ceramics classifiable as "utilitarian" or "kitchenwares" were recovered: fragments of a Bristol-glaze stoneware bowl and a large storage vessel with a salt-glazed exterior and an Albany-slipped interior.

The majority of the marked tablewares are of British manufacture (e.g., John Maddock & Sons, Alfred Meakin, Johnson Brothers, W. H. Grindley, J. & G. Meakin, T. & R. Boote, Powell & Bishop, Charles Meakin; Figure D.1g-j, D.2a), but there are several early Austrian (Figure D.2b), German (Figure D.2c), and American marks (Figure D.2d). Nearly all of these manufacturers were also represented in collections from excavated contexts in Old Sacramento (Praetzellis et al. 1983) that dated ca. 1811-1935.

Town Period (ca. 1910-1935)

Numerous contexts represent the years when Manzanar was a thriving agricultural settlement. Surface contexts containing ceramics clearly manufactured during these years include:

Downtown Manzanar (MANZ 1993 A-16), Gilmer Farm (MANZ 1993 A-7), Kispert/Hay Ranch (MANZ 1993 A-1), Mager House (MANZ 1993 A-10), Military Police Compound (MANZ 1993 A-32), OVI Headquarters/Shepherd Ranch (MANZ 1993 A-13), and ten dumps or trash scatters (MANZ 1993 A-4, MANZ 1993 A-6, MANZ 1993 A-11, MANZ 1993 A-15, MANZ 1993 A-19, MANZ 1993 A-27, MANZ 1993 B-7, MANZ 1993 B-8, MANZ 1993 B-32, MANZ 1993 B-34). Within the central portion of the relocation center (MANZ 1993 A-30), ceramics dating to this period were found in Block 15, 23, 32, 34, and the Hospital Block. Excavated contexts include Unit 16, Unit 18, Unit 21, and Unit 22.

Again, most of the ceramics from this period that were collected (or excavated) during this project are domestic tablewares (plates of different sizes, platters, cups, saucers, bowls of several sizes, custard cups), although there are some Japanese-made teawares and tablewares (cups, saucers, tea bowls, tea pot/sugar bowl/coffee pot, plates, bowls of various sizes, child's plate) and other forms (ornamental vessel) with probable coeval dates. Miscellaneous (toy dishes), toilet (basin), and utilitarian wares (mixing? bowl, pie plate, indeterminate form) comprise the remainder of the forms represented for this time period.

The inclusion of Japanese ceramics in this time period may appear somewhat problematic, particularly since large numbers of Japanese-Americans and immigrants did not arrive in the area until the early 1940s. It must, however, be remembered that European-style forms were being manufactured by the Japanese for export during this period, and while the bodies were porcelain, decoration was clearly nontraditional. Kaga (or Geisha girl) wares (discussed above; see Figure D.3a) date as early as the 1890s, and Litts (1988:11) notes that the "bulk of Geisha Girl Porcelain was produced prior to World War II." Many other Japanese-made wares in the collection appear to have been made in more traditional styles, and although they are assigned a 1921+ date in Table D.1 based on the appearance of "Made in Japan" in the mark, they may in fact belong to either the Manzanar Town period or the Manzanar Relocation Center

period, and they may have been used by either the Anglo or Japanese residents of the area.

Most non-Japanese wares dated to this period are nonvitreous white-bodied earthenwares, although there are some transitional semivitreous-vitreous bodies that may be categorized as early hotelware. The primary decorative method seen on ceramics from this collection dating to this period is the overglaze floral decal, although bluebird decals of all sizes were also popular (Figure D.3b-f). Decal bands were also used to accent plate and saucer rims (Figure D.3g). Transfer printing, while eclipsed by decal decoration, still occurred, but usually only in traditional patterns such as "willow" (Figure D.4a). The style of decoration observed on ceramics of this period was decidedly traditional (mostly floral and a few "scenic" decals such as windmills [Figure D.4b]), and little could be categorized as being in the style of the day (Art Nouveau). By the early 1930s, however, Art Deco abstract design influences could be seen in decals used on tablewares. Beginning in the late 1920s, plain and molded bodies began to be covered with colored slip glazes (see above), giving rise to well-known products such as Fiesta, Harlequin, and Bauer Ringwares, and there are examples of these wares in the collection as well. Art Deco Japanese and Czechoslovakian porcelains are characterized by their thinness and gaudy decoration, which incorporates luster-wash grounds with overglaze, often quite crude, decoration (Figure D.4c). Figure D.4d illustrates a partial small Czechoslovakian earthenware plate with handpainted floral decoration.

The few utilitarian wares collected that probably date to this period include two blue, slip-glazed stoneware bowls and a stoneware bowl with underglaze blue sponged motifs on the exterior and an undecorated interior.

During this time period, consumers appear to have moved away from ceramics of British manufacture and were purchasing American-made wares made by potteries such as Buffalo China; Edwin M. Knowles China; Knowles, Taylor, & Knowles; Homer Laughlin; Poxon-Vernon Potteries; Paden City Pottery; Taylor, Smith, and Taylor; Chester China, and C.C. Thompson Pottery Co (Figure 5). A few English-made examples were collected, however, including a "willow"-pattern plate with a possible Cauldon, Ltd. mark. Several pieces manufactured by Johnson Brothers had marks with a date range extending past 1913, and another made by the same company probably dates post-1913.

Relocation Center Period (1942-1945)

The bulk of the ceramics represented in this collection date to the brief period of intense occupation (1942-1945) by Japanese-American citizens and immigrant "prisoners" and military personnel associated with the Owens Valley Assembly Center, which became the Manzanar Relocation Center in October 1942. This collection of materials is especially important because of the opportunity it offers to analyze traditional-style, Japanese-made ceramics in use by persons of Japanese descent during a very narrow time span. It is probably safe to assume that most, if not all, of the Japanese-made ceramics found at Manzanar date from approximately the 1890s to the 1940s, with the majority dating to the 1930s and 1940s. This analysis, then, provides probably the most detailed descriptive examination of Japanese "useful wares" from this period to date based on an archeological collection (see Costello and Maniery [1988] for descriptive information on pre-1915 Japanese wares in California; also Stenger 1993; Stitt 1974). Its utility will be tested if future researchers can identify wares they encounter by using the descriptions presented in Table D.1. The Japanese ceramics recovered during limited archeological reconnaissance work at another relocation center, the Gila River Relocation Center south of Phoenix, Arizona, were apparently not studied in their entirety (Jensen 1993; Sawyer-Lang 1989; Tamir et al. 1993).

Sites clearly containing ceramics dating to this occupation include the central portion of the relocation center (MANZ 1993 A-30; from 13 blocks and four perimeter trash features), the relocation center landfill (MANZ 1993 B-8), the hospital landfill (MANZ 1993 A-37, Locus A), and the airport (MANZ 1993 B-29). Excavated contexts with ceramics dating to this period include Unit 25 (hospital landfill) and potentially Units 21 and 26. Post-World War II ceramics identified in the collection were from the Staff Housing Block (MANZ 1993 A-30), Kispert/Hay Ranch MANZ (1994 A-1), MANZ 1993 A-32, MANZ 1993 B-7, and excavation Unit 26.

Ceramics dating to this time period at Manzanar fall into two basic categories: Japanese porcelains made in traditional Japanese forms (and some definite and probable Japanese stonewares) and vitreous, American-made hotelwares. A few nonvitreous, white-bodied, American-made earthenwares were present, but in much smaller quantities than during the previous occupation.

Japanese porcelain forms included small, medium, and large (serving) plates; small, medium, large, and serving bowls; European-style cups and saucers; straight-sided, tiny, sake, and handleless cups; a dish with irregular sides; and ornamental items such as a porcelain box and figurines. Several stoneware items likely to be of Japanese manufacture occurred as bowl forms. Form designations were based on Costello and Maniery (1988). Traditional Japanese wares found at Manzanar undoubtedly were used by internees as domestic tablewares and teawares and as ornamental items, even though other meal-taking opportunities were provided for them. The stoneware bowls also could have been used in food preparation activities.

Both traditional and export-style decoration appear on Japanese wares from Manzanar that date to this occupation of the site. Nontraditional export-style decoration has already been discussed above in the context of Kaga or Geisha girl porcelains. It is important to remember that nontraditional Japanese decoration used on porcelains made for export generally appears on Western-style forms, such as those commonly found in dinner or tea services, where there is much greater emphasis on flatwares rather than on hollowwares such as bowls and cups. Two Noritake examples were recovered, but both likely date to the relocation center use.

Traditional decoration on Japanese porcelains and stonewares will be treated in more depth here because it has not been well documented to date. While there are discussions of Japanese porcelains (e.g., Schiffer 1986; Stitt 1974), the focus tends toward ornamental and export wares rather than the everyday items used by ethnic Japanese practicing traditional foodways. Each Japanese item found at Manzanar is described in Table D.1. Representative examples are shown in Figures D.6-8. The purpose of this discussion, then, is to summarize the major kinds of decoration characteristic of the first half of the twentieth century as they appear on traditional wares used by the Japanese Americans at Manzanar during the period of their internment.

The most common form of traditional decoration is underglaze transfer printing or hand-painting, usually in blue, often accompanied by overglaze accenting in other colors. Gilding, when it appears, should be seen as a Western influence rather than a traditional decorative technique. Many of the examples exhibiting the dark blues in combinations with bold reds are reminiscent of Imari-style decoration, made in Japan from ca. 1650 (Schiffer 1986:110). Large floral sprays, often incorporating chrysanthemums, are common motifs, as are landscapes featuring mountain peaks, trees, houses, and clouds. Other Japanese wares in the collection have abstract or stylized painted floral and geometric designs, some elements of which may have been added by a stencil technique. Decoration on bowl forms generally is concentrated on the exterior, whereas plate forms naturally would have a decorative focus on the interior. Plates and bowls, particularly the larger forms, often

exhibit lines (one or more) around the exterior base, above where the body joins the footring.

Another traditional decorative technique is slip glazing over smooth or molded surfaces. Examples in this collections include a gray stoneware bowl with a lustrous red glaze, and porcelain bowls and plates, several with a celadon glaze, either alone or with additional handpainted decoration and another with a light brown "marbled" glaze with handpainted or stenciled motifs over the glaze. Japanese characters are occasionally incorporated into the decoration.

The most frequent mark on Japanese-made wares is some form of the "Made in Japan," mark. From 1891 (after the McKinley Tariff Act), items imported into the United States were required to display their country of origin. Beginning in that year, and continuing until 1921, Japanese manufacturers marked their wares with "Nippon," a Westernization of Japan's Japanese name. In 1921, the U.S. government declared that Nippon was a Japanese word, and that their export wares should be marked with "Japan," an English word (Litts 1988:58). Thus, it is a general rule of thumb that wares marked with "Made in Japan" date to 1921 and after. "Made in Japan" marks occur frequently in the Manzanar collection, in underglaze, overglaze, and impressed versions. Unfortunately, when wares are marked in this fashion we only learn that they were made in Japan at some time from 1921 onwards and little else. We must depend on the style of the decoration and the context to provide additional temporal information. In addition, it is difficult to identify specific manufacturers, even when Japanese characters appear on the base.

Vitreous, American-made hotelwares occurring in the Manzanar collection included tablewares created for intensive-use situations such as hospitals, military messes, and dining halls such as those set up at Manzanar for the internees. Both "thick" and "hotel" grades are represented. Forms commonly found in the archeological record included plates of various sizes, cups and saucers, "30's" bowls, bakers, and serving dishes (Figure D.9).

Because hotelware bodies are fired at such high temperatures, decorative possibilities are limited. Therefore many examples are completely undecorated, and others have underglaze bands, border motifs, or logos in special high-temperature colors. In the Manzanar collection, examples of logos include a crest with "VIRGINIA" beneath it, an anchor, and a staff-with-entwined-snakes medical logo for the United States Army Medical Department (Figures D.10-11).

Almost all hotelwares are marked in great detail (using specially designed stamps), particularly when they were commissioned by the United States government and issued by the U.S. Army Quartermaster Corps. American manufacturers dominated the hotelware market, and those represented in the Manzanar collection include Iroquois China, Shenango China, Wallace, Sterling, Syracuse, Technical Porcelain and Chinaware (TEPCO), Homer Laughlin, McNichol, Carr, and Buffalo (Figures D.12-14; see also Table D.1).

The small quantity of white-bodied earthenwares and stoneware vessels recovered from Manzanar that date to this period would have been used in domestic settings by internees or relocation center staff.

Discussion and Conclusions

Historical-ceramic data provide information pertinent to several research questions concerning occupation at Manzanar prior to the World War II period. First, temporal information on ceramics by collection and excavation location can be used to "sort out" areas representing different occupations of the site, in particular those areas where occupation occurred prior to the establishment of the Manzanar townsite and which might be obscured by later deposits.

Our ability to locate, date, and determine the horizontal and vertical extent of deposits is critical for investigating site structure and land-use history and ultimately for assessing the integrity of deposits.

Second, because we have been able to segregate groups of ceramics by time period, preliminary statements can be made about frontier urbanism and economics. Based solely on the evidence gleaned through analysis of the ceramics from Manzanar, it is possible to suggest that during the Ranching period, the occupants of the area were still relying in large part on imported goods, and in the case of ceramics, primarily British goods. By the time the town of Manzanar was founded ca. 1910, access to markets and/or consumer preference appeared to have changed, and most ceramics were American made rather than British.

Third, the ceramics associated with the Manzanar Relocation Center are figuratively a "goldmine." The American-made hotelwares found on the site represent ceramics manufactured, used, and discarded within a three-year timespan. Rarely do archeologists have the opportunity to characterize such a temporally bounded collection. This group of ceramics will provide important comparative information on this time period for archeologists, regardless of where they are working in the United States. The wide range of manufacturers' marks found on hotelwares from Manzanar provides information on government-procurement strategies and specifications of the time, and can be compared with materials recovered from other relocation centers, such as the Gila River Relocation Center in Arizona (e.g., Sawyer-Lang 1989), to determine the degree to which regional variation in approaches occurred.

The characterization of nontraditional Japanese wares at the site is important because many of them were probably associated with the Anglo residents of the Manzanar townsite rather than with the Japanese internees who arrived later. The possible use of Japanese-made wares by non-Japanese suggests that the Japanese may have been competitive with American ceramics producers as early as the 1910-1935 period. Unfortunately, too few of these wares are found in securely dated excavated contexts to allow firm conclusions about their use histories. Additional work at Manzanar, if undertaken, might provide the opportunity for further research on this topic.

Finally, and perhaps most significantly, this collection has provided an opportunity for the characterization of traditional Japanese ceramics from an archeologically little-known time period—the first half of the twentieth century. Again, the fact that most of these ceramics come from (often mixed) surface contexts limits our ability to generalize about them as a proper "assemblage." As a "collection," however, they are still important as the expression of traditional foodways for the Japanese Americans who began arriving at Manzanar in 1942.

Japanese Americans sent to the relocation centers supposedly brought only what they could carry with them and often allegedly disposed of or stored nearly all of their possessions prior to their evacuation. This was clearly not always the case, however, as documented by Tamir et al. (1993) through oral interviews with persons who had been interned at the Gila River Relocation Center. Many Japanese internees brought most of their property with them or had it sent later by the War Relocation Authority (the agency that stored some of property internees brought with them), or by friends who safeguarded their property in their absence (Tamir et al. 1993:52). In late 1945, when the Gila River Relocation Center closed, most families shipped from 6,000-8,000 pounds of property, while one shipped 17,000 pounds (Tamir et al. 1993:52). It is clear that much of what was shipped at the end of a family's internment had come to them during their stay and consisted of items they had owned prior to evacuation. Tamir et al. (1993:81-82) also note that internees at Gila River were able to

obtain goods either through catalog sales or other shopping opportunities outside the center.

The coexistence of American-made hotelwares suitable for institutional use and Japanese-made wares in traditional forms is interesting because the internees theoretically took their meals at the block mess hall. Tamir et al. (1993:115-116) note that (at the Gila River Relocation Center) although meals were prepared for internees and relocation center employees and served at the mess hall, many chose instead to eat with their families and cooked on one- or two-burner hot plates. After hotelwares, "fine Japanese porcelains" were the second most common artifact found at Gila River. Most of these were export porcelains marked with "Made In Japan," but others are unmarked. They note that all are "high quality specialty goods, designed for traditional Japanese use and hand decorated in many different patterns and colors." The ceramic artifacts recovered from Manzanar appear to indicate that the same situation occurred among the Japanese American families interned there. While teawares may have had "ceremonial uses," other vessels such as bowls and plates used in everyday food consumption would indicate that Japanese American internees made considerable efforts to maintain traditional foodways. The documentary record is fairly silent about this topic, but the archeological record is clear that maintenance of ethnic preferences in food preparation and consumption may be an example of "resistance" by the Japanese Americans against those who interned them against their will.

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 A-4 Locus B (FN A-175)	1	saucer body-ftrng-base	sv	int and ext undec	3/16" thk; partial uglz black tp mark = ...[MEA]KIN/[HAN]LEY/[EN]GLAND; 1882-1900
MANZ 1993 A-4 Locus B (FN A-178)	1	saucer? base	nv	int and ext undec	1/8" thk; partial blackish blue indet uglz stamped? mark = wreath with ...Co. inside
MANZ 1993 A-4 Locus B (FN A-173)	2 (same vessel)	cup rims, one with broken handle attachment	nv	ext has ~1/32" oglz gold lining 1/4" below lip; int has discont 1/4"-wide oglz decal strips right below lip—black ground with pink, green, yellow, and white floral; decal strip outlined at top and bottom with ~1/32" oglz gold lining	~1/8" thk; late 1920s-early 1930s
MANZ 1993 A-6 (FN A-133)	1	bowl rim; d = 6"	nv	ext undec; int oglz? 1/32" olive green line encircling lip; 5/8" molded acorn and leaves band beg. at lip; beneath band an uglz purple wavy line, 1/8" at thickest part; off-white glaze	~3/16" thk
MANZ 1993 A-6 (FN A-133)	1	plate rim-marly brk-body-ftrng; ~d = 9"	nv	ext undec; int has molded, wavy lip with Art Deco-style rim design; around rim several lg oglz floral decals were placed, part of one is present in green, pink, purple, red, blue, and yellow	3/16" thk; ca. 1930s-1940s
MANZ 1993 A-6 (FN A-133)	2 (same set, diff forms)	plate rim-marly brk-ftrng-base with d = 9"; saucer body-ftrng-base	nv	plate: ext undec; int oglz bright blue 1/16" line around lip, 1/2" below that a faded, <1/64" line, latter line intersected by ~1"-d "windmill" scene decal in lt and dk blue, yellow, and brown saucer: ext undec; int oglz "windmill" decal	plate: ~3/16" thk; saucer: 1/8" thk, partial blackish green uglz stamped mark = [HOMER] LAUGHLIN/EMPRESS/...12 20 L; manuf. Dec. 1920, pattern name "Empress" (see Lehner 1988:246)
MANZ 1993 A-6 (FN B-454)	1	plate/saucer body	nv	ext undec; int molded portion probably represents area beneath lip, below is oglz abstract crest?-like decal in yellow, black, green, lt blue, and red	1/8" thk
MANZ 1993 A-6 (FN B-454)	1	saucer rim; d = indet	nv	ext undec; int 1/16" uglz green line encircling lip; beg at lip for 5/8" a molded panel with acorns and leaves, beneath that uglz hp purple "twisted ribbon" motif	avg thk = 3/16"
MANZ 1993 A-6 (FN B-454)	1	saucer body	nv	ext undec; int uglz hp thk and thn line leaves (grn), stem (blk), and flower (red and yellow)	<1/8" thk
MANZ 1993 A-6 (FN A-133)	1	saucer rim-body-ftrng-base; d = 6"	nv	ext undec; int uglz bright blue 1/16" line around lip, 5/16" below a <1/32" line, interrupted by floral decal sprays in green, yellow, black, and blue	1/8" thk; ca. late 1920s-1930s
MANZ 1993 A-6 (FN A-133)	1	oval platter rim-marly brk-ftrng-base; d = indet	v, hw	ext undec; int uglz med blue tp swag and urn motif around rim	~1/4" thk; uglz green stamped mark = O.P.CO./SYRACUSE/CHINA, also an impressed triangle on base; ca. 1940s
MANZ 1993 A-6 (FN A-133)	1	plate body-ftrng-base	nv	ext undec; int uglz hp floral and dot in black, green (2 shades), brown, and yellow; off-white glaze	~1/8" thk
MANZ 1993 A-6 (FN B-454)	1	plate? rim, irreg- shaped lip; d = indet	nv	ext undec; int traces of oglz gold lining around lip, beg 3/4" below lip oglz floral decal in orange, yellow, green, black, and purple	3/16" thk
MANZ 1993 A-6 (FN A-133)	1	saucer body	p	ext undec; int oglz pastel rose decal in pink, bluish green, and green	1/8" thk
MANZ 1993 A-7 Locus B (FN B-460)	7 (6 refit)	~50% sm plate; d = 7"	nv	ext undec; int oglz hp lg floral in blue, green, yellow, black and orange, 3/16" yellowish orange band around rim	1/8" thk; uglz black stamped mark = Czechoslovakia/Hand-painted; also a black hp decorator's mark; 1918+
MANZ 1993 A-7 Locus B (FN A-135)	1	1 cup rim-shoulder brk; d = 4"	nv/sv	int undec; ext oglz 3/16" gold band encircling rim, beg at lip	1/8" thk
MANZ 1993 A-7 Locus B (FN A-135)	1	1 plate rim-marly brk; d = 10"	nv	ext undec; int has 1/4"-wide oglz decal strip right below lip—black ground with pink, green, yellow, and white floral; decal strip outlined at top and bottom with ~1/32" oglz gold lining (same set as cup in FN A-173)	3/16" thk; ca. late 1920s-early 1930s

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 A-7 Locus B (FN A-135)	3 (probably to same plate)	2 plate rims, 1 plate rim-marly brk; d = 9"	nv	ext undec; int oglz bright blue 1/16" line encircling lip, beneath that are portions of uglz bluish gray and black bluebird decal (on 2 of the sherds)	1/8-3/16" thk; one of sherds is burned; ca. late 1910s-1920s
MANZ 1993 A-7 Locus D (FN A-136)	1	plate base	nv	int and ext undec	~3/16" thk; blurry uglz greenish-black mark, undecipherable (probably American made)
MANZ 1993 A-7 Locus F Collection Unit 1 (FN B-559)	1	small plate rim-marly brk-body-ftrng-base; irreg lip; ~d = 7"	nv	int art deco style molding around lip	3/16" thk; ca. 1930s+
MANZ 1993 A-7 Locus F Collection Unit 3 (FN B-563)	5 (2 refit, all from same vessel)	plate; irreg lip; d = 8"	nv	ext undec; int art deco style relief-molded decoration around lip	3/16" thk; int and ext crazed; some sherds have int and ext rust staining; ca. 1930s+
MANZ 1993 A-7 Locus F Collection Unit 3 (FN B-563)	2 (refit)	cylindrical storage vessel; d = 7"	sw	buff paste; int and ext sg	5/8" thk; some rust staining on int
MANZ 1993 A-7 Locus H (FN A-137)	1	saucer/plate rim; d = indet; wavy, irreg lip	p	ext undec; int oglz? lt olive green tp (foliage)	1/4" thk
MANZ 1993 A-7 Locus H (FN A-137)	2 (refit)	indet form base sherds	nv/sv	int and ext undec	1/8" thk; uglz black tp mark = undecipherable/portion of coat-of-arms/W.H. GRINDL[EY]/ENGLAN[D] with impressed, upside-down "80" at 11:00 o'clock through coat of arms (this mark not listed in Godden [1964], but probably ca. 1892-1900)
MANZ 1993 A-7 Locus H (FN A-137)	2 (same vessel)	plate rim-body-marly brk-ftrng-base; wavy, irreg lip; d = indet	nv/sv	ext undec but has bluish tint to glz due to flown design on int; int delicate relief molding—bosses, half circles, wavy lines beg at lip and extending 1/2", also uglz flow blue hp over much of this area; below relief molding to just below marly brk uglz dk flow blue floral tp; oglz gold floral stamp or tp	~1/8" thk; early 20th c.
MANZ 1993 A-7 Locus I (FN A-138)	2 (same vessel)	1 saucer rim, 1 saucer body; d = indet; irreg, wavy lip	nv	ext undec; int wavy lines and bosses relief molding 1/8" below lip, below that oglz pink, purple, brown, and green thistle and leaf decal	1/8" thk; ca. 1930s (see FN B-458 for probable piece of same saucer)
MANZ 1993 A-7 Locus I (FN B-458)	2 (refit)	saucer? body-ftrng-base	nv	ext undec; int has blurry uglz blue abstract floral tp over much of surface; body sherd has same tp over entire surface to 3/4" above ftrng	3/16" thk; ca. 1930s (see FN A-138 for probable piece of same saucer)
MANZ 1993 A-7 Locus I (FN A-138)	1	1 bowl rim; d = indet	nv	ext undec; int relief-molded bosses 1/8" below lip, below that oglz gray, lt and dk pink, and green floral and leaf decal	1/8" thk; ca. 1930s
MANZ 1993 A-7 Locus I (FN A-138)	1	1 saucer body-ftrng-base	nv	ext uglz blue (blurry) border motif with tree motif below; int undec	3/16" thk; ca. 1930s (probably part of same saucer as described in FN B-458)
MANZ 1993 A-7 Locus I (FN A-138)	2 (same vessel)	1 cup rim, 1 cup body-ftrng; d = indet	nv	int of rim has uglz blue abstract floral tp (blurry) beg at lip and ext 3/4"; ext has same tp over entire surface; body sherd has same tp over entire surface to 3/4" above ftrng	~3/16" thk
MANZ 1993 A-7 Locus I (FN B-458)	1	saucer rim, irreg lip; d = indet	nv	ext undec; int relief-molded bosses 1/8" below lip, below that orange, green, brown, and blue poppy decal	1/8" thk

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 A-7 Locus I (FN A-138)	2 (same vessel)	2 saucer rims; ~d = 5"	nv	ext undec; int wavy lines, floral, and relief- molded bosses 1/8" below lip, below that a lt and dk pink and green rose decal	1/8" thk; ca. 1930s
MANZ 1993 A-7 Locus I (FN B-458)	1	plate base	sv	int and ext undec	3/16" thk; nearly complete black uglz tp mark = crown and scepter on tray/TRADE MARK/ROYAL SEMI PORCELAIN/JOHN MADDOCK & SONS/ENGLAND (ca. 1906+; Godden 1964:406)
MANZ 1993 A-7 Locus I (FN B-458)	1	saucer rim, irreg lip; d = indet	nv	ext undec; int wavy lines and relief-molded bosses 1/8" below lip, with oglz purple, brown, and green thistle and leaf decal below	1/8" thk; ca. 1930s (see FN A-138 for probable pieces of same saucer)
MANZ 1993 A-7 Locus I (FN B-458)	1	saucer base; ~d = 4"	p	ext undec; int oglz decal floral motif in shades of green, tan and red	1/16" thk; unglzd ftrng; oglz green stamped mark = shield with pine tree and H & C/S (Haas and Czjzek, Schleggenwald) inside, 1972 above and CZE[CHOSLOV]AKIA below; Czechoslovakia = 1918-1939 (Danckert 1981:409-410; Röntgen 1981:74)
MANZ 1993 A-7 Locus J (FN B-462)	1	plate, >50% complete; d = 10"	nv/sv	ext undec; int delicate floral molding on fluted rim, spaced ~2-1/2" apart around rim	1/8" thk; uglz blackish green tp mark = [ROYAL IR]ONSTONE CHINA/coat-of-arms motif/JOHNSON BROs/ENGLAND (mark dates 1883-1913; Godden 1964:355)
MANZ 1993 A-7 Locus J (FN B-462)	1	sm plate, >50% complete; ~d = 6-3/4"	nv/sv	int and ext undec	3/16" thk; uglz black tp mark = ROYAL IRONSTONE CHINA/coat-of-arms motif/JOHNSON BROs/ENGLAND (mark dates 1883-1913; Godden 1964:355)
MANZ 1993 A-10 (FN A-139)	1	saucer/plate rim; d = indet	nv	ext undec but bluing in glz due to flown blue on int; int irreg lip with delicate molded bosses, dots, lines, and floral motifs, dk flow blue over all	1/8" thk; ca. 1880s-1910
MANZ 1993 A-10 (FN A-139)	1	bowl rim, ~d = 6"?	nv	ext undec; int irreg lip with delicate molded bosses and floral motifs, below 1/2" molded area slightly flown blue uglz tp floral sprays	1/8" thk; ca. 1880s-1910
MANZ 1993 A-10 (FN A-139)	1	cup rim, ~d = 4"	nv	int has uglz bright blue 1/64" line encircling 5/16" below lip; ext has bright blue oglz 1/32" line around lip, body has molded panels, portions of blue, green, and pink bluebird on branch decal	1/8" thk; ca. late 1910s-1920s
MANZ 1993 A-11 (FN A-140)	1	saucer base	p	ext undec; int uglz hp foliage motif in medium blue	1/8" thk
MANZ 1993 A-11 (FN A-140)	1	plate rim; d = indet	nv	ext undec; int oglz 1/16" silver line around lip, beneath that uglz 1/32" bright blue line 3/8" below lip intersected by oglz rose with leaves decal in lt and dk pink, green, and black	3/16" thk; late 1920s-1930s
MANZ 1993 A-11 (FN A-140)	1	slip-cast doll body fragment	p	unglzd (bisque); int undec, ext has raised portion of bow, oglz hp in bright blue	1/16" thk; ext has burned areas and rust staining; late 19th c.
MANZ 1993 A-13 (FN A-82)	1	bowl rim; ~d = 7"	nv	ext undec; int uglz blue tp willow border (begins at lip and extends ~1"); remains of gold lining around lip	3/16" thk
MANZ 1993 A-13 Locus A (FN A-159)	1	bowl body-ftrng-base	nv	ext undec; int uglz blue abstract floral over white slipped int and ext	~1/4" thk; (refits with sherd in FN B-586)
MANZ 1993 A-13 Locus A (FN A-159)	1	small cup rim; d = indet	p	int undec; ext uglz hp blue swirl/vine motif	1/8" thk; probably Japanese
MANZ 1993 A-13 Locus A (FN A-159)	1	cup? body sherd	nv	int undec; ext uglz hp blue leaves and grouped adjacent lines	3/16" thk
MANZ 1993 A-13 Locus A (FN A-159)	1	plate/saucer base	nv	int and ext undec	1/8" thk; blackish green uglz stamped mark ...THE/... [M]. KNOWLES/ ...[I]VORY/...8-1-1; Edwin M. Knowles; ca. 1920s-1930s (Lehner 1988:237, ~mark #8)

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 A-13 Locus B (FN A-161)	2 (refit)	large bowl? bodies	sw	buff paste; ext and int Bristol glz with oglz med blue tp leaf	3/16" thk; ca. 1890-1930 (Ketchum 1983:215) (see FN B-843)
MANZ 1993 A-13 Locus B (FN A-160)	1	bowl/crock? base	yw	buff paste; ext and int dk yellow slip with clear glz over	3/8" thk
MANZ 1993 A-13 Locus B (FN A-160)	1	plate body-ftrng-base	p	ext undec; int series of molded bosses encircling int below break to base, above bosses and onto body an uglz floral and leaf decal in green, blue, magenta, and yellow	~3/16" thk; unglzd ftrng
MANZ 1993 A-13 Locus C (FN A-161)	2 (probably from same vessel)	1 saucer rim, 1 body sherd	nv	ext undec; int rim has 1/16" oglz bright blue lining around lip; int body has 1/16" bright blue lining	1/8" thk
MANZ 1993 A-13 Locus C (FN A-161)	1	cup rim; irregular, wavy lip; d = indet	nv	int and ext uglz blue 1/16" line ~3/16" below lip; on ext below line - uglz blue abstract floral motif; on white-slipped int and ext (may be part of 1/4" thk cup in FN A-159)	3/16" thk
MANZ 1993 A-13 Locus C (FN A-161)	1	plate base	nv	int and ext undec	3/16" thk; uglz blackish green stamped mark = Homer Laughlin logo/Homer Laughlin/[E]MPRESS/2 21 L; manuf. Feb. 1921, pattern name "Empress" (Lehner 1988:246)
MANZ 1993 A-13 Locus C (FN A-161)	1	cup rim; d = indet	nv	int and ext uglz blue ~1/16" line 1/8" below lip; on ext below line - uglz blue abstract floral motif and wavy, grouped adjacent lines; on white-slipped int and ext (may be part of 3/16" thk cup in FN A-159)	1/8" thk
MANZ 1993 A-13 Locus G (FN A-164)	1	sugar bowl body with portion of handle attachment present	nv/sv	int undec; ext delicate molded design with bosses and swirls around shoulder of sugar bowl, above shoulder oglz ~1/16" bright blue line encircling vessel	1/8" thk; late 19th c.-early 20th c.
MANZ 1993 A-15 Locus A (FN B-565)	1	plate marly brk-body	nv	ext undec; int oglz green, lavender, red, and pink floral decal	3/16" thk; ca. 1930s
MANZ 1993 A-15 Locus A Collection Unit 2 (FN B-568)	2 (refit)	bowl rims, irreg lip; d = indet	nv	ext undec; int delicate relief molding around lip with lime green airbrushed accent	~3/16" thk; early 1900s
MANZ 1993 A-15 Locus A Collection Unit 2 (FN B-568)	1	plate ftrng-base	nv/sv	int and ext undec	~3/16" thk; burned ext and int
MANZ 1993 A-15 Locus B Collection Unit 3 (FN B-570)	1	plate base	nv	int and ext undec	1/8" thk; blue uglz stamped mark, indet portion of a scroll; int and ext crazed, ext burned
MANZ 1993 A-15 Locus B Collection Unit 3 (FN B-570)	1	saucer rim-body	nv	ext undec; int has 1/16" bright blue line encircling lip with 1/32" line 1/2" below that; probably part of a "bluebird" motif	~1/8" thk; int and ext crazed; late 1910s-1920s
MANZ 1993 A-15 Locus B Collection Unit 3 (FN B-570)	2 (same vessel)	plate rim-marly brk-body, plate marly brk-body; d = 10"	nv	ext undec; int has 1/16" bright blue line encircling lip with 1/32" line 1/2" below that; probably part of a "bluebird" motif	3/16" thk; spalled and crazed int and ext; late 1910s-1920s

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 A-15 Locus B Collection Unit 3 (FN B-570)	1	cup body-ftrng-base	nv	int and ext undec	1/8" thk; int and ext crazed
MANZ 1993 A-15 Locus B Collection Unit 3 (FN B-570)	1	plate base	nv	ext undec; int oglz lt and dk brown, rust, and gray abstract decal (lines and bands)	~1/8" thk; ca. 1920s-early 1930s
MANZ 1993 A-16 Locus A (FN A-89)	1	cup body	nv	int undec; ext bluebird decal (blue, black, orange)	1/8" thk; ca. late 1910s-1920s
MANZ 1993 A-16 Locus B (FN A-90)	1	saucer rim; ~d = 5-1/2"	nv	ext undec; int oglz 1/16" blue line encircling lip	1/8" thk
MANZ 1993 A-16 Locus B (FN A-90)	1	saucer body-ftrng-base	nv	int and ext undec	1/8" thk; partial black-green indet stamped uglz mark = radiating vertical lines/...RE/crude vase shapes below
MANZ 1993 A-16 Locus B (FN A-90)	1	saucer rim-body; d = 5-1/2"	nv	ext undec; int has faded 1/16" oglz blue or gilt line encircling lip with oglz bluebird on branch decal below in blue, green, and pink	1/8" thk
MANZ 1993 A-16 Locus B (FN A-90)	1	platter rim-marly brk-body-(no ftrng)-base; d = indet	nv	ext undec; int oglz 1/16" blue line encircling lip, large blue, gray, and black bluebird decal extending from rim area well onto base	1/4" thk; partial stamped green-gray mark = K.T.& K/..../....V/..../...NA. [Knowles, Taylor, and Knowles]; ca. 1910s-1920s (Lehner 1988:238-239, mark #35)
MANZ 1993 A-16 Locus B (FN A-90)	1	small shallow bowl rim-body-base; ~d = 6"	nv	ext undec; int bright blue oglz 1/16" line encircling lip with portion of oglz bluebird on floral branch decal in blue, black, pink, and green	3/16" thk; ca. late 1910s-1920s
MANZ 1993 A-16 Locus B (FN A-90)	1	saucer rim-body; d = 5-1/2"	nv	ext undec; int oglz faded 1/16" black or gilt line encircling lip	1/8" thk
MANZ 1993 A-16 Locus C (FN B-461)	1	~50% bowl; d = 5-1/2"	sv	int and ext undec	1/4" thk; center portion of ext base glzd but rest of base is not; incompletely stamped blackish green oval (3/4" long) mark = VERNON? [LETTERS MISSTAMPED?] CHINA/VERNON/CALIFORNIA (see Lehner 1988:489, mark #16); int and ext crazed, some staining on int; 1928-1948
MANZ 1993 A-16 Locus D (FN A-92)	1	cup body	nv	int undec; ext uglz hp apple green leaves(?) and 1/16" black scalloped line	1/8" thk
MANZ 1993 A-16 Locus D (FN A-92)	3 (probably same set)	saucer? rim-marly break; body-ftrng-base; base	p	int oglz 1/4" gray luster wash beginning at lip, at edge of gray luster 1/16" blk line, beneath that pale yellow luster ground with hp crude floral dec in blk, green, yellow, orange, blue, and white, which continues onto int base	avg thk = 1/8"; unglzd ftrng
MANZ 1993 A-16 Locus D (FN A-92)	1	plate rim-marly break; ~d = 9"	p	ext undec; int oglz hp 1/16" blk lines around lip and 1-1/4" below lip at marly break, 1/4" blk line runs vertically from lip to marly, below marly break a white luster wash	3/32" = avg thkness; probably Japanese or Czechoslovakian
MANZ 1993 A-16 Locus D (FN A-92)	2 (probably same set)	rim to a toy-sized saucer/plate; rim-body to toy-sized cup, d = 2"	p	saucer/plate: ext undec; oglz on int 3/16" purple luster wash beginning at lip, at edge of purple luster 1/16" blk line, beneath that pale yellow luster ground; cup: int undec, oglz on ext same luster and line dec with green, pink, yellow, white, blk, and salmon crude hp floral dec on pale yellow ground	3/16" thk at lip; probably Japanese or Czechoslovakian

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 A-16 Locus F (FN B-623)	2 (refit)	cup rim-body	nv	int undec; ext 1/4" relief molded area beg at lip, vertical panels beneath that; beg ~3/4" beneath lip oglz floral decal in orange, brown, green, blue, and purple	1/8" thk; ca. 1930s-early 1940s
MANZ 1993 A-19 Locus B (FN A-55)	1	saucer body-ftrng-base	p	ext undec; int oglz pink and lt green floral decal	1/8" thk; unglzd ftrng
MANZ 1993 A-19 Locus B (FN A-55)	1	plate base	nv	int and ext undec	1/8" thk; partial mark = blackish green stamped uglz Homer Laughlin symbol, rest of mark not visible; symbol used early 1900s on dinnerware (Lehner 1988:247)
MANZ 1993 A-20 Locus E (FN A-62)	1	sugar bowl? with recessed int lip area (for placement of lid): rim-body	sw, red body	int body to ext edge of lip slipped with brown glaze; ext 1/8" white band directly below extruded lip, with olive-green slipped area below	3/16" thk
MANZ 1993 A-20 Locus E (FN A-62)	1	gadrooned shape with partial handle, either a sugar bowl or teapot; body-ftrng-base	p	int undec; ext "Geisha Girl" (Kaga) style dec, oglz raised rust stencil with green and blue accents; handle has rust accent with a rust blob adjacent	1/8" thk; unglzd ftrng; no mark visible; Japanese made; ca. 1900-1925
MANZ 1993 A-21 (FN A-109)	1	toiletware basin rim-shoulder break; d = indet	nv	ext undec; int has wavy molding beneath wavy lip, pink airsprayed area 3/8" down from lip with hints of gilding; beg. beneath shoulder break is an oglz rose decal in gray, green, pink, and brown	3/16" thk; ca. 1930s
MANZ 1993 A-21 (FN A-109)	1	saucer rim-body; ~d = 6"; wavy, irreg lip	nv	ext undec; int has molded vertical lines from lip extending down 1/4", below - oglz gray, green, and pink floral decal	1/8" thk; ca. 1930s
MANZ 1993 A-27 (FN A-223)	1	shallow dish rim-ftrng-base; d = indet	nv	ext undec; int 1/8" copper luster band encircling rim 1/16" below lip	~3/16" thk; "tea leaf ironstone;" late 19th c.-early 20th c.
MANZ 1993 A-27 (FN A-223)	2 (same vessel)	plate body-ftrng base	p	ext and int celadon glaze; int also has hp oglz floral motifs in pink and dk green	3/16-1/4" thk;; unglzd ftrng; Japanese (probably part of plate described in FN A-30)
MANZ 1993 A-27 (FN A-223)	3 (same vessel)	plate rim-marly brk-body; d = 8"	nv	ext undec; int beg approx 1/2" beneath lip is pink and lt green rose and yellow, blue, and brown abstract (art-deco style) decal motif encircling rim	3/16" thk; ca. late 1920s-early 1930s (see FN A-30 for probable sherd to this vessel)
MANZ 1993 A-27 (FN A-223)	1	plate rim	nv	int and ext undec	3/16" thk; int and ext crazed
MANZ 1993 A-27 (FN A-223)	1	plate rim-marly brk-body-base	sv	ext undec; int molded ridge 3/16" below lip	3/16" thk
MANZ 1993 A-27 (FN A-30)	1	saucer body-ftrng-base; portion of cup well remains	nv	int and ext undec	3/16" thk; partial uglz tp black mark = lion/griffin symbol with ...OOD & Co/[EN]GLAND beneath; ca. 1891-1900
MANZ 1993 A-27 (FN A-30)	1	cup rim-body; d = indet	nv	ext blue green blurry floral and leaf uglz tp beg at lip going down at least 1"; int same tp beg at lip and going down ~5/8"	3/16" thk; ca. 1880s-1890s
MANZ 1993 A-27 (FN A-30)	1	saucer rim-body; d = 5-1/2"	nv	ext undec (has glaze bubble); int uglz flow-blue band ca. 3/8" down from rim, runs downward onto body, beg at lip and going down 3/4" is a oglz gold floral accent decal	1/8" thk
MANZ 1993 A-27 (FN A-30)	1	saucer body-ftrng-base	nv	ext undec; int blue green uglz tp daisies	1/8" thk; ca. 1880s-1890s
MANZ 1993 A-27 (FN A-30)	1	teapot, sugar bowl, or jar lid; ~d = 3"	p	int undec; ext uglz blue "hatched" triangles made up of many 1/2" lines, together with white areas, oglz hp 1/2" rust lines to fill in white areas, also uglz outlined blue daisy-type flowers with oglz hp rust centers	avg thk = 3/16"; probably Japanese
MANZ 1993 A-27 (FN A-30)	1	plate body-ftrng-base	nv	int and ext undec	3/16" thk; partial uglz stamped green mark = ...K.Co./491[?]; pre-1904 (per Lehner [1988:238] a Knowles, Taylor, and Knowles mark #5)
MANZ 1993 A-27 (FN A-30)	1	plate marly break-body-base	p	celadon (green) glaze both int and ext; ext otherwise undec; int uglz broken-line dk green hp bird and branch motif, with oglz pink hp accents; unglzd ftrng	1/4" thk; Japanese (sherds in FN B-223 that probably are part of this plate)

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 A-27 (FN A-30)	1	plate rim-marly-body-ftrng; d = 10"	nv	ext undec; int beg approx 1/2" beneath lip is pink and lt green rose and yellow, blue, and brown abstract (art-deco style) decal motif encircling rim	approx. 3/16" thk; ca. late 1920s-early 1930s (see sherds in FN B-223 probably to same plate)
MANZ 1993 A-27 (FN A-30)	1	bowl body	p	int undec; ext celadon (lt green) glaze with uglz hp brown shading and darker green floral motifs	3/16" thk; Japanese
MANZ 1993 A-27 (FN B-823)	1	bowl/cup? body	sw?	int blue slip glz with portion of sg white body showing; ext blue slip glzd	1/8" thk; possibly Asian
MANZ 1993 A-30 Camouf. Factory (FN A-171)	1	indet body	v, hw	int and ext undec	1/4" thk; mark = blue [U.]S.Q.M.C./...I.-15.../...-17.../...M...; U.S. Army issue, ca. 1940s?
MANZ 1993 A-30 Garage Block (FN A-186)	1	plate (sm portion) ftrng-base	v, hw	int and ext undec	1/4" thk; mark = blackish green stamped uglz HC symbol/HOMER LAUGHLIN/MADE IN U.S.A./M 42 N 6; manuf. in 1942
MANZ 1993 A-30 Hospital Block (FN A-147)	1	plate ftrng-base	nv	ext undec; int brown, red, green rose decal	1/8" thk; no mark visible; ca. late 1920s-1930s
MANZ 1993 A-30 Hospital Block (FN A-152)	1	plate base	v, hw	int and ext undec	1/4" thk; mark = olive green uglz tp with ...NG...[C]OMPANY/swirl/...VITRIFIED/ E[A]ST LIVERPOOL, O[HIO]; Sterling China Co. mark; ca. 1940s
MANZ 1993 A-30 Hospital Block (FN A-150)	1	cup rim-body with partial handle (probably circular); ~d = 3-1/2"	v, hw	int undec; ext has 1/8" uglz red band around cup ~1/16" below lip, beneath band 1/16" is a very thin (1/64"); 1/4" fugitive oglz black line around lip (mostly faded)	1/4" thk; ca. 1940s
MANZ 1993 A-30 Hospital Block (FN A-128)	1	cup body	nv	int undec; ext hp flow blue floral motif	1/8" thk; lg spall on int; ca. 1890-1920
MANZ 1993 A-30 Hospital Block (FN A-128)	1	plate rim-marly break; ~d = 9"	nv	dyed pink body; clear glaze allows pink body to show through on int and ext; ext undec; int molded, noncircular lip; 1/16" silver gilt line around lip	3/16" thk
MANZ 1993 A-30 Hospital Block (FN A-127)	1	saucer rim-body; est. d = 5"	nv	ext undec; int irreg lip with oglz 1/16" gilt lining around lip, 3/16" below lip 1/32" med blue line	1/8" thk
MANZ 1993 A-30 Hospital Block (FN A-131)	1	cup rim-body; ~d = 3-1/2"	v, hw	int undec; ext uglz red tp 1/2 of UNITED S[TATES] MEDICAL DE[PARTMENT] logo; glz worn off on ext (see other examples in assemblage)	3/16" thk; ca. 1940s
MANZ 1993 A-30 Root Cellar (FN A-158)	1	plate base	sv	int and ext undec, ea. 1/8" half of 1/4" body is diff color paste: int is white, ext is orange-buff	1/4" thk; mark = PAT. 1,8... above partial oval mark with Colo../w[are?], beneath mark in a cartouche is A...
MANZ 1993 A-30 Service Station (FN A-187)	1	body	sw	red body; ext and int slipped with lustrous very dk brown lead glaze	
MANZ 1993 A-30 Service Station (FN A-188)	1	soup plate rim-marly break-body	nv	ext undec; int irreg wavy rim with molded rim to marly area (7/8"), at lip and marly break 1/16" and 1/32", respec, silver oglz gilt lining	1/8" thk
MANZ 1993 A-30 Service Station (FN A-189)	1	cereal-size bowl rim-marly break	v, hw	buff body; ext undec; int 5/32" wide brown decal band motif encircles vessel approx 1/4" below lip	1/4" thk; ca. 1940s
MANZ 1993 A-30 Staff Housing (FN A-194)	1	utilitarian, kitchen-type bowl body	nv	buff body; int undec; ext annular banded, bands = 5/32" wide, one cornflower blue, one white	~1/8" thk

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 A-30 Staff, Area B (FN B-546)	1	cup body	nv	int undec; ext uglz red floral tp	3/16" thk; post-WW II
MANZ 1993 A-30 Staff, Area B MANZ 1993 A-30 (FN B-546)	1	plate body	nv	ext undec; portions of yellow and orange floral tp on int	1/8" thk; portion of indet uglz blue black stamped wreath mark
MANZ 1993 A-30 Staff, Area D MANZ 1993 A-30 (FN B-548)	1	unknown vessel body	nv	molded ridges int and ext; int and ext salmon-colored slip glz	1/8" thk; ca. 1940s
MANZ 1993 A-30 West Warehouse (FN A-172)	1	canister/container lid (concave); d = indet	nv	buff body; ext molded in concentric ridges, slipped brown; interior also slipped brown to with in 1/4" of lip	3/16" thk; ca. 1930s?
MANZ 1993 A-30 West Warehouse (FN A-172)	1	saucer rim-body	p	ext undec; int uglz 3/8" band beg at lip, defined by 1/16" and 1/32" blue lines, respec, stacked darker blue hp open "V" shapes with in band	approx. 1/8" thk
MANZ 1993 A-30 West Warehouse (FN A-172)	1	canister/container lid (concave); d = indet	nv	buff body; ext molded in concentric ridges, slipped blue; interior also slipped blue to with in 1/4" of lip	3/16" thk; ca. 1930s?
MANZ 1993 A-30 Block 3 (FN-8)	1	rim-neck to outflaring-rim vessel	sw?	gray paste; int and ext lustrous brown/green-black streaked glaze	3/16" thk
MANZ 1993 A-30 Block 4 (FN A-16)	1	plate? body	p	ext undec; int has oglz floral design in pastel green, yellow, and brown with darker brown accent on a brown leaf and a trace of gilding	1/8" thk
MANZ 1993 A-30 Blk 12, Area B-1 (FN B-550)	1	lg bowl base?	nv	beige paste; ext and int greenish turquoise slip glz	3/8" thk; ca. late 1930s-early 1940s
MANZ 1993 A-30 Block 13 (FN A-50)	2 (refit)	plate rim-marly brk	nv	ext undec; int blurry uglz blue floral tp	3/16" thk; body is probably a "second" or "third"—in cross-section body looks like it is about to spall horizontally in two
MANZ 1993 A-30 Blk 13, Area B-1 (FN B-501)	1	portion of lid; ~d = 3-1/2"	p	int undec; ext hp stylized floral motifs in black and white	~3/16" thk; possibly Japanese
MANZ 1993 A-30 Blk 13, Area B-2 (FN B-512)	1	bowl rim-body; d = 5-1/2"	nv	int and ext undec	3/16" thk
MANZ 1993 A-30 Blk 13, Area B-2 (FN B-513)	3 (2 refit)	2 cups rims-bodies, 1 cup body; d = 4"	nv	int and ext undec	3/16" thk; cracked/crazed and stained int and ext
MANZ 1993 A-30 Blk 13, Area B-2 (FN B-512)	1	med plate (saucer) rim-body	p	ext undec; int oglz hp tan leaf and black stem	1/8" avg thk; probably Japanese
MANZ 1993 A-30 Blk 13, Area B-2 (FN B-514)	4	plate with rolled rim (ext); d = 10"	v, hw	int and ext undec	3/16" thk; no mark visible

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 A-30 Blk 13, Area B-2 (FN B-514)	4 (3 refit)	oval nappy with rolled rim (ext); ~length = 6"	v, hw	int and ext undec	3/16" thk; uglz green stamped mark = partial Shenango mark; some water staining int; ca. 1940s
MANZ 1993 A-30 Blk 13, Area B-2 (FN B-513)	1	1 bowl outflaring rim-body	nv	int and ext undec	3/16" thk
MANZ 1993 A-30 Blk 13, Area C (FN B-522)	1	plate/saucer body	p	ext undec; int uglz med blue grps of parallel lines	1/8" thk
MANZ 1993 A-30 Blk 13, Area D (FN B-523)	1	bowl? rim, half-rolled rim; d = 7"	v, hw	int and ext undec	3/16" thk
MANZ 1993 A-30 Blk 13, Area D (FN B-523)	1	bowl rim-body, half-rolled rim; d = 7"	v, hw	int and ext undec	3/16" thk
MANZ 1993 A-30 Blk 13, Area D (FN B-523)	1	soup plate rim-marly brk-body, half-rolled rim; d = 9"	v, hw	int and ext undec	1/4" thk
MANZ 1993 A-30 Blk 13, Area D (FN B-523)	1	plate base	v, hw	int and ext undec	3/16" thk
MANZ 1993 A-30 Blk 13, Area D (FN B-523)	1	plate/soup plate body-ftrng-base	v, hw	int and ext undec	3/16" thk; mark = uglz black [TEP]CO/[US]A/[CH]INA (Lehner 1988:468-469, mark #1; Technical Porcelain and Chinaware Co., El Cerrito, Calif.; mark from the 1940s, used on "restaurant" ware)
MANZ 1993 A-30 Blk 13, Area D (FN B-523)	1	plate/soup plate rim-body, half-rolled rim; d = indet	v, hw	int and ext undec	5/16" thk
MANZ 1993 A-30 Blk 13, Area D (FN B-523)	1	bowl ftrng-base	v, hw	int and ext undec	5/16" thk at base; unglzd ftrng; mark = uglz black stamped .../...NA/... STLER
MANZ 1993 A-30 Blk 14, Area B-1 (FN B-524)	1	serving bowl? rim-body-ftrng, ext half-rolled rim; d = 12"	v, hw	int and ext undec	3/8" thk; unglzd ftrng; ca. 1940s
MANZ 1993 A-30 Blk 14, Area B-2 (FN B-526)	2 (refit)	cylindrical vessel bodies	sw	int irreg surface, wheel thrown, iridescent reddish brown glaze; ext sg; outer 1/2 of paste is gray, inner 1/2 is buff	1/4" thk; possibly Asian
MANZ 1993 A-30 Blk 14, Area B-2 (FN B-526)	2 (same vessel?)	bowl rims-bodies, irregular lip; d = indet	nv	ext undec; int molded "Art Deco-style" wavy line motif around rim	1/8" thk; ca. 1930s+
MANZ 1993 A-30 Blk 14, Area B-2 (FN B-526)	1	plate rim-body, ext half-rolled rim; d = indet	v, hw	int and ext undec	3/16" thk
MANZ 1993 A-30 Blk 14, Area B-2 (FN B-526)	2 (same vessel?)	bowl rim-body, bowl body-ftrng-base; d = 5-1/2"	v, hw	int and ext undec	3/8" thk; unglzd ftrng; int and ext discolored by burning
MANZ 1993 A-30 Blk 14, Area B-2 (FN B-526)	1	bowl body-ftrng-base	v, hw	ext and int undec	5/16" thk; unglzd ftrng; uglz stamped blue mark = McNICHOL CHINA in cartouche/[U.]S.Q.M.C./...-QM-4633 (0. 1. 5209)/[M]AR. 20, 1941); manuf. 1941

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 A-30 Block 15 (FN A-41)	1	cup body	nv/sv	int undec; ext molded body with delicate green uglz tp with oglz red hp accent	3/16" thk; ca. 1880s-1910
MANZ 1993 A-30 Block 15 (FN A-41)	3 (same vessel)	plate rim-body-ftrng	nv	int undec; ext oglz 1/32" blue line encircling lip; discontinuous thinner blue line 5/8" below lip partially covers oglz floral decal in green, orange, and yellow	3/16" thk
MANZ 1993 A-30 Block 15 (FN A-41)	1	saucer body-ftrng-base	nv/sv	ext undec; int uglz brown floral tp with red and blue uglz accent	~3/16"; style dates ca. 1880s-1910; mark = uglz brown tp PAN.../RO[Y]AL/ ALFR[ED MEAKIN]/E[NGLAND]; also small brown tp motif above and to left of mark; mark dates 1891+ (Godden 1964:426)
MANZ 1993 A-30 Block 15 (FN A-41)	3 (same vessel)	plate rim-marly brk-base	nv	ext undec; int oglz complex floral decal placed discontinuously around rim in pink, brown, green, blue, lt brown, and yellow	3/16" thk; mark = [KN]OWLES CHIN[A]...; burned sherd from 97 may be a part of this set; ca. 1920s (see Lehner 1988:237, mark #9)
MANZ 1993 A-30 Block 19 (FN A-97)	1	cup rim; d = 3-1/2"	nv	int and ext yellowish glaze; int oglz 1/16" silver gilt line encircling lip; molded, paneled body with wall-trellis-foliage decal in brown, green, and pink	3/16" thk; ca. 1930s
MANZ 1993 A-30 Block 19 (FN A-97)	1	med bowl? rim; ~d = 5"	p	int undec; ext uglz blue cross-hatched motifs and foliage, gray mum with blue center	1/8" thk; probably Japanese
MANZ 1993 A-30 Block 19 (FN A-97)	1	plate body-base-ftrng	nv	int and ext yellowish glz; int oglz floral decal in green, yellow, pink, and green	3/16" thk
MANZ 1993 A-30 Block 19 (FN A-97)	1	med bowl? rim; d = indet	p	int undec; ext uglz hp dk blue and med blue abstract floral motifs	1/8" thk; probably Japanese
MANZ 1993 A-30 Block 19 (FN A-97)	1	cup rim; est d = 4"	nv	int undec; ext oglz floral decal in blue, green, and yellow	~1/8" thk; burned; ca. 1920s
MANZ 1993 A-30 Block 19 (FN A-97)	1	sugar bowl? shoulder-body	nv	int undec; ext molded, raised daisy motif	3/16" thk
MANZ 1993 A-30 Block 20 (FN A-78)	11	sherds representing two 8" plates	p	ext undec; int uglz dark blue tp (somewhat flown) phoenix pattern	~3/16"; mark = uglz hp dark blue upside down demi-wreath/M/JAPAN, has marks from jigger, was not hand thrown or pressed; M = Morimura (Noritake founder); pre-1940 (Alden 1995:8)
MANZ 1993 A-30 Block 21 (FN A-44)	1	portion of body of hollow dog figurine	p	dog's coloring shaded in black, int not completely glazed	1/8" thk
MANZ 1993 A-30 Blk 21, Area B-1 (FN B-534)	2 (refit)	1 cup rim-body, 1 cup body; d = indet	nv	ext surface fluted; int has impressed 1/16" line 3/8" below lip; int and ext yellow-tinted glaze	3/16" thk
MANZ 1993 A-30 Blk 21, Area B-1 (FN B-534)	1	plate marly brk-body	nv	ext undec; int portion (beneath rim area) purple, green, brwn, and lt blue oglz thistle decal	1/8" thk
MANZ 1993 A-30 Blk 21, Area B-2 (FN B-539)	2 (same vessel)	basal portion of a pitcher, sugar bowl, coffee pot?	p	int and ext undec	1/8" thk; mark on concave surface = oglz rust red hp/stenciled [M]ADEIN/[JA]PAN; 1921+
MANZ 1993 A-30 Block 23 (FN A-29)	1	plate ftrng-base	nv	ext undec; int blue uglz tp in willow pattern	3/16"; partial uniden uglz blue tp mark = ...ON WARE/crown motif/...VENTON/...LTD/...NGLAND; may be CAULDON LTD. (England) mark dating 1905-1920 (see Godden 1964:133)

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 A-30 Block 23 (FN A-29)	1	soup? bowl body	nv	ext undec; int oglz floral decal in pastel pink, yellow, gray, and green	3/16" thk; ca. 1930s
MANZ 1993 A-30 Block 25 (FN A-76)	1	plate rim-marly brk-body-ftrng-base; half-rolled rim on int; d = 10"	v, hw	ext undec; int uglz decal? = 9/16" wide gray-blue geometric band, beg. 1/2" below lip	3/16" thk
MANZ 1993 A-30 Block 25 (FN A-74)	6 (same vessel)	med bowl rim-body-ftrng-base; d = 4-1/2"	p	int undec; ext uglz hp lt and dk blue leaves with etching through the painted areas used for texture, oglz detail in red and gold	base thk = 1/4"; mark = hp oglz rust MADE IN/JAPAN; above and to left of painted mark is an impressed Japanese character in an oval cartouche; 1921+
MANZ 1993 A-30 Block 25 (FN A-73)	1	med bowl rim-body; d = 4-1/2"	p	int undec; ext uglz dk and med blue hp floral motifs with dk blue stenciled pine cones	1/8" thk; probably Japanese
MANZ 1993 A-30 Block 26 (FN A-101)	1	cup body-ftrng-base; d = indet; form is probably tall, straight-sided cup	nv	int undec; ext has molded, ridged area near base	1/8" thk
MANZ 1993 A-30 Block 26 (FN A-99)	1	bowl rim-body-ftrng-base; d = 5"	v, hw	int and ext undec	3/8" thk; partial uglz stamped med. blue mark = U. .../W-431-0.../...(see FN B-197 for same type bowl with complete mark in darker blue)
MANZ 1993 A-30 Block 26 (FN A-100)	1	plate base	nv	int and ext undec	3/16" thk; partial uglz blue-black to mark = coat of arms with JOHNSON BROs/ENGLAND underneath; mark dates 1883-1913 (Godden 1964:355)
MANZ 1993 A-30 Block 26 (FN A-79)	1	med plate (saucer) rim-body; d = 4-1/2"	p	ext undec; int oglz blue-gray 1/32" line around lip, below that is a hp? gray crane, beneath that is a 1/64" blue-gray line encircling int of saucer	5/32" thk; unmarked, but almost surely Japanese with this crane motif
MANZ 1993 A-30 Block 26 (FN A-79)	1	med bowl body	p	int undec; ext uglz hp lt blue stems with dark blue flowers (abstract), also raised white stems	1/8" thk; unmarked, but probably Japanese
MANZ 1993 A-30 Block 28 (FN A-115)	1	plate body-ftrng	p	ext has uglz blue hp irreg lines ~1/8" thk and 1/16" line around ftrng; int is covered with uglz blue U-shaped designs	avg thk = 3/16", although body near base is 1/4" thk; porcelain body is irregular and poorly potted; Japanese (similar examples in rest of assemblage)
MANZ 1993 A-30 Block 29 (FN A-125)	1	saucer rim-body	nv	int and ext have vertical horiz. molding beg. at lip and extending down 3/4", yellow slip glaze over all	1/8" thk; ca. 1930s-1940s
MANZ 1993 A-30 Block 29 (FN A-126)	1	cup rim-body	nv	int has 1/32" oglz silver line 1/8" below lip; ext has molded swag area beneath lip, oglz 1/16" silver line around lip, beg. ~1/2" below lip oglz yellow, brown, and green pansy decal	1/8" thk
MANZ 1993 A-30 Block 29 (FN A-119)	1	plate rim-marly brk; d = indet	nv	ext undec; int has faded, oglz 9/16"- wide floral decal band beg. 1/8" below lip in pastel yellow, gray, blue, pink, purple, and green	3/16" thk; ca. 1920s
MANZ 1993 A-30 Block 31 (FN B-620)	1	portion of cup handle	v, hw	oglz olive green hp discontinuous accent down middle of handle	3/8" thk; ca. 1940s
MANZ 1993 A-30 Block 31 (FN B-620)	1	plate rim-marly brk-body; int has half-rolled rim; d = 10"	v, hw	ext undec; int uglz lt blue 3/16" band 1/2" below lip, with thn blk outline above and below	3/16" thk; ca. 1940s
MANZ 1993 A-30 Block 31 (FN B-620)	1	plate rim-marly brk-body; int has half-rolled rim; d = 9"	v, hw	buff paste; ext undec; int uglz brown 3/16" band 1/2" below lip, lt green 1/16" lines 1/8" above and below brown band	3/16" thk; ca. 1940s

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 A-30 Block 32 (FN A-103)	1	bowl rim-marly brk, ~d = 8"; half-rolled lip on int	v, hw	ext undec; int uglz hp 3/32" black line 1/4" beneath lip and 1/16" rust line 1/2" below that	3/16" thk; ca. 1940s (see FN A-107 for same pattern on saucer)
MANZ 1993 A-30 Block 32 (FN A-103)	1	plate rim; ~d = 10"	nv	ext undec; int oglz 1/16" gold line around lip with bluebird on branch decal below in pink, green, blue, and yellow	3/16" thk; late 1910s-1920s
MANZ 1993 A-30 Block 32 (FN A-103)	1	plate body-ftrng-base	p	ext undec; int oglz completely covered/washed with dark orange paint	1/8" thk; unglzd ftrng; possibly Japanese
MANZ 1993 A-30 Block 34 (FN A-117)	1	saucer body-ftrng-base	nv	ext undec except for bluing in the glaze from "flown" blue tp on int; int uglz delicate blue swag tp with oglz gold floral decal accent	avg thk = 1/8"; ca. 1920s?
MANZ 1993 A-30 Block 34 (FN A-117)	1	lid? rim-body; d = 12"	nv	int undec, slipped with opaque white tin glaze; ext raised, molded floral design with turquoise slip glaze (majolica "like")	avg thk = 5/16"
MANZ 1993 A-30 Block 34 (FN A-117)	1	sm bowl rim; d = 5-1/2"; int has rolled lip	sv/v, hw	ext undec; int uglz partial logo in red tp with [U]NITED STATES ARM[Y MEDICAL DEPARTMENT] beg directly below 1/2" outflaring rim	3/16" thk; ca. 1940s (see FN A-197 for example of same pattern on saucer)
MANZ 1993 A-30 Firebreak A6 (FN A-56)	1	figurine base (d = 1-1/2") and portion of pedestal (d = 7/8")	p	enameled, base black, pedestal green with peach shade above	1/16" thick; mark = oglz stamped orange "Germany;" approx. 3/8" circular open area to one side of center in base; possibly late 19th c.
MANZ 1993 A-30 Firebreak B6 (FN A-59)	1	unknown form	sw, gray body	int? sg except for one sm portion; ext? lustrous very dark brown lead glz with lighter brown "splotches"	1/4" thk; sherd measures ~3-1/8" long by 1-7/8" wide and is almost completely flat, except for unglzd portion of slightly curved, sg side
MANZ 1993 A-30 Firebreak C4 (FN A-36)	1	plate/saucer ftrng-base	nv	int and ext undec	1/8" thk; indet mark = blurry gray stamped uglz shield with MADE IN/bisected by horizontal scroll with ...POTTERY
MANZ 1993 A-30 Firebreak E6 (FN A-21)	1	soup plate body-ftrng-base	sv/v	int and ext undec	3/16" thk; mark = uglz stamped green 5/8" circle with crown inside, around crown JOHN MADDOCK & [SONS] ENGLA[ND], with scroll beneath with VITRE[OUS] inside; also impressed 3/8"- wide crown mark; ca. 1880-1896 (see Godden 1964:406)
MANZ 1993 A-30 Firebreak E6 (FN A-21)	1	soup plate? body	nv	ext undec; int oglz floral lt green and lt blue decal	3/16" thk
MANZ 1993 A-30 Feature P-17 (FN A-84)	1	plate rim; ~d = 10"	nv/sv	int undec; ext oglz 1/16" line around lip, uglz? decal beginning right below line 5/8" wide rectangular, floral, and dot motifs	~3/16" thk; well potted; method of decal application possibly unusual (Japanese?)
MANZ 1993 A-30 Feature P-19 (FN A-85)	1	straight-sided cup rim; d = 3-1/2"	sv	int and ext undec except for 1/8" copper luster bands approx. 1/16" below lip; probably "tea leaf" ironstone	3/16" thk; late 19th c.- early 20th c.
MANZ 1993 A-30 Feature P-19 (FN A-85)	1	"custard" cup rim; ~d = 3-1/4"	nv	tan-gray low-fired body; molded ext 3/8"-wide "horizontal" bands, yellow slip-glazed int and ext	1/4" thk; ca. 1930s, might be Bauer "ringware" (Baldinger 1995:64)
MANZ 1993 A-30 Feature P-20 (FN A-88)	1	small "vegetable" bowl body-ftrng-base	nv	int and ext slip glazed light yellow, ftrng either unglzd or glz worn away; glz is crazed	1/8" thk; stamped? blackish-green indet mark = undecipherable/MADE IN U.[S.A.]/ 37-4.../Yor...(in script)/8...
MANZ 1993 A-30 Feature P-20 (FN A-88)	1	bowl body	sw	tan-gray body; int smooth, ext narrow, probably horizontal molded ribs, both sides slip glazed brick-red color (very lustrous glaze; mottled appearance with brown flecks)	1/4" thk; probably Asian

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 A-30 Feature P-23 (FN A-95)	1	plate rim; ~d = 9"	nv	ext undec; int gold floral and swag decal beg at lip and continuing vertically for ~3/4"; airsprayed green area from lip down ~3/8" over decal	3/16" thk
MANZ 1993 A-30 Feature P-24 (FN A-106)	1	plate rim-body-ftrng-base; ~d = 7"	p	ext undec; (all oglz) int lt yellow ground beginning at lip and extending down 1-1/2", hairline brown line where ground ends; in ground area geometric and floral decals in rust red and brown, hp accents on these motifs in orange, red, blue, green, pink, yellow	5/16" thk; unglzd ftrng; mark = hp oglz brown ...[J]APAN; probably 1921+
MANZ 1993 A-30 Feature P-26 (FN A-107)	3 (same vessel)	saucer rim-body; saucer rim-body-ftrng; saucer rim-body-ftrng-base; ext base extruded to match area where cup well is in int; on ext, raised line encircles base 1/2" in from ftrng; est d = 6"	v, hw	ext undec; int uglz dk olive double lining 1/16" beneath lip, top is 1/16" band, lower is a hairline; another hairline circling area where body meets cup well; on 2nd of 3 sherds an uglz decal(?) in same green of a crest with VIRGINIA below	3/16" thk; partial mark = uglz blackish green stamped(?) O.P.CO.../SYRACU[SE]/..CHINA/K-3; ca. 1940s
MANZ 1993 A-30 Feature P-26 (FN A-107)	1	saucer rim-body-ftrng; ~d = 6"	v, hw	ext undec; int has 1/8" black uglz band 1/8" below lip, 5/16" below that is a rust-colored band ~3/32" wide	3/16" thk; ca. 1940s
MANZ 1993 A-30 Feature P-26 (FN A-107)	1	saucer rim-body-ftrng-base; d = 3-1/4"; ~50% present; faint cup well present, area very well worn	p	ext and int have lt blue glz; lip is lined with a 1/16" (uglz) dark blue line; uglz line (part of a motif) on int body	3/16" thk; unglzd ftrng; mark = oglz rust red: MA...JAPAN; 1921+
MANZ 1993 A-30 Feature P-26 (FN A-107)	1	vegetable dish rim, ~d = 4-5/8"	v, hw	ext undec; int uglz stamped? rows of alternating black 1/8" squares	1/8" thk; ca. 1940s
MANZ 1993 A-30 Feature P-26 (FN A-107)	1	saucer rim-body-ftrng-base; est d = 5-3/4"	v, hw	ext undec; int uglz hp; each band made up of alternating open squares and dk blue squares; geometric motif of stacked colored and uncolored squares between the lines (probably repeated around rim)	3/16" thk; glaze crazed on int cupwell and some on ext base; partial dk blue tp mark: incomp motif/JOHN MADDOCK &.../ENGLAND/HUDSON; mark dates ca. 1940s, Hudson = pattern name (see Godden 1964:406)
MANZ 1993 A-30 Feature P-26 (FN A-107)	1	saucer rim-body; ~d = 5-1/2"	v, hw	ext undec; int uglz hp dk olive green 1/8" band 1/8" below lip	3/16" thk
MANZ 1993 A-30 Feature P-28 (FN A-112)	1	bowl body-ftrng-base; ~d = 5-1/2"	v, hw	int and ext undec	7/16" thk at base; unglzd ftrng; mark = uglz blurry stamped cursive "L" with STERLING?/CHINA COMPAN... across it, with VITRIFIED/EAST LIVERPOOL, O. below; ca. 1940s, stamp made by Quality Stamp Co., see Lehner 1988:440, 442, mark #35)
MANZ 1993 A-30 Feature P-30 (FN A-110)	1	saucer rim-body-ftrng-base, >50% complete; 2-3/4"-d cup well present; saucer d = 6"	v, hw	ext undec; int uglz 1/8" navy blue band encircling rim 1/8" below lip, about 1" below band a thin, 1/32" lighter blue line where saucer body curves to meet base	3/16" thk; mark = uglz green decal mark: motif with seated Indian making a pot/SHENANGO CHINA/NEWCASTLE, PA.; ca. early 1940s (Lehner 1988:421, 423, mark #35)
MANZ 1993 A-30 Feature P-30 (FN B-1044)	1	saucer rim-body-ftrng-base, portion of cup well present; d = 6"	v, hw	ext undec; int 2/16" dark blue band 1/16" below lip, 1/16" beneath blue band is a blue anchor, ca. 3/4" long, 1/16" beneath anchor is 1/32" blue line	3/16" thk; no mark visible; American made
MANZ 1993 A-30 Feature P-34 (FN A-111)	1 (complete)	handled cup; d = 3-1/4"	sv/v, hw	int and ext undec	~1/2" thk at mid-vessel side; glz worn off ftrng, mark = TEPCO/USA/CHINA (Lehner 1988:468-469, mark #1; Technical Porcelain and Chinaware Co., El Cerrito, Calif.; mark from the 1940s, used on "restaurant" ware)
MANZ 1993 A-30 Feature P-46 (FN A-121)	1	small plate rim; ~d = 6"	nv	int molded parallel wavy ridges beginning at lip, both int and ext have yellow slip glaze	3/16" thk; ca. 1930s-1940s
MANZ 1993 A-30 Feature P-66 (FN A-165)	1	cup body	nv	int undec; ext oglz 1/16" bright blue line around lip, below shoulder break on cup a series of vertical molded ridges	1/8" thk

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 A-30 Feature P-66 (FN A-165)	1	cup? body	nv	int undec; ext oglz gold floral tp	~1/8" thk
MANZ 1993 A-30 NE perimeter (FN A-113)	1	soup bowl? rim-marly break-body; ~d = 9"	nv	ext undec; int oglz 1/6" silver line around lip, beg 1/4" below lip to marly break silver decal stylized daisy chain motif with rect motif interspersed	3/16" thk
MANZ 1993 A-30 SW perimeter (FN A-180)	1	bowl body	p	ext has faint uglz hp lines, 1 blue and 1 gray; int has uglz hp gray bamboo, leaves, and rocks motif	~5/16" thk (very thick); some water staining; Japanese
MANZ 1993 A-30 SW perimeter (FN A-179)	1	plate base	sv	int and ext undec	~1/4" thk; partial indet uglz stamped red mark = ...CO/[CH]INA/copyright symbol
MANZ 1993 A-30 in road east of Block 35 (FN A-94)	1	plate/saucer base	nv	int and ext undec	3/16" thk; partial uglz tp black British diamond-shaped Patent Office registry mark, letter "A" in left-hand portion of diamond indicates that either the pattern or the shape was registered in the month of Nov. in some year between 1842 and 1867; also has undeciph. imp. mark
MANZ 1993 A-32 (FN 195)	1	plate rim	nv	ext undec; int irreg wavy lip form (art nouveau-style molded lip) with gilt ca. 1/16" line around lip, one hp(?) sm blue, green, and red floral sprig	approx. 1/8" thk; ca. 1930s+
MANZ 1993 A-32 (FN 195)	1	plate marly-body-ftrng-base	nv	ext undec; int oglz purple and gray floral (thistle) decal on marly (probably went up to rim area)	1/8" thk; late 1920s-1930s
MANZ 1993 A-32 (FN 195)	2 (refit)	bowl rims; ~d = 7"	nv	ext undec; int uglz brown tp fruit with leaves with yellow, blue, and green hp accent	1/8" thk; post-WW II
MANZ 1993 A-32 (FN 195)	1	plate body; ~d = 10"	nv	ext undec; int oglz dk and light pink and green floral decal	1/8" thk; ca. late 1920s-early 1930s
MANZ 1993 A-32 (FN 195)	1	cup body	p	int undec; ext oglz dk and lt pink, brown, and green floral decal	less than 1/8" thk
MANZ 1993 A-32 (FN 195)	1	plate rim-marly break; ~d = 10"	nv	ext undec; int tp(?) medium green floral/leaf/scroll decal on rim to marly break; irreg wavy lip form with 1/16" molded "channel" around rim beneath lip	5/32" thk
MANZ 1993 A-36 Locus A (FN A-199)	1	sm plate rim; ~d = 8"	nv/sv	ext undec, int blue-green uglz floral tp beg. at lip	1/8" thk; probably English, ca. 1885-1910
MANZ 1993 A-36 Locus A (FN A-199)	2 (refit)	tea bowl bodies	p	int undec; ext uglz dk blue tp (similar to FN A-79), which is a phoenix pattern	~1/16" thk; Japanese
MANZ 1993 A-37 Locus A (FN B-904)	1	med plate (saucer) rim, irreg-shaped lip; d = indet	nv/sv	ext undec; int raised beaded area encircling lip, beneath that oglz fugitive brown "ho" motifs? (circle, asterisk)	1/8" thk; probably Asian
MANZ 1993 A-37 Locus C (FN A-132)	1	plate rim-marly brk; irreg, wavy lip; ~d = 9"	nv	int and ext burgundy slip glaze	1/8" thk; ca. 1940s
MANZ 1993 A-37 Locus C (FN A-132)	1	med plate (saucer) rim-body; d = 5-1/2"	p	ext undec (glz burned off base); int uglz pale grayish green 3/32" line encircling lip, body has abstract "ho" motif	~3/16" thk; probably Japanese
MANZ 1993 A-37 Locus C (FN A-132)	1	bowl? base	nv	int and ext turquoise slip glaze; ext has uglz? copper luster decoration? near ftrng	1/8" thk

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 A-37 Locus C (FN A-132)	1	bowl rim-body-ftrng-base	nv	int and ext yellow slip glz; int has three deep, molded concentric ridges beg ~1/2" below lip	avg thk = 5/16"; int and ext have burned areas; ca. 1930s-1940s
MANZ 1993 A-37 Locus C (FN A-132)	1	plate? rim, irreg, wavy lip; d = indet;	nv	int and ext blue slip glz	~3/16" thk; ca. 1930s-1940s
MANZ 1993 A-37 Locus C (FN A-132)	1	bowl rim-shoulder brk; d = 9"	nv	int and ext green slip glaze	5/16" thk; glaze on ext is disfigured from burning; ca. 1930s-1940s
MANZ 1993 A-37 Locus C (FN A-132)	1	bowl/platter rim; irreg wavy lip; d = indet	nv	ext undec; int has molded "Art Deco" style molding around lip, oglz 1/16" bright blue line encircling lip, with 1/32" line 1" below that	1/4" thk; int and ext of sherd water stained; ca. 1930s+
MANZ 1993 A-37 Locus C (FN A-132)	1	bowl rim; d = 8"	sw?	int and ext blue slip glz; ext has three molded concentric ridges beg 1/2" below lip	5/16" thk; sherd is badly burned and glz disfigured; ca. 1930s-1940s
MANZ 1993 B-1 Locus A (FN B-773)	11 (2 refit, all are from same vessel)	serving bowl; irreg lip; d = indet	nv	int and ext green glz; int molded leaf and floral motif	3/16" thk
MANZ 1993 B-1 Locus A (FN B-773)	1	plate rim-marly brk-body	nv/sv	ext undec; int overall uglz blue flow floral tp with oglz gilding as accent	3/16" thk; partial uglz flow blue mark = SEVILLE[pattern name]/ROYA[L]/SEMI P[ORCELAIN]; possibly New Wharf Pottery Co., Burslem, in business 1878-1894 (see Gaston 1983:Plate 256, 157; Godden 1964:467)
MANZ 1993 B-1 Locus A (FN B-773)	1	saucer rim; irreg lip; est d = 5-1/2"	nv/sv	ext undec except for some bluing in glz from flow tp on int; int relief molded bosses and wavy lines below lip, over all uglz blue flow floral tp with oglz gilding to accent flower	1/8" thk (may be same set as plate below)
MANZ 1993 B-1 Locus A (FN B-773)	1	plate rim-marly brk-body	nv/sv	ext undec; int delicate relief molding below lip; below that oglz green and dk and lt pink rose and leaf decal ending at marly brk	1/8-3/16" thk
MANZ 1993 B-2 (FN B-294)	1	saucer body-ftrng-base	sv	int and ext undec	3/16" thk; partial uglz black tp = IRONSTO[NE]/J. & G. MEAKI[N]/HANLEY./ ENGLAND.; ca. 1890+ (Godden 1964:427)
MANZ 1993 B-2 (FN B-294)	3 (same vessel)	serving bowl rim-body-ftrng-base; d = 10"	p	ext undec; int 5/16" lt blue-gray luster wash band beginning at lip, over that oglz art-deco-style floral decal in green, gray, black, dk yellow, and red, straddling lower edge of band are oglz gold "laurel" leaves going up to edge of decal	1/4-3/8" thk; uglzd ftrng; uglz stamped olive green mark = Eagle China/[double-headed eagle motif]/Austria
MANZ 1993 B-2 Locus 2 (FN B-782)	1	saucer rim-body-ftrng-base; ~d = 5-1/2"	p	very granular paste; ext undec; int remnants of three oglz bands beginning at lip and cont 3/4" to raised vertical panels separated by oglz gold lines; ea panel has oglz hp squiggles in alternating colors: purple, rust, and blue	approx 3/16" thk; unglzd ftrng; possibly Japanese
MANZ 1993 B-4 (FN B-806)	2 (refit)	bowl outflaring rim-body	nv	ext undec; int oglz stamped purplish-black abstract motifs on outflaring rim	3/16" thk; rust staining on int
MANZ 1993 B-4 (FN B-806)	1	sm bowl rim-body-ftrng-base	nv	ext undec; int oglz ~1/16" gold line encircling lip, beg at lip oglz leaf, rose, and floral decal motifs (green, pink, blue) joined by pink abstract band	1/8" thk
MANZ 1993 B-7 (FN B-753)	1	plate rim-marly brk-body; d = 9"	nv	ext undec; int ~1/2"-wide oglz border decal beg at lip, abstract floral, shield, and swirls in yellow brn, grn, black, and rose	3/16" thk; ca. 1930s
MANZ 1993 B-7 (FN B-753)	2	saucer rims-bodies-ftrngs-base; d = 5-1/2"	p	ext undec; int 3/8" oglz gray blue luster band, edged on bottom with 1/16" black line	1/8" thk; unglzd ftrng; probably Japanese

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 B-7 (FN B-753)	1	child's? plate ftrng-base	p	ext undec; int oglz raised/stenciled black outlines with hp fill-in in red, pink, bright and olive green, blue, and orange, scene is little Dutch girl holding a bucket, with house and part of a windmill? in background	3/32" thk; oglz green stenciled/stamped mark = MADE JAPAN in a circle with IN in the middle; 1921+
MANZ 1993 B-7 (FN B-762)	1	saucer rim-body-ftrng-base; ~d = 6"	nv	ext undec; int oglz orange, yellow, black, and green floral decal, beg 1/4" below lip and extending to ~1/2" above cup well	1/8" thk; crazing int and ext
MANZ 1993 B-7 (FN B-753)	1	sm bowl with outflaring rim-body	nv/sv	ext undec; int body fluted, oglz 3/8" decal, bounded beg at lip by three 1/16" adjacent lines in gold, lt blue, and turquoise, beneath that yellow ground with lt and dk pink and green roses, bottom edge outlined by hp? black dots	3/32-1/8" thk; ca. 1930s-early 1940s (see FN B-816 for probable matching pcs)
MANZ 1993 B-7 (FN B-753)	2 (same vessel)	bowl rims-bodies; d = 9"	p	ext undec; int oglz tp beg at lip, 1/4" blue band around lip, edged in yellowish brown, pink and grn rose interspersed at breaks in band, with green, yellow, and grayish blue floral swags joining roses; 1/32" gold line around int of vessel 1-5/8" below lip	1/8" thk; water stained on ext of one sherd
MANZ 1993 B-7 (FN B-753)	1	rim to a dish with outflaring, irregular rim; d = indet	p	ext undec; int 1/2" uglz hp flow blue band with oglz gold accent, beneath that oglz raised/stenciled landscape motifs in rust red with oglz grn and gold accent	1/8" thk; commonly known as "Geisha Girl" (Kaga) ware; ca. 1900-1925
MANZ 1993 B-7 (FN B-753)	1	bowl rim; ~d = 8"	nv	ext undec; int has oglz parallel 1/32" gold lines beg at lip, 3/32" apart, beneath that a 5/8" tp band, lt blue ground with swags and neoclassical motifs	5/32" thk
MANZ 1993 B-7 (FN B-753)	1	plate body	nv	ext undec; int has portion of oglz abstract floral decal in lt and darker green and rust red	3/16" thk; probably post-WW II
MANZ 1993 B-7 (FN B-762)	1	child's plate rim-marly brk-body-ftrng-base; d = 2-1/2"	p	ext and int undec	3/32" thk; unglzd ftrng; impressed partial mark = ...541
MANZ 1993 B-7 (FN B-762)	1	saucer? body-ftrng-base	nv	ext undec; int vertical ribbed body to int base; oglz lt and dk pink, green, yellow, and orange floral decal	1/8" thk; late 1930s-early 1940s
MANZ 1993 B-7 (FN B-762)	1	bowl rim-body; d = 9"	p	ext undec; int oglz border and floral swag decal in green, yellow, gray, pink, and rust, ~1-3/4" below lip 1/32" oglz gold line encircling int of vessel	1/8" thk
MANZ 1993 B-7 (FN B-762)	1	cup handle-body	nv	int undec; ext uglz blue floral tp down center of handle and on body where handle joins	3/32" thk; matches blue willow saucer, same provenience
MANZ 1993 B-7 (FN B-753)	1	bowl rim-body; ~d = 8"	nv	ext undec; int traces of oglz gilding around lip; oglz stenciled/stamped squiggly gilded motif just above marly break around int of vessel	1/8" thk
MANZ 1993 B-7 (FN B-762)	1	plate ftrng-base	nv	ext undec; int oglz orange floral decal with oglz hp green accent	~1/8" thk; partial blackish green faint uglz stamped mark = Homer Laughlin symbol/HOMER LAU[GHLIN/MADE in [U.S.A.]/U 6... (date-marking system indicates dates ca. 1920+ per DeBolt 1994:78)
MANZ 1993 B-7 (FN B-762)	1	plate/saucer body	nv	ext undec; int uglz lt and dk blue, green, black, and mustard yellow swirl and floral decal	1/8" thk
MANZ 1993 B-7 (FN B-762)	1	plate rim; irreg lip; est d = 10"	nv	ext undec; int molded art-deco design around lip, uglz flow blue 1/2" band beg at lip, over that traces of gold accent	~1/8" thk; ext and int crazed; 1930s+
MANZ 1993 B-7 (FN B-762)	1	shallow bowl ftrng-base?	nv	int and ext undec	1/8" thk; int and ext crazed; partial blackish green mark = Homer Laughlin symbol/[HOMER] LAUGHLIN/[U.]S.A. ...; ca. 1920+
MANZ 1993 B-7 (FN B-762)	1	saucer rim-body-ftrng-base; est d = 5-1/2"	p	ext undec; int oglz 1/8" gold band encircling lip	~1/8" thk; unglzd ftrng; mark = oglz hp green MADE IN/JAPAN; 1921+
MANZ 1993 B-7 (FN B-753)	1	plate ftrng, base	p	ext undec; int oglz pale floral? decal in gray and lavender	1/8" thk; unglzd ftrng
MANZ 1993 B-7 (FN B-753)	3 (same vessel?)	plate bodies, plate body-ftrng-base	p	ext undec; int portions of lg, oglz floral decal with hp accents in pink and dk pink	1/8" thk; unglzd ftrng; one of the body sherds is discolored, by burning?(?)

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 B-7 (FN B-753)	1	pie plate? rim-base; d = 9"	nv	ext undec; int traces 1/8" oglz gilding around lip, ~1/16" beneath that 1/32" gold line around vessel interior	3/16" thk; partial uglz green stamped mark = [J]ohnson Bros/England; probably 1913+ (see Godden 1964:356)
MANZ 1993 B-7 (FN B-753)	1	plate rim-marly brk-body	nv	ext undec; int oglz lt and dk pink floral decal near marly brk	3/16" thk; ca. 1930s
MANZ 1993 B-7 (FN B-753)	1	plate base	nv	int and ext undec	5/32" thk; partial uglz faded gray stamped mark = PAD.../POT[TERY]; Paden City Pottery, near Sisterville, W.Va., mark ca. 1930s (see Lehner 1988:336)
MANZ 1993 B-7 (FN B-753)	1	sugar bowl? rim; d = 3-1/2"	p	int undec; ext oglz 1" gray blue luster band edged on bottom with 1/16" black line, beneath line portions of lt blue and orange yellow ground visible	1/8" thk; probably Japanese (possibly in same set as saucer, below)
MANZ 1993 B-7 (FN B-753)	1	sm bowl/saucer rim-body; d = 4-1/2"	nv	ext undec; int discolored floral decal	1/8" thk; ca. 1930s
MANZ 1993 B-7 (FN B-753)	3 (refit)	cup bodies	nv	int undec; ext oglz lg floral decal in green, gray, peach, lavender, lt pink, blue, yellow and rose	5/32" thk
MANZ 1993 B-7 (FN B-753)	1	plate rim-marly brk-body	nv	ext undec; int traces of oglz gilding around lip; oglz stenciled/stamped squiggly gilded motif just above marly break around int of vessel	~3/16" thk (see bowl sherd below, probably from same set)
MANZ 1993 B-7 (FN B-753)	1	plate base	nv	ext undec; int small portion of oglz fruit/floral decal in pink, blue, and brown	~3/16" thk
MANZ 1993 B-7 (FN B-753)	1	cup body	sv	int undec; ext floral decal in brown and gray	3/16" thk
MANZ 1993 B-7 (FN B-753)	2	plate rim-marly brk-body-base; d = indet	nv	ext undec; int oglz 1/16" bright blue line around lip, oglz bluebird and floral decal beg beneath lip and cont onto int base in blue, yellow, pink, and green	3/16" thk; uglz stamped blackish green mark = oval with [P]OXON CHINA/ VERNON/CALIFORNIA; 1916-1928 (see Lehner 1980:156)
MANZ 1993 B-7 (FN B-753)	1	plate rim-body-ftrng-base; d = 9"	sv	int and ext undec	1/4" thk; partial uglz blk tp mark = [M]EAKIN/[ENGLA]ND; late 19th/early 20th c.
MANZ 1993 B-7 (FN B-753)	1	saucer body, ftrng, base	nv/sv	ext traces of flow blue coloration; int uglz flow blue floral tp	1/8" thk; 1880s+
MANZ 1993 B-7 (FN B-753)	1	plate body-base	nv	int and ext undec	1/4" thk; uglz stamped rust-red mark = VERNON/CHINA/VERNON.CAL.; 1928-1948 (Lehner 1988:488)
MANZ 1993 B-7 (FN B-753)	1	outflaring, sm bowl rim; d = indet	nv	ext undec; int oglz 1/16" blk line around lip, beneath that oglz abstract and floral decal in yellow, grn, blk, lt and dk pink	~3/16" thk
MANZ 1993 B-7 (FN B-753)	1	saucer rim; d = 5-1/2"	nv	ext undec; int uglz dk blue willow pattern border	1/8" thk
MANZ 1993 B-7 (FN B-753)	1	cup rim; d = indet	nv	int and ext uglz dk blue willow pattern border	~1/8" thk
MANZ 1993 B-7 (FN B-753)	1	cylindrical vessel body-base; base d = 6"	sw	ext bristol-like glz; int lustrous brown glz with uglz black swirled motifs	1/4" thk; unglzd ftrng; probably Japanese; possibly other pcs in collection
MANZ 1993 B-7 (FN B-753)	2 (same vessel)	plate rim-marly-break-body; irreg lip; d = indet	nv	ext undec; int relief molding near lip, oglz lavender, gray, brwn, and green thistle decal	5/32" thk; other matching pcs in collection; ca. 1930s
MANZ 1993 B-7 (FN B-753)	1	plate rim-marly brk-body, irreg lip; ~d = 8"	nv	ext undec; int relief-molded art-deco style wavy-line motif with 1/2" flow-blue band beg at lip; beneath that, traces of oglz gilding/stenciling from lip to marly break	~3/16" thk; probably 1920s+
MANZ 1993 B-7 (FN B-762)	5 (same vessel)	saucer body-ftrng-base	nv	ext undec; int uglz blue willow tp	1/8" thk; matches cup represented by handle, same provenience
MANZ 1993 B-7 (FN B-767)	1	plate base	nv	int and ext undec	~1/4" thk; partial uglz stamped mark = undecipherable motif with ...T & K/...[GR]ANITE; Knowles, Taylor, and Knowles ca. 1890-1900 (DeBolt 1994:71)

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 B-7 (FN B-754)	1	plate rim-marly brk; d = indet	nv/sv	ext undec; int uglz flow blue geometric and floral tp beg at lip extending 1-1/2" to marly brk	1/8-1/4" thk; burned ext and int, some melted glass adhering on ext, glz pitted on int
MANZ 1993 B-7 (FN B-754)	1	plate rim-marly brk-ftrng-base; d = 10"	nv	ext undec; int oglz turquoise, black, gray, and red? abstract and floral, art-deco-style accent decal beg at lip and extending approx. 1"	3/16" thk; sherd was burned, int glz is pitted and rough, paste is reddish and rust stained in places; ext glz pitted, some glass slag adhering, areas of burning and rust staining; ca. late 1920s-1930s
MANZ 1993 B-7 (FN B-754)	2 (same vessel)	plate rim-marly brk-ftrng-base; irreg lip; ~d = 8"	p	ext undec; int relief-molded floral dec beg at lip and extending 7/8" to 1/4" above marly brk, oglz yellow, gray, and three green hp cherries and stems on int base and over marly brk-base area	1/8" thk; unglzd ftrng; except at ftrng; Continental hardpaste p or Japanese?
MANZ 1993 B-7 (FN B-754)	1	plate rim; irreg lip; d = indet	nv/sv	ext undec except for blue tint in glz from flow blue rim dec on int; int delicate relief-molded swirls for 1/2" below lip, over this, a uglz flow blue band	~3/16 thk; burned ext and int; late 19th c.-early 20th c.
MANZ 1993 B-7 (FN B-754)	3 (same object)	molded paint palette? with circular cup-shaped depressions for paints, and part of trough-shaped area for brushes	nv	int and ext undec	
MANZ 1993 B-7 (FN B-754)	1	bowl rim-body	p	int undec; ext molded relief dec bosses and swirls, possible oglz gray airbrushing on ext	3/32" thk; glass slag stuck to int
MANZ 1993 B-7 (FN B-767)	1	plate body	nv	ext undec; int oglz gold stamped lines, swirls, and floral motif, ~1/32" bright blue line runs horizontally around vessel interior and meets design	~3/16" thk; early 1900s
MANZ 1993 B-7 (FN B-767)	1	saucer rim; irreg lip; ~d = 5-1/2"	nv	ext undec; int traces of oglz gold stamped lines, swirls, and a floral motif, also the letter "H" in gothic script	~1/8" thk (may be part of the same set as the plate body, below)
MANZ 1993 B-7 (FN B-767)	1	saucer rim-body-ftrng-base, ~50% complete; d = 5-1/2"	sv	int and ext undec	1/4" thk; uglz blackish grn stamped mark = CHESTER/HOTEL/CHINA in a circle; made by Taylor, Smith and Taylor, Chester, W. Va., mark dates 1908-ca. 1930 per DeBolt 1994:143)
MANZ 1993 B-7 (FN B-767)	1	sugar bowl base	p	int undec; ext has raised, molded floral swirl decoration near notched ftrng, traces of oglz orange luster	3/32" thk; oglz green stamped mark = GERMANY with in 1/2" diameter circle, dot at int base of circle
MANZ 1993 B-7 (FN B-767)	2 (possibly same vessel)	serving bowl rim, body-base; d = indet	nv	ext undec; int oglz 1/16" rust-red line around lip, 5/8" below that a very thin line (<1/64"), spread around vessel int are oglz hp abstract floral motifs in rust red and green	1/8" thk
MANZ 1993 B-7 (FN B-767)	1	saucer rim-body-ftrng-base; d = 5-1/2"	p	ext undec; int oglz 1/8" bright blue band around lip, beneath that and well onto base are oglz bright blue raised/stenciled bluebird and floral motifs, with hp pink accents	1/8" thk; unglzd ftrng; probably Japanese, ca. 1920s, maybe the Japanese answer to the popular "bluebird" motif on American dinnerware
MANZ 1993 B-7 (FN B-767)	1	saucer body-ftrng-base	sv	int and ext undec	1/8" thk; partial uglz olive grn mark = TH[OM]/lines crossed at rt angles/PSO[N]; mark ca. 1930s, C.C. Thompson Pottery Co., East Liverpool Ohio (see Lehner 1988:470-471)
MANZ 1993 B-7 (FN B-767)	1	serving bowl rim-body; d = 7-1/2"	nv	ext undec; int oglz bright blue 3/32" line around lip, 1/4" below that 1/32" line, placed over lines beg at lip is oglz floral motif with in abstract swirls in pink, green, gray, blue, black, and yellow	1/4" thk; ca. 1920s-early 1930s
MANZ 1993 B-7 (FN B-767)	1	ornamental dish rim-body-undulating frng-base; irreg rim, d = indet	p	ext undec; body has deep, molded wavy lines, 1/8" oglz brown line around lip and down onto vessel int with sm, raised dots on it, 9/16" beneath that a 1/16" oglz line luster line applied to match curve in rim, between rim and line hp floral and stems in dk and lt green, lt blue, and pink	~1/8" thk
MANZ 1993 B-7 (FN B-767)	1	bowl? body-ftrng-base	p	int has molded fluted areas; both int and ext have oglz floral decals in lt and med green and pink	1/8" thk; unglzd ftrng; possibly Japanese
MANZ 1993 B-7 (FN B-767)	1	plate rim-marly brk; ~d = 9"	nv	ext undec; int oglz ~3/32" bright blue line around lip, oglz bluebird decal over marly break in lt and bright blue, yellow, green, and pink	3/16" thk; ca. late 1910s-1920s
MANZ 1993 B-7 (FN B-767)	1	bowl rim-body; irreg lip, d = indet	nv	ext undec; int relief-molded art-deco-style dec spaced at intervals around lip, 1/2" beneath lip portions of oglz bluebird decal in green, lt blue, and brown	3/16" thk; ca. 1930s

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 B-7 (FN B-767)	1	plate body-ftrng-base	nv	ext undec; int oglz delicate leaf and floral decal in shades of lt and dk grayish green and pink/brown	3/16" thk; uglz smeared green mark = [R]ADISSON/W.S. GEORGE/641; 1920s-1940s (DeBolt 1994:53, 226); possibly manufactured in 1941 by W. S. George Pottery Company
MANZ 1993 B-8 (FN A-197)	1	saucer rim; ~d = 5-3/4"	p	int, beg at lip, 7/16" green luster-wash band with 1/16" black line defining lower edge	1/4" thk
MANZ 1993 B-8 (FN A-197)	1	bowl (?) body	nv	tp plaid motif, alternating lines of lt, stippled red and darker red	5/16" thk
MANZ 1993 B-8 (FN A-197)	1	cup rim	nv	ext relief dec below lip, portion of pink and yellow floral decal present, 1/8" silver lining around rim	3/8" thk
MANZ 1993 B-8 (FN A-197)	1	sm plate, rim-marly-ftrng-base; d = 8"	nv	irreg rim with molded panels, with in each panel a floral decal (pink, blue, green, yellow)	5/16" thk
MANZ 1993 B-8 (FN A-197)	1	plate rim-marly, half-rolled rim on int; d = 9"	v, hw	int single hp lt blue band 5/8" below lip, outlined with thin black lines	~1/4" thk
MANZ 1993 B-8 (FN A-197)	1	saucer/sm plate, rim-marly-ftrng-base; d = 6"	nv	thin blue slip glaze, lip to marly has raised, int relief dec	3/8" thk
MANZ 1993 B-8 (FN A-197)	1	portion of cup/sm bowl base-ftrng	nv	3/16" black line around ext edge of ftrng	base = 1/4" thk, glz worn away on ftrng; mark = tp floral basket with undecipherable word above and MADE IN JAPAN below; 1921+
MANZ 1993 B-8 (FN A-197)	1	saucer rim-body-ftrng-base, 50% complete; d = 5-3/4"	sv/v, hw	int 1/8" red band below lip with thin red line below that, uglz logo in red tp with UNITED STATES ARMY MEDICAL DEPARTMENT	3/8" thk, mark = green stamp /[missing logo]/[CH]INA/...PA./[U.S.A]RMY/ [MEDI]CAL/[DE]PT/...1941; is a partial Shenango China mark; rust staining; manuf. 1941
MANZ 1993 B-8 (FN A-197)	1	body-ftrng-base to something ornamental (vase?)	p	int undec (sm blob of clay fired onto int base surface); ext green slip glazed, large molded "beads" around ext base	3/16" thk, blue-gray hp [MADE IN] JAPAN; 1921+
MANZ 1993 B-8 (FN A-197)	1	sm portion of body-ftrng-base	p	ext 1/32" gold line around edge of nonoriental-style ftrng; entire ftrng glzd	body = 1/16" thk; mark = decal "M" with in green and tan wreath with NORITAKE above and JAPAN below; 1940 (mark MM-44, Alden 1995:169)
MANZ 1993 B-8 (FN A-197)	1	med bowl rim-body; ~d = 4-1/2"	p	int uglz beg 1/8" below lip med blue 1/4" band, with 1/8" med blue line 1/8" below it; ext uglz 1/4" below lip 1/8" med blue line, beneath that hp brown/gray volcano-type, snowcapped mountain with blue sprayed cloud, also another unid blue motif with brown/gray "something" adjacent	5/16" thk; rust staining; probably Japanese
MANZ 1993 B-8 (FN A-197)	1	saucer rim-body-ftrng-base, 50% complete; d = 5-3/4"	sv/v, hw	same as above, except without tp logo	3/8" thk; mark = green stamped Indian making pottery logo with [SHENAN]GO CHINA/...STLE,PA./[A]RMY/MEDICAL/...; rust staining; 1940s
MANZ 1993 B-8 (FN A-197)	2 (refit)	plate base; 4" diameter (ftrng); 2 concentric rings with in rings	nv	uglz blue tp, willow pattern	3/16" thk; ftrng worn or unglzd, water and burn stains on ext; mark = MADE IN JAPAN, stamped in uglz blue; 1921+ (see Litts 1988:58)
MANZ 1993 B-8 (FN A-197)	1	bowl body-ftrng-base	sw (gray body)	int sg; ext high-gloss "ox-blood" red glz	1/2" thk; ftrng and base unglzd; marks = imp MADE/IN/JAPAN with in a heart, and imp oval with Japanese character in it; 1921+
MANZ 1993 B-8 (FN A-197)	1	lg bowl body-ftrng-base; ~ftrng d = 3-1/2"	p	ext uglz portion of sm motif with blk broken line, solid line, and dots; 2 very thin (ca. 1/64") lt blue, concentric lines at juncture of body and ftrng; int uglz black and gray tree motif with rows of Japanese characters	5/16" thk; unglzd ftrng; no mark visible; rust staining; Japanese
MANZ 1993 B-8 (FN A-197)	1	med bowl body-ftrng-base	p	int undec; ext has gray and black faded remnants of stylized leaf decal; 1/32" reddish brown line around juncture of ftrng and body	approx 1/4" thk; ftrng damaged, but some of remaining portion unglzd; mark = hp reddish brown, 2 nested circles with MADE IN JAPAN with a dot separating MADE and JAPAN, inner circle has triangle with in it with initials KB inside, beneath circles it says HAND PAINTED, with N backwards; some rust staining; 1921+
MANZ 1993 B-8 (FN A-197)	1	med bowl rim; ~d = 4-1/4"	p	int undec; ext hp uglz blue, cross hatching and floral(?) outlined motifs	3/16" thk; probably Japanese

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 B-8 (FN A-197)	1	med bowl rim; d = indet	p	int undec; ext med blue, dk blue, and red floral uglz motifs with gilt oglz hp pistol and stamen for one of the flowers	1/8" thk; probably Japanese
MANZ 1993 B-8 (FN A-197)	1	lg sherd to rim- body-ftrng-base of a box, ht = 2-1/4"	p	int undec; ext has hp uglz blue bonsai? tree motif	1/4" thk (base), wall of side slightly thicker; no mark visible; rust staining; probably Japanese
MANZ 1993 B-8 (FN A-197)	1	med bowl rim-body-ftrng-base; ~d = 4-1/4"	p	int undec; ext hp oglz lining: 3 lines 1-3/4" below lip, ea. 1/32" wide, 2 are black, middle line is faded gold, also a 1/32" line where body joins ftrng	3/16" thk; unglzd ftrng; mark = rust red Japanese character (oglz?)
MANZ 1993 B-8 (FN A-197)	1	sm bowl rim-body-ftrng-base; d = indet	p	int undec; ext uglz blue floral motifs with oglz yellow and orange flowers over the blue, flowers have gilt centers and detail on leaves; int ftrng thinly lined with blue	3/16" thk; unglzd ftrng; mark = hp rust red (oglz?) MADE [I]N [JAPAN]; rust staining; 1921+
MANZ 1993 B-8 (FN A-197)	1	med bowl rim; d = 4-1/2"	p	int undec; ext has uglz blue hp stylized forest and trees design(?)	1/8" thk; rust staining; probably Japanese
MANZ 1993 B-8 (FN A-197)	1	med plate (saucer?) rim-body-ftrng-base; d = indet	p	ext undec; int (uglz) 1/16" lt blue line 1/16" below lip, darker blue "blob and tree?" motif with (oglz) gilt accent	1/8" thk; unglzd ftrng; no mark visible; rust staining; may be in the same "set" or "pattern" as item described above; probably Japanese
MANZ 1993 B-8 (FN A-197)	1	med bowl body-ftrng-base	p	int undec; ext has uglz partial stenciled outline of crane? (sprayed over in med blue) with bird's legs and tail feathers outlined in darker blue, gilt oglz detail of bird	5/16" thk; unglzd ftrng; mark = hp rust red (oglz?) [M]ADE IN [J]APAN; 1921+
MANZ 1993 B-8 (FN A-197)	1	saucer with int "well," >50% complete; rim-marly-ftrng-base, ~d = 6"	nv, buff body	orange slip glaze	9/16" thk; encrusted with iron deposits, imp uglz mark = BAU[ER]/USA/LOS ANGEL[ES] (see Lehner 1988:39); stilt marks visible on base; mid-1930s (Baldinger 1995:64); 1930+ (Chipman 1992:15)
MANZ 1993 B-8 (FN A-197)	1	lg plate, >50% complete; ftrng d = 5"; 2 concentric rngs with in ftrng, 1 rng at marly/base brk; approx. d = 9"; rim-marly-ftrng-base	p	int 1/8" oglz blue line around int lip, otherwise undec	3/8" thk; uglz ftrng, hp oglz mark in red; MADE IN JAPAN; 1921+
MANZ 1993 B-8 (FN A-197)	1	plate-rim-marly-ftrng-base; d = 9"	nv	int 1/4" black band on rim with gold decal overlying it	3/8" thk, water stains int and ext
MANZ 1993 B-8 (FN A-197)	1	shallow sm bowl rim-body-ftrng-base; depth = 1-1/4", ~d=3"	p	int oglz hp turquoise green "grass" motif beg right below lip and down one side to base	1/4" thk; unglzd ftrng, no mark; some rust staining visible; probably Japanese
MANZ 1993 B-8 (FN A-197)	1	sm bowl body-ftrng-base	p	int 1/16" brown (imitation gold) line where body joins ftrng	3/8" thk; ftrng damaged, can not tell if unglzd, but probably was; mark = MADE IN/JAPAN, hp rust red (oglz?); 1921+
MANZ 1993 B-8 (FN A-197)	1	med bowl rim; ~d = 5"	p	1/16" brown line along top of lip (oglz?); int hp uglz blue, 3/4" banded area with 1/16" single line next to brown line at lip and double blue line at bottom of band, with in band a series of stylized "line" motifs; ext 1/16" line 3/16" below lip	1/8" thk; probably Japanese
MANZ 1993 B-8 (FN A-197)	1	plate base; base d = 5-3/4"	p	uglz hp lt blue mums, dk blue leaves; oglz hp green leaves with gold outline, flowers with orange petals and yellow centers; uglz blue lining around int of ftrng, 1 line on ext ftrng, 2 lines above it	1/4" thk; unglzd ftrng, some water staining int; no mark visible; Japanese
MANZ 1993 B-8 (FN A-197)	1	bowl rim-body-base-ftrng; d = indet	p	int hp unglz blue bands below lip (approx. 1/8" and 1/16" wide, respec.), 1/32" line around int base, with Japanese character in int center; ext hp unglz blue dec: 1/32" line below lip, stenciled leaves on body, and 1/32" lines above and below ftrng break	approx 1/4" thk; unglzd ftrng; mark = hp? uglz blue circle with [M]ADE in JA[PAN] visible; 1921+
MANZ 1993 B-8 (FN A-197)	1	med bowl rim; ~d = 4-1/4"	p	same dec as entry directly above	3/16" thk; unglzd ftrng; probably part to bowl described directly above [but does not refit]; probably Japanese
MANZ 1993 B-8 (FN A-197)	1	med bowl body-ftrng-base; 50% complete; d = indet	p	int undec; ext hp uglz blue dec: staggered series of parallel vertical lines with occasional floral motif defined by thin line around vessel middle and thin lines at body-ftrng break	3/16" thk; unglzd ftrng; mark = hp uglz blue MADE IN/JAPAN; 1921+

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 B-8 (FN A-197)	1	large plate body-ftrng-base	p	ext lt blue uglz 1/16" lines encircle unglzd ftrng above and below, 1/16" line encircles body 7/16" above ftrng; int uglz lt blue concentric 1/32" to 1/16" line circles around center of plate, center and panels above lines have uglz lt and dark blue gray, and peach? designs with oglz sloppily painted rust red, gilt, and green accents and black outlining	5/16" thk; no mark visible; Japanese
MANZ 1993 B-8 (FN A-197)	1	plate base	hw; dyed buff body	int undec; ext beneath mark has six small, gray-green circles (uglz, stamped)	1/2" thk; uglz (stamped?) brown mark = CAFE AU LAIT/BUFFALO/CHINA (~mark #38, Lehner 1988:65)
MANZ 1993 B-8 (FN A-197)	1	med bowl rim-body-ftrng-base; >50% complete; ~d = 4-1/4"	p	int undec; ext has hp dec 1/32" brown line around lip, gray stylized triangular swags around lip with alternating flowers (green, blue, and yellow), 1/64" line at body-ftrng break	3/8" thk; unglzd ftrng; hp (oglz?) rust red MADE IN JAPAN painted in circular fashion, with centered dots on either side of JAPAN; rust staining; 1921+
MANZ 1993 B-8 (FN A-197)	1	plate body-ftrng-base	p	ext uglz hp 3-1/16" concentric med blue lines above where body joins ftrng, on body a sm area of lt and med blue; int hp med blue "blobs" under dark blue "waves" or "swirls;" areas of dk blue are outlined in oglz gilt	5/16" thk; unglzd ftrng; no mark present; rust staining; probably Japanese
MANZ 1993 B-8 (FN A-197)	1	sm bowl rim-body-ftrng-base, 50% complete; ~d = 3-3/4	p	int undec; ext lt brn "marbled" glz with 3 motifs spaced around bowl; 2 have same hp floral motif with in a triple-line circle, but one is rust red and the other black; the third is a brown, shield-shaped design probably applied with a stencil	3/8" thk, base and edge of ftrng are unslipped, and ftrng is unglzd; mark = hp? rust red rectangular cartouche with MADE IN/JAPAN; rust staining; 1921+
MANZ 1993 B-8 (FN A-197)	1	plate base	sv/v, hw?	int and ext undec	3/8" thk; mark = black-green uglz stamp CHINA BY/IROQUOIS/U.S.A. A. 4/T; ca. 1940s
MANZ 1993 B-8 (FN A-197)	1	bowl, ~50% complete, rim-body-ftrng-base; d = 5-5/8"	v, hw	int and ext undec	5/16" thk base; mark = blurry blue stamp U.S.Q.M.C./W431-QM-4627/(O.L 5205)/MAR. 17, 1941; some rust staining; manuf. 1941
MANZ 1993 B-8 (FN A-197)	1	lg bowl body-ftrng-base; ftrng d = 3-1/2"	p	ext lt blue hp 2 very thin (<1/64") concentric lines above where ftrng joins body, single lines of same thickness 3/8" above double lines	1/4" thk; rust staining; marks = hp oglz rust red MADE IN/JAPAN plus an impressed Japanese character to one side near the glzd ftrng, central portion of base unglzd except for 1"-d recessed, glzd circle in center; mark is centered with in small circle
MANZ 1993 B-8 (FN A-197)	2	lg sherd to a plate body-ftrng-base + small rim sherd	p	ext uglz lt blue three concentric 1/32" lines above junc of body and ftrng, two directly above junc, other ~3/4" above; int center has black tp flower-tree motif in 2-3/8" circle, rust red 1/16" concentric circle 5/8" out from center circle, with 2 1/32" concentric circles 7/16" away from that; above that a series of panels extending to lip; panels have black uglz tp floral outlines with oglz fill-in and accenting in blue, green, rust red, yellow, blue, white	1/4" thk; unglzd, battered ftrng; no mark visible; probably Japanese
MANZ 1993 B-8 (FN B-1040)	1	>50% oval serving bowl; est length = 10"	v, hw	ext undec; int uglz 1/8" red band below lip, with 1/32" line below that	base = 1/4" thk, body = 3/16" thk; uglz black stamped mark = McNicol China with in a "cartouche"/CLARKSBURG, W.VA./1941/X; probably made to match Shenango-made U.S. Army Medical Corps "hotel china;" manuf. 1941
MANZ 1993 B-8 (FN B-1040)	1	>50% bowl; d = 5"	v, hw	int and ext undec	1/4-3/8" thk; unglzd ftrng; blurry, black, uglz stamped mark = SHENANGO/CHINA/NEW CASTLE.PA (Lehner 1988:422, mark #7); some staining ext and int; ca. 1940s
MANZ 1993 B-8 (FN B-1040)	1	>50% bowl; d = 5-1/2"	v, hw	int and ext undec	1/4-1/2" thk; unglzd ftrng; blue uglz stamped mark = U.S.Q.M.[C.]/W431-QM-46.../(O.I. 5205)/MAR. 17, 194[1]; manuf. 1941
MANZ 1993 B-8 (FN B-1040)	1	~75% straight-sided (probably handleless) cup; d = 3-1/2"	v, hw	int and ext undec	7/16" thk; unglzd ftrng; blurry stamped uglz black mark = British pound symbol with STERLING/CHINA COMPANY/VITRIFIED/EAST LIVERPOOL, O. (Lehner 1988:440, 442, mark #39; Sterling China Co., 1917+; made a great deal for armed services during WW II); this example ca. 1940s
MANZ 1993 B-8 (FN B-1040)	1	~50% bowl; d = 5"	v, hw	int and ext undec	3/8-1/2" thk; unglzd ftrng; stamped uglz blackish green mark = WALLACE/OH/CHINA (Lehner 1988:498; Wallace China Co., Vernon, Ca., ca. 1931-1964); this example ca. 1940s

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 B-8 (FN B-1040)	1	~50% bowl; d = 6"	v, hw	int and ext undec	body = 7/16" thk, base = 3/16" thk; unglzd ftrng; uglz blue stamped mark = U.S.Q.M.C./3522 O-I-1081/?-13-[4?]0 [manuf. ca. 1940?]
MANZ 1993 B-8 (FN B-1040)	1	tiny tea bowl (child's?) rim-body-ftrng-base; ~50% of vessel present; ~d = 1-1/2"	p	int uglz blue rectangular cartouche with Japanese characters inside; ext undec	thkness at lip ca. 1/16", at base 1/8" thk; unglzd ftrng; mark = uglz blue hp 1/16" line circling int of ftrng, with blurry MADE IN JAPAN inside; 1921+
MANZ 1993 B-8 (FN B-1040)	1	cup body-ftrng-base	v, hw	int and ext undec	1/4" thk; unglzd ftrng; uglz blackish green stamped mark = CARR CHINA CO./[G]RAFTON, W. VA./... 42; manuf. in 1942
MANZ 1993 B-8 (FN B-1040)	1	cup body-ftrng-base	v, hw	int and ext undec	3/16" thk; unglzd ftrng; uglz blk stamped mark = TEPCO/U.S.A./CHINA (Lehner 1988:468-469, mark #1; Technical Porcelain and Chinaware Co., El Cerrito, Calif.; mark from the 1940s, used on "restaurant" ware)
MANZ 1993 B-8 (FN B-1040)	1	cup rim-body	nv	int 1/32" oglz gold line 1/8" below lip; ext 3/8-1/2" wide abstract and floral oglz decal band, beg 1/16" below lip, in black, yellow, pink, and green	1/8" thk; ca. 1920s-early 1930s
MANZ 1993 B-8 (FN B-1040)	1	rim-body-ftrng-base to either an oval offal dish or a toothbrush dish from a bathroom set; d = indet	v, hw	ext undec; int uglz dk blue 1/8" band 1/8" below lip	3/16" thk; uglz partial green stamped mark = [BU]FFALO/CHINA/[MA]DE IN U.S.A./C-12; ca. 1940s
MANZ 1993 B-8 (FN B-1040)	1	plate ftrng-base	nv	int and ext undec	1/4" thk; partial uglz green stamped mark = CROWN .../crown/MADE IN/U.S.A./7 42; Crown Potteries Co. (Lehner 1988:117-118, mark #16); manuf. in 1942
MANZ 1993 B-8 (FN B-1040)	1	bowl body-ftrng-base	p	int uglz blue semicircular motif; ext impressed wavy-line stacked motifs, celadon-like glz; int portion of base painted brown on unglzd surface	~1/4" thk; unglzd ftrng; Japanese
MANZ 1993 B-8 (FN B-1040)	1	>50% of a saucer (rim-body-ftrng-base); d = 6"	v, hw	ext undec; int uglz 1/32" line 1/8" below lip, 1/2" beneath that 3/16" lt blue band outlined in blk, 1/32" lt blue line around cup well	3/16" thk; unglzd ftrng; uglz blackish green stamped mark = O.P.CO./SYRACUSE/CHINA/J-10/Wm. TAYLO...; J = 1929 (DeBolt 1994:107); same pattern as below
MANZ 1993 B-8 (FN B-1040)	1	saucer body-ftrng-base	nv	int impressed abstract floral and circle motifs, both int and ext slip glzd blue	~3/16" thk; partial uglz stamped green mark = [KN]OWLES CHIN[A]; ca. 1930s
MANZ 1993 B-8 (FN B-1040)	1	bowl? body	p	int undec; ext uglz line and floral motifs in purple, lt and dk blue	1/8" thk
MANZ 1993 B-8 (FN B-1040)	1	plate body-ftrng-base	v, hw	int and ext undec	3/16" thk; uglz blackish green stamped mark = logo/HOMER LAUGHLIN/MADE IN U.S.A./A 43 N 6; manuf. in 1943
MANZ 1993 B-8 (FN B-1040)	1	med bowl rim-body; d = 4-1/2"	p	int undec; ext lt yellow ground with oglz green, orange, and rust leaves and stems	1/8" thk; probably Japanese
MANZ 1993 B-8 (FN B-1040)	1	plate body-ftrng-base	v, hw	int and ext undec	1/4" thk; uglz olive green, blurry, stamped mark = Buffalo China/C-9[?]; 1940s
MANZ 1993 B-8 (FN B-1040)	1	~75% of a sm. dish (rim-body-ftrng-base); ~d = 5"	v, hw	ext undec; int uglz 1/32" line 1/8" below lip, 1/2" beneath that 3/16" lt blue band outlined in blk	~3/16" thk; uglz blackish green stamped mark = O.P.CO./SYRACUSE/..CHINA-/S-1; S = 1938 (DeBolt 1994:107); same pattern as above
MANZ 1993 B-8 (FN B-791)	1	>50% straight-sided cup rim-body-ftrng-base	p	int undec; ext oglz hp brown branch with dk green leaves on a lt brown stem, red cherries? in between with pink over as accent	3/16" thk; unglzd ftrng; rust staining on int and on broken edges; ext glz drip visible; rust and black oglz hp mark = MADE IN/JAPAN; 1921+
MANZ 1993 B-8 (FN B-791)	1	~50% composite-shape tea bowl; d = 3"	nv	int undec; ext molded horizontal ridges from lip to break, where body tapers in sharply to ftrng; ftrng unglzd to imitate porcelain; ext has turquoise "cloud"	1/8" thk; oriental, probably Japanese
MANZ 1993 B-8 (FN B-791)	1	straight-sided cup rim-body; d = 2-1/2"	p	int undec; ext molded body with oglz hp neck, shoulder, torso, and arm of a "suma" figure, arm and neck are flesh-colored brush stroke with rust outlining, figure wearing a rust and black robe and carrying a rust, black, and white weapon	3/16" thk; probably Japanese
MANZ 1993 B-8 (FN B-791)	1	platter? rim-marly brk-body; d = indet	nv	ext and int yellow-tinted glz; int 1/16" gold lining 1/8" below lip; ~1/2" below lip a black, green, yellow, orange, purple, and gray floral decal	3/16" thk; crazed int and ext; discolored; late 1930s-early 1940s

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 B-8 (FN B-791)	1	~40% (flaring rim) sake cup? body-ftrng-base; d = indet	p	int undec; ext greenish celadon-like glz, uglz hp dk green abstract lines and burgundy flowers; where int of ftrng joins base a 1/16" hp blue line encircles ftrng	3/16" thk; unglzd ftrng; hp uglz? blue mark = MADE/IN/JAPAN; 1921+
MANZ 1993 B-8 (FN B-789)	1	~40% cup; d = 4"	nv	int oglz 1/16" gold line 1/8" below lip; ext beg at lip green, purple, brown, and yellow discolored decal	~1/8" thk; red staining ext and int, some clouding from burning; other pieces in assemblage; late 1920s-1930s
MANZ 1993 B-8 (FN B-791)	1	>50% steep-sided cup	v, hw	int and ext undec	5/8" thk; unglzd ftrng; speckled staining on ext; partial black uglz stamped mark = symbol for a British pound with the ff. across it: STERLING/CHINA COMPANY/VITRIFIED/[EAST LIVERPOOL, O.]; ca. 1940s (stamp made by Quality Stamp Co., see Lehner [1988:440, 442, mark #35])
MANZ 1993 B-8 (FN B-791)	1	~1/3 of ashtray; d = 5-1/2"	nv	int and ext slip glzd yellow, int has some molded around outflaring lip	3/16" thk; int badly blackened from burning; ext has blackened areas; ca. 1930s-1940s
MANZ 1993 B-8 (FN B-791)	1	~50% med bowl; d = 4-1/2"	p	int undec; ext uglz hp blue abstract grass and floral motif	1/8" thk; unglzd ftrng; no mark visible, probably Japanese; rust and other red staining int and ext
MANZ 1993 B-12 (FN B-852)	3 (2 refit, all from same set)	2 = plate rim-marly brk; d = 8"; 1 cup rim-body; d = indet	nv	plate = ext undec; int uglz stenciled and hp dec; ~1/8" red line around rim just below lip, below that a 1/16" dk green line, below that abstract floral dk green and red, 1/16" dk green line encircling marly break; cup has ~same dec on ext, with 1/16" uglz red line 1/8" below lip on int	~1/8" thk; plate sherds are rust stained ext and int
MANZ 1993 B-16 (FN B-811)	1	cup rim-body with pt of handle attachment; scalloped lip; d = indet	p	int undec; ext molded, scalloped lip	lip ~1/6" thk, max body thkness = 5/32"
MANZ 1993 B-16 (FN B-816)	1	sm bowl rim-body; irreg-shaped lip, d = indet	nv/sv	ext undec; int beaded and abstract relief molded motif beg at lip	1/8" thk; ca. 1880s
MANZ 1993 B-16 (FN B-816)	2 (same design)	plate rim-body	nv	ext undec (spalled in both cases); nt <1/16" oglz line around lip, beneath that oglz decal = 1/16" blue line with black lining on lower portion, beneath that pink and green roses in black baskets, series of black dots join basket motifs	avg thk = 3/16"; ca. 1930s-early 1940s (see FN B-753)
MANZ 1993 B-16 (FN B-816)	1	egg cup? rim-body; ~d = 1-3/4"	p	int undec; ext has traces of oglz gold line around lip ~1/16"	avg thk = 1/8"
MANZ 1993 B-16 (FN B-816)	1	saucer/plate body	p	ext undec; int traces of oglz pink decal, body possibly molded	1/16-1/8" thk
MANZ 1993 B-16 (FN B-816)	1	med plate (saucer?) body	p	int undec; int uglz blue floral tp, slightly blurry	<1/8" thk, probably Asian porcelain (very granular paste)
MANZ 1993 B-16 (FN B-816)	1	plate/saucer rim; d = indet	nv	ext undec; int has traces oglz 1/16" gold line around lip	~1/8" thk
MANZ 1993 B-20 (FN B-834)	1	base to vessel such as sugar bowl, pitcher, or ewer; d = indet	nv/sv	ext has scalloped base with relief- molded beading around edge	flat portion of base = 1/8" thk; ca. 1880s
MANZ 1993 B-22 (FN B-841)	2 (refit)	saucer body-ftrng-base	nv	int and ext undec	1/8" thk; burned int; partial uglz tp "peach"-colored mark = irreg circle with bell in bell tower .../VERN[ON]... in block letters/CALIFORNIA/34; early 1930s (Chipman 1992:67-68)
MANZ 1993 B-22 (FN B-841)	1	saucer rim	nv	ext undec; int delicate relief- molded dot and lines beg ca. 1/8" below lip	1/8" thk; ca. 1880s
MANZ 1993 B-22 (FN B-841)	1	portion of upper eye socket, doll head	p	unglzd (bisque); int uglzd; ext flesh coloring with hp eye lashes above eye socket portion	3/32" thk; German or French; ca. late 19th c.-early 20th c.
MANZ 1993 B-22 (FN B-841)	1	saucer?/plate rim	p	ext undec; int molded "beaded" lip with oglz gilding around lip, molded thin double ridges beg 1/8" below lip; beg 1/8" below lip oglz gold floral and abstract decal	3/32" thk (very thin)

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 B-22 (FN B-841)	1	plate/saucer body-ftrng-base	p	ext undec; int has gray, dark pink, green, and yellow floral decal in plate/saucer well	1/16-1/8" thk; unglzd ftrng
MANZ 1993 B-22 (FN B-841)	4 (same vessel)	plate rim-marly brk; d = indet	nv	ext undec; int molded ridge beg at lip for 1/4", beg 1/2" below lip an oglz brown, black, yellow, and orange floral tp, extending over marly break on all three sherds	3/16" thk; ext rust staining on 2 sherds, sherds are heavily crazed
MANZ 1993 B-22 (FN B-841)	1	plate-saucer ftrng-base	sv	ext undec; int vertical paneled body, area around base encircled with molded rope	3/16" thk; partial impressed circular mark, only portion readable in lower part of circle = [TUN]STALL (English)
MANZ 1993 B-22 (FN B-841)	2 (refit)	plate rim-marly brk; irreg lip; d = 10"	sv	ext undec; int uglz blackish blue small dots and floral tp beg at lip extending 1-1/2" to marly brk and below	3/16" thk; ca. 1880s
MANZ 1993 B-22 (FN B-841)	1	plate base	nv	int and ext undec	1/4" thk; partial uglz brown mark = crown and quartered shield/ROYAL [base of shield] [PREMIUM]/SEMI-PORCE[LAIN]/T & R BOO[TE]/ENGL[AND.] (Godden 1964:84 dates this printed mark 1890-1906)
MANZ 1993 B-22 (FN B-841)	1	plate ftrng-base, concentric lines on base ext	nv	int and ext undec	~1/4" thk; partial uglz blurry gray-blue mark = C.P. .../"frame-like" box with portion of lion visible inside/"leaf" underneath; ca. 1880s
MANZ 1993 B-24 (FN B-831)	1	cup rim-body; d = 3-1/2"	nv	int undec; ext oglz 1/32" lining around lip and 3/4" below lip	1/8" avg thkness
MANZ 1993 B-29 (FN A-200)	1	plate marly-body-ftrng-base	v, hw	int and ext undec	1/4" thk; partial mark = blackish green stamped uglz ...LAUGHLIN with a line under it; staining possibly from burning on both int and ext; ca. 1940s
MANZ 1993 B-32 (FN B-843)	1	plate body-ftrng-base	nv	int and ext undec	1/4" thk; molded concentric rings on base; partial uglz blackish green stamped mark = American eagle over a prostrate lion with [Laughl]in swirled beneath (Lehner 1988:247-248, mark #3); second Homer Laughlin trademark, used prior to 1900 signifying end of British domination in the dinnerware industry
MANZ 1993 B-32 (FN B-843)	1	bottle lip-neck-shoulder	sw	clear (alkaline) glz int and ext	3/16-1/4" thk
MANZ 1993 B-32 (FN B-843)	1	mug ftrng-base	nv/sv	int and ext undec	5/32" thk; partial uglz blk tp mark = logo/KNOWLES, TAYLOR/AND/KNOWLES (DeBolt 1994:71); ca. 1880-1890 (possibly up to 1904 per Lehner 1988:238-239)
MANZ 1993 B-32 (FN B-843)	1	pitcher or mug ftrng-base	sv	int and ext undec	~1/8" thk at base; broad, flat ftrng worn; base has incised uglz "8," partial uglz brown tp mark = lg quartered shield with ROYAL PREMIUM/SEMI-PORCELAIN/T & R BOOTE/ENGLAND below (Godden 1964:84); ca. 1891-1906
MANZ 1993 B-32 (FN B-843)	3 (2 refit)	lg storage vessel bodies ("crock")	sw	grayish tan paste; ext sg with uglz dk blue thk-lined abstract and dot designs; int Albany slip	5/16" thk; ca. 1840-1890 (Ketchum 1983:4-5, 51)
MANZ 1993 B-32 (FN B-843)	1	plate body	sv	int and ext undec	3/16" thk
MANZ 1993 B-32 (FN B-843)	1	lg bowl body-ftrng-base; d = indet	sw	buff; ext and int Bristol glz with oglz lt blue tp floral and berry motif	1/4" thk; ca. 1890-1930 (Ketchum 1983: 215) (see FN A-160)
MANZ 1993 B-32 (FN B-843)	2 (refit)	lg bowl body-ftrng-base; d - indet	p	int and ext hp dk blue lining and floral	~1/4-~1/2" thk; part of ftrng unglzd; probably Japanese
MANZ 1993 B-32 (FN B-843)	1	saucer rim	p	ext undec; int oglz 1/16" gold line around lip, beneath that stamped/stenciled abstract motifs and lines	3/32" thk
MANZ 1993 B-32 (FN B-843)	1	molded doll shoulder-partial head with arm socket	p	unglzd (bisque); flesh-colored ext	<1/8" thk; on upper back of doll molded or incised ...60n.12; late 19th c.

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1993 B-32 (FN B-843)	4 (same vessel)	steep-sided saucer rim-body-base-ftrng, irreg lip; d = 5-1/2"	p	ext undec; int molded, paneled areas from lip down 1-1/4", purple luster and around lip, on int base blue, purple, green, blue, yellow, and brown oglz floral decal	1/8" thk; unglzd ftrng; no mark visible, burned, discolored area on base
MANZ 1993 B-32 (FN B-843)	1	plate body-ft ng-base	sv	int and ext undec	3/16" thk; partial uglz black tp mark = [ROYA]L IRONSTONE CH[INA]/over quartered shield motif; late 19th c.
MANZ 1993 B-32 (FN B-843)	2 (refit)	plate bases	sv	int and ext undec	~1/4" thk; partial uglz blk tp mark = modified royal garter with "IRONSTONE CHINA" inside, with POWELL & BISHOP in ribbon/ENGLAND below (Godden 1972:509, mark #3136; 1876-1878); ENGLAND suggests 1891+, but Powell and Bishop became, Powell, Bishop and Stonier in 1878. This may be one of the early marks with ENGLAND marked
MANZ 1993 B-32 (FN B-843)	4 (2 refit)	plate rim-marly brk; d = 10"	sv	ext undec; int uglz brwn tp twig and leaf border pattern with asymmetrically placed leaves and twigs on int base	~3/16" thk; partial uglz brown tp mark = royal garter with CAMB[RIDGE] pattern name with in garter and P. H. & S. inside (not in Godden, but dates ca. 1880s)
MANZ 1993 B-32 (FN B-843)	1	lg bowl rim-body; ~d = 11-1/2"	sw	buff body; int undec; top of rolled rim onto ext uglz blue sponged motifs with crudely painted lines and bands	3/8" thk; ca. 1900-1935 (Ketchum 1983:214)
MANZ 1993 B-32 (FN B-843)	2	plate rim-marly brk; d = 8"	nv	ext undec; int cranberry red uglz floral tp, beg at lip extending over marly brk	1/8" thk; possibly late 19th c.
MANZ 1993 B-32 (FN B-843)	7 (5 refit)	lg bowl rims body-ftrng-base; ~d = 6"	p	ext uglz blue 1/8" band around lip, ~1/8" bands around ring base (2) and abstract blue curvilinear motifs (on body), 1/32" line 1" beneath lip, unglzd portion of base; int uglz blue abstract U-shaped motifs, grps of juxtaposed parallel lines, open white center with abstract motifs	~1/8" thk at rim, 5/16" thk at base; Japanese (see other similar pcs in assemblage)
MANZ 1993 B-32 (FN B-843)	1	saucer rim-body-ftrng-base; ~d = 7"	sv	int and ext undec	3/16" thk; partial uglz blk tp mark = same as POWELL and BISHOP mark noted above in this provenience
MANZ 1993 B-32 (FN B-843)	1	plate body-ftrng-base	sv	int and ext undec	1/4" thk; partial uglz black tp mark = [ROYAL] IRONSTONE CHINA/quartered shield motif with unicorn and griffin/CHARLES MEAKIN/ENGLAND (Godden 1964:426); late 19th c.
MANZ 1993 B-32 (FN B-843)	1	saucer base	sv	ext undec; int has delicate molded scalloped motif around cup well	<1/8" thk; stamped "M" or "W" on base, uglz stamped, greenish black mark = ENGLAND/W.H. GRINDLEY & Co. within wreath (Godden 1964:294); ca. 1914-1925
MANZ 1993 B-32 (FN B-843)	2 (refit)	sm plate body-ftrng-base	p	ext undec; int oglz lg floral decal on int base in lt and dk purple, green, yellow, brown; traces of delicate relief molding on plate body toward rim	<1/8" thk; unglzd ftrng; uglz? greenish black stamped mark = crown and snake motif/B.R.C.(Bauer, Rosenthal and Co.)/Voltaire/Germany; pre-1897 (Danckert 1981:195); Germany = 1885+
MANZ 1993 B-34 (FN B-848)	1	plate rim-marly brk; d = indet	nv	ext undec; sm amt relief molding below lip, beg at lip to marly break green, violet, dk and lt pink, and yellow rose decal	1/8" thk; ca. late 1920s-early 1930s
MANZ 1993 B-34 (FN B-848)	3 (same vessel)	shallow bowl (soup plate) rim-body-ftrng-base	nv	ext undec but glz has bluish tint from flow blue tp on int; int 1/4" flow blue tp band beg at lip, int has central tp motif on base; some kind of "Persian-like" scenery	1/8" thk; undecipherable uglz blue mark (only a short line); Shanghai pattern, possibly W.H. Grindley and Co., ca. 1891-1914 (per Gaston 1983: Plates 60 and 259)
MANZ 1993 B-34 (FN B-848)	2 (refit)	small plate rim-marly brk, body; est d = 8"	nv	ext undec; int oglz bright blue 1/16" line around lip, 1/2" below that a faded, <1/64" line, latter line intersected by ~2" in diam "windmill" scene decal in lt and dk blue, yellow, and brown	1/8" thk; ca. 1920 (see FN A-133 for pieces in same pattern)
MANZ 1994 A-1 (FN B-1045)	1	plate/saucer rim-body; d = indet	nv	ext undec; int oglz 1/4" decal band beg at lip, rect lt brown design, 1/16" gilt lining above and below band	3/16" thk
MANZ 1994 A-1 (FN B-1045)	1	med plate (saucer?) body-ftrng-base; hint of cup well present	p	ext undec; int oglz "Geisha Girl" (Kaga) dec raised rust decal/stencil house, fence, flowers with lt green accent	1/8" thk; unglzd ftrng; Japanese made; ca. 1900-1925
MANZ 1994 A-1 (FN B-1045)	1	lg bowl rim-body; d = 6"	p	int undec; ext oglz overlapping "icicle" motifs beg at lip, lt grn with orange over it; design very sloppy	~1/4" thk; probably Japanese
MANZ 1994 A-1 (FN B-1045)	1	cup body-ftrng-base	p	int undec; ext uglz blue tp oriental scene with fence, blue shading at base of design; cup and ftrng shapes are not traditional oriental	1/16" thk; unglzd ftrng; no mark visible; possibly Asian

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
MANZ 1994 A-1 (FN B-1045)	1	plate rim-marly brk-sm portion of body; ~d = 10"	nv	ext undec; int 1/2" decal band, 1/16" blue-gray lines defining top and bottom edge, with in band checkerboard motif, with in alternating blocks blue floral motifs; ovals with roses spaced? 1-1/4" apart with in band; beneath band, very thin series of vertical "hatch" marks	1/4" avg thkness; ca. 1920s
MANZ 1994 A-1 (FN B-1045)	1	plate rim-marly brk-body; ~d = 8"	nv	ext undec; int molded dec around marly brk, 1/16" uglz blue line directly under lip, 3/8" below lip a 1/32" lighter blue line	3/16" thk
MANZ 1994 A-1 (FN B-1045)	1	plate base	p	int undec, with fine-grained gravel fused to it (due to burning); ext raised ridge down middle of sherd, mark directly on one side of ridge	3/8" thk; mark = decal, outline cartouche with crown, inside turquoise with black lettering Meito China/MADE in/JAPAN, beneath cartouche "Hand Painted;" probably post-WW II
MANZ 1994 A-1 (FN B-1045)	1	bowl body	nv	ext undec; int portion of pink, rose, and green "cabbage rose" decal [probable Trellis pattern]	1/8" thk; American made; ca. 1930s
Unit 7 0-10 cm (FN B-251)	1	small, indet body	nv	ext undec; int spalled	not applicable
Unit 9 0-10 cm (FN B-273)	1	plate body	nv/sv	int and ext undec	3/16" thk
Unit 16 0-10 cm (FN B-473)	2	saucer rims-bodies	nv	ext undec; int oglz 1/16" line encircling lip, 1/2" below that a 1/32" line; probably part of a "bluebird" motif	1/8" thk; ca. late 1910s-1920s
Unit 17 Surface (FN B-492)	1	cup body	p	int undec; ext oglz lt green and pink floral decal and traces of oglz gilding	1/8" thk
Unit 17 Surface (FN B-492)	1	bowl body	p	int uglz blue hp abstract u-shaped motifs and fan shapes, ~1/16" blue band encircling lip; ext uglz blue hp lines up to ~1/4" in width	1/8" thk; similar examples in rest of assemblage; Japanese
Unit 17 Surface (FN B-492)	1	cup body	sv	int and ext undec	1/4" thk
Unit 17 Surface (FN B-492)	1	cup body	nv	int and ext undec	1/4" thk
Unit 17 0-10 cm (FN B-486)	2 (refit)	plate rim-marly brk; plate rim-marly brk-ftrng-base; d = 9"	sv	ext undec; int molded paneled rim extending to just below marly brk	1/4" thk; indet impressed mark, English; decorative style (paneled rim) suggests 1850s-1860s date of manufacture
Unit 17 0-10 cm (FN B-486)	2 (same vessel)	cup/bowl bodies	nv/sv	int and ext undec	1/8" thk
Unit 17 0-10 cm (FN B-486)	2 (refit)	plate rims-bodies; d = 10"	nv	ext undec; int has thin molded ridge 1/4" beneath lip	3/16" thk
Unit 17 0-10 cm (FN B-486)	1	ewer? body	nv	int and ext undec	~3/16" thk
Unit 17 0-10 cm (FN B-486)	1	cup? body	p	int undec; ext oglz lt green and pink floral decal and traces of oglz gilding	~1/8" thk (see FN B-492 for sherd from same vessel or set)

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
Unit 17 0-10 cm (FN B-486)	1	chamber pot rim-body; d = 10"	nv/sv	int and ext undec	3/16" thk
Unit 17 0-10 cm (FN B-486)	1	plate rim-marly brk; d = 10"	nv	int and ext undec	3/16" avg thk
Unit 17 0-10 cm (FN B-486)	1	plate rim-marly brk; d = 10"	nv/sv	int and ext undec	3/16" thk; burned areas on int and ext
Unit 17 0-10 cm (FN B-486)	1	ewer, jug, or sugar bowl ftrng-base	nv/sv	int and ext undec	1/8" thk; uglz brown tp mark = part of a crown and shield; maker unknown, probably ca. 1870-1900 based on style of mark
Unit 17 0-10 cm (FN B-486)	1	outflaring rim bowl rim-body; d = 10"	nv/sv	int and ext undec	~5/16" thk
Unit 17 0-10 cm (FN B-486)	1	bowl/cup body	p	int undec; ext uglz blue abstract floral tp	1/8" thk; probably Japanese
Unit 17 0-10 cm (FN B-486)	3 (2 refit, all from same vessel)	saucer rims-bodies, irreg-shaped lip; d = indet; body-ftrng-base	p	ext undec; int delicate relief molding below lip, oglz pink luster 3/16" thk line beg at lip; on base int oglz 1/32" pink luster line around cup well	1/16" thk at rim, base/body ~1/8" thk; unglzd ftrng
Unit 17 0-10 cm (FN B-486)	2	med bowl (or dish) rim-body, med bowl (or dish) body; ~d = 5" (body either warped in firing or deliberately pinched in)	p	int uglz blue hp abstract u-shaped motifs and fan shapes, ~1/16" blue band encircling lip; ext uglz blue hp lines up to ~1/4" in width	1/4" thk; Japanese (see FN B-492 and B-494 for sherd from same vessel or set)
Unit 17 0-10 cm (FN B-486)	1	saucer? body	p	ext undec; int discolored but has traces of rust enamel?	1/8" thk
Unit 17 0-10 cm (FN B-486)	1	unknown form body	nv	int and ext lustrous brown glaze with black speckles in int	1/8" thk
Unit 17 0-10 cm (FN B-486)	4	presentation mug; d = indet	p	int undec; ext pink luster, below rim an oglz hp dk blue flower with gilded outline and accent; beneath flower stenciled ... "present"	1/8-3/16" thk; unglzd ftrng
Unit 17 0-10 cm (FN B-486)	1	plate rim, irreg- shaped lip; d = indet	nv	ext undec; int molded bosses around lip with delicate raised floral motif below (refits with sherd from FN B-494)	1/8" thk; ca. 1880s
Unit 17 0-10 cm (FN B-486)	8 (misc sherds)	indet forms	nv	int and ext undec	not applicable
Unit 17 0-10 cm (FN B-486)	3 (misc sherds)	1 saucer base, 2 plate base	nv	int and ext undec	not applicable
Unit 17 10-20 cm (FN B-572)	1	saucer body	p	int and ext undec	~1/8" thk
Unit 17 10-20 cm (FN B-494)	4	plate ftrngs-bases	nv	int and ext undec	not applicable

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
Unit 17 10-20 cm (FN B-494)	1	indet ftrng-base, possibly to a bowl	sv	int and ext undec	base = 3/16" thk; worn ftrng
Unit 17 10-20 cm (FN B-494)	6	plate bodies	5 nv 1 sv	int and ext undec	not applicable
Unit 17 10-20 cm (FN B-572)	1	plate base	v, hw	int and ext undec	5/16" thk; ca. 1940s
Unit 17 10-20 cm (FN B-572)	1	plate base	nv	int and ext undec	1/4" thk
Unit 17 10-20 cm (FN B-494)	1	plate rim; irreg-shaped lip; d = indet	nv	ext undec; int molded bosses around lip with delicate raised floral motif below	1/8" thk (refits with sherd from FN B-486)
Unit 17 10-20 cm (FN B-494)	1	cup body	p	int undec; ext oglz airsprayed lt orange ground with area of green design	1/16" thk; probably Japanese; ca. early 1900s
Unit 17 10-20 cm (FN B-494)	8	~2"-deep oval serving dish	sv	int and ext undec	3/16" thk; partial uglz blk tp mark = incomplete motif with EN[GLAND] below; ca. 1891-early 1900s (rim sherd from FN B-486 refits)
Unit 17 10-20 cm (FN B-494)	1	saucer? rim; d = indet	nv	int and ext undec	1/8" thk
Unit 17 10-20 cm (FN B-494)	3	ewer bodies	nv	int undec; 1 sherd has relief-molded floral decoration	3/16" thk; ca. 1880s-1890s
Unit 17 10-20 cm (FN B-494)	1	bowl body	p	int uglz blue hp abstract U-shaped motifs; ext uglz blue hp lines up to ~1/4" in width	3/16" thk; similar sherds in rest of assemblage; Japanese
Unit 17 20-30 cm (FN B-575)	1	cup body	p	int and ext undec	1/8" thk
Unit 17 20-30 cm (FN B-575)	1	cup body-ftrng-base	v, hw	int and ext undec	5/16" thk; some areas of paste discolored, possibly from burning
Unit 17 20-30 cm (FN B-575)	1	plate body	nv	int and ext undec	3/16" thk
Unit 17 20-30 cm (FN B-575)	4	2 plate ftrngs-bases, 2 plate bases	nv	int and ext undec	1/8" thk
Unit 17 30-40 cm (FN B-578)	1	cup body	p	int and ext undec	1/8" thk
Unit 18 Surface (FN B-586)	1	serving? bowl lip unglzd; d = 10"	sw	gray paste; ext and int clear glz	3/8" avg thk; probably Japanese

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
Unit 18 Surface (FN B-586)	1	bowl? body	sw	buff paste; int and ext Bristol glz	1/4" thk; post-1915 (Greer 1981:264)
Unit 18 Surface (FN B-586)	1	bowl body-ftrng-base	nv	ext undec; int uglz blue abstract floral; white-slipped int and ext	~1/4" thk (refits with sherd in FN A-159)
Unit 18 0-10 cm (FN B-591)	1	plate rim	sv	int and ext undec	3/16" thk
Unit 18 0-10 cm (FN B-591)	1	indet body	sw	buff body; int and ext Bristol glz	1/4" thk; post-1915 (Greer 1981:264)
Unit 18 0-10 cm (FN B-591)	1	indet body	sw	reddish gray paste; int and ext lustrous brown slip glz	5/16" thk
Unit 18 0-10 cm (FN B-588)	1	indet body	sw	buff paste; int and ext lustrous brown slip glz	~1/4" thk
Unit 18 0-10 cm (FN B-591)	4 (same vessel)	cylindrical vessel bodies	sw	lt gray body; int and ext sg	1/4-3/8" thk
Unit 18 10-20 cm (FN B-594)	1	straight-sided cup rim-body	sv	int and ext undec	5/32" thk
Unit 18 10-20 cm (FN B-594)	1	lg bowl body	yw	buff paste; int and ext undec	5/16" thk
Unit 18 10-20 cm (FN B-594)	1	cylindrical vessel body	sw	gray paste; int and ext sg	5/16" thk
Unit 18 10-20 cm (FN B-594)	1	small, rectangular tile	p	int and ext undec	1-1/2" x 3/4" x 1/4"
Unit 19 10-20 cm (FN B-613)	1	saucer body-ftrng-base	nv	int and ext undec	3/16" thk
Unit 19 10-20 cm (FN B-613)	1	saucer rim	nv	int and ext undec	1/8" thk
Unit 20 0-10 cm (FN B-626)	1	sm deep (cereal/soup) bowl rim-body; ~d = 5"	nv	int undec; ext stenciled dark red stars around rim; molded horizontal ridges beg 7/8" below lip	3/16" thk
Unit 20 10-20 cm (FN B-631)	1	indet body	p	int surface spalled off; ext very dk brn or black glz	not applicable
Unit 21 Surface (FN B-670)	5 (same vessel)	cup rims-bodies (2), cup bodies (3)	nv	int undec; ext relief-molded rope border around slightly outflaring rim, paneled body, ~1/2" below lip purple, orange, blue, yellow, green, and brown oglz floral decal	1/8" thk; ca. 1930s-early 1940s

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
Unit 21 Surface (FN B-670)	6 (same vessel, 2 refit)	3 plate rims, 3 bodies; ~d = 3-1/2"	nv	ext undec; int 1/16" thk oglz gold line around rim, on two pieces traces of identical gold line around marly brk	~3/16" thk; ca. late 1930s; American made (see FN B-675)
Unit 21 Surface (FN B-670)	2 (refit)	plate bodies-base brks-bases	nv	int and ext undec	1/8-3/16" thk; may be the base to 6 sherds described above
Unit 21 Surface (FN B-670)	3 (could be from same vessel)	saucer/plate bodies	nv	int and ext undec	1/8" thk; all 3 discolored by burning
Unit 21 Surface (FN B-670)	1	handle to small cup?	sv	undec all surfaces	not applicable
Unit 21 Surface (FN B-670)	1	(serving/mixing) bowl body	sw	buff paste; int and ext deep blue slip glz; int has molded grape? motif	1/4" thk; probably 1930s-1940s
Unit 21 Surface (FN B-670)	1	bowl rim-body; ~d = 6-1/2"	p	ext undec; int molded thin ridge around rim, with accent wavy line molding apparently at intervals around rim	1/8" thk (see probable pcs to same vessel in FN B-675)
Unit 21 Surface (FN B-670)	2 (refit)	plate rims-marly brks-bodies-ftrngs-bases; d = 10"	p	ext undec; int relief-molded wavy-line art-deco-style motif around rim	1/8" thk; unglz ftrng
Unit 21 Surface (FN B-670)	1	saucer/plate base	p	int and ext undec	1/8" thk; traces of indet stamped uglz? mark with parts of a circle with a letter? in it; this base may actually belong with one of the 2 vessels described immed above
Unit 21 Surface (FN B-670)	1	med plate (saucer) rim-body; d = 6"	p	ext undec; int hp oglz black 1/16" lines—around rim and 3/4" beneath rim, 3/32" line runs perpendicular between lines, beneath zoned area an area of pinkish luster	3/16" thk; probably Japanese (refits with sherd in FN B-675)
Unit 21 Surface (FN B-670)	4 (same vessel)	cup rims (2), cup bodies-handles; ~d = 4"	p	int undec; ext oglz air-sprayed orange, yellow, and green, with traces of oglz <1/16" rust line around lip; handles have 1/16" oglz rust line down their middles	~3/32" thk; probably Japanese (see FN B-675 for sherds either to same cup or set)
Unit 21 Surface (FN B-670)	1	~1/3 of a med plate (saucer) rim-body-ftrng-base; d = 5-1/2" thk	p	ext undec; int traces of oglz airsprayed orange, ~1/16" rust line around lip	3/16-1/8"; unglzd ftrng; probably Japanese (same cup or set described immed above)
Unit 21 0-10 cm (FN B-677)	1	plate base	nv	int and ext undec	1/8" thk; burned int and ext
Unit 21 0-10 cm (FN B-675)	11 (handle frags refit, others probably from same vessel)	cup rims-bodies-handle frags; ~d = 3"	p	int undec; ext oglz air-sprayed shades of orange, hp green bands and grass? motifs, traces of oglz <1/16" rust line around lip; two handle pcs have 1/16" oglz rust line down their middles	3/32" thk; probably Japanese (see FN B-670 for sherds either to same cup or set)
Unit 21 0-10 cm (FN B-675)	1	toy cup rim-body-ftrng; d = indet	p	int undec; ext ~1/16" oglz hp blk line 3/16" below lip, above it lavender luster, beneath it yellow luster; oglz hp red strawberry with yellow dots, pink flower with yellow center, and lt green leaves, all outlined in black	~1/8" thk; unglzd ftrng; probably Japanese (see above for another pc in set)

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
Unit 21 0-10 cm (FN B-675)	5 (2 refit, others probably from same vessel)	med plate (saucer) rims-bodies-ftrngs-bases; d = 5"	p	ext undec; int oglz air-sprayed shades of orange, hp areas of green <1/16" rust line around lip	~1/8" thk; unglzd ftrng; probably Japanese (see FN B-675 and B-670 for cups in same set)
Unit 21 0-10 cm (FN B-675)	4 (all refit)	toy saucer rims-bodies-ftrngs-bases	p	ext undec; int ~1/6" oglz hp blk line 3/16" below lip, above it lavender luster, beneath it yellow luster; oglz hp pink, and orange and yellow flowers with grn leaves, all outlined in black	~1/8" thk; unglzd ftrng; probably Japanese (see above for other pcs in set)
Unit 21 0-10 cm (FN B-675)	2 (may be same vessel)	spout, body-ftrng-base, both to toy vessels	p	int and ext undec	1/16" thk
Unit 21 0-10 cm (FN B-675)	9 (3 definitely from same vessel)	bowl with irreg rims-bodies-ftrngs-bases; ~d = 6"	p	ext undec; int molded thin ridge around rim, with accent wavy line molding at intervals around rim	5/32" thk; unglzd ftrng; probable base to this vessel has indet oglz olive green stamped mark = ALIC.../circle with joined HR inside (same bowl or set as bowl noted in FN B-670)
Unit 21 0-10 cm (FN B-675)	10 (probably from same vessel)	plate rim, marly breaks, bodies, ftrng, base; d = indet	nv	ext undec; int 1/16" thk oglz gold line around rim, on 3 pieces traces of identical gold line around marly brk	~3/16" thk; probable base to this vessel has uglz blackish green stamped mark = [V]ERNON/..CHINA...RNON, CAL../029 (?); 1928-1948 (Lehner 1988:488-489) (same plate or set as plate noted in FN B-670)
Unit 21 0-10 cm (FN B-675)	1	med plate (saucer) body-ftrng-base	p	ext undec; int hp oglz black 1/16" line running around int, with 3/32" line running perpendicular to it; beneath zoned area an area of pinkish luster	1/8" thk; unglzd ftrng; probably Japanese (refits with sherd from FN B-670)
Unit 21 0-10 cm (FN B-675)	3 (probably from same vessel)	bowl rim and bodies; d = 6"	nv	ext undec; int outflaring rim with traces of oglz gold lining around lip, 3/4" below lip a 1/32" gold line around int	1/8" thk; ca. late 1930s (from same set as plate noted in FN B-670 and plate described below)
Unit 21 0-10 cm (FN B-675)	1	bowl rim; d = 6"	sv	ext undec; int outflaring rim with oglz 1/16" gold line around lip	3/16" thk
Unit 21 0-10 cm (FN B-675)	3	toy plate rims-marly brk-ftrng-base; ~d = 4"	p	ext undec; int ~1/16" oglz hp blk line 3/16" below lip, above it lavender luster, beneath it, yellow luster; on base a hp orangish strawberry outlined in blk, with yellow dots	3/32" thk; unglzd ftrng; probably Japanese (next two entries are in same set)
Unit 21 0-10 cm (FN B-675)	11 (same vessel, 3 handle pcs refit)	cup rims-bodies-handles-ftrng-base; ~d = 3-1/2"	nv	int undec; ext relief-molded rope border around slightly outflaring rim, paneled body, ~1/2" below lip purple, pink, blue, yellow, green, and brown oglz floral decal; square-shaped handle (refits with rim from FN B-670)	1/8" thk; ca. 1930s-early 1940s
Unit 21 10-20 cm (FN B-680)	2 (refit)	plate bodies-bases	nv	ext undec; int oglz floral decals in blue, brown, yellow, purple, green, and orange, placed where base and body join	~1/8" thk; ca. 1930s-early 1940s (either same plate or set as pcs in FN B-670 and B-675)
Unit 21 10-20 cm (FN B-680)	1	med plate (saucer) rim-body; d = indet	p	ext undec; int airsprayed green, gray, and yellow	1/8" thk; probably Japanese
Unit 21 10-20 cm (FN B-680)	1	cup rim-body; d = 3-1/2"	p	int undec; ext oglz 1/16" black lines, one around lip, one 3/4" below lip, perpendicular 3/32" line coming off lower line; between lines pinkish yellow luster	~5/32" thk; probably Japanese (same set as items in FN B-670 and B-675)
Unit 22 Surface (FN B-688)	1	plate/platter base	nv	ext undec; int has portion of oglz bluish gray and black bluebird decal	3/16" thk; broken surfaces of sherd are heavily stained; ca. late 1910s-1920s

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
Unit 22 Surface (FN B-688)	4 (possibly same vessel)	saucer? marly break-base	nv	ext undec, interiors of sherds grouped here have portions of oglz bluish gray and black bluebird decals	~1/8" thk; 2 of sherds show evidence of burning
Unit 22 Surface (FN B-688)	1	plate ftrng-base	nv	int and ext undec	3/16" thk; both int and ext heavily crazed
Unit 22 Surface (FN B-688)	1	saucer rim; d = indet	nv	~1/4" band beg at lip bounded by 1/16" gold" lining on either edge; additional dec may have existed with in the band	1/8" thk; int and ext crazed; area where dec is burned
Unit 22 Surface (FN B-688)	1	straight-sided child's mug rim-body	nv	int undec; ext uglz blk tp broom and fireplace scene, with portion of a shoe, hp detail in lt and dk brown; 5/8" below lip a grayish blue 1/16" line encircling cup and meeting on either side of a tp rhyme, of which portion remains: ["]...D,/... A GOOD/[BO]Y AM I"	1/8" thk; late 19th-early 20th c.; probably English
Unit 22 Surface (FN B-688)	1	plate/saucer body	p	ext undec; int oglz airsprayed lt blue over a stencil (of leaves?), with gray over that to one side	1/8" thk; probably Japanese
Unit 22 0-10 cm (FN B-691)	1	cup handle fragment	nv	oglz bright blue tapering line down middle of ext portion of handle	not applicable
Unit 22 0-10 cm (FN B-691)	1	cup handle frag	nv	undec	not applicable
Unit 22 0-10 cm (FN B-691)	1	saucer rim-body; d = 5"	nv	ext undec; int 1/32" bright blue oglz line around lip	1/8" thk
Unit 22 0-10 cm (FN B-691)	1	saucer? rim	p	int and ext undec	1/8" thk; fused-on slag from burning
Unit 22 0-10 cm (FN B-691)	1	saucer/plate rim; d = indet	nv	ext undec; int indet molding around rim	<3/16" thk
Unit 22 0-10 cm (FN B-691)	2 (diff vessels)	misc bodies	p	int and ext undec, except for one example with ext oglz pink airspraying	both 3/32"; fused-on slag from burning
Unit 22 0-10 cm (FN B-691)	1	saucer rim; d = 5"	nv	ext undec; int 1/32" oglz (formerly) bright blue (now discolored through burning) line around lip; beneath that part of oglz wing of bluish-black bluebird decal	1/8" thk; int and ext surfaces burned; ca. late 1910s-1920s
Unit 22 0-10 cm (FN B-691)	1	plate rim; ~d = 9"	nv	ext undec; int 1/32" oglz bright blue line around lip, ~1" below that part of oglz wing of a blueish-black bluebird decal	~3/16" thk; ca. late 1910s-1920s
Unit 22 0-10 cm (FN B-691)	2 (diff vessels)	misc rims	nv	one is undec int and ext; other has relief molding on rim int	both 5/32" thk; fused-on slag from burning
Unit 22 0-10 cm (FN B-691)	1	plate body	nv	int and ext undec	3/16" thk; fused-on slag from burning
Unit 22 0-10 cm (FN B-691)	3 (same vessel)	cup rim-bodies, irreg rim; d = indet	p	int undec; ext airsprayed lt grn with oglz hp gold accents	1/16-1/32" thk; Japanese

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
Unit 22 0-10 cm (FN B-691)	1	saucer body-ftrng-base	p	ext undec; int traces of oglz lt grn lines and bands	~1/8" thk; unglzd ftrng; Japanese
Unit 22 0-10 cm (FN B-691)	3 (diff vessels)	plate base; plate body-ftrng-base; saucer? body	nv	int and ext undec	3/16", 3/16", and 3/16" thk, respec
Unit 22 0-10 cm (FN B-691)	1	indet rim	sw?	int and ext green glz	~1/8" thk, fused-on slag from burning
Unit 22 0-10 cm (FN B-691)	1	saucer? body-ftrng-base	nv	ext undec; int traces of oglz green floral (leaf) decal	3/16" thk; partial uglz greenish black stamped mark = outline of pitcher with ...S.T./???
Unit 22 0-10 cm (FN B-691)	4 (refit)	saucer rims-bodies-ftrng-base; d = 6"	nv	ext undec; int 1/4" oglz decal band—black ground with cartouches with white background, alternating floral motifs over the ground, pink and green rose, daisies in yellow and white, and blue, band edged in ~1/32" gold lining	1/8" thk; ca. 1920s
Unit 22 0-10 cm (FN B-691)	1	saucer/plate base	nv	ext undec; int hp green indet motif	1/8" thk; int surface burned
Unit 22 0-10 cm (FN B-691)	2 (same vessel)	toy teapot spout and body	sw	int has some green slip glz; ext green slip glz	~1/8" thk; probably Japanese; vessel exhibits pitting from being burned
Unit 22 10-20 cm (FN B-695)	1	body-ftrng-base to elongated vessel	p	int and ext undec	1/8-1/4" thk; unglzd ftrng; probably Japanese; fused-on slag from burning
Unit 23 0-10 cm (FN B-716)	1	cup/bowl body	p	int undec; ext uglz lt and bright shades of airsprayed blue over stencils	5/16" thk; Japanese
Unit 25 0-10 cm (FN B-908)	1	body sherd	sw	buff body; int and ext very fine sg surface	~5/16" thk
Unit 25 0-10 cm (FN B-908)	2	cup bodies	p	int and ext undec	3/32" thk
Unit 25 0-10 cm (FN B-908)	2	cup rim, cup body-ftrng-base	v, hw	int and ext undec	3/8" thk, base portion burned; ca. 1940s
Unit 25 0-10 cm (FN B-908)	1	saucer rim; ~d = 6"	v, hw	ext undec; int 1/4" thk dk red uglz band 1/4" below lip, 1/4" below that 1/32" dk red line	5/32" thk; ca. 1940s
Unit 25 10-20 cm (FN B-927)	1	unknown trough-shaped object 1/2" wide	p	unglzd (bisque); int and ext undec	3/32" thk; one side has impressed lettering "CANOE," other side has undecipherable impressed lettering
Unit 25 10-20 cm (FN B-927)	2	plate body, plate body-ftrng-base	sv	int and ext undec	3/16" thk; burned
Unit 25 10-20 cm (FN B-927)	2	bowl bodies, unusual ridge on int	sw	buff body; int and ext very fine sg surface	3/16" thk (see probable sherd to same vessel in 0-10 cm level)

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
Unit 25 10-20 cm (FN B-927)	1	bowl? (rolled) rim-body	v, hw	int and ext undec	3/16" thk; ca. 1940s
Unit 25 20-30 cm (FN B-939)	1	plate rim-marly brk; d = 10"	nv	ext undec; int 1/8" ridge around rim, uglz 1/32" yellow line 1/2" beneath lip	5/16" thk
Unit 25 20-30 cm (FN B-939)	1	bowl? body	sw	buff body; int and ext very fine sg surface	3/8" thk (see probable sherd to same vessel in 10-20 cm level)
Unit 25 20-30 cm (FN B-939)	1	cup body	nv	int and ext undec	1/8" thk
Unit 25 20-30 cm (FN B-939)	1	cup rim-body	v, hw	int and ext undec	3/8"; ca. 1940s
Unit 25 40-50 cm (FN B-965)	1	cup rim; d = indet	v, hw	int and ext undec	1/4" thk; ca. 1940s
Unit 25 40-50 cm (FN B-965)	1	saucer? rim spall	v, hw	int uglz dk green 1/64" line 1/2" beneath lip, 1/32" line 1/8" below that	ca. 1940s
Unit 25 40-50 cm (FN B-965)	1	bowl? (rolled) rim-body	v, hw	int and ext undec	3/16" thk; probable sherd to same vessel in 10-20 cm level; ca. 1940s
Unit 26 Surface (FN B-990)	1	saucer rim-body-ftrng-base; est d = 4"	p	ext undec; int (all oglz) beg at lip 7/16" purple luster wash band, 1/16" black line, orange luster wash below over rest of surface; on orange luster rust, green, black, and white hp floral	~1/8" thk (very thin, almost eggshell); unglzd ftrng; Japanese or Continental (e.g., Czechoslovakian)
Unit 26 10-20 cm (FN B-996)	1	plate body-ftrng-base	nv	ext undec; oglz floral orange, yellow, black decal on base int	3/16" thk; sherd partially burned; ca. 1930s-early 1940s
Unit 26 10-20 cm (FN B-996)	1	saucer rim-body; d = 6"	nv	ext undec; int has traces of oglz gold accent	5/32" thk
Unit 26 20-30 cm (FN B-1007)	1	>1/3 of a cup; d = 2-1/2"	p	ext undec; int oglz hp abstract, bird, and cloud motifs in blk, gray, rust, white, and gold	1/8" thk; unglzd ftrng; probably Japanese
Unit 26 20-30 cm (FN B-1007)	1	cup? body-ftrng-base, prominent ring base	nv	int and ext undec	1/8" thk
Unit 26 20-30 cm (FN B-1007)	5 (3 refit)	cup rim-body, handle frag; d = 4"	nv	ext 5/8" molded grape, fruit, and leaf motif 1/2" below lip; int beg ~3/16" below lip 1-1/8" oglz floral decal band in yellow, green, blue, purple, and pink; handle painted uglz in pink	1/8" thk
Unit 26 30-40 cm (FN B-1017)	1	saucer rim-body; d = 5-1/2"	nv	int and ext undec	1/8" thk
Unit 26 30-40 cm (FN B-1017)	1	cup? body-ftrng-base, prominent ring base	nv	int and ext undec	1/8" thk; from same vessel as above

Table D.1.
Manzanar Historical Ceramics (key to abbreviations used listed at end of table).

Provenience (Field No.)	No. of Sherds[a]	Vessel Form[b]	Body[c]	Decoration[d]	Remarks[e]
Unit 26 30-40 cm (FN B-1017)	1	saucer rim-body; d = 5"	nv	ext undec; int glz gold stenciled/stamped abstract floral motif beg at lip and extending 5/8", 1/64" gold line 3/4" beneath lip	5/16" thk
Unit 26 40-50 cm (FN B-1023)	1	plate rim-marly brk; irreg lip; est d = 10"	nv	ext undec; int remnants of 1/16" gold line around lip; lt and dk green, gray, yellow, and orange rose decal beginning 1/2" below lip	3/16" thk; rust (water) stained on broken surfaces; ca. 1930s-1940s

Key to abbreviations and terms:

avg = average
beg = beginning
brk = break
ca. = circa
cont = continue(s)
d = diameter
dec = decorated/decoration
diff = different
discont = discontinuous
dk = dark
est = estimate
ext = exterior
ftrng = footring
glz/glzd = glaze/glazed
grp/grps = group/groups
hp = handpainted
ht = height
hw = hotelware
immed = immediately
imp = impressed
indet = indeterminate
ind = individual
int = interior
irreg = irregular
junc = juncture
lg = large
lt = light
manuf = manufactured
marly = part of plate between the center (or cavetto) and rim
med = medium
misc = miscellaneous
nv = nonvitreous
oglz = overglaze
p = porcelain
pc/pcs = piece/pieces
pt = part
rect = rectilinear
rep = represent(s)
respec = respectively
rng(s) = ring(s)
rw = redware
sg = salt glaze(d)
sm = small
sv = semivitreous
sw = stoneware
thk = thick
tp = transfer
undec = undecorated
uglz = underglaze
unglzd = unglazed
unid = unidentified
v = vitreous
yw = yellowware

a. Sherds are grouped by "minimum vessel" in this column, whenever possible. An attempt is made to indicate the degree of completeness for each intact or reconstructible vessel. Whether or not the sherds refit, or are probably from the same vessel, is also noted.

b. This column represents the analyst's assessment of the overall form (e.g., cup, plate, saucer, bowl, etc.) plus a description, in shorthand form, of how many vessel components are actually present for the form, given the sherds at hand. For example, saying that for a bowl, the "rim-body-ftrng-base" is represented indicates that for this artifact, the entire form is represented by this particular sherd. The components are joined by a dash to show that they are continuous. Also included in this column are measurements for vessel rim and footring diameter. See above for pertinent abbreviations. Terminology for Japanese or suspected Japanese forms is adapted from Costello and Maniery (1988).

c. This column provides information on ware, e.g., whether the sherd is nonvitreous (nv), semivitreous (sv), or vitreous (v) white-bodied earthenware, or some gradation or variation thereof, such as hotelware (hw); porcelain (p); stoneware (sw); redware (rw); yellowware (yw); and terra cotta. Information on paste/body color is provided for stoneware sherds.

d. Information on interior and exterior vessel decoration is presented in this column, using decorative categories explained in the text.

e. This column includes information on vessel thickness and other general observations about unique characteristics of the item, e.g., whether the footring is unglazed (indicative of porcelain or other highly vitrified body); descriptions of makers' marks, if present; evaluation of post-depositional alterations to the artifact (e.g., whether it is burned, water stained, etc.); whether there are cross-referenced ceramics in the collection; and, for porcelain, whether an item can be identified as Japanese made, or less specifically, as Asian. If possible, manufacturing dates are provided for the item in question. These dates are based either on information from makers' marks or company histories or on stylistic variation previously documented by the analyst (Fryman and Majewski 1995; Majewski 1994; Majewski and O'Brien 1987). Dates were not provided unless the analyst felt confident that the assessment was correct ± an error factor of about 10%.

Table D.2.

Date Ranges for Historical Ceramics by Provenience Based on Manufacturers' Marks, Ware, and Decorative Style.

Provenience	No.	American	English	Japanese	Other	NA	Date Range(s)*
MANZ 1993 A-4 Locus B	4	0	1	0	0	3	English: ~1892-1900 NA: late 1920s-early 1930s
MANZ 1993 A-6	12	3	0	0	0	9	American: 1920, ~1940s NA: 1920s-1930s, 1930s-1940s
MANZ 1993 A-7	42	1	5	1	8	27	English: 1883-1913, ~1892-1900, ~1906+ Czech: 1918-1939 NA: early 20th c., late 1910s-1920s, late 1920s-early 30s, ~1930s, ~1930s+
MANZ 1993 A-10	3	0	0	0	0	3	NA: ~1880s-1910, late 1910s-1920s
MANZ 1993 A-11	3	0	0	0	1	2	German/French: late 19th c. NA: late 1920s-1930s
MANZ 1993 A-13	15	2	0	1	0	12	American: ~1890-1930, 1921, 1920s-1930s NA: ~1930s-1940s, late 19th c.-early 20th c.
MANZ 1993 A-15	10	0	0	0	0	10	NA: early 1900s, late 1910s-1920s, ~1920s-early 30s, ~1930s
MANZ 1993 A-16	17	3	0	3	0	11	American: ~1910s-1920s, ~1940s NA:. 1910s-1920s, ~1930s-early 1940s
MANZ 1993 A-19	2	1	0	0	0	1	American: early 1900s+
MANZ 1993 A-20	2	0	0	1	0	1	Japanese: ~1900-1925
MANZ 1993 A-21	2	0	0	0	0	2	NA: ~1930s
MANZ 1993 A-27	18	1	1	4	0	12	American: pre-1904 English: 1891-1900 NA: 1880s-1890s, late 19th c.-early 20th c., 1920s-1930s, ~late 1920s-early 1930s
MANZ 1993 A-30 Camouf. Factory	1	1	0	0	0	0	American: ~1940s
MANZ 1993 A-30 Garage Block	1	1	0	0	0	0	American: 1942
MANZ 1993 A-30 Hospital Block	7	3	0	0	0	4	American: ~1940s NA: late 1920s-1930s
MANZ 1993 A-30 Root Cellar	1	0	0	0	0	1	
MANZ 1993 A-30 Service Station	3	1	0	0	0	2	American: ~1940s
MANZ 1993 A-30 Staff Housing	4	0	0	0	0	4	NA: ~1940s, 1945+
MANZ 1993 A-30 West Warehouse	3	0	0	0	0	3	NA: ~1930s?
MANZ 1993 A-30 Block 3	1	0	0	0	0	1	
MANZ 1993 A-30 Block 4	1	0	0	0	0	1	
MANZ 1993 A-30 Block 12	1	0	0	0	0	1	NA: ~late 1930s-early 1940s
MANZ 1993 A-30 Block 13	25	5	0	2	0	18	American: ~1940s

Table D.2.

Date Ranges for Historical Ceramics by Provenience Based on Manufacturers' Marks, Ware, and Decorative Style.

Provenience	No.	American	English	Japanese	Other	NA	Date Range(s)*
MANZ 1993 A-30 Block 14	9	5	0	1	0	3	American: ~1940s, 1941 NA: ~1930s+
MANZ 1993 A-30 Block 15	8	3	1	0	0	4	American: ~1920s English: 1891-1910 NA: 1880s-1910
MANZ 1993 A-30 Block 19	6	0	0	2	0	4	NA: ~1920s, ~1930s
MANZ 1993 A-30 Block 20	11	0	0	11	0	0	Japanese: pre-1940
MANZ 1993 A-30 Block 21	6	0	0	2	0	4	Japanese: 1921+
MANZ 1993 A-30 Block 23	2	0	1	0	0	1	English: 1905-1920 NA: ~1930s
MANZ 1993 A-30 Block 25	8	0	0	7	0	1	Japanese: 1921+
MANZ 1993 A-30 Block 26	5	1	1	2	0	1	American: ~1940s English: 1883-1913
MANZ 1993 A-30 Block 28	1	0	0	1	0	0	
MANZ 1993 A-30 Block 29	3	0	0	0	0	3	NA: ~1930s-1940s
MANZ 1993 A-30 Block 31	3	3	0	0	0	0	American: ~1940s
MANZ 1993 A-30 Block 32	3	1	0	1	0	1	American: ~1940s NA: late 1910s-1920s
MANZ 1993 A-30 Block 34	3	0	0	0	0	3	American: ~1940s NA: ~1920s?, ~1920s
MANZ 1993 A-30 Firebreak A6	1	0	0	0	1	0	German: late 19th c.
MANZ 1993 A-30 Firebreak B6	1	0	0	0	0	1	
MANZ 1993 A-30 Firebreak C4	1	0	0	0	0	1	
MANZ 1993 A-30 Firebreak E6	2	0	1	0	0	1	English: ~1880-1896
MANZ 1993 A-30 Feature P-17	1	0	0	1	0	0	
MANZ 1993 A-30 Feature P-19	2	1	0	0	0	1	American: ~1930s NA: late 19th c.-early 20th c.
MANZ 1993 A-30 Feature P-20	2	1	0	0	0	1	
MANZ 1993 A-30 Feature P-23	1	0	0	0	0	1	
MANZ 1993 A-30 Feature P-24	1	0	0	1	0	0	Japanese: 1921+
MANZ 1993 A-30 Feature P-26	8	5	1	1	0	1	American: ~1940s English: ~1940s Japanese: 1921+

Table D.2.

Date Ranges for Historical Ceramics by Provenience Based on Manufacturers' Marks, Ware, and Decorative Style.

Provenience	No.	American	English	Japanese	Other	NA	Date Range(s)*
MANZ 1993 A-30 Feature P-28	1	1	0	0	0	0	American: ~1940s
MANZ 1993 A-30 Feature P-30	2	2	0	0	0	0	American: ~1940s, early 1940s
MANZ 1993 A-30 Feature P-34	1	1	0	0	0	0	American: 1940s
MANZ 1993 A-30 Feature P-46	1	0	0	0	0	1	NA: ~1930s-1940s
MANZ 1993 A-30 Feature P-66	2	0	0	0	0	2	
MANZ 1993 A-30 NE Perimeter	1	0	0	0	0	1	
MANZ 1993 A-30 SW perimeter	2	0	0	1	0	1	
MANZ 1993 A-30 in road east of Block 35	1	0	1	0	0	0	English: 1842-1867
MANZ 1993 A-32	7	0	0	0	0	7	NA: late 1920s-1930s, ~1930s+, 1945+
MANZ 1993 A-36 Locus A	3	0	1	2	0	0	English: ~1885-1910
MANZ 1993 A-37 Locus A	1	0	0	1	0	0	
MANZ 1993 A-37 Locus C	8	5	0	1	0	2	American: ~1930s-1940s NA: ~1930s
MANZ 1993 B-1 Locus A	14	0	1	0	0	13	English: 1878-1894
MANZ 1993 B-2	5	0	1	1	3	0	English: ~1890+ Austrian: late 19th c.-early 20th c.
MANZ 1993 B-4	3	0	0	0	0	3	
MANZ 1993 B-7	77	10	2	9	1	55	American: ~1890-1900, 1908-1930, ~late 1910s-1928, 1916-1928, 1920s-1940s, ~1930s English: late 19th c.-early 20th c., ~1913+, 1920+, 1922-1929 Japanese: late 19th c.-early 20th c., early 1900s, ~late 1910s-1920s, ~1900-1925, ~1920s, 1921+, ~1920s-1930s, ~1930s German: 1885+ NA: 1880s+, 1920s+, ~1930s, ~1930s-early 1940s, late 1930s-early 1940s, 1945+
MANZ 1993 B-8	74	23	0	40	0	11	American: 1920s-1930s, 1929, ~1930s, 1930s+, 1938, ~1940s, 1942, 1943 Japanese:: 1921+, 1940 NA: ~1920s-early 1930s, late 1920s-1930s, 1930s-early 1940s
MANZ 1993 B-12	3	0	0	0	0	3	
MANZ 1993 B-16	8	0	0	1	0	7	NA: ~1880s, ~1930s-early 1940s
MANZ 1993 B-20	1	0	0	0	0	1	NA: ~1880s

Table D.2.

Date Ranges for Historical Ceramics by Provenience Based on Manufacturers' Marks, Ware, and Decorative Style.

Provenience	No.	American	English	Japanese	Other	NA	Date Range(s)*
MANZ 1993 B-22	15	2	2	0	1	10	American: 1930s English: 1890-1906 German/French: late 19th c.-early 20th c. NA: ~1880s
MANZ 1993 B-24	1	0	0	0	0	1	
MANZ 1993 B-29	1	1	0	0	0	0	American: ca.. 1940s
MANZ 1993 B-32	39	6	11	9	2	11	American: ~1840-1890, 1877-1900, ~1880-1904, 1900-1935 English: ~1878-early 1900s, ~1880s, ~1914-25, late 19th c., ~1891-1906 German: 1885-1897 NA: ~1890-1930
MANZ 1993 B-34	6	0	3	0	0	3	English: ~1891-1914 NA: ~1920s, ~late 1920s-early 30s
MANZ 1994 A-1	8	1	0	2	0	5	American: ~1920s Japanese: 1900-25, 1945+
Excavation Unit 7	1	0	0	0	0	1	
Excavation Unit 9	1	0	0	0	0	1	
Excavation Unit 16	2	0	0	0	0	2	NA: ~late 1910s-1920s
Excavation Unit 17	78	2	10	6	0	60	English: ~1850s-1860s, ~1891-early 1900s Japanese: ~early 1900s NA: ~1870-1900, ~1880s, ~1880s-1890s
Excavation Unit 18	15	0	0	1	0	14	NA: 1915+
Excavation Unit 19	2	0	0	0	0	2	
Excavation Unit 20	2	0	0	0	0	2	
Excavation Unit 21	94	16	0	33	0	45	American: 1928-1948 NA: ~1930s-early 1940s, 1930s-1940s, ~late 1930s, ~1930s-early 1940s
Excavation Unit 22	38	0	2	7	0	29	English: late 19th-early 20th c. NA: ~late 1910s-1920s
Excavation Unit 23	1	0	1	0	0	0	
Excavation Unit 25	19	0	0	0	0	19	NA: ~1940s
Excavation Unit 26	14	0	0	1	1	12	NA: ~1930s-1940s
Total	818	112	47	157	18	484	

* NA - not attributed.

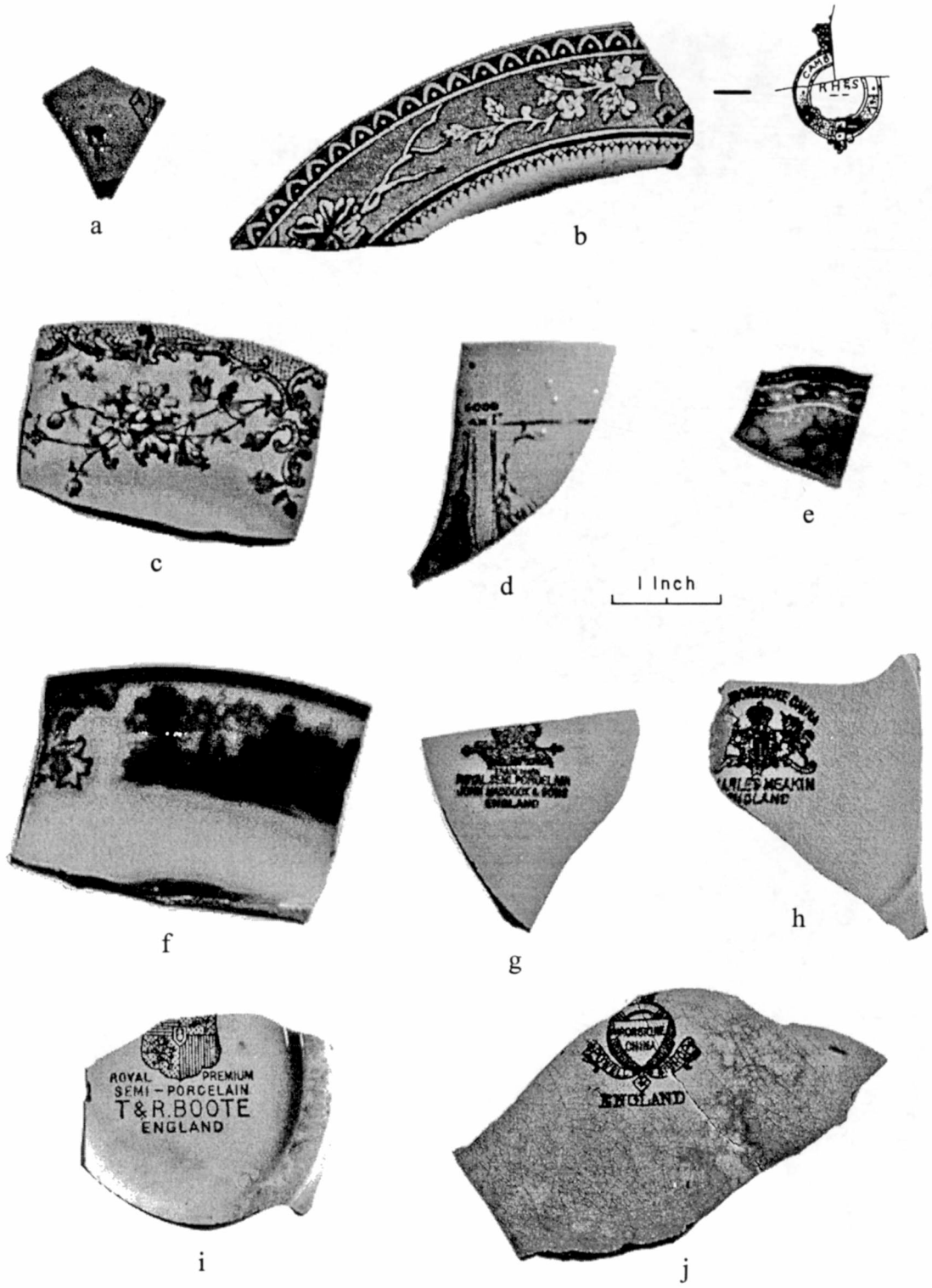


Figure D.1. Ceramics and manufacturers' marks associated with the 1860-1910 ranching period at Manzanar; a. portion of a British registry backmark (FN A-97); b. brown floral transfer print (left) and "Cambridge" backmark (right, FN B-843); c. bluish-black floral transfer print (FN B-841); d. polychrome transfer print (FN B-688); e-f. flow blue floral transfer prints (FN B-773 and FN B-848); g. John Maddock & Sons backmark (FN B-458); h. Charles Meakin backmark (FN B-843); i. T & R Boote backmark (FN B-843); j. Powell & Bishop backmark (FN B-843).

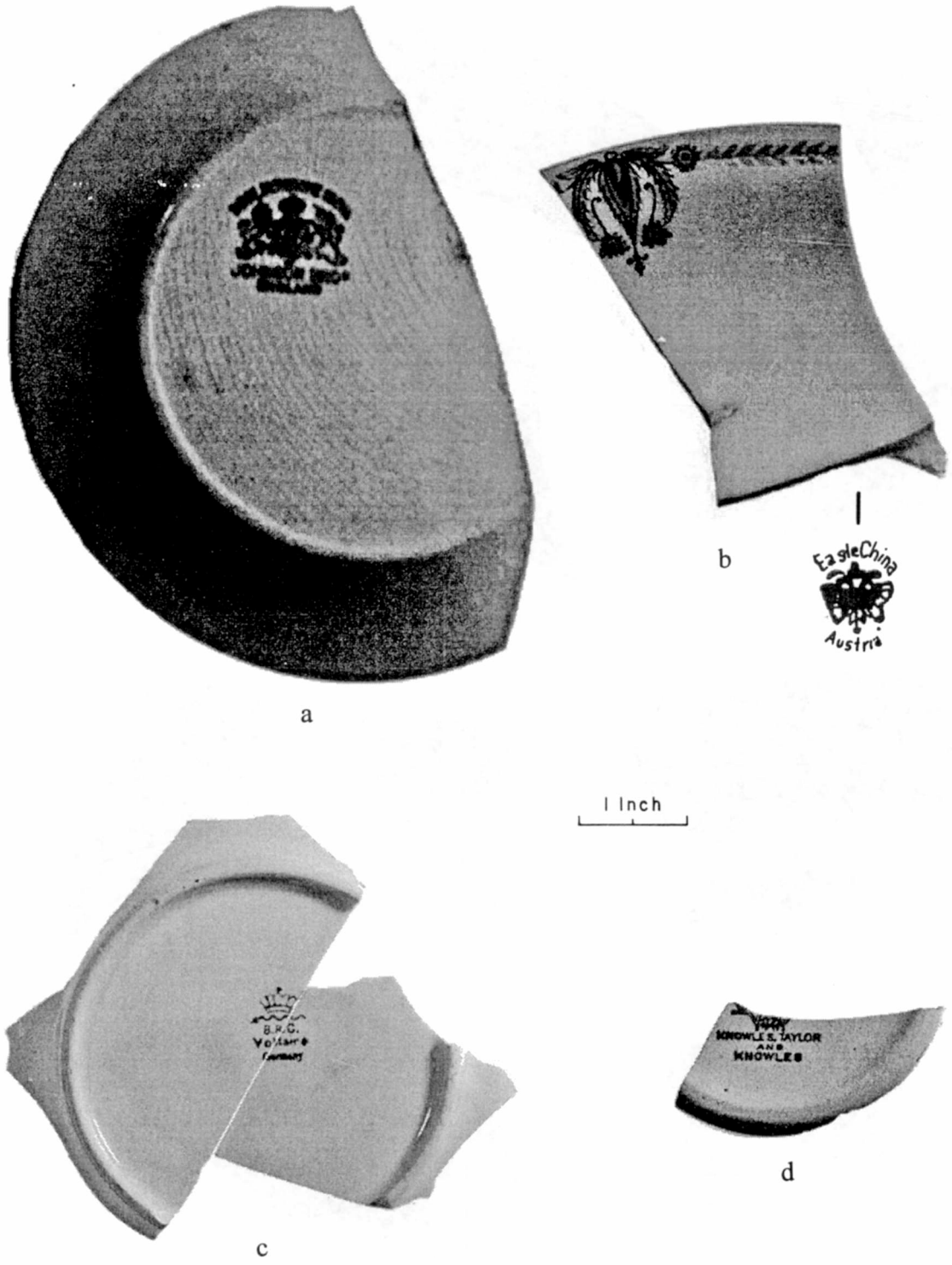


Figure D.2. Ceramics and manufacturers' marks associated with the 1860-1910 ranching period at Manzanar; a. Johnson Bros. backmark (FN B-462); b. Austrian bowl fragment (upper) and backmark (lower, FN B-294); c. German backmark (FN B-843); d. Knowles, Taylor and Knowles backmark (FN B-843).

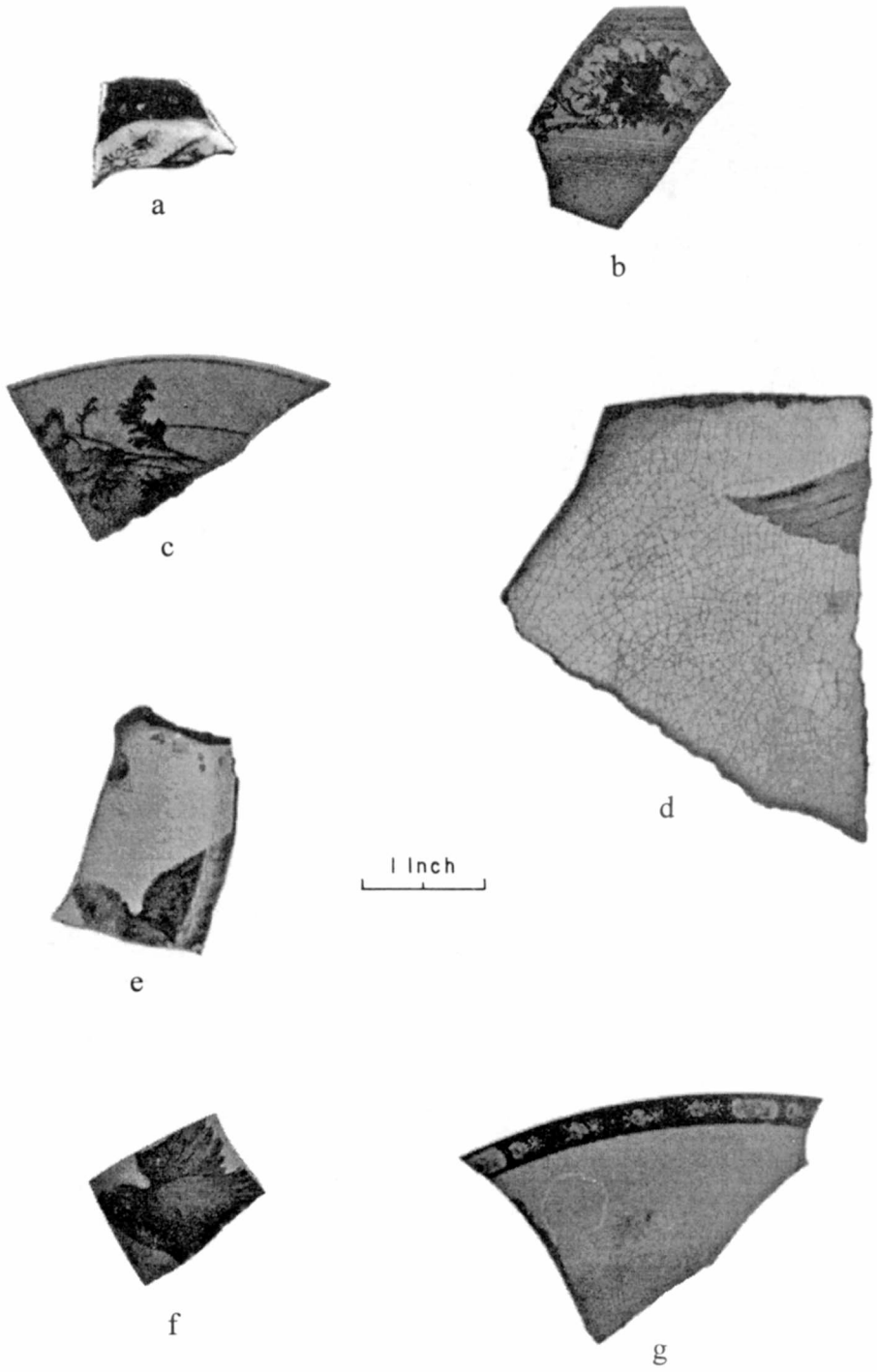


Figure D.3. Ceramics and manufacturers' marks associated with the 1910-1935 Manzanar townsite period; a. Kaga/Geisha Girl ware (FN B-753); b-c. examples of overglaze floral decals (FN B-41); d-f. examples of overglaze bluebird decals (FN B-990 and A-89); g. decal rim band (FN A-135).

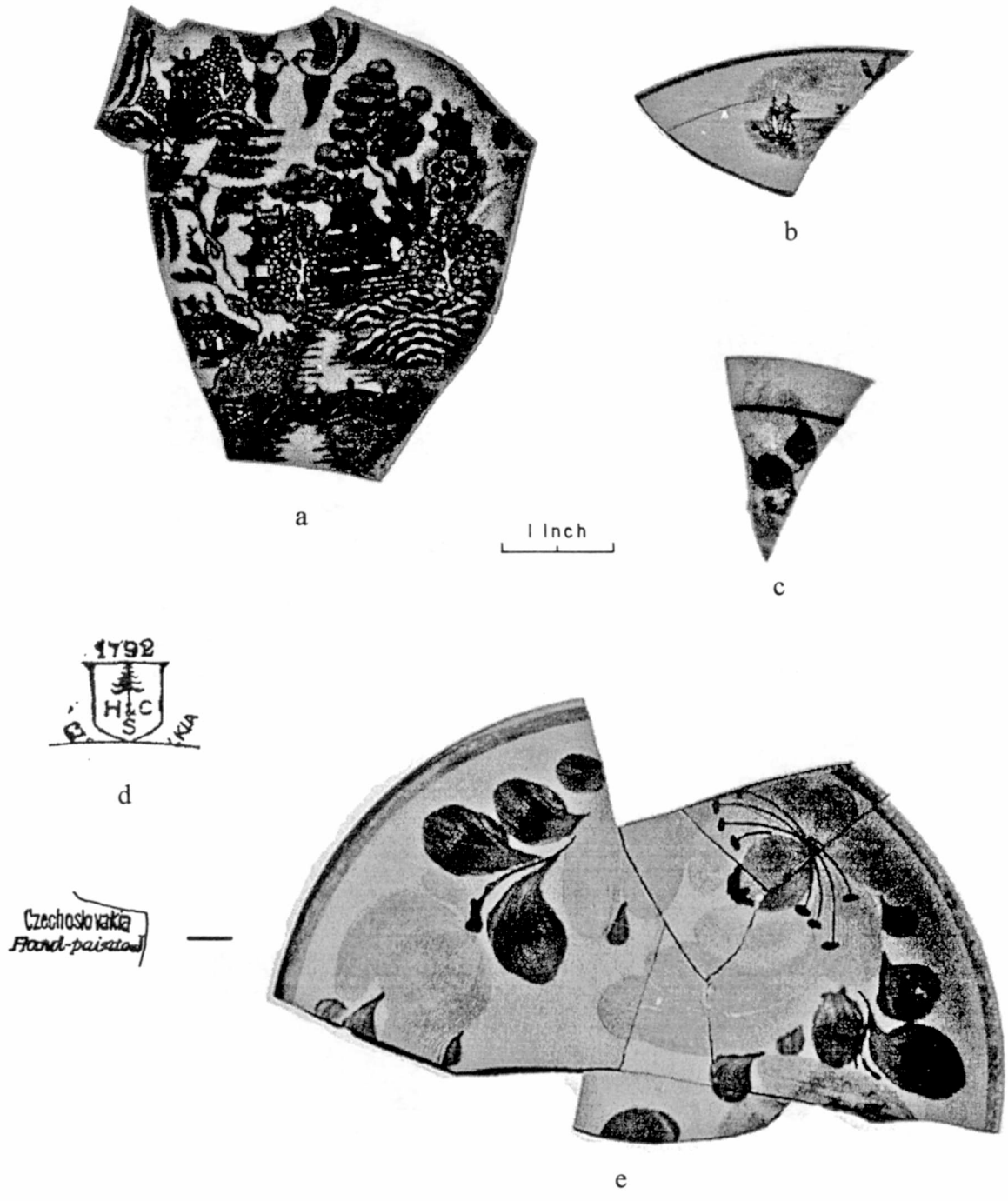


Figure D.4. Ceramics and manufacturers' marks associated with the 1910-1935 Manzanar townsite period; a. blue "willow" pattern transfer-printed sherd (FN A-197); b. overglaze windmill decal (FN B-848); c. possible Japanese Art Deco-style luster and handpainted decoration (FN B-990); d. Czechoslovakian backmark (FN B-458); e. Czechoslovakian backmark (left) and plate with handpainted decoration (right, FN B-460).

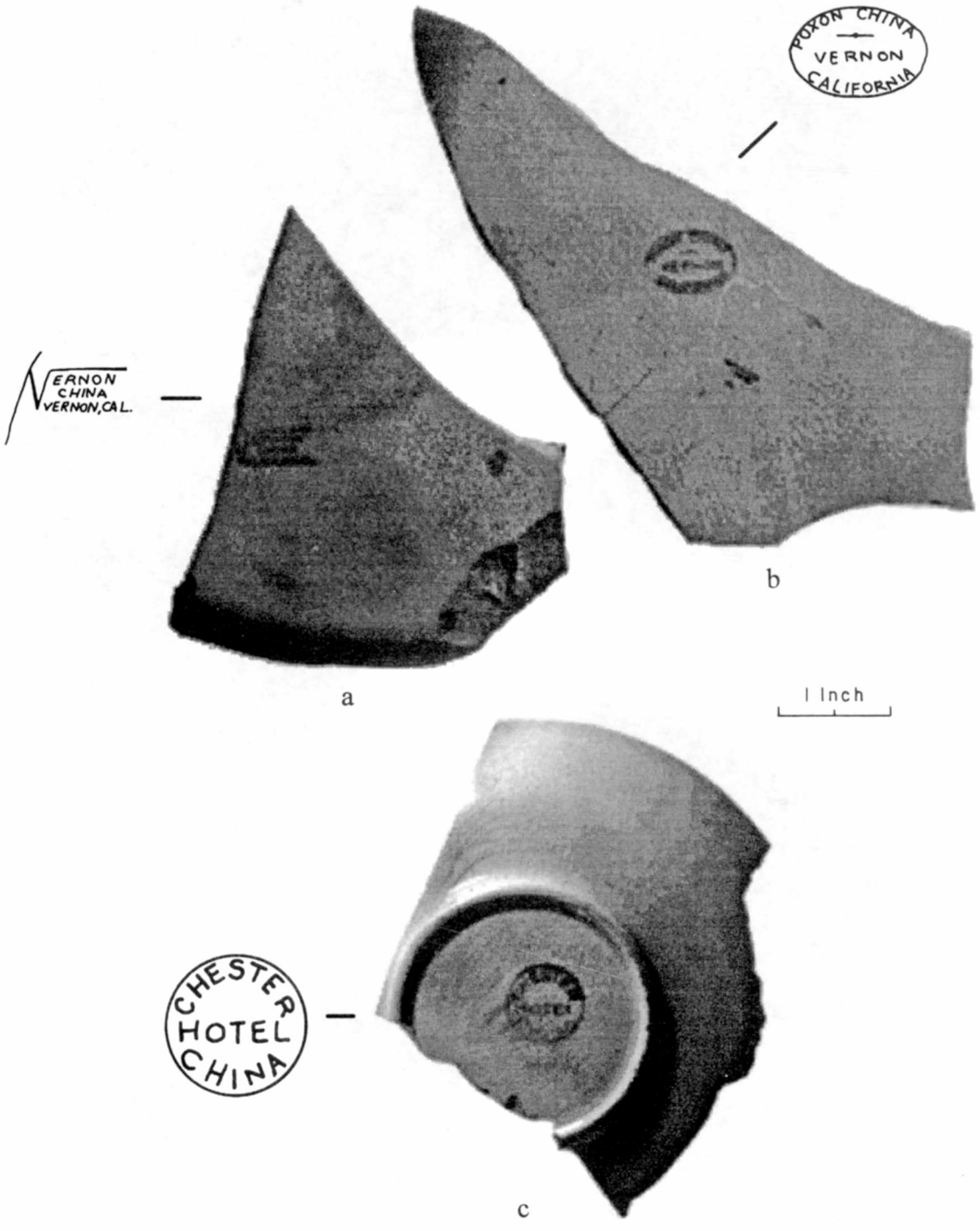


Figure D.5. Ceramics and manufacturers' marks associated with the 1910-1935 Manzanar townsite period; a. Vernon China backmark (FN B-753); b. Poxon China backmark (FN B-753); c. Chester Hotel China backmark (FN B-767).

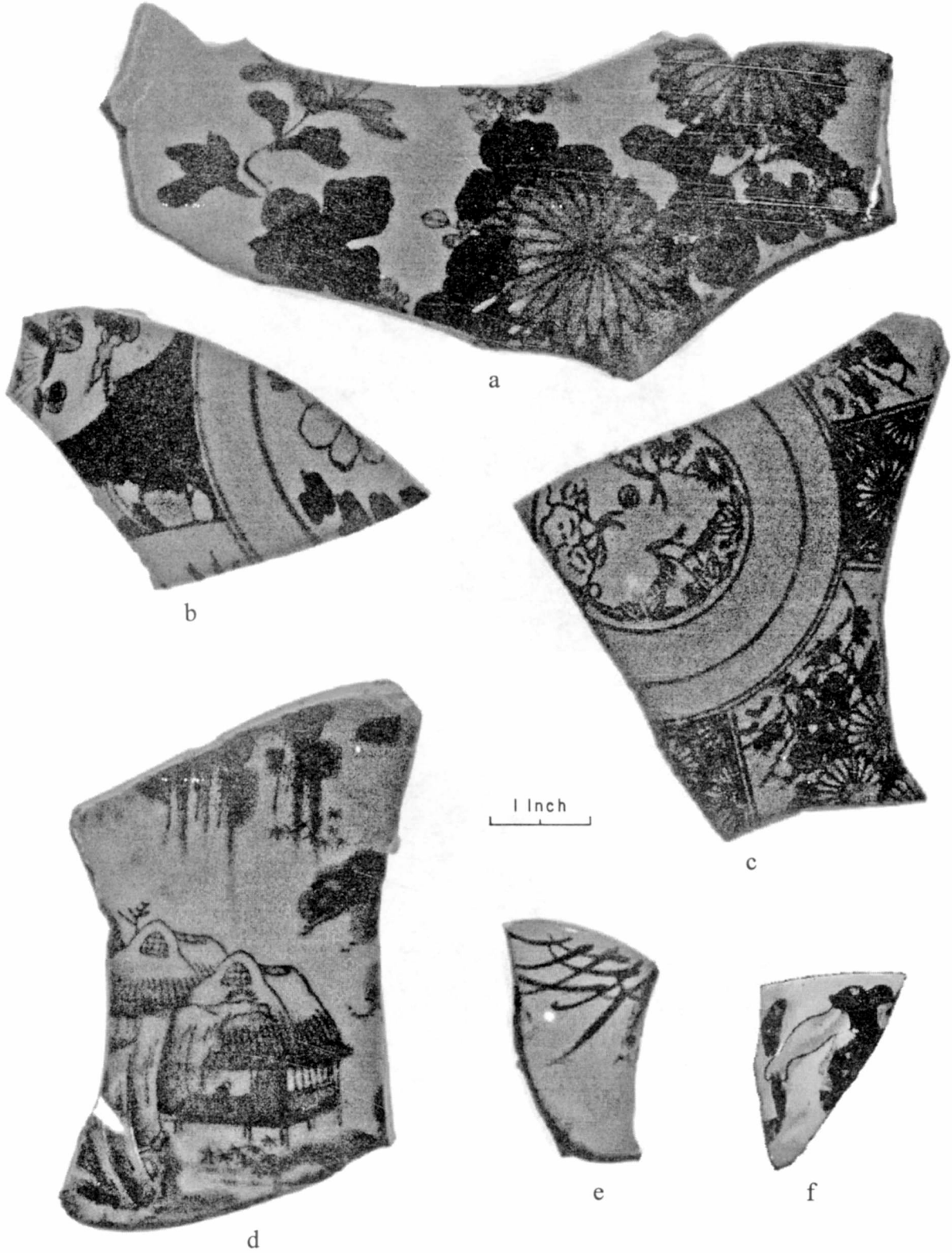


Figure D.6. Japanese-made ceramics dating to the 1942-1945 Manzanar Relocation Center period; a-d. Imari-style decoration on plates; e. cup with handpainted "suma" figure; f. cup with handpainted floral decoration (a-e. FN A-197; f. FN B-791).

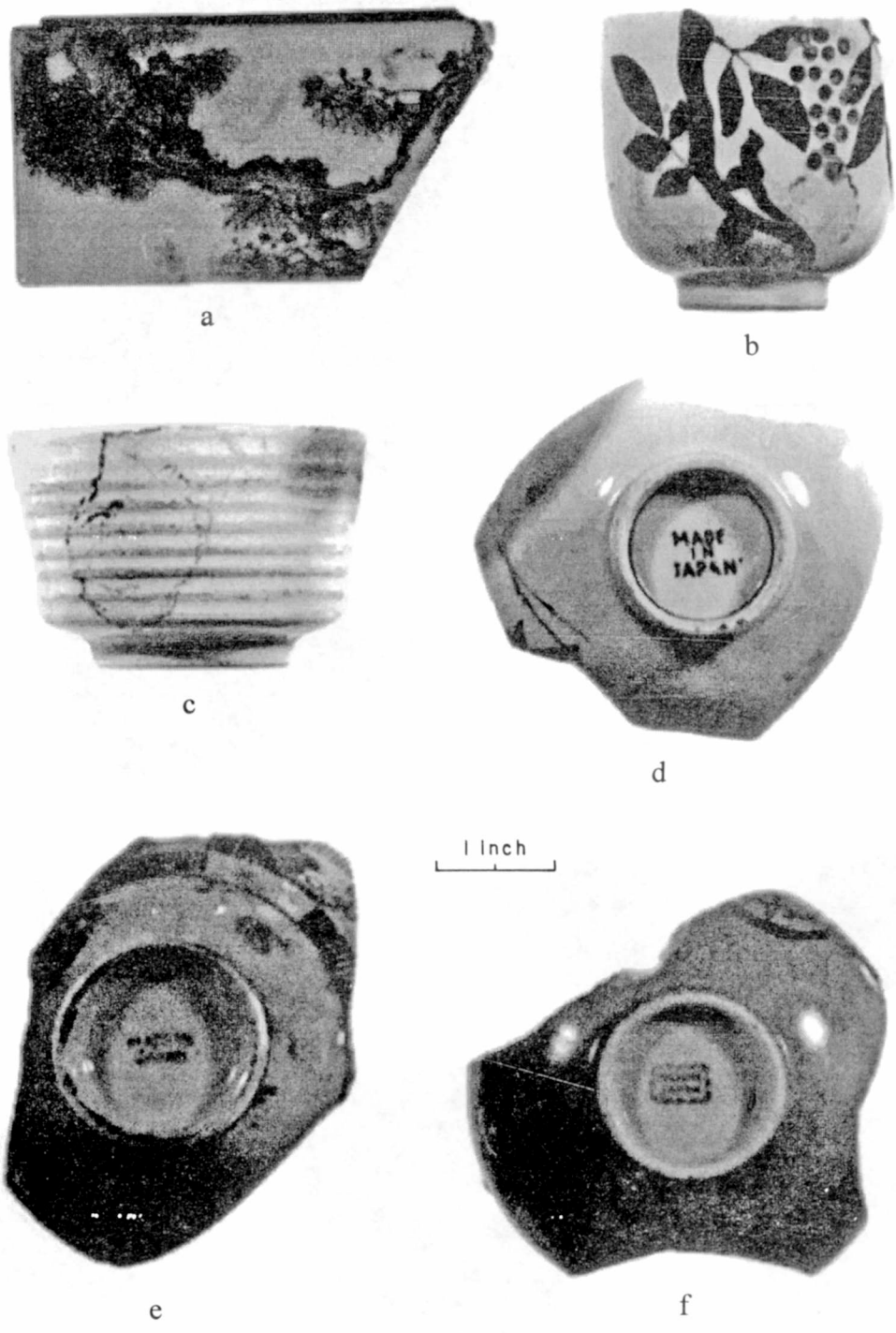


Figure D.7. Japanese-made ceramics and manufacturers' marks on porcelains dating to the 1942-1945 Manzanar Relocation Center period; a. box with underglaze blue handpainted decoration; b. cup with stylized tree decoration; c. undecorated bowl with horizontal ridges; d. backmarked, small cup with celadon-like glaze, and handpainted floral decoration; e. backmarked, bowl with geometric motifs; f. backmarked, bowl with brown marbled glaze and handpainted decoration (a, e-f. FN A-197; b-d. FN B-791).

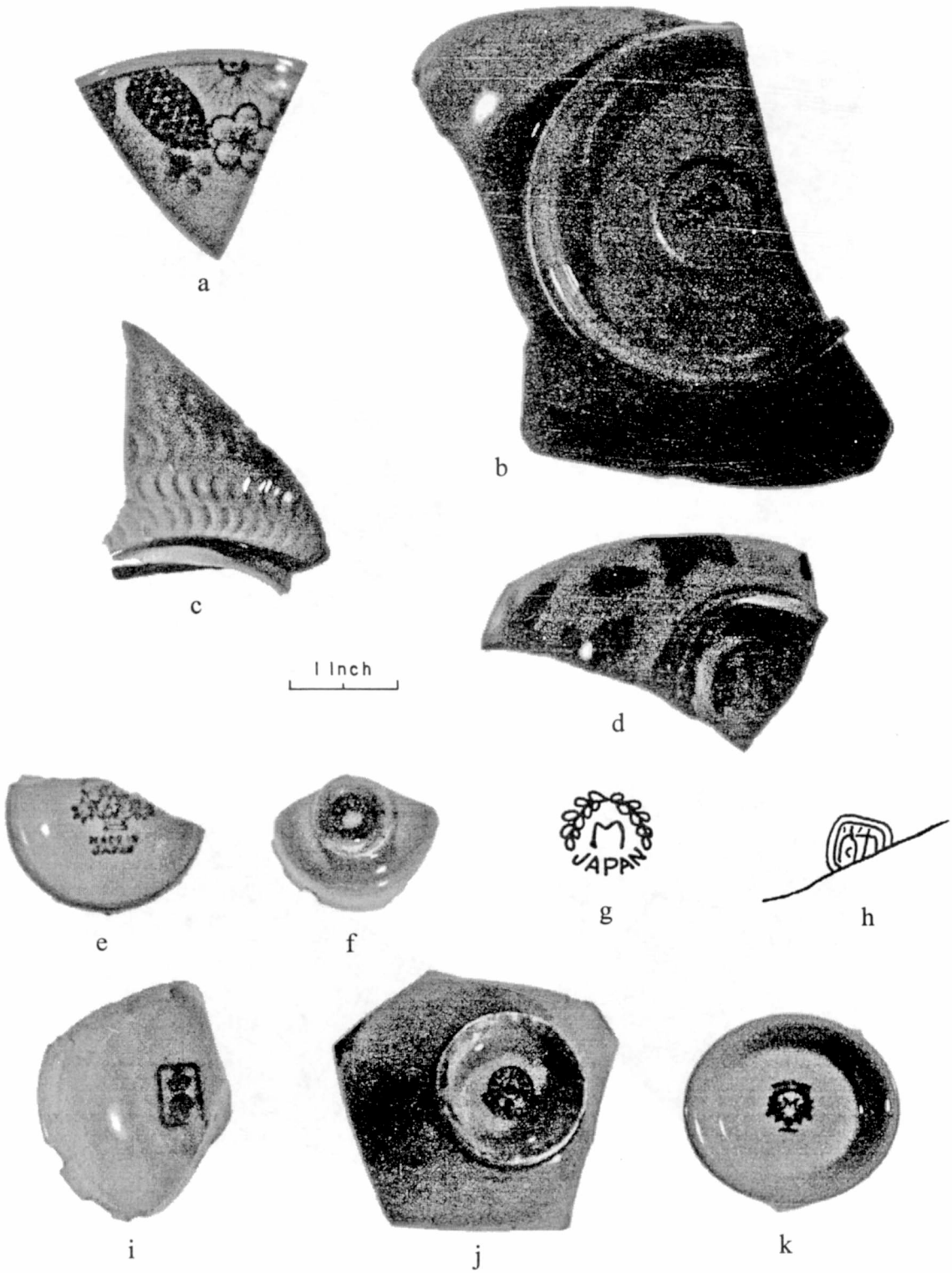


Figure D.8. Japanese-made ceramics and manufacturers' marks on porcelains dating to the 1942-1945 Manzanar Relocation Center period; a. bowl with underglaze stencil floral and pinecone motifs; b. bowl exterior illustrating lining around juncture of body and footring (with "Made in Japan" backmark and unglazed footring and base); c. bowl with celadon glaze and molded decoration; d. "Made in Japan" backmark on bowl with handpainted or stenciled underglaze abstract floral decoration; e-k. assorted Japanese backmarks (a. FN A-73; b, d-f, h-k. FN A-197; c. FN B-1040; g. FN A-78).

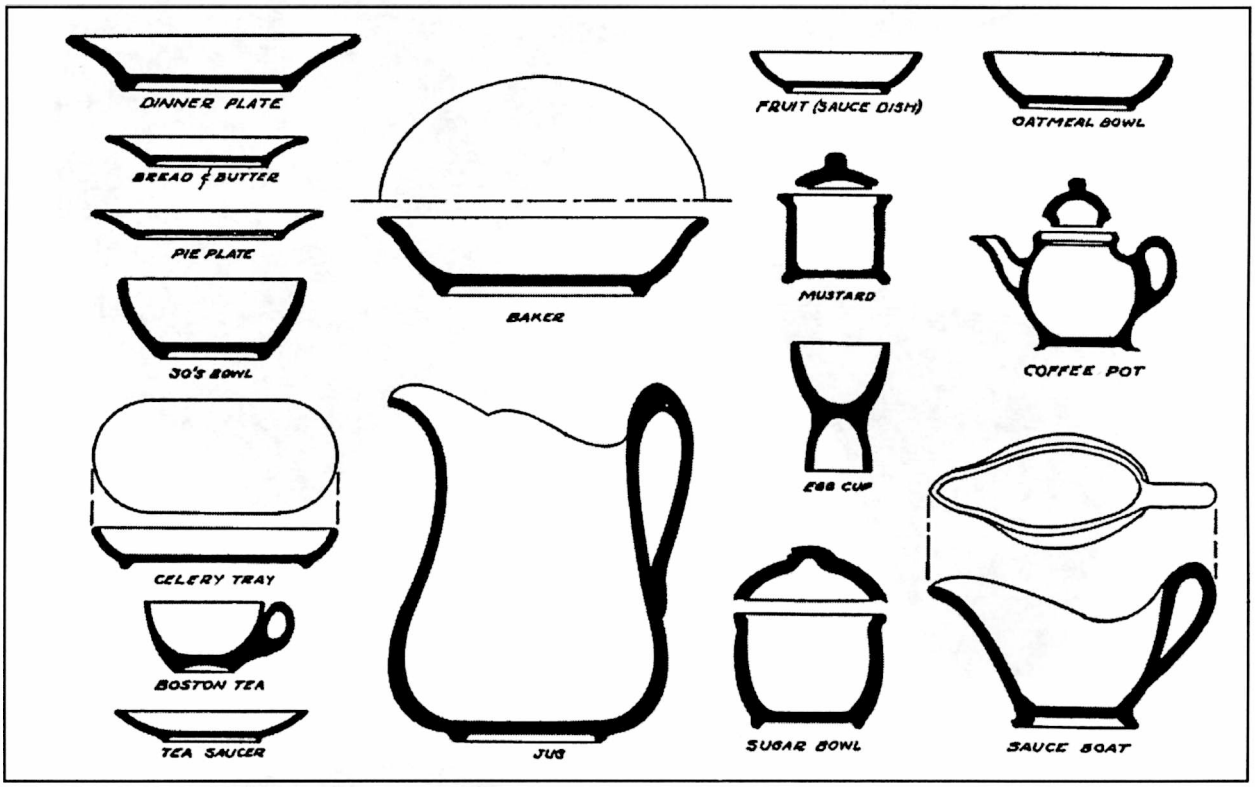


Figure D.9. Typical hotelware shapes from U.S. government specification M-C-301 (after Newcomb 1947:Figure 10-4).

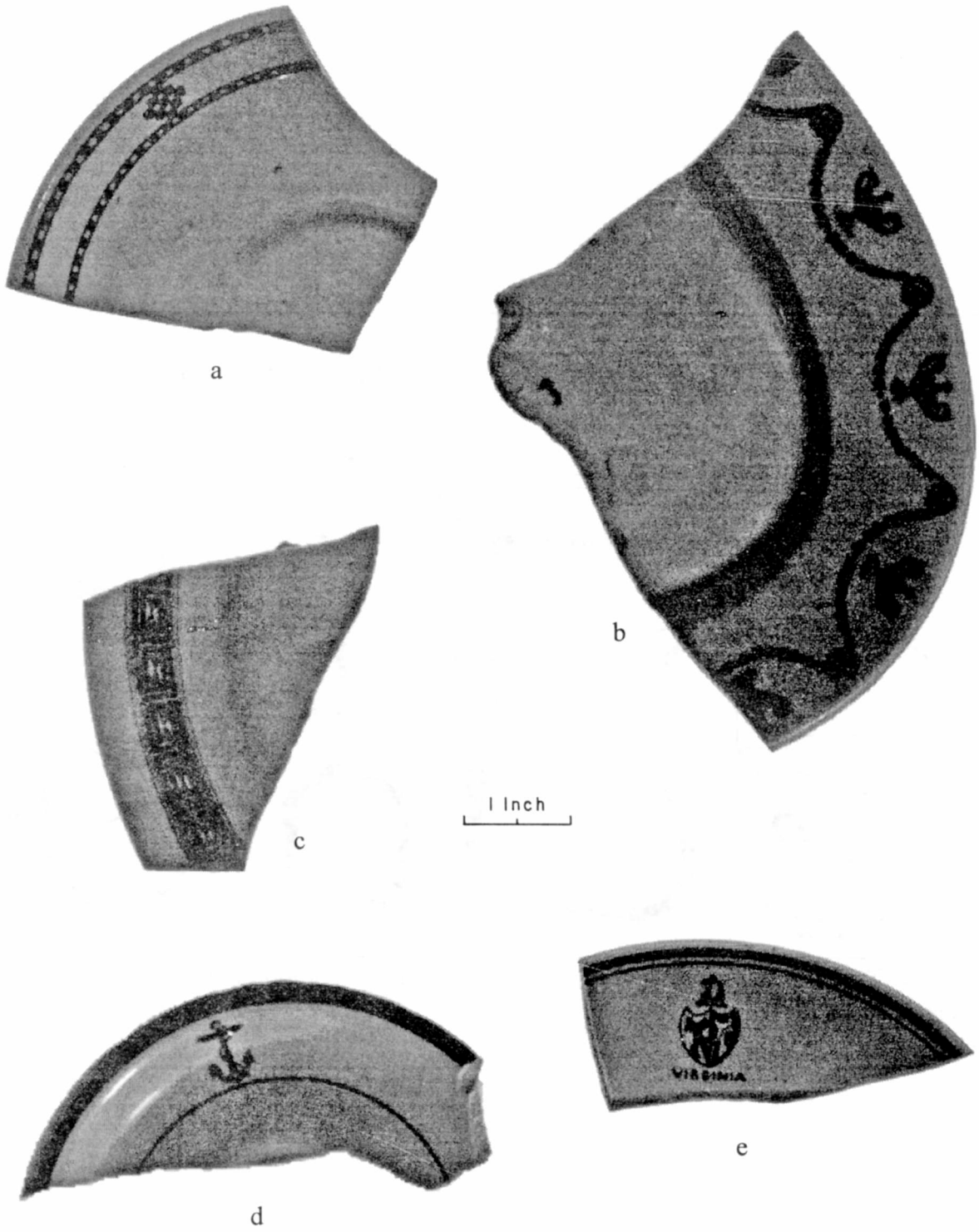


Figure D.10. American hotelwares dating to the 1942-1945 Manzanar Relocation Center period; a. abstract border motif (FN A-107); b. urn and swag border motif (FN A-133); c. Greek-key border motif (FN A-76); d. anchor logo (FN B-1044); e. Virginia logo (FN A-107).

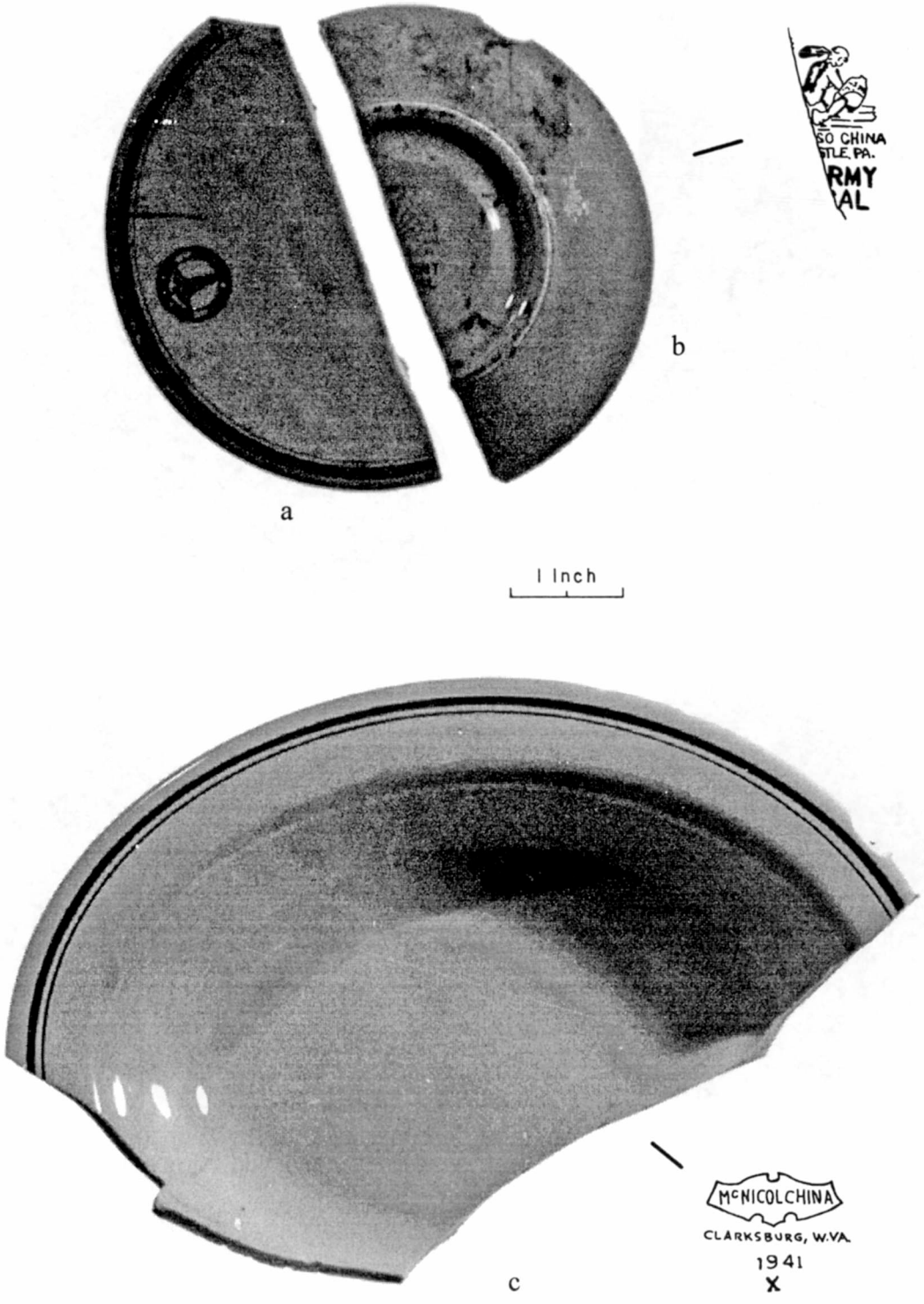


Figure D.11. American hotelwares dating to the 1942-1945 Manzanar Relocation Center period; a. United States Army Medical Department logo (FN A-197); b. Shenango–United States Army Medical Department backmark (FN A-197); c. McNichol China serving bowl (left) and backmark on reverse (right, FN B-1040).

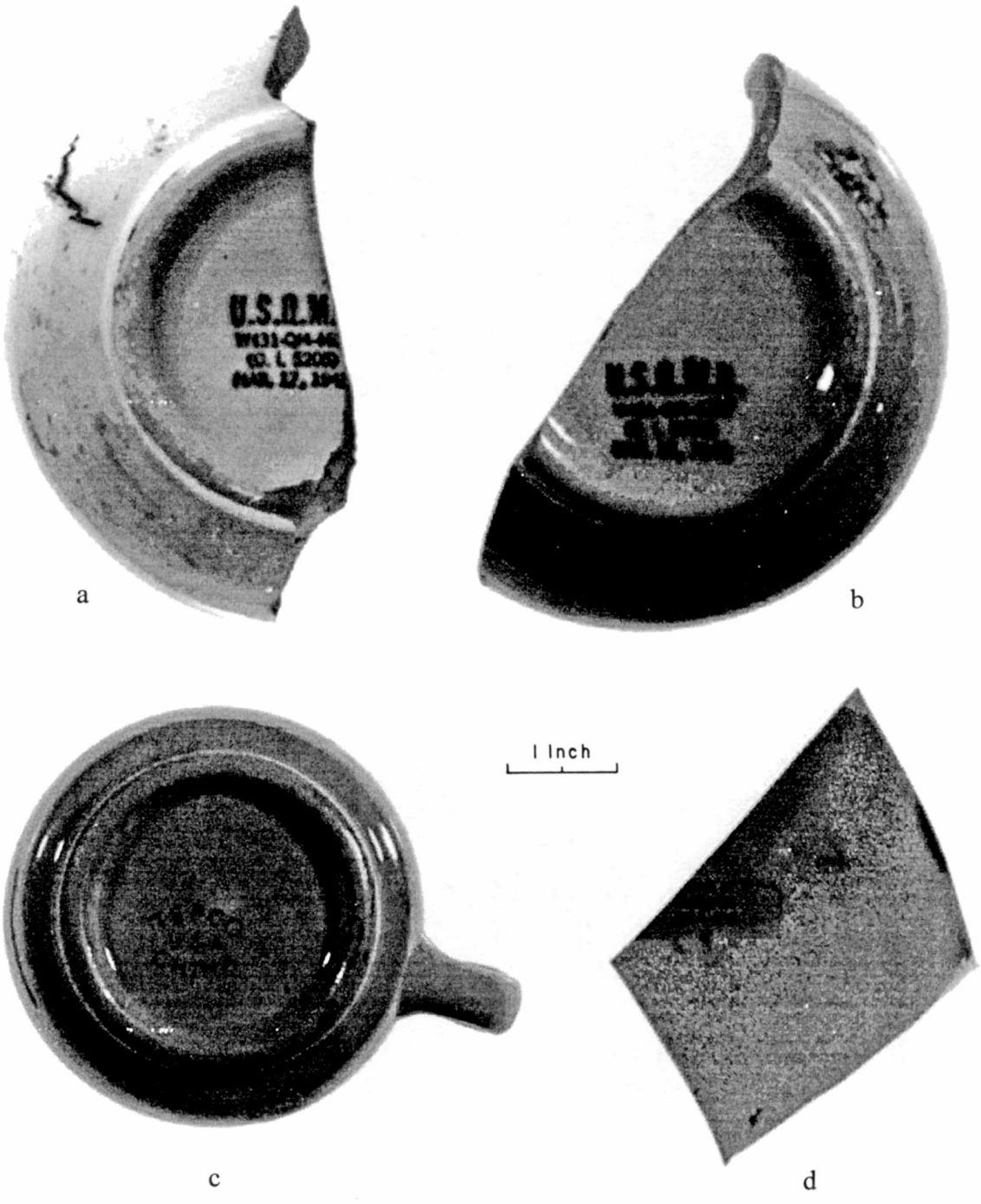


Figure D.12. American manufacturers' marks on ceramics dating to the 1942-1945 Manzanar Relocation Center period; a-b. United States Quartermaster backmark on bowls (FN B-1040 and A-197); c. TEPCO backmark on cup base (FN A-111); d. Iroquois backmark on platter (FN A-197).

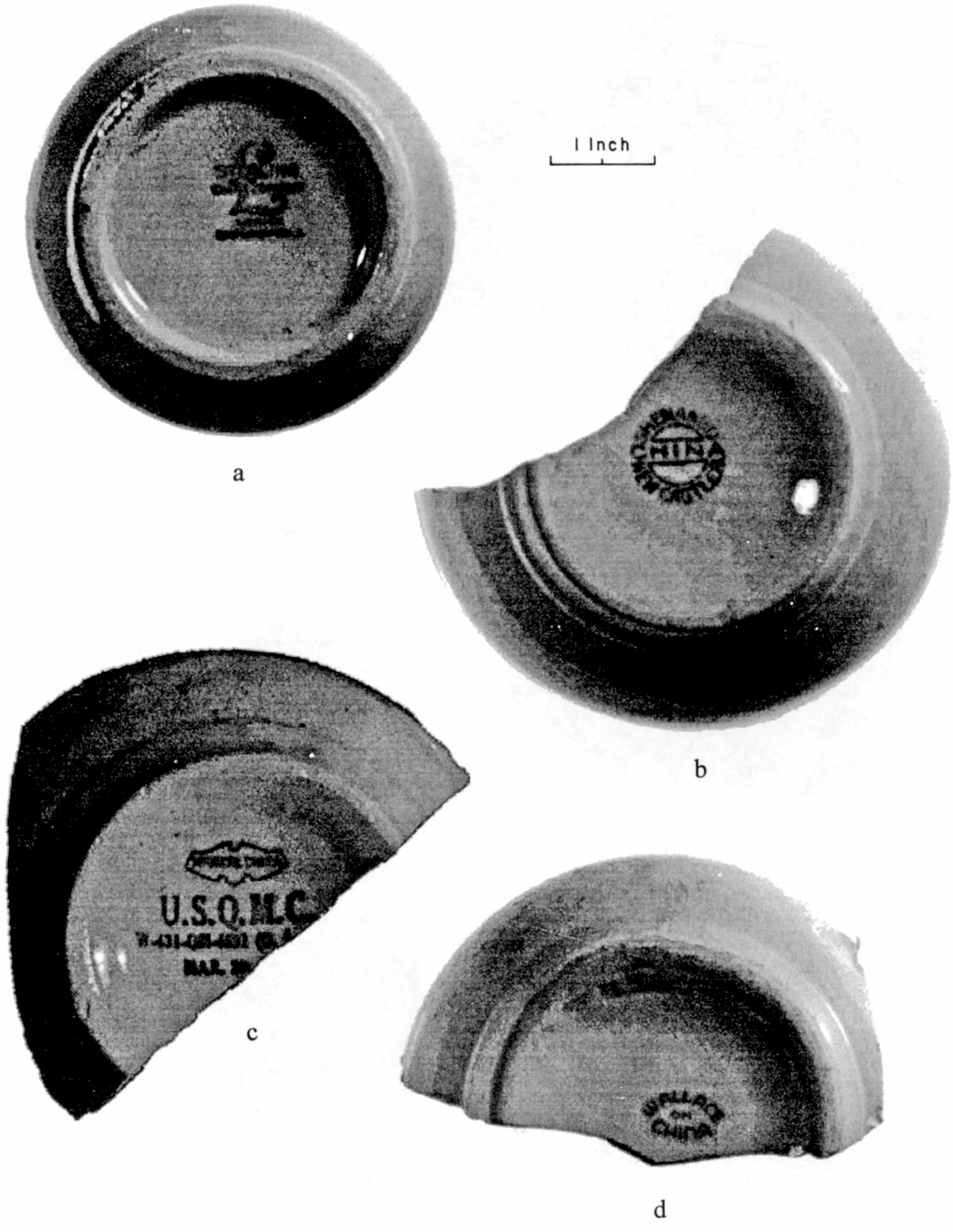


Figure D.13. American manufacturers' marks on ceramics dating to the 1942-1945 Manzanar Relocation Center period; a. Sterling China Co. backmark; b. Shenango China backmark; c. McNichol China-U.S.Q.M.C. backmark; d. Wallace China backmark (a-b, d. FN B-1040; c. uncollected specimen cf. FN B-526).

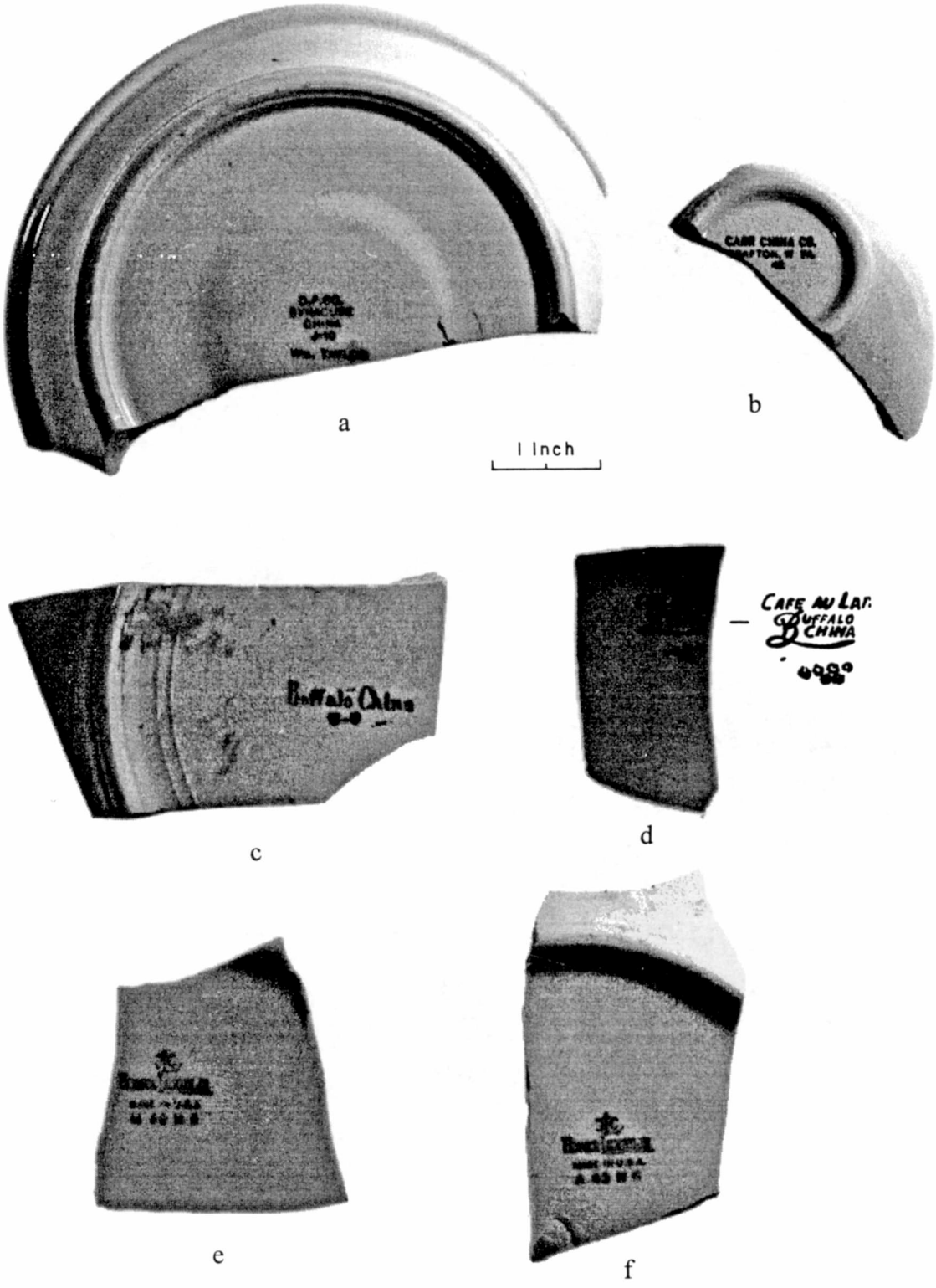


Figure D.14. American manufacturers' marks on ceramics dating to the 1942-1945 Manzanar Relocation Center period; a. O.P.CO. Syracuse China backmark; b. Carr China Co. backmark; c-d. Buffalo China backmarks; e-f. Homer Laughlin backmarks (a-c, f. FN B-1040; d. A-197; e. A-186).

Appendix E

Buttons

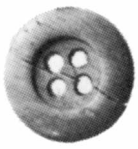
C. Lynn Rogers

During archeological investigations at Manzanar National Historic Site, 63 buttons, representing eight material types, were recovered (Table E.1). Each type is described below. Given the small sample and the potential for mixed multiple components, only a few trends stand out. First, as would be expected, the older types, such as the porcelain buttons and the one large classic nineteenth century bone button (FN B-497), came mostly from the Shepherd Ranch (MANZ 1993 A-13) and sites associated with the Town of Manzanar. Second, in contrast, the shell, plastic, and metal buttons were recovered from relocation center contexts. Third, many of the buttons, especially the shell and plastic ones, appear charred. The charring suggests many of the buttons were purposefully discarded and burned with trash rather than lost.

Bone Type 1

No. of Buttons: 1.

Material: bone.



scale 1:1

Description: round, one-piece, tan, polished bone, four-hole sew through; face is convex, with flat, depressed, round hole panel of 3/8 inch diameter; the rim is nearly 1/8 inch thick with a sharp-angled edge; back is flat, with the outer edge bevelled.

Manufacture: tubular-sawn blank; lathe-shaped face and back; holes are drilled.

Origins: unknown.

Uses: male trousers; female and male undergarments.

Date Range: ca. 1700 to present.

Specimens Represented:

27 lines (11/16 inch) size

B-497 — fair condition, complete, but broken in half (MANZ 1993 A-13, Unit 17, 10-20 cm).

References: Albert and Kent 1949:25; Gehret 1976:128, 157-158; Jones 1946:39; Luscomb 1979:25.

Bone Type 2

No. of Buttons: 1.

Material: bone.



scale 1:1

Description: round, one-piece, charred dark grey, four-hole sew through; face is flat and plain, the sew holes all have beveled edges (countersunk); sides are straight and are 1/32 inch thick; back is convex, with wide, flat, raised hole panel, of 3/8 inch diameter.

Manufacture: tubular-sawn blank; lathe-shaped

Table E.1.
Distribution of Button Material Types in Manzanar Collection.

	MANZ 1993 A-13	MANZ 1993 A-20	MANZ 1993 A-25	MANZ 1993 A-30	MANZ 1993 A-32	MANZ 1993 A-37a	MANZ 1993 A-37c	MANZ 1993 B-1	MANZ 1993 B-7	MANZ 1993 B-8	MANZ 1993 B-22	MANZ 1993 B-27	MANZ 1993 B-32	Total
Bone	1					1	3							5
Glass						1								1
Metal	2			7			1							10
Plastic				7			2					1		10
Porcelain	3			3				1					1	8
Rubber											1			1
Shell	1	1	1	11	1	2	5		1	1			1	25
Unknown				1		1	1							3
Total	7	1	1	29	1	5	12	1	1	1	1	1	2	63

face and back, drilled holes.

Origins: unknown.

Uses: male trousers; male and female long underwear.

Date Range: ca. 1700 to present.

Specimens Represented:

21 lines (1/2 inch) size

B-1004 — complete, but charred (MANZ 1993 A-37, Locus C, Unit 26, 20-30 cm).

References: Albert and Kent 1949:25; Gehret 1976:128, 157-158; Jones 1946:39; Luscomb 1979:25.

Bone Type 3

No. of Buttons: 1.

Material: bone.

Description: round, one-piece, incomplete, charred?, two-hole sew-through; face is concave with raised, flat outer rim of 1/16 inch width; sides are offset due to cutting tool line, sides are 1/16 inch thick; back is convex.



scale 1:1

Manufacture: tubular-sawn blank; lathe shaped face; drilled holes.

Origins: unknown.

Uses: shirt, blouse, underwear button for males and females.

Date Range: ca. 1700 to present.

Specimens Represented:

20 lines (1/2 inch) size

B-978 — incomplete (MANZ 1993 A-37, Locus A, Unit 25, 50-75 cm).

References: Albert and Kent 1949:25; Gehret 1976:128, 157-158; Jones 1946:39; Luscomb 1979:25.

Bone Type 4

No. of Buttons: 1.

Material: bone.



scale 1:1

Description: round, one-piece, in excellent condition, dark brown grey bone, that possibly has been slightly charred; face is flat, with wide, raised, rounded outer rim of 1/8 inch width; sides are rounded and 1/16 inch thick; back is flat with slight small center depression, possibly made by a turning tool.

Manufacture: tubular-sawn blank; lathe-shaped face; drilled holes.

Origins: unknown.

Uses: shirt, jacket, or underwear button for males or females.

Date Range: ca. 1700 to present.

Specimens Represented:

21 lines (1/2 inch) size

B-1022 — complete (MANZ 1993 A-37, Locus C, Unit 26, 40-50 cm).

References: Albert and Kent 1949:25; Gehret 1976:128, 157-158; Jones 1946:39; Luscomb 1979:25.

Bone Type 5

No. of Buttons: 1.

Material: bone or composition, or vegetable ivory.



scale 1:1

Description: round, one-piece black, probably charred material, two-hole sew-through; face is slightly convex, with small channel between the sew holes, and narrow incised ring near outer edge; sides are rounded and 1/32 inch thick; back is flat with rounded outer edge.

Manufacture: appears tubular-sawn blank, with lathe-turning and drilled holes.

Origins: unknown.

Uses: male shirt, underwear button; female blouse, dress, vest button.

Date Range: if bone, ca. 1700 to present if vegetable ivory, ca. 1862 to present.

Specimens Represented:

21 lines (1/2 inch) size

B-1004 — incomplete (MANZ 1993 A-37, Locus C, Unit 26, 20-30 cm).

References: Albert and Kent 1949:25, 72-73; Gehret 1976: 128, 157-158; Jones 1946:39.

Glass Type 1

No. of Buttons: 1.

Material: glass.



scale 1:1

Description: round, one-piece, colorless, transparent glass, self shanked; face is a plain dome, forming nearly a ball button; sides are rounded, max. button thickness is 3/8 inch; back is pointed, with central area pinched outward, through which a sewing hole has been formed horizontally, forming a self-shank.

Manufacture: pressed.

Origins: likely Czechoslovakia.

Uses: feminine blouse, dress, sweater.

Date Range: ca. 1918 to present.

Specimens Represented:

18 lines (7/16 inch) size

B-913 — complete, but cracked internally, as if from heat (MANZ 1993 A-37, Locus A, Unit 25, 0-10 cm).

References: Hughes and Lester 1991:139-153.

Metal Type 1

No. of Buttons: 1.

Material: brass.



scale 1:1

Description: round, one-piece, brass, corroded two-hole sew-through; face is convex with stamped design of a central

anchor, oriented vertically, on a horizontally lined ground, and with a raised rounded outer rim of 1/16 inch width; sides are rounded and 1/16 inch thick; back is concave, showing the negative side of the face design, outer edge being rolled under at back.

Manufacture: stamped from sheet of brass.

Origins: U.S., Britain, or Germany likely.

Uses: perhaps shirt or jacket button. The motif suggests this is a military button, but it does not appear to be official military/navy issue. Instead, it is a sporty button, probably found on casual outer garments.

Date Range: ca. 1825 to present.

Specimens Represented:

25 lines (5/8 inch) size

B-1022 — complete (MANZ 1993 A-37, Locus C, Unit 26, 40-50 cm).

References: Anonymous 1983:18-19; Luscomb 1979:17.

Metal Type 2

No. of Buttons: 1.

Material: unidentified metal.



scale 1:1

Description: round, two-piece metal button, two-hole, sew-through; face is convex, with depressed ring near outer edge, and rounded rim at edge, of 1/16 inch width; sides are rounded and 1/16 inch thick; back piece is absent. It is assumed that the face was crimped over a metal or cardboard back disc, now missing.

Manufacture: Sanders' type construction, in which two stamped metal discs are crimped together.

Origins: Britain or United States likely; Germany possible.

Uses: small size of button suggests its use as a shirt button, perhaps on male or female work shirts.

Date Range: ca. 1825 to present.

Specimens Represented:

18 lines (7/16 inch) size

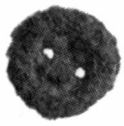
B-587 — incomplete (MANZ 1993 A-13, Locus A, Unit 18, 0-10 cm).

References: Anonymous 1983:18-19; Luscomb 1979:17.

Metal Type 3

No. of Buttons: 1.

Material: iron.



scale 1:1

Description: round, two-piece, four-hole, sew-through, very corroded; face is flat, with wide, raised, rounded outer rim of 1/8 inch width; sides are rounded and 3/32 inch thick; back is a separate iron disc, flat, with depressed outer edge, over which face disc is crimped.

Manufacture: Sanders' type construction-stamped iron discs are mechanically crimped together.

Origins: Britain or U.S.; Germany possible.

Uses: fly or suspender button for male trousers and work garments such as overalls, jackets.

Date Range: ca. 1825 to ca. 1930s.

Specimens Represented:

22 lines (9/16 inch) size

B-496 — complete, but very corroded (MANZ 1993 A-13, Unit 17, 10-20 cm).

References: Anonymous 1983:18-19; Luscomb 1979:17

Metal Type 4

No. of Buttons: 1.

Material: aluminum.



scale 1:1

Description: round, one-piece, two-hole, sew-through, in excellent condition; face is flat at center (hole panel), with two concentric raised, rounded outer rings, the inner one 1/16 inch wide, and

outer one slightly less than 1/16 inch wide; sides are rounded and 1/32 inch thick; back is negative of face, with convex hole panel (3/8 inch wide), depressed, flat outer area and raised, narrow, outer edge (1/32 inch).

Manufacture: stamped disc of aluminum.

Origins: United States most likely.

Uses: trouser, shirt, or blouse button.

Date Range: ca. 1880 to present.

Specimens Represented:

22 lines (9/16 inch) size

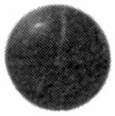
B-154 — complete (MANZ 1993 A-30, Block R, surface).

References: Hughes and Lester 1991:222-224; Luscomb 1979:3.

Metal Type 5

No. of Buttons: 1.

Material: brass.



scale 1:1

Description: round, three-piece button, incomplete, shanked; face is convex, with stamped design of two crossed wavy lines, meant to imitate the look of a woven leather button; sides are rounded and 1/8 inch thick; back parts are missing, but they are thought to have been a flat metal back disc, and a metal loop shank.

Manufacture: Sanders' construction.

Origins: Britain or United States most likely; Germany possible.

Uses: coat or jacket button.

Date Range: ca. 1825 to present.

Specimens Represented:

20 lines (1/2 inch) size

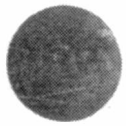
B-512 — incomplete (MANZ 1993 A-30, Block 13, surface).

References: Luscomb 1979:17.

Metal Type 6

No. of Buttons: 1.

Material: iron.



scale 1:1

Description: round, two- or three-piece, incomplete, rivet button; face is convex, stamped disc, with "Lee" across face horizontally; sides are pointed and 1/16 inch thick; back is missing — probably several metal parts to form a large rivet that would have pierced one or two layers of cloth.

Manufacture: stamped metal parts, crimped together.

Origins: United States most likely.

Uses: rivet button on heavy work garments for males or females, composed of denim or duck cloth.

Date Range: 1877 to present.

Specimens Represented:

23 lines (5/8 inch) size

A-106 — incomplete (MANZ 1993 A-30, Feature P-30, surface).

References: Cray 1978:31-33.

Metal Type 7

No. of Buttons: 3.

Material: brass?



scale 1:1

Description: round, one-piece, in excellent condition, stamped; four-hole sew-through; face is flat, with concave hole panel of 5/16 inch width, flat part of face is covered with raised stippling ground, and at the top of button, "U.S.," a five-pointed star at each side of face, and at bottom "ARMY," two narrow, flat rims surround the hole panel and the outer edge of face; sides are straight and 1/32 inch thick; back is flat with convex hole panel of 5/16 inch diam., and raised narrow outer rim (1/32 inch wide).

Manufacture: stamped brass disc.

Origins: United States, most likely.

Uses: trouser button for U.S. Army fatigue uniforms, most likely.

Date Range: 20th century.

Specimens Represented:

22 lines (9/16 inch) size

B-1056 — complete, poor condition (MANZ 1993 A-30, surface, Hospital Laundry Room slab).

27 lines (11/16 inch) size

A-172 — complete, excellent condition (MANZ 1993 A-30, Block W, surface).

B-1055 — complete (MANZ 1993 A-30, Block 8, surface).

References: none

Metal Type 8

No. of Buttons: 1.

Material: brass and iron.



scale 1:1

Description: round, three-piece, in fair condition, shanked; face is slightly convex, with stamped overall design of U.S. Eagle device, consisting of a central spread eagle, head turned to eagle's right, a circle of ten stars around a sphere, above the eagle's head, with ribbon (?) between eagle and star group, olive branch in right talon, arrows in left, and shield on eagle's chest, with 5 vertical stripes in lower two-thirds and upper 1/3 blank, all of this on horizontally lined ground; sides are rounded and 3/32 inch thick; back is an iron disc and the shank is so corroded that exact form, makers mark, and shank type cannot be discerned.

Manufacture: Sanders' type construction.

Origins: U.S. or Britain most likely.

Uses: United States General Services military uniform button, probably for pocket, sleeve cuff, due to small size.

Date Range: 1908 to present?

Specimens Represented:

24 lines (5/8 inch) size

A-97 — complete (MANZ 1993 A-30, Block 19, surface).

References: Johnson 1948a: 65-68; Johnson 1948b:Plates 24-27.

Plastic Type 1

No. of Buttons: 1.

Material: casein?



scale 1:1

Description: round, one-piece, of white material that is crazed, four-hole sew-through; face is concave with bevelled outer rim of 3/32 inch width; sides are rounded and 3/32 inch thick; back is flat with slightly raised, flat hole panel of 1/2 inch diam., also a small center mold depression.

Manufacture: molded.

Origins: United States or Germany likely.

Uses: large size suggest use as a female dress, blouse, or sweater button; or child's coat button.

Date Range: ca. 1900 to present.

Specimens Represented:

29 lines (3/4 inch) size

B-503 — complete (MANZ 1993 A-30, Block 13, surface).

References: Hughes and Lester 1991:66-67; Luscomb 1979:36.

Plastic Type 2

No. of Buttons: 2.

Material: casein?



scale 1:1

Description: round, one-piece, white, crazed material, four-hole sew-through; face is flat, with two parallel oblong depressions, each connecting two sew holes; sides are rounded and 1/16 inch thick; back is convex to semiconical, with flattened hole panel, and central small depression

resulting from mold process.

Manufacture: molded.

Origins: United States or Germany, likely.

Uses: shirt size buttons, useful for male shirts, underwear, and for female dresses, blouses, sweaters, and long underwear.

Date Range: ca. 1900 to present.

Specimens Represented:

21 lines (1/2 inch) size

B-513 — complete (MANZ 1993 A-30, Block 13, surface).

B-523 — complete (MANZ 1993 A-30, Block 13, surface).

References: Hughes and Lester 1991:66-67; Luscomb 1979:36.

Plastic Type 3

No. of Buttons: 1.

Material: casein?



scale 1:1

Description: round, one-piece, dull blue-green, crazed material, two-hole, sew-through; face is flat, with depressed channel between the two holes, rest of the face is ornamented with fine lines (approx. 100 of them) radiating out from the center — these are molded in slight relief, and a narrow groove decorates the outer rim; sides are straight and just over 1/16 inch thick; back is flat with a greatly raised, flat hole panel of 1/4 inch diameter and with a central small depression, resulting from the molding process.

Manufacture: molded.

Origins: United States or Germany likely.

Uses: shirt, vest for males; blouse, dress, sweater for females .

Date Range: ca. 1900 to present.

Specimens Represented:

21 lines (1/2 inch) size

B-212 — complete, good condition (MANZ 1993 A-30, Block 19, surface).

References: Hughes and Lester 1991:66-67; Luscomb 1979:36.

Plastic Type 4

No. of Buttons: 3.

Material: casein?



scale 1:1

Description: round, one-piece, in poor condition, white, crazed material, two-hole sew-through; face is convex, with rectangular hole panel of 1/4 inch by 1/8 inch size, and outer narrow depressed rim, defining an octagon interior shape; sides are rounded and less than 1/16 inch thick; back is flat, with slightly raised, flat round hole panel of 5/32 inch diameter, with depressed center mark, due to mold process.

Manufacture: molded.

Origins: United States or Germany likely.

Uses: female dress, blouse, sweater buttons; the smaller sizes useful for baby clothes.

Date Range: ca. 1900 to present.

Specimens Represented:

18 lines (7/16 inch) size

B-1022 — incomplete (MANZ 1993 A-37, Locus C, Unit 26, 40-50 cm).

B-1033 — complete, but in poor condition (MANZ 1993 A-37, Locus C, Unit 26, sidewall).

22 lines (9/16 inch) size

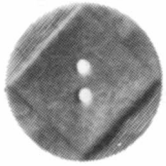
B-836 — complete, in fair condition (MANZ 1993 B-27, airport hangar surface).

References: Hughes and Lester 1991:66-67; Luscomb 1979:36.

Plastic Type 5

No. of Buttons: 1.

Material: bakelite.



scale 1:1

Description: round, one-piece, light green plastic, two-hole sew through; face consists of a large molded square, the sur

face of which is slightly concave, and flat surfaces outside the square, decorated with fine, parallel lines; sides are rounded and 3/32 inch thick, back is flat, with slightly raised, flat hole panel of 3/8 inch diameter, with small central mold depression.

Manufacture: molded.

Origins: United States most likely.

Uses: large size suggests dress, blouse, or sweater button for feminine garments.

Date Range: ca. 1909 to present.

Specimens Represented:

34 lines (7/8 inch) size

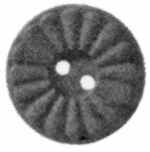
A-29 — complete (MANZ 1993 A-30, Block 23, surface).

References: Luscomb 1979:79.

Plastic Type 6

No. of Buttons: 1.

Material: bakelite.



scale 1:1

Description: round, one-piece, dark blue plastic, two-hole sew-through; face is flat with round, flat, sunken hole panel of 1/4 inch diameter, and 16 radiating teardrop shapes, with outer edge sunken; sides are straight and 1/32 inch thick; back is complex, with flat, round hole panel of 5/16 inch diameter, with three small round depressions from mold process, hole panel is surrounded by deep wide concave ring 1/8 inch wide, and narrow outer ring that is flush with hole panel.

Manufacture: molded.

Origins: U.S. most likely.

Uses: feminine dress, skirt, blouse, sweater.

Date Range: ca. 1909 to present.

Specimens Represented:

28 lines (11/16 inch) size

A-103 — complete (MANZ 1993 A-30, Block 32, surface).

References: Luscomb 1979:79.

Plastic Type 7

No. of Buttons: 1.

Material: bakelite.



scale 1:1

Description: round, one-piece, dark blue plastic, two-hole, sew-through; face is concave within large central square, outside of which is a convex surface, covered with fine, parallel molded lines; sides are straight and 1/16 inch thick; back is complex in shape, with a flat, round central hole panel of 1/4 inch diameter, surrounded by a wide deep channel, 3/32 inch wide, and with a flat, narrow outer rim that is flush with the hole panel.

Manufacture: molded.

Origins: U.S.

Uses: female dress, blouse, skirt, sweater.

Date Range: ca. 1909 to present.

Specimens Represented:

23 lines (9/16 inch) size

A-145 — complete (MANZ 1993 A-30, Block 35, surface).

References: Luscomb 1979:79.

Porcelain Type 1

No. of Buttons: 2.

Material: white porcelain.



scale 1:1

Description: round, one-piece, of translucent, white porcelain, glazed; four-hole, sew-through; face is semi-conical with concave hole panel of 1/4 inch to 3/16 inch width, and decorated with 24 molded ribs, radiating out from the center (ribs occupy the area between the hole panel and outer edge of button); a raised rim borders the hole panel and the outer edge of face; sides are straight and 3/32 inch thick; back is slightly

convex, with hole panel area flattened and pitted. Known as "Piecrust Chinas" by button collectors.

Manufacture: Prosser's compression-molded technique; dry, powdered clay, or moistened, powdered clay was formed, fired, glazed, then fired again.

Origins: From 1840 to ca. 1850, most Prosser porcelain buttons were manufactured in England. From 1850 to ca. 1910, French firms produced the vast majority. Those from Manzanar are most likely from France.

Uses: Piecrust chinas, like other porcelain sew-throughs, are typical "shirt" buttons. They were worn on male shirts, on long underwear, and on feminine outer and undergarments, such as skirts, waists, underwear, nightclothes, and on baby clothes.

Date Range: 1840 to ca. 1910.

Specimens Represented:

17 lines (7/16 inch) size

B-484 — complete, painted brown on face and sides, overglaze (MANZ A-13, Unit 17, 0-10 cm).

23 lines (9/16 inch) size

B-776 — complete (MANZ 1993 B-1, Locus C, surface).

References: Albert and Adams 1970:5-11, 90-91; Albert and Kent 1949:35.

Porcelain Type 2

No. of Buttons: 3.

Material: white porcelain.



scale 1:1

Description: round, one-piece, of translucent, white porcelain, glazed; four-hole, sew-through; face is semi-conical with concave hole panel of 3/16 inch to 5/16 inch width; sides are straight and 1/32 inch to 1/16 inch thick; back is convex, with flattened, pitted hole panel. Known by collectors as "Dish Type China."

Manufacture: Prosser method of compression-molding, patented in England in 1840.

Origins: France, most probably; Britain or United States possible.

Uses: shirt or underwear, or vest button for males; skirt, waist, apron, or undergarment button for females.

Date Range: 1840 to ca. 1910.

Specimens Represented:

17 lines (7/16 inch) size

B-452 — complete (MANZ 1993 A-13, surface [30 m east of Unit 18]).

23-24 lines (9/16 inch-5/8 inch) size

B-846 — complete (MANZ 1993 B-32, surface).

B-302 — complete (MANZ 1993 A-30, SW perimeter surface [within MANZ 1993 A-4]).

References: Albert and Adams 1970:5-11, 79-81; Albert and Kent 1949:35.

Porcelain Type 3

No. of Buttons: 1.

Material: white porcelain.



scale 1:1

Description: round, one-piece, translucent white clay, glazed; four-hole, sew-through type; face is flat, with raised flat outer rim of 3/32 inch wide; sides are straight and 3/32 inch thick; back is convex, with depressed flat hole panel. Sew holes are large, each 3/32 inch wide. A variant of the "Tire Type", identified by collectors.

Manufacture: Prosser compression-molded. Formed, fired, glazed, and re-fired.

Origins: France most likely; United States or Britain possible.

Uses: Due to size and thickness of this button, I surmise that is probably functioned as a male shirt button, or as a female blouse or dress, or nightclothes button.

Date Range: 1840 to ca. 1910.

Specimens Represented:

23 lines (9/16 inch) size

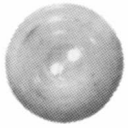
B-595 — incomplete (MANZ 1993 A-13, Locus A, Unit 18, 10-20 cm).

References: Albert and Adams 1970:5-11, 85-86; Albert and Kent 1949:35.

Porcelain Type 4

No. of Buttons: 1.

Material: white porcelain.



scale 1:1

Description: round, one-piece button, of translucent, white clay, glazed; two-hole, sew-through; face is generally flat, decorated with three concentric raised rings, that may originally have been painted blue, the rings surround a deep, flat, depressed hole panel of 3/16 inch width; sides are rounded and 3/32 inch thick; back is flat with bevelled outer edge, back and sides are painted blue, overglaze. Known as a "Three-Banded Ringer" by collectors.

Manufacture: Prosser compression-mould technique.

Origins: France, most likely; Britain or United States unlikely.

Uses: female waists, dresses, blouses, light sweaters/jackets.

Date Range: 1840 to ca. 1910.

Specimens Represented:

24 lines (5/8 inch) size

A-182 — complete (MANZ 1993 A-30, SW perimeter, surface).

References: Albert and Adams 1970:5-11, 50-51; Albert and Kent 1949:35.

Porcelain Type 5

No. of Buttons: 1.

Material: black porcelain.

Description: round, three-piece button, shanked, of black, opaque, glazed porcelain; face is domed and smooth; sides are straight and 1/16 inch thick; max. button thickness is 1/4 inch; back is slightly convex with an iron wire loop shank embedded in back hole, covered by a brass or zinc shank plate of 1/4 inch diameter. Known as a "Gaiter" button by collectors.



scale 1:1

Manufacture: Prosser compression-mould technique, with addition of metal shank and plate, cemented on, after firing.

Origins: France, most likely; United States and Britain, unlikely.

Uses: feminine waists, skirts, blouses, dresses; male vests.

Date Range: 1858 to ca. 1910.

Specimens Represented:

16 lines (7/16 inch) size

B-214 — complete (MANZ 1993 A-30, Block 20, surface).

References: Albert and Adams 1970:5-11, 20-21; Albert and Kent 1949:35.

Rubber Type 1

No. of Buttons: 1.

Material: possibly hard rubber.



scale 1:1

Description: round, one-piece, black composition material, four-hole sew-through; face is convex with two parallel channels connecting two sew holes each, a deep grooved ring decorates the mid area of button, groove is 1/16 inch wide; sides are straight and 1/16 inch thick, max. button thickness is 5/16 inch; back is convex, with raised, convex hole panel of 11/16 inch width.

Manufacture: molded.

Origins: U.S. most likely.

Uses: very large and heavy button, probably a heavy coat or jacket button.

Date Range: 1851 to ca. 1950.

Specimens Represented:

43 lines (1 1/16 inch) size

B-853 — complete (MANZ 1993 B-22, surface).

References: Hughes and Lester 1991:48-49; Luscomb 1979:170-171.

Shell Type 1

No. of Buttons: 3.

Material: shell.



scale 1:1

Description: round, one-piece, of ocean and/or freshwater shell, four-hole, sew-through; face is flat, with wide, raised outer rim. The outer rim may be beveled, sloping down to hole panel, or it may be very rounded, or flat and angular. Sides are rounded to straight, varying in thickness from 1/32 inch to 1/16 in; back is flat.

Manufacture: tubular-sawn blanks, lathe-shaped and drilled buttons.

Origins: England, France, Austria, or United States possible.

Uses: the smaller sizes are suitable for baby clothes, feminine undergarments, and blouses, or for male shirt buttons; the larger sizes are for feminine blouses, waists, skirts, dresses, children's and women's jackets.

Date Range: ca. 1800 to present.

Specimens Represented:

17 lines (7/16 inch) size

B-1015 — charred, incomplete, constantly falling apart (MANZ 1993 A-37, Locus C, Unit 26, 30-40 cm).

19 lines (1/2 inch) size

B-513 — good condition (MANZ 1993 A-30, Block 13, surface).

24 lines (5/8 inch) size

B-512 — exfoliating (MANZ 1993 A-30, Block 13, surface).

References: Albert and Kent 1949:59-60; Jones 1946:33-38; Luscomb 1979:177-180.

Shell Type 2

No. of Buttons: 3.

Material: ocean shell.



scale 1:1

Description: round, one-piece, of smoky grey, iridescent shell, in excellent condition, with four sew holes; face is concave with beveled outer rim, of 1/8 inch width; sides are straight and 1/32 inch thick, but of irregular thickness around the circumference, due to nature of shell; back is flat or semi-conical, with flat hole panel. One small button retains its cortex on back.

Manufacture: tubular-sawn blanks, lathe-shaped and drilled buttons.

Origins: England, France, Austria likely.

Uses: The small pair are shirt size, usable for males on shirts or underwear, or for females on blouses, waists, undergarments, also for baby clothes.

Date Range: ca. 1800 to present.

Specimens Represented:

17 lines (7/16 inch) size

B-1022 — two complete buttons, both charred dark grey (MANZ 1993 A-37, Locus C, Unit 26, 40-50 cm).

23 lines (9/16 inch) size

B-299 — complete, good condition (MANZ 1993 A-30, surface [within MANZ 1993 A-4]).

References: Albert and Kent 1949:59-60; Jones 1946:33-38; Luscomb 1979:177-180.

Shell Type 3

No. of Buttons: 9.

Material: shell.



scale 1:1

Description: round, one-piece white, slightly iridescent shell, possibly freshwater shell, two-hole sew-throughs; faces are flat, with "fish-eye," or pointed oval shaped hole panels, sew holes are 1/16

inch diam; sides are straight to rounded, and 1/32 inch to 3/32 inch thick; backs are flat and devoid of cortex.

Manufacture: tubular-sawn blanks, lathe-shaped and drilled buttons.

Origins: England, France, Austria, or United States likely.

Uses: smaller sizes are suitable for baby clothes, male shirts and underwear, and female waists, nightclothes, undergarments, and skirts; larger size for female blouses, dresses, waists, skirts, children's clothes, jackets, male vests.

Date Range: ca. 1800 to present; for freshwater ones 1891 to present.

Specimens Represented:

16 lines (7/16 inch) size

B-524 — good condition, complete (MANZ 1993 A-30, Block 14, surface).

18 lines (7/16 inch) size

B-503 — 2, complete, in fair condition (MANZ 1993 A-30, Block 13, surface).

20-21 lines (1/2 inch) size

B-513 — complete, good condition (MANZ 1993 A-30, Block 13, surface).

B-454 — complete, good condition (MANZ 1993 A-13, surface).

22-23 lines (5/8 inch) size

B-978 — 2, poor condition, complete, exfoliating rapidly, charred (MANZ 1993 A-37, Locus A, Unit 25, 50-75 cm).

B-765 — complete, good condition (MANZ 1993 B-7, Locus B, surface).

24 lines (5/8 inch) size

B-846 — complete, good condition (MANZ 1993 B-32, surface).

References: Albert and Kent 1949:59-60: Jones 1946:33-38; Luscomb 1979: 177-180.

Shell Type 4

No. of Buttons: 3.

Material: shell.



scale 1:1

Description: round, one-piece, of soft white to yellowish white color, with little iridescence, two-hole sew-through; face is flat, with flat depressed round hole panel 5/32 inch in diameter; sides are straight to rounded and 1/16 inch thick; back is flat, one has remnant of cortex, while others are devoid of cortex.

Manufacture: tubular-sawn blanks, lathe-shaped faces and drilled holes.

Origins: England, France, Austria, or United States.

Uses: all here are typical shirt buttons, being small. Probably used on male shirts, vests, underwear, on female undergarments, waists, skirts, blouses, dresses, nightclothes, and on baby clothes.

Date Range: ca. 1800 to present.

Specimens Represented:

15 lines (3/8 inch) size

B-522 — complete except for chip off edge (MANZ 1993 A-30, Block 13, surface).

16-17 lines (7/16 inch) size

B-503 — top face layer missing (MANZ 1993 A-30, Block 13, surface).

B-846 — good condition, complete (MANZ 1993 A-32, surface).

References: Albert and Kent 1949:59-60; Jones 1946:33-38; Luscomb 1979:177-180.

Shell Type 5

No. of Buttons: 2.

Material: shell.



scale 1:1

Description: round, one-piece, of off-white shell, with slight iridescence, two-hole sew-through; face is semiconical with flat apex, forming a ring

around a deep flat, depressed, round hole panel of 3/16 inch diameter; sides are straight and 1/16 inch thick; back is flat, and devoid of cortex.

Manufacture: tubular sawn blanks; lathe-shaped face, drilled holes.

Origins: England, France, Austria, or United States.

Uses: Both are small, simple types, usable on male shirts, vests, undergarments; on female dresses, waists, blouses, skirts, undergarments, nightclothes; on baby clothes.

Date Range: ca. 1800 to present.

Specimens Represented:

16-17 lines (7/16 inch) size

B-780 — complete, in good condition (MANZ 1993 B-8, surface)

B-513 — complete, in excellent condition (MANZ 1993 A-30, Block 13, surface).

References: Albert and Kent 1949:59-60; Jones 1946:33-38; Luscomb 1979:177-180.

Shell Type 6

No. of Buttons: 1.

Material: ocean shell.



scale 1:1

Description: round, one-piece, of white, very iridescent ocean shell, two-hole sew-through; face is slightly concave with narrow raised, flat outer rim of 1/32 inch width; sides are straight and less than 1/16 inch thick; back is flat, with a bit of cortex present.

Manufacture: tubular-sawn blank; lathe-shaped face, drilled holes.

Origins: England, France, or Austria.

Uses: good shirt button for males, as well as vest, underwear button; for females, dress, blouse, skirt, waist, or nightgown button; baby clothes.

Date Range: ca. 1800 to present.

Specimens Represented:

17 lines (7/16 inch) size

B-219 — excellent condition, complete (MANZ 1993 A-30, Block 21, surface).

References: Albert and Kent 1949:59-60; Jones 1946:33-38; Luscomb 1979:177-180.

Shell Type 7

No. of Buttons: 2.

Material: shell.



scale 1:1

Description: round, one-piece, off-white, dull shell, probably freshwater shell, 2-hole, sew-through; face is flat, with fish-eye hole panel and deep, incised ring near outer edge, leaving a flat rim of 1/16 inch width, with inner groove of nearly same width; sides are straight and just greater than 1/16 in thickness; back is flat and plain, devoid of cortex.

Manufacture: tubular-sawn blank; lathe-shaped face, possibly hand-cut fish-eye groove; drilled holes.

Origins: likely the U.S., as material seems to be freshwater shell.

Uses: large button was probably worn on a child's coat, a woman's coat, or on feminine dress, blouse, or sweater. Small one for shirts, undergarments, as well as outer garments.

Date Range: 1891 to present.

Specimens Represented:

29 lines (3/4 inch) size

A-172 — complete, good condition (MANZ 1993 A-30, Block W, surface [within MANZ 1993 A-4).

20 lines (1/2 inch) size

B-624 — complete, but charred and in fragile condition (MANZ 1993 A-25, Unit 20, surface).

References: Albert and Kent 1949:59-60; Jones 1946:33-38; Luscomb 1979:25, 177-180.

Shell Type 8

No. of Buttons: 1.

Material: shell.



scale 1:1

Description: round, one-piece, charred shell, two-hole sew-through; face shape is unknown as this layer has peeled off; sides are straight and less than 1/1-6 in thick, now; back is also gone, but probably was flat. This charred button is extremely fragile and continues to exfoliate and break with handling.

Manufacture: tubular-sawn blank, drilled holes.

Origins: England, France, Austria, or U.S.

Uses: shirt-size button, probably used on male shirts, vests, underwear, on female undergarments, waists, skirts, blouses, dresses, nightclothes, and on baby clothes.

Date Range: ca. 1800 to present.

Specimens Represented:

16 lines (7/16 inch) size

B-1004 — complete, but broken into many pieces (MANZ 1993 A-37, Locus C, Unit 26, 20-30 cm).

References: Albert and Kent 1949:59-60; Jones 1946:33-38; Luscomb 1979:177-180.

Shell Type 9

No. of Buttons: 1.

Material: shell.



scale 1:1

Description: round, one-piece, incomplete and charred, two- or four-hole sew-through, face is flat, with oblong hole panel, and at least three hand-incised tear drop shaped grooves surrounding the hole panel; sides are straight and just under 1/16 inch thickness; back is flat and plain.

Manufacture: tubular-sawn blank; lathe-shaped face, hand-cut teardrops, drilled holes.

Origins: England, Austria, France.

Uses: shirt button, used on male shirts, vests, underwear, on female undergarments, waists, skirts, blouses, dresses, nightclothes, and on baby clothes.

Date Range: ca. 1800 to present.

Specimens Represented:

18 lines (7/16 inch) size

B-1022 — charred, incomplete (MANZ 1993 A-37, Locus C, Unit 26, 40-50 cm).

References: Albert and Kent 1949:59-60; Jones 1946:33-38; Luscomb 1979:177-180.

Shell Type 10

No. of Buttons: 1.

Material: ocean shell.



scale 1:1

Description: round, two-piece shanked button, with high quality, white, very iridescent ocean shell disc; face is flat and plain, originally adorned with the small metal head of a pin shank, now gone; sides are straight 1/16 to 3/32 inch thick; back is flat with remnant of cortex, pin shank missing, but originally formed a wire loop shank at back.

Manufacture: tubular-sawn blank, drilled hole.

Origins: England, France, Austria likely.

Uses: female sweater, dress, blouse.

Date Range: ca. 1800 to present.

Specimens Represented:

24 lines (5/8 inch) size

A-62 — incomplete (MANZ 1993 A-20, surface).

References: Albert and Kent 1949:59-60; Jones 1946:33-38; Luscomb 1979:177-180.

Unknown Type 1

No. of Buttons: 1.

Material: unidentified composition.



scale 1:1

Description: round, one-piece, broken, possibly charred grey white, four-hole sew-through;

face is flat, with wide, raised, flat outer rim of 1/8 inch width; sides are rounded and 1/16 inch thick; back is convex with flattened hole panel.

Manufacture: unknown, but probably molded in some way.

Origins: unknown.

Uses: shirt, work blouse, dress, underwear button for males and females.

Date Range: 1869 to present.

Specimens Represented:

24 lines (5/8 inch) size

B-1015 — incomplete (MANZ 1993 A-37, Locus C, Unit 26, 30-40 cm).

References: Luscomb 1979:36, 46.

Unknown Type 2

No. of Buttons: 1.

Material: unknown composition.



scale 1:1

Description: round, one-piece, black material with small flecks of silver in it, two-hole sew-through; face is convex with fish-eye hole panel and raised, rounded outer rim of 1/16 inch width; sides are straight and 1/16 inch thick; back is flat with raised, flat, round hole panel of 5/16 inch diameter, with small central depression from mold process.

Manufacture: molded.

Origins: United States most likely.

Uses: male shirt or vest button; female dress, blouse, trouser button.

Date Range: ca. 1869 to present.

Specimens Represented:

22 lines (9/16 inch) size

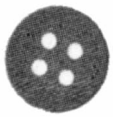
B-925 — complete (MANZ 1993 A-37, Locus A, Unit 25, 10-20 cm).

References: Hughes and Lester 1991:66-67.

Unknown Type 3

No. of Buttons: 1.

Material: unidentified composition.



scale 1:1

Description: round, one-piece, black plastic, possibly charred, four-hole sew through; face is flat, with two parallel channels each connecting two sew holes; sides are rounded and 1/32 inch thick; back is semi-conical with round flat hole panel of 318 inch width, and central small mold depression.

Manufacture: molded.

Origins: U.S. most likely.

Uses: male trouser button, or shirt button; female suit skirt, vest button, or trousers.

Date Range: ca. 1869 to present.

Specimens Represented:

22 lines (9/16 inch) size

B-546 — complete (MANZ 1993 A-30, Block S, surface).

References: Hughes and Lester 1991:66-67.


SCRAP

Appendix F

Miscellaneous Historical Materials



This appendix briefly summarizes 417 collected miscellaneous historical items and ecofacts not discussed in the preceding appendices. These include 5 pieces of cloth, 7 corks or cork fragments, 13 electrical porcelain artifacts, 203 floral remains, 7 pieces of leather, 8 pieces of paper, 34 plastic artifacts, 21 rubber artifacts, 27 shells or shell fragments, 13 terra cotta flower pot fragments, 19 wood artifacts or fragments, and 60 other items. The items and their provenience are listed in Tables F.1-F.12 by material type.

Excluding floral remains, 8 percent were from town or ranch era contexts, 80 percent were from relocation center era contexts, 4 percent were from the World War II era Manzanar Airport, 4 percent were from post-relocation center contexts. For 3 percent, temporal association was unclear. Most of the items associated with the relocation center were from a single excavation unit (Unit 25) in the relocation center hospital landfill, and are hospital related.

The floral remains, in contrast to other miscellaneous items, come largely from the pre-relocation center contexts, reflecting the agricultural focus of these time periods. Of the floral remains 47 percent were from town or ranch-era contexts, 10 percent were from relocation center era contexts, 3 percent were from post-relocation center contexts, and 40 percent were from unclear temporal associations.

Cloth items include two lantern wicks from Unit 26, within a post-relocation-center landfill. One lamp wick and four small cloth fragments came from Unit 25, the relocation center hospital landfill.

All the cork was from Unit 25 and consisted of stoppers and stopper fragments, probably for test tubes, medicine bottles, and other medical equipment.

Ten of the 13 collected electrical porcelain artifacts were from Relocation Center contexts, one was from the Manzanar Airport, and two were from town-era sites. They include fixtures for knob-and-tube wiring, lights, switches, and an outlet.

The 203 floral remains, collected only from excavation units, include 176 peach pits or fragments, nine plum pit fragments, six squash seeds, four corn cob fragments, two walnut shells, an apricot pit, a charred bean, and four unidentified seed fragments. Many peach pits were recovered from Unit 2, likely reflecting that unit's location within a former town-era peach orchard. However, peach pit fragments were well distributed throughout the three

temporal components, and in half of the excavation units. The most diverse floral assemblages came from Unit 22 in a town-era residential trash deposit and from Unit 25 in the relocation center hospital landfill.

There were five small leather fragments from Unit 25; one of these is a flat circle 2¼ inches in diameter, of unknown function. A man's work shoe was collected from the Relocation Center landfill. The final leather piece collected was a small fragment from Unit 23 at MANZ 1993 A-28 (Ed Shepherd/Campbell House).

Paper items include a sandpaper disk and label bits, likely from medicine bottles, from Unit 25 and several charred butter and milk cartons melted together from a small dump associated with a relocation center farm field.

The 34 plastic items in relocation center contexts include a toy fragment, a record fragment, a tax token, a bowl, flatware, bottle caps, and a toothbrush (Figure F.1). Medical bottle caps, tubing, and other medical-related items were recovered from Unit 25. An electrical switch and a buckle were collected from the Manzanar Airport. Town context plastic includes a "Carter's Ink" cap, a record fragment, a whiskey bottle cap, and possibly a cap for a wine bottle cork stopper.

The only rubber item collected from a town context was a hot water bottle (see Figure F.1) from MANZ 1993 A-15, Locus B. Hose fragments and a bushing were collected from the Manzanar Airport. From the relocation center came two toy wheels, an eraser, a caster, a sink/laundry tub stopper, and other unidentified fragments. Unit 25, at the hospital landfill, yielded a test tube stopper, a bottle stopper with a hole for a pipette, a rubber band, and a strap. Two collected golf balls from the relocation center may be later intrusions.

The 27 shell pieces are mostly abalone fragments, with one barnacle collected from Block 13, several marine bivalves all likely associated with the relocation center, and an inlay piece from Unit 4 of uncertain temporal association.

The 13 terra cotta fragments represent at least five flower pots. Two of the fragments came from town contexts, one from a post-relocation center context, and 10 from relocation center contexts.

The 19 wood items include one possible toy wheel from the surface at Block 33. The others are lumber and shingle fragments from five excavation units in town-era, relocation center-era, and post relocation center-era contexts.

Other materials collected include a piece of asphalt (from the 80-145 cm level of Unit 26 in the post-relocation center landfill), a yellow fire brick fragment, two pencil leads (from Unit 26), two pre-1914 ceramic marbles (Randall 1971; both from early town-era contexts), two human feces, eight drywall and plaster fragments, a hardened roll of plaster gauze, a 1-inch-square piece of sandstone, nine stone "Go" gaming pieces, a group of mica washers, and 17 slate fragments possibly from chalkboards (16 from Unit 19 and one from Block 21).

Three of the "Go" pieces, as well as the feces, putty, plaster gauze, and other hospital-related material, came form Unit 25. Another two "Go" pieces were collected from the surface of the hospital landfill (MANZ 1993 A-37 Locus A), perhaps suggesting some of the hospital patients played this traditional Japanese game to pass the time.

Table F.1. Cloth Items Collected During Field Work at Manzanar National Historic Site.

Description	Provenience	Field No.
three small fragments	Unit 25, 0-10 cm	B-909
fragment (wool?)	Unit 25, 20-30 cm	B-936
lamp wick, 9" long	Unit 25, 50-75 cm	B-983
two lantern wicks, 3½" long	Unit 26, 30-40 cm	B-1019

Table F.2. Cork Items Collected During Field Work at Manzanar National Historic Site.

Description	Provenience	Field No.
stopper, 3/4"-1/2" dia. by 1" long	Unit 25, surface	B-561
stopper, 7/8" dia. by 1" long, central pipette hole and series of holes around edge	Unit 25, 50-75 cm	B-988
stopper fragment, 1¼" dia.	Unit 25, 10-20 cm	B-926
stopper fragment	Unit 25, 20-30 cm	B-937
stopper, 3/8"-5/8" dia. by 1" long	Unit 25, 20-30 cm	B-937
stopper, 1/2"-3/4" dia. by 1" long	Unit 25, 30-40 cm	B-951
eroded piece, 1¼" long	Unit 25, 40-50 cm	B-961

Table F.3. Electrical Porcelain Artifacts Collected During Field Work at Manzanar National Historic Site (markings listed within quotation marks).

Description	Provenience	Field No.
two split knobs with nails "SUPERIOR 5½"	MANZ 1993 A-30, Block 14	A-52
outlet fragment "...A-250V 15A-125V"	MANZ 1993 A-30, Block 14, Area B-2	B-526
light fixture "250W 250V MADE IN USA G 6481 UL"	MANZ 1993 A-30, Block 20	B-215
tube	MANZ 1993 A-30, Block 35	A-145
split knob with nail "KNOX 5½"	MANZ 1993 A-30, Judo Block	B-131
on-off switch block "KNOX UL 3400"	MANZ 1993 A-30, Firebreak C5	B-223
large lipped tube	MANZ 1993 A-30, Firebreak C5	A-53
split knob top "F PATD"	MANZ 1993 B-7	B-767
split knob with nail "ALLIEATOR P.P. INC. 3½"	MANZ 1993 B-27, Feature 2	B-838
rotary switch knob "P"	Unit 21, surface	B-670
on-off recessed switch	Unit 25, 50-75 cm	B-987
small knob "$"	Unit 26, 30-40 cm	B-1014
base plate "MEISSNER U.S.A. G A3"	Unit 26, 30-40 cm	B-1040

Table F.4. Floral Remains Collected During Field Work at Manzanar National Historic Site.

Provenience	Description
Unit 1	
60-70 cm	1 peach pit fragment
70-80 cm	1 peach pit fragment
80-90 cm	2 peach pit fragments
90-100 cm	1 peach pit fragment
Unit 2	
0-10 cm	48 peach pit fragments
10-20 cm	4 peach pit fragments
20-30 cm	6 peach pit fragments
30-40 cm	2 peach pit fragments
40-50 cm	3 peach pit fragments
80-90 cm	1 peach pit fragment
Unit 3	
20-30 cm	1 peach pit fragment
Unit 5	
20-30 cm	4 peach pit fragments
Unit 6	
0-10 cm	6 peach pit fragments
10-20 cm	1 peach pit fragment
Unit 10	
20-30 cm	walnut shell
Unit 16	
0-10 cm	18 peach pit fragments
10-20 cm	13 peach pit fragments
40-50 cm	1 peach pit fragment
Unit 17	
0-10 cm	walnut shell
Unit 20	
10-20 cm	1 peach pit fragment
Unit 21	
0-10 cm	12 peach pit fragments, 1 unknown fragment
Unit 22	
0-10 cm	24 peach pit fragments, 1 apricot pit fragment, 4 plum pit fragments, 5 squash seeds, 4 corn cob fragments, 2 unknown fragments
10-20 cm	2 peach pit fragments, 2 plum pit fragments, 1 unknown fragment
20-30 cm	2 peach pit fragment, 2 plum pit fragments
50-60 cm	1 peach pit fragment
Unit 25	
0-10 cm	1 peach pit fragment
10-20 cm	1 peach pit fragment
20-30 cm	2 peach pit fragments, 1 squash seed, 1 unknown fragment
30-40 cm	1 peach pit fragment
40-50 cm	10 peach pit fragments, 1 plum pit
50-75 cm	1 peach pit fragment
Unit 26	
10-20 cm	1 peach pit fragment
20-30 cm	1 peach pit fragment
30-40 cm	3 peach pit fragments, 1 bean

Table F.5. Leather Items Collected During Field Work at Manzanar National Historic Site.

Description	Provenience	Field No.
leather shoe fragment with metal eyes and shoelace	MANZ 1993 B-8	A-203
small fragment	Unit 23, 10-20 cm	B-718
bag (?) fragment	Unit 25, 0-10 cm	B-912
circle, 2¼" dia.	Unit 25, 20-30 cm	B-936
small fragment	Unit 25, 20-30 cm	B-940
small fragments	Unit 25, 40-50 cm	B-960
small fragment	Unit 25, 50-75 cm	B-983

Table F.6. Paper Items Collected During Field Work at Manzanar National Historic Site.

Description	Provenience	Field No.
color fragments with portions of readable print	Unit 25, 0-10 cm	B-909
small fragments with portions of readable print	Unit 25, 10-20 cm	B-920
small fragments with portions of readable print	Unit 25, 20-30 cm	B-936
few small bits with portions of readable print (bottle labels?)	Unit 25, 30-40 cm	B-950
sandpaper disk, 9/16" dia., with central hole	Unit 25, 30-40 cm	B-947
small fragments with portions of readable print	Unit 25, 40-50 cm	B-960
fragments with portions of readable print (labels?)	Unit 25, 50-75 cm	B-986
burned and charred waxed milk and butter cartons*	MANZ 1993 A-15, Locus A	B-810

* milk cartons: "Golden State Co., LTD., State Grade A Homogenized Milk Pasteurized"; butter cartons: "Challenge Butter"

Table F.7. Plastic Artifacts Collected During Field Work at Manzanar National Historic Site (embossments listed within quotation marks).

Description	Provenience	Field No.
red toy wheel (?) fragment	MANZ 1993 A-30, Block 12, Area B-2	B-554
record fragment, 1/8" thick	MANZ 1993 A-30, Block 13	A-69
tax token "2 STATE OF UTAH SALES TAX TOKEN"	MANZ 1993 A-30, Block 22	A-40
orange bowl fragment	MANZ 1993 A-30, Staff Housing, Area D	B-548
brown cap to cork bottle stopper, 1" dia "NO 11 MCC 7250 USA" with southern gentlemen embossed on top	MANZ 1993 A-30, Dr/Nurse's Qtrs Block	A-19
orange toy lizard foot	MANZ 1993 A-30, Staff Housing	A-192
green flatware, end fragment	MANZ 1993 A-30, Staff Housing, Area A	B-544
small black embossed fragment	MANZ 1993 A-30, Staff Housing, Area C	B-547
fragment of orange toy fork	MANZ 1993 A-30, Staff Housing, Area C	B-547
black medical (?) bottle cap, 1⅜" dia. "C-54-15 64 28-400 16"	MANZ 1993 A-30, Staff Housing, Area D	B-548
insert piece (?)	MANZ 1993 A-15, Locus A, Unit 3	B-566
toothbrush, yellow, green, and black	MANZ 1993 B-8	B-819
cap for wine bottle cork stopper, 1" dia. "T'S EST. 1835 VIRGINIA DARE REG. U.S. PAT. OFF. WINE GARRETT & CO INC NY MADE IN USA"	MANZ 1993 B-15	B-855
blue bottle cap, 3/4" dia.	MANZ 1993 B-27, Feature 2	B-837
buckle "NO. 750R PAT. NO. 4001920 Fast-N-Tite® UNIVERSAL STRAP CO. JACKSON WI."	MANZ 1993 B-27	B-829
electrical switch part	MANZ 1993 B-27	B-828
black medical bottle cap, 7/8" dia. "23 82 20-414" with Owens Illinois Bottle Co. trademark	MANZ 1993 A-37, Locus A	B-903
black medical bottle cap fragment	MANZ 1993 A-37, Locus A	B-903
black bottle cap, 1⅜" dia. "CARTER'S INK'S"	Unit 17, 0-10 cm	B-488
record fragment, 1/8" thick	Unit 18, 0-10 cm	B-590
brown whiskey (?) bottle cap 1¼" dia. "30 ANCHOR C"	Unit 21, 0-10 cm	B-673
black medical bottle cap, 1" dia.	Unit 25, 0-10 cm	B-916
black medical bottle cap fragments	Unit 25, 0-10 cm	B-916
black medical bottle cap, 1¼" dia. "30 400 68 4"	Unit 25, 0-10 cm	B-916
thin clear sheet, $1\frac{5}{16}$" by $2\frac{11}{16}$"		
microscope slide cover (?)	Unit 25, 10-20 cm	B-924
two small fragments (one from a bottle cap)	Unit 25, 10-20 cm	B-924
black block, 3/4" by 7/8" by 1/8" thick, with six holes, possibly a holder for glass tubes or lances	Unit 25, 20-30 cm	B-937
thin clear sheet, 1" by 1½" with rounded corners and traces of paper	Unit 25, 20-30 cm	B-937
white tube fragment	Unit 25, 20-30 cm	B-937
black medical bottle cap, 1" dia. "6"	Unit 25, 20-30 cm	B-937
black medical bottle cap fragment	Unit 25, 20-30 cm	B-937
piece of thin light blue sheet	Unit 25, 20-30 cm	B-932
black medical bottle cap fragment	Unit 25, 40-50 cm	B-961
two small clear tube fragments	Unit 25, 40-50 cm	B-961

Table F.8. Rubber Artifacts Collected During Field Work at Manzanar National Historic Site.

Description	Provenience	Field No.
golf ball, eroded	MANZ 1993 A-30, Block 13, Area B-2	B-513
toy car wheel (?), 3/4" dia.	MANZ 1993 A-30, Block 14, Area B-1	B-524
white toy car wheel (?), 5/8" dia.	MANZ 1993 A-30, Block 21, Area B-2	B-537
pencil eraser	MANZ 1993 A-30, Block 21, Area B-2	B-539
caster, 2" dia. wheel	MANZ 1993 A-30, Block 26	A-80
hardened fragment	MANZ 1993 A-30, Staff Housing	A-193
string-reinforced rubber hose fragment	MANZ 1993 A-30, Staff Housing, Area C	B-547
golf ball interior	MANZ 1993 A-30, Service Station Area	A-185
laundry tub/sink stopper, 1¼" dia.	MANZ 1993 A-30, Feature P-26	A-107
hot water bottle	MANZ 1993 A-15, Locus B, Unit 2	B-569
burned fragment	MANZ 1993 A-15, Locus B, Unit 2	B-561
two hose fragments, 2" dia.	MANZ 1993 B-27	B-823
fragment of string-reinforced rubber hose with metal clamp, 7/8" dia.	MANZ 1993 B-27	B-823
two bushings	MANZ 1993 B-27	B-823
two fragment of small orange rubber medical hose	Unit 25, 0-10 cm	B-916
small white fragment	Unit 25, 0-10 cm	B-916
black test tube stopper, 1/2"-3/8" dia. by 7/8" long	Unit 25, 0-10 cm	B-916
two 3⅛" long white pieces, complete(?) may be grips for flat glass	Unit 25, 30-40 cm	B-957
foam rubber and cloth strap (?)	Unit 25, 50-75 cm	B-989
small rubber band	Unit 25, 50-75 cm	B-989
stopper, 1" dia., with pipette hole	Unit 25, 50-75 cm	B-987

Table F.9. Shell Collected During Field Work at Manzanar National Historic Site.

Description	Provenience	Field No.
five abalone shell fragments	MANZ 1993 A-30, Block 13	B-511
abalone shell fragment	MANZ 1993 A-30, Block 14, Area B-1	B-524
barnacle	MANZ 1993 A-30, Block 13, Area B-2	B-514
two marine bivalve fragments	MANZ 1993 A-30, Block 16	A-46
abalone shell fragment	MANZ 1993 A-30, Block 21, Area B-1	B-534
five abalone shell fragments	MANZ 1993 A-30, Block 21, Area B-2	B-540
marine bivalve fragment	MANZ 1993 A-30, Block 23	A-29
marine bivalve fragment	MANZ 1993 A-30, Block 28	A-124
abalone shell fragment	MANZ 1993 A-30, Firebreak E6	A-22
marine bivalve fragment	MANZ 1993 A-21	A-109
inlay (?) piece, 0.38" diameter, 0.1" thick	Unit 4, 0-10 cm	B-164
three abalone shell fragments	Unit 6, 0-10 cm	B-237
abalone shell fragment	Unit 25, 0-10 cm	B-910

Table F.10. Terra Cotta Fragments Collected During Field Work at Manzanar National Historic Site.

Description	Provenience	Field No.
two flower pot fragments	MANZ 1993 A-30, Block 21, Area C	B-541
flower pot fragment	MANZ 1993 A-30, Staff Housing, Area B	B-546
two flower pot fragments	Unit 21, 10-20 cm	B-680
five flower pot fragments	Unit 25, 10-20 cm	B-918, B-927
two flower pot fragments	Unit 25, 30-40 cm	B-952
flowerpot fragment	Unit 26, 30-40 cm	B-1017

Table F.11. Wood Collected During Field Work at Manzanar National Historic Site.

Description	Provenience	Field No.
toy wheel (?), 2" dia. by 11/16" thick	MANZ 1993 A-30, Block 33	A-116
charred wood, 3½" by 2¼" by 1¾"	Unit 9, 0-10 cm	B-295
small shim	Unit 15, 0-10 cm	B-448
seven shingle (?) fragments	Unit 16, 0-10 cm	B-475
small fragment	Unit 16, 10-20 cm	B-479
seven fragments, 3/4" thick, longest is 9"	Unit 19, 0-10 cm	B-602
fragment, 3/4" thick	Unit 26, 80-145 cm	B-1028

Table F.12. Other Historic Materials Collected During Field Work at Manzanar National Historic Site.

Material	Description	Provenience	Field No.
asphalt (?)	oil-impregnated soil	Unit 26, 80-145 cm	B-1026
ceramic	marble, white w/orange stripes	MANZ 1993 A-4	B-278
ceramic	marble, white	MANZ 1993 A-13, Locus B	B-583
clay	yellow fire brick fragment	MANZ 1993 A-37, Locus A	B-899
coal	briquet, rounded edges, 1¾" by 2½"	MANZ 1993 A-30, Block 25	A-78
graphite	pencil lead, burned (?)	Unit 26, 10-20 cm	B-995
graphite	pencil lead	Unit 26, 30-40 cm	B-1012
human feces	two fragments	Unit 25, 30-40 cm	B-957
plaster	two small drywall fragments	Unit 6, 20-30 cm	B-243
plaster (?)	three bits of ornamental plaster (?)	Unit 19, 10-20 cm	B-616
plaster	two small drywall fragments	Unit 19, 10-20 cm	B-615
plaster	hardened roll of plaster glaze	Unit 25, 20-30 cm	B-935
plaster	ornamental, structural (ceiling?)	MANZ 1993 A-13, Locus D	A-162
putty	white with thin groove, glass mount (?)	MANZ 1993 A-37, Locus A	B-903
putty	pinkish, hardened putty (?)	Unit 25, 20-30 cm	B-940
putty	pinkish flat fragment	Unit 25, 30-40 cm	B-947
putty	two small pink fragments	Unit 25, 30-40 cm	B-957
putty	five pink blobs	Unit 25, 50-75 cm	B-989
sandstone	1" square, 7/8" thick, rounded edges	MANZ 1993 A-30, Block 20	A-28
stone	"Go" piece, black	MANZ 1993 A-30, Block 21	B-179
stone	soapstone washer fragment, 1½" dia., with 5/8" dia. hole	MANZ 1993 A-30, Block 21, Area B-2	B-540
stone	slate chalkboard fragment	MANZ 1993 A-30, Block 21, Area B-2	B-540
stone	"Go" piece, black	MANZ 1993 A-30, Block 33	A-116
stone	two "Go" pieces (one white, one black)	MANZ 1993 A-30, Block 35	A-145
stone	mica washer(s), 15 thin sheets 7/8" dia., with 1/4" hole, bound with thin copper wire	MANZ 1993 A-30, Hospital Block	B-1042
stone	"Go" piece, white	MANZ 1993 A-37, Locus A	A-122
stone	"Go" piece, black	MANZ 1993 A-37, Locus A	B-1047
stone	12 slate chalkboard fragments	Unit 19, 0-10 cm	B-603
stone	four slate chalkboard fragments	Unit 19, 10-20 cm	B-116
stone	two "Go" pieces, both white (one is a fragment)	Unit 25, 20-30 cm	B-943
stone	"Go" piece, black	Unit 25, 40-50 cm	B-964
unknown	burned substance	Unit 21, 0-10 cm	B-676
unknown	burned substance	Unit 22, 50-60 cm	B-711
unknown	glue fill, cap for small vial (?)	Unit 25, 40-50 cm	B-961
unknown	burned substance	Unit 26, 20-30 cm	B-1005



Figure F.1. Hot water bottle from MANZ 1993 A-15, Locus B (FN B-569) and toothbrush from MANZ 1993 B-8, Feature 1 (FN A-198).

Appendix G

Debitage Analysis

Lynne M. D'Ascenzo

A total of 3,901 pieces of debitage was recovered from four prehistoric archeological sites at Manzanar National Historic Site during National Park Service excavations in 1993. At each of these four sites, MANZ 1993 A-1, MANZ 1993 A-2, MANZ 1993 A-3 and MANZ 1993 A-4, debitage was the most abundant artifact type recovered (see Chapter 13).

Debitage was recovered from fourteen 1 m by 1 m units, excavated in 10 cm levels. Excavation Units 1 and 2 at site MANZ 1993 A-1 yielded 94 pieces of debitage. At MANZ 1993 A-2, 2,998 pieces of debitage were recovered from Units 3, 4, 5, 6, and 24. Thirty-six pieces of debitage were recovered from Unit 7 at site MANZ 1993 A-3. Six units, Units 9 through 14, at site MANZ 1993 A-4 yielded 773 pieces of debitage (Table G.1).

Over 75 percent of the debitage was recovered from a single excavation unit at MANZ 1993 A-2 (Unit 24) that encountered a layer of charcoal with abundant artifacts that may represent a occupation surface or house floor. Because this unit presents the best analytic case, both numerically and contextually, the results for this unit are discussed separately below.

Methods

Debitage was analyzed using three categories of information: lithic material type, technology, and size. This information is used to characterize the lithic reduction strategies that produced the assemblage.

Material

Debitage was first sorted by lithic material type: obsidian, basalt/igneous, or cryptocrystalline material. Obsidian, by far the most common flaked stone material at prehistoric sites in the Owens Valley, is available at several locations in the region. The closest sources to the Manzanar area include Fish Springs, 25 miles north near Big Pine, and Coso Hills, 50 miles south near Coso Junction. Obsidian sources were not differentiated in this analysis. Basalt and igneous rock quarries have been less intensively studied than obsidian quarries, but there are several potential sources within Owens Valley. The cryptocrystalline material category in this analysis includes chert, chalcedony and jasper. Chert colors are highly variable from very light tan and gold to grays and brown, and include fine-grained to coarse-grained specimens. Chalcedony is light-colored/white, translucent, and extremely fine-grained. Jasper is fine-grained and red or gold in color. These materials are apparently cobble-derived and were probably

Table G.1. Debitage Distribution.

Site	Unit	Depth	Count	Site Total
A-1	1	90 cm	60	
A-1	2	80 cm	34	94
A-2	3	50 cm	206	
A-2	4	50 cm	141	
A-2	5	100 cm	212	
A-2	6	60 cm	7	
A-2	24	80 cm	2,432	2,998
A-3	7	40 cm	36	36
A-4	9	90 cm	178	
A-4	10	60 cm	124	
A-4	11	80 cm	114	
A-4	12	90 cm	244	
A-4	13	80 cm	79	
A-4	14	120 cm	34	773

obtained from alluvial fans and stream terraces in the surrounding area.

Technology

To provide consistency and comparability with other research in the region, the technological flake-type data of whole flakes were recorded using flake-type definitions developed by Far Western Anthropological Research Group (FWARG) for analysis of lithic debitage from CA-INY-30, a multi-component stratified site in the southern Owens Valley (Basgall and McGuire 1988:427).

The FWARG definitions follow, modified slightly for clarity rather than categorical differences:

Primary Decortication Flake (PD) — a percussion flake with more than 85 percent of the dorsal surface covered with cortex.

Secondary Decortication Flake (SD) — a percussion flake with less than 85 percent of the dorsal surface partially covered with cortex.

Simple Tertiary Flake (S) — a percussion flake which has one or two planar interior fractures as its dorsal surface.

Complex Tertiary Flake (C) — a percussion flake of any size and shape which has three or more generally non-patterned dorsal scars.

Biface Thinning Flake (BTF) — a percussion flake with a complex dorsal surface, frequently curved from proximal to distal end.

Percussion/Pressure Flake (PPF) — a whole tertiary flake with an intact platform, usually rounded in plan view, with a maximum dimension between 5 mm and 20 mm.

Pressure Flake (P) — a tertiary flake with an intact platform that generally has a length from proximal to distal end less than 20 mm (if ribbon-like) or less than 10 mm (if rounded in plan view). The former usually exhibit a single dorsal arris running the length of the flake.

Pieces of debitage that lack technologically identifiable attributes are categorized as one of the three flake types defined below. These flake types are not included on the cumulative reduction profile graphs because they are not diagnostic of any one step in the lithic reduction continuum, but can be produced at any stage of the reduction process.

Flake Fragment — percussion flake fragments that cannot be identified to type.

Angular Piece — often referred to as shatter, these percussion shatter fragments are blocky chunks of stone of variable size; cortex may be present.

Indeterminate Debitage — usually small, flat fragments lacking any technologically diagnostic characteristics.

Size

Debitage recovered from selected units that were screened with 1/8-inch mesh was sorted into eight size grades. These included Unit 1

(MANZ 1993 A-1), Units 3 and 24 (MANZ 1993 A-2), Unit 7 (MANZ 1993 A-3), and Unit 9 (MANZ 1993 A-4). Size grades 2 through 8 progress in 6 mm increments starting at 6 mm, up to 48 mm. Size grade 1 includes flakes less than 6 mm in size. Flake sizes were determined by placing each flake on a series of squares. A flake was considered to belong in the size-grade of the smallest square into which it would fit at any angle.

Results and Interpretations

The following interpretations are based on proportional data of material-type frequency, flake attributes, and size-grade. Interpretation emphasis is on intersite and material-type variability. Raw lithic data are presented in Table G.2.

Lithic Material-Type

Obsidian is the most frequent lithic material type at all sites, comprising 82 percent (n=3,197) of the overall assemblage. Results of obsidian sourcing are presented in Appendices J and K. Cryptocrystalline materials represent 16 percent (n=635) of the recovered debitage assemblage. Basalt/igneous is the least common material type at 2 percent (n=69) of the total assemblage.

Only at MANZ 1993 A-1 is the percentage of cryptocrystalline materials (51%, n=48) greater than the percentage of obsidian (49%, n=45). Although the sample is small, at MANZ 1993 A-3 cryptocrystalline materials comprise 34 percent (n=12) of the lithic material, obsidian 58 percent (n=21), and basalt/igneous 8 percent (n=3) of the site assemblage. This suggests the lithic procurement strategy at MANZ 1993 A-1, and perhaps at MANZ 1993 A-3, differs from the other tested sites, where frequency of obsidian is markedly higher than other material types. At MANZ 1993 A-2 obsidian comprises 84 percent (n=2,512) of the site assemblage, cryptocrystalline materials 14.5 percent (n=437), and basalt/igneous 1.5 percent (n=46). At MANZ 1993 A-4 obsidian is 80 percent (n=619), cryptocrystalline materials 17 percent (n=135), and basalt/igneous 3 percent (n=19) of the assemblage.

Technology

The proportions of flake types from each site, by lithic material-type, are graphed in Figures G.1 through G.4. The cumulative proportions of flake-types from Unit 24 at MANZ 1993 A-2 are graphed in Figure G.5. Cumulative ogive curves are used here to graphically represent the data as relative proportions of debitage flake types. These cumulative curves can be thought of as profiles of the reduction character of the assemblage (Bloomer 1991:207) from each site. The flake types, defined above, are graphed from left to right on the X-axis of the graphs. The flake types are ordered to reflect stages or steps along what is often a continuum of flake removals (Crabtree 1982), assuming a linear model of biface production. These reduction profiles provide the basis for the interpretation of reduction activities at each site.

MANZ 1993 A-1

Reduction of obsidian is divided almost equally between early stage flake types (48%) and later stage flake types (52%). Cortical flakes comprise 17 percent of this assemblage (n=5) as do percussion/pressure flakes. The majority of the flake types are simple interior flakes and complex interior flakes (31%, n=9 and 28%, n=8) with a low percentage (7%, n=2) of biface thinning flakes.

The profile for cryptocrystalline materials indicates a strong emphasis on early stage bifacial reduction, expressed by high percentages of simple interior (47%, n=17) and cortical flakes (36%, n=9). But, later stage reduction is also represented with over a quarter of the assemblage including complex interior flakes (14%, n=5), biface thinning flakes (3%, n=1) and percussion/pressure flakes (11%, n=4).

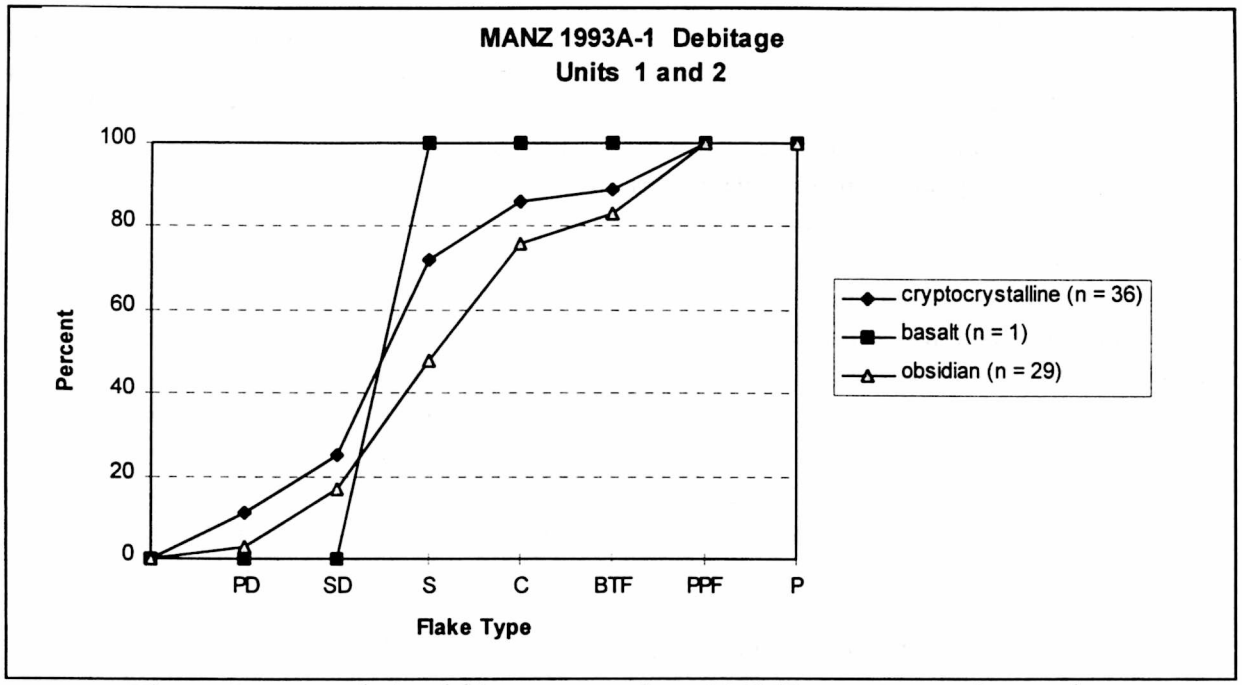


Figure G.1. Cumulative debitage proportions, MANZ 1993 A-1, Units 1 and 2.

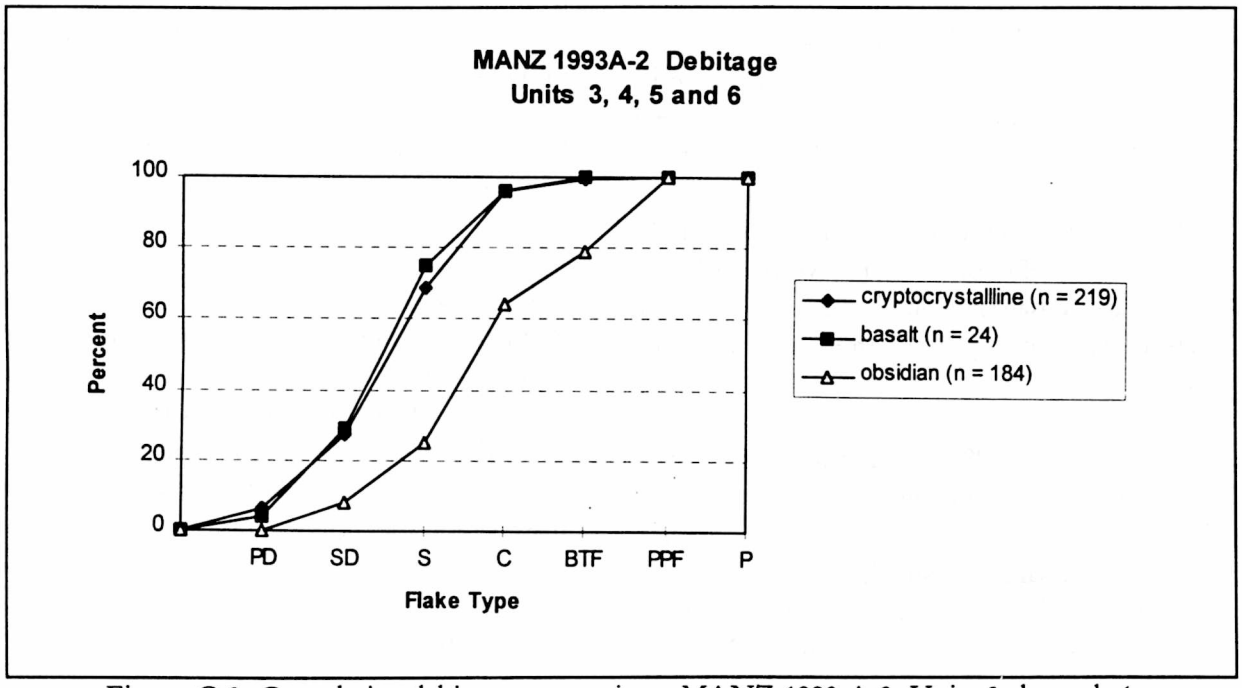


Figure G.2. Cumulative debitage proportions, MANZ 1993 A-2, Units 3 through 6.

The only evidence of reduction for basalt/ igneous is a single cortical flake, associated with early stage bifacial reduction.

MANZ 1993 A-2

In the obsidian assemblage, late stage biface production is indicated by a high percentage of complex interior flakes (39%, n=72) combined with modest percentages of biface thinning flakes (15%, n=28) and a high percentage of percussion/pressure flakes (21%, n=38). The absence of primary decortication flakes, a low percentage of secondary decortication flakes (8%, n=14) and

less than half of interior flakes represented by simple interior flakes (17%, n=32) supports this interpretation of late stage reduction.

Over a quarter of the cryptocrystalline materials are cortical; 6 percent (n=13) are primary decortication flakes and 21 percent (n=46) are secondary decortication flakes. Simple interior flakes represent 42 percent (n=91) of the assemblage, complex interior flakes 27 percent (n=59) and biface thinning flakes 4 percent (n=8). The emphasis is on early stage reduction, suggesting production of flake blanks from cores.

For the basalt/igneous, early stage reduction is suggested by 29 percent (n=7) cortical and 46 percent (n=11) simple interior flakes. Complex interior flakes comprise 21 percent (n=5) of the assemblage and biface thinning flakes 4 percent (n=1).

MANZ 1993 A-2, Unit 24

The technological profile for obsidian from Unit 24 includes flake types from the entire reduction sequence. It is the only unit where distinct pressure flakes were identified, in addition to those in the broad percussion/pressure flake category. Less than 1 percent (n=10) of the assemblage consists of primary decortication flakes. Low percentages of secondary decortication (10%, n=120) and of simple interior flakes (15%, n=176) suggests some early stage bifacial reduction is represented. But the majority of the assemblage indicates late stages of bifacial reduction, with high percentages of complex interior flakes (35%, n=401), biface thinning flakes (12%, n=137), pressure/percussion flakes (27%, n=308) and pressure flakes (1%, n=16).

Cortical flakes comprise a quarter of the cryptocrystalline materials assemblage; primary decortication flakes and secondary decortication flakes represent 6 percent (n=8) and 19 percent (n=25) respectively. Nearly equal percentages of simple interior flakes (31%, n=41) and complex interior flakes (27%, n=36), and a small amount of biface thinning flakes (7%, n=11) and percussion/pressure flakes (10%, n=13) suggest early stage biface production.

For basalt/igneous, a high percentage of secondary decortication flakes (18%, n=2) and of simple interior flakes (45%, n=5) with a comparatively low percent of complex interior flakes (37%, n=4) suggests early stage bifacial reduction of material quarried elsewhere.

MANZ 1993 A-3

The small amount of debitage recovered from Unit 7, the only unit with prehistoric material of the two units excavated at that site, limits the reliability of interpretations and truncates the technological profiles. Of the obsidian, there were six complex interior flakes, three simple interior flakes, one secondary decortication flake, one biface thinning flake, and five pressure flakes, possibly suggesting late stage reduction of obsidian.

Early stage bifacial reduction may be suggested by the profile for cryptocrystalline materials, with a high percentage of simple interior flakes (70%, n=7) compared to complex interior flakes (20%, n=2) and the presence of biface thinning flakes (10%, n=1).

Two of the three basalt/igneous flakes recovered from Unit 7 are secondary decortication flakes and the third is a complex flake, hinting at bifacial reduction.

MANZ 1993 A-4

Late stage bifacial reduction is indicated by the obsidian profile. Primary decortication flakes (1%, n=4) are not well represented. Low percentages of secondary decortication flakes (18%, n=59), and of simple interior flakes (18%, n=62) compared to complex interior flakes (44%, n=149), and a modest amount of biface thinning flakes (12%, n=39) and a low percent of percussion/pressure flakes (7%, n=24) support this interpretation.

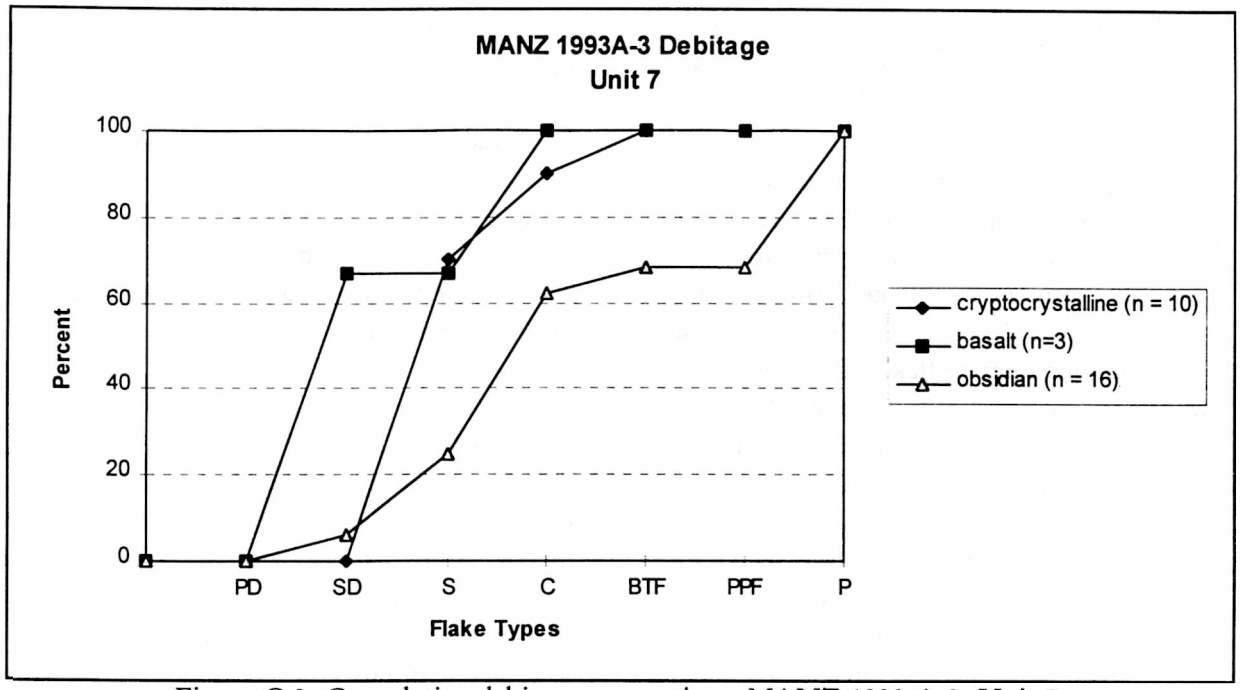


Figure G.3. Cumulative debitage proportions, MANZ 1993 A-3, Unit 7.

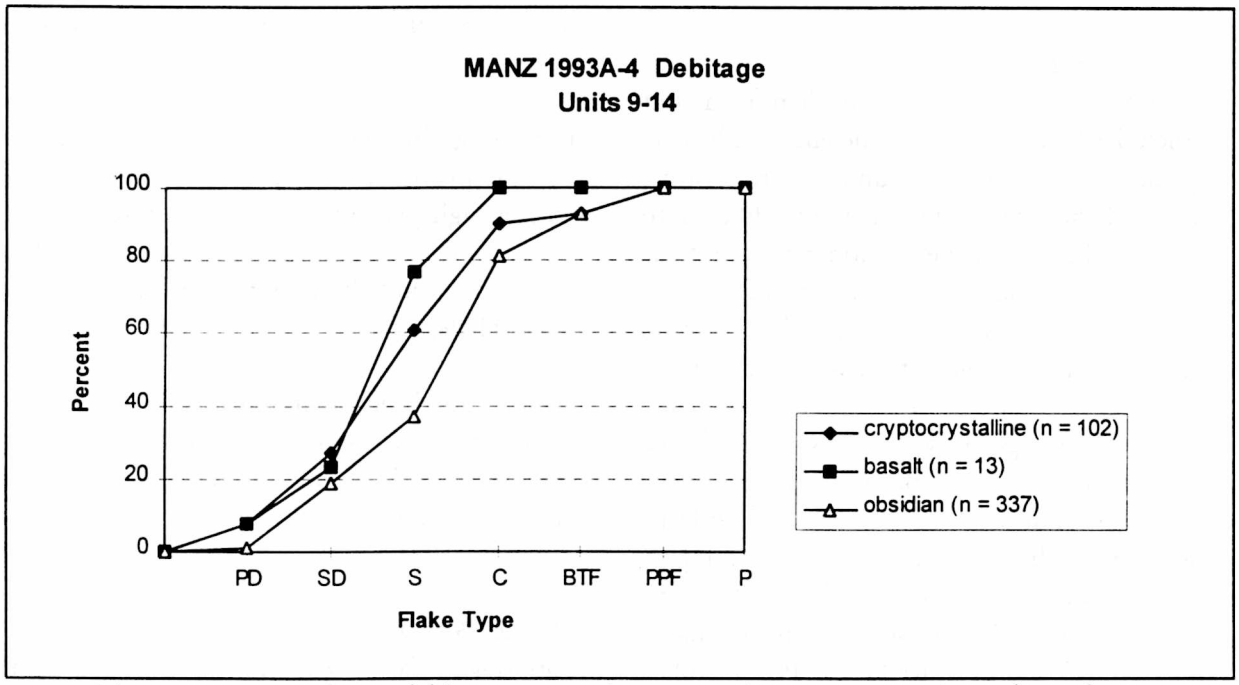


Figure G.4. Cumulative debitage proportions, MANZ 1993 A-4, Units 9 through 14.

Early stage bifacial reduction is indicated for the cryptocrystalline materials by a higher percentage of simple interior flakes (34%, n=35) compared to complex interior flakes (29%, n=30), and a high percentage of cortical flakes (27%, n=27). A low percentage of biface thinning flakes (3%, n=3) and percussion/pressure flakes (7%, n=7) tends to support this interpretation. This pattern suggests an early stage of bifacial reduction, possibly preparation of flake blanks from cores.

Only 13 basalt/igneous flakes were recovered: seven are simple interior flakes, three are complex interior flakes, and three are cortical

flakes. Though the sample is small, it may suggest core reduction and early stage bifacial reduction.

Summary of Technological Trends

Late stage bifacial reduction is indicated by the plotted profiles of obsidian debitage. This assemblage contains less than one percent primary decortication flakes for all sites, suggesting reduction of prepared blanks of raw material with core reduction/primary decortication taking place at some other location. The most frequent flake types are interior, with complex interior flakes proportionally more frequent than simple interior flakes or bifacial thinning flakes. Small percentages of percussion/pressure and pressure flakes at all sites indicate final stages of tool manufacture, or tool maintenance.

Debitage profiles for cryptocrystalline materials are characterized by low percentages of percussion/pressure, pressure, and bifacial thinning flakes and high percentages of simple interior flakes, indicating a predominance of early stage reduction activities. Primary and secondary decortication flakes comprise approximately 25 percent of the assemblages from each site. The single exception to this trend is the assemblage from MANZ 1993 A-3, where the plotted profiles are probably affected by the small sample size.

Early stage bifacial reduction is indicated for basalt/igneous at all sites by the high percentages of secondary decortication and simple interior flakes, and minimal representation of later stage flake types. A relatively low percentage of primary decortication flakes indicates basalt/igneous debitage was derived from quarried cores. The small size of the basalt/igneous assemblage inhibits comprehensive interpretation, however; basalt/igneous comprises less than eight percent of the material recovered from any of the sites.

Debitage Lacking Technologically Identifiable Attributes

Flake fragments, angular pieces, and indeterminate debitage comprise 41 percent (n=1,604) of the entire debitage assemblage recovered during the project. Obsidian has the highest percentage of flake fragments at 43 percent (n=1,367) with 3 percent (n=85) angular pieces and less than 1 percent (n=11) indeterminate debitage. Flake fragments are 16 percent (n=11) of the basalt/igneous assemblage with 7 percent (n=5) angular pieces. For the cryptocrystalline materials flake fragments are 14 percent (n=90) of the assemblage, angular pieces are 6 percent (n=39) and indeterminate debitage is less than 1 percent (n=6).

Size

Size-grade information indicates small-sized raw material (cores or biface blanks) was used at all of the tested sites. Less than 1 percent (n=18) of the entire debitage assemblage is size-grade 6 or greater (Figure G.6). The overwhelming majority of the flakes are less than 30 mm (size-grade 5) in size.

The flake size-grade information supports the technological profiles. In later stages of bifacial reduction fewer large flakes and greater numbers of small flakes are produced. Debitage from biface replication experiments that was size-sorted and graphed by percentages resulted in a characteristic exponentially-shaped curve (Patterson 1990), illustrating this general relationship between large and small flake sizes. This trend is apparent in the graphs of size-graded debitage from the 1993 Manzanar excavations. Because the majority of lithic debitage recovered is obsidian and because the predominant reduction strategy indicated by obsidian profiles is biface production, it is not surprising that flake size is generally small. Size-grade 2 consistently has the highest percentages of debitage graphed for all units.

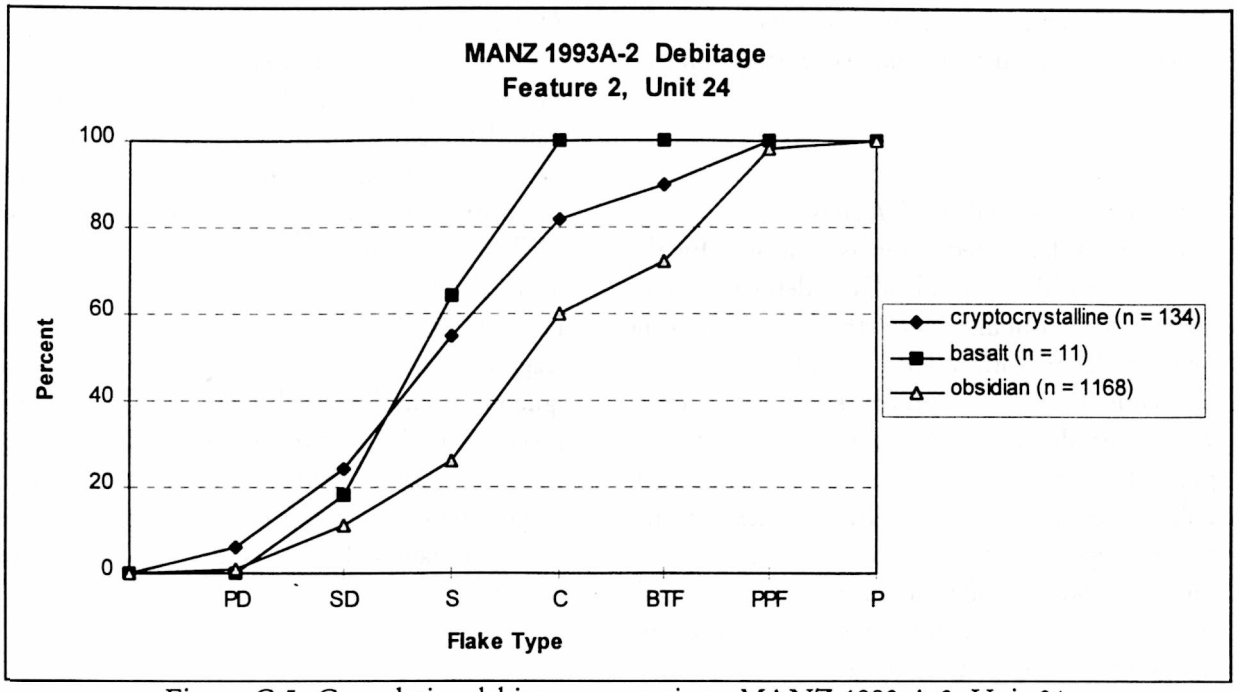


Figure G.5. Cumulative debitage proportions, MANZ 1993 A-2, Unit 24.

In Unit 24, the obsidian, which represents later stage bifacial reduction according to the technological classification, has higher percentages of small flakes than the cryptocrystalline material-type profiles which represent earlier stage bifacial reduction, according to flake type classification. This difference may also be related, in part, to the differing fracture properties of the two material-types.

Summary

Analytical data compiled for the 3,901 pieces of debitage recovered during the 1993 Manzanar excavation indicate a broad pattern of bifacial lithic reduction strategies and similar utilization of lithic material-types across the sites.

Debitage material types in the assemblage include obsidian, cryptocrystalline materials (chert, chalcedony and jasper), and basalt/igneous. Basalt/igneous has the lowest representation at 2 percent (n=69) and obsidian has the highest representation at 82 percent (n=3,197). Cryptocrystalline materials represent the remaining 16 percent (n=635).

The majority of the recovered debitage, 75 percent (n=2,233), is from Unit 24 at site MANZ 1993 A-2. This unit was excavated within a feature where lithic reduction activity was intense compared to other units excavated during the project. The reduction strategies for the Unit 24 debitage assemblage are the same as those indicated for other units at site MANZ 1993 A-2 and for units at the other sites tested.

At all sites, bifacial reduction was the dominant strategy with small amounts of core reduction and of expedient flake use. Raw material was apparently small cobbles of cryptocrystalline materials or small quarried obsidian cores or flake blanks. Late stage bifacial reduction is the pattern indicated for obsidian and early stage reduction is indicated for cryptocrystalline materials. Early stage bifacial reduction and some core reduction is suggested by the basalt/igneous debitage data.

Overall low percentages of percussion/pressure and pressure flakes are indicated for cryptocrystalline and basalt/igneous and for a small amount of obsidian. This pattern suggests that production of biface blanks, rather than finished tools,

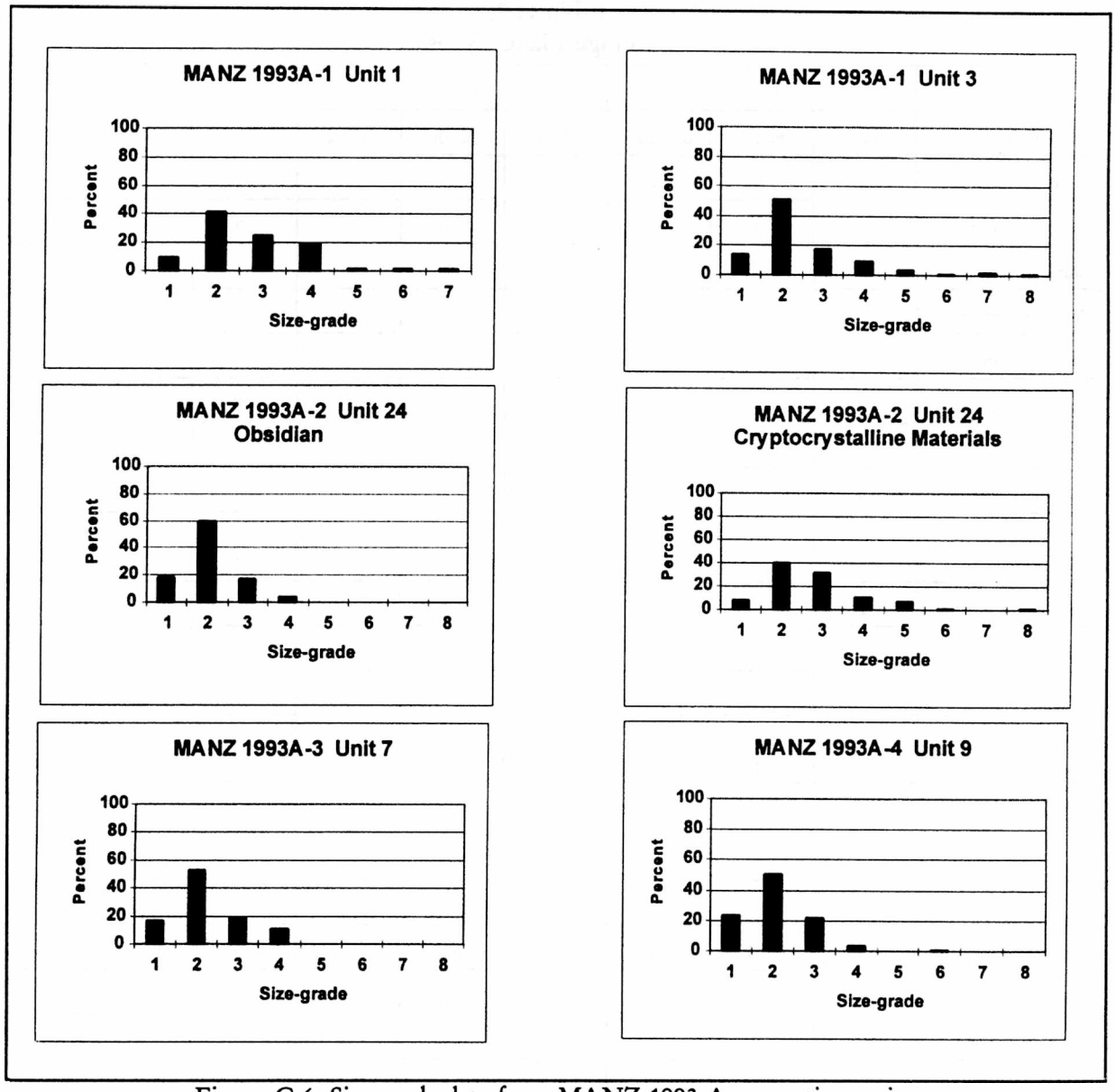


Figure G.6. Size-grade data from MANZ 1993 A excavation units.

may have been the aim of reduction activities, although pressure flakes may be under-represented due to recovery techniques. Parts of the reduction sequence may not be represented for some sites, such as MANZ 1993 A-3, or for some materials, such as basalt/igneous, due to small sample size.

Table G.2.
Debitage Flake Types.

	Unit 1			Unit 2			Unit 3		
Flake Type	chert	basalt	obsidian	chert	basalt	obsidian	chert	basalt	obsidian
1° decortication	2	0	1	2	0	0	3	0	0
2° decortication	4	0	4	1	0	0	20	5	0
Simple tertiary	10	1	4	7	0	5	30	8	9
Complex tertiary	4	0	4	1	0	4	15	5	18
Biface thinning	0	0	0	1	0	2	1	1	11
Percussion/pressure	4	0	2	0	0	3	2	0	33
Pressure	0	0	0	0	0	0	0	0	0
subtotal	24	1	15	12	0	14	71	19	71
Fragment	5	0	8	3	0	5	2	1	28
Angular	2	0	1	0	0	0	9	4	0
Indeterminate	2	0	2	0	0	0	1	0	0
subtotal	9	0	11	3	0	5	12	5	28
total	33	1	26	15	0	19	83	24	99

	Unit 4			Unit 5			Unit 6		
Flake Type	chert	basalt	obsidian	chert	basalt	obsidian	chert	basalt	obsidian
1° decortication	4	0	0	6	1	0	0	0	0
2° decortication	9	0	6	17	1	8	0	0	0
Simple tertiary	12	2	12	47	1	11	2	0	0
Complex tertiary	15	0	26	21	0	28	1	0	0
Biface thinning	22	0	7	7	0	9	0	0	1
Percussion/pressure	0	0	1	0	0	4	0	0	0
Pressure	0	0	0	0	0	0	0	0	0
subtotal	47	2	52	98	3	60	3	0	1
Fragment	8	0	29	10	2	33	1	0	1
Angular	1	0	1	4	0	2	1	0	0
Indeterminate	0	0	1	0	0	0	0	0	0
subtotal	9	0	31	14	2	35	2	0	1
total	56	0	81	112	5	95	5	0	2

Table G.2.
Debitage Flake Types.

	Unit 7			Unit 9			Unit 10		
Flake Type	chert	basalt	obsidian	chert	basalt	obsidian	chert	basalt	obsidian
1° decortication	0	0	0	1	0	3	2	0	0
2° decortication	0	2	1	4	0	7	1	1	17
Simple tertiary	7	0	3	6	0	19	10	2	9
Complex tertiary	2	1	6	3	0	33	5	1	22
Biface thinning	1	0	1	0	0	12	1	0	4
Percussion/pressure	0	0	0	0	0	16	0	0	1
Pressure	0	0	5	0	0	0	0	0	0
subtotal	10	3	16	14	0	90	19	4	53
Fragment	2	0	4	6	0	57	1	1	38
Angular	0	0	1	0	0	9	3	0	2
Indeterminate	0	0	0	0	0	2	0	0	3
subtotal	2	0	5	6	0	68	4	1	43
total	12	3	21	20	0	158	23	5	96

	Unit 11			Unit 12			Unit 13		
Flake Type	chert	basalt	obsidian	chert	basalt	obsidian	chert	basalt	obsidian
1° decortication	0	1	0	4	0	1	0	1	0
2° decortication	2	0	11	9	0	17	2	0	6
Simple tertiary	4	0	8	7	5	14	3	0	10
Complex tertiary	6	0	28	14	2	40	1	0	19
Biface thinning	0	0	4	0	0	16	2	0	2
Percussion/pressure	0	0	1	0	0	3	5	0	0
Pressure	0	0	0	0	0	0	0	0	0
subtotal	12	1	52	34	7	91	13	1	37
Fragment	2	4	40	11	0	86	0	1	25
Angular	1	0	2	6	0	9	1	0	1
Indeterminate	0	0	0	0	0	0	0	0	0
subtotal	3	4	42	17	0	95	1	1	26
total	15	5	94	51	7	186	14	2	63

Table G.2.
Debitage Flake Types.

	Unit 14			Unit 24		
Flake Type	chert	basalt	obsidian	chert	basalt	obsidian
1° decortication	1	0	0	8	0	10
2° decortication	1	0	1	25	2	120
Simple tertiary	5	0	2	41	5	176
Complex tertiary	1	0	7	36	4	401
Biface thinning	0	0	1	11	0	137
Percussion/pressure	2	0	3	13	0	308
Pressure	0	0	0	0	0	16
subtotal	10	0	14	134	11	1168
Fragment	1	0	7	38	3	1006
Angular	0	0	1	10	1	56
Indeterminate	1	0	0	2	0	3
subtotal	2	0	8	50	4	1065
total	12	0	22	184	15	2233

Appendix H

Faunal Remains

Jennifer A. Waters

Faunal remains (1,922 unmodified specimens and 15 worked specimens) were recovered from 24 of 26 test excavation units at Manzanar National Historic Site. Faunal bone was collected from units containing archeological materials dating to the prehistoric, historical, and modern periods. All of the bone was highly fragmented. The four prehistoric faunal assemblages contained 20 percent to 40 percent identifiable bone. The historical site faunal assemblages contained from 0 percent to 100 percent identifiable bone. The taxonomic list of identified specimens from each component at Manzanar is presented in Tables H.1 and H.2.

The taxa identified at the prehistoric sites at Manzanar include lagomorphs, rodents, carnivores, artiodactyls, fish, frogs/toads, lizards, snakes, and birds. Other prehistoric sites in the Owens Valley, e.g., CA-INY-30 (Basgall and McGuire 1988); Pinyon House, Two Eagles, and Crater Middens (Bettinger 1989); and Alabama Gates Project sites (Delacorte et al. 1995) showed basic similarities in the taxa represented and in the low ratios of identifiable to unidentifiable bone. In general, faunal remains from prehistoric sites in the Owens Valley are very fragmented which may be a result of prehistoric processing and disposal practices.

The domestic fauna identified from historical contexts at Manzanar include horse, pig, cow, sheep/goat, and chicken. Identifiable wild fauna consist primarily of lagomorphs. The historical fauna were recovered from five sites in and around the former town of Manzanar. The total sample is small (n=246), but two sites (MANZ 1993 A-13 and MANZ 1993 A-16) yielded sufficient faunal remains to allow comparisons of the taxa represented and butchering patterns. The historical faunal remains also were very fragmented which, again, may be the result of disposal practices or possibly post-occupational disturbances.

Seventy faunal specimens were recovered from relocation center contexts. The areas included three loci from MANZ 1993 A-30 and Locus A from MANZ 1993 A-37. The species identified include cow, pig, fish, and chicken. A post-relocation center dump (Locus C at MANZ 1993 A-37) also yielded faunal remains (185 specimens). Identified taxa included lagomorphs, pig, sheep/goat, chicken, and Phasianidae (quails, bobwhites, and pheasants).

Methods

Faunal material was recovered using 1/4-inch and 1/8-inch screens. One hundred percent of the faunal material recovered was analyzed.

Table H.1.
Taxonomic Groups Represented in the Faunal Assemblages from Prehistoric Sites at Manzanar National Historic Site.

Class Mammalia	
Order Lagomorpha	
Family Leporidae	
Sylvilagus sp.	Cottontails
Lepus sp.	Jackrabbits
Order Rodentia	
Family Geomyidae	
Thomomys cf. *talpoides*	cf. Northern pocket gopher
Family Heteromyidae	
Perognathus sp.	Pocket mice
Family Muridae	
Subfamily Cricetinae	
Neotoma sp.	Wood rats
Microtus sp.	Meadow mice
Order Carnivora	
Family Canidae	
Canis sp.	Coyotes/dogs
Family Procyonidae	
Procyon lotor	Raccoon
Order Artiodactyla	
Family Bovidae	
Ovis canadensis	Bighorn sheep
Class Osteichthyes	Bony fishes
Class Amphibia	
Order Salientia	
Family Peolobatidae	
Scaphiopus sp.	Spadefoot toads
Class Reptilia	
Order Squamata	
Suborder Suaria	Lizards
Suborder Serpentes	Snakes
Family Colubridae	Nonpoisonous Snakes
Pituophis catenifer	Gopher snake
Class Aves	
Order Anseriformes	
Family Anatidae	Ducks
Order Passeriformes	Perching birds

Many of the faunal specimens were identified with the assistance of the WACC comparative collection.[1] In addition, several references were used to aid in the identifications and to determine modern animal distributions in the vicinity of the National Historic Site (e.g., Ingles 1965; McGinnis 1984; Olsen 1964, 1968, 1972; Peterson 1990; Sisson and Grossman 1953; Stebbins 1985). Specimens were identified to species when possible. Nonmammalian specimens were identified to the class level or below. Specimens unidentifiable to class were placed in the unidentified remains category. All mammal bone in the prehistoric assemblages not identifiable at least to the ordinal level was considered unidentifiable. Unidentifiable mammal bone from the prehistoric sites was placed in one of five categories: small (rodent-size), small-medium

[1]I thank Professor Stanley Olsen and Jennifer Strand of the Arizona State Museum for providing access to the WACC comparative faunal collection housed at the Museum.

Table H.2.
Taxonomic Groups Represented in the Faunal Assemblages from Historical Sites at Manzanar National Historic Site.

Class Mammalia	
Order Lagomorpha	
Family Leporidae	
Sylvilagus sp.	Cottontails
Lepus sp.	Jackrabbits
Order Rodentia	Rodents
Order Carnivora	
Family Procyonidae	
Procyon lotor	Raccoon
Order Perissodactyla	
Family Equidae	
Equus caballus	Horse
Order Artiodactyla	
Family Suidae	
Sus scrofa	Domestic pig
Family Bovidae	
Bos taurus	Domestic cow
Ovis aries/Capra hircus	Domestic sheep/goat
Class Osteichthyes	Bony fishes
Class Aves	
Order Galliformes	
Family Phasianidae	Quails, pheasants, and partridges
Gallus gallus	Domestic chicken

(rabbit-size), medium-large (carnivore-size), large (ungulate size), and indeterminate (unknown size). These fragments were sorted according to estimated element circumference and bone-wall thickness. Nearly all of the unidentifiable mammal specimens consisted of long bone or indeterminate element fragments. In most cases, mammal bones identifiable to element were identified at least to the ordinal level.

All unidentifiable large mammal bone from the historical sites was sorted when possible by size into small, medium, or large ungulate. These categories roughly correspond to sheep/goat (small ungulate), pig (medium ungulate), and cow/horse (large ungulate). However, the presence of wild ungulates in the historical assemblages cannot be discounted. Wild ungulate remains, e.g., deer, could be present in the medium, large, or indeterminate ungulate categories. The indeterminate ungulate category consists primarily of long bone fragments. The large ungulate category consists mostly of rib and vertebra fragments. Most of the identifiable bone was identified to species, however, some possible pig elements (cf. *Sus scrofa*) were too fragmentary for positive identification. Likewise, sheep and goats are too similar to separate based on the fragmentary elements present in this assemblage. Bird bones that were similar to chicken bones, but were smaller or larger than the comparative specimens, were assigned to the category "possible chicken" (cf. *Gallus gallus*). Eggshell fragments also were placed in this category.

Faunal specimens from Manzanar were tabulated by the number of identifiable specimens (NISP). The minimum number of individuals (MNI) was calculated for the prehistoric faunal remains. The MNI was not calculated for the historical faunal remains because all historical assemblages contained less than 30 identifiable specimens. The small quantity of identifiable bone precluded the usefulness of the measure, i.e., each identifi-

Table H.3.
Faunal Bone Counts for Prehistoric Sites at Manzanar National Historic Site by Number of Identified Specimens (NISP) and Minimum Number of Individuals (MNI).

	MANZ 1993 A-1		MANZ 1993 A-2		MANZ 1993 A-3		MANZ 1993 A-4	
Taxon	NISP	MNI	NISP	MNI	NISP	MNI	NISP	MNI
Leporidae	-	-	3	-	-	-	-	-
Lepus sp.	15	2	101	4	2	1	19	2
Sylvilagus sp.	6	1	36	2	-	-	5	1
Small rodents	4	-	2	-	-	-	-	-
Medium rodents	7		4	-	-	-	-	-
Thomomys cf. *talpoides*	3	1	2	1	1	1	-	-
Perognathus sp.	2	1	-	-	-	-	-	-
Neotoma sp.	-	-	1	1	-	-	1	1
Microtus sp.	1	1	1	1	-	-	-	-
Medium carnivores	1	-	2	-	-	-	-	-
Canis sp.	1	1	5	1	-	-	-	-
Procyon lotor	-	-	-	-	-	-	1	1
Artiodactyla	8	-	34	-	-	-	16	1
Ovis canadensis	1	1	5	1	-	-	-	-
Osteichthyes	-	-	2	1	-	-	-	-
Salientia	12	2	-	-	-	-	-	-
Scaphiopus sp.	-	-	2	1	-	-	-	-
Suaria	8	1	3	1	-	-	-	-
Serpentes	-	-	1	1	-	-	-	-
Pituophis catenifer	1	1	-	-	-	-	-	-
Aves	2	-	5	-	-	-	3	-
Small bird	-	-	-	-	-	-	-	-
Medium bird	2	1	1	-	-	-	1	-
Anatidae	-	-	1	1	-	-	-	-
Phasianidae	-	-	-	-	-	-	1	1
Small passerine	1	1	-	-	-	-	-	-
Medium passerine	-	-	1	1	-	-	-	-
Unidentifiable mammal	4	-	2	-	-	-	10	-
Small mammal	16	-	-	-	-	-	1	-
Small-medium mammal	55	-	330	-	1	-	36	-
Medium-large mammal	1	-	1	-	-	-	-	-
Large mammal	36	-	500	-	-	-	80	-
Unidentifiable small animal	1	-	-	-	-	-	1	-
Unidentifiable to class	1	-	3	-	-	-	1	-
Totals	189	14	1048	17	4	2	176	7

able taxon had an MNI of one. Because the bone from all temporal components was very fragmented, the majority in most cases was unidentifiable. Elements with post-depositional breaks were refitted when possible and counted as one element. However, most bones were broken when fresh, and only a few specimens (n=15) with old breaks could be refitted with any accuracy. Refitting was not attempted with the unidentifiable mammal bone fragments except in the case of post-depositional breaks.

Other attributes recorded for the faunal material included skeletal element, element portion, element symmetry, and bone surface modifications such as degree of burning, gnawing, weathering, and butchering marks. The lack of epiphyseal fusion of long bones for immature specimens also was noted. All data were entered into dBASE IV and are on file at the Western Archeological and Conservation Center.

Prehistoric Sites

Eighteen taxa were present in the faunal assemblages from the prehistoric sites including ten mammal, four bird, two reptile, one amphibian, and one fish taxa. Jackrabbits were the most abundant identifiable taxon at all four of the prehistoric sites. Assemblage sizes varied among the sites. All the remains were highly fragmented with very low numbers of complete elements (less than 15 per site). Table H.3 lists all specimens by NISP and the MNI for nonredundant taxa, i.e., the lowest level taxon, usually genus. For example, an MNI was not calculated for small and medium rodents because these taxa could contain specimens from the identified rodent genera. The MNI was calculated for each taxon based on the site total per taxon. Because of the low proportions of identifiable bone, the MNI exceeded one individual in only three taxa. The lagomorphs (*Lepus* sp., *Sylvilagus* sp.) were represented by more than one individual based on repetitive elements and immature specimens. The two frog/toad (Salientia) individuals from MANZ 1993 A-1 were differentiated by size.

The two test units in MANZ 1993 A-1 yielded 189 faunal specimens. Twelve taxa were represented including mammals, amphibians, reptiles, and birds. The majority of the prehistoric bone (66%) from Manzanar was recovered from MANZ 1993 A-2. Test excavations at MANZ 1993 A-2 produced 1,048 bone fragments from five units, including Unit 24 (Feature 2). Unit 24 contained over half (651 specimens) of the faunal remains recovered from MANZ 1993 A-2. Thirteen taxa were represented in the faunal assemblage from MANZ 1993 A-2 including mammals, fishes, amphibians, reptiles, and birds.

MANZ 1993 A-3 contained only four faunal specimens from one of two test units. The four specimens include: two jackrabbit elements (one burned maxilla fragment and one distal metatarsal); the front of a pocket gopher skull, including the maxillae with teeth; and one small-medium mammal long bone fragment. The pocket gopher skull probably was a recent intrusion because the skull was relatively complete (cf. Driver 1985; Korth 1979). In addition, the skull had a fresh appearance: it was cream colored with an unweathered surface which also suggests that it probably was recently deposited.

One hundred seventy-six faunal specimens were recovered from five excavation units at MANZ 1993 A-4. There were seven taxa represented in the faunal assemblage, including mammal and bird remains. MANZ 1993 A-4 contained the only raccoon (*Procyon lotor*) element recovered from the prehistoric sites.

In addition to the unmodified specimens, 15 fragments of worked bone were recovered from the excavations. The majority were indeterminate forms that exhibited polish or striations.

Table H.4.
Frequencies of Lagomorph Elements from Prehistoric Sites at Manzanar National Historic Site (number burned in parentheses).

Element	MANZ 1993 A-1		MANZ 1993 A-2*		MANZ 1993 A-4	
	Syl	Lepus	Syl	Lepus	Syl	Lepus
Skull fragment	-	-	4	1	-	-
Maxilla	-	-	-	4(1)	-	1(1)
Mandible	-	1(1)	3	15(5)	-	2
Isolated tooth	-	-	-	6	-	-
Vertebra	-	-	2(1)	6(4)	-	-
Rib	-	6(1)	4(2)	21(4)	2	2
Scapula	-	3(3)	5(3)	7(5)	-	2(1)
Proximal humerus	-	1	1(1)	2(2)	-	-
Distal humerus	-	-	1	1(1)	-	-
Humerus shaft	-	-	-	1	-	-
Radius shaft	-	1(1)	2(2)	5(5)	-	-
Proximal radius	-	-	1	2(2)	1	1
Distal radius	-	-	-	1(1)	-	1
Ulna shaft	-	-	-	1(1)	-	2
Proximal ulna	1	-	-	-	-	1
Metacarpal	-	1(1)	1	2	-	-
Patella	-	-	1(1)	-	-	-
Pelvis fragment	3(2)	-	-	1	-	1
Sacrum fragment	-	-	-	-	-	1
Proximal femur	-	1	-	-	1	-
Distal femur	-	-	-	4(2)	-	-
Femur shaft	-	-	-	1	-	1(1)
Tibia shaft	-	-	2(1)	2(1)	-	-
Proximal tibia	-	-	1(1)	2(1)	-	-
Distal tibia	-	-	-	4(2)	-	2(1)
Calcaneus	-	-	2(2)	3(2)	-	2
Metatarsal	2(2)	-	-	2	1(1)	-
Phalanges	-	1	6(4)	5(2)	-	-
Indeterminate long bone	-	-	-	2	-	-
Totals	6(4)	15(7)	36(18)	101(41)	5(1)	19(4)

*Three Leporidae specimens are not included.

Lagomorphs

Lagomorphs comprise the largest percentage of the identifiable bone from all sites: 28 percent of the identifiable specimens from MANZ 1993 A-1; 66 percent of the identifiable specimens from MANZ 1993 A-2; and 51 percent of the identifiable specimens from MANZ 1993 A-4. Jackrabbits (*Lepus* sp.) outnumbered cottontails (*Sylvilagus* sp.) nearly three (or more) to one (see Table H.3). The lagomorph elements identified in the prehistoric assemblages are listed in Table H.4.

Two species of jackrabbits occur in the National Historic Site vicinity today. Black-tailed jackrabbit (*Lepus californicus*) is the most widely-distributed species in California. It is found in nearly all vegetation communities except those of the higher mountains (Ingles 1965:139). The white-tailed jackrabbit (*Lepus townsendii*) inhabits sagebrush areas and open spaces in higher vegetation communities in the Upper Sonoran and Transition life zones. These two species may be distinguished osteologically by characteristics of the supraorbital process of the skull (Ingles 1965:139). This skull part was not identified in the assemblages from Manzanar. Therefore, all jackrabbit remains are identified as *Lepus* sp.

Three species of cottontail occur in the National Historic Site vicinity today. The desert cottontail (*Sylvilagus audubonii*) inhabits thickets in the Lower and Upper Sonoran life zones. The Nuttall or mountain cottontail (*Sylvilagus nuttalli*) is usually found at higher elevations. The pygmy rabbit (*Sylvilagus idahoensis*) inhabits the dense rabbitbrush and sagebrush of the Sagebrush Scrub Community of the Upper Sonoran life zone. This species is three to four inches smaller in length than the other cottontail species (Ingles 1965:141). Based on the size of the cottontail elements in the assemblages at Manzanar, it is unlikely that any are from the pygmy rabbit. The mountain cottontail often co-occurs with the desert cottontail in the sagebrush areas in the Upper Sonoran life zone (Ingles 1965:141). The two species may be distinguished osteologically by mandibular depth and tooth-row length (Hoffmeister 1986:135). All the cottontail remains were identified as *Sylvilagus* sp. because the mandibles in the Manzanar assemblages are too fragmentary to make definitive comparisons.

Three specimens from MANZ 1993 A-2 could not be identified as either cottontail or jackrabbit and were classified as indeterminate rabbit (Leporidae). One skull fragment, one burned tooth fragment, and one distal metapodial were included in this category.

Lagomorphs are prevalent in the faunal assemblages recovered from other prehistoric sites in the Owens Valley. Jackrabbits and cottontails comprised over half of the identifiable bone in some assemblages (Bettinger 1989; Delacorte et al. 1995; Hildebrandt 1988).

Rodents

Four rodent genera were identified in the prehistoric faunal assemblages: pocket gophers (*Thomomys*), pocket mice (*Perognathus*), wood rats (*Neotoma*), and meadow mice (*Microtus*). With the exception of MANZ 1993 A-1, rodents comprised a small fraction of the faunal assemblages from Manzanar (see Table H.3). Thirty percent (17 specimens) of the identifiable assemblage from MANZ 1993 A-1 consisted of elements from at least three rodent species.

Only one species of pocket gopher, the northern pocket gopher (*Thomomys talpoides*), occurs in the National Historic Site vicinity today (Ingles 1965:201). In addition to the pocket gopher skull from MANZ 1993 A-3, a maxilla fragment and two mandible fragments were identified from MANZ 1993 A-1, and a mandible fragment and proximal humerus were recovered from MANZ 1993 A-2. Species are distinguished osteologically by cranial characteristics or the shape of the baculum. The specimens from Manzanar are assigned to *Thomomys* cf. *talpoides*.

Two species of pocket mouse occur in the National Historic Site vicinity today: the little pocket mouse (*P. longimembris*) and the Great Basin pocket mouse (*P. parvus*). The little pocket mouse is much smaller than the other pocket mouse species (Ingles 1965; Hoffmeister 1986). All species of pocket mice may be distinguished osteologically by baculum shape. Some species also may be separated by cranial characteristics, e.g., the width of the interparietal versus the interorbital bones of the skull. The mandible and bulla recovered from MANZ 1993 A-1 are in the

size-range of a medium to large pocket mouse and are identified as *Perognathus* sp.

Two species of wood rats inhabit the National Historic Site vicinity today. The desert wood rat (*N. lepida*) lives in the sagebrush scrub of the Lower and Upper Sonoran life zones. The bushy-tailed wood rat (*N. cinerea*) may occur in the sagebrush scrub of the Upper Sonoran life zone, however, it also is found at higher elevations. Wood rat species are distinguished osteologically by characteristics of the upper molars. The distal tibia from MANZ 1993 A-2 and the mandible fragment from MANZ 1993 A-4 cannot be identified to species and are assigned to *Neotoma* sp.

Only one species of microtine mouse (*Microtus*) with rootless molars occurs in the National Historic Site vicinity today: the California meadow mouse (*M. californicus*). The California meadow mouse may be distinguished osteologically from other species with rootless molars by the shape of the incisive foramina or characteristics of the third upper molar (Ingles 1965:272, 285). A complete mandible was collected from MANZ 1993 A-1 and an isolated lower molar from MANZ 1993 A-2. Because only the lower dentition was recovered, these specimens were assigned to *Microtus* sp.

In addition to these species the faunal assemblages from other late prehistoric sites in the Owens Valley contained remains from marmots (*Marmota*), ground squirrels (*Ammospermophilus/Spermophilus*), kangaroo rats (*Dipodomys*), and deer mice (*Peromyscus*) (Bettinger 1989; Delacorte et al. 1995; Hildebrandt 1988).

Seventeen rodent specimens were classified as indeterminate rodent: six elements from small rodents (mouse-sized), and eleven specimens from medium-sized rodents (wood rat/pocket gopher-sized). Postcranial elements comprised the majority (94%) of the indeterminate rodent specimens. Some of the rodent remains probably were intrusive to the prehistoric deposits (see below).

Artiodactyls

Artiodactyl remains comprised less than 20 percent of the identifiable assemblages from MANZ 1993 A-1 (n=9) and MANZ 1993 A-2 (n=39). Sixteen artiodactyl specimens, or 34 percent of the identifiable assemblage, were recovered from MANZ 1993 A-4. One fragmented mandible, and one fragmented upper molar from MANZ 1993 A-1 were identified as bighorn sheep (*Ovis canadensis*). One left maxilla with teeth; two isolated, fragmented upper teeth; one lower molar fragment; and one proximal radius recovered from MANZ 1993 A-2 also were identified as bighorn. The other artiodactyl elements were identified to the ordinal level.

Artiodactyl elements recovered from archeological sites can provide information about prehistoric butchering patterns. In the typical meat procurement strategy, the major meat-bearing elements are expected to be transported back to residential sites. Those elements include the pelves and bones of the axial skeleton, e.g., ribs, sternae, and vertebrae. These bones could be stripped of meat and abandoned at the butchering site as well. Bones with little meat, such as those from the lower limbs, are expected to be left behind at the butchering site to lessen the load. However, meat consumption may not be the only goal of hunting. Cranial and podial (bones from the lower limbs) elements could be used for headdresses and bone tools (Szuter 1991). In addition, some elements, particularly metapodials and foot bones, contain large quantities of marrow and grease (Binford 1978:27,33). These elements may be carried back to residential sites for further processing.

All artiodactyl elements from the prehistoric sites at Manzanar are listed in Table H.5. The majority of identifiable elements at MANZ

Table H.5.
Artiodactyl Elements in the Prehistoric Assemblages from Manzanar National Historic Site.

Element	MANZ 1993 A-1	MANZ 1993 A-2	MANZ 1993 A-4
horn/hoof fragment	-	1*	-
skull fragment	-	1*	-
maxilla fragment	-	1 (*O. canadensis*)	-
mandible (horizontal ramus)	1 (*O. canadensis*)	1	-
tooth (upper)	1 (*O. canadensis*)	2 (*O. canadensis*)	-
tooth (lower)	-	1 (*O. canadensis*)	-
tooth (indeterminate)	3	19 (8*)	3 (1*)
lumbar vertebra (spinous process)	-	-	1†
rib	-	-	2*
scapula (glenoid)	1*	1*	-
humerus (distal)	-	1†	-
radius (proximal)	-	1 (*O. canadensis*)†	-
ulna (proximal)	1*	-	-
pelvis fragment	-	1	2
femur (head)	1 (6 pieces)	-	-
tibia (proximal)	-	1*	-
tibia (distal)	-	1*	-
tibia (shaft)	1*	-	-
tarsal (2+3)	-	1*	-
metatarsal (proximal)	-	1*	-
metapodial (distal)	-	-	1*
phalanx (indeterminate)	-	-	1‡
first phalanx	-	-	2 (1‡)
third phalanx	-	-	1‡
long bone (indeterminate)	-	6 (1*)	3 (3*)
Totals	9	39	16

* burned.
† burned with cut marks.
‡ immature.
Note: The indeterminate tooth category contains miscellaneous enamel fragments. Two worked rib fragments from MANZ 1993 A-1 and one worked rib fragment from MANZ 1993 A-2 are not included in the table.

1993 A-1 and MANZ 1993 A-2 are cranial elements, however, other parts of the skeleton, with the exception of the axial portion, are represented in varying quantities. The elements recovered from MANZ 1993 A-4 are more evenly distributed between the cranial, axial, and postcranial skeleton. Most of the cranial elements were tooth fragments, so their numbers are somewhat misleading. Therefore, the cranial to postcranial ratio, particularly at MANZ 1993 A-2 and MANZ 1993 A-4, was smaller than it appears. In addition, the artiodactyl element representation was skewed by the large quantities of unidentifiable large mammal long bone fragments. Many, if not all, of these are from artiodactyls, but the element is no longer recognizable. As a result, the identifiable artiodactyl subassemblage is too small to be represen-

tative and any butchering patterns that are evident are not very meaningful.

Six immature artiodactyl specimens were identified in the prehistoric assemblages. One indeterminate fragment of spongy bone was noted from MANZ 1993 A-1. The other five immature artiodactyl specimens from MANZ 1993 A-4 included four phalanges and one indeterminate long bone shaft. The phalanges were similar in development to an immature (less than one-year-old) lamb comparative skeleton.

In addition to bighorn sheep (*Ovis canadensis*), other artiodactyl species identified in the faunal assemblages from prehistoric sites in the Owens Valley included mule deer (*Odocoileus hemionus*) and pronghorn (*Antilocapra americana*) (Delacorte et al. 1995; Hildebrandt 1988). In the Sierra Nevada, all three species bear their young in May or June. Mule deer fawns are born in the middle of June; bighorn lambs in May through June, and pronghorns around the first of June (Ingles 1965:290,294,298). It is likely that the immature artiodactyl remains represent a fall/winter and possibly spring occupation at MANZ 1993 A-4. However, it is unclear if the site was occupied during the spring/summer months as well. It is difficult to pinpoint seasonality based on these few specimens: a more specific age could be determined from intact mandibles. In addition, the absence of immature specimens does not preclude fall/winter occupation at the other sites at Manzanar.

Carnivores

Ten specimens were identified as carnivore in the prehistoric faunal assemblages from Manzanar. Coyote/dog (*Canis* sp.) specimens included one burned mandible without teeth from MANZ 1993 A-1 and three isolated incisors, a burned distal humerus, and a tarsal from MANZ 1993 A-2. Three specimens were identified as medium carnivore (coyote/dog-sized) including two rib fragments recovered from MANZ 1993 A-2 and one burned rib fragment collected from MANZ 1993 A-1. One burned distal humerus from a raccoon (*Procyon lotor*) was recovered from MANZ 1993 A-4.

In addition to the Manzanar species, carnivore remains recovered from other sites in the Owens Valley include gray fox (*Urocyon cinereoargenteus*), badger (*Taxidea taxus*), spotted skunk (*Spilogale putorius*), long-tailed weasel (*Mustella frenata*), and bobcat (*Lynx rufus*) (Bettinger 1989; Hildebrandt 1988).

Carnivore remains are generally recovered in small numbers from archeological sites. It is likely that they were hunted more for their skins than for food. For example, during the historical period, the Northern Paiute in Nevada hunted bobcats for their pelts which were used to make quivers (Wheat 1967:11). Dogs were kept for pets and hunting companions. The Owens Valley Paiute used dogs to drive bighorn sheep over cliffs in the Sierra Nevada (Steward 1938:54). The Surprise Valley Paiute hunted ground squirrels with dogs. The rodents were "run beneath a rock and pulled out by twisting a straight stick in the skin" (Kelly 1932:87).

Seventy percent of the carnivore bone recovered from Manzanar was burned. These specimens were present as a result of either prehistoric subsistence or disposal practices. In other words, it was unclear if these specimens represented items that were actually eaten, or the remains of animals used for other purposes.

Fishes

Two indeterminate fish bone fragments were recovered from MANZ 1993 A-2. One fragment is a vertebra from a small- to medium-sized fish. The other fragment is unidentifiable. Native fish in the area included speckled dace (*Rhynichthys osculus*), Tui chub (*Gila bicolor*), Owens pupfish (*Cyprinodon radiosus*), and the Owens sucker (*Catostomus fumeiventris*) (McGinnis 1984).

Fish remains were recovered in relatively large quantities from the late components of the Alabama Gates sites (Delacorte et al. 1995:355). Between 28 percent and 72 percent of the identifiable faunal assemblages from these sites were composed of fish elements. The identified genera included *Catostomus* (suckers) and *Gila* (chubs). In comparison, fish bone made up only 3 percent (n=34) of the identifiable assemblage recovered from the late components at CA-INY-30 (Hildebrandt 1988:331). Only mammal bone was reported from Pinyon House, Two Eagles, and Crater Middens (Bettinger 1989).

Food preferences among prehistoric groups may be responsible for the lack of fish remains at archeological sites, but fish may have been consumed in greater quantities than is apparent from the remains recovered. Bone preservation, preparation and disposal methods, and archeological recovery techniques affect fish bone recovery.

Fish remains are more fragile than mammal bone and are rarely preserved in acidic soils (Wheeler and Jones 1989:63). Preparation, cooking, and disposal methods may be responsible for the lack of fish bone in prehistoric faunal assemblages. Undoubtedly, some processing and disposal of fish remains occurred on the shore or in the water (Wheeler and Jones 1989:65). Consequently, fish bone may not be recovered in great quantities from excavations in living areas or middens. The archeological recovery methods employed may not recover much fish bone even when fish elements are present. The recovery rate for fish elements is dependent upon screen size (Casteel 1972; Clason and Prummel 1977; James 1994). Substantially more fish remains are recovered using 1/8-inch or smaller mesh.

Seasonality also may influence the number of fish remains present in archeological sites. For example, the annual sucker and chub spawning runs on the Owens River occurred in the spring and summer months (Moyle 1976, cited in Delacorte et al. 1995:356). Sites that were occupied during the seasonal fish runs could contain more fish bone than sites that were not occupied during these months.

Although only two fish bone fragments were recovered from the prehistoric sites at Manzanar, more fish may have been consumed by the prehistoric human inhabitants than is indicated by this small amount. Fish probably were available in nearby streams such as Bairs Creek and Shepherd Creek as well as the Owens River. Specimens of other riparian species in the prehistoric assemblages from Manzanar, including raccoon and a duck (see below), further indicate that this habitat was exploited at least to some extent.

Amphibians

Fourteen frog/toad elements were identified in the prehistoric faunal assemblages from Manzanar. Twelve specimens were recovered from MANZ 1993 A-1. Two frog/toad elements were recovered from MANZ 1993 A-2. Based on bone color and surface condition, most of the elements from MANZ 1993 A-1 appear to be recent. In addition, eight of the eleven frog/toad elements recovered from Unit 1 at MANZ 1993 A-1 were complete. Only 13 complete elements from all identifiable taxa were recovered from MANZ 1993 A-1. The eight complete amphibian specimens represent 89 percent of the complete elements from Unit 1, another indication that they were intrusive to the cultural deposits (see below). No amphibian remains were reported from other sites in the Owens Valley.

Reptiles

Thirteen reptile elements were identified in two prehistoric site assemblages from Manzanar. Eight lizard elements were recovered from MANZ 1993 A-1. Six specimens were charred and two were recent intrusions, based on bone color and surface condition. MANZ 1993 A-2 contained three lizard elements, one burned.

Two snake vertebrae were identified in the faunal assemblages. One, from MANZ 1993 A-1, represented a gopher snake (*Pituophis catenifer*). The other, identified in the assemblage from MANZ 1993 A-2, was from an indeterminate immature snake. Both vertebrae were charred.

Reptile remains were recovered from nearly all of the late components of the Alabama Gates sites (Delacorte 1995:355). Most were considered intrusive to the cultural deposits. A small amount (n=13) of reptile bone was recovered from CA-INY-30 (Hildebrandt 1988:326). Three specimens were burned. Hildebrandt (1988:325) assigned the reptile remains to noncultural status because this taxon showed "significantly higher quantities of unburnt bone relative to burnt bone." This was not the case at Manzanar, where 9 out of 13 reptile elements were burned.

Birds

Nineteen bird specimens were identified in the prehistoric faunal assemblages from Manzanar. The remains were fragmentary and were differentiated more by size than species. Five bird specimens were identified from MANZ 1993 A-1 including one distal tibiotarsus from a small passerine, two indeterminate medium-sized bird elements, and two eggshell fragments from indeterminate birds. Seven specimens from MANZ 1993 A-2 consisted of five indeterminate bird specimens, including three eggshell fragments and two indeterminate fragments. Two charred distal tibiotarsi were recovered from MANZ 1993 A-2, one from a medium-sized duck and one from a medium-sized passerine. The five bird specimens from MANZ 1993 A-4 included a sternum fragment (keel) tentatively identified as quail/pheasant (Phasianidae), three possible sternum fragments from a medium-sized bird, and one unidentifiable fragment from an indeterminate bird. With the exception of the two charred specimens, it is unclear if most of the bird remains recovered are related to the prehistoric occupation of Manzanar. They represent local taxa and could be recent intrusives. The depositional origins of eggshell fragments are especially hard to distinguish.

A large quantity of bird bone was recovered from CA-INY-30, including several duck species (*Anas* spp.), coot (*Fulica americana*), grebes (Podicipedidae), snow goose (*Chen caerulescens*), blue heron (*Ardea herodias*), great horned owl (*Bubo virginianus*), and quail (*Callipepla* sp.) (Hildebrandt 1988:324). *Fulica* and *Anas* were recovered from some of the late components of the Alabama Gates sites as well (Delacorte 1995:355). Some of these species may be represented in the unidentifiable bird bone at Manzanar.

Burned Bone

The percentages of burned bone in the prehistoric assemblages from Manzanar varied among the sites. MANZ 1993 A-1 contained 45 percent burned bone; MANZ 1993 A-2 contained 67 percent burned bone; MANZ 1993 A-3 contained 25 percent burned bone; and MANZ 1993 A-4 contained 54 percent burned bone. Lagomorphs and reptiles were burned in relatively high proportions in the identifiable assemblage at MANZ 1993 A-1 (52% and 67%, respectively). Carnivore specimens in all the prehistoric assemblages were burned in high proportions. One-hundred percent of the carnivore remains from MANZ 1993 A-1 and MANZ 1993 A-4 were burned. Fifty-seven percent of the carnivore remains from MANZ 1993 A-2 were burned. Most of the other identified taxa were burned in low percentages. However, none of the amphibian remains recovered from MANZ 1993 A-1 and MANZ 1993 A-2 were burned. Likewise, the rodent and bird elements from MANZ 1993 A-4 were unburned. The majority of burned bone was unidentifiable. Unidentifiable bone comprised 68 percent of the burned bone from MANZ 1993 A-1; 88 percent from MANZ 1993 A-2; and 79 percent from MANZ 1993 A-4. Table H.6 lists the proportion of burned bone per taxon for the three larger site assemblages.

Table H.6.
Frequencies of Burned Bone by Taxon from Prehistoric Sites at Manzanar National Historic Site (percentage of taxon burned in parentheses).

Taxon	MANZ 1993 A-1	MANZ 1993 A-2	MANZ 1993 A-4
Lagomorphs*	11 (52%)	60 (43%)	5 (21%)
Rodents	6 (35%)	2 (20%)	0 (0%)
Carnivores	2 (100%)	4 (57%)	1 (100%)
Artiodactyls	3 (38%)	18 (53%)	10 (63%)
Fishes	+	0 (0%)	+
Amphibians	0 (0%)	0 (0%)	+
Reptiles	6 (67%)	2 (50%)	+
Birds	2 (40%)	2 (25%)	0 (0%)
Unidentifiable mammal	4 (100%)	2 (100%)	6 (60%)
Small mammal	4 (25%)	+	1 (100%)
Small-medium mammal	26 (47%)	193 (59%)	22 (61%)
Medium mammal	1 (100%)	1 (100%)	+
Large mammal	18 (50%)	417 (83%)	50 (63%)
Unidentifiable small animal	1 (100%)	+	0 (0%)
Unidentifiable to class	0 (0%)	0 (0%)	0 (0%)
Totals	85 (45%)	701 (67%)	95 (54%)

*MANZ 1993 A-3 contained one burned jackrabbit maxilla.
+Taxon not recovered

Burned bone was grouped into four color categories: brown, black (charred), gray, and white (calcined). Experimental results demonstrate bone color changes with the length of exposure to heat and the temperature of the fire (Brain 1981:54; Gilchrist and Mytum 1986:31; Lyman 1994:385; Shipman et al. 1984:314; Waters 1995:38). Brown bone is produced by low temperatures and/or short exposure times. Higher temperatures and longer burning periods produce bone colors from black to gray to white (Gilchrist and Mytum 1986:31). Gray or calcined bone may be produced by contact with hot ash (Grayson 1988:24; Waters 1995:32). The majority (at least 75%) of the burned bone from the prehistoric sites at Manzanar was black/charred (Table H.7).

During cooking, the areas of the skeleton that are burned and the burning color vary depending upon the body size of the animal; butchering practices, i.e., if and how the animal was disarticulated and which joints and other parts are exposed; and cooking methods (Szuter 1984, 1991; Waters 1995). It is likely that most burned bones from archeological sites were not burned during cooking (cf. Lyman 1994:384). More often bone is burned as a result of disposal practices and trash burning, or as fuel for fires (Lyman 1994:388). Burning on fractured surfaces indicates that a bone was broken before it was burned (Lyman 1994:389). However, if bone is burned to a greater degree on the outside (cortical surface) than the inside, it was likely broken after burning. Naturally-burned bone is not burned as the direct result of human subsistence activities and, in open sites, is usually the result of small animals caught in a brush or trash fire. Naturally-burned bone is rarely calcined or uniformly burned in extent or color (Lyman 1994:389).

Table H.7.
Burning Color Frequencies for Burned Bone from Prehistoric Sites at Manzanar National Historic Site (percentage burned in parentheses).

Color	MANZ 1993 A-1	MANZ 1993 A-2	MANZ 1993 A-4
Brown	6 (7%)	11 (2%)	5 (5%)
Brown/charred	2 (2%)	9 (1%)	11 (12%)
Charred	65 (77%)	625 (89%)	71 (75%)*
Charred/gray	10 (12%)	41 (6%)	5 (5%)
Gray	2 (2%)	15 (2%)	0 (0%)
Gray/calcined	0 (0%)	0 (0%)	0 (0%)
Calcined	0 (0%)	0 (0%)	1 (1%)
Charred/calcined	0 (0%)	0 (0%)	2 (2%)
Total burned	85 (100%)	701 (100%)	95 (100%)

*Two charred specimens are partially burned.

For the most part, the burned subassemblages from the prehistoric sites at Manzanar were uniformly burned both in color and surface area. That is, the fragments were completely burned and burned to one color (black). In addition, most of the bone was burned on fractured surfaces suggesting that the bone was broken before burning, possibly for the extraction of bone marrow, grease, or meal (Binford 1981:91; James 1990:31; Kelly 1932:94; Lyman 1994:217). The large proportion of charred bone indicates that most of the burning was not directly related to cooking and probably resulted from trash burning. The mixture of burned and unburned bone signals that the bone was burned elsewhere and deposited in a common trash area with unburned bone from other activities. This interpretation concurs with the assumption that the areas excavated represent midden or trash areas resulting from multiple disposal episodes (Chapter 11).

Other Bone Surface Modifications

Less than half of the bone from the prehistoric sites at Manzanar exhibited surface modifications other than burning. MANZ 1993 A-1 contained 38 percent (n=67) surface modified bone. The assemblage from MANZ 1993 A-2 consisted of 30 percent (n=311) surface modified bone. Forty-six percent (n=76) of the assemblage from MANZ 1993 A-4 exhibited surface modifications. With the exception of one burned element, the four specimens collected from MANZ 1993 A-3 were not modified. Most of the surface modifications appear to be the result of natural phenomena. The most common of these modifications consisted of a thin coating of calcium carbonate on bone surfaces. Other modifications included root etching, weathering, staining, and gnawing by rodents and carnivores. One example of pathology, a diseased medium-rodent axis, was noted from MANZ 1993 A-2. Table H.8 lists the number of surface modifications per site.

Forty-four specimens from MANZ 1993 A-1, 193 specimens from MANZ 1993 A-2, and 36 specimens from MANZ 1993 A-4 were coated with a thin layer of calcium carbonate. Lyman (1994:420) calls the precipitation of calcium carbonate salts "calcification." Calcification, along with mineral staining, is "typical of some archeological remains recovered from somewhat arid areas where moisture is insufficient to flush the salts from the sedimentary matrix" (Lyman 1994:420).

Root etching was observed on 15 specimens from MANZ 1993 A-1, 50 specimens from MANZ 1993 A-2, and 21 specimens from MANZ 1993

Table H.8.
Noncultural Bone Surface Modifications in the Prehistoric Assemblages from Manzanar National Historic Site.

Modification	MANZ 1993 A-1	MANZ 1993 A-2	MANZ 1993 A-4
Calcium carbonate coating	44	193	36
Root etching	15	50	21
Weathering	0	69	8
Staining	0	0	9
Rodent gnawing	2	5	1
Carnivore gnawing	0	2	1
Total	61	319	76

Note: Quantities represent the number of occurrences. Many bone surfaces exhibited multiple modifications.

A-4. Root etching is thought to result from the acidic secretions of plant roots, although the secretions may actually be from the fungi associated with decomposing roots (Lyman 1994:375). Root etching may occur before or after burial.

Weathering was recorded for bone surfaces that were eroded and/or cracked and flaking. Most of the weathered bones were only slightly eroded. However, a small quantity (2 elements broken into 14 fragments) of unidentifiable large-mammal long-bone fragments from MANZ 1993 A-2 exhibited flaking of the cortical surface. Three specimens from MANZ 1993 A-2, one indeterminate rabbit metapodial and two large mammal long bone fragments, were heavily weathered and sun-bleached. These bones were on or just below the surface and probably were only recently buried. These specimens may be modern or historical. The weathering of bone is most commonly associated with exposure to sunlight, moisture, and temperature fluctuations before burial (Behrensmeyer 1978; Schiffer 1987). The rate of weathering depends upon the intensity and amount of exposure to these weathering agents as well as the species and element. Bones of different-sized taxa and different densities weather at different rates (Lyman 1994:358).

Animal damage appeared to be minimal in the prehistoric faunal assemblages. Only 11 occurrences of gnawed bone were observed. MANZ 1993 A-1 contained two rodent-gnawed elements, MANZ 1993 A-2 contained seven gnawed elements (5 rodent-gnawed and 2 carnivore-gnawed), and MANZ 1993 A-4 contained two gnawed elements (1 rodent-gnawed and 1 carnivore-gnawed).

A number of culturally-modified faunal specimens was recovered from the prehistoric sites at Manzanar. Six bones from MANZ 1993 A-4 and one bone each from MANZ 1993 A-1 and MANZ 1993 A-2 exhibited cut marks. All but one, a small-medium mammal long-bone fragment from MANZ 1993 A-4, were observed on large mammal bone fragments (Table H.9). Fifteen other bones in the collections exhibited striations and polish and are described below.

The dynamics of many of the natural processes that affect bone surfaces are not well understood (Lyman and Fox 1989; Lyman 1994). This is particularly true for buried bone. Many of the surface modifications (calcification, root etching) on the bone from the prehistoric sites at Manzanar occurred after burial. This does not include burning, weathering, gnawing, or butchering marks which probably occurred prior

Table H.9.
Occurrences of Cut Marks on Bones from Prehistoric Sites at Manzanar National Historic Site.

Site	Taxon	Element	Comments
MANZ 1993 A-1	Large mammal	Long bone	Root etched
MANZ 1993 A-2	Artiodactyl	Distal humerus	Burned (gray)
MANZ 1993 A-4	Small-medium mammal	Long bone	Stained
MANZ 1993 A-4	Artiodactyl	Lumbar vertebra (spinous process)	Partially charred
MANZ 1993 A-4	Large mammal	Long bone (2 fragments)	-
MANZ 1993 A-4	Large mammal	Long bone (2 cortical fragments)	Burned (brown/black)

to burial. The distribution of surface modifications seems to be fairly uniform; occurring at all sites, in all units, and at similar levels. The exceptions include mineral staining (only present at MANZ 1993 A-4), carnivore gnawing and weathering (not present at MANZ 1993 A-1), and the greater proportion of cutmarks at MANZ 1993 A-4. Therefore, it appears that the bones from all the prehistoric sites were subjected to the same agents of surface modification and at similar frequencies.

Worked Bone

Fifteen worked bone specimens were identified in the prehistoric assemblages at Manzanar. No worked bone was recovered from MANZ 1993 A-3. Most of the worked specimens were fragments (n=14) which made the identification of tool types difficult. Four beads, three possible awl fragments, one spatulate tool fragment, one drilled fragment, and six miscellaneous fragments were identified. Table H.10 lists the worked bone by provenience, tool type, taxon, and element, and contains the metric measurements for each specimen.

Beads

Four beads were recovered from MANZ 1993 A-1 and MANZ 1993 A-2 (two from each site). All but one of the beads were manufactured from small mammal bone. The exception (FN B-873) was made from a medium-large bird long bone shaft. The beads were cut and snapped, then the ends were ground smooth. All of the beads have beveled ends. One specimen (FN B-42) is charred. The bone beads recovered from other sites in the Owens Valley also were made from small mammal or bird bone. Their mode of manufacture was similar to that of the bone beads recovered from Manzanar (Basgall and McGuire 1988:152-153; Bettinger 1989:264; Delacorte et al. 1995:300).

Awls

One possible awl tip from MANZ 1993 A-1 (FN B-54) was polished and had one flat surface with striations. The specimen was charred and partially covered with calcium carbonate. Two possible awl shaft fragments were identified from MANZ 1993 A-2. These specimens (FN B-878) were charred and completely coated with calcium carbonate. The thinner fragment was smoothed flat and exhibited striations and polish on all four sides, while the thicker fragment exhibited polish on only one surface.

Awls and awl fragments have been reported from other sites in the Owens Valley (Basgall and McGuire 1988:290; Bettinger 1989:265; Delacorte et al. 1995). Awl tips were the most frequently recovered section, possibly because they were more recognizable than other broken awl parts (cf. Basgall and McGuire 1988:290).

Other Tools

One charred spatulate-tool fragment (FN B-392) was identified from MANZ 1993 A-4. The specimen was manufactured from a large mammal long bone shaft. The tool was striated and polished on the cortical surface and beveled on the distal end, probably from use. The interior surface did not appear to be worked, but it was coated with calcium carbonate, which would obscure other modifications. Bettinger (1989:266) described seven spatulate tools from Crater Middens. Six specimens were manufactured from large mammal long bone shafts. One spatula was made from a small mammal bone. The gouge-smoothers from CA-INY-30 were characterized by blunt, rounded points (Basgall and McGuire 1988:290) and appeared to correspond closely to Bettinger's (1989) spatula category.

One large mammal bone fragment from MANZ 1993 A-4 (FN B-415) was notched or drilled and may have been from a pendant. The break in the specimen bisected the hole. No other modification was evident.

Two artiodactyl rib shaft fragments from MANZ 1993 A-1 (FN B-34 and B-94) have edges that were cut with a coarse-toothed saw. Both specimens were very weathered. FN B-34 consisted of mostly compact bone. The cortical surface was partially worn away and was very eroded. FN B-94 still contained cancellous bone, but the compact bone was eroded and pitted. Bettinger (1989:268) reported a section of sawn bone from Crater Middens. The presence of saw marks suggests the use of the site in historical times, although no other subsurface historical period artifacts were recovered from the same levels at MANZ 1993 A-1.

An artiodactyl rib-shaft fragment (FN B-200) from MANZ 1993 A-2 exhibited striations and polish on both sides. One end was cut. The specimen was charred/calcined.

A large mammal rib shaft (FN B-399) from MANZ 1993 A-4 was highly polished and exhibited striations on both surfaces. The unbroken edge was smoothed thin. This specimen was charred and traces of calcium carbonate were present on the broken surfaces. Two other fragments from MANZ 1993 A-4 (FN B-268 and FN B-376) were included under worked bone because they exhibited striations and/or polish. Both specimens were burned and contained traces of calcium carbonate. The fragments were too small to define the tool shape or type.

Identifiable artifact types from other prehistoric sites in the Owens Valley include awls, beads, tubes, scrapers, flakers, and spatulas (Basgall and McGuire 1988; Bettinger 1989; Delacorte et al. 1995). However, like the prehistoric sites at Manzanar, the largest worked bone component recovered from the other sites was comprised of indeterminate types.

Intrusive Specimens

Intrusive specimens were defined as recent introductions to archeological sites that were not part of the prehistoric subsistence regime. The animals represented by intrusive bones died of natural causes rather than being hunted by prehistoric humans. Several variables were examined to determine which bones recovered from the prehistoric sites at Manzanar were intrusive. These variables included predator damage, skeletal representation, bone surface condition, burning, and breakage patterns.

Predators deposit bones from prey animals on archeological sites through feces, pellets, and dismembered carcasses. Indications of predation and scavenging that are observable on bone surfaces include gnawing, beak or talon punctures, and digestive corrosion by both mammalian and avian carnivores. There was little evidence that bone was deposited by predators at Manzanar. Only three occurrences of mammalian carnivore gnawing were recorded (see Table H.8). No beak or talon punctures

Table H.10.
Worked Bone Recovered from Prehistoric Sites at Manzanar National Historic Site.

Site	Catalog No.	Type	Taxon	Element	Size (mm)*		
					L	W	T/D
MANZ 1993 A-1	B-34	Indeterminate	Artiodactyl	Rib shaft	36.41	10.47	1.70
MANZ 1993 A-1	B-42	Bead (broken)	Small-medium mammal	Metapodial shaft	10.05	-	2.90
MANZ 1993 A-1	B-54	Bead (broken)	Small-medium mammal	Metapodial shaft	16.40	-	2.92
MANZ 1993 A-1	B-54	Awl?	Indeterminate mammal	Indeterminate	21.97	3.37	-
MANZ 1993 A-1	B-94	Indeterminate	Artiodactyl	Rib shaft	35.38	9.71	2.06
MANZ 1993 A-2	B-197	Bead (whole)	Small mammal	Long bone shaft	16.88	-	2.49
MANZ 1993 A-2	B-200	Indeterminate	Artiodactyl	Rib shaft	23.62	10.69	3.97
MANZ 1993 A-2	B-873	Bead (broken)	Medium-large bird	Long bone shaft	12.94	-	7.37
MANZ 1993 A-2	B-878	Awl?	Large mammal	Long bone shaft	10.28	6.56	4.15
MANZ 1993 A-2	B-878	Awl?	Large mammal	Long bone shaft	13.94	4.19	2.79
MANZ 1993 A-4	B-268	Indeterminate	Small-medium mammal	Long bone shaft	19.66	8.19	1.75
MANZ 1993 A-4	B-376	Indeterminate	Large mammal	Long bone shaft	13.29	8.77	2.85
MANZ 1993 A-4	B-392	Spatula?	Large mammal	Long bone shaft	15.34	9.10	2.54
MANZ 1993 A-4	B-399	Indeterminate	Medium-large mammal	Rib shaft	12.21	8.54	3.26
MANZ 1993 A-4	B-415	Drilled/notched fragment	Large mammal	Indeterminate	12.93	11.31	3.89

* L = length, W = width, T/D= thickness/diameter.

were noted, nor were any bones observed that exhibited digestive corrosion.

Small animal remains representing natural deaths should produce largely intact or nearly complete skeletons in undisturbed deposits. This assumes either the animal was immediately buried or died underground. Bones that are buried before the decay of soft tissue tend to stay articulated and unscattered (Lyman 1994:162). Underground disturbances, such as rodent burrowing, may produce scattered and disarticulated skeletons, but individual elements will be predominately complete (Driver 1985:18). Several species of cottontails, rodents, amphibians, and reptiles inhabit underground burrows either daily or seasonally while hibernating (Hoffmeister 1986; Ingles 1965; Olsen 1968; Stebbins 1985). Some of these animals do not dig their own burrows, but inhabit abandoned rodent burrows. Recent burrow deaths should consist of bone that has a fresh, unweathered appearance. This bone is generally a cream-color and is often greasy.

In terms of skeletal representation, none of the small animal specimens, e.g., rodents, amphibian, and reptiles, recovered from the prehistoric sites at Manzanar were represented by more than a few elements in each excavation unit. However, some did exhibit a fresh bone surface condition. These included four amphibian specimens from MANZ 1993 A-1, one lizard dentary from MANZ 1993 A-2, and the pocket gopher skull from MANZ 1993 A-3.

Burning is often used by faunal analysts to distinguish cultural from natural bone. However, lack of burning does not automatically make a bone intrusive. Likewise, burning does not make rodent and other small animal bones cultural. Bone may be burned naturally in a brush fire or when a small animal is inadvertently caught in a trash fire. It makes more sense to suspect unburned small animal bone as intrusive when a majority of the known economic taxa, particularly lagomorphs, were burned, or when the unburned small animal bone was present in specific archeological contexts, such as hearths.

At Manzanar, small identifiable animal bone tended to be burned less than large identifiable animal bone. The bones of some taxa (rodents, frog/toads, birds) were never burned. Those included rodent and bird elements from MANZ 1993 A-4, and all amphibian elements. This may indicate that some of the small animal bone was intrusive. However, because the bone from the prehistoric sites at Manzanar appeared to be from trash-related, secondary contexts (Schiffer 1987), it represents many different disposal episodes from primary contexts. Therefore, a mixture of burned and unburned bone is expected and makes it harder to eliminate unburned bone from the cultural sample simply because it was unburned.

The breakage rate for elements from the three largest prehistoric sites at Manzanar was very high (at least 94% broken). The few unbroken bones recovered were generally from the small animal taxa. Twelve complete elements (6% of the site assemblage) were recovered from MANZ 1993 A-1. The faunal assemblage from MANZ 1993 A-2 contained 11 complete elements (1% of the site assemblage). Only one complete element (less than 1% of the site assemblage) was recovered from MANZ 1993 A-4. Table H.11 lists the taxon, element, and surface condition for each complete specimen recovered. It is striking that nearly all the complete bones are foot bones except for the rodent, amphibian, and snake elements recovered from MANZ 1993 A-1, and the canid incisors from MANZ 1993 A-2. Foot bones, such as metapodials, carpals, tarsals, and phalanges, are structurally denser than other skeletal elements (Lyman 1984); they are more likely to remain unbroken. On the other hand, the rodent and, particularly, amphibian elements are more fragile (Olsen 1968:63) and would presumably be broken up with the rest of the assemblage if they were deposited at the same time.

Table H.11.
Complete Elements Recovered from Prehistoric Sites at Manzanar National Historic Site.

Site	Unit	Taxon	Element	Burning	Surface condition
MANZ 1993 A-1	1	Jackrabbit	Phalanx	Not burned	None
MANZ 1993 A-1	1	Medium rodent	Vertebrae (2)	Not burned (1) Charred (1)	None (1) Calcium carbonate (1)
MANZ 1993 A-1	1	Medium rodent	Calcaneus	Not burned	None
MANZ 1993 A-1	1	Frog/toad	Tibio-fibula (2)	Not burned	None
MANZ 1993 A-1	1	Frog/toad	Radio-ulna (2)	Not burned	None
MANZ 1993 A-1	1	Frog/toad	Long bone (indet)	Not burned	Root etched
MANZ 1993 A-1	2	Cottontail	Metatarsal (2)	Charred	Calcium carbonate
MANZ 1993 A-1	2	Gopher snake	Vertebra	Charred	Calcium carbonate
MANZ 1993 A-1	2	Medium bird	Phalanx	Charred	Calcium carbonate
MANZ 1993 A-2	3	Jackrabbit	Phalanx	Not burned	Root etched
MANZ 1993 A-2	24	Cottontail	Patella	Charred	None
MANZ 1993 A-2	24	Cottontail	Calcaneus	Charred	Rodent gnawed
MANZ 1993 A-2	24	Cottontail	Phalanges (2)	Not burned (1) Charred (1)	Root etched
MANZ 1993 A-2	24	Jackrabbit	Calcaneus	Charred	None
MANZ 1993 A-2	24	Jackrabbit	Phalanges(2)	Charred	None
MANZ 1993 A-2	24	Dog/coyote	Incisors (2)	Not burned	None
MANZ 1993 A-2	24	Artiodactyl	Tarsal	Charred	Calcium carbonate
MANZ 1993 A-4	12	Jackrabbit	Calcaneus	Not burned	Root etched

Many small animal bones at Manzanar exhibited at least one of the following characteristics of intrusive bone: no visible surface modifications, unburned, or unbroken. The amphibian bones and some of the rodent bones from MANZ 1993 A-1, and the pocket gopher skull from MANZ 1993 A-3 exhibited all three attributes. This does not mean that other specimens from other sites were not intrusive, but they cannot be unequivocally distinguished as such based on the above criteria.

Assemblage Comparisons

The prehistoric faunal assemblages from Manzanar are very similar in the number and types of taxa represented. They reflect exploitation of the local environment, including limited use of riparian areas. Bighorn sheep may have been obtained in the Sierra Nevada, but other species were found in the site vicinities. With the exception of MANZ 1993 A-3, the assemblage sizes are large enough to allow more detailed examination of the variability among them.

The variability among archeological sites is dependent upon site function, seasonality, targeted resources, and the duration and size of occupations (Binford 1982). There is considerably more overlap, both seasonally and functionally, at residential sites than at special-purpose locations, such as kill sites (Binford 1978:490). Coarse-grained archeological assemblages are produced during extended and generalized occupations. These assemblages are larger in size and more heterogenous than those from short-term or specialized occupations, i.e., they contain a more diverse collection of items (Binford 1978, 1980, 1982). Likewise, the faunal assemblages produced by occupations of extended duration

Table H.12.
Faunal Assemblage Characteristics from Late Prehistoric Sites/Components in the Owens Valley (arranged by assemblage size).

Site	Assemblage Size	Total Taxa	Rodent Taxa	Worked Bone	Large Mammals*	Small Mammals*	Percent Unidentifiable
MANZ 1993 A-4	176	7	1	5	130	62	73%
MANZ 1993 A-1	189	12	3	5	45	109	60%
CA-INY-2750[a]	422	11	4	1	58	313	81%
CA-INY-3775[a]	560	9	1	0	44	351	71%
CA-INY-3769[a]	758	12	4	1	80	632	93%
MANZ 1993 A-2	1048	13	3	5	544	478	80%
Feature	651	11	1	3	325	309	77%
Nonfeature	397	9	3	2	219	169	86%
CA-INY-328/H[a]	2829	11	3	7	419	2286	93%
CA-INY-30[b]	16881	28	6	84	1820	14402	92%

* includes identifiable and unidentifiable bones
a. Delacorte et al. 1995
b. Basgall and McGuire 1988

and generalized function should be larger in size with a greater number of taxa represented than the faunal assemblages at sites of short occupational duration and specialized activities.

Szuter (1992) selected several attributes of faunal assemblages to examine the occupational intensity of archeological sites. She defined intensity of occupation as "how long or often a site was occupied and/or how many people may have lived there" (Szuter 1992:424). She argued that greater taxonomic richness, more rodent taxa, greater numbers of worked bone, and larger assemblages are indicative of a more intensive occupation. Because taxonomic richness is affected by sample size, larger assemblages would be expected to contain more taxa than smaller assemblages (Grayson 1984:132). Therefore, similarly-sized assemblages should contain similar numbers of taxa, unless the sites differ in function and/or occupational intensity. Table H.12 lists the criteria for assessing occupational intensity (Szuter 1992), the ratio of large mammal to small mammal specimens, and the percent of unidentifiable bone for the prehistoric faunal assemblages from Manzanar and the faunal assemblages from the late components of other sites in the southern Owens Valley.

The faunal assemblages from MANZ 1993 A-1 and MANZ 1993 A-2 were very similar to each other in the numbers and types of taxa represented, but the assemblages were different sizes. Following Grayson's (1984) argument, the larger assemblage from MANZ 1993 A-2 should contain a greater variety of taxa than the assemblage from MANZ 1993 A-1, but it does not. Another difference between the two site assemblages was the ratio between large and small mammal bone. MANZ 1993 A-1 had a greater quantity of small mammal bones than large mammal bones (109 vs. 45). MANZ 1993 A-2 had slightly less small mammal bone than large mammal bone (478 vs. 544).

Feature 2, a occupation surface or possible house floor, and nonfeature contexts at MANZ 1993 A-2 are listed separately in Table H.12. Both contexts contained similar numbers and types of taxa. Additionally, Feature 2 contained the only

elements recovered in the prehistoric assemblages from Manzanar. The burned proportion from Feature 2 (67%) and the nonfeature contexts (68%) were nearly identical. The degree of fragmentation between the two contexts also was very similar. Seventy-seven percent of the assemblage recovered from Feature 2 was unidentifiable and 86 percent of the assemblage from nonfeature contexts was unidentifiable. Burning and fragmentation were higher at MANZ 1993 A-2 than at the other Manzanar sites. In general, MANZ 1993 A-2 probably served as an animal processing location. The greater density of bone in Feature 2 suggests at least one episode of intensive animal processing.

The faunal assemblage from MANZ 1993 A-4 was not as diverse as the similarly-sized assemblage from MANZ 1993 A-1 and contained more than twice as much large mammal bone as small mammal bone. On one hand, this may indicate that MANZ 1993 A-4 functioned more often as a large mammal processing location. On the other hand, the lack of smaller animal bones may be the result of the screen size used in excavation rather than an actual functional difference.

Screening experiments have demonstrated the differential recovery rate of small mammal elements using 1/4-inch mesh versus 1/8-inch mesh (Shaffer 1992). Mandibles and scapulae were the only elements consistently recovered in 1/4-inch mesh for animals with body weights of less than 140 grams (Shaffer 1992:131). This weight category included mice, shrews, kangaroo rats, and moles. Pelves, scapulae, femora, humeri, skulls, and mandibles were recovered at least 70 percent of the time from the majority of species with body weights up to 340 grams. This weight category included pocket gophers, cotton rats, wood rats, and ground squirrels. The recovery of bones from animals weighing more than 4500 grams (red fox and coyote) was not greatly affected by 1/4-inch screening (Shaffer 1992: 134).

The results of Shaffer's (1992) experiment have implications for the interpretation of the prehistoric faunal remains from Manzanar. The use of different-sized mesh during the excavations at Manzanar may have affected the recovery of small animal remains, particularly from MANZ 1993 A-4. One of two units at MANZ 1993 A-1, two (including Feature 2) of five units at MANZ 1993 A-2, one of two units at MANZ 1993 A-3, and one of six units at MANZ 1993 A-4 were screened with 1/8-inch mesh. The average bone density (bone fragments per cubic meter) at MANZ 1993 A-1 was nearly three times that at MANZ 1993 A-4 (80 bone fragments per cubic meter vs. to 30 bone fragments per cubic meter). Nearly the same amount of archeological deposit was screened through 1/8-inch mesh at both sites. However, the unit screened with 1/8-inch mesh at MANZ 1993 A-4 included a human burial. Burial contexts are not expected to contain the amount of faunal material found in midden contexts. Therefore, the 1.15 cubic meters of deposits screened through 1/8-inch mesh at MANZ 1993 A-4 were not completely comparable to the 1.00 cubic meter of midden deposits screened through 1/8-inch mesh at MANZ 1993 A-1 (Table H.13).

As shown above, the faunal assemblage from MANZ 1993 A-1 is more diverse than MANZ 1993 A-4. The additional identifiable taxa from MANZ 1993 A-1 are small animals, e.g., reptiles, rodents and amphibians. MANZ 1993 A-1 contained a much greater amount of unidentifiable small mammal bone than MANZ 1993 A-4. These small fragments would easily pass through 1/4-inch screen. Therefore the differences in unidentifiable small mammal bone recovery between MANZ 1993 A-1 and MANZ 1993 A-4 also may be the result of 1/4-inch screening at MANZ 1993 A-4.

The interpretation of the differences between the Manzanar assemblages is difficult because of the use of different-sized mesh, but a few conclusions may be drawn. The average bone density was

Table H.13.
Comparisons of Faunal Material Recovered per Screen Size from Prehistoric Sites at Manzanar National Historic Site.

Site	Screen Size	Excavated Volume (cubic meters)	NISP	Average Site Density (per cubic meter)
MANZ 1993 A-1	1/4"	1.375	42	80 fragments
MANZ 1993 A-1	1/8"	1.000	147	
MANZ 1993 A-2	1/4"	2.600	239	269 fragments
MANZ 1993 A-2	1/8"	1.300	809	
MANZ 1993 A-3	1/4"	0.700	0	3 fragments
MANZ 1993 A-3	1/8"	0.600	4	
MANZ 1993 A-4	1/4"	4.800	146	30 fragments
MANZ 1993 A-4	1/8"	1.150	30	

much higher at MANZ 1993 A-2 than at the other sites. This indicates a longer or more intense occupation. The higher rate of burning and the degree of fragmentation in the faunal assemblage from MANZ 1993 A-2 may indicate that the site, or at least Feature 2, was specifically geared toward animal processing. The faunal assemblages from the other sites probably represent more generalized subsistence activities with an emphasis on small mammal hunting at MANZ 1993 A-1.

A comparison of the Manzanar faunal assemblages with faunal assemblages from other sites in the southern Owens Valley is presented in Table H.12. In general, the other sites listed in Table H.12 were more extensively excavated than the sites at Manzanar and contain numerous loci and features. CA-INY-30 was a large, multi-component village site (Basgall and McGuire 1988). The Alabama Gates project site assemblages are from the late period component of four sites and represent short-term encampments used for the exploitation of specific resources (Delacorte et al. 1995). The assemblages from the late period components of these southern Owens Valley sites contained many of the same taxa as the assemblages from Manzanar, and the proportions of identifiable bone were low as well. The recovered taxa reflect exploitation of the local environment, including use of the riparian environment. The assemblages from the Alabama Gates project (Delacorte et al. 1995) contained greater proportions of fish bone than the Manzanar assemblages. This suggests a functional and/or seasonal difference between the sites. However, the recovery methods used at the Alabama Gates sites (primarily screening with 1/8-inch mesh) undoubtedly increased the recovery of fish remains.

Faunal bone from sites in the southern Owens Valley was generally concentrated in structures (Basgall and McGuire 1988; Delacorte and McGuire 1993; Delacorte et al. 1995). The structures at these sites usually contained greater quantities of bone and more diverse faunal assemblages than nonstructural features. For example, at CA-INY-3769 approximately 58 percent of the bone was recovered from structures. The deposits from structural features represented only 17 percent of the excavated deposit (Delacorte et al. 1995:302). A similar pattern is present at Manzanar, although the sample was somewhat more limited. Sixty-two percent of the total prehistoric faunal bone was recovered from Feature 2, a occupation surface or possible house floor. The rest of the faunal bone at Manzanar was recovered from midden deposits.

As shown in Table H.12, the assemblages from other sites in the southern Owens Valley fall within the parameters set by Szuter's (1992) occupational intensity model. The larger faunal assemblages generally displayed greater taxonomic richness, more rodent taxa, and greater numbers of worked bone, indicating more intensive occupations. However, the faunal assemblage from CA-INY-3775 had a relatively small number of taxa for its size. The assemblage had a high proportion of fish bone (72% of identifiable bone), had dense deposits of mussel shell, and was near the Owens River. Therefore, it probably represents a brief but intensive occupation focusing on the procurement and processing of riverine resources rather than a more generalized, i.e., terrestrial and riverine, resource exploitation site (Delacorte et al. 1995:235).

The late period components from the Alabama Gates project sites (Delacorte et al. 1995), located in the Owens River floodplain and Alabama Hills, contained faunal assemblages with low numbers of large mammal bone (Delacorte et al. 1995:335). The lack of large mammal bone, particularly bighorn (*Ovis canadensis*) and pronghorn (*Antilocapra americana*) in the assemblages suggests that hunting was limited to the local environment and was not conducted in the uplands or grasslands (Delacorte et al. 1995:335). This also suggests that most large mammal hunting was conducted on a daily encounter basis rather than on organized logistical trips, contributing fewer numbers of large mammal bone to the archeological assemblages.

The Manzanar sites, with the exception of MANZ 1993 A-1, contained a considerably higher ratio of large mammal to small mammal bone than other sites in the Owens Valley. If the sites at Manzanar represent short-term encampments for local resource procurement, such as the Alabama Gates sites, bighorn hunting would be a seasonal activity. The bighorn remains at Manzanar could represent opportunistic hunting during the late fall/early winter when bighorn were in the valley (Ingles 1965: 298). In the late fall/early winter, the fat content of bighorn, deer, and other large game animals is very low due to sparse and poor-quality forage (cf. Speth and Spielmann 1983:3). Extra calories for metabolic digestion are needed to supplement a human diet high in lean meat because protein requires a higher specific dynamic action (the energy expended for metabolic processing of food) than other nutrients (Speth and Spielmann 1983:6-7). When carbohydrates are unavailable, fat must provide the extra calories to satisfy basic metabolic and physiological functions. Fat from bone would be an important supplement to the human diet, particularly in the late winter/early spring when game animals are lean and carbohydrates are scarce. This may be the case at MANZ 1993 A-2 where the highly fragmented assemblage was the result of specialized processing of large mammals and other animals.

The idea that hunting was restricted to local species (Delacorte et al. 1995:335) fails to take into account the processing of large mammal bone for the extraction of marrow and grease. Bighorn and pronghorn specimens may be present in the unidentifiable large mammal subassemblages at other late period sites in the Owens Valley. The suggestion that the procurement and processing of large animals was limited, ignores the possibility that butchering may have been done at upland locations. This would limit the amount of bone recovered from lowland processing sites because certain elements would be left behind at the kill location and would not be present at the processing locations. Unfortunately, the high proportion of unidentifiable bone at lowland locations makes it difficult to confirm this possibility.

The highly fragmented condition of most of the faunal assemblages from the Owens Valley suggests intensive processing of bone. The processing of bone for grease, marrow, and/or meal may not have been a strictly fall/winter strategy. Such intensive processing may indicate food shortages and subsistence stress (cf. James

Table H.14.
Faunal Bone Counts from Sites Associated with the Manzanar Townsite (burned bone in parentheses).

Taxon	MANZ 1993 A-6*	MANZ 1993 A-13	MANZ 1993 A-16	MANZ 1993 A-28
Cottontails (*Sylvilagus* sp.)	1	1(1)	0	0
Jackrabbits (*Lepus* sp.)	0	2	0	0
Indeterminate large rodent	0	1	0	0
Indeterminate small mammal	1	1(1)	0	0
Raccoon (*Procyon lotor*)	0	1	0	0
Indeterminate medium mammal	0	1	0	0
Horse (*Equus caballus*)	0	5	0	0
Cow (*Bos taurus*)	2	3	2	0
Pig (*Sus scrofa*)	1	3	1	0
Pig? (cf. *Sus scrofa*)	0	2	1(1)	0
Sheep/goat (*Ovis aries/Capra hircus*)	0	8(3)	4	0
Small ungulates	0	4(1)	4	0
Medium ungulates	0	3	2	0
Large ungulates	0	4	0	0
Indeterminate ungulates	6(5)	75(42)	72(56)	6(5)
Chicken (*Gallus gallus*)	0	0	3(1)	0
Chicken? (cf. *Gallus gallus*)	4*	1	2*	0
Quails, bobwhites, etc. (Phasianidae)	0	0	1	0
Indeterminate medium birds	1	4(1)	2	0
Indeterminate birds	0	0	2	0
Indeterminate class	0	2(1)	2(2)	0
Totals	16(5)	121(50)	98(60)	6(5)

* Eggshell fragments

1990:31-33), or simply a daily dietary necessity where competition for scarce resources occurs. The lack of identifiable artiodactyl bone from late period sites in the southern Owens Valley requires more careful examination of the *unidentifiable* assemblages to determine whether bone fragmentation patterns exist.

Town of Manzanar Sites

Faunal bone (241 specimens) was recovered in eight excavation units from four sites associated with the former town of Manzanar. These include MANZ 1993 A-6, MANZ 1993 A-13, MANZ 1993 A-16, and MANZ 1993 A-28. The counts for the faunal remains recovered from each site are listed in Table H.14. Most of the identifiable taxa were domestic animals including horse (*Equus caballus*), cow (*Bos taurus*), pig (*Sus scrofa*), sheep/ goat (*Ovis aries/Capra hircus*), and chicken (*Gallus gallus*). However, small quantities of cottontail (*Sylvilagus* sp.) and jackrabbit (*Lepus* sp.) bone, along with a raccoon (*Procyon lotor*) radius and a large rodent (marmot/muskrat size) scapula blade fragment, also were recovered. In addition, one wild bird specimen, a distal femur, was assigned to Family Phasianidae (quails, pheasants, and partridges). Some of the rabbit

Table H.15.
Identifiable Elements from Major Meat Animals in the Three Largest Manzanar Townsite Assemblages.

	MANZ 1993 A-6		MANZ 1993 A-13							MANZ 1993 A-16				
Element	C	P	C	P	S	LU	MU	SU	IU	C	P	S	IG	CH
Skull	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Atlas	-	1[a]	-	-	-	-	-	-	-	-	-	-	-	-
Cervical vertebra	-	-	-	-	-	1[a]	-	-	-	-	-	-	-	-
Thoracic vertebra	1[a]	-	-	1	2[a]	-	-	-	-	-	-	2[a]	-	-
Lumbar vertebra	1[a]	-	-	-	1	-	-	1[a]	-	1[a]	-	-	-	-
Indeterminate vertebra	-	-	-	-	-	-	1[b]	-	-	-	-	-	-	-
Rib	-	-	2[a]	1[c]	-	-	-	-	7[a]	-	2[a]	2[a]	2[a]	-
Scapula	-	-	-	-	1[a]	-	-	-	-	-	-	-	-	1
Humerus	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Radius	-	-	-	1[d]	1[a]	-	-	-	-	-	-	-	-	-
Ulna	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Pelvis	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Astragalus	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Phalanx	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Tibiotarsus	-	-	-	-	-	-	-	-	-	-	-	-	-	1

Key:

Taxa Abbreviations

C=cow
P=pig
S=sheep/goat
CH=chicken
LU=large ungulate
MU=medium ungulate
SU=small ungulate
IU=indeterminate ungulate

Butchering Marks

a. saw cut, fine
b. saw cut, coarse
c. knife
d. ax/cleaver

and bird bone was burned, indicating possible cultural use.

The majority of bone from all of the sites was highly fragmented and unidentifiable. Two of the town-era assemblages were small, containing less than 15 specimens. However two assemblages, one from the Shepherd Ranch (MANZ 1993 A-13; n=121) and one from downtown Manzanar (MANZ 1993 A-16; n=98), were considerably larger. Both assemblages were expected to contain evidence of animal husbandry and home butchering because many of the town residents kept animals (see Chapter 6). Therefore, these two assemblages should contain similar body part representation and butchering techniques.

Body Part Representation

Three site assemblages, MANZ 1993 A-6, MANZ 1993 A-13, and MANZ 1993 A-16, contained identifiable elements with and without butchering marks. No identifiable bone was recovered from MANZ 1993 A-28. MANZ 1993 A-28 did contain one indeterminate ungulate long bone fragment with a fine-toothed saw cut.

Table H.15 lists the identifiable elements from the major meat animals recovered from MANZ 1993 A-6, MANZ 1993 A-13, and MANZ 1993 A-16. The high food value elements (cf. Lyman 1977:70) from the axial skeleton were the most commonly occurring bones in the identifiable assemblages from all the sites. All of the identifiable elements from cow, pig, and sheep/goat from MANZ 1993 A-6 and MANZ 1993 A-16 were vertebrae and ribs. In addition to the axial skeleton, skull parts, foot bones, and long bones were recovered at MANZ 1993 A-13. These elements included one cow astragalus, one pair of pig maxillae, one pig phalanx, and one pig radius. An even larger portion of the sheep/goat skeleton was identified at MANZ 1993 A-13, including fragments from a scapula, humerus, radius, ulna, and pelvis.

Three chicken bones were positively identified in the assemblage from MANZ 1993 A-16. These included one burned distal tibiotarsus (leg element), one scapula, and one pelvis fragment. One burned possible-chicken sternum fragment was identified from MANZ 1993 A-13. Chicken eggshell fragments were recovered from all tested sites except MANZ 1993 A-28. No butchering marks were present on any of the identifiable chicken elements.

Five horse bones were identified in the Shepherd Ranch assemblage (MANZ 1993 A-13). The elements included one second phalanx, one subadult thoracic vertebra, one unfused pad of a cervical vertebra, and two rib fragments. With the exception of the phalanx, all of the horse elements were recovered from the same provenience. These elements were probably from one subadult individual. None of the bones displayed butchering marks or were burned.

Most of the elements among the butchered bone from the town sites correspond to high-quality retail cuts from the rib and loin areas, e.g., chops, steaks, and roasts (Levie 1963; Schulz and Gust 1983). In addition to these cuts, other lower quality cuts were represented from the Shepherd Ranch (MANZ 1993 A-13). For example at MANZ 1993 A-13, foreshank cuts were represented by pig and sheep/goat radii (Levie 1963:260, 276). Although it works well for soups and stews (Levie 1963:260), meat from the foreshank is of secondary quality.

The difference in body part representation between the Shepherd Ranch and town sites assemblages usually indicates home butchering as opposed to purchasing meat from a butcher (cf. Gust 1987:149). The presence of skull and foot bones from pig and cow in the Shepherd Ranch (MANZ 1993 A-13) assemblage sets it apart from the town assemblages (MANZ 1993 A-6 and MANZ 1993 A-16). Cranial and foot bones from cows and sheep have low food value and are commonly discarded in the butchering process,

Table H.16.
Bone Surface Modifications in Assemblages from Manzanar Town-era Sites.

Modification	MANZ 1993 A-6	MANZ 1993 A-13	MANZ 1993 A-16
Saw cuts, fine	5	35	35
Saw cuts, coarse	0	7	0
Ax/cleaver marks	0	3	0
Knife marks	0	8	0
Rust staining	0	3	11
Carnivore gnawing	0	6	1
Rodent gnawing	4	1	1
Root etching	0	6	0
Melted glass	0	0	5
Erosion	0	6	0
Sun-bleaching	0	1	1
Total	9	76	54

Note: The bone from MANZ 1993 A-28 contained no surface modifications other than one fine-toothed saw cut.

unlike the cranial and foot bones from pigs, which are considered food items (Lyman 1977:69). Unfortunately, the small proportion of identifiable elements from the Manzanar sites makes it difficult to discern a butchering pattern with any certainty. Because of the limited excavations in MANZ 1993 A-6 and MANZ 1993 A-16, it is unclear whether the town residents did any home butchering, i.e., it is impossible to say they did not. For example, the test excavations in the townsite may have occurred in food refuse locations as opposed to butchering refuse locations. In addition, the assemblages from MANZ 1993 A-6 and MANZ 1993 A-16 may not be representative of the town as a whole.

Butchering Marks

Forty-two percent (n=5) of the bone recovered from MANZ 1993 A-6 contained butchering marks; 38 percent (n=46) of the bone recovered from MANZ 1993 A-13, and 32 percent (n=38) of the bone recovered from MANZ 1993 A-16 displayed butchering marks (Table H.16). The majority of the assemblages were comprised of indeterminate element fragments from indeterminate ungulates. Likewise, the majority (72%) of butchering marks were on unidentifiable elements. Most of the butchering marks consisted of fine-toothed saw cuts (n=76), probably from a meat saw (cf. Lyman 1977:67). All saw cuts were through the bone. No butchering marks other than fine-toothed saw cuts were observed on bone from the Manzanar town sites. Other butchering marks, found only on bone from the Shepherd Ranch site (MANZ 1993 A-13), included coarse-toothed saw cuts (n=7), thin bladed (knife) cut marks (n=8), and thick bladed (ax/cleaver) cut marks (n=3).

Other Bone Surface Modifications

Bone surface modifications other than butchering marks and burning occurred on 37 percent (n=48) of the surface-modified bone recovered from the former Manzanar townsite area (see Table H.16). Eight elements exhibited signs of

Table H.17.
Burning Color Frequencies for Burned Bone from Manzanar Town-era Sites (percentage of burned assemblage in parentheses).

Color	MANZ 1993 A-6	MANZ 19 93 A-13	MANZ 1993 A-16
Brown	0 (0%)	0 (0%)	2 (3%)
Brown/charred	0 (0%)	0 (0%)	2 (3%)
Charred	0 (0%)	22 (44%)	5 (8%)
Charred/gray	0 (0%)	15 (30%)	25 (42%)
Gray	0 (0%)	7 (14%)	8 (13%)
Gray/calcined	4 (80%)	6 (12%)	9 (15%)
Calcined	0 (0%)	0 (0%)	7 (12%)
Brown/gray	1 (20%)	0 (0%)	0 (0%)
Charred/calcined	0 (0%)	0 (0%)	2 (3%)
Total burned	5 (100%)	50 (100%)	60 (100%)

Note: MANZ 1993 A-28 contained five burned (gray/calcined) indeterminate ungulate bone fragments.

weathering, e.g., sun-bleaching (n=2) and erosion (n=6). Root etching was recorded only on specimens (n=6) from MANZ 1993 A-13. Animal damage included rodent gnawing (n=5) and carnivore gnawing (n=6). The presence of melted glass (n=5) on bones probably was related to trash burning. The rust stains (n=16) on bones may be the result of contact with rusting metal cans. The elements with rust stains and/or melted glass on them were part of a larger accumulation of trash. Rodent gnawing and root etching may have occurred before or after burial. The rest of the surface modifications occurred before the bones were buried.

The faunal assemblages from all sites from the Manzanar townsite and from Shepherd Ranch contained high proportions of burned bone: 31 percent burned at MANZ 1993 A-6, 41 percent at MANZ 1993 A-13, 61 percent at MANZ 1993 A-16, and 83 percent at MANZ 1993 A-28 (see Table H.14). Most of the burned bone was charred, gray, or a combination of the two (Table H.17). The burning colors indicate the bone was burned as a result of trash burning rather than cooking. The majority of burned bone from all sites was comprised of indeterminate ungulate element fragments (see Table H.14). Indeterminate ungulate bone fragments comprised all of the burned bone from MANZ 1993 A-6 and MANZ 1993 A-28. Indeterminate ungulate bone from MANZ 1993 A-13 and MANZ 1993 A-16 comprised 84 percent and 93 percent of the burned bone, respectively. Most of the burned bone appears to have been broken during or after burning. Burned bone is more brittle than unburned bone and may be more susceptible to breakage (Lyman 1994:389). If the burned bone remained unburied for any length of time, it would be exposed to a number of fracturing agents. For example, trampling either during or after the occupation of the site would cause damage to most of the skeletal elements in the Manzanar assemblages (Lyman 1994:379). However, the actual agents responsible for the fracturing could not be determined.

Summary and Conclusions

The faunal assemblages recovered from the former town of Manzanar and the Shepherd Ranch were small. However, several general patterns were evident. The bones of the major domestic meat animals, i.e., cow, pig, sheep/

Table H.18.
Faunal Bone Counts for Relocation Center and Post-relocation Center Assemblages (burned bone counts in parentheses).

Taxon	MANZ 1993 A-30 Staff Housing	MANZ 1993 A-30 Feature P-17	MANZ 1993 A-30 Feature P-18	MANZ 1993 A-37 Locus A	MANZ 1993 A-37 Locus C
Cottontails (Sylvilagus sp.)	0	0	0	0	1(1)
Jackrabbit (Lepus sp.)	0	0	1(1)	0	4(4)
Indeterminate small mammal	0	0	0	0	4(4)
Pig (Sus scrofa)	2	1	0	1	2(2)
Pig? (cf. *Sus scrofa)*	15	0	0	4(3)	2(2)
Sheep/goat (Ovis/Capra)	0	0	0	0	2(2)
Small ungulates	0	0	0	0	4(4)
Medium ungulates	0	0	0	4(3)	5(5)
Large ungulates	0	0	0	0	0
Indeterminate ungulates	0	0	3(3)	23(12)	147(147)
Osteichthyes	0	0	0	1	0
Chicken (Gallus gallus)	0	1(1)	1(1)	1	5(5)
Chicken? (cf. *Gallus gallus)*	0	2+	2+	15(15)*	1(1)
Quails, bobwhites, etc. (Phasianidae)	0	0	0	0	3(3)
Indeterminate medium bird	0	0	2(1)	0	1(1)
Indeterminate class	0	0	0	0	4(3)
Total	17(0)	4(1)	9(6)	49(32)	185(184)

+ Eggshell fragments
Note: one burned cow bone from MANZ 1993 B-8 is not included in the table.

goat, and chicken, were present in similar quantities at all sites and the remains of small wild game were present in small numbers. There was a difference between the samples from the town proper and Shepherd Ranch in body part representation of domestic ungulates and the nature of butchering marks. The town assemblages contained elements exclusively from the axial skeleton, e.g., vertebrae and ribs. These elements generally represent high-quality cuts of meat. The elements identified in the Shepherd Ranch assemblage were from the axial skeleton and other areas of the ungulate skeleton that represented cuts of variable quality. Butchering marks also suggest some variability in butchering at Shepherd Ranch, although the majority of the butchered bones have fine-toothed saw cuts as do the bones from the town assemblages. Based on the excavated sample, it appears that the town residents did not do their own butchering and the Shepherd Ranch residents did at least some of their own butchering. However, additional data are needed to make more definitive statements about meat preferences and butchering patterns.

Relocation Center and Post-Relocation Center Sites

Faunal bone (79 specimens) from the relocation center was recovered from five locations including the staff housing area (MANZ 1993 A-30), Features P-17 and P-18 (MANZ 1993 A-30), the hospital dump (MANZ 1993 A-37, Locus A), and the relocation center landfill (MANZ 1993 B-8). Faunal bone also was collected from a post-relocation center dump (MANZ 1993 A-37, Locus C). Bone from the staff housing area was recovered from surface collections as was a single cow bone from MANZ 1993 B-8. Bone from the other locations was recovered from one excavation unit in each location. The majority of the bone from all of these locations was highly fragmented. The counts for the faunal remains recovered from each location are listed in Table H.18.

It was anticipated that bone from relocation center contexts would consist primarily of elements from pigs and chickens, which were raised in areas adjacent to the relocation center (Chapter 4). In addition, it was expected that there might be differences in body part representation, particularly of pigs, between bone refuse from staff versus internee features. Body parts representing higher quality cuts would be recovered from staff refuse areas whereas bone representing lower quality cuts would be recovered from internee refuse areas.

Body Part Representation

Faunal bone from Features P-17 and P-18 probably were part of refuse from the mess hall in Block 35. Recovered specimens included two chicken wing elements, one pig rib shaft fragment, a jackrabbit bone, one indeterminate small mammal bone, three large ungulate bones, and two medium bird bones. The pig rib was cut with a fine-toothed saw. Four chicken eggshell fragments also were recovered. The only cow element recovered from relocation center contexts was a thoracic vertebra fragment from MANZ 1993 B-8. The vertebra fragment was cut with a fine-toothed saw vertically through the centrum.

All identifiable elements from the major meat animals (e.g., pig, sheep/goat, chicken) recovered from the staff housing area and the hospital dump are listed in Table H.19. The bone collected from the staff housing area was identified as pig. Those specimens exhibited fine-toothed saw cuts and were highly weathered, i.e., sun-bleached with cracking and flaking cortical surfaces. One cross section was positively identified as a proximal humerus diaphysis. The other 15 long bone diaphysis cross sections were tentatively identified as either humerus or femur. All cross sections were cut with a fine-toothed saw. Femur cross section cuts represent ham steaks and humerus cross section cuts represent shoulder steaks (Levie 1963:277, 279). Meat from the shoulder is

lower in quality than meat from the ham and contains much more fat (Levie 1963:278). In addition to the long bone cross sections, one lumbar vertebra fragment was identified as pig. This specimen represents a loin chop, a relatively high-quality cut (Levie 1963:281, 283). The vertebra fragment exhibited both fine- and coarse-toothed saw cuts.

The majority of the faunal bone from the relocation center contexts was recovered from the hospital dump (MANZ 1993 A-37, Locus A). Forty-nine specimens, representing three taxa, were collected. Because the bone was highly fragmented, only five ungulate elements were positively identified (see Table H.19). Those elements were identified as pig or possible pig. They included one rib (vertebral end), one lumbar vertebra, and two caudal vertebrae. The rib and lumbar vertebra represent primary meat products, e.g., rib and loin chops or roasts (Levie 1963:283). The caudal vertebrae represent secondary products from the ham (Levie 1963: 282-283). The presence of caudal vertebrae suggests that some butchering was done at the hospital.

Almost half (47%) of the bone from the hospital dump was indeterminate ungulate element fragments. Identifiable elements from indeterminate ungulates included high food value parts from the axial skeleton, e.g., ribs and vertebrae. In addition to the ungulate specimens, the hospital dump also contained one proximal chicken radius and 15 fragments of chicken eggshell. One indeterminate fish bone (Osteichthyes), possibly from a marine species, also was recovered.

One hundred eighty-five fragments of faunal bone were recovered from the post-relocation center dump (MANZ 1993 A-37, Locus C). This feature contained a much greater variety of taxa than the assemblages from relocation center contexts (see Table H.18). Domestic animal remains included pig, sheep/goat, and chicken. Wild specimens included cottontail, jackrabbit, and possible quail. Eighty-nine percent of the bone (n=165) was unidentifiable. Nearly all of the unidentifiable bone was from indeterminate ungulates. The indeterminate ungulate subassemblage may contain wild as well as domestic ungulate remains.

The post-relocation center dump contained greater variability than the relocation center contexts in the cuts of meat represented (see Table H.19). The majority (n=21) of the identifiable elements were from the axial skeleton, e.g. vertebrae and ribs. Other skeletal parts identified included one sheep/goat distal radius (unfused epiphysis). This is part of the foreshank, a secondary cut or by-product (Levie 1963:260). Such low quality cuts are generally used for soups and stews. No butchering refuse, e.g., ungulate cranial or foot parts, was recovered from the post-relocation center dump. One pig phalanx was identified, but could represent a food item rather than butchering waste.

The majority of the saw cuts (n=50) on bone from the post-relocation center dump were on unidentifiable elements from indeterminate ungulates. Half of the cuts were on either femur or humerus diaphysis fragments. The diaphyses were cut into cross sections similar to those recovered from the staff housing area (see above). If these diaphyses were from pigs, the femur cross section cuts represent ham steaks, and the humerus cross section cuts represent shoulder steaks (cf. Levie 1963:277, 279). If the diaphyses were from sheep, the humerus cross section cuts represent arm chops (Levie 1963: 266). Chops from the shoulder area are considered to be "fair" quality (Levie 1963:260). Legs of lamb are generally not cut.

Fourteen identifiable nonungulate specimens were recovered from the post-relocation center dump (see Table H.18). Lagomorph elements included one cottontail atlas fragment, and four jackrabbit elements. The jackrabbit elements included one lumbar vertebra fragment, one rib shaft, one distal metacarpal, and one distal femur.

Three possible quail elements were identified. They included one distal femur and two carpometacarpi (wing elements), one complete and one distal fragment. The quail bones were probably from the same individual. Five chicken bones were recovered. They included one cervical vertebra, one caudal vertebra, one distal radius, and one proximal coracoid (wing element). One possible chicken scapula fragment also was identified. There were no butchering marks on the rabbit, quail, or chicken bones, but all were burned (gray/calcined).

Butchering Marks and Other Surface Modifications

Few surface modifications (other than burning and butchering marks) were identified on bone recovered from relocation center contexts or the post-relocation center dump. Table H.20 lists the surface modifications on bone from all four locations. Butchering marks were observed on all of the bone from the staff housing area. The marks were almost exclusively fine-toothed saw cuts with the exception of one coarse-toothed saw cut mark. Weathering was also observed on the bone from the staff housing area. All specimens were sun-bleached and heavily eroded. The only surface modification apparent on bone from Feature P-17 (other than burning) was a fine-toothed saw cut on one bone. Surface modifications on bone from the hospital dump included fine-toothed saw cuts (n=18) and two elements with rust stains. Twenty-six percent (n=48) of the specimens recovered from the post-relocation center dump exhibited fine-toothed saw cuts. Rust stains were visible on 47 elements from the post-relocation center dump.

The percentage of burned bone in the assemblages from the relocation center and the post-relocation center occupations was variable and probably relates to the function of the features (see Table H.18). The assemblage collected from the staff housing area did not contain burned bone. One burned bone (25% of the assemblage) was recovered from Feature P-17. In contrast, 65 percent (n=32) of the bone from the hospital dump assemblage was burned. The assemblage from the post-relocation center dump contained 99 percent (n=184) burned bone.

Table H.21 lists the burning colors and their proportions for relocation center dumps and the post-relocation center dump. Sixty-nine percent of the burned bone from the hospital dump is charred (black). The majority of the burned bone from the post-relocation center dump is gray/calcined (71%) and very ashy. In addition, 56 percent (n=18) of the burned elements from the hospital dump were partially, rather than completely, burned. Only one specimen from the post-relocation center dump was partially burned.

The assemblages from the staff housing area and Features P-17 and P-18 probably represent light (more ephemeral) trash scatters. Based on the condition of the faunal bone and the other artifacts recovered, the loci at MANZ 1993 A-37 were regular trash features, i.e., dumps that were used more than once. The post-relocation center dump may have been reused more often than the hospital dump. The greater amount of reuse would account for the accumulation of ash, and the longer burning of the bone, indicated by the burning colors (gray/calcined as opposed to black). In addition, the bone from the post-relocation center dump was more broken up than the bone from the hospital dump (89% unidentifiable versus 55% unidentifiable), indicating more intensive use.

Summary and Conclusions

The identifiable assemblages from relocation center contexts were expected to contain mostly pig and chicken bone because these animals were raised near the center. All camp assemblages were dominated by pig bone, but contained little or no chicken bone. In light of the cow bone recovered from the dump (MANZ 1993 B-8), more cow bone may be

Table H.19.
Identifiable Elements from Major Meat Animals from MANZ 1993 A-30 and MANZ 1993 A-37.

	MANZ1993A-30 (Staff Housing)		MANZ1993A-37 (Locus A')					MANZ1993A-37 (Locus C)					
Element	cf. P	P	P	cf. P	MU	IU	C	S/G	SU	P	MU	IU	C
Cervical vertebra	-	-	-	-	-	-	-	-	-	-	1	-	1
Thoracic vertebra	-	-	-	-	-	-	-	1	-	-	-	1.	-
Lumbar vertebra	-	1[a]	-	1·	2·	-	-	-	-	-	1·	1	-
Caudal vertebra	-	-	-	2·	-	-	-	-	-	-	-	-	1
Indeterminate vertebra	-	-	-	1·	-	1·	-	-	-	-	-	7	-
Rib	-	-	1·	-	-	1·	-	-	3·	-	1·	5·	-
Scapula	-	-	-	-	-	-	-	-	-	-	1·	1	-
Humerus	-	1·	-	-	-	-	-	-	-	-	1	-	-
Humerus/Femur (shaft)	15·	-	-	-	-	-	-	-	-	-	-	-	-
Radius	-	-	-	-	-	-	1	1·	-	-	-	-	1
Femur	-	-	-	-	-	-	-	-	-	1	1	-	-
Pelvis	-	-	-	-	-	-	-	-	-	1	-	-	-
Tibia	-	-	-	-	-	-	-	-	1·	-	-	-	-
Phalanx	-	-	-	-	-	-	-	-	-	1	-	-	-
Coracoid	-	-	-	-	-	-	-	-	-	-	-	-	1

Key:

Taxa Abbreviations

P=pig
S/G=sheep/goat
C=chicken
MU=medium ungulate
SU=small ungulate
IU=indeterminate ungulate

Butchering Marks

a. saw cut, fine
b. saw cut, coarse

Table H.20.
Surface Modifications on Bone from Relocation Center and Post-relocation Center Contexts.

Modification	MANZ 1993 A-30 Staff Housing	MANZ 1993 A-30 Feature P-17	MANZ 1993 A-30 Feature P-18	MANZ 1993 A-37 Locus A	MANZ 1993 A-37 Locus C
Fine-toothed saw cut*	31	1	0	18	60
Coarse-toothed saw cut	1	0	0	0	0
Rust staining	0	0	2	2	47
Sun-bleaching	17	0	0	0	0
Total	49	1	2	20	107

* Quantities represent actual number of saw cuts, not number of elements.

Table H.21.
Burning Color Frequencies for Bone from Relocation Center and Post-relocation Center Contexts (percentage of total burned in parentheses).

Burning Color	MANZ 1993 A-30 Feature P-18	MANZ 1993 A-37 (Locus A)	MANZ 1993 A-37 (Locus C)
Charred	2 (33%)	22 (69%)	14 (8%)
Charred/gray	0 (0%)	4 (13%)	0 (0%)
Gray	1 (17%)	5 (16%)	4 (2%)
Gray/calcined	1 (17%)	0 (0%)	130 (71%)
Calcined	1 (17%)	1 (3%)	22 (12%)
Brown/gray	1 (17%)	0 (0%)	0 (0%)
Charred/calcined	0 (0%)	0 (0%)	14 (8%)
Total burned	6 (100%)	32 (100%)	184 (100%)

Note: Feature P-17 (MANZ 1993 A-30) and MANZ 1993 B-8 contained one burned bone each. No burned bone was collected from the staff housing area (MANZ 1993 A-30).

present in the indeterminate ungulate sub-assemblage from the hospital dump. Cows were raised for a brief period during the early occupation of the relocation center (Chapter 4). On the other hand, the cow bone, like the fish bone from the hospital dump, could represent shipped-in food.

The post-relocation center dump contained a greater variety of taxa, including game animals, than the relocation center assemblages. This may be due in part to its larger size (cf. Grayson 1984:132). However, the post-relocation center residents would be more likely to hunt wild game than the evacuees because the post-relocation center residents would have access to the weapons and other gear needed to procure them.

Butchering marks and body part representation indicate that the majority of the bone from relocation center contexts represents high food value parts and retail cuts. This suggests that most of the butchering was done at another location. However, it is possible that butchering

locations within the relocation center were not excavated. The presence of pig caudal vertebrae fragments in the hospital dump indicates that some "clean-up" butchering may have been done in the food service facilities prior to meal preparation.

Unfortunately, the sample from the relocation center was too limited to determine if there were differences in the cuts of meat eaten by the staff versus the internees. In addition, the affiliation of some of the bone from certain loci is not clear. It is possible that the bone from the staff housing area actually may be from the post-relocation center occupation rather than the WRA staff (Chapter 4). This may indeed be the case because the staff housing area and the post-relocation center dump were the only two locations where the long bone cross sections, representing the lower quality steaks and chops, were recovered.

Appendix I

Physical Anthropology

Elaine A. Guthrie



This appendix includes descriptions of Japanese American teeth and dental casts from the relocation center hospital landfill, two bones from prehistoric sites later identified as human, and a Native American Indian burial.

During the intensive survey of Manzanar National Historic Site, no evidence of Native American Indian graves or cemeteries was located or suspected. Native American Indian sites recorded during the survey phase of the project appeared to be primarily artifact scatters with some potential for midden deposits. There was no reason to believe, during the planning of the subsequent testing project, that any human remains or funerary items would be discovered. In fact, no human remains have ever been encountered during previous archeological investigations in the Owens Valley, in spite of the large number and diversity of sites investigated. Prior to excavation, the California State Historic Preservation Office (SHPO) and appropriate Native American Indian tribes were notified of the scope and purpose of the subsurface testing. A Plan of Work was sent to these parties for comment 30 days prior to the start of field work.

Although human remains were not anticipated, the burial site of an individual was inadvertently discovered within one of the 1 m by 1 m test units. Although the implementing regulations for Native American Graves Protection and Repatriation Act (NAGPRA; in draft during the time of field work) specifically excludes Federal actions on non-Federal lands (such as the case at Manzanar), the archeological investigations at Manzanar endeavored to follow the spirit of the law by protecting this grave and associated cultural items through in situ preservation.

After discovery of the human remains, access to the excavation unit was restricted. The remains were partially exposed, photographed, and analyzed by a trained physical anthropologist. No bone was moved during the course of this work. Because the National Historic Site is accessible to the unsupervised public at all hours, the remains and all associated artifacts were reburied in place without further disturbance.

The appropriate agency officials and tribal groups were then contacted. In response, one individual from the Lone Pine Paiute-Shoshone community commented that the excavation project should have had a Native American Indian monitor. Several Native American Indian individuals wanted to know the grave location and this information was provided. In subsequent consultations in 1994 (Van Horn 1995) it was determined that if additional human remains are inadvertently discovered at the National Historic Site they should be reburied in place and tribal elders notified. However, given

that these archeological investigations have documented the presence of human remains, it seems prudent to also ensure that future excavations at prehistoric sites within the National Historic Site be monitored by a Native American Indian observer.

Introduction

Prehistoric and historical human remains were encountered during archeological testing at Manzanar National Historic Site. An inhumation, dating to between A.D. 600 and 1300 based on associated artifacts, was discovered in a excavation unit at MANZ 1993 A-4. Apparently, this is the first burial found at a prehistoric site in the Owens Valley during archeological testing. Historical-period human remains recovered during testing consisted of loose teeth and dental casts found in the relocation center hospital dump (MANZ 1993 A-37, Locus A). Finally, two isolated bones were inadvertently recovered from two prehistoric sites, a foot bone from MANZ 1993 A-1 and a toe bone from MANZ 1993 A-4.

Inhumation

On October 27, 1993, during the testing phase at Manzanar, a previously undisturbed prehistoric inhumation was discovered in a 1 m by 1 m excavation unit at MANZ 1993 A-4 (Unit 9). A human cranium was encountered 72 cm below the surface in an upright position, with no apparent articulated bones. Because of the multiple historical and prehistoric occupations and extensive disturbance in the vicinity, excavation in the unit was continued to determine whether the cranium was part of an intact burial and if so, to determine its cultural affiliation. No bone was moved during subsequent excavation. The area was heavily disturbed by rodents, but the burial was found to be largely intact. After a portion of the burial was exposed, the excavation was halted and the unit backfilled with no associated artifacts or bone collected.

The individual had been placed in an unusual seated position with the legs fully flexed to the right side at the hips and knees, the torso bent completely forward, and the head facing up (Figure I.1). The orientation of the head and shoulders relative to the rest of the body suggests the size and shape of the pit was small and concave. The only indication of a pit outline was on the southern edge of the unit; even here the pit outline was discontinuous due to very loose sandy soil.

Associated Artifacts

In the levels containing the post-cranial skeletal material were six associated artifacts: three obsidian projectile points, a chert biface, a vesicular basalt pipe bowl, and three fragments of a steatite pipe stem (see Figure I.1). No other artifacts were encountered in these levels. All of the associated artifacts were reburied with the skeletal remains.

Bone Preservation

The cranium was in excellent condition while the rest of the bones were only in fair condition. This discrepancy is likely the result of the dense nature of cranial vault bone. Furthermore, the dense shafts of the weight-bearing long bones are adapted to receive loads along the long axis of the bone and not from the side. The horizontal position of the axial and appendicular skeleton may have added to the differential preservation of the bone.

Sex

The individual was determined to be male based on the following attributes:

1. large femoral and humeral heads
2. narrow sub-pubic angle
3. short pubic bone
4. square chin
5. pronounced muscle attachment sites for the following muscles:

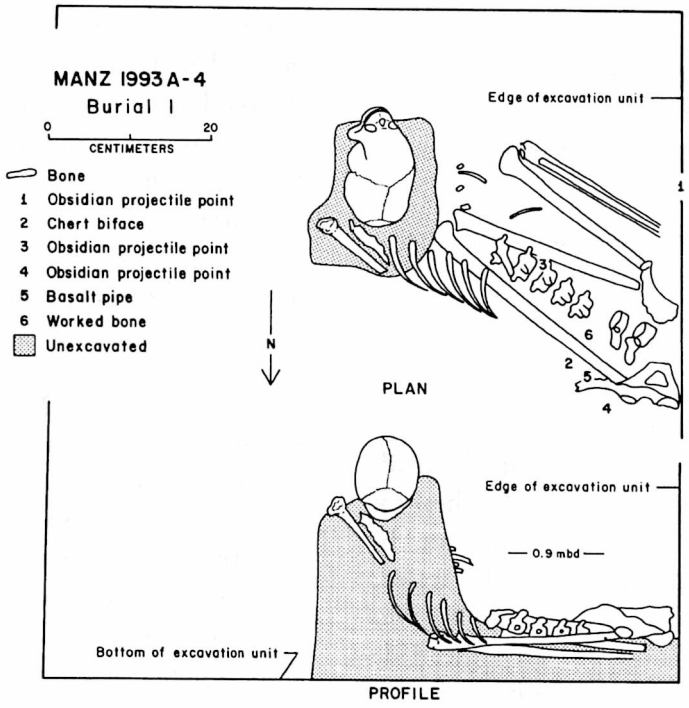


Figure I.1. Burial plan and profile.

b. masseter muscles on the mandible

c. nuchal muscles on the occipital

d. gluteal muscles on the femora

e. plantarflexors on the tibiae

f. peroneal muscles on the tibiae

6. general robustness of the long bones

The sacrum, pubic symphysis, sciatic notches, and the sacro-iliac joints were not clearly visible for the determination of sex due to poor preservation of the bone.

Age

The age of this male was estimated to be approximately 25-35 years of age based on the following:

1. complete fusion of all epiphyses
2. lack of degenerative joint disease (a minor amount of lipping was present on the patella but all other visible joints were normal)
3. moderate amount of wear of all visible teeth; the only third molar visible was the right maxillary which lacked dental wear because it was partially impacted.

Some of the best indicators of age were not visible due to poor preservation of the bone. Furthermore, a full examination of the dentition was not conducted, since doing so would have required moving the skull.

Biological Affinity

This young adult male was identified as an American Indian due to the following indicators:

1. extreme shoveling of the central maxillary incisors with barrel-shaped lateral maxillary incisors (the occlusal surface of the mandibular incisors was not visible)
2. broad zygomatic arches
3. asterionic bones on left temporo-occipital suture

Stature

The only long bones available for stature measurements included the left femur and left tibia, which are fortunately the most reliable predictors of stature. The maximum lengths were taken for each and incorporated into the following stature calculations for Mesoamerican

males (Genoves, 1967):

2.26(43 cm [maximum femur length]) + 66.379 = 163.56 cm ± 3.42 cm or about 5 ft 4 inches

1.96(33 cm [maximum tibia length]) + 3.752 = 158.43 cm ± 2.82 cm or about 5 ft 2 inches

An average of the two estimates results in a stature of 161 cm ± 3.12 cm or about 5 ft 3 inches.

Pathology

From an examination of the bones in the field, this individual appeared to be relatively healthy with no evidence of cranial deformation. In addition to a few minor, but well healed, antemortem indentations on the skull, two button osteomas were observed on either side of the frontal bone just below the insertion for the temporalis muscle. These small, benign tumors are fairly common among archeological and modern skeletons. Each was approximately 10 mm in diameter, raised 3-4 mm, with a small perforation (2 mm in diameter) which was most likely due to postmortem damage. No periosteal reaction or other signs of infection of the bone were found. Besides a considerable amount of tooth wear, no dental pathologies were present on the teeth that were visible. The cause of death could not be determined.

Other Human Remains

Other human remains encountered include loose teeth and dental casts found in the relocation center hospital dump (MANZ 1993 A-37, Locus A), an isolated toe bone from MANZ 1994 A-4, and an isolated foot bone from MANZ 1993 A-1.

Bone

Two human bones were inadvertently collected during testing before they were identified as human. One, recovered from MANZ 1994 A-4, was identified in the laboratory as a proximal left first pedal phalanx. This bone was from the 0-10 cm level of Unit 9, the same unit as the burial discussed above. Because the foot area of the burial was not excavated, it is not possible to determine whether this bone could be related to the burial.

A second isolated bone, presumably the first metatarsal of a subadult human, was recovered from the 20-30 cm level of Unit 1 within prehistoric site MANZ 93 A-1. The overall morphology is unlike most human first metatarsals in that both the distal and proximal surfaces present epiphyseal surfaces; in human bone there is normally only one such surface on the proximal end. Comparison with non-human mammal bone yielded no similarities (Jenny Waters, personal communication, 1995). Despite the unusual morphology, it is most likely a human bone (Walter Birkby, personal communication, 1995).

Teeth

During the excavation of Unit 25 in the relocation center hospital landfill, three individual teeth were recovered. The first two (FN B-963; Figure I.2a-b) include a right mandibular third molar, and what is most likely a celluloid temporary crown for a premolar. The upper occlusal half of the molar crown is heavily discolored dark brown, probably from smoking, which indicates that it was partially impacted. It was probably extracted as a routine procedure because of the impaction, rather than the few, minor carious lesions. The temporary crown is slightly worn and characterized by a central hole along the long axis to fit over the prepared tooth. Two small holes are present on the mesial and distal surfaces to allow air and excess adhesive to escape. The third tooth recovered (FN B-977; Figure I.2c) is a maxillary premolar. It was charred, probably in the hospital incinerator, resulting in damage to the crown.

Dental Casts

Three plaster dental casts (FN B-970 and B-955) were also recovered from Unit 25. The first is a complete cast of an almost edentulous mandible with significant alveolar resorption (FN B-970, Figure I.2d). The only two teeth that remained in the tooth row are heavily worn and had drifted medially to the front of the mandible. Two canines were incompletely erupted outside of the normal tooth row, anterior to the others. Perhaps this cast was taken to fit an elderly individual with dentures. The second dental cast is a partial cast of a right maxilla, presumably in preparation for a bridge to replace the missing first molar (FN B-970, Figure I.2e). Due to the poor integrity of the original cast and subsequent erosion after burial, the dental morphology of the remaining teeth is not clear; however, at least one large carious lesion is evident on the second molar. The final plaster cast is an impression, the first step in making a dental cast (FN B-955, Figure I.2f). Based on the sequence of dental eruption, it appears to be the left portion of a subadult (6-7 years old) maxilla. The remainder of the impression was not recovered. No unusual or pathological conditions were noted and therefore the reason for making the impression is not evident.

Summary and Conclusions

The loose teeth and dental casts are likely hospital waste from the relocation center occupation and it is unlikely that any World War II-era burials would be found outside of the relocation center cemetery. The historical town of Manzanar did not have a cemetery, therefore historical Euroamerican burials associated with the town are also unlikely. Mortuary practices during the earlier ranch period are not known. However, the presence of historical Native American burials in the vicinity of the early ranches cannot be ruled out.

The prehistoric inhumation excavated at MANZ 1993 A-4 is quite significant due to the paucity of skeletal material from this region, particularly the Owens Valley. Due to the potential for additional skeletal remains, extreme caution must be taken during any future development in this area.

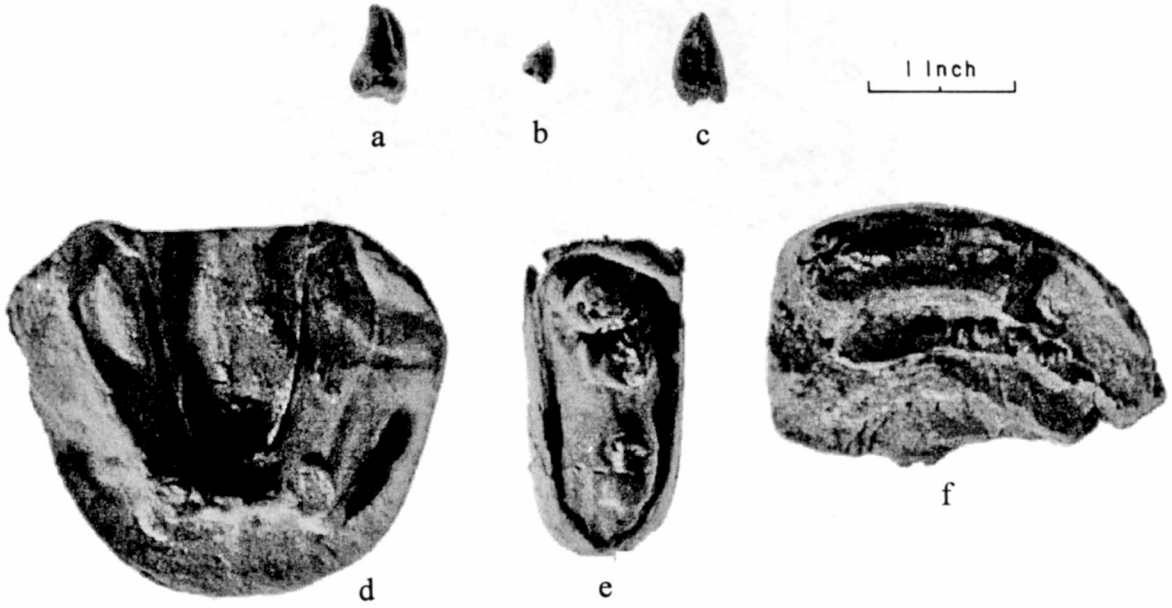


Figure I.2. Teeth and dental casts from hospital landfill (MANZ 1993 A-37, Locus A); a. molar, b. temporary crown, c. premolar, d-f. dental casts.


Housewives!
SAVE
WASTE
FATS
FOR
EXPLOSIVES!
Bring Them Here

Appendix J

Visual Obsidian Sourcing

With recurrent volcanism and highly siliceous extrusions and flows, the eastern Sierra Nevada has numerous obsidian sources (Figure J.1). At most prehistoric sites in the region, obsidian is the predominant material used for flaked stone artifacts, due to its excellent knapping qualities. Since different flows have different chemical compositions, obsidian artifacts usually can be traced to their source, providing clues about trade, procurement, and territoriality (e.g. Bettinger 1982b; Bettinger and King 1971; Bouey and Basgall 1984).

The most reliable method of determining source is through chemical analysis with neutron activation and various types of x-ray fluorescence (XRF) techniques. But since these methods are too expensive to use routinely with large numbers of specimens, many researchers have used observable characteristics to differentiate sources visually (e.g. Basgall and McGuire 1988; Burton 1990; Delacorte et al. 1995). Descriptions of the visual characteristics of obsidian from several eastern California sources can be found in Basgall and McGuire (1988), Bettinger, Delacorte, and Jackson (1984), Burton (1990, 1992b), Clay and Hall (1988), and Ericson (1981).

With these descriptions in mind, all obsidian recovered from Manzanar was visually examined to estimate the relative frequency of the different obsidian sources used by the prehistoric occupants. The artifacts were examined in a strong light to determine texture and reflected color, with a light table to determine degree of translucency and cast or refracted color, and under magnification to examine inclusions. The published descriptions were useful in attributing about half of the obsidian recovered from Manzanar to two sources. Forty-five percent were easily categorized as from Fish Springs, located 23 miles north of Manzanar, and less than 1 percent came from the Casa Diablo source, 75 miles to the north.

The most distinctive characteristic of Fish Springs obsidian is its greenish color. It has been described as having green to bluish green iridescence, sometimes with brown feathering. It varies from transparent to near opaque; clearer material often contains abundant black and white inclusions, or white to gray streaks or thin bands. The Casa Diablo source has been characterized as having near-uniform opacity, with a waxy to coarse grain and a dull to waxy surface appearance. Color can vary from gray to black to brown or mahogany red; black with mahogany red specks or bands is also common. Low quality cobbles are gray, grainy, and riddled with inclusions, but these were seldom used.

Descriptions of obsidian from other regional sources were also considered during the analysis of the Manzanar flaked stone assemblage. Obsidian from Coso Hills, located 50 miles south of Manzanar, has been described as clear black, opaque black with inclusions, silvery black, and gray/black banded. Queen obsidian, from a source 85 miles north, is distinguished by its translucency and lack of inclusions. It can be nearly transparent with a black, gray, or golden brown cast, but parallel banding is also common. Recent chemical sourcing studies have found that some obsidian that looks like Queen is chemically distinct; the location of this source, dubbed "Queen Impostor," is currently unknown.

Obsidian from other sources has been less frequently encountered in the Owens Valley. Obsidian from the Mono Glass Mountain source, 75 miles north of Manzanar, is opaque with scattered white- or light-colored inclusions, or opaque with clear bands. Obsidian from Mount Hicks, 110 miles north, is translucent with moss-like inclusions; much is clear (like Queen obsidian), but pieces larger than 2 cm have contorted banding or clouding and small phenocrysts. Bodie Hills obsidian, 100 miles north, is gray with green bands and masses, or clear with grayish green masses and inclusions, or a mix of very dense black and red brown with dendritic masses interspaced with clear material with black and white phenocrysts. Mono Craters obsidian, from 85 miles north, is semi-translucent with occasional white- or light-colored inclusions. Saline Valley obsidian, from 25 miles east, occurs mainly as small cobbles, and has yet to be described in the available literature.

Since some of the described attributes are not exclusive to a single source, they are difficult to use as distinguishing criteria. Therefore, the obsidian from Manzanar was divided into narrowly defined homogenous categories (Table J.1). All pieces within a category appear very similar; in fact, given the variability within sources, it was expected that more than one of these categories designated for the Manzanar artifacts could be

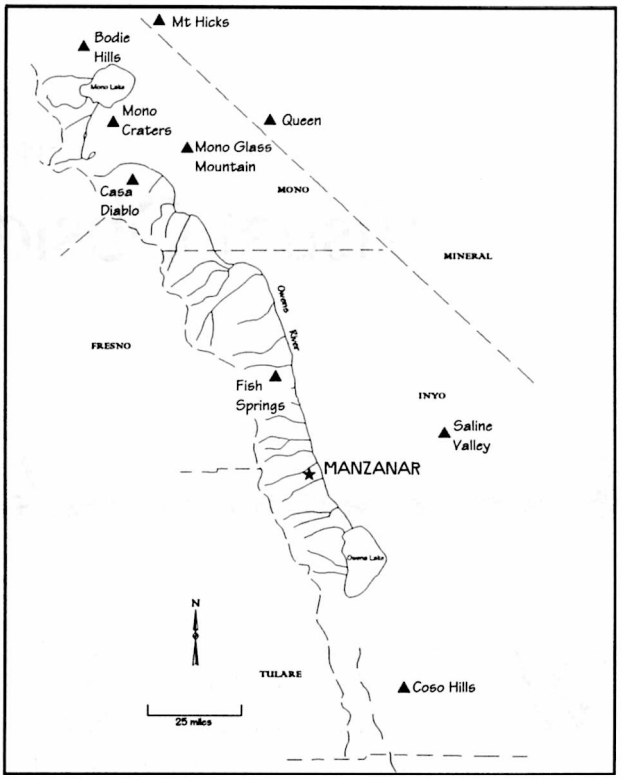


Figure J.1. Eastern Sierra Obsidian Sources.

from a single source. For example, types C, D, and M in Table J.1 clearly meet the Fish Springs description, while both types G and H are considered unambiguously Casa Diablo.

But 50 percent was only provisionally sourced: 47 percent appeared to fit the Coso Hills description, 1 percent the Queen description, and 2 percent more were potentially Casa Diablo (Table J.1). Four percent did not fit the published descriptions well enough to be attributed to any particular source. To determine sources for the unattributed obsidian and to provide a check of the visual sourcing, a small sample of obsidian was submitted for XRF analysis (Appendix K). Specimens selected represented the full range of variability within each category, and include both finished tools and debitage. Fish Springs and red Casa Diablo specimens were not submitted for XRF analysis because their source ascriptions appeared sufficiently unambiguous.

The XRF results, shown in Table J.2, confirm the apparent overlap in the descriptions, and in the

visual characteristics of the sources themselves. The two chemically sourced specimens of "Type F" obsidian, which was suspected to be Casa Diablo, were indeed from the Lookout Mountain subsource of Casa Diablo. Three "Type E" specimens considered Queen, were Queen (n=2) and Queen Impostor (n=1). But nine specimens from "Type A," which was suspected to be Coso Hills obsidian, included five from Fish Springs, as well as four from Coso Hills subsources (Sugarloaf Mountain and West Sugarloaf). Equally ambiguous were the results from some of the unattributed categories (Types B, K, and L). Although these categories each seem visually homogenous, XRF-sourced specimens in each came from more than one source, with four different sources represented by the black opaque with silvery sheen obsidian classed as "Type K," and two sources each represented by "Type B" and "Type L." The actual variability within each visual type may be even greater, since such a small sample from each was chemically sourced. The one "Type I" specimen, which looked similar to Casa Diablo mahogany red obsidian but with clear bands, was determined to be not obsidian at all.

Based on the XRF results, it is possible that as much as half of the "Type A" obsidian is from the Fish Springs source. If so, at least three-quarters of the obsidian recovered from Manzanar came from Fish Springs, the nearest known naturally occurring source of obsidian.

Table J.1.
Obsidian Varieties in Manzanar Assemblage Based on Visual Criteria.

Description	Number	Source
Translucent varieties:		
A. Cloudy or speckled with a bluish tint	1447	Coso Hills?
B. Semi-opaque, foggy black, some banded	86	unknown
C. Translucent with a green tint and inclusions	69	Fish Springs
D. Clear-banded with a green tint and inclusions	1321	Fish Springs
E. Clear, some with a golden brown tint	30	Queen?
Opaque varieties:		
F. Black or gray with a sugary texture	75	Casa Diablo?
G. Black with red or brownish red bands	1	Casa Diablo
H. Waxy red	1	Casa Diablo
I. Dull red with clear bands	1	unknown
J. Black with clear feathered edges	18	unknown
K. Black with a silvery sheen	4	unknown
L. Black with clear and gray bands	12	unknown
M. Black with a green tint and inclusions	19	Fish Springs

Table J.2
Percent in Each Obsidian Material Type and XRF-Sourcing Results.

type	all specimens	formal tools only	debitage only	MANZ 1993 A-1	MANZ 1993 A-2	excavation Unit 24	MANZ 1993 A-3	MANZ 1993 A-4	XRF results*
A	47	34	47	35	39	51	33	33	5-FS, 2-SM, SM?, WS
B	3	4	3	0	10	1	5	5	2-SM?, QI
C	2	11	2	nil	10	1	5	4	
D	43	28	43	46	33	41	38	52	
E	1	5	1	nil	1	nil	9	3	2-Q, QI
F	2	6	2	nil	2	3	5	1	2-LM
G	nil	nil**	0	0	0	0	0	0	
H	nil	0	nil	0	0	0	0	nil	
I	nil	1	nil	0	0	0	5	0	not obsidian
J	.5	5	.5	nil	3	nil	0	.5	QI
K	nil	nil	nil	0	nil	nil	0	0	FS, SM, QI, unk
L	nil	1	nil	0	0	.5	0	0	2-WS
M	.5	5	.5	nil	0	.5	0	1	

* FS - Fish Springs, SM - Sugarloaf Mountain (Coso Hills), WS - West Sugarloaf (Coso Hills), Q - Queen, QI - Queen Impostor, LM - Lookout Mountain (Casa Diablo).

** isolate

Appendix K

Obsidian XRF-Source Analysis

Richard E. Hughes

This appendix presents x-ray fluorescence (XRF) data derived from the analysis of 25 obsidian artifacts from Manzanar National Historic Site, Inyo County, California. Laboratory investigations were performed on a Spectrace™ 5000 (Tracor X-ray) energy dispersive x-ray fluorescence spectrometer equipped with a Rh x-ray tube, a 50 kV x-ray generator, with microprocessor controlled pulse processor (amplifier) and bias/protection module, a 100 mHz analog to digital converter (ADC) with automated energy calibration, and a Si(Li) solid state detector with 150 eV resolution (FWHM) at 5.9 keV in a 30 mm^2 area. The x-ray tube was operated at 35.0 kV, .28 mA, using a .127 mm Rh primary beam filter in an air path at 300 seconds livetime (except when a .25 mm^2 primary beam collimator was used) to generate x-ray intensity data for elements zinc (Zn Kα), gallium (Ga Kα), rubidium (Rb Kα), strontium (Sr Kα), yttrium (Y Kα), zirconium (Zr Kα), and niobium (Nb Kα), and at 15.0 kV, .30 mA, with a .127 mm aluminum (Al) filter in an air path at 300 seconds livetime for generating x-ray intensity data for the elements titanium (Ti Kα), manganese (Mn Kα), and total iron ($Fe_2O_3^T$). Iron vs. manganese (Fe Kα/Mn Kα) ratios were computed from data generated by operating the x-ray tube at 12.0 kV, .30 mA, with a .127 mm aluminum (Al) filter at 200 seconds livetime. Livetime for all analyses was extended when primary beam collimation was employed. Trace element intensities were converted to concentration estimates by employing a least-squares calibration line established for each element from analysis of up to 26 international rock standards certified by the U.S. Geological Survey, the U.S. National Institute of Standards and Technology (formerly National Bureau of Standards), the Geological Survey of Japan, and the Centre de Recherches Petrographiques et Geochimiques (France). Further details pertaining to x-ray tube operating conditions and calibration appear in Hughes (1988).

Trace element composition estimates on the table (except Fe/Mn ratios) are expressed in quantitative units (i.e. parts per million [ppm] and weight percent composition), and these were compared directly to values for known obsidian sources that appear in Hughes (1983, 1985, 1988, 1989, n.d.), Jack (1976), and Jack and Carmichael (1969). Artifacts were assigned to a parent obsidian type if diagnostic trace element concentration values (i.e., ppm values for Rb, Sr, Y, Zr and, when necessary Ti, Mn and $Fe_2O_3^T$) corresponded at the 2-sigma level. I consider artifact-to-obsidian source (geochemical type) matches reliable if diagnostic mean measurements for artifacts fall within two standard deviations of mean values for source standards. The term "diagnostic" is used here to specify those trace

elements that are well-measured by x-ray fluorescence, and whose concentrations show low intra-source variability and marked variability across sources (see Hughes 1990, 1993; Hughes and Lees 1991). Although Zn, Ga, and Nb ppm concentrations also were measured and reported for each specimen, they are not considered "diagnostic" because they do not usually vary significantly across obsidian sources (see Hughes 1982, 1984). This is particularly true of Ga, which occurs in concentrations between 10-30 ppm in nearly all sources in the study area. Zn ppm values are always high in Zr-rich, Sr-poor peralkaline volcanic glasses (like those in northwestern Nevada, where concentrations are >150 ppm), but otherwise they do not vary dramatically between sources.

Trace element composition measurements in the table are reported to the nearest ppm to reflect the resolution capabilities of energy dispersive x-ray fluorescence spectrometry for non-destructive quantitative analysis. The resolution limits of the present x-ray fluorescence instrument for the determination of Zn is about 3 ppm; Ga about 2 ppm; for Rb about 4 ppm; for Sr about 3 ppm; Y about 2 ppm; Zr about 5 ppm; Nb about 3 ppm; Ti about 16 ppm; Mn about 19 ppm; and $Fe_2O_3^T$ about .08 percent by weight. When counting and fitting error uncertainty estimates (the "+" value in the table) for a sample are greater than calibration-imposed limits of resolution, the larger number is a more conservative indicator of composition variation and measurement error arising from differences in sample size, surface and x-ray reflection geometry (see Hughes 1988).

Eight of these specimens were fashioned from obsidians of the Coso volcanic field; five from the Sugarloaf Mountain variety, and three from West Sugarloaf variant. Two Sugarloaf Mountain samples marked with question marks (?) are not clearly separate (on the basis of Rb vs. Zr plots; cf. Hughes 1988: Fig. 3) from West Sugarloaf but they were provisionally attributed to Sugarloaf Mountain on the basis of Ti concentrations. Six samples were fashioned from Fish Springs obsidian, two match the Lookout Mountain (Casa Diablo area) chemical type profile (cf. Hughes n.d.: Figure 2), and two samples conform to the chemical signature of Queen volcanic glass. Five samples have Rb, Sr, Y and Zr concentrations similar to Queen obsidian, yet Fe/Mn ratios considerably greater (17-18) than those in my Queen geologic source reference collection. When first recognized this glass type at CA-INY-30 was termed "Queen Impostor;" it has since been identified at other sites in the area, including upland sites in the White Mountains. One specimen (FN B-1035) has trace elements similar to Coso volcanic field obsidians, but higher Rb than any of my standards. The visual appearance of this sample suggests that it either was subjected to extreme heat or that it may represent material from the frothy (pumiceous) carapace of an obsidian- bearing rhyolite dome. Finally, one specimen (FN B-893) was fashioned from a non-obsidian parent material.

Table K.1
Obsidian X-Ray Fluorescence Data.

Cat. Number	Trace and Selected Minor Element Concentrations											Ratio	Obsidian Source (Chemical Type)
	Zn	Ga	Rb	Sr	Y	Zr	Nb	Ba	Ti	Mn	$Fe_2O_3^T$	Fe/Mn	
A-26	45 ±6	15 ±3	135 ±4	80 ±3	18 ±2	163 ±5	11 ±3	nm	941 ±29	351 ±20	1.42 ±.08	42	Lookout Mountain, Casa Diablo area
A-27	39 ±5	19 ±3	163 ±4	18 ±3	31 ±2	122 ±5	33 ±3	nm	716 ±21	500 ±20	.90 ±.08	17	Queen Impostor
A-116	58 ±6	17 ±3	201 ±5	9 ±3	33 ±2	83 ±5	42 ±3	nm	nm	nm	nm	8	Fish Springs
A-156	49 ±5	15 ±3	188 ±4	7 ±3	30 ±2	83 ±5	39 ±3	nm	nm	nm	nm	9	Fish Springs
B-6	50 ±5	15 ±3	198 ±4	7 ±3	32 ±2	87 ±5	40 ±3	nm	nm	nm	nm	8	Fish Springs
B-32	66 ±6	28 ±3	265 ±5	6 ±3	58 ±2	134 ±5	50 ±3	nm	nm	nm	nm	40	West Sugarloaf, Coso Volcanic Field
B-41	57 ±6	18 ±3	191 ±5	7 ±3	29 ±2	81 ±5	36 ±3	nm	nm	nm	nm	8	Fish Springs
B-151	48 ±6	16 ±3	168 ±5	16 ±3	35 ±2	140 ±5	35 ±3	nm	728 ±24	501 ±20	.92 ±.08	18	Queen Impostor
B-177	42 ±5	18 ±3	157 ±4	15 ±3	33 ±2	128 ±5	34 ±3	nm	725 ±21	533 ±20	.99 ±.08	18	Queen Impostor
B-260	50 ±6	16 ±3	147 ±4	84 ±3	18 ±2	176 ±5	10 ±3	nm	767 ±28	298 ±20	1.30 ±.08	42	Lookout Mountain, Casa Diablo area
B-306	56 ±5	20 ±3	238 ±5	6 ±3	53 ±2	117 ±5	39 ±3	nm	nm	nm	nm	43	Sugarloaf Mtn., Coso Volcanic Field

All trace element values (except Fe/Mn ratios) in parts per million (ppm) or weight percent ($Fe_2O_3^T$); ± = pooled estimate (in ppm) of x-ray counting uncertainty and regression fitting error at 300 seconds livetime; nm = not measured.

Table K.1
Obsidian X-Ray Fluorescence Data.

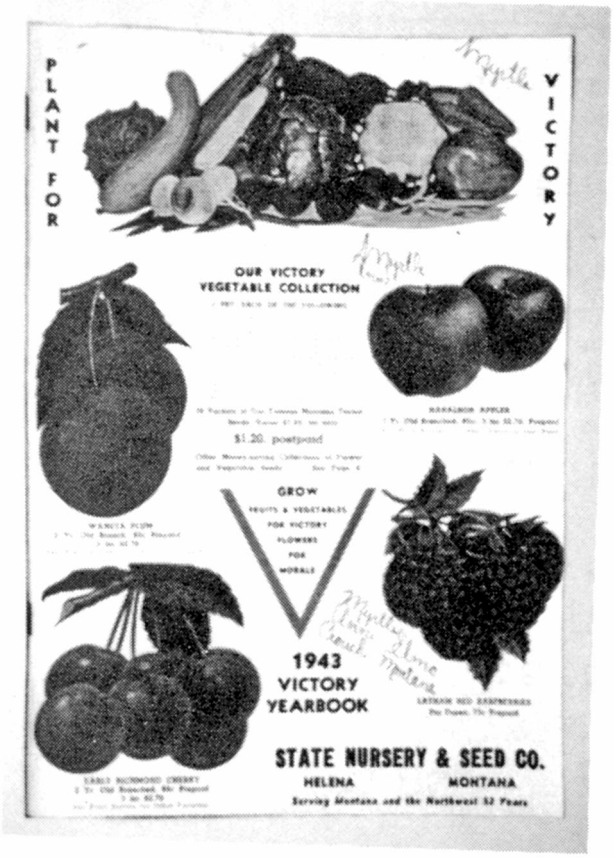
Cat. Number	Trace and Selected Minor Element Concentrations											Ratio	Obsidian Source (Chemical Type)
	Zn	Ga	Rb	Sr	Y	Zr	Nb	Ba	Ti	Mn	$Fe_2O_3^T$	Fe/Mn	
B-730	65 ±5	23 ±3	262 ±5	7 ±3	58 ±2	138 ±5	49 ±3	nm	nm	nm	nm	42	West Sugarloaf, Coso Volcanic Field
B-733	55 ±6	17 ±4	168 ±5	17 ±3	33 ±2	130 ±5	33 ±3	nm	702 ±23	493 ±20	.90 ±.08	17	Queen Impostor
B-743	54 ±5	18 ±3	169 ±4	16 ±3	24 ±2	122 ±5	33 ±3	nm	670 ±21	732 ±20	.85 ±.08	12	Queen
B-750	55 ±5	16 ±3	190 ±4	8 ±3	33 ±2	85 ±5	39 ±3	nm	nm	nm	nm	8	Fish Springs
B-785	56 ±6	15 ±3	171 ±4	18 ±3	26 ±2	125 ±5	32 ±3	nm	669 ±23	667 ±20	.80 ±.08	11	Queen
B-793	59 ±5	20 ±3	240 ±5	6 ±3	54 ±2	123 ±5	45 ±3	nm	317 ±20	267 ±20	1.12 ±.08	nm	Sugarloaf Mtn., ? Coso Volcanic Field
B-857	35 ±5	18 ±3	158 ±4	17 ±3	32 ±2	125 ±5	31 ±3	nm	nm	nm	nm	17	Queen Impostor
B-864	53 ±5	23 ±3	219 ±4	4 ±3	48 ±2	103 ±5	39 ±3	nm	285 ±19	303 ±20	1.04 ±.08	nm	Sugarloaf Mtn., Coso Volcanic Field
B-865a	57 ±5	23 ±3	236 ±4	5 ±3	50 ±2	106 ±5	44 ±3	nm	301 ±20	291 ±20	.99 ±.08	nm	Sugarloaf Mtn., Coso Volcanic Field
B-865b	46 ±5	19 ±3	190 ±4	7 ±3	31 ±2	85 ±5	41 ±3	nm	nm	nm	nm	8	Fish Springs
B-865c	53 ±5	22 ±3	236 ±4	6 ±3	51 ±2	124 ±5	43 ±3	nm	346 ±20	277 ±20	1.13 ±.08	nm	Sugarloaf Mtn.,? Coso Volcanic Field

All trace element values (except Fe/Mn ratios) in parts per million (ppm) or weight percent ($Fe_2O_3^T$); ± = pooled estimate (in ppm) of x-ray counting uncertainty and regression fitting error at 300 seconds livetime; nm = not measured.

Table K.1
Obsidian X-Ray Fluorescence Data.

Cat. Number	Trace and Selected Minor Element Concentrations											Ratio	Obsidian Source (Chemical Type)
	Zn	Ga	Rb	Sr	Y	Zr	Nb	Ba	Ti	Mn	$Fe_2O_3^T$	Fe/Mn	
B-870	49 ±5	19 ±3	239 ±4	6 ±3	54 ±2	133 ±5	45 ±3	nm	334 ±19	263 ±20	1.06 ±.08	nm	West Sugarloaf, Coso Volcanic Field
B-893	38 ±5	0 ±3	0 ±5	9 ±3	2 ±3	10 ±7	0 ±3	nm	nm	nm	nm	nm	Not Obsidian
B-1035	68 ±5	22 ±3	291 ±5	5 ±3	65 ±2	110 ±5	62 ±3	nm	nm	nm	nm	nm	Unknown

All trace element values (except Fe/Mn ratios) in parts per million (ppm) or weight percent ($Fe_2O_3^T$); ± = pooled estimate (in ppm) of x-ray counting uncertainty and regression fitting error at 300 seconds livetime; nm = not measured.


PLANT FOR VICTORY
OUR VICTORY VEGETABLE COLLECTION
$1.20. postpaid
GROW
FRUITS & VEGETABLES
FOR VICTORY
FLOWERS
FOR
MORALE
1943
VICTORY
YEARBOOK
STATE NURSERY & SEED CO.
HELENA MONTANA
Serving Montana and the Northwest 52 Years

Appendix L

Obsidian Hydration Results

Thomas M. Origer



This appendix reports hydration band analysis of 110 obsidian specimens obtained from sites at Manzanar National Historic Site (Table L.1). The analysis was completed at the Sonoma State University Obsidian Hydration Lab, an adjunct of the Anthropological Studies Center, Department of Anthropology. Procedures used by our hydration lab for preparation of thin sections and measurement of hydration bands are described below.

Each specimen was examined to find two or more surfaces that would yield edges that would be perpendicular to the microslide when preparation of the thin section was completed. Two small parallel cuts were made at an appropriate location along the edge of each specimen with a four-inch diameter circular saw blade mounted on a lapidary trimsaw. The cuts resulted in the isolation of small samples with a thickness of approximately one millimeter. Each sample was removed from its specimen with a razor blade and mounted with Lakeside Cement onto a permanently etched petrographic microslide.

The thickness of each sample was reduced by manual grinding with a slurry of #500 silicon carbide abrasive on a glass plate. The grinding was completed in two steps. The first grinding was stopped when each samples' thickness was reduced by approximately one-half. This eliminated any microchips created by the saw blade during the cutting process. Each slide was then reheated, which liquefied the Lakeside Cement, and the sample inverted. The newly exposed surfaces were then ground until the proper thickness was attained.

The correct thin section thickness was determined by the "touch" technique. A finger was rubbed across each slide, onto the sample, and the difference (thickness) was "felt." The second technique used for arriving at proper thin section thickness is the "transparency" test. Each microslide was held up to a strong source of light and the translucency of the thin section observed. The samples were sufficiently reduced in thickness when each thin section readily allowed the passage of light. A coverslip was glued over each thin section when grinding was completed. The completed microslides are curated at our hydration lab under File No. 94-H1280.

The hydration bands were measured with a strainfree 40 power objective and a Bausch and Lomb 12.5 power filar micrometer eyepiece on a Nikon petrographic microscope. Six measurements were taken at several locations along the edge of each thin section. The mean of the measurements was calculated and listed on the table with other relevant information. The

hydration measurements have a range of ±0.2 microns due to normal limitations of the equipment. The abbreviations "DH" shown under the "Mean" column on the enclosed data pages mark specimens that had diffuse hydration. Note, that some specimens were marked by very large bands that yielded approximate measurements because of surface weathering or non-uniformity of their widths.

Table L.1.
Obsidian Hydration Results.

Lab No.	Cat. No.	Description		Remarks	Measurements	Mean	Source*
1	B-19	Debitage	Unit 1, 0-10 cm	none	1.1 1.1 1.2 1.2 1.2 1.2	1.2	FS
2	B-26	Debitage	Unit 1, 10-20 cm	weathered	approximately 1.4	DH	FS
3	B-40	Debitage	Unit 1, 40-50 cm	none		DH	FS
4	B-43	Debitage	Unit 1, 50-60 cm	none	2.9 3.0 3.0 3.0 3.0 3.2	3.0	FS
5	B-51	Debitage	Unit 2, 0-10 cm	none	3.4 3.4 3.5 3.6 3.6 3.6	3.5	FS
6	B-55	Debitage	Unit 2, 10-20 cm	none	3.0 3.2 3.2 3.2 3.3 3.4	3.2	FS
7	B-60	Debitage	Unit 2, 20-30 cm	none	3.9 3.9 4.0 4.0 4.1 4.2	4.0	FS
8	B-64	Debitage	Unit 2, 30-40 cm	none	1.8 1.8 1.9 1.9 1.9 1.9	1.9	FS
9	B-70	Debitage	Unit 2, 40-50 cm	none	2.6 2.7 2.7 2.7 2.7 2.8	2.7	FS
10	B-76	Debitage	Unit 2, 50-60 cm	none	2.5 2.5 2.6 2.6 2.6 2.8	2.6	FS
11	B-83	Debitage	Unit 2, 70-80 cm	none	1.3 1.3 1.3 1.3 1.3 1.4	1.3	FS
12	B-87	Debitage	Unit 2, 80-90 cm	Band 1	2.4 2.6 2.6 2.6 2.6 2.7	2.6	FS
12	B-87	Debitage	Unit 2, 80-90 cm	Band 2		DH	FS
13	B-90	Debitage	Unit 1, 60-70 cm	none	4.6 4.7 4.7 4.7 4.8 4.8	4.7	FS
14	B-95	Debitage	Unit 1, 70-80 cm	none	6.5 6.5 6.6 6.8 6.8 6.9	6.7	FS
15	B-97	Debitage	Unit 1, 80-90 cm	none	1.6 1.6 1.7 1.7 1.7 1.7	1.7	FS
16	B-184a	Debitage	Unit 5, 0-10 cm	none	3.5 3.7 3.7 3.7 3.7 3.8	3.7	FS
17	B-184b	Debitage	Unit 5, 0-10 cm	none	1.0 1.0 1.1 1.2 1.2 1.2	1.1	FS
18	B-189a	Debitage	Unit 5, 10-20 cm	none	2.9 3.0 3.0 3.0 3.0 3.0	3.0	FS
19	B-189b	Debitage	Unit 5, 10-20 cm	none	2.5 2.6 2.6 2.6 2.6 2.6	2.6	FS
20	B-192a	Debitage	Unit 5, 20-30 cm	none	6.4 6.4 6.5 6.5 6.5 6.5	6.5	FS
21	B-192b	Debitage	Unit 5, 20-30 cm	none	3.2 3.2 3.3 3.3 3.3 3.3	3.3	FS
22	B-201a	Debitage	Unit 5, 30-40 cm	none	2.6 2.7 2.7 2.7 2.7 2.9	2.7	FS
23	B-201b	Debitage	Unit 5, 30-40 cm	none	3.5 3.6 3.7 3.7 3.8 3.9	3.7	FS
24	B-202a	Debitage	Unit 5, 40-50 cm	none	2.1 2.1 2.2 2.2 2.3 2.4	2.2	FS
25	B-202b	Debitage	Unit 5, 40-50 cm	none	1.3 1.3 1.4 1.4 1.4 1.5	1.4	FS
26	B-205a	Debitage	Unit 5, 50-60 cm	none	2.8 2.8 2.9 2.9 3.0 3.0	2.9	FS
27	B-205b	Debitage	Unit 5, 50-60 cm	none	2.9 3.0 3.0 3.0 3.0 3.2	3.0	FS
28	B-208	Debitage	Unit 5, 60-70 cm	none	2.9 2.9 3.0 3.0 3.1 3.2	3.0	FS
29	B-218	Biface	A-3 (Blk 20), surf.	none	2.3 2.3 2.4 2.4 2.5 2.5	2.4	FS
30	B-226	Biface	A-3 (Blk 20), surf.	none	3.2 3.2 3.2 3.2 3.2 3.2	3.2	FS
31	B-229	Debitage	Unit 5, 70-80 cm	none	2.7 2.8 2.8 2.8 2.9 2.9	2.8	FS
32	B-245a	Debitage	Unit 7, 0-10 cm	none	4.3 4.3 4.4 4.4 4.4 4.5	4.4	FS
33	B-245b	Debitage	Unit 7, 0-10 cm	none	5.5 5.6 5.6 5.6 5.6 5.7	5.6	FS
34	B-253	Debitage	Unit 7, 10-20 cm	none	1.9 2.0 2.0 2.0 2.0 2.1	2.0	FS
35	B-255	Biface	Unit 7, 10-20 cm	none	3.8 3.9 3.9 4.0 4.0 4.2	4.0	FS
36	B-257a	Debitage	Unit 7, 20-30 cm	none	2.0 2.0 2.1 2.1 2.1 2.3	2.1	FS

Table L.1.
Obsidian Hydration Results.

Lab No.	Cat. No.	Description		Remarks	Measurements	Mean	Source*
37	B-257b	Debitage	Unit 7, 20-30 cm	none	4.4 4.5 4.5 4.5 4.6 4.7	4.5	FS
38	B-261	Debitage	Unit 7, 30-40 cm	none	2.4 2.4 2.4 2.5 2.5 2.7	2.5	FS
39	B-269a	Debitage	Unit 9, 0-10 cm	none	3.6 3.7 3.7 3.7 3.7 3.8	3.7	FS
40	B-269b	Debitage	Unit 9, 0-10 cm	none		DH	FS
41	B-305a	Debitage	Unit 9, 10-20 cm	none	3.7 3.8 3.8 3.8 3.8 3.9	3.8	FS
42	B-305b	Debitage	Unit 9, 10-20 cm	none	3.0 3.1 3.1 3.1 3.2 3.2	3.1	FS
43	B-308a	Debitage	Unit 9, 20-30 cm	none	3.0 3.0 3.0 3.0 3.1 3.1	3.0	FS
44	B-308b	Debitage	Unit 9, 20-30 cm	none	3.1 3.2 3.2 3.2 3.2 3.2	3.2	FS
45	B-310a	Debitage	Unit 9, 30-40 cm	none	8.4 8.4 8.5 8.6 8.6 8.6	8.5	FS
46	B-310b	Debitage	Unit 9, 30-40 cm	none	3.0 3.0 3.1 3.1 3.1 3.3	3.1	FS
47	B-313a	Debitage	Unit 9, 40-50 cm	none	3.1 3.1 3.1 3.2 3.2 3.2	3.2	FS
48	B-313b	Debitage	Unit 9, 40-50 cm	none	2.1 2.3 2.3 2.4 2.4 2.4	2.3	FS
49	B-316a	Debitage	Unit 9, 50-60 cm	none	2.3 2.3 2.3 2.3 2.4 2.4	2.3	FS
50	B-316b	Debitage	Unit 9, 50-60 cm	none	2.9 2.9 3.0 3.0 3.0 3.0	3.0	FS
51	B-319	Debitage	Unit 9, 60-70 cm	none	3.3 3.3 3.3 3.5 3.5 3.6	3.4	FS
52	B-322a	Debitage	Unit 9, 70-80 cm	none	2.6 2.6 2.7 2.7 2.7 2.7	2.7	FS
53	B-322b	Debitage	Unit 9, 70-80 cm	none	3.3 3.5 3.5 3.6 3.6 3.6	3.5	FS
54	B-331	Debitage	Unit 9, 80-90 cm	Band 1	3.5 3.5 3.6 3.6 3.6 3.6	3.6	FS
54	B-331	Debitage	Unit 9, 80-90 cm	Band 2	4.2 4.2 4.2 4.2 4.2 4.3	4.2	FS
55	B-381	Debitage	Unit 11, 0-10 cm	none	2.4 2.4 2.4 2.4 2.4 2.5	2.4	FS
56	B-384	Debitage	Unit 11, 10-20 cm	none	2.4 2.5 2.5 2.5 2.6 2.6	2.5	FS
57	B-395	Debitage	Unit 11, 20-30 cm	none	3.0 3.0 3.0 3.0 3.0 3.1	3.0	FS
58	B-396	Biface	Unit 11, 20-30 cm	none	3.0 3.0 3.0 3.0 3.1 3.1	3.0	FS
59	B-398	Debitage	Unit 11, 30-40 cm	none	2.4 2.4 2.4 2.4 2.5 2.5	2.4	FS
60	B-402	Debitage	Unit 11, 40-50 cm	none	3.3 3.3 3.3 3.5 3.5 3.5	3.4	FS
61	B-406	Debitage	Unit 11, 50-60 cm	none	3.6 3.6 3.6 3.6 3.6 3.8	3.6	FS
62	B-408	Debitage	Unit 11, 60-70 cm	none	3.0 3.0 3.0 3.1 3.1 3.2	3.1	FS
63	B-409	Debitage	Unit 11, 70-80 cm	none	3.2 3.3 3.3 3.5 3.5 3.6	3.4	FS
64	B-411	Debitage	Unit 12, 0-10 cm	none	3.5 3.5 3.5 3.5 3.5 3.5	3.5	FS
65	B-413	Debitage	Unit 12, 10-20 cm	Band 1	2.5 2.6 2.7 2.7 2.7 2.7	2.7	FS
65	B-413	Debitage	Unit 12, 10-20 cm	Band 2/w	approximately 35.0	---	FS
66	B-416	Debitage	Unit 12, 20-30 cm	none	3.1 3.1 3.2 3.2 3.2 3.2	3.2	FS
67	B-420	Debitage	Unit 12, 30-40 cm	weathered	2.7 2.7 2.9 2.9 2.9 2.9	2.8	FS
68	B-421	Debitage	Unit 12, 40-50 cm	none	3.3 3.3 3.5 3.5 3.5 3.5	3.4	FS
69	B-423	Debitage	Unit 12, 50-60 cm	Band 1	2.9 3.0 3.0 3.1 3.1 3.1	3.0	FS
69	B-423	Debitage	Unit 12, 50-60 cm	Band 2/w	approximately 42.0	---	FS
70	B-426	Debitage	Unit 12, 60-70 cm	none	3.9 4.1 4.1 4.1 4.1 4.1	4.1	FS
71	B-427	Debitage	Unit 12, 70-80 cm	none	2.9 2.9 2.9 3.0 3.2 3.2	3.0	FS
72	B-430	Debitage	Unit 12, 80-90 cm	none	2.6 2.6 2.7 2.7 2.7 2.9	2.7	FS
73	B-510	Humboldt	A-3 (Blk 13), surf.	none	6.0 6.0 6.0 6.0 6.0 6.1	6.0	FS
74	B-730a	Debitage	Unit 24, 0-10 cm	none	3.6 3.6 3.6 3.7 3.8 3.8	3.7	FS
75	B-730b	Debitage	Unit 24, 0-10 cm	none	3.7 3.8 3.8 3.9 3.9 3.9	3.8	FS
76	B-737a	Debitage	Unit 24, 10-20 cm	none	1.2 1.2 1.2 1.2 1.2 1.2	1.2	FS
77	B-737b	Debitage	Unit 24, 10-20 cm	none	3.7 3.7 3.7 3.8 3.8 3.8	3.8	FS
78	B-743a	Debitage	Unit 24, 20-30 cm	weathered	3.9 4.1 4.1 4.1 4.2 4.2	4.1	FS
79	B-743b	Debitage	Unit 24, 20-30 cm	none	3.3 3.3 3.5 3.5 3.5 3.6	3.5	FS

Table L.1.
Obsidian Hydration Results.

Lab No.	Cat. No.	Description		Remarks	Measurements	Mean	Source*
80	B-743c	Debitage	Unit 24, 20-30 cm	none	1.1 1.1 1.2 1.2 1.2 1.2	1.2	FS
81	B-743d	Debitage	Unit 24, 20-30 cm	none	3.0 3.0 3.1 3.2 3.2 3.2	3.1	FS
82	B-858a	Core	Unit 24, 20-30 cm	none	3.2 3.3 3.3 3.5 3.5 3.5	3.4	FS
83	B-858b	Core	Unit 24, 20-30 cm	none	3.3 3.5 3.5 3.5 3.5 3.5	3.5	FS
84	B-859a	Core	Unit 24, 20-30 cm	Band 1	3.6 3.7 3.7 3.7 3.8 3.8	3.7	FS
84	B-859a	Core	Unit 24, 20-30 cm	Band 2	approximately 30.0	---	FS
85	B-865a	Debitage	Unit 24, 30-40 cm	Band 1	3.3 3.3 3.5 3.6 3.6 3.6	3.5	FS
85	B-865a	Debitage	Unit 24, 30-40 cm	Band 2	7.2 7.2 7.4 7.4 7.4 7.5	7.4	FS
86	B-865b	Debitage	Unit 24, 30-40 cm	none	3.5 3.5 3.6 3.6 3.6 3.6	3.6	FS
87	B-870a	Debitage	Unit 24, 40-50 cm	none	3.6 3.6 3.6 3.6 3.6 3.6	3.6	FS
88	B-870b	Debitage	Unit 24, 40-50 cm	none	3.0 3.0 3.0 3.0 3.1 3.1	3.0	FS
89	B-872a	Debitage	Unit 24, 50-60 cm	none	2.9 3.0 3.0 3.1 3.1 3.1	3.0	FS
90	B-872b	Debitage	Unit 24, 50-60 cm	none	3.5 3.5 3.6 3.6 3.6 3.8	3.6	FS
91	B-874	Biface	Unit 24, 50-60 cm	none	7.6 7.6 7.8 7.8 7.8 7.8	7.7	FS
92	B-879a	Debitage	Unit 24, 60-70 cm	none	2.9 2.9 2.9 2.9 3.0 3.0	2.9	FS
93	B-879b	Debitage	Unit 24, 60-70 cm	none	1.8 1.9 2.0 2.0 2.0 2.0	2.0	FS
94	B-890a	Debitage	Unit 24, 70-80 cm	Band 1	3.6 3.6 3.6 3.6 3.6 3.7	3.6	FS
94	B-890a	Debitage	Unit 24, 70-80 cm	Band 2	approximately 40.0	---	FS
95	B-890b	Debitage	Unit 24, 70-80 cm	Band 1	2.5 2.6 2.6 2.6 2.6 2.6	2.6	FS
95	B-890b	Debitage	Unit 24, 70-80 cm	Band 2	approximately 47.0	---	FS
96	A-5	Elko tang	A-2 (Blk D3), surf.	none	3.6 3.7 3.7 3.7 3.8 3.8	3.7	FS
97	A-6	RSCN point	A-2 (Blk D3), surf.	none	2.4 2.4 2.4 2.5 2.5 2.6	2.5	FS
98	B-6	LL base	A-1 (Blk B6), surf.	weathered		DH	FS†
99	A-32	RSCN point	A-2 (Blk C5), surf.	none	2.4 2.5 2.5 2.6 2.6 2.6	2.5	FS
100	A-39	Elko tang	A-2 (Blk 16), surf.	none	4.8 4.8 4.9 4.9 5.0 5.1	4.9	FS
101	B-41	DSN point	Unit 1, 40-50 cm	none	1.9 2.0 2.0 2.0 2.1 2.2	2.0	FS†
102	A-44	RSCN point	A-2 (Blk 21), surf.	none	3.1 3.2 3.2 3.2 3.3 3.3	3.2	FS
103	A-55	Elko tang	Isolate (Blk A6)	none	4.8 4.8 4.9 4.9 4.9 5.0	4.9	FS
104	A-116	DSN point	Isolate (Blk 33)	none	2.4 2.5 2.5 2.5 2.5 2.6	2.5	FS†
105	B-139	RSCN point	A-2 (Blk 16), surf.	none	3.8 3.9 3.9 3.9 4.0 4.0	3.9	FS
106	A-156	DSN point	A-4 (Blk R), surf.	none	2.9 3.0 3.0 3.0 3.1 3.1	3.0	FS†
107	B-181	Humboldt	A-2 (Blk 21), surf.	none	5.6 5.6 5.7 5.7 5.7 5.8	5.7	FS
108	B-284	RSCN point	A-4 (SWP), surf.	none	2.3 2.3 2.4 2.4 2.4 2.4	2.4	FS
109	B-740	RSCN point	Unit 24, 20-30 cm	none	2.9 3.0 3.0 3.0 3.0 3.2	3.0	FS
110	B-750	Biface	Unit 24, 20-30 cm	none	3.6 3.6 3.7 3.7 3.7 3.7	3.7	FS†

* FS - Fish Springs.
† XRF-sourced, all others visually sourced.

Appendix M

Radiocarbon Dating Results

Beta Analytic, Inc.

This appendix presents the results of three charcoal samples submitted for radiocarbon dating analysis. The Pretoria Calibration Procedure program (Vogel et al. 1993) was used to convert B.P. results to calendar years.

The combined charcoal specimen FN B-746/894 was pretreated by first examining and picking free any rootlets. It was then given acid, alkali, acid series of soakings to remove carbonates and humic acids. The clean charcoal was then synthesized to benzene and counted for radiocarbon content. The amount of suitable, clean carbon finally available for dating was small (0.5 gram) and we volunteered extended counting to reduce the attendant statistical error term. With that exception, all other analytical steps proceeded normally.

Specimen FN B-862 was pretreated by first examining for rootlets. It was then given acid, alkali, acid series of soakings to remove carbonates and humic acids. The following benzene synthesis and counting went normally. The sample was small and this caused the larger than usual statistical error.

The combined sample FN B-896/897 was originally submitted for radiometric analysis and then converted to AMS analysis after finding the presence of only a small amount of useable carbon. Pretreatment, C-14 content measurement, and age calculation went normally.

Laboratory Number: Beta-69481
Specimen Number: FN B-862
Provenience: MANZ 1993 A-2, Unit 24, 20-30 cm
Radiocarbon age: 1050 ±90 B.P.
Calibrated result: cal A.D. 790 to 1190
Intercept data
  Intercept of radiocarbon age with calibration curve:
    cal A.D. 1000
  1 sigma calibrated result (68% probability):
    cal A.D. 900 to 1040

Laboratory Number: Beta-69482
Specimen Number: FN B-746/894
Provenience: MANZ 1993 A-2, Unit 24, 30-40 cm
Radiocarbon age: 1430 ±90 B.P.
Calibrated result: cal A.D. 430 to 780
Intercept data
  Intercept of radiocarbon age with calibration curve:
    cal A.D. 640
  1 sigma calibrated result (68% probability):
    cal A.D. 560 to 670

Laboratory Number: Beta-92763
Specimen Number: FN B-896/897
Provenience: MANZ 1993 A-2, Unit 24, 20-40 cm
Measured Radiocarbon age: 500 ±60 B.P.
C13/C12 Ratio: -26.9 o/oo
Radiocarbon age: 470 ±60 B.P.
Calibrated result: cal A.D. 1400 to 1515, A.D. 1585 to 1625
Intercept data
  Intercept of radiocarbon age with calibration curve:
    A.D. 1435
  1 sigma calibrated result (68% probability):
    A.D. 1420 to 1460


We Can Do It!
WAR PRODUCTION CO-ORDINATING COMMITTEE

Appendix N

Owens Valley Plat Maps

Los Angeles Department of Water and Power

In 1929, after the city of Los Angeles had acquired most of the private land in the Owens Valley, the Department of Water and Power (LADWP) began a systematic inventory of their valley holdings. The inventory included detailed plat maps, photographs of existing improvements, and assessment forms. The plat maps show roads, fences, pipelines, powerlines, previous land ownership, and major crop types for most developed areas of the Owens Valley. Albums include photographs of every structure (including sheds and outhouses) then owned by LADWP. The maps and photographs and most of the assessment forms for the Manzanar area were completed by the end of 1930, but handwritten changes were noted on the assessment forms and maps up to the 1950s. The inventory records are currently located at the LADWP Northern District Office in Bishop, California.

This appendix includes reduced reproductions of the plat maps for nineteen sections within Township 13 South, Range 35 East and Township 14 South, Range 35 East (MDM), which includes Manzanar National Historic Site and adjacent areas (Figure N.1).

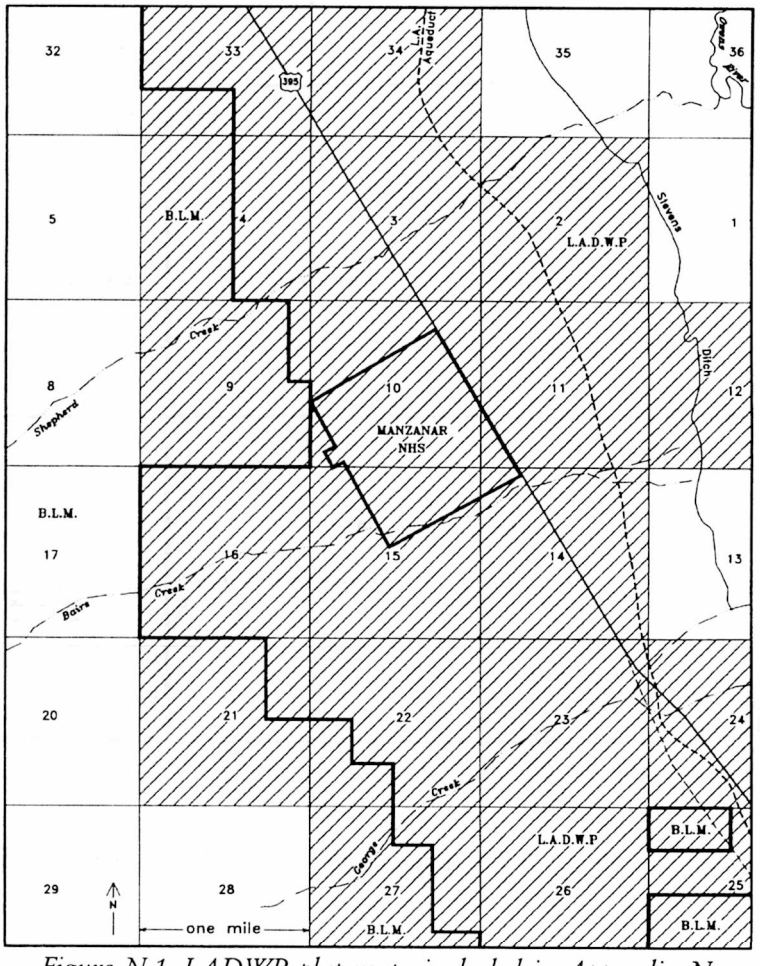


Figure N.1. LADWP plat maps included in Appendix N.

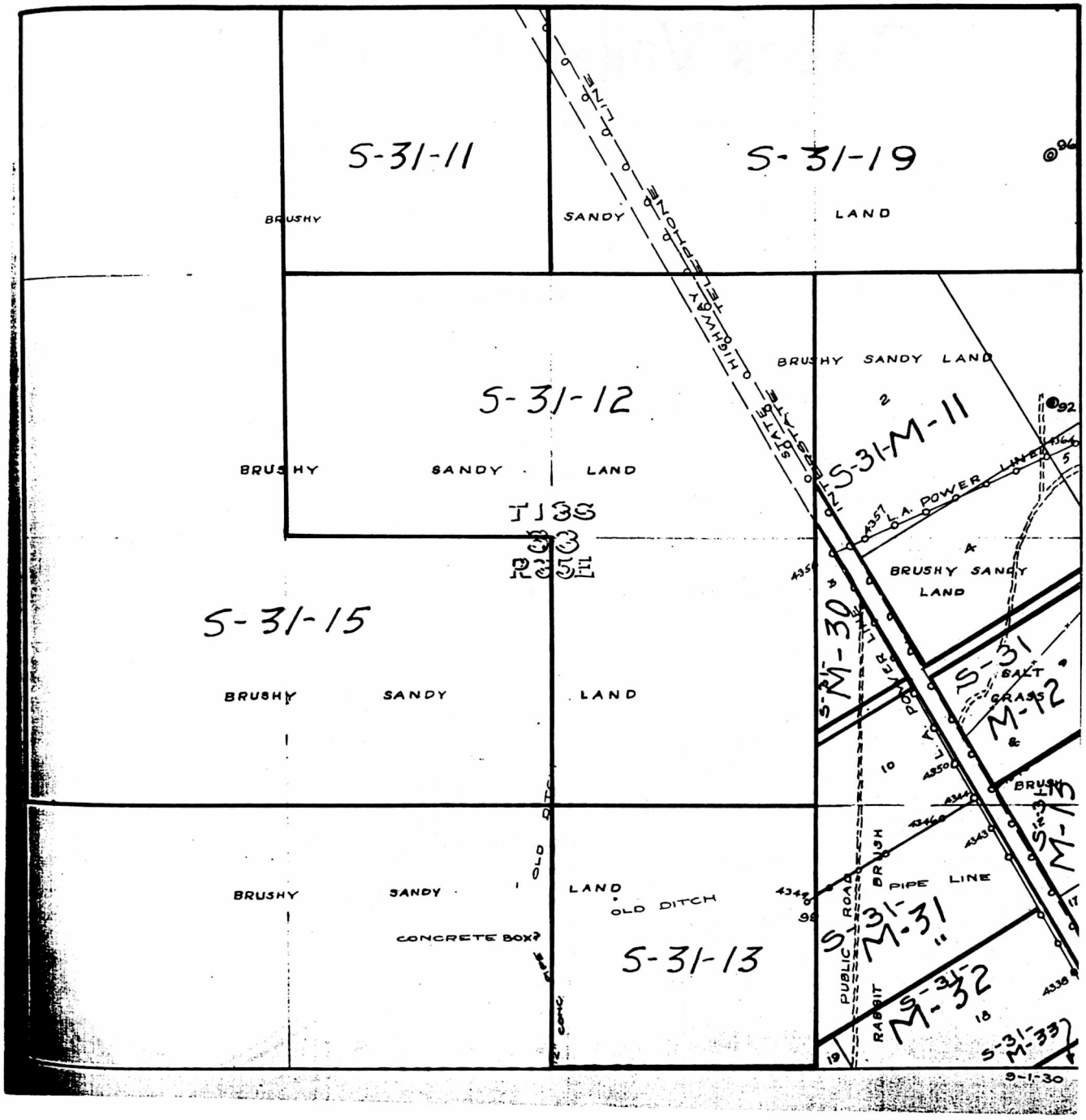


Figure N.2. LADWP plat map: T13S, R35E, section 33.

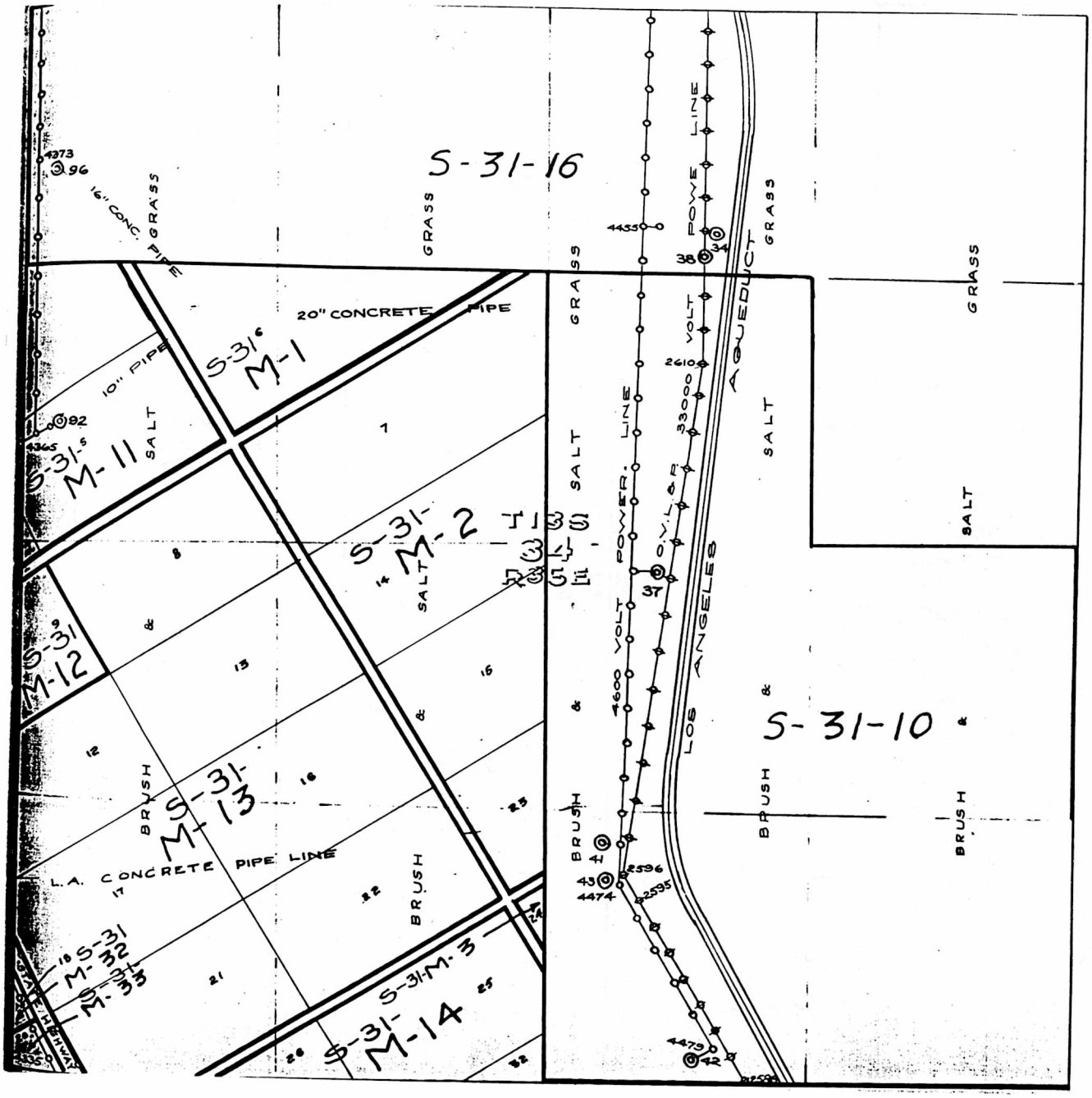


Figure N.3. LADWP plat map: T13S, R35E, section 34.

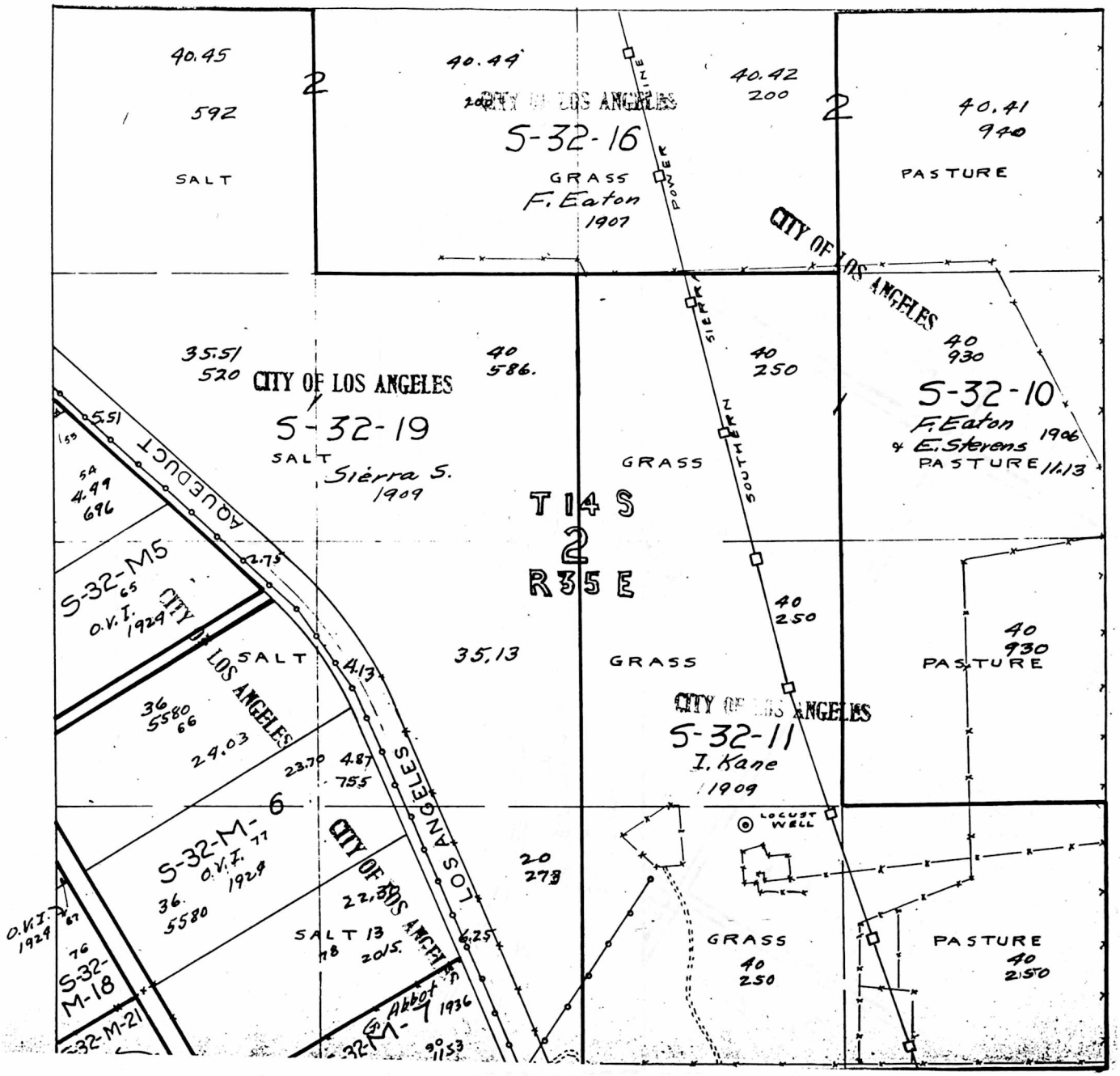


Figure N.4. LADWP plat map: T14S, R35E, section 2.

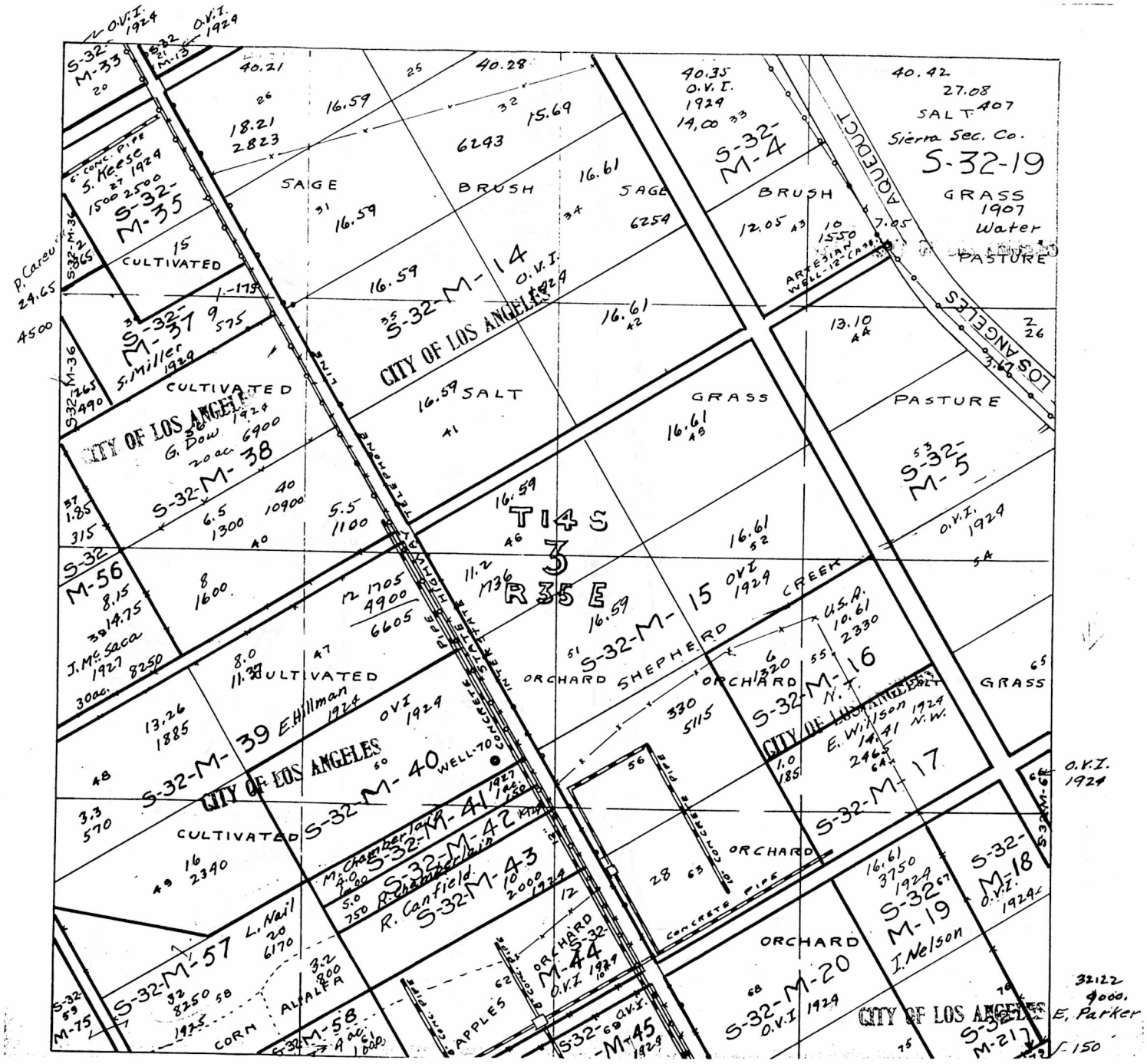


Figure N.5. LADWP plat map: T14S, R35E, section 3.

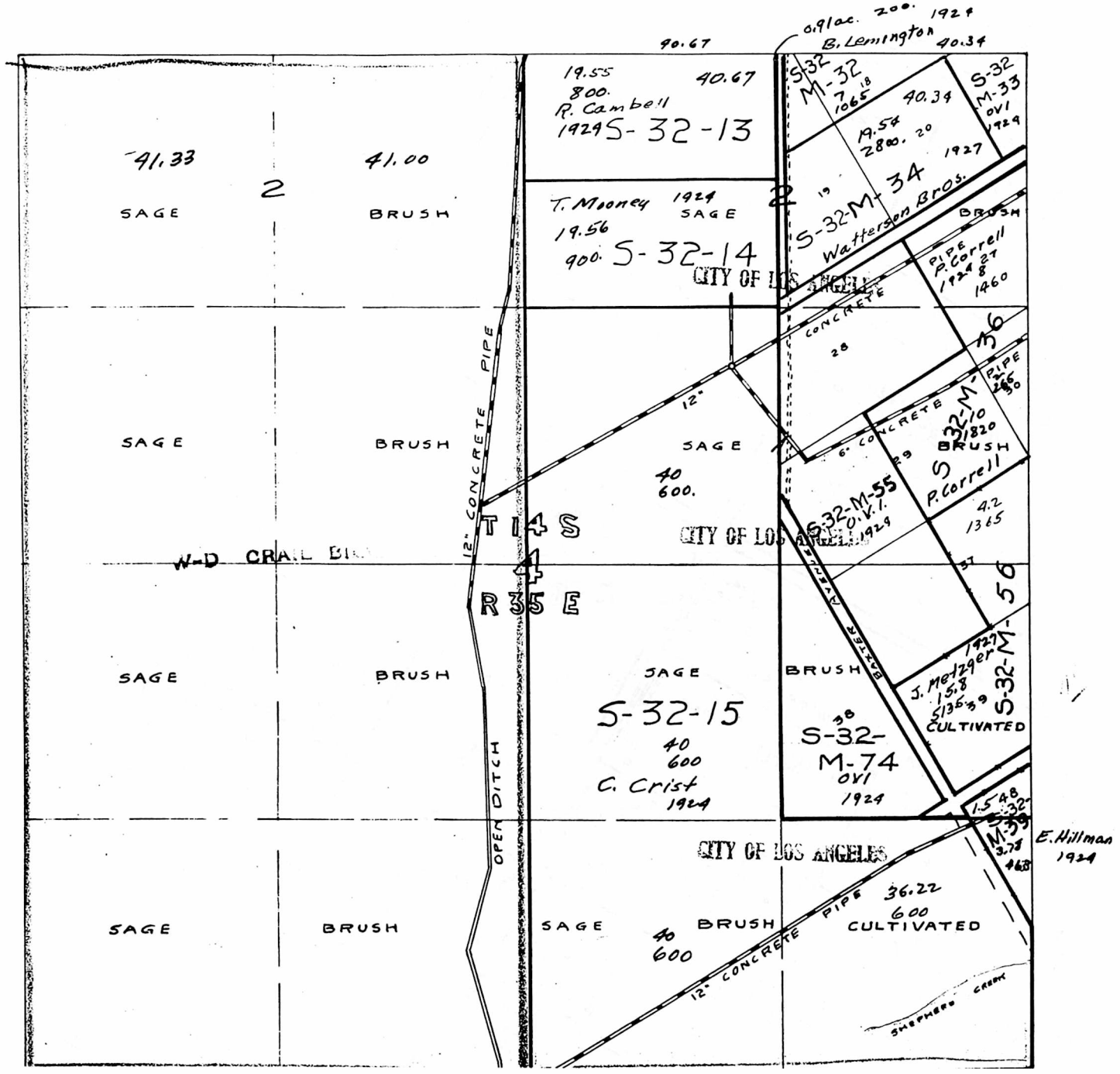


Figure N.6. LADWP plat map: T14S, R35E, section 4.

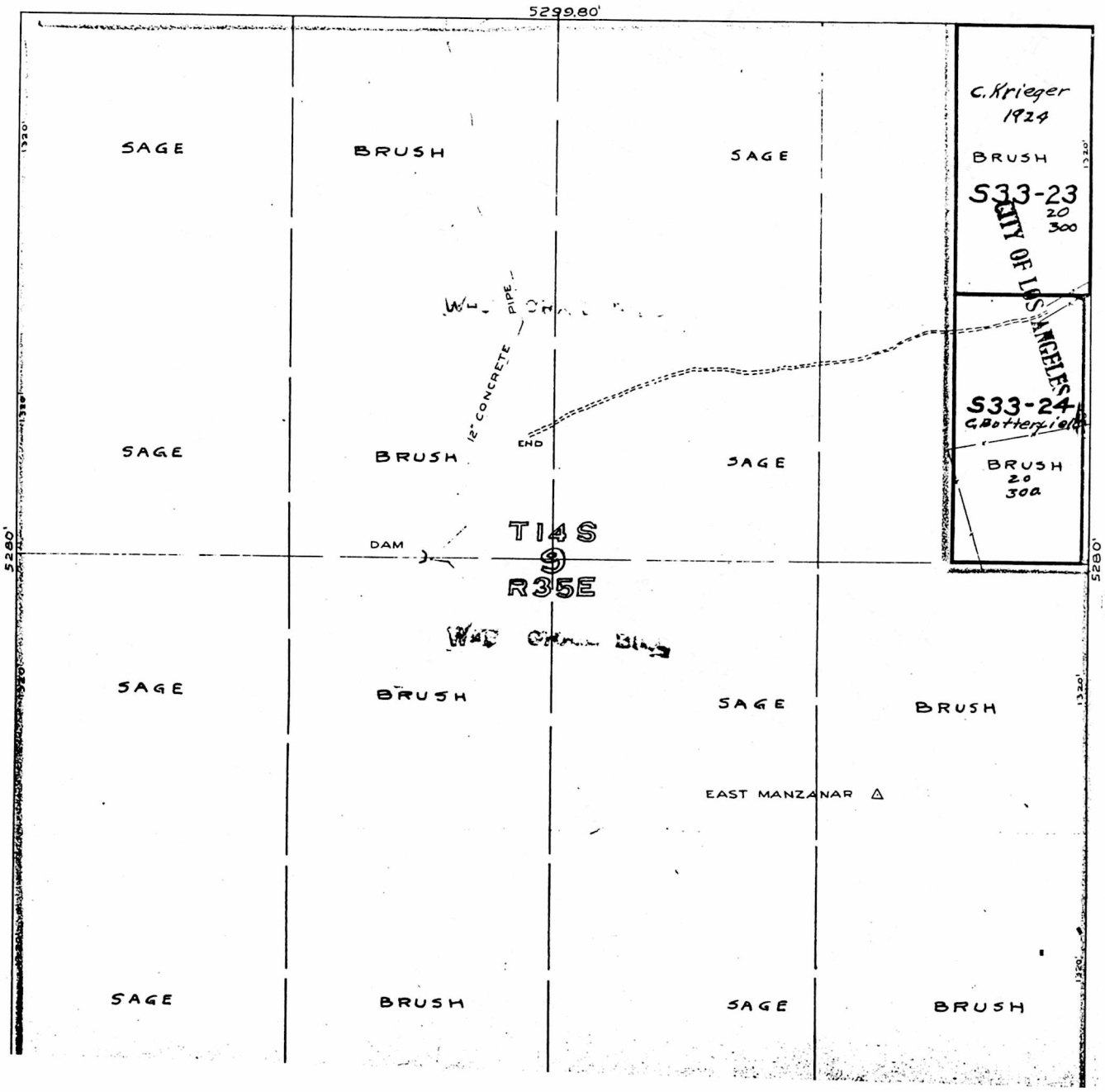


Figure N.7. LADWP plat map: T14S, R35E, section 9.

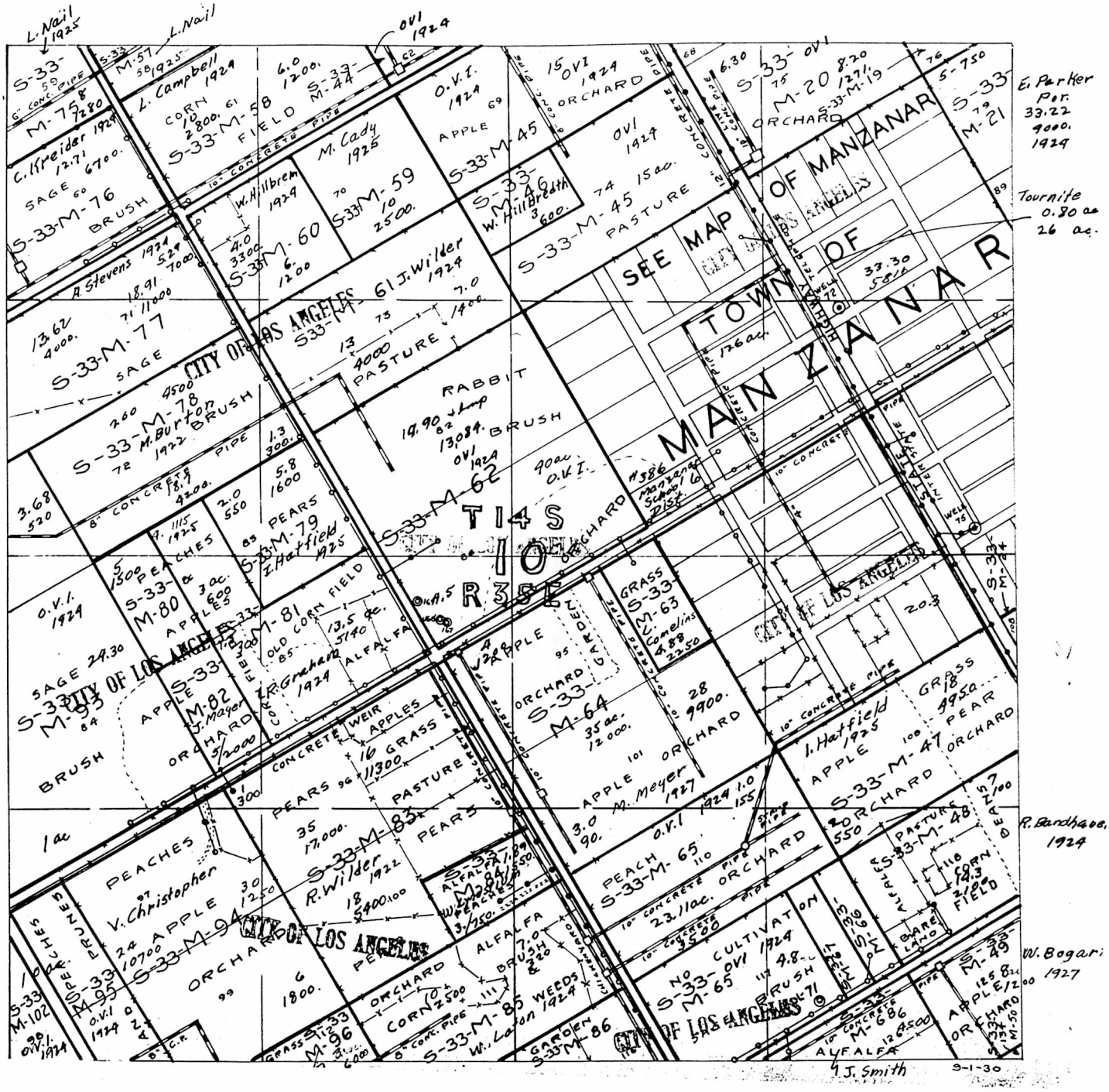


Figure N.8. LADWP plat map: T14S, R35E, section 10.

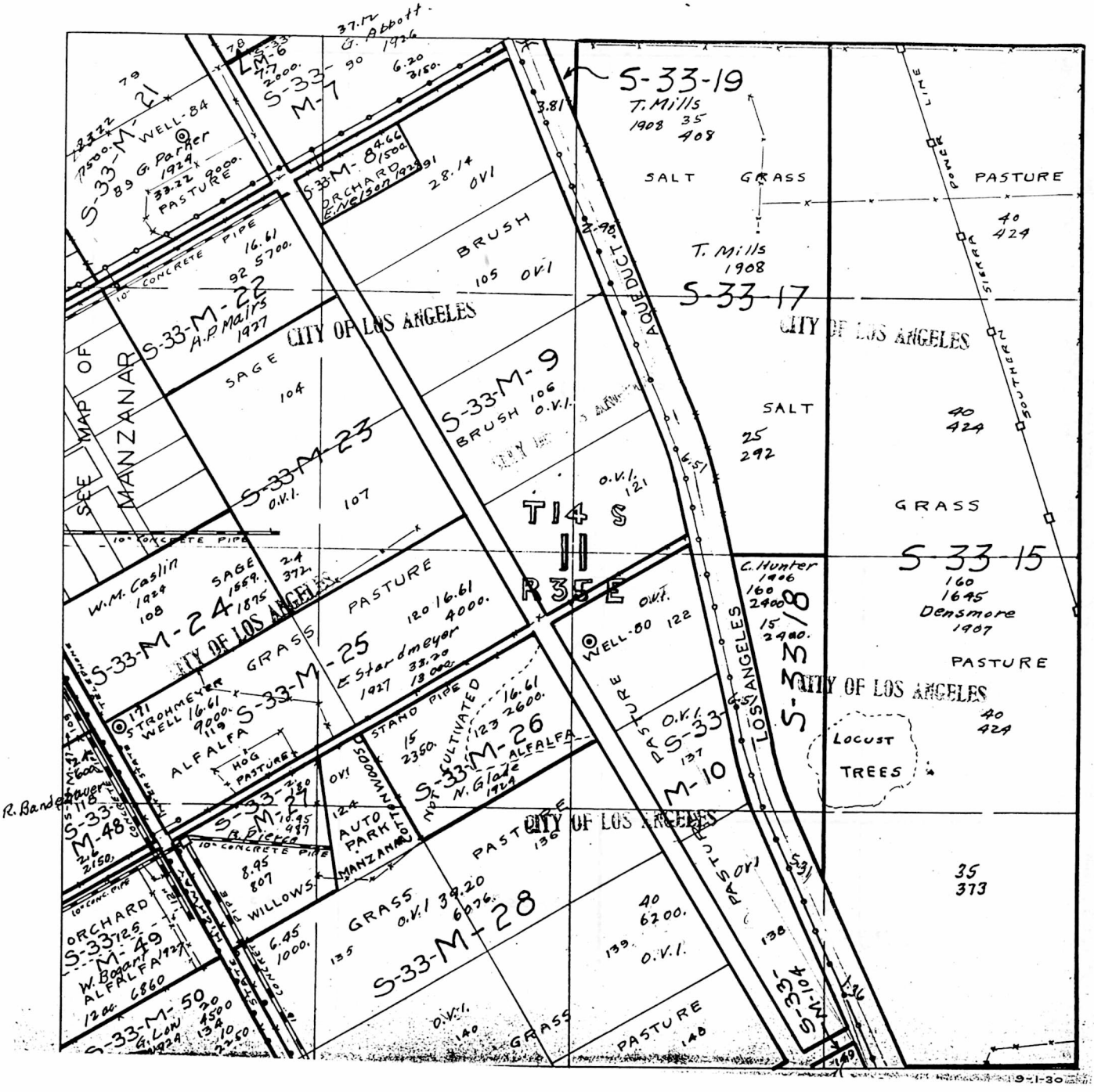


Figure N.9. LADWP plat map: T14S, R35E, section 11.

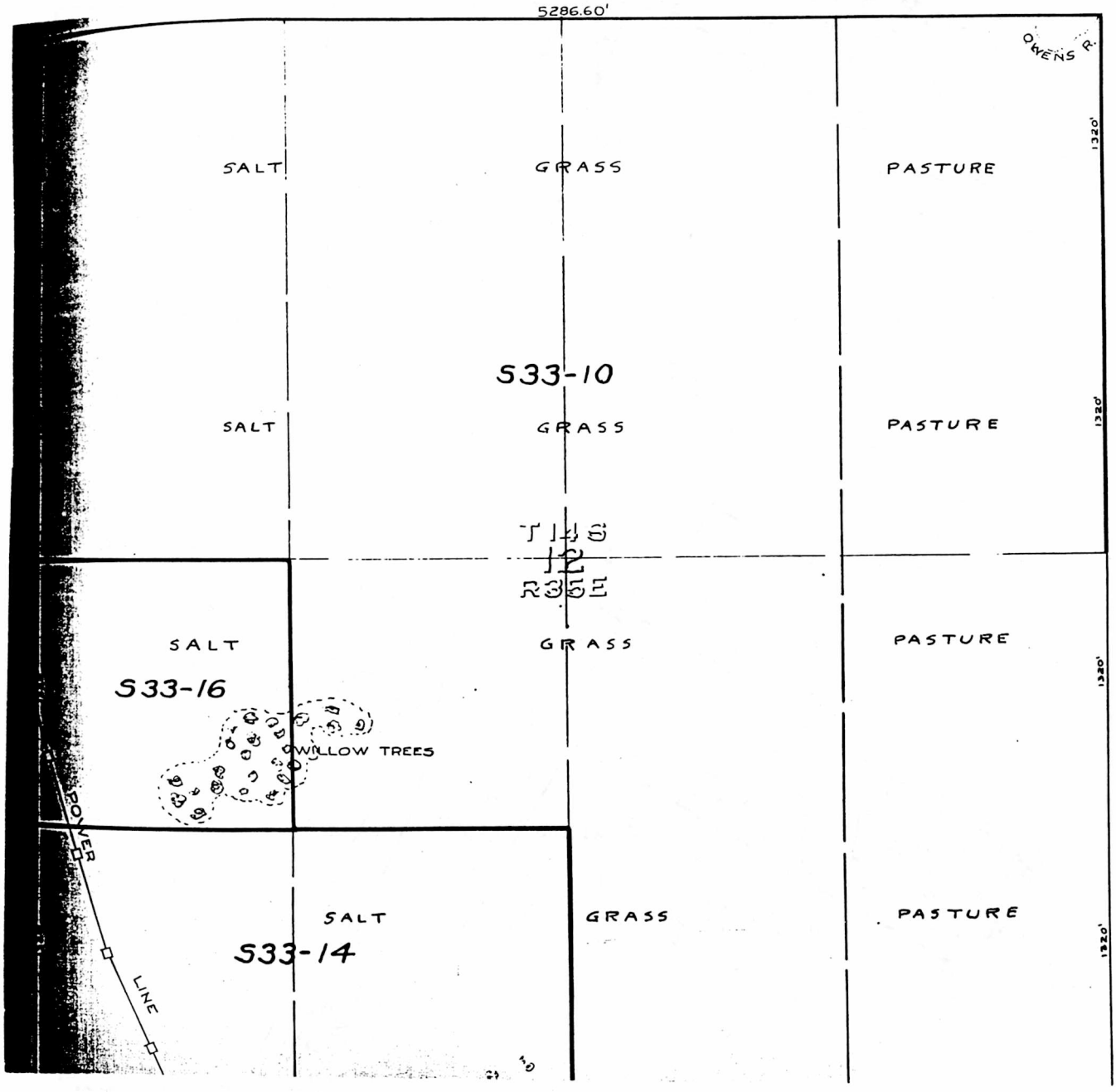


Figure N.10. LADWP plat map: T14S, R35E, section 12.

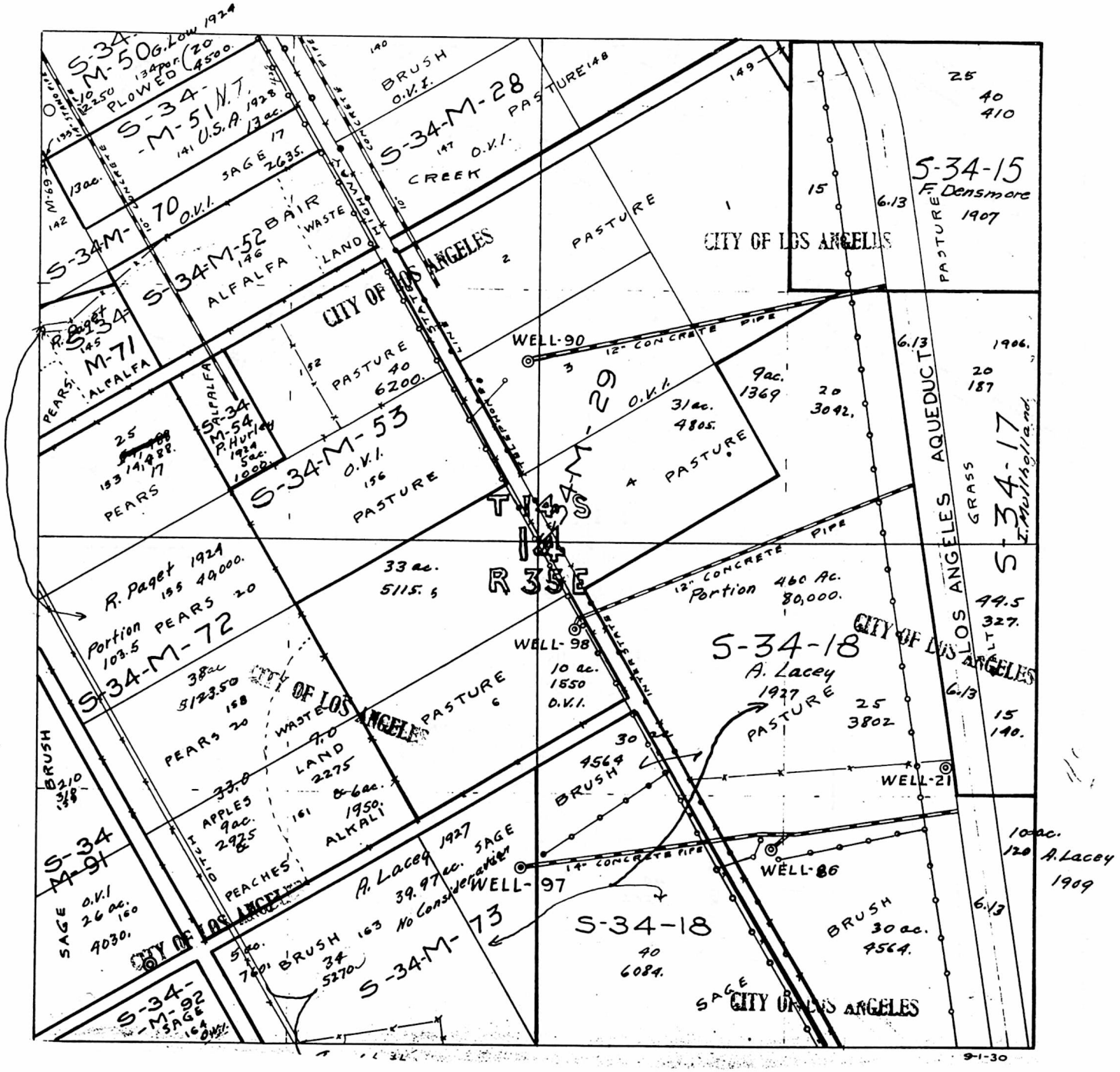


Figure N.11. LADWP plat map: T14S, R35E, section 14.

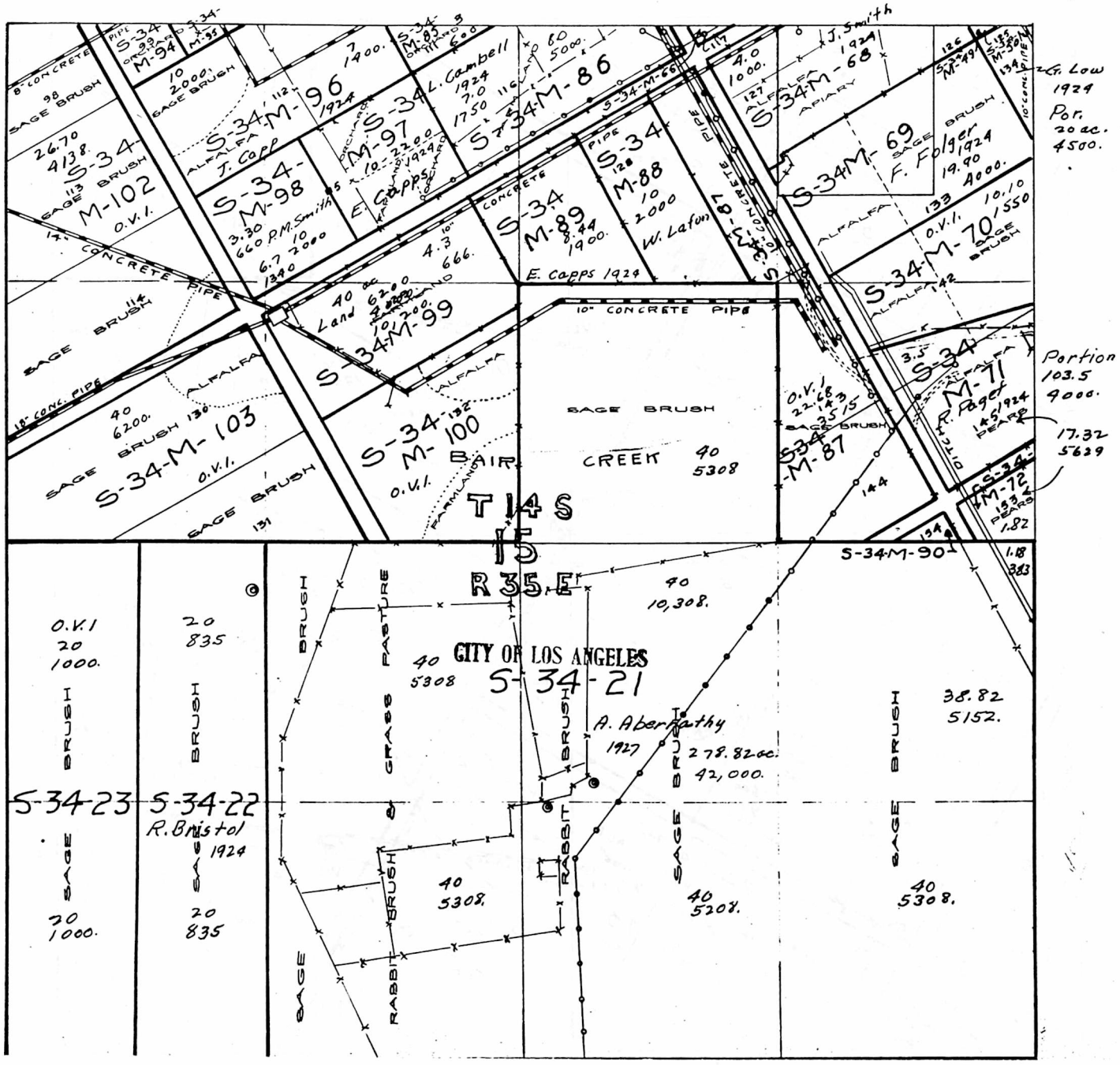


Figure N.12. LADWP plat map: T14S, R35E, section 15.

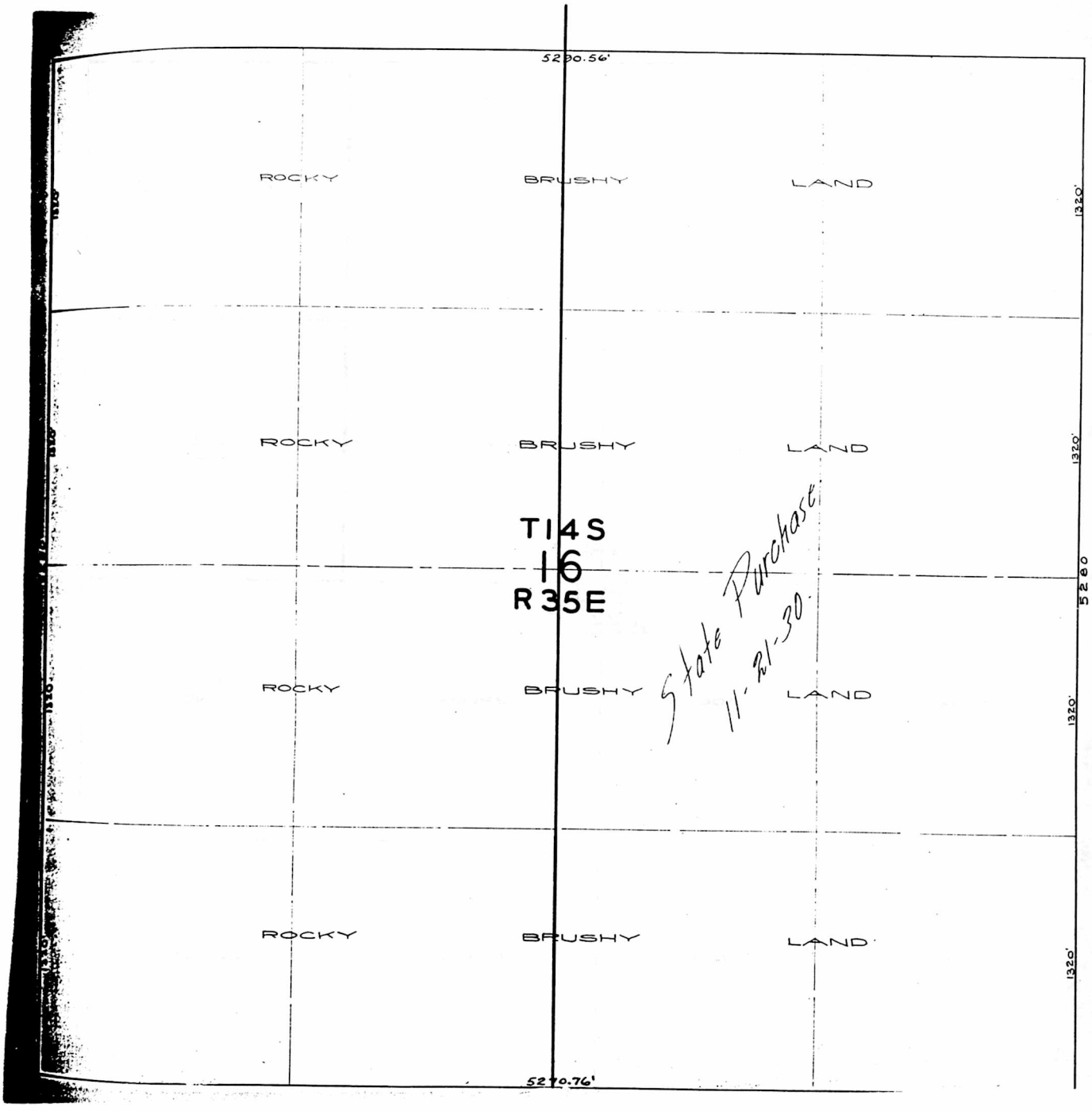


Figure N.13. LADWP plat map: T14S, R35E, section 16.

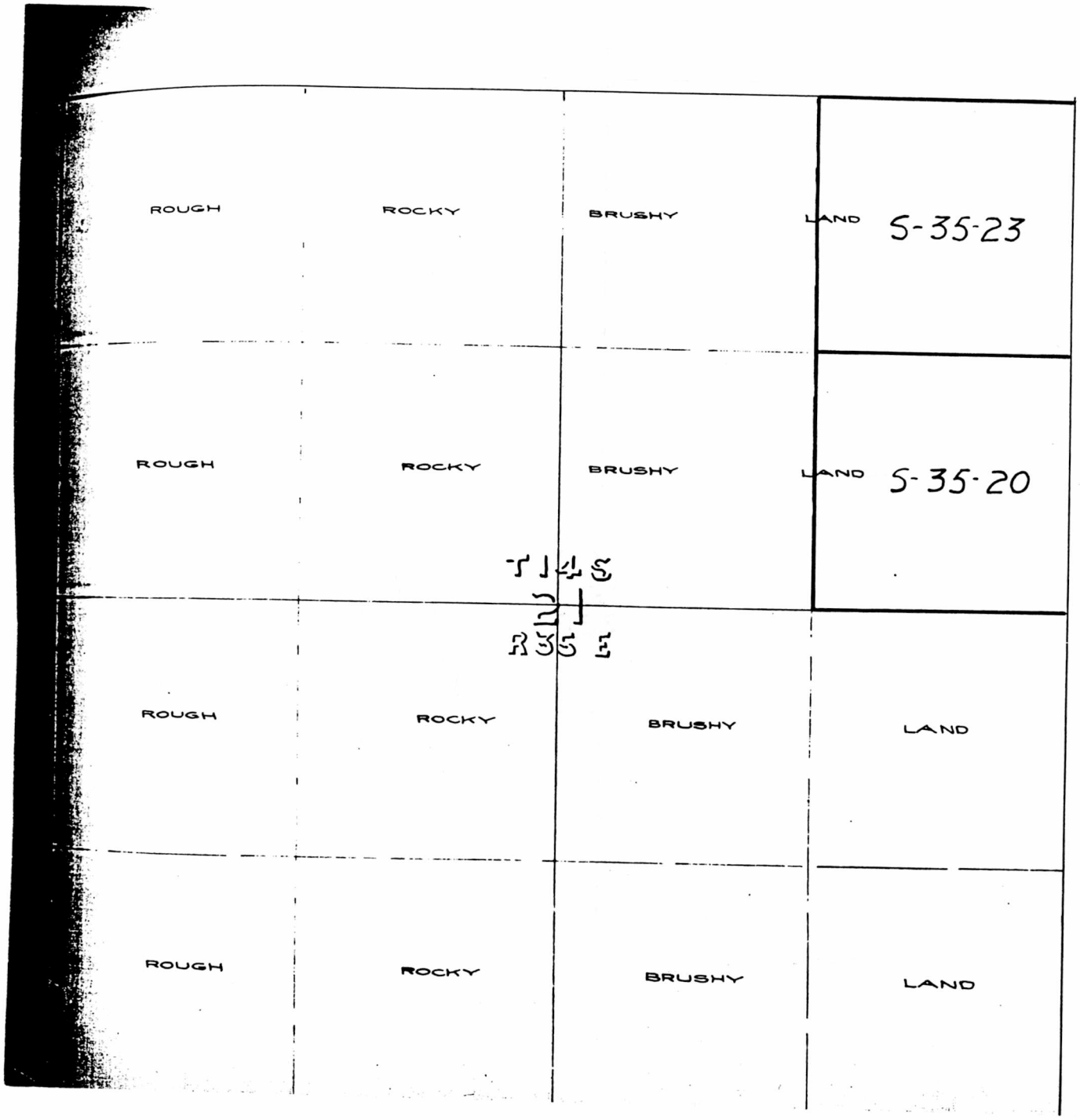


Figure N.14. LADWP plat map: T14S, R35E, section 21.

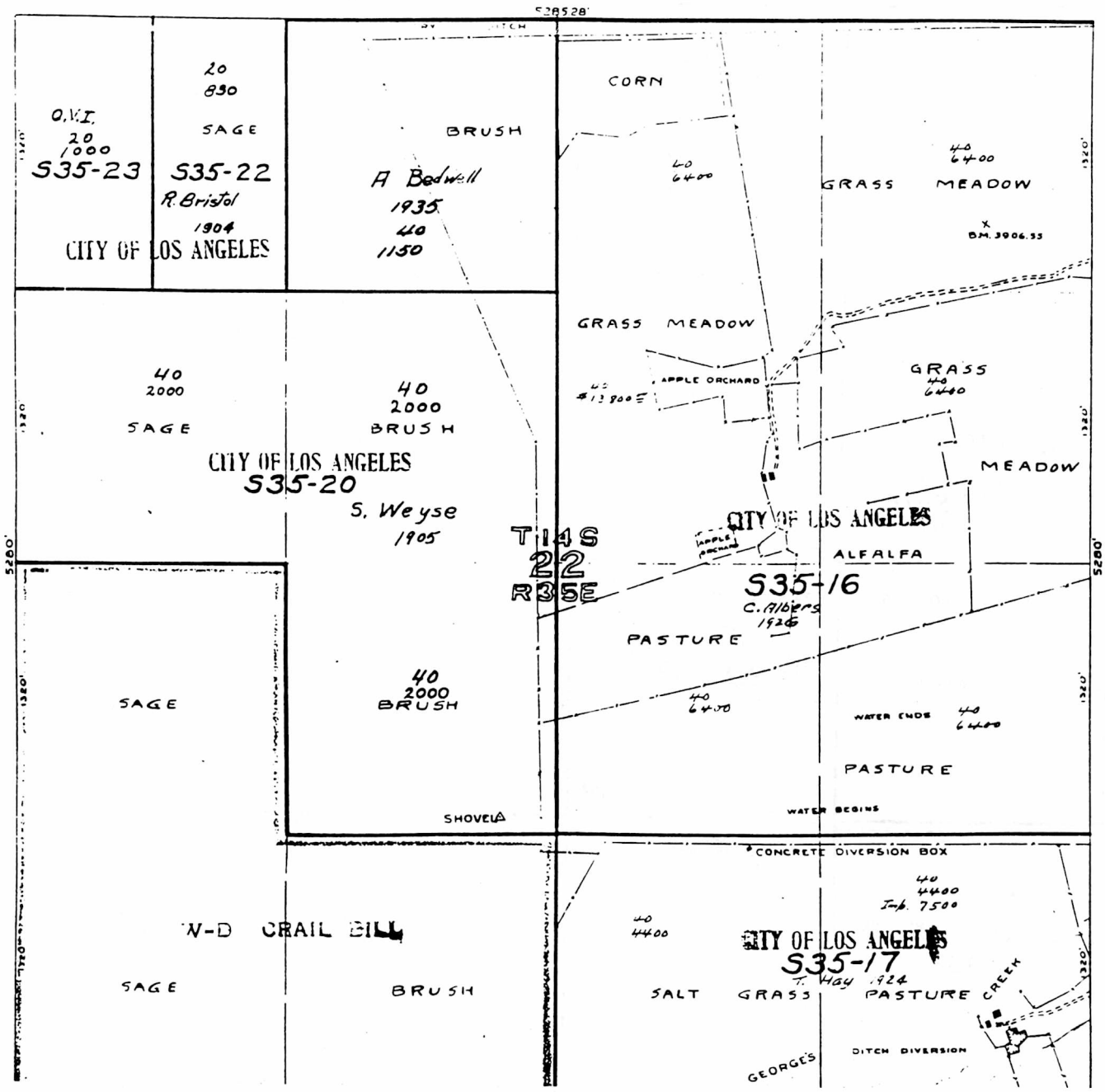


Figure N.15. LADWP plat map: T14S, R35E, section 22.

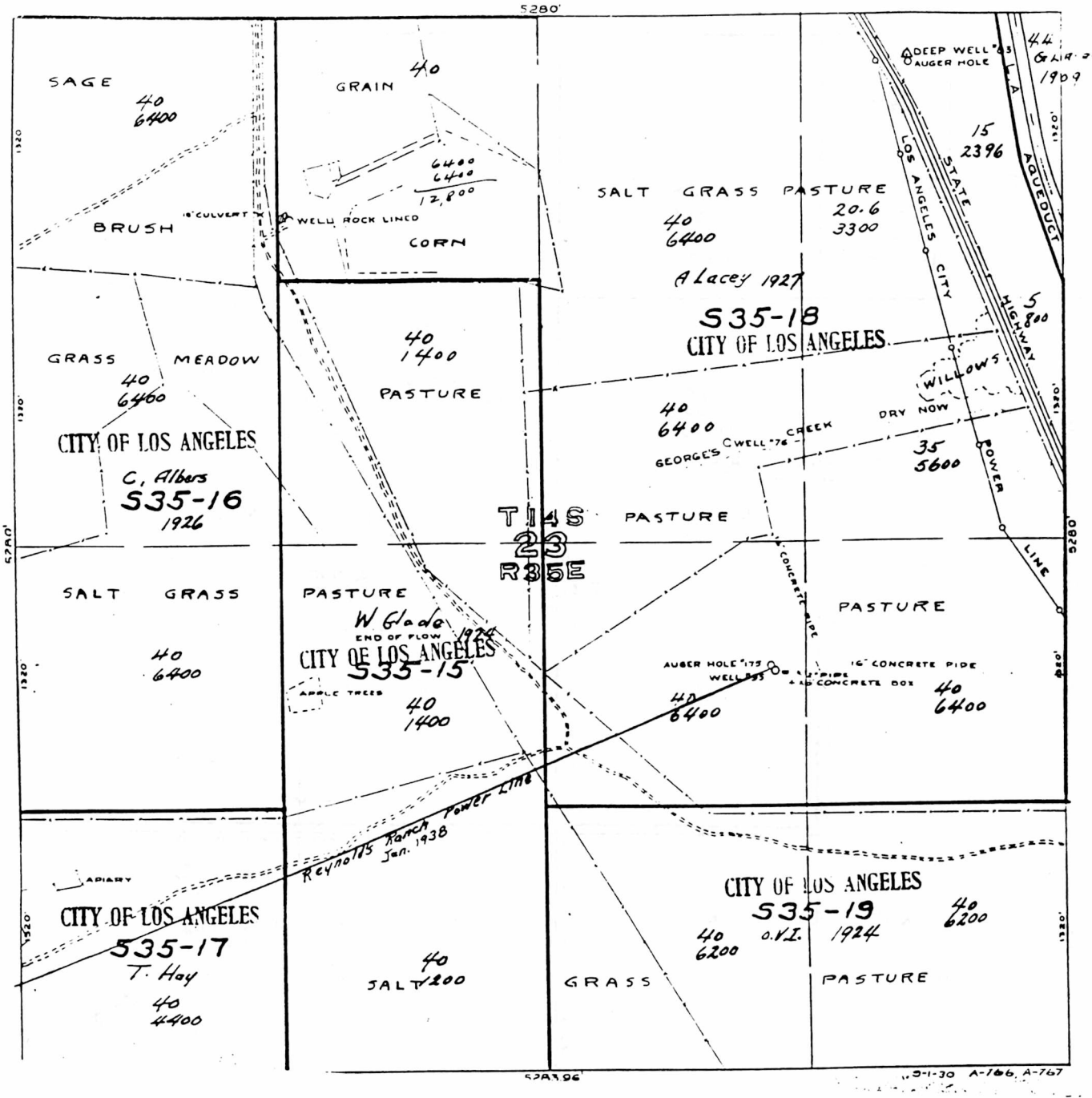


Figure N.16. LADWP plat map: T14S, R35E, section 23.

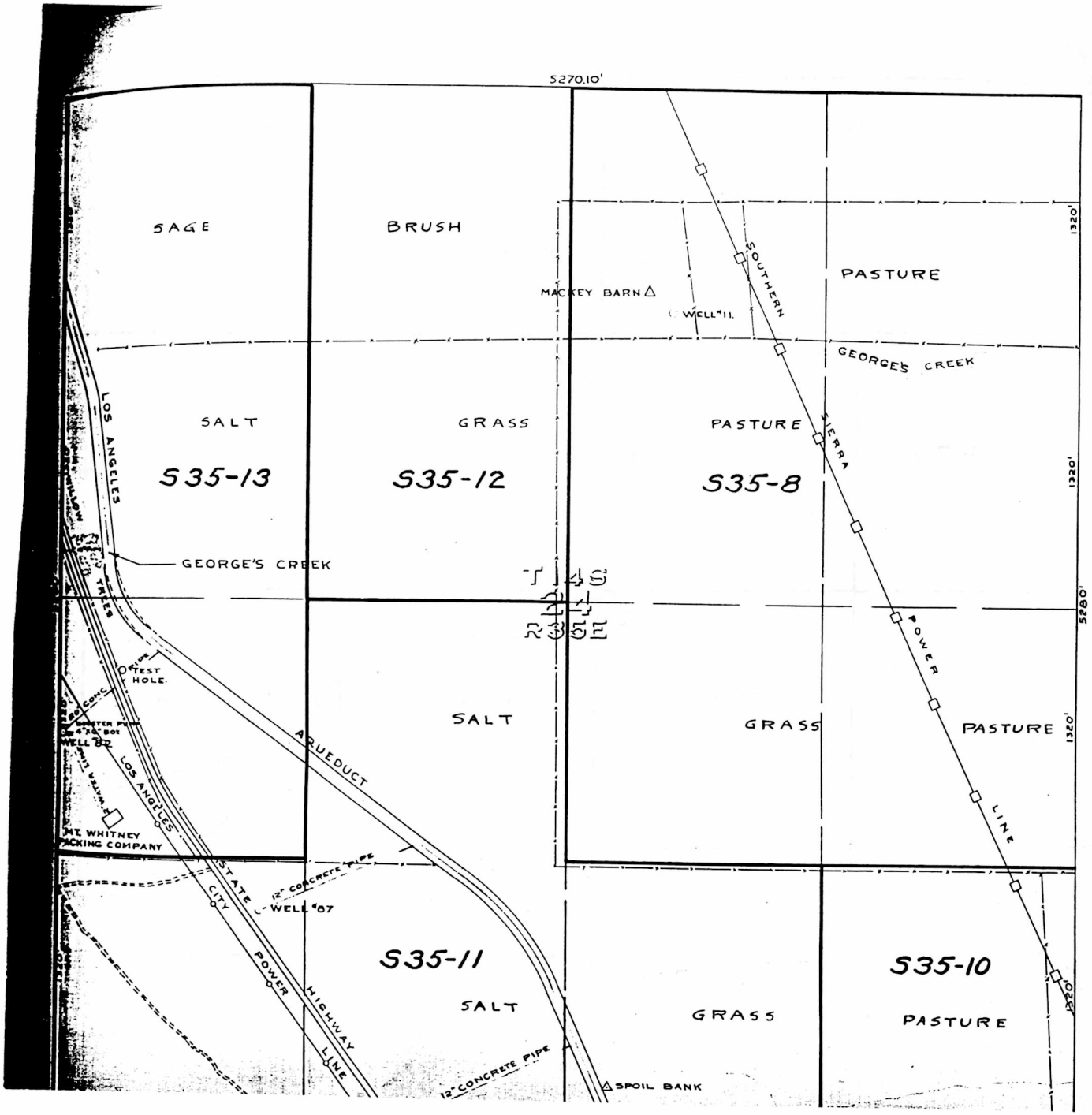


Figure N.17. LADWP plat map: T14S, R35E, section 24.

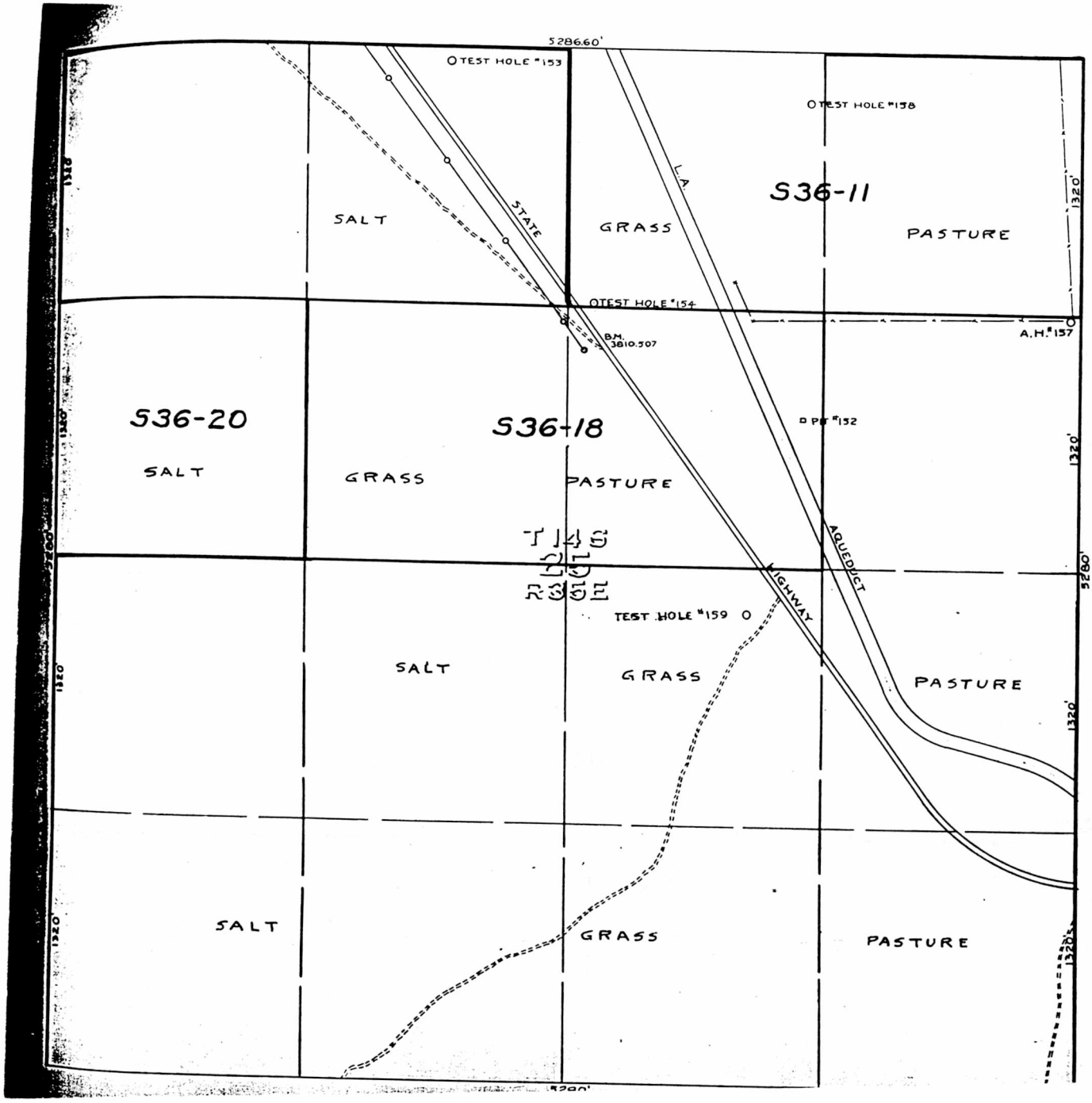


Figure N.18. LADWP plat map: T14S, R35E, section 25.

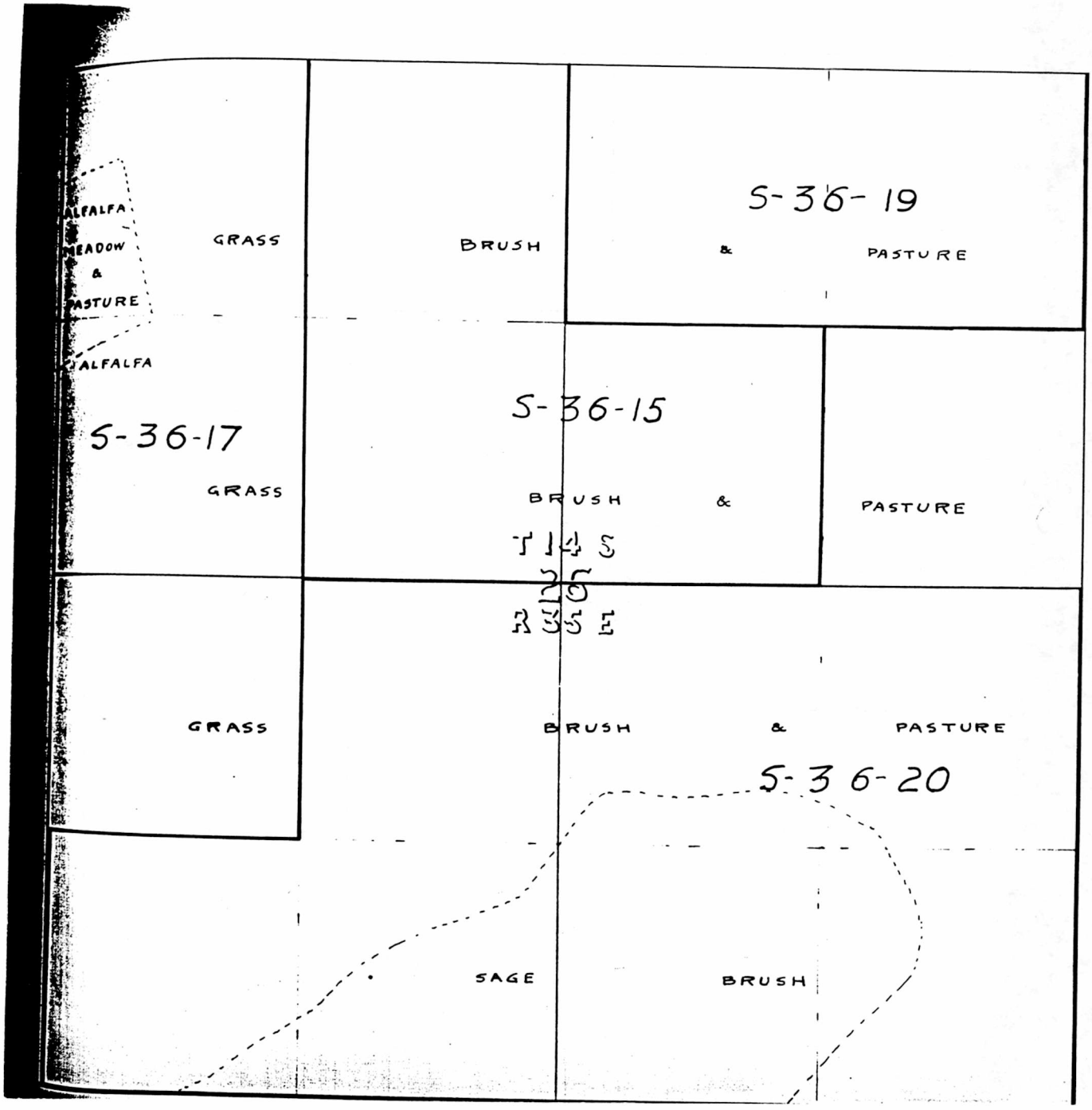


Figure N.19. LADWP plat map: T14S, R35E, section 26.

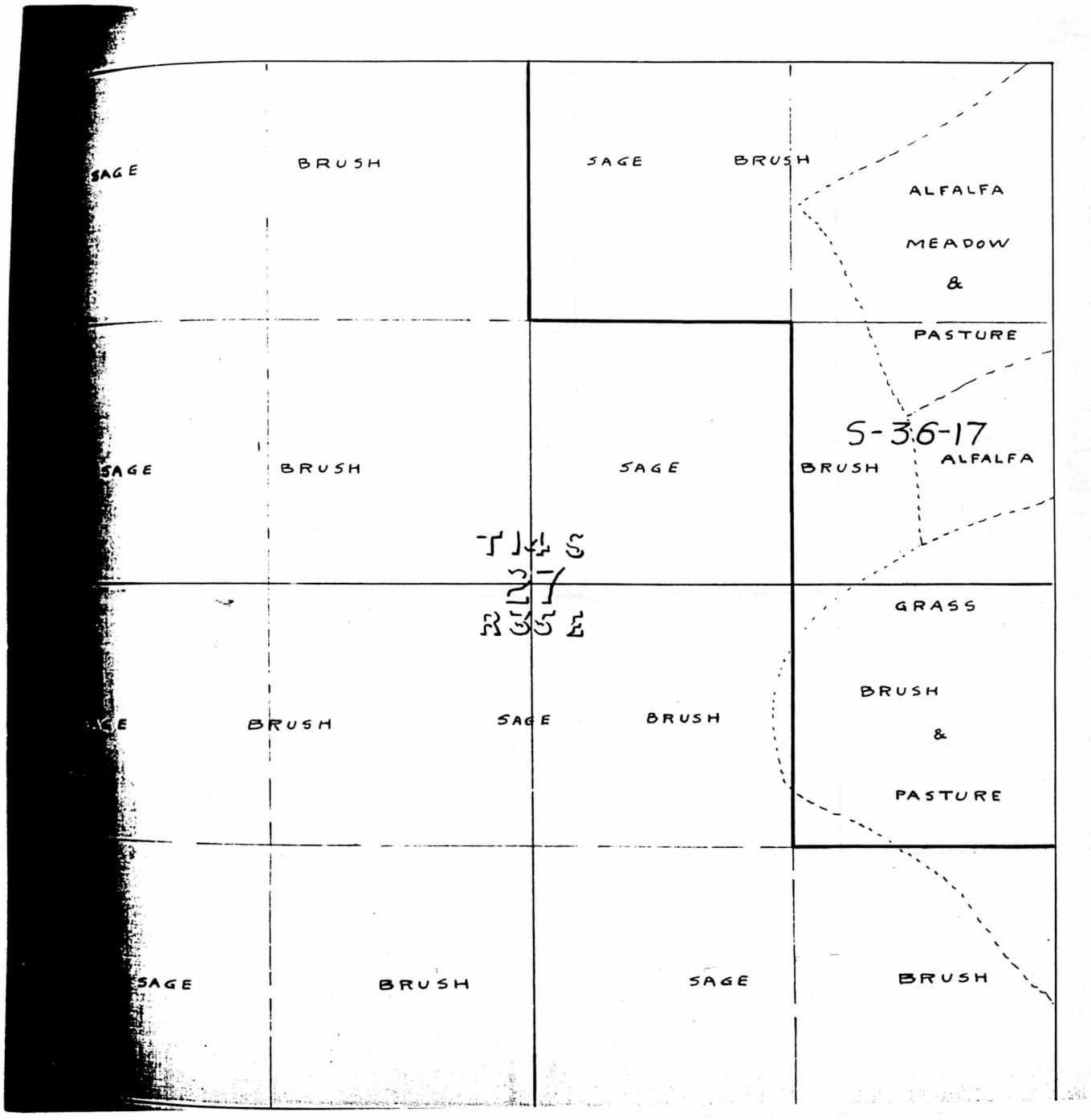


Figure N.20. LADWP plat map: T14S, R35E, section 27.

Appendix O

Architectural Drawings

Historic American Buildings Survey

In the summer of 1994, the Historic American Buildings Survey (HABS) of the National Park Service produced architectural drawings of the remaining buildings at Manzanar National Historic Site. The work was conducted by Elizabeth Louden (supervisor), Christopher Dwyer, Zoltan Sugar, Antony Nash, Michael Kelleher, and Brian Grogan. The HABS documentation, which includes the 1945 Camp Layout and Land Improvements maps and a brief introduction as well as the original drawings, is curated at the Library of Congress, Prints and Photographs Division. The "as-built" drawings include floor plans, elevations, sections, construction details, and isometric projections for the auditorium, military police post, and internal police post. For the relocation center cemetery HABS produced a site plan, and for the cemetery monument, elevations, a plan, and an axonometric drawing. The relocation center reservoir and settling basin drawings include plans, elevations, and gate details. A watchtower drawing was also produced based on historical photographs, government specifications, and remnant lumber stored at the Eastern California Museum in Independence. Reduced copies of the entire HABS Manzanar record are reproduced in this appendix.

MANZANAR

WAR RELOCATION CENTER



FOLLOWING THE ATTACK ON PEARL HARBOR BY JAPAN AND THE ENTRY OF THE UNITED STATES INTO WORLD WAR II, PRESIDENT FRANKLIN D. ROOSEVELT ISSUED EXECUTIVE ORDER 9066 ON FEBRUARY 19, 1942. THIS ORDER ALLOWED THE WAR DEPARTMENT TO "PROSCRIBE MILITARY AREAS . . . FROM WHICH ANY OR ALL PERSONS MAY BE EXCLUDED" IN ORDER TO PROVIDE "PROTECTION AGAINST ESPIONAGE AND AGAINST SABOTAGE." UNDER THIS AUTHORITY, LT. GENERAL JOHN L. DEWITT, COMMANDER OF THE WESTERN DEFENSE COMMAND, ISSUED A NUMBER OF PUBLIC PROCLAMATIONS AND CIVILIAN EXCLUSION ORDERS WHICH LED TO THE FORCED REMOVAL OF ALL PERSONS OF JAPANESE ANCESTRY, REGARDLESS OF THEIR CITIZENSHIP, FROM THE WEST COAST OF THE UNITED STATES.

THE WESTERN DEFENSE COMMAND INITIALLY PLANNED WHAT IT CALLED A "VOLUNTARY EVACUATION" IN WHICH THE JAPANESE-AMERICANS WOULD INDEPENDENTLY MOVE FROM THE WEST COAST AND RELOCATE TO INTERIOR STATES. TO HOUSE THOSE PERSONS WHO COULD NOT, OR WOULD NOT RELOCATE, IN MARCH 1942 THE ARMY CORPS OF ENGINEERS BEGAN CONSTRUCTION OF THE OWENS VALLEY RECEPTION CENTER IN INYO COUNTY, CALIFORNIA. WHEN HOSTILITY TOWARD JAPANESE-AMERICANS IN INTERIOR STATES MADE VOLUNTARY EVACUATION DIFFICULT, A GOVERNMENT ORGANIZED EVACUATION AND RELOCATION PLAN WAS IMPLEMENTED. UNDER THIS PLAN, THE EVACUEES FIRST WENT TO ARMY RUN ASSEMBLY CENTERS LOCATED NEAR THEIR HOMES. FROM THESE FACILITIES THEY WERE EVENTUALLY TRANSPORTED TO ONE OF TEN RELOCATION CENTERS ADMINISTERED BY A CIVILIAN AGENCY, THE WAR RELOCATION AUTHORITY (WRA), WHICH WAS SUPPOSED TO CARRY OUT THE RELOCATION OF APPROXIMATELY 110,000 PEOPLE OF JAPANESE DESCENT.

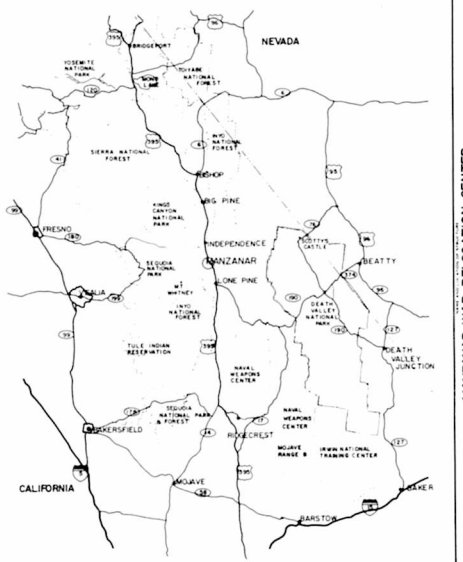
WITH THE WRA RESPONSIBLE FOR THE RELOCATION OF THE JAPANESE-AMERICANS, THE ARMY TRANSFERRED THE OWENS VALLEY RECEPTION CENTER AND THE 10,049 PEOPLE HELD THERE, TO THE WRA ON JUNE 1, 1942, AND THE FACILITY BECAME MANZANAR WAR RELOCATION CENTER. THE INTERNEES HELD AT MANZANAR LIVED IN A SANDY 600 ACRE CAMP OF WOOD AND TARPAPER BARRACKS SURROUNDED BY A BARBED WIRE FENCE AND GUARD TOWERS. TO IMPROVE THEIR SURROUNDINGS THE EVACUEES PLANTED GRASS AND TREES, AND CONSTRUCTED JAPANESE STYLE ROCK GARDENS AND PARKS. THE CAMP WAS WITHIN A 5,500 ACRE AREA IN WHICH THE EVACUEES RAISED CROPS AND LIVESTOCK. THE WRA WAS ABLE TO RELOCATE A NUMBER OF THE JAPANESE-AMERICANS AT MANZANAR TO OTHER PARTS OF THE COUNTRY, WHILE OTHERS ENTERED THE MILITARY TO PARTICIPATE IN THE WAR EFFORT.

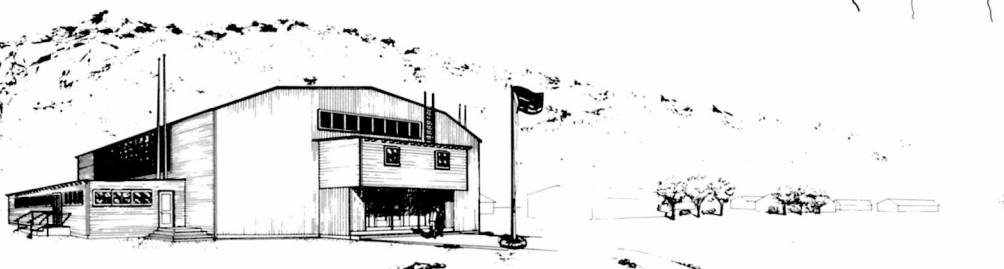
EVENTUALLY, IT BECAME CLEAR TO THE WAR DEPARTMENT THAT THE EXCLUSION OF ALL JAPANESE-AMERICANS COULD NOT BE JUSTIFIED BY MILITARY NECESSITY, AND LT. GENERAL DEWITT BEGAN TO RESCIND THE EXCLUSION ORDERS ON DECEMBER 17, 1944. HOWEVER, MANY OF THE EVACUEES NO LONGER HAD HOMES TO RETURN TO AND WERE RELUCTANT TO FACE THE STRONG ANTI-JAPANESE SENTIMENT PRESENT ON THE WEST COAST. AS A RESULT, IT WAS NOT UNTIL NOVEMBER 21, 1945, THAT THE LAST EVACUEES LEFT MANZANAR WAR RELOCATION CENTER AND THE CAMP WAS CLOSED.

AFTER ITS CLOSING, MOST OF THE WOOD BUILDINGS AT MANZANAR WERE SOLD AS GOVERNMENT SURPLUS AND REMOVED, LEAVING FOUNDATIONS AND CONCRETE PADS THE PRINCIPAL REMAINS OF THE CAMP. THE SIGNIFICANT CONSTRUCTION STILL INTACT ON THE SITE INCLUDES TWO STONE SENTRY POSTS AT THE CAMP ENTRANCE, SEVERAL ROCK GARDENS, A CEMETERY MEMORIAL, THE RESERVOIR, AND THE HIGH SCHOOL AUDITORIUM, WHICH IS CURRENTLY USED AS A GARAGE BY INYO COUNTY. THE DESERT HAS RECLAIMED MUCH OF MANZANAR, AND THE SITE IS COVERED WITH SAND AND PLANTS CHARACTERISTIC OF THE GREAT BASIN.

IN ORDER TO PRESERVE AND INTERPRET THE REMAINS OF MANZANAR WAR RELOCATION CENTER THE UNITED STATES CONGRESS ESTABLISHED MANZANAR NATIONAL HISTORIC SITE, A UNIT OF THE NATIONAL PARK SYSTEM, ON MARCH 3, 1992.

THE DOCUMENTATION OF MANZANAR NATIONAL HISTORIC SITE WAS UNDERTAKEN IN THE SUMMER OF 1994 BY THE HISTORIC AMERICAN BUILDINGS SURVEY/HISTORIC AMERICAN ENGINEERING RECORD (HABS/HAER), DIVISION OF THE NATIONAL PARK SERVICE, IN COOPERATION WITH DEATH VALLEY NATIONAL MONUMENT AND THE WESTERN REGIONAL OFFICE OF NPS. PRINCIPALS INVOLVED WERE TOM MULHERN, CHIEF, DIVISION OF PARK HISTORIC PRESERVATION, WRO; ROSS HOPKINS, SUPERINTENDENT, MANZANAR NATIONAL HISTORIC SITE; ROBERT J. KAPSCH, CHIEF, HABS/HAER; PAUL D. DOLINSKY, CHIEF, HABS. THE PROJECT WAS ORGANIZED AND DIRECTED BY JOSEPH D. BALACHOWSKI, HABS SUPERVISORY ARCHITECT, AND CATHERINE C. LAVOIE, HABS SUPERVISORY HISTORIAN. THE DOCUMENTATION WAS PRODUCED IN THE FIELD BY SUPERVISOR ELIZABETH I. LOUDEN, PROFESSOR, TEXAS TECH UNIVERSITY; ARCHITECTS CHRISTOPHER DWYER, WASHINGTON, DC, AND ZOLTAN SUGAR, US-ICOMOS, BUDAPEST, HUNGARY; ARCHITECTURE TECHNICIAN ANTHONY NASH, IOWA STATE UNIVERSITY; HISTORIAN MICHAEL KELLEHER, NEW YORK UNIVERSITY; AND PHOTOGRAPHER BRIAN GROGAN, EL PORTAL, CALIFORNIA.





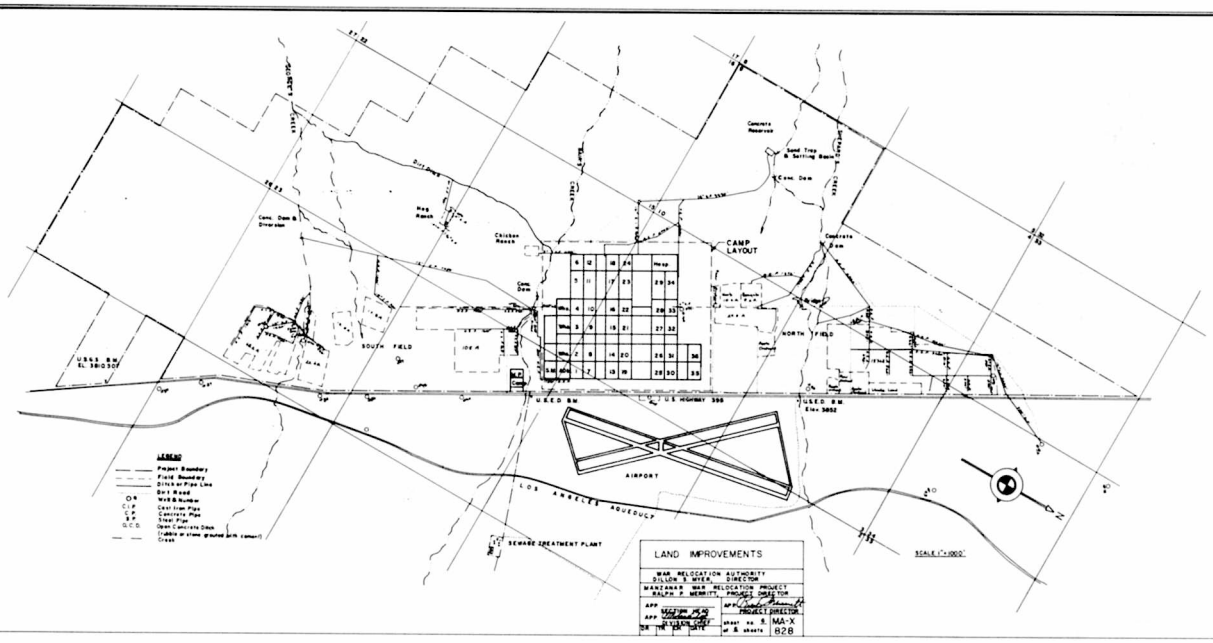
MANZANAR WAR RELOCATION CENTER
INYO COUNTY
NEAR INDEPENDENCE VICINITY
CALIFORNIA

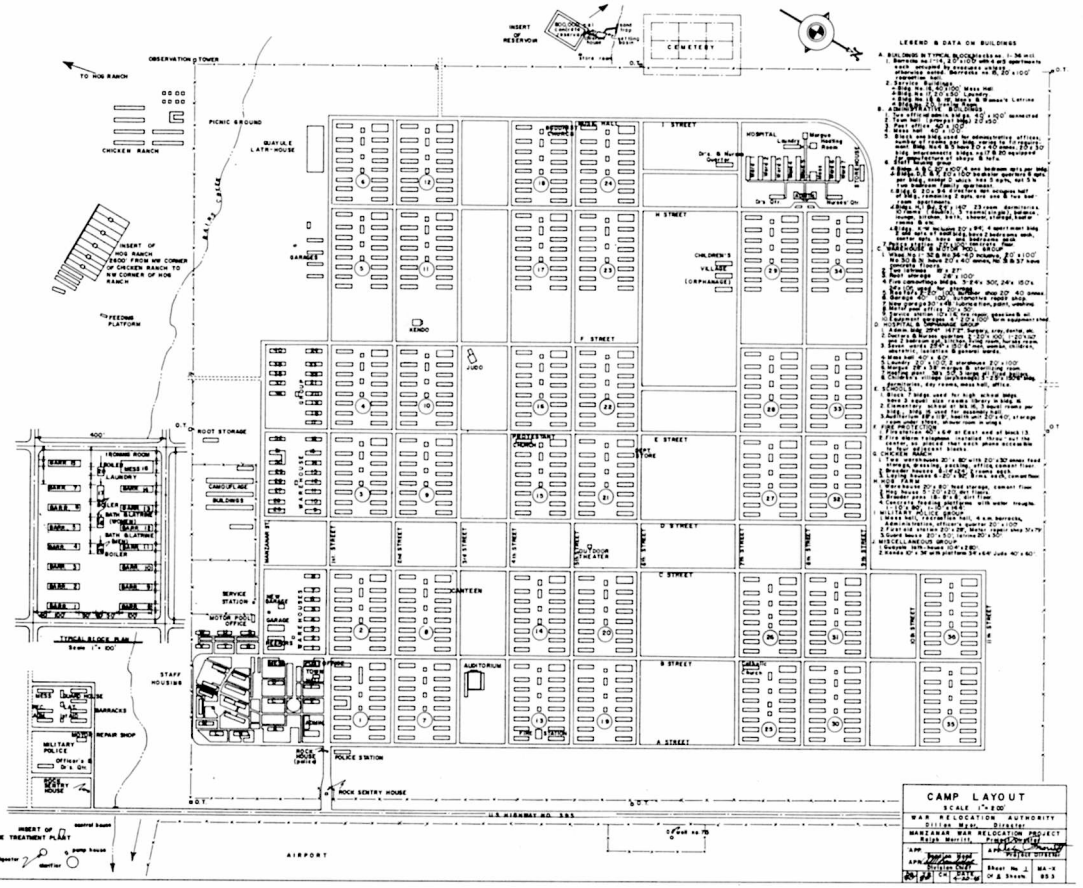
HISTORIC AMERICAN BUILDINGS SURVEY
CA-2338

SHEET 1 OF SHEETS 2

DRAWN BY: ELIZABETH I. LOUDEN
MANZANAR NATIONAL HISTORIC SITE
RECORDING PROJECT, 1994

U.S. HWY 395





HISTORICAL MAPS

NOTE: MAPS ADAPTED FROM ORIGINAL SOURCE 1945 "CAMP LAYOUT" AND "LAND IMPROVEMENTS" MAPS.

drawn by: ELIZABETH I. LOUDEN

MANZANAR NATIONAL HISTORIC SITE
RECORDING PROJECT 1994
UNITED STATES DEPARTMENT OF THE INTERIOR

U.S. HWY 395

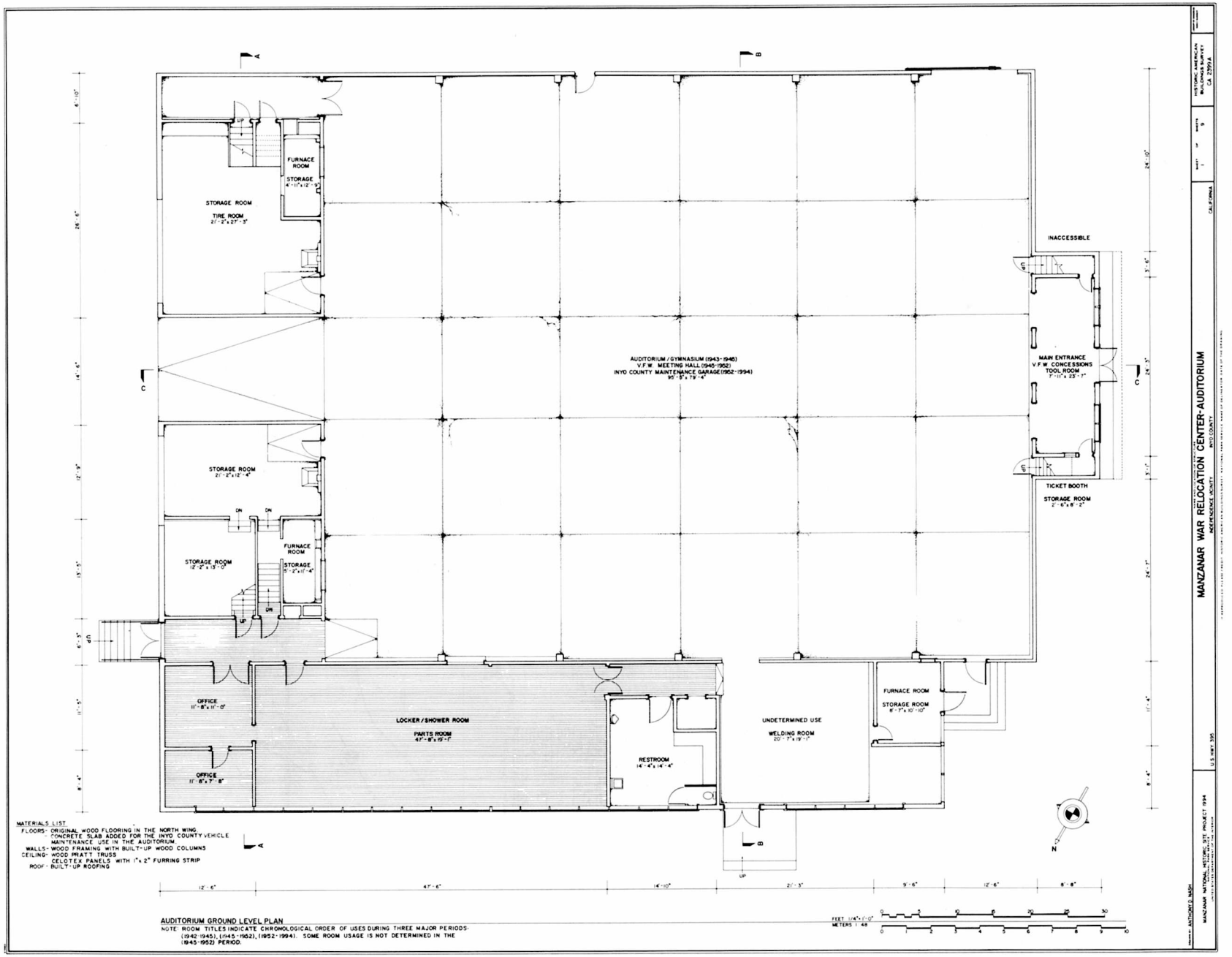
MANZANAR WAR RELOCATION CENTER - CAMP LAYOUT HISTORIC MAPS

NAME AND LOCATION OF STRUCTURE
INDEPENDENCE VICINITY
INYO COUNTY
CALIFORNIA

SHEET 2 OF 2 SHEETS

HISTORIC AMERICAN BUILDINGS SURVEY
CA 2539

* REPRODUCED PLEASE CREDIT HISTORIC AMERICAN BUILDINGS SURVEY - NATIONAL PARK SERVICE, NAME OF DELINEATOR, DATE OF THE DRAWING.



MATERIALS LIST
FLOORS- ORIGINAL WOOD FLOORING IN THE NORTH WING
CONCRETE SLAB ADDED FOR THE INYO COUNTY VEHICLE MAINTENANCE USE IN THE AUDITORIUM
WALLS- WOOD FRAMING WITH BUILT-UP WOOD COLUMNS
CEILING- WOOD PRATT TRUSS
CELOTEX PANELS WITH 1" x 2" FURRING STRIP
ROOF- BUILT-UP ROOFING

AUDITORIUM GROUND LEVEL PLAN

NOTE: ROOM TITLES INDICATE CHRONOLOGICAL ORDER OF USES DURING THREE MAJOR PERIODS- (1942-1945), (1945-1952), (1952-1994). SOME ROOM USAGE IS NOT DETERMINED IN THE 1945-1952 PERIOD.

MANZANAR WAR RELOCATION CENTER-AUDITORIUM

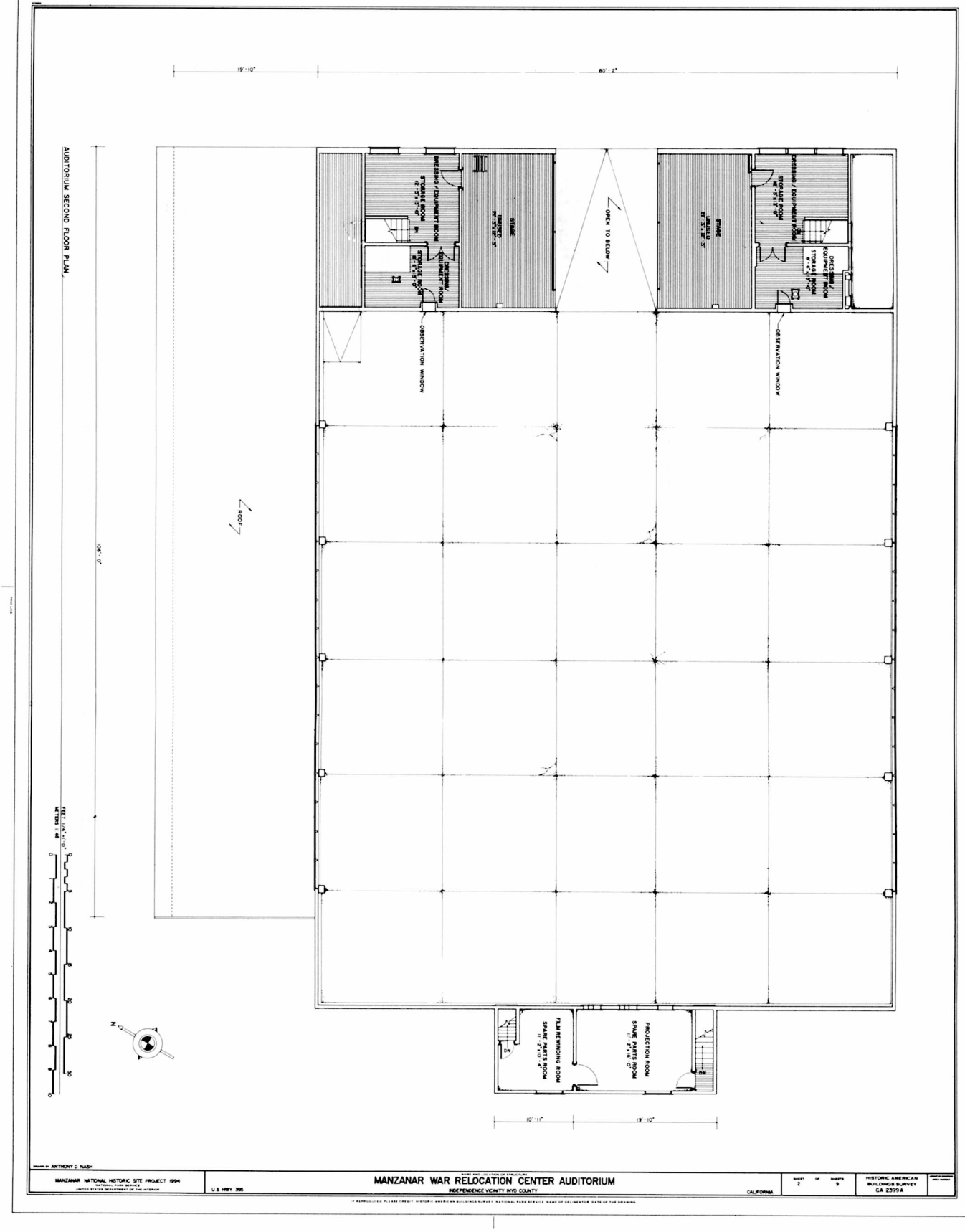
INDEPENDENCE VICINITY INYO COUNTY CALIFORNIA

MANZANAR NATIONAL HISTORIC SITE PROJECT 1994 U.S. HWY 395

HISTORIC AMERICAN BUILDINGS SURVEY CA-2399-A

SHEET 1 OF 3 SHEETS

DRAWN BY: ANTHONY D. NASH



ANTHONY D. NASH

MANZANAR NATIONAL HISTORIC SITE PROJECT 1994
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

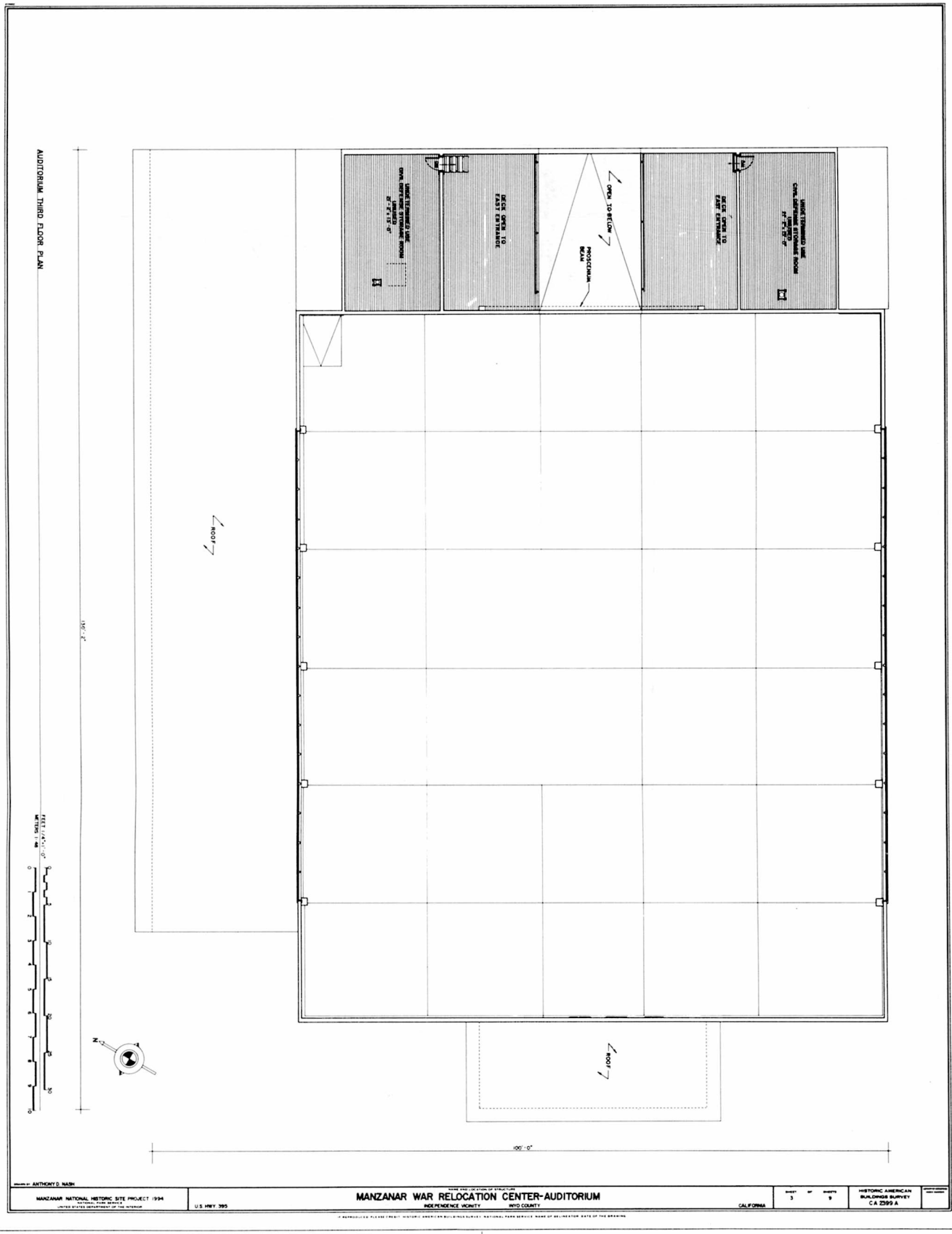
MANZANAR WAR RELOCATION CENTER AUDITORIUM

U.S. HWY 395
INDEPENDENCE VICINITY INYO COUNTY
CALIFORNIA

SHEET 2 OF SHEETS 9

HISTORIC AMERICAN BUILDINGS SURVEY
CA 2399-A

* REPRODUCED PLEASE CREDIT HISTORIC AMERICAN BUILDINGS SURVEY, NATIONAL PARK SERVICE, NAME OF DELINEATOR, DATE OF THE DRAWING.



ANTHONY D. NASH

MANZANAR NATIONAL HISTORIC SITE PROJECT 1994
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

NAME AND LOCATION OF STRUCTURE

MANZANAR WAR RELOCATION CENTER-AUDITORIUM

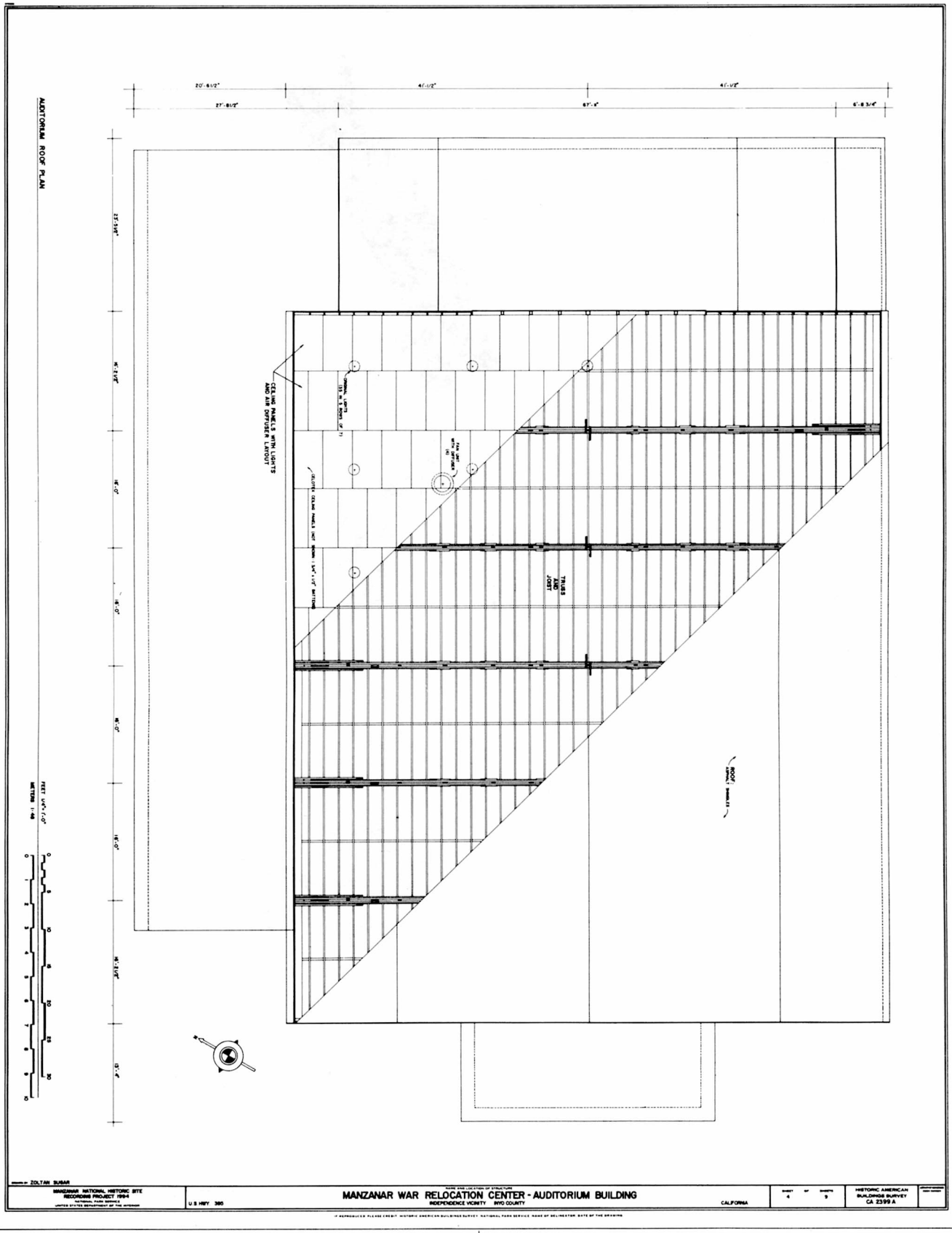
INDEPENDENCE VICINITY INYO COUNTY CALIFORNIA

U.S. HWY 395

SHEET 3 OF SHEETS 9

HISTORIC AMERICAN BUILDINGS SURVEY
CA-2399-A

REPRODUCED PLEASE CREDIT HISTORIC AMERICAN BUILDINGS SURVEY, NATIONAL PARK SERVICE NAME OF DELINEATOR DATE OF THE DRAWING


AUDITORIUM ROOF PLAN
20'-6 1/2"
41'-1/2"
41'-1/2"
27'-8 1/2"
67'-4"
5'-8 3/4"
CEILING PANELS WITH LIGHTS AND AIR DIFFUSER LAYOUT
TRUSS JOIST
ROOF SLOPE
FEET 1/4"=1'-0"
METERS 1:48
ZOLTAN SUSAR
MANZANAR NATIONAL HISTORIC SITE
RECORDING PROJECT 1994
U.S. HWY 395
MANZANAR WAR RELOCATION CENTER - AUDITORIUM BUILDING
INDEPENDENCE VICINITY INYO COUNTY
CALIFORNIA
HISTORIC AMERICAN BUILDINGS SURVEY
CA 2399 A

AUDITORIUM BUILDING - ISOMETRIC

MATERIALS LIST

AUDITORIUM BUILDING

FRAMING:
2" X 4" STUDS
4" X 4" CORNER POSTS
2" X 6" JOISTS / 1 5/8" X 5 3/4" STUDS
1" X 5" DIAGONAL SHEATHING
2" X 10 3/4" CEILING JOIST
COLUMNS
VARIES FROM 1 1/2" TO 2 1/2" X 11" LUMBER
BOLTED TOGETHER FORMING A LAMINATED COLUMN
WINDOWS:
TYPICAL 4' X 4' WITH TOP HINGES
FLOOR:
CONCRETE SLAB
3 1/2" WOOD FLOORING
FINISH:
5" WOODEN BEVEL-EDGE SIDING
PAINTED

MANZANAR QUADRANGLE
CALIFORNA - INYO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
MAIN LONE PINE 15' QUADRANGLE

QUADRANGLE LOCATION

NORTH ELEVATION

AUDITORIUM BUILDING - NORTH ELEVATION, ISOMETRIC & UTM MAP

MANZANAR WAR RELOCATION CENTER - AUDITORIUM BUILDING
INDEPENDENCE, INYO COUNTY
CALIFORNIA
U.S. HWY. 395
MANZANAR NATIONAL HISTORIC SITE
DRAWN BY: ELIZABETH LOCKEN
HISTORIC AMERICAN BUILDINGS SURVEY
CA-2399-R



TRANSVERSE SECTION A-A



EAST ELEVATION

AUDITORIUM BUILDING EXISTING ENTRANCE

FEET 1/4"=1'-0" 0 5 10 15 20 25 30

METERS 1:48 0 1 2 3 4 5 6 7 8 9 10

MANZANAR WAR RELOCATION CENTER - AUDITORIUM BUILDING
INDEPENDENCE (VICINITY) INYO COUNTY CALIFORNIA

U.S. HWY 395

MANZANAR NATIONAL HISTORIC SITE
PHOTOGRAPHIC SURVEY
1984

ZOLTAN SUGAR

HISTORIC AMERICAN BUILDINGS SURVEY
CA-2399-A

SHEET 17 OF 18 SHEETS

LONGITUDINAL SECTION C-C

SOUTH ELEVATION

AUDITORIUM BUILDING EXTERIOR AND INTERIOR VIEWS

FEET 1/4"=1'-0"
METERS 1:48

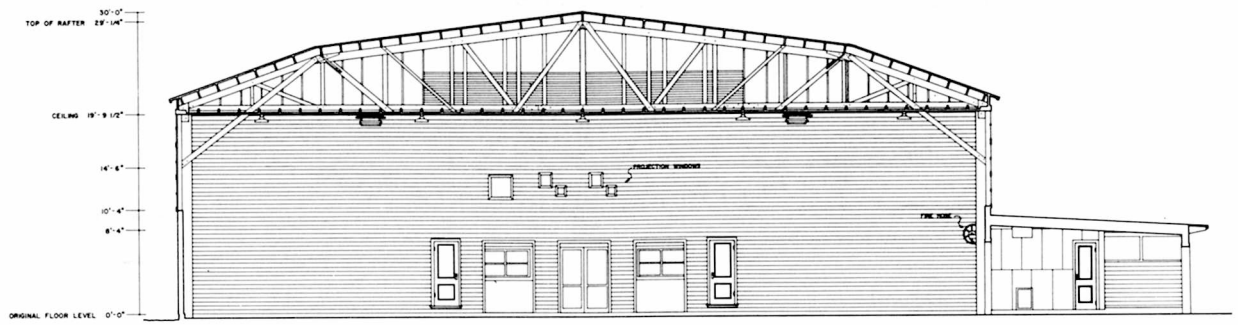
0 5 10 15 20 25 30
0 1 2 3 4 5 6 7 8 9 10

MANZANAR WAR RELOCATION CENTER - AUDITORIUM BUILDING
INYO COUNTY CALIFORNIA

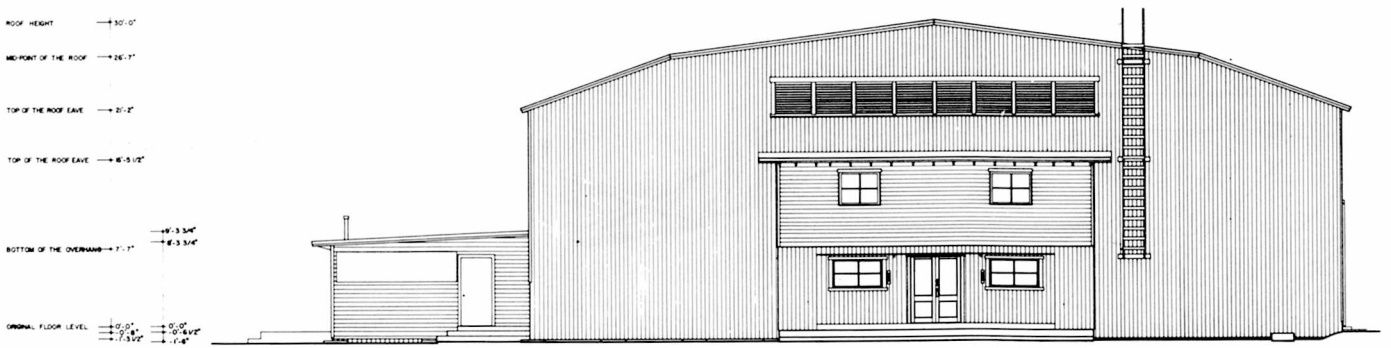
MANZANAR NATIONAL HISTORIC SITE
RECORDING PROJECT 1994

HISTORIC AMERICAN BUILDINGS SURVEY
CA-2399-A

U.S. HWY. 395



TRANSVERSE SECTION B-B



WEST ELEVATION

AUDITORIUM BUILDING EXTERIOR AND INTERIOR VIEWS

FEET 1/8"=1'-0" 0 5 10 15 20 25 30

METERS 1:48 0 1 2 3 4 5 6 7 8 9 10

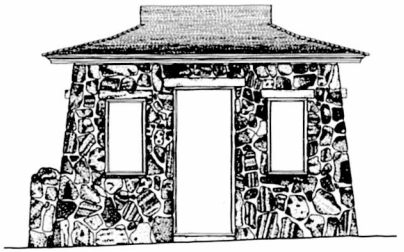
MANZANAR WAR RELOCATION CENTER - AUDITORIUM BUILDING
INYO COUNTY
INDEPENDENCE VICINITY
CALIFORNIA

HISTORIC AMERICAN BUILDINGS SURVEY
CA-2399-A

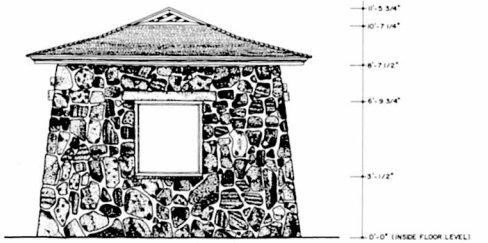
MANZANAR NATIONAL HISTORIC SITE
RECORDING PROJECT 1994
U.S. HWY. 395

JAMES C. ZOLTAN BUSAM & CHRISTOPHER S. SNYDER

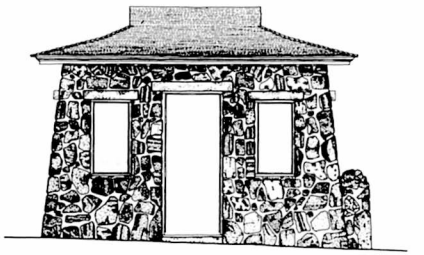
TYPICAL WASHER
- USED WITH 3/4" BOLT AND 1" NUT
1/4" METAL PLATE
DETAIL 2
FEET 1 1/2" = 1'-0"
METERS 1 : 8
1/4" METAL STRAP
DETAIL 1
FEET 1 1/2" = 1'-0"
METERS 1 : 8
NOTE: DOCUMENTS STATE SPLIT-RINGS WERE EMPLOYED - UNABLE TO CONFIRM
2 1/2"
SMALL WASHER, "S" (SEE SECTION BB)
- USED WITH 1/2" BOLT AND 3/4" NUT
- MARKED WITH AN 'S' ON ELEVATION
D1
D2
D3
ISOMETRIC PRATT TRUSS
DETAIL 3
FEET 1 1/2" = 1'-0"
METERS 1 : 8
SECTION BB
SECTION AA
PLAN/ELEVATION PRATT TRUSS
FEET 1/4" = 1'-0"
METERS 1 : 40
MANZANAR WAR RELOCATION CENTER AUDITORIUM BUILDING
INYO COUNTY
CALIFORNIA
HISTORIC AMERICAN ENGINEERING RECORD
CA-235-9-A
MANZANAR NATIONAL HISTORIC SITE
U.S. HWY 395
CHRISTOPHER S. DEITZ & ZOLTAN SUGAR & ANTHONY D. NASH



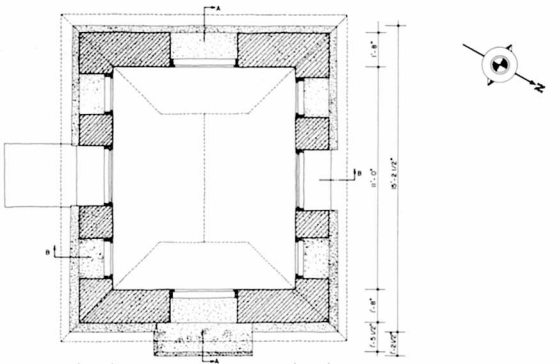
NORTH ELEVATION

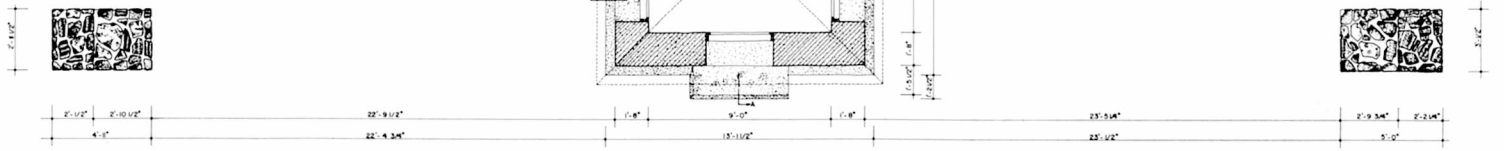


WEST ELEVATION



SOUTH ELEVATION





PLAN



EAST ELEVATION

MILITARY POLICE POST WITH THE ENTRY GATES

FEET 1/2"=1'-0"

METERS 1:24

MANZANAR WAR RELOCATION CENTER - MILITARY POLICE POST

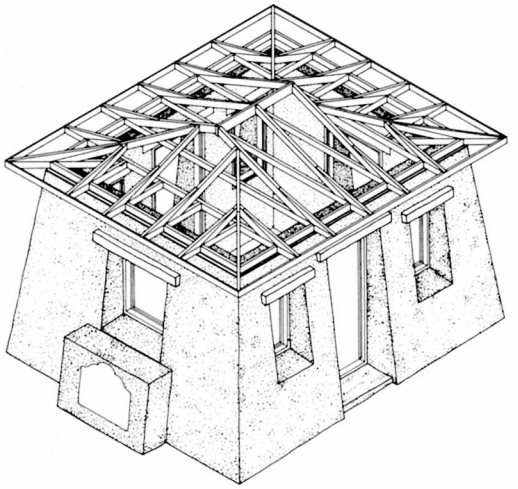
INDEPENDENCE VICINITY INYO COUNTY

CALIFORNIA

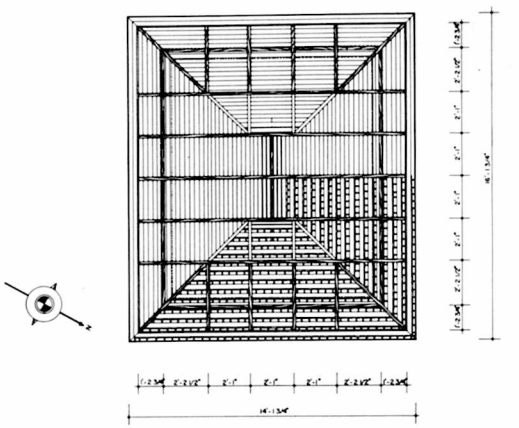
HISTORIC AMERICAN BUILDINGS SURVEY CA-2399-B

MANZANAR NATIONAL HISTORIC SITE PROJECT 1994

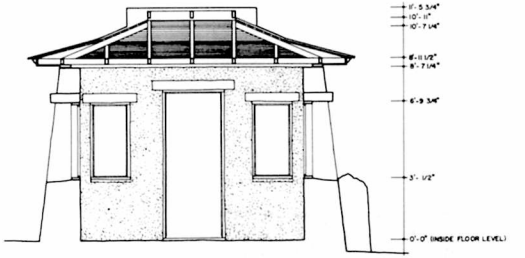
U.S. HWY 395



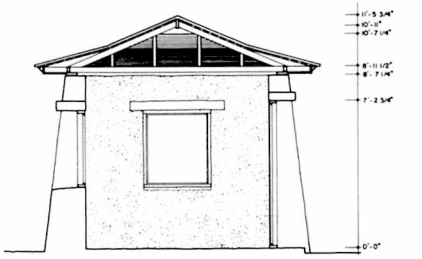
STRUCTURAL ISOMETRIC



REFLECTED CEILING PLAN



SECTION A-A



SECTION B-B

MILITARY POLICE POST STRUCTURE

FEET 1/8"=1'-0"
METERS 1:24

HISTORIC AMERICAN BUILDINGS SURVEY CA-2359-B

SHEET 2 OF 3 SHEETS

MANZANAR WAR RELOCATION CENTER - MILITARY POLICE POST

INDEPENDENCE VICINITY INYO COUNTY CALIFORNIA

MANZANAR NATIONAL HISTORIC SITE PROJECT 1984

U.S. HWY 395

DELINEATED BY: ZOLTAN JOSAN



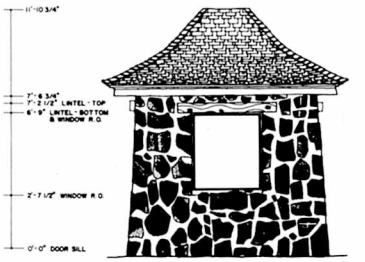
EAST ELEVATION



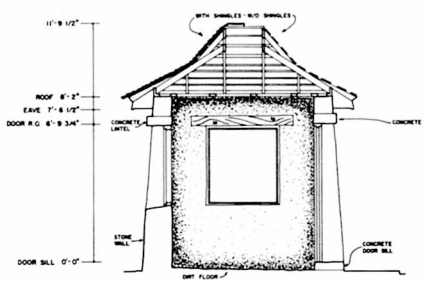
SOUTH ELEVATION



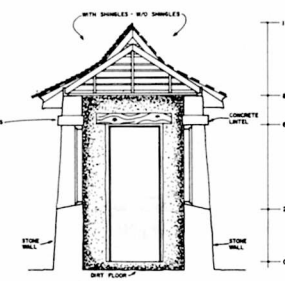
WEST ELEVATION



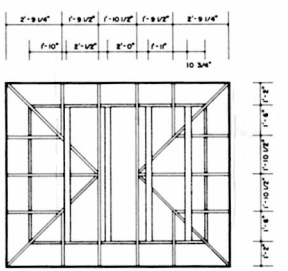
NORTH ELEVATION



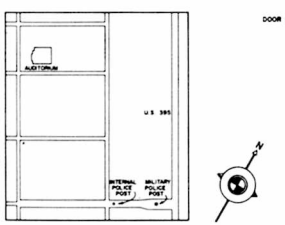
SECTION A-A



SECTION B-B



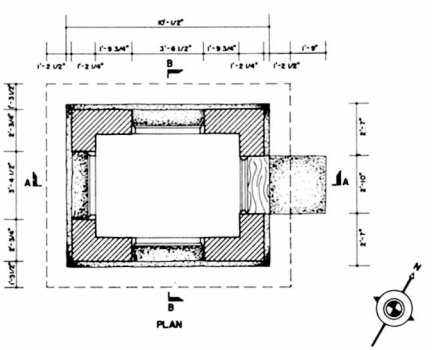
REFLECTED CEILING PLAN



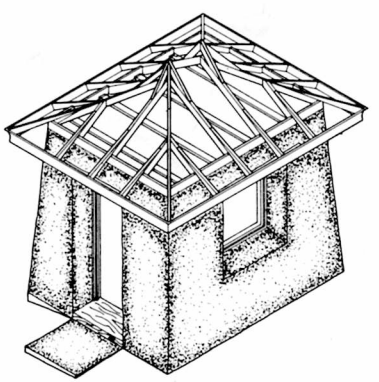
LOCATION MAP

NOTE: SEE SHEET "HISTORIC MAPS" FOR COMPLETE CAMP LAYOUT

NOTE: CONCRETE USED FOR LINTELS AND DOOR SILL HAS BEEN TINTED AND SCORED TO RESEMBLE WOOD TIMBER



PLAN



STRUCTURAL ISOMETRIC

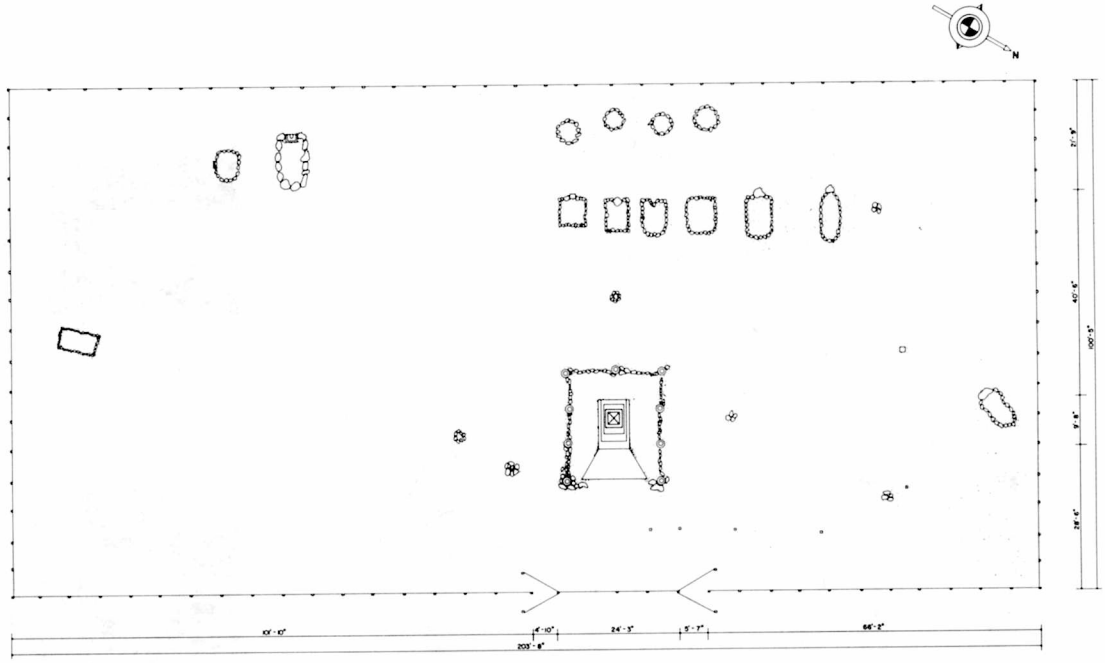
INTERNAL POLICE POST

MANZANAR WAR RELOCATION CENTER - INTERNAL POLICE POST
INYO COUNTY
CALIFORNIA

MANZANAR NATIONAL HISTORIC SITE PROJECT 1994
CHRISTOPHER DWYER

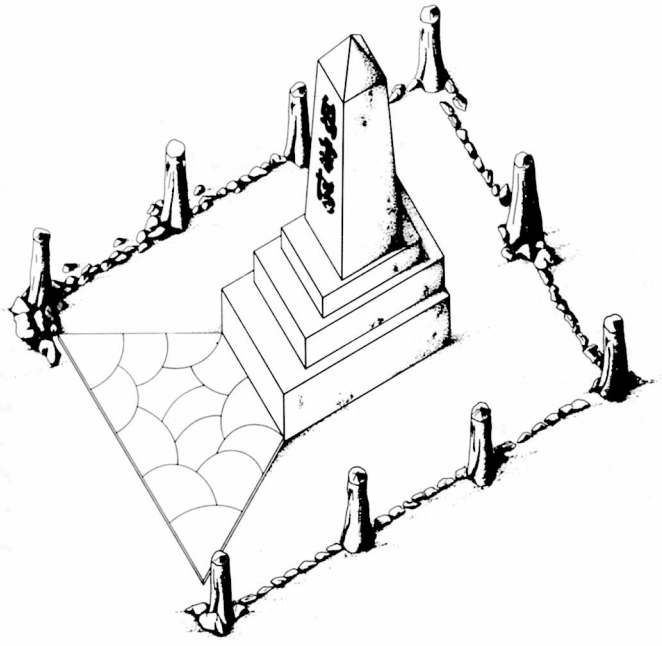
U.S. HWY 395

HISTORIC AMERICAN BUILDINGS SURVEY
CA-2390-C



SITE PLAN

FEET 1/8"=1'-0"
METERS 1:96



MATERIALS LIST

CEMETERY OBELISK

CONCRETE FORMED ON SITE
CONCRETE POSTS(19) STYLIZED TO RESEMBLE TREE STUMPS

AXONOMETRIC-OBELISK

FEET 1/2"=1'-0"
METERS 1:24

DRAWN BY: ANTHONY D. NASH

MANZANAR NATIONAL HISTORIC SITE PROJECT 1994
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

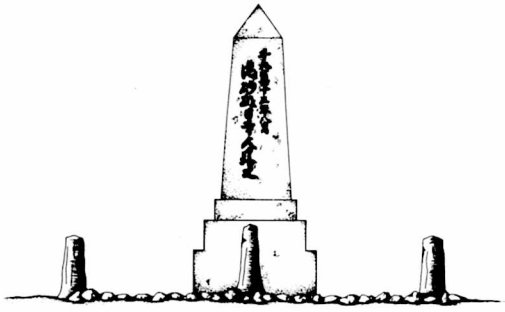
U.S. HWY 395

NAME AND LOCATION OF STRUCTURE
MANZANAR WAR RELOCATION CENTER-CEMETERY
INDEPENDENCE VICINITY INYO COUNTY
CALIFORNIA

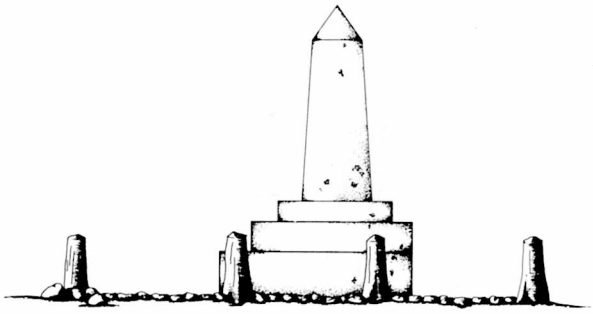
SHEET 1 OF SHEETS 2

HISTORIC AMERICAN BUILDINGS SURVEY
CA 2389 D

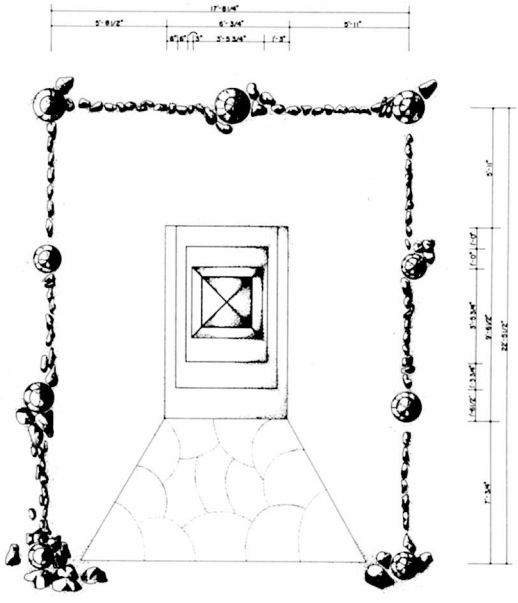
* REPRODUCED, PLEASE CREDIT HISTORIC AMERICAN BUILDINGS SURVEY, NATIONAL PARK SERVICE, NAME OF DELINEATOR, DATE OF THE DRAWING.



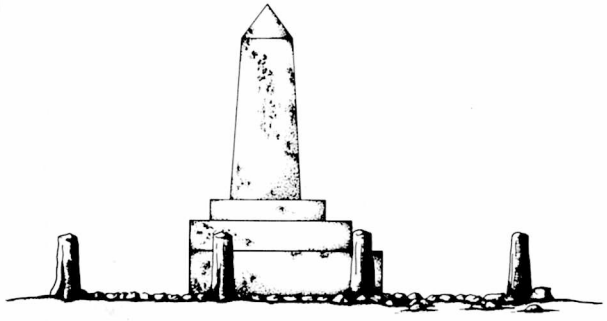
WEST ELEVATION



NORTH ELEVATION



PLAN



SOUTH ELEVATION



EAST ELEVATION

FEET 1/2" = 1'-0"
METERS 1:24

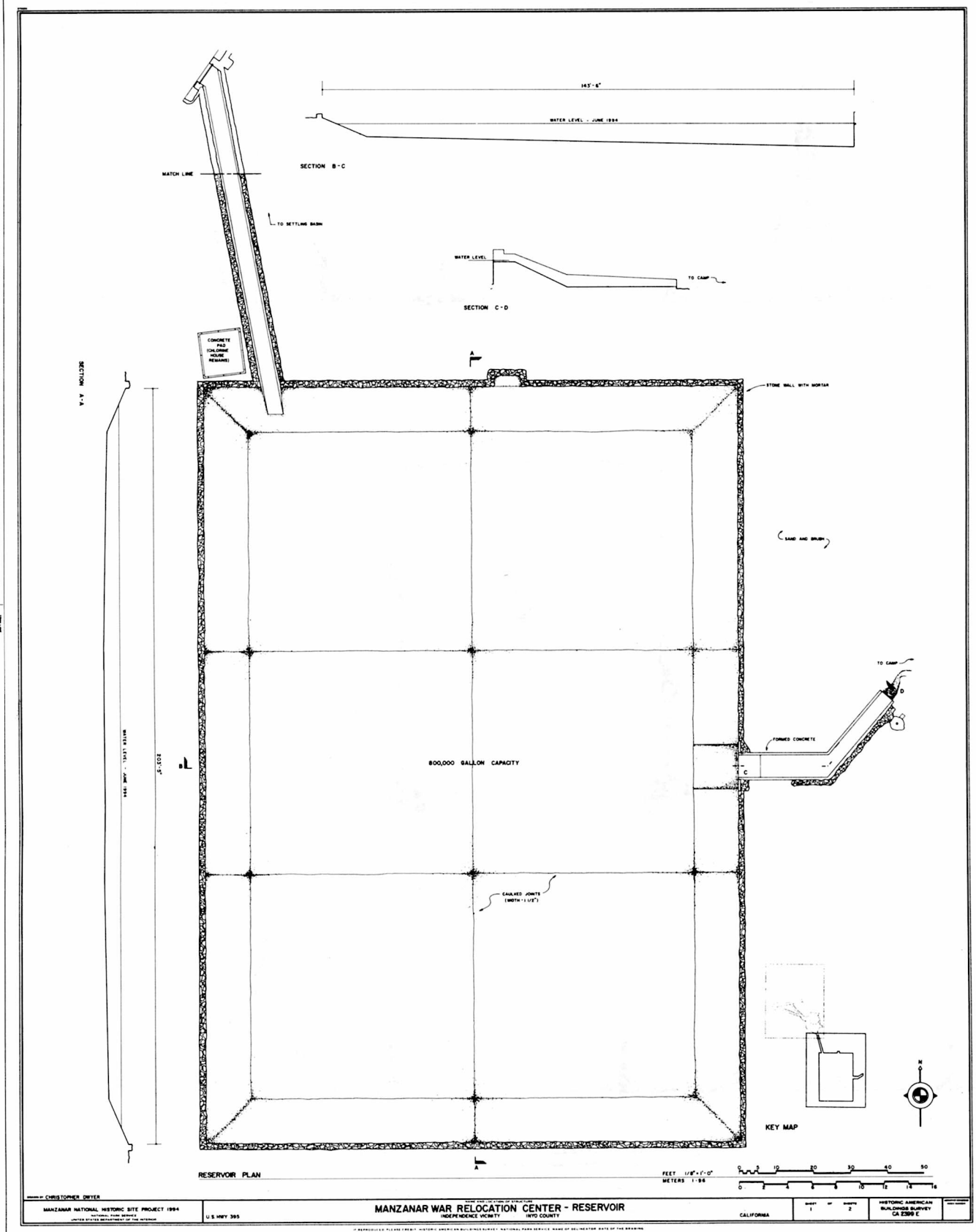
MANZANAR NATIONAL HISTORIC SITE PROJECT 1994
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR

U.S. HWY 395

MANZANAR WAR RELOCATION CENTER - CEMETERY OBELISK
INDEPENDENCE VICINITY INYO COUNTY CALIFORNIA

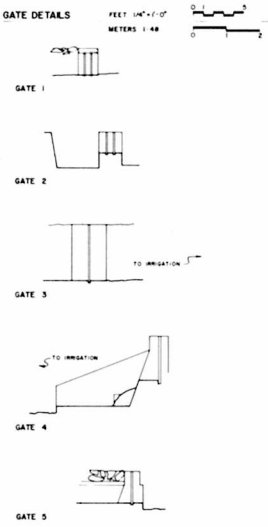
SHEET 2 OF SHEETS 2

HISTORIC AMERICAN BUILDINGS SURVEY
CA 2399 D


143'-6"
WATER LEVEL - JUNE 1994
SECTION B-C
MATCH LINE
TO SETTLING BASIN
WATER LEVEL
TO CAMP
SECTION C-D
CONCRETE PAD (CHLORINE HOUSE REMAINS)
SECTION A-A
WATER LEVEL - JUNE 1994
203'-9"
STONE WALL WITH MORTAR
SAND AND BRUSH
TO CAMP
FORMED CONCRETE
800,000 GALLON CAPACITY
CAULKED JOINTS (WIDTH - 1 1/2")
KEY MAP
N
RESERVOIR PLAN
FEET 1/8"=1'-0"
METERS 1:96
0 5 10 20 30 40 50
0 2 4 6 8 10 12 14 16
drawn by CHRISTOPHER DWYER
MANZANAR NATIONAL HISTORIC SITE PROJECT 1994
NATIONAL PARK SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. HWY 395
NAME AND LOCATION OF STRUCTURE
MANZANAR WAR RELOCATION CENTER - RESERVOIR
INDEPENDENCE VICINITY INYO COUNTY CALIFORNIA
SHEET 1 OF SHEETS 2
HISTORIC AMERICAN BUILDINGS SURVEY
CA 2399 E
REPRODUCED PLEASE CREDIT: HISTORIC AMERICAN BUILDINGS SURVEY, NATIONAL PARK SERVICE. NAME OF DELINEATOR AND DATE OF THE DRAWING.

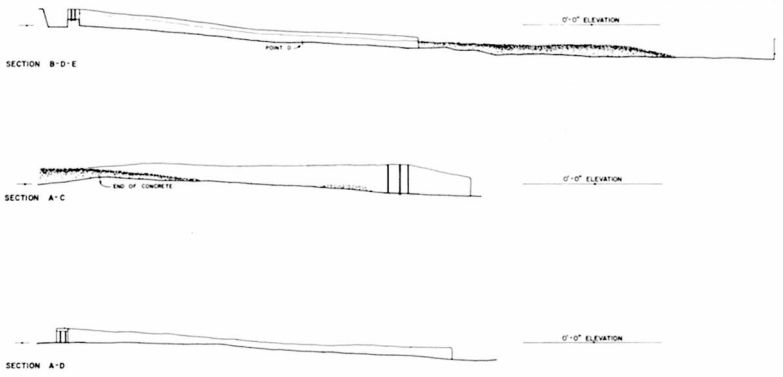
GATE DETAILS

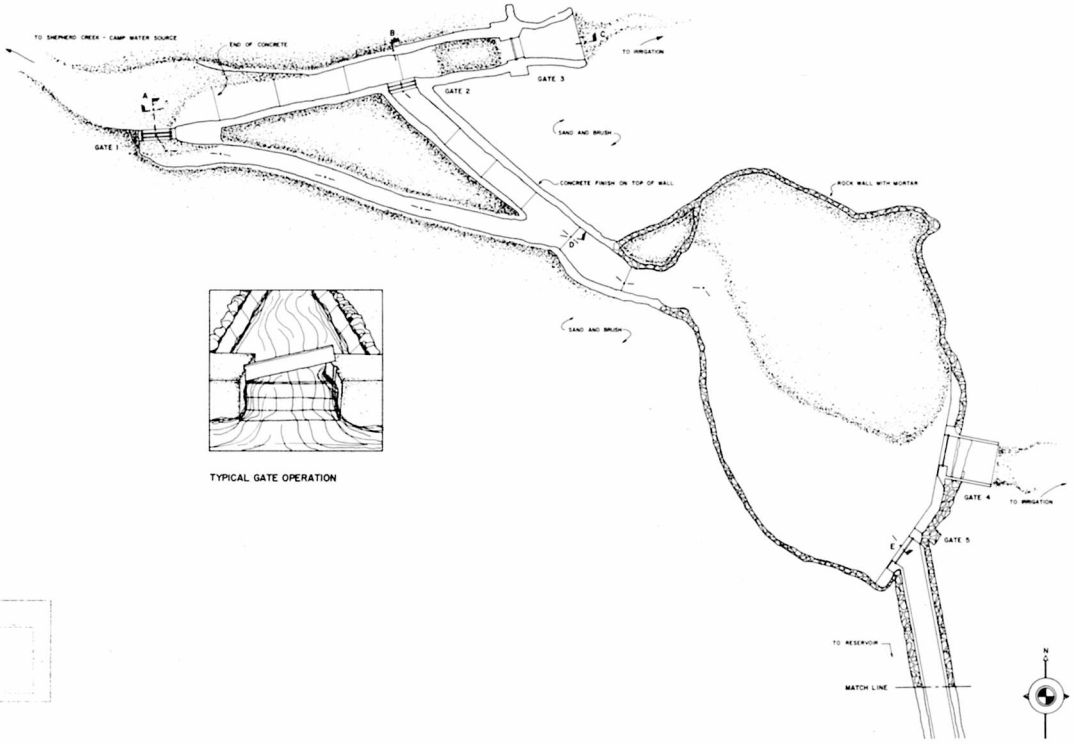
FEET 1/4"=1'-0"
METERS 1:48



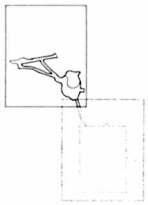
SECTIONS

FEET 1/8"=1'-0"
METERS 1:96





TYPICAL GATE OPERATION



KEY MAP

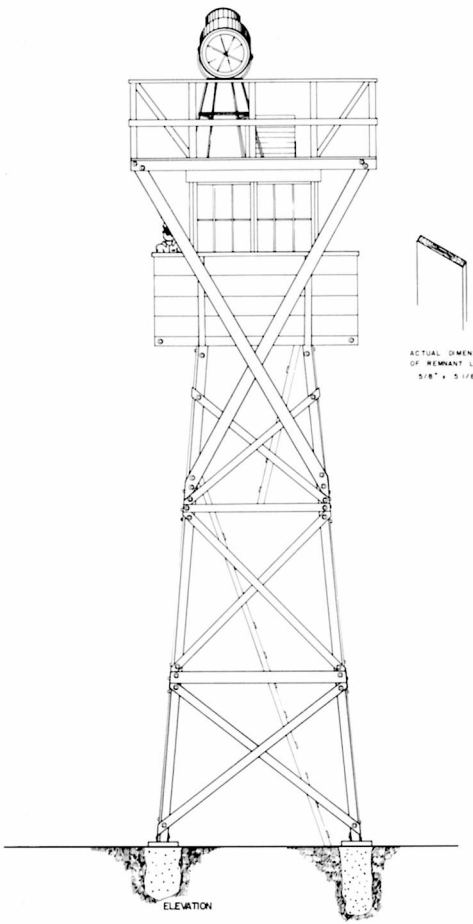
SETTLING BASIN PLAN

FEET 1/8"=1'-0"
METERS 1:96

drawn by: CHRISTOPHER DWYER

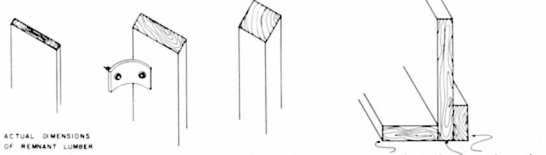
MANZANAR NATIONAL HISTORIC SITE PROJECT 1994 NATIONAL PARK SERVICE UNITED STATES DEPARTMENT OF THE INTERIOR	U.S. HWY. 395	MANZANAR WAR RELOCATION CENTER - RESERVOIR INDEPENDENCE VICINITY INYO COUNTY	CALIFORNIA	SHEET 2 OF SHEETS 2	HISTORIC AMERICAN BUILDINGS SURVEY CA-2399-E

REPRODUCED FROM THE HISTORIC AMERICAN BUILDINGS SURVEY - NATIONAL PARK SERVICE. NAME OF DELINEATOR. DATE OF THE DRAWING.

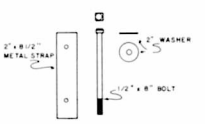


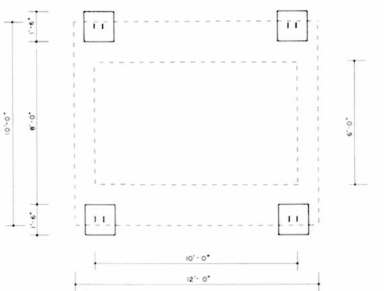
ELEVATION

NOTE: GUARD TOWER DRAWING IS CONJECTURAL BASED ON REMNANT LUMBER, HISTORIC PHOTOS AND GOVERNMENT INVENTORY SPECIFICATIONS. DISCREPANCIES WERE FOUND BETWEEN THE SOURCES AND THE LUMBER.

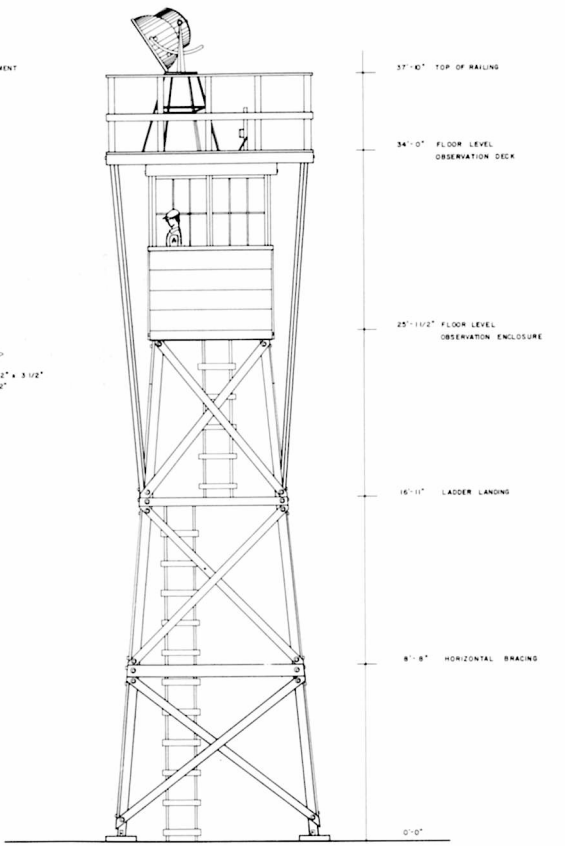


DETAILS
SCALE: 3"=1'-0"





PLAN



ELEVATION

OBSERVATION (GUARD) TOWER

FEET 1/2"=1'-0"
METERS 1:24

MANZANAR WAR RELOCATION CENTER-OBSERVATION (GUARD) TOWER
INDEPENDENCE VICINITY
INYO COUNTY
CALIFORNIA
U.S. HWY 395

MANZANAR NATIONAL HISTORIC SITE
NATIONAL PARK SERVICE

HISTORIC AMERICAN BUILDINGS SURVEY
CA-2393-F

Appendix P

Concordance of Site and Feature Numbers

Most relocation center features within the authorized National Historic Site boundary were designated site MANZ 1993 A-30. Within this area all features and artifacts were recorded block by block. After field work, field notes and maps were used to separate out the pre-relocation center components into logical areally discrete sites, based on artifact and feature distributions. As discussed in Chapter 8, historical site boundaries were defined to include a discrete area or group of features thought to represent one occupation. Prehistoric sites were generally defined following the California Historical Records Inventory System (CHRIS) Eastern Information Center's site density criteria for Inyo County (15 items per 100 square meters, or a feature). Site numbers designate the National Park Service unit acronym, project year, project designation, and sequential number. Site information was recorded on standard Archeological Site Survey Records, and submitted to the CHRIS Eastern Information Center clearinghouse at the University of California, Riverside, for trinomial designations.

Separating out distinct temporal components, even though they overlap (or underlie) the central area of the relocation center, seemed the most useful approach for this and future research. Later, with additional research and analysis, a few more changes had to be made. First, upon more detailed analysis a few sites or portions of sites originally thought to be town-era were determined to relate to the relocation center occupation. Therefore, in this report, those *site* designations were dropped to more clearly reflect their true context and association with site MANZ 1993 A-30: sites MANZ 1993 A-18 and A-25, and portions of A-12, A-16, A-22, and A-28 have been reclassified as relocation center features within MANZ 1993 A-30. Second, during the writing of this report both the original field notes and site records were closely re-examined. Some minor discrepancies were found in the site records, as would be expected in a project of this magnitude. In addition, new data were gathered during subsequent work at the National Historic Site. These corrections and additions have been incorporated into this report, which supersedes the information on the original site records on file at the CHRIS clearinghouse.

To aid future researchers find their way around the various designations used in the field notes, site records, and this report, Tables P.1 and P.2 provide a concordance. CHRIS trinomial designations for each site are listed in Table P.3.

Table P.1.
MANZ 1993 A-30 Feature Designations.

In this Report	In Site Records	In Field Notes and Photo Log	Description
Administration Block			
A-1	A-1	Fea. 1	flagpole, planters, and sidewalk
A-2	A-2	Fea. 2	concrete slab with inscriptions at mess hall
A-3	A-3	Fea. 3	small concrete slab with inscriptions
A-4	A-4	Fea. 4	walkway, steps, sign base
A-5	A-5	Fea. 5	traffic circle with inscriptions
A-6	A-6	Fea. 6	walkway and steps
A-7	A-7	Fea. 7	three small slabs within building
A-8	A-8	Fea. 8	patio wall and concrete slab at recreation building
A-9	A-9	Fea. 9	entry to town hall
A-10	A-10	-	entry to post office
A-11	A-11	-	concrete ditch and storm drain
A-12	A-12	-	storm drains on both sides of road
A-13	A-13	-	small foundation within administration building
A-14	A-14	-	rock alignment around administration building
A-15	A-15	-	rock alignment
A-16	A-16	-	rock alignment at parking area
A-17	A-17	-	rock alignment
A-18	A-18	-	rock lined road
Auditorium Block			
Au-1	Au-1	-	auditorium
Au-2	Au-2	-	clapboard building (removed 1994)
Au-3	Au-3	-	rock/dirt mound (removed 1994)
Camouflage Factory Block			
C-1	C-1	Fea. 1	concrete slab with steel drum rust stains
C-2	C-2	Fea. 2	concrete slab and adjacent small slab
C-3	C-3	-	concrete slab
C-4	C-4	-	concrete slab
C-5	C-5	-	concrete slab
C-6	C-6	-	concrete feature
C-7	-	-	artifact concentration
Children's Village Block			
C-1	C-1	Fea. 1	orchard
C-2	C-2	Fea. 2	orchard
C-3	C-3	Fea. 3	pond/settling basin
C-4	C-4	Fea. 4	footing blocks
C-5	C-5	Fea. 5	footing blocks
C-6	C-6	Fea. 6	footing blocks
C-7	C-7	Fea. 7	pond/depression
C-8	MANZ 1993 B RD-1	Fea. 8	recently dumped prehistoric artifacts
C-9	MANZ 1993 B RD-1	-	recently dumped prehistoric artifacts
Doctors and Nurses Quarters Block			
D-1	D-1	Fea. 1	sidewalk
D-2	D-2	Fea. 2	concrete stoop
D-3	D-3	Fea. 3	concrete stoop, nearby water pipe
D-4	D-4	Fea. 4	orchard
D-5	D-5	-	orchard

Table P.1.
MANZ 1993 A-30 Feature Designations.

In this Report	In Site Records	In Field Notes and Photo Log	Description
Garage Block			
G-1	G-1	Fea. 1	concrete slab
G-2	G-2	-	concrete slab
G-3	G-3	-	concrete slab
G-4	G-4	-	concrete slab
G-5	G-5	-	concrete slab
Hospital Block			
H-1	H-1	-	concrete and rock retaining wall
H-2	H-2	Fea. 2	bench
H-3	H-3	Fea. 3	steps
H-4	H-4	Fea. 4	steps
H-5	H-5	Fea. 5	pond/garden
H-6	H-6	Fea. 6	pulled manhole
H-7	H-7	Fea. 7	steps
H-8	H-8	Fea. 8	retaining wall
H-9	H-9	Fea. 9	wash rack slab
H-10	H-10	Fea. 10	heater room slab
H-11	H-11	Fea. 11	laundry slab
H-12	H-12	-	steps
H-13	H-13	-	steps
H-14	H-14	-	steps
H-15	H-15	-	rock alignment along road
H-16	H-16	-	rock circles around dead trees
H-17	H-17	Area A	artifact concentration
H-18	H-18	Area B	artifact concentration
H-19	H-19	Area C	artifact concentration
H-20	H-20	-	morgue slab
H-21	H-21	-	sidewalk with inscriptions
Judo House Block (Firebreak E3)			
J-1	J-1	Fea. 1	judo storage room foundation
J-2	J-2	-	judo house remains
J-3	J-3	Fea. 3	cobble and concrete walkways
		Fea. 2	floor safe
Root Storage Block			
R-1	R-1	-	depression and mound
R-2	R-2	-	concrete border remnants, mound
Service Station Area			
Se-1	Se-1	Fea. 5	gas pump slab
Se-2	Se-2	Fea. 6	concrete slab
Se-3	Se-3	-	stoops, rock alignment
Se-4	-	-	gate remnants
Se-5	-	-	waterline access hole
Se-6	-	-	depression (removed fuel tank?)
		Fea. 4	footing blocks (Staff Appartment)

Table P.1.
MANZ 1993 A-30 Feature Designations.

In this Report	In Site Records	In Field Notes and Photo Log	Description
Staff Housing Blocks			
S-1	S-1	Fea. 1	director's residence, patio wall
S-2	S-2	-	entry
S-3	S-3	Fea. 3	cobblestone stoop
S-4	S-4	Fea. 4	concrete slabs
S-5	S-5	Fea. 5	clothesline
S-6	S-6	Fea. 6	concrete slab
S-7	S-7	-	rock alignment
S-8	S-8	Fea. 8	concrete ditch
S-9	S-9	Service Station Blk Fea. 1	rock ditch
S-10	S-10	Service Station Blk Fea. 2	storm drain
S-11	S-11	Service Station Blk Fea. 3	concrete and rock ditch
S-12	S-12	-	rock alignment
S-13	S-13	-	rock alignment
S-14	S-14	-	rock alignment along road
S-15	S-15	-	rock alignment
S-16	S-16	-	rock alignment
S-17	S-17	-	rock alignment
S-18	S-18	-	rock alignment along road
S-19	S-19	-	rock alignment, parking area
-	-	Fea. 2	water heater slab at director's residence
Warehouse Blocks			
W-1	W-1	West Warehouse Blk Fea. 1	concrete slab
W-2	W-2	-	latrine slab
W-3	W-3	-	latrine slab
W-4	W-4	East Warehouse Blk Fea. 1	charcoal concentration
Block 1			
1-1	1-1	Fea. 5	storm drain
1-2	1-2	Fea. 6	storm drain
1-3	1-3	-	rock alignment
1-4	1-4	-	rock alignment along road
-	-	Fea. 1	manhole with cover
-	-	Fea. 2	manhole
-	-	Fea. 3	faucet and rocks
-	-	Fea. 4	concrete stoop
-	-	Fea. 7	cattle guard
Block 2			
2-1	2-1	Fea. 1	small pond
2-2	2-2	-	sidewalk?
2-3	2-3	-	rock alignment/entry
2-4	2-4	-	rock alignment/garden
-	-	Fea. 2	faucet
-	-	Fea. 3	mens latrine
-	-	Fea. 4	womens latrine
-	-	Fea. 5	laundry

Table P.1.
MANZ 1993 A-30 Feature Designations.

In this Report	In Site Records	In Field Notes and Photo Log	Description
Block 3			
3-1	3-1	Fea. 1	concrete stoop w/imbedded glazed pipe fragments
3-2	3-2	-	stoop
3-3	3-3	Fea. 3	mens latrine entry
3-4	3-4	-	stoop
3-5	3-5	Fea. 5	rock circle, stump
3-6	3-6	Fea. 6	cobblestone stoop
-	-	Fea. 2	footing blocks
-	-	Fea. 4	mens latrine
Block 4			
4-1	4-1	Fea. 1	stoop, cobbles in concrete Barracks 8
4–2	4-2	-	rock alignments/garden
Block 5			
5–1	5-1	-	rock alignment
5–2	5-2	-	stoop
5–3	5-3	-	orchard
Block 6			
6-1	6-1	Fea. 1-2	bamboo enclosure and rock garden
6–2	6-2	-	rock alignments
Block 7			
7-1	7-1	Fea. 1	faucet
7–2	7-2	-	rock alignments
Block 8			
8-1	8-1	Fea. 1	cobblestone stoop
Block 9			
9-1	9-1	Fea. 1	faucet, brick, and cobbles
9-2	9-2	Fea. 2	concrete step Barracks 1
9-3	9-3	Fea. 3	stoop Barracks 2
9-4	9-4	Fea. 4	stoop Barr 3
9-5	9-5	Fea. 5	concrete trough Barracks 6
9-6	9-6	Fea. 6	inscription Barracks 6
9-7	9-7	Fea. 7	sidewalk Barracks 7
9-8	9-8	Fea. 8	garden
9-9	9-9	Fea. 9-10	garden complex, concrete step w/wood gain pattern
9-10	9-10	-	rock alignment
Block 10			
10–1	10-1	Fea. 1-2	faucet and concrete with date
10-2	10-2	-	sidewalk
10-3	10-3	Fea. 3	garden, mound

Table P.1.
MANZ 1993 A-30 Feature Designations.

In this Report	In Site Records	In Field Notes and Photo Log	Description
Block 11			
11-1	11-1	Fea. 1	steel pipeline
11-2	11-2	Fea. 2	stoop with inscription Barracks 8
11-3	11-3	Fea. 3	faucet, concrete work, and stoop
11-4	11-4	Fea. 4	walkway
11-5	11-5	-	sidewalk
11-6	11-6	-	rock alignment
11-7	11-7	-	stoop
11-8	11-8	-	orchard
Block 12			
12-1	12-1	Fea. 1	pond/garden
12-2	12-2	-	sidewalk
Block 13			
13-1	13-1	Fea. 1	fire department slab
13-2	13-2	Fea. 2	concrete slab between barracks
13-3	13-3	Fea. 3	cans in concrete
13-4	13-4	-	rock alignments
13-5	13-5	-	stoop
13-6	13-6	-	stoop, faucet
13-7	13-7	-	stoop/rock alignment
13-8	13-8	Fea. 4	concrete blocks, one with date (from auditorium)
Block 14			
14-1	14-1	Fea. 1	stoop and garden
14-2	14-2	Fea. 2	cans in concrete, rock alignment
14-3	14-3	Fea. 3	stoop and garden
14-4	14-4	Fea. 4	garden
14-5	14-5	-	stoop/rock alignment
14-6	14-6	-	rock alignment/stoop
14-7	14-7	-	stoop/rock alignment
14-8	14-8	-	rock alignment
14-9	14-9	-	depression/rock alignment
Block 15			
15-1	15-1	Fea. 1	stoop and garden Barracks8
15-2	15-2	Fea. 2	rock alignment
15-3	15-3	Fea. 3	stoop and walkway Barracks 1
15-4	15-4	Fea. 4	stoop Barracks 1
15-5	15-5	Fea. 5	stoop with date
15-6	15-6	-	sidewalks
15-7	15-7	-	stoops/rock alignment
15-8	15-8	-	stoops/rock alignment
Block 16			
16-1	16-1	Fea. 1	rock alignments
Block 17			
17-1	17-1	Fea. 1	broken concrete with date
17-2	17-2	Fea. 2	garden with cactus
17-3	17-3	-	rock alignment
17-4	17-4	-	rock alignment, curb
17-5	17-5	-	wall
17-6	17-6	-	rock alignment

Table P.1.
MANZ 1993 A-30 Feature Designations.

In this Report	In Site Records	In Field Notes and Photo Log	Description
Block 18			
18-1	18-1	-	rock alignments
18–2	18-2	-	sidewalk
18–3	18-3	-	rock alignment
18–4	18-4	-	sidewalk
18–5	18-5	-	concrete slab
18–6	18-6	-	rock alignment
-	-	Fea. 1	manhole
-	-	Fea. 2	recent ditch
Block 19			
19-1	19-1	Fea. 1	rock and concrete garden Barracks 5, stoops
19-2	19-2	Fea. 2	inscription on concrete at faucet Barracks 12
19–3	19-3	-	stoop Barracks 1
Block 20			
20-1	20-1	Fea. 1	stoop, rock alignments Barracks 4
20-2	20-2	Fea. 2	stoop Barracks 6
20-3	20-3	-	stoop/rock alignment
20-4	20-4	Fea. 4	rock alignment Barracks 10
20-5	20-5	-	stoop/rock alignment
20–6	20-6	-	stoop
-	-	Fea. 3	grease trap
Block 21			
21-1	21-1	Fea. 1	asphalt walkway Barracks 9, concrete sidewalk
21-2	21-2	Fea. 2	sidewalk Barracks 10
21-3	21-3	Fea. 3	faucet, rock work Barracks 10
21-4	21-4	Fea. 4	rock alignments
21–5	21-5	-	rock alignments
21–6	21-6	-	stoop
21–7	21-7	-	rock alignments
21–8	21-8	-	pipes
21–9	21-9	-	rock alignment
21–10	21-10	-	rock alignment
21–11	21-11	-	rock alignment
Block 22			
22-1	22-1	Fea. 1	stoop Barracks 13
22-2	22-2	Fea. 2	stoop with date Barracks 14, sidewalk
22-3	22-3	Fea. 3	garden
22-4	22-4	-	rock alignments, stoops
22-5	22-5	-	rock alignments, stoops
22-6	22-6	-	rock alignments, stoops
22-7	22-7	-	rock alignments, stoops
22-8	22-8	-	rock alignments, stoops
22-9	22-9	-	rock alignments, stoops
22-10	22-10	-	rock alignments, stoops
22-11	22-11	-	rock alignments, stoops
Block 23			
23–1	23-1	-	walkway, rock alignments
23–2	23-2	-	rock alignment

Table P.1.
MANZ 1993 A-30 Feature Designations.

In this Report	In Site Records	In Field Notes and Photo Log	Description
Block 24			
24-1	24-1	Fea. 1	faucet, pool, and concrete work
24-2	24-2	Fea. 2-4	exposed pipes in gully
24-3	24-3	-	rock alignment, stoop
24-4	24-4	-	rock alignments
24-5	24-5	-	rock alignment
Block 25			
25-1	25-1	-	rock alignments
25-2	25-2	-	rock alignments, stoop
25-3	25-3	-	rock alignments
25-4	25-4	-	rock alignments, stoop
Block 26			
26-1	26-1	Fea. 1	rock alignment and stoop Barracks 1
26-2	26-2	Fea. 2	pond and garden
26-3	26-3	-	rock alignments
26-4	26-4	-	rock alignments, sidewalk
Block 27			
27-1	27-1	Fea. 1	stoop Barracks 3
27-2	27-2	-	rock alignment, fence
27-3	27-3	-	rock alignment, stoop
Block 28			
28-1	28-1	-	stoop
Block 29			
29-1	29-1	Fea. 1	faucet and concrete trough, rock alignment, stoop
29-2	29-2	Fea. 2	clothesline post
29-3	29-3	-	sidewalk
29-4	29-4	-	sidewalk
29-5	29-5	-	rock alignment
29-6	29-6	-	rock alignment
29-7	29-7	-	rock alignment along road
29-8	29-8	-	rock alignment along road
29-9	29-9	-	orchard
29-10	-	-	artifact concentration
29-11	-	-	artifact concentration
Block 30			
30-1	30-1	-	stoop
30-2	30-2	-	rock alignment
Block 31			
31-1	31-1	Fea. 1	small garden/mound
31-2	31-2	Fea. 2	rock alignment
31-3	31-3	Fea. 3	stoop Barracks 14
31-4	31-4	Fea. 4	stoop Barracks 14
31-5	31-5	-	stoop, rock alignment
31-6	31-6	-	rock alignments
31-7	31-7	-	sidewalk, rock alignments
31-8	31-8	-	stoop

Table P.1.
MANZ 1993 A-30 Feature Designations.

In this Report	In Site Records	In Field Notes and Photo Log	Description
Block 32			
32-1	32-1	Fea. 1	stoop Barracks 6
32-2	32-2	Fea. 2	stoop Barracks 3
32-3	32-3	Fea. 3	faucet and concrete Barracks 8
32-4	32-4	Fea. 4	rock alignment, stoop Barracks 8
32–5	32-5	-	sidewalk, rock alignment
Block 33			
33–1	33–1	-	rock alignments
33–2	33–2	-	rock alignments
33–3	33–3	-	stoop
33–4	33–4	-	stoop
33–5	33–5	-	fencing
33–6	33–6	-	stoop
Block 34			
34-1	34-1	Fea. 1	large upright pedestaled boulder
34-2	34-2	Fea. 2	raised rectangular area with rock border
34-3	34-3	Fea. 3	small pond
34-4	34-4	Fea. 4	pond, stream, and garden
34–5	34-5	-	dated stoop, walkway
34–6	34-6	-	large upright pedestaled boulder
34–7	34-7	-	rock alignment
34–8	34-8	-	orchard
34–9	34-9	-	rock work
Block 35			
35-1	35-1	Fea. 1	garden, rock alignments, planters
35-2	35-2	Fea. 2	rock alignment
Block 36			
36-1	36-1	Fea. 1	pond and garden
36-2	36-2	Fea. 2	cactus garden
36–3	36-3	-	sidewalk
36–4	36-4	-	sidewalk
Firebreak A6			
A6-1	A6-1	Fea. 1	baseball field
A6-2	A6-2	Fea. 5	baseball field
A6–3	A6-3	-	artifact concentration
Firebreak A9			
A9-1	A9-1	Fea. 3	depression
A9-2	A9-2	Fea. 2	wooden home plate
		Fea. 1	powerline and road
Firebreak B3			
B3-1	B3-1	-	low mound
B3-2	B3-2	-	capped water pipe
B3-3	B3-3	Fea. 3	rock alignment
B3-4	B3-4	Fea. 4	rock alignments, capped water pipe
B3-5	B3-5	Fea. 5	tennis court remnants
B3-6	B3-6	Fea. 1	tennis court, concrete border
B3-7	B3-7	Fea. 7	fire hydrant and rocks
B3-8	B3-8	Fea. 2	rock circles and alignment
-	-	Fea. 6	burned (?) soil

Table P.1.
MANZ 1993 A-30 Feature Designations.

In this Report	In Site Records	In Field Notes and Photo Log	Description
Firebreak B6			
Firebreak B9			
Firebreak C0			
C0-1	C0-1	-	charcoal concentration
Firebreak C1			
C1-1	C1-1	Fea. 1	posts, cut flush to ground
Firebreak C2			
Firebreak C3			
C3-1	C3-1	-	lumber concentration
-	-	Fea. 1	collapsed road
Firebreak C4			
-	-	Fea. 1	manhole with cover
-	-	Fea. 2	linear depression (removed waterline?)
-	-	Fea. 3	gully erosion
Firebreak C5			
C5-1	C5-1	Fea. 3	concrete, wood support
-	-	Fea. 2	bucket
-	-	Fea. 4	carbon rod
Firebreak C6			
Firebreak C7			
C7-1	C7-1	-	nail concentration
Firebreak C8			
C8-1	C8-1	-	orchard remnants
Firebreak C9			
C9-1	C9-1	Area 1	artifact concentration
C9-2	C9-2	Area 2	artifact concentration
C9-3	C9-3	-	arrow of rocks
C9-4	C9-4	-	artifact concentration
Firebreak D3			
D3-1	D3-1	Fea. 1	waterline access cover
Firebreak D6			
D6-1	D6-1	Fea. 1	lumber concentration
D6-2	-	-	artifact concentration
D6-3	-	-	artifact concentration
-	-	Fea. 2	tree alignment
-	-	Fea. 3	ditch (?)

Table P.1.
MANZ 1993 A-30 Feature Designations.

In this Report	In Site Records	In Field Notes and Photo Log	Description
Firebreak E6			
E6-1	E6-1	-	artifact concentration
E6-2	-	-	artifact concentration
Firebreak F3			
F3-1	F3-1	Fea. 1	scattered rock and mound
F3-2	F3-2	Fea. 2	concrete slab
F3-3	F3-3	Fea. 3	steel pipe
F3-4	F3-4	-	steel pipe
F3-5	F3-5	-	steel pipe
F3-6	F3-6	-	ditch with in situ wood remains
F3-7	F3-7	-	ditch with in situ wood remains
F3-8	F3-8	-	ditch
Firebreak H3			
H3-1	H3-1	-	ditch with in situ wood remains
H3-2	H3-2	-	ditch with rock and concrete culvert
H3-3	H3-3	-	ditch with in situ wood remains
H3-4	H3-4	-	ditch with in situ wood remains
H3-5	H3-5	-	ditch with in situ wood remains
-	-	Fea. 1	tree alignment
-	-	Fea. 2	recent ditch
Firebreak H6			
H6-1	H6-1	-	orchard remnants
Perimeter			
P-1	P-1	NWP, Area L1	artifact concentration
P-2	P-2	NWP, Fea. 6	ditch, fencing, posts
P-3	P-3	NWP, Fea. 7	small concrete slab
P-4	P-4	NWP, Fea. 5	wooden weir box
P-5	P-5	-	earthen ditches
P-6	P-6	NWP, Fea. 8	terraces, victory gardens
P-7	P-7	NWP, Fea. 9	concrete structure foundation
P-8	P-8	-	rock concentration (guardhouse)
P-9	MANZ 1993 A-12, Fea. 2	NWP, Fea. 10A	concrete slab
P-10	MANZ 1993 A-12, Fea. 3	-	well
P-11	MANZ 1993 A-12, Locus A	NWP, Area Q	artifact concentration
P-12	MANZ 1993 A-12, Locus B	NWP, Area P1	artifact concentration
P-13	MANZ 1993 A-12, Locus C	NWP, Area P2	artifact concentration
P-14	P-9	NWP, Fea. 13B	barbecue grill
P-15	P-10	NWP, Fea. 13A	barbecue grill
P-16	P-11	NEP, Area C	artifact concentration
P-17	P-12	NEP, Area E	artifact concentration
P-18	MANZ 1993 A-25, Locus A	NEP, Area F1	artifact concentration and depression
P-19	MANZ 1993 A-25, Locus B	NEP, Area F2	artifact concentration
P-20	MANZ 1993 A-25, Locus C	NEP, Area G	artifact concentration
P-21	P-13	NEP, Fea. 1	concrete ditch, victory garden
P-22	MANZ 1993 A-16, Locus A	NEP, Area J	artifact concentration
P-23	P-14	NEP, Area N2	artifact concentration
P-24	P-15	NEP, Area O	artifact concentration
P-25	P-16	NEP, Area P	artifact concentration
P-26	MANZ 1993 A-18, Locus A	NEP, Area Q1	artifact concentration
P-27	MANZ 1993 A-18, Locus B	NEP, Area Q2	artifact concentration
P-28	MANZ 1993 A-18, Locus C	NEP, Area R	artifact concentration
P-29	P-17	-	Watchtower 8

Table P.1.
MANZ 1993 A-30 Feature Designations.

In this Report	In Site Records	In Field Notes and Photo Log	Description
Perimeter (continued)			
P-30	MANZ 1993 A-22, Locus A	NEP, Area T1	artifact concentration
P-31	MANZ 1993 A-22, Locus B	NEP, Area T2	artifact concentration
P-32	MANZ 1993 A-22, Locus C	NEP, Area T3	artifact concentration
P-33	MANZ 1993 A-22, Locus D	NEP, Area T4	artifact concentration
P-34	P-18	NEP, Area U1-2	artifact concentration
P-35	P-19	-	orchard
P-36	P-20	NEP, Fea. 5	barrels and asphalt
P-37	P-21	NEP, Fea. 6	rock lined ditch
P-38	P-22	NEP, Fea. 7, 8, 10, 18A-B	entrance, parking area, wall stubs
P-39	P-23	NEP, Fea. 9	entrance sign
P-40	P-24	NEP, Fea. 16	military police post
P-41	P-25	NEP, Fea. 17	internal police post
P-42	P-26	NEP, Fea. 19	police station slab and rock alignments
P-43	P-27	-	artifact concentration
P-44	P-28	NEP, Area Y2	artifact concentration
P-45	P-29	NEP, Area X	artifact concentration
P-46	P-30	NEP, Area Y1	artifact concentration
P-47	P-31	-	Watchtower 7 and artifact concentration
P-48	P-32	-	fence posts
P-49	P-33	-	Watchtower 6, rocks, fence post
P-50	P-34	-	fence posts
P-51	P-35	-	fence posts
P-52	P-36	SWP, Fea. 5	small barbecue grill
P-53	P-37	-	structure pad with footing blocks
P-54	P-38	-	structure pad with footing blocks
P-55	P-39	-	structure pad with footing blocks
P-56	P-40	-	concrete slab, mostly buried
P-57	P-41	SWP, Area E, Fea. 9	artifact concentration and trees
P-58	P-42	SWP, Fea. 3	depressions
P-59	P-43	SWP, Area D	artifact concentration
P-60	P-44	SWP, Fea. 2A	tamarisk and fence
P-61	P-45	SWP, Fea. 2B	small concrete slab
P-62	P-46	SWP, Area C1-2	two areas of step rubble
P-63	P-47	-	Watchtower 8
P-64	P-48	SWP, Fea. 1	depressions and concrete rubble, concrete wall
P-65	P-49	SWP, Area B	artifact concentration
P-66	P-50	SWP, Area A	artifact concentration
P-67	P-51	-	rocks and asphalt (guardhouse)
P-68	P-52	-	orchard
P-69	P-53	-	three waterline access covers
P-70	P-54	-	Watchtower 5
P-71	-	-	tree alignment
P-72	P-55	NWP, Area C3	artifact concentration
P-73	-	-	pulled watchtower footings
P-74	-	-	pulled watchtower footings
P-75	-	-	highway R-O-W fence
P-76	-	-	highway R-O-W fence
P-77	-	-	fence
P-78	-	-	fence
P-79	-	-	fence
P-80	-	-	fence posts
P-81	-	-	fence posts

Table P.2.
Site Concordance.

In this Report	In Site Records	In Field Notes and Photo Log	Description/Common Name
MANZ 1993 A-1	MANZ 1993 A-1	Firebreak B6, Area 1	Native American Indian site
MANZ 1993 A-2	MANZ 1993 A-2	Judo Blk; Blks 15-17, 21, 22; Firebreaks C2-C7, D3, D6	Native American Indian site
Locus A	Locus A		midden
Locus B	Locus B		midden
Locus C	Locus C		artifact concentration
MANZ 1993 A-3	MANZ 1993 A-3	Blks 13, 14, 19, 20	Native American Indian site
Locus A	Locus A		artifact concentration
MANZ 1993 A-4	MANZ 1993 A-4	East and West Warehouse Blks; SWP, Areas 4, F-H	Native American Indian site/ Parker House
Locus A	Locus A	SWP, Area 1	midden/historical artifact scatter
Locus B	Locus B	SWP, Area 2	midden
Locus C	Locus C	SWP, Area 3	midden, burial
Locus D	Locus D	SWP, Area 4	midden
Locus E	Locus E	East Warehouse Blk	prehistoric artifact scatter
Locus F	Locus F	SWP, Area H	historical artifact concentration
Locus G	Locus G	SWP, Area G	historical artifact concentration
Locus H	Locus H	SWP, Area F	historical artifact concentration
MANZ 1993 A-5	MANZ 1993 A-5	-	town-era pipeline
MANZ 1993 A-6	MANZ 1993 A-6		Gilmer Farm
Feature 1	Feature 1	NWP, Fea. 4a	basement
Feature 2	Feature 2	NWP, Fea. 4b	well
Feature 3	Feature 3	NWP, Area E	historical artifact concentration
MANZ 1993 A-7	MANZ 1993 A-7		town-era dump
Locus A	Locus A	NWP, Area D	historical artifact concentration
Locus B	Locus B	NWP, Area F1	historical artifact concentration
Locus C	Locus C	NWP, Area F2	historical artifact concentration
Locus D	Locus D	NWP, Area G1	historical artifact concentration
Locus E	Locus E	NWP, Area G2	historical artifact concentration
Locus F	Locus F	NWP, Area H	historical artifact concentration
Locus G	Locus G	NWP, Area I	historical artifact concentration
Locus H	Locus H	NWP, Area K	historical artifact concentration
Locus I	Locus I	NWP, Area J1	historical artifact concentration
Locus J	Locus J	NWP, Area J2	historical artifact concentration
MANZ 1993 A-8	MANZ 1993 A-8	Hospital Blk, Fea. 12	Christopher Farm
MANZ 1993 A-9	MANZ 1993 A-9	Hospital Blk, Fea. 1	Wilder Farm
MANZ 1993 A-10	MANZ 1993 A-10	NWP, Area L1	John Meyers Farm
MANZ 1993 A-11	MANZ 1993 A-11	NWP, Area M	Graham Farm (dump)
MANZ 1993 A-12	MANZ 1993 A-12		Well No. 169
	Feature 1	NWP, Fea. 10B	buried concrete diversion box
	Feature 2	-	well

Table P.2.
Site Concordance.

In this Report	In Site Records	In Field Notes and Photo Log	Description/Common Name
MANZ 1993 A-13	MANZ 1993 A-13		OVI headquarters/J. Shepherd Ranch
Feature 1	Feature 1	NWP, Fea. 12	rock lined road
Feature 2	Feature 2	-	ditch and post alignment
Feature 3	Feature 3	-	earthen ditches
Feature 4	Feature 4	NWP, Fea. 4	foundation posts, leveled area
Feature 5	Feature 5	NWP, Fea. 14B	concrete water trough
Feature 6	Feature 6	NWP, Fea. 14A	concrete water trough
Locus A	Locus A	NWP, Area N1	historical artifact concentration
Locus B	Locus B	NWP, Area N2	historical artifact concentration
Locus C	Locus C	NWP, Area N3	historical artifact concentration
Locus D	Locus D	NWP, Area N4	historical artifact concentration
Locus E	Locus E	NWP, Area N5	historical artifact concentration
Locus F	Locus F	-	historical artifact scatter
Locus G	Locus G	NWP, Area O1	historical artifact concentration
Locus H	Locus H	NEP, Area A	historical artifact scatter
Locus I	Locus I	NEP, Area B	historical artifact concentration
MANZ 1993 A-14	MANZ 1993 A-14	NEP, Area D	historical artifact concentration
MANZ 1993 A-15	MANZ 1993 A-15		Wicks Place/Hawthorne Property
Locus A	Locus A	NEP, Area G	historical artifact concentration
Locus B	Locus B	NEP, Area H	historical artifact concentration
MANZ 1993 A-16	MANZ 1993 A-16		Downtown Manzanar and Lacey Home
Feature 1	Feature 1	-	Community Hall foundation
Feature 2	Feature 2	NEP, Fea. 2	Store basement
Feature 3	Feature 3	-	Garage remains
Locus A	Locus B	NEP, Area K1	historical artifact scatter, leveled area
Locus B	Locus C	NEP, Area K2	burned historical artifacts, leveled area
Locus C	Locus D	NEP, Area M2	historical artifact scatter
Locus D	Locus E	NEP, Area M1	burned historical artifacts, leveled area
Locus E	Locus F	NEP, Area L	historical artifact scatter
Locus F	Locus G	-	historical artifact scatter
Locus G	Locus H	-	historical artifact scatter
MANZ 1993 A-17	MANZ 1993 A-17	NEP, Area N1	Meyer Lumber
MANZ 1993 A-19	MANZ 1993 A-19		Bevis Place/Briggs Property, prehistoric artifact scatter
Feature 1	Feature 1	-	concrete pipeline
Feature 2	Feature 2	Firebreak A6, Fea. 2	posts cut flush to ground
Feature 3	Feature 3	Firebreak A6, Fea. 3	depression
Locus A	Locus A	-	historical artifact scatter
Locus B	Locus B	-	historical artifact scatter
MANZ 1993 A-20	MANZ 1993 A-20		Lenbek and Kemp Homesites
Locus A	Locus A	-	historical artifact scatter
Locus B	Locus B	Firebreak B6, Area 2	historical artifact scatter
Locus C	Locus C	Firebreak B6, Area 4	historical artifact scatter, leveled area
Locus D	Locus D	Firebreak B6, Area 5	historical artifact scatter, depression
Locus E	Locus E	Firebreak B6, Area 6	historical artifact scatter, leveled area
Locus F	Locus F	Firebreak B6, Area 3	historical artifact scatter

Table P.2.
Site Concordance.

In this Report	In Site Records	In Field Notes and Photo Log	Description/Common Name
MANZ 1993 A-21	MANZ 1993 A-21	NEP, Area S	historical artifact scatter
MANZ 1993 A-22	MANZ 1993 A-22	NEP, Fea. 3	Hatfield Property
MANZ 1993 A-23	MANZ 1993 A-23		Bogart Farm
-	-	NEP, Area V	historical artifact scatter
Feature 1	Feature 1	NEP, Fea. 4	buried concrete diversion box
MANZ 1993 A-24	MANZ 1993 A-24	NEP, Area W	Bogart Farm
MANZ 1993 A-26	MANZ 1993 A-26		Capps Homesite
-	-	Firebreak B3, Area 1	historical artifact scatter
-	-	Firebreak B3, Fea. 6	level area
MANZ 1993 A-27	MANZ 1993 A-27	Firebreak C5	historical artifact concentration
MANZ 1993 A-28	MANZ 1993 A-28	Judo Blk, Blk 16, Firebreak F3	Campbell/Ed Shepherd House
Feature 1	Feature 1	Judo Blk, Fea. 1	concrete slabs
Feature 2	Feature 2	Blk 16, Fea. 2	can dump
MANZ 1993 A-29	MANZ 1993 A-29	-	town-era pipeline
MANZ 1993 A-30	MANZ 1993 A-30	(see separate listing)	Manzanar Relocation Center Central Area
MANZ 1993 A-31	MANZ 1993 A-31	Chicken Ranch	Relocation Center Chicken Ranch
MANZ 1993 A-32	MANZ 1993 A-32		Military Police Compound
Feature 1	Feature 1	-	rock alignment
Feature 2	Feature 2	-	rock alignment
Feature 3	Feature 3	SEP, Fea. 3	footing blocks
Feature 4	Feature 4	SEP, Fea. 4	concrete slab
Feature 5	Feature 5	SEP, Fea. 5	rock alignment
Feature 6	Feature 6	SEP, Fea. 6	concrete perimeter foundation
Locus A	Locus A	SEP, Area F	historical artifact scatter
Locus B	Locus B	SEP, Area G	recent trash dump
Locus C	Locus C	SEP, Area H	recent trash dump
MANZ 1993 A-33	MANZ 1993 A-33	Cemetery Features 1-14	Relocation Center Cemetery
MANZ 1993 A-34	MANZ 1993 A-34	SEP, Fea. 1, 2, Area D; SWP, Fea. 7; NEP, Fea. 12-14	Bairs Creek Irrigation System, Bairs Creel Lower Dam
Feature 1	Feature 1	SEP, Fea. 2	dam
Feature 2	Feature 2	SEP, Fea. 1B	settling pond
Feature 3	Feature 3	SEP, Fea. 1A	concrete diversion box
Feature 4	Feature 4	SEP, Fea. 1D	concrete diversion box w/inscriptions
Feature 5	Feature 5	SEP, Fea. 1C	concrete diversion box
Locus A	Locus A	SEP, Area D	historical artifact concentration
MANZ 1993 A-35	MANZ 1993 A-35	SEP, Areas A and C	Relocation Center Factory Area Trash Deposits
Locus A	Locus A	SEP, Area B	historical artifact concentration
Locus B	Locus B	SEP, Area C	historical artifact concentration
MANZ 1993 A-36	MANZ 1993 A-36	SEP, Area A1, A2	Administration Area Trash Scatter

Table P.2.
Site Concordance.

In this Report	In Site Records	In Field Notes and Photo Log	Description/Common Name
MANZ 1993 A-37	MANZ 1993 A-37		Relocation Center Hospital Landfill
Locus A	Locus A	NWP, Area A	hospital landfill
Locus B	Locus B	NWP, Area B	stoves
Locus C	Locus C	NWP, Area C1	post-relocation center landfill
Locus D	Locus D	NWP, Area C2	historical artifact scatter
MANZ 1993 B-1	MANZ 1993 B-1	SW survey area, Site 1; NW survey area, Area O	Native American Indian site with historical component
MANZ 1993 B-2	MANZ 1993 B-2	SW survey area, site 2	Native American Indian site with historical component
MANZ 1993 B-3	MANZ 1993 B-3	SW survey area, Site 3	Native American Indian site
MANZ 1993 B-4	MANZ 1993 B-4	Bairs Ck survey area, Site 4, Area S	Native American Indian site with historical component
MANZ 1993 B-5	MANZ 1993 B-5	NW survey area, Area P; Bairs Ck survey area, Site 5	historic site with prehistoric component
MANZ 1993 B-6	MANZ 1993 B-6	Bairs Ck survey area, Site 6	Native American Indian site
MANZ 1993 B-7	MANZ 1993 B-7	NW survey area, Area A	town-era dump
MANZ 1993 B-8	MANZ 1993 B-8	NW survey area, Area N; SW survey area, Dumps 1, 3, 4	Relocation Center Landfill
MANZ 1993 B-9	MANZ 1993 B-9	NW survey area, Areas B-J	Relocation Center Disposal Pits
MANZ 1993 B-10	MANZ 1993 B-10	NW survey area, Areas P-R	Native American Indian site with historical component
MANZ 1993 B-11	MANZ 1993 B-11	NW survey area, Area L, Fea. 1-8	Relocation Center Water Delivery System
MANZ 1993 B-12	MANZ 1993 B-12	Shepherd Ck Irrigation Fea. 1-6, 8-14, 17, 20	Relocation Center North Fields Irrigation System
MANZ 1993 B-13	MANZ 1993 B-13	Shepherd Ck Dam	Shepherd Creek (Upper) Dam
MANZ 1993 B-14	MANZ 1993 B-14	Wooden Bridge	Wooden Bridge
MANZ 1993 B-15	MANZ 1993 B-15	NW survey area, Areas T and Y; Bairs Ck survey area, site 15	Relocation Center South Fields Irrigation System, Bairs Creek Pipeline, Georges Creek Upper Dam
MANZ 1993 B-16	MANZ 1993 B-16	Bairs Ck survey area, Fea. 21-22, Area U	Paget Farm
MANZ 1993 B-17	MANZ 1993 B-17	Georges Ck Bridge and Far South Fields	Relocation Center Far South Fields Irrigation System, Georges Creek Lower Dam, Well Nos. 76 and 95
MANZ 1993 B-18	MANZ 1993 B-18	Outlying Features, Area X	Town-era dump
MANZ 1993 B-19	MANZ 1993 B-19	Hog Farm	Relocation Center Hog Farm

Table P.2.
Site Concordance.

In this Report	In Site Records	In Field Notes and Photo Log	Description/Common Name
MANZ 1993 B-20	MANZ 1993 B-20	Cabin 1	Abernathy Ranch
MANZ 1993 B-21	MANZ 1993 B-21	Cabin 2	Albers Ranch
MANZ 1993 B-22	MANZ 1993 B-22	Cabin 3	Lacey Farm
MANZ 1993 B-23	MANZ 1993 B-23	Cabin 4	Glade Homesite
MANZ 1993 B-24	MANZ 1993 B-24	Concrete Structures	Albers Ranch
MANZ 1993 B-25	MANZ 1993 B-25	Outlying Features, Town Water System	Town Water System Pipeline, Shepherd Creek middle Dam, LADWP Ditch
MANZ 1993 B-26	MANZ 1993 B-26	Old Ditch	Shepherd Creek Ditch
MANZ 1993 B-27	MANZ 1993 B-27	Airport	Manzanar Federal Airport
MANZ 1993 B-28	MANZ 1993 B-28	Sewage Treatment Plant	Relocation Center Sewage Treatment Plant
MANZ 1993 B-29	MANZ 1993 B-29	Reservoir	Relocation Center Reservoir, Town Water System Intake Dam
MANZ 1993 B-30	MANZ 1993 B-30	Georges Ck Ditch Bairs Ck survey area, Fea. 14	Georges Creek Ditch
MANZ 1993 B-31	MANZ 1993 B-31	Bairs Ck Irrigation	Bairs Creek Pipeline
MANZ 1993 B-32	MANZ 1993 B-32	BLM 1; NW survey area, Area W	town-era dump
MANZ 1993 B-33	MANZ 1993 B-33	-	Kreider Farm
MANZ 1993 B-34	MANZ 1993 B-34	BLM 2; NW survey area, Area X	town-era dump
MANZ 1993 B-35	MANZ 1993 B-35	Shepherd Cr. Irrigation, Fea. 18-19	Metzger/Correll Properties
MANZ 1993 B-36	MANZ 1993 B-36	Shepherd Ck. Irrigation, Fea. 15-16	Shepherd Creek Bridge
MANZ 1993 B-37	MANZ 1993 B-37	Shepherd Ck. Irrigation, Fea. 7	South Fork Bridge
MANZ 1993 B-38	MANZ 1993 B-38	Shepherd Ck. Irrigation, Fea. 21-23	North Wells, Wells No. 91 and 92
MANZ 1994 A-1	MANZ 1994 A-1	-	Hay/Kispert Ranch
MANZ 1994 A-2	MANZ 1994 A-2	-	Georges Creek Upper Weir
MANZ 1994 A-3	MANZ 1994 A-3	-	Georges Creek Lower Weir
MANZ 1994 A-4	MANZ 1994 A-4	-	historical artifact scatter

Table P.2.
Site Concordance.

In this Report	In Site Records	In Field Notes and Photo Log	Description/Common Name
MANZ 1994 A-5	MANZ 1994 A-5	-	Bairs Creek Pipeline
MANZ 1994 A-6	MANZ 1994 A-6	-	concrete weir boxes
MANZ 1995 A-1	MANZ 1995 A-1	-	Bairs Creek Upper Dam
MANZ 1995 A-2	MANZ 1995 A-2	-	Lennington Farm
MANZ 1995 A-3	MANZ 1995 A-3	-	prehistoric artifact scatter

Table P.3.
CHRIS Trinomial Designations.

NPS Site Number	CHRIS Trinomial
MANZ 1993 A-1	CA-INY-4861
MANZ 1993 A-2	CA-INY-4862
MANZ 1993 A-3	CA-INY-4863
MANZ 1993 A-4	CA-INY-4864/H
MANZ 1993 A-5	CA-INY-4865H
MANZ 1993 A-6	CA-INY-4866H
MANZ 1993 A-7	CA-INY-4867H
MANZ 1993 A-8	CA-INY-4868H
MANZ 1993 A-9	CA-INY-4869H
MANZ 1993 A-10	CA-INY-4870H
MANZ 1993 A-11	CA-INY-4871H
MANZ 1993 A-12	CA-INY-4872H
MANZ 1993 A-13	CA-INY-4873H
MANZ 1993 A-14	CA-INY-4874H
MANZ 1993 A-15	CA-INY-4875H
MANZ 1993 A-16	CA-INY-4876H
MANZ 1993 A-17	CA-INY-4877H
MANZ 1993 A-18	CA-INY-4878H
MANZ 1993 A-19	CA-INY-4879/H
MANZ 1993 A-20	CA-INY-4880H
MANZ 1993 A-21	CA-INY-4881H

Table P.3.
CHRIS Trinomial Designations.

NPS Site Number	CHRIS Trinomial
MANZ 1993 A-22	CA-INY-4882H
MANZ 1993 A-23	CA-INY-4883H
MANZ 1993 A-24	CA-INY-4884H
MANZ 1993 A-25	CA-INY-4885H
MANZ 1993 A-26	CA-INY-4886H
MANZ 1993 A-27	CA-INY-4887H
MANZ 1993 A-28	CA-INY-4888H
MANZ 1993 A-29	CA-INY-4889H
MANZ 1993 A-30	CA-INY-3802H
MANZ 1993 A-31	CA-INY-4890H
MANZ 1993 A-32	CA-INY-4947H
MANZ 1993 A-33	CA-INY-4893H
MANZ 1993 A-34	CA-INY-4894H
MANZ 1993 A-35	CA-INY-4895H
MANZ 1993 A-36	CA-INY-4896H
MANZ 1993 A-37	CA-INY-4897H
MANZ 1993 B-1	CA-INY-4898/H
MANZ 1993 B-2	CA-INY-4899/H
MANZ 1993 B-3	CA-INY-4900/H
MANZ 1993 B-4	CA-INY-4901/H
MANZ 1993 B-5	CA-INY-4902/H
MANZ 1993 B-6	CA-INY-4903/H
MANZ 1993 B-7	CA-INY-4904/H
MANZ 1993 B-8	CA-INY-4905H
MANZ 1993 B-9	CA-INY-4906H
MANZ 1993 B-10	CA-INY-4907/H
MANZ 1993 B-11	CA-INY-4936H
MANZ 1993 B-12	CA-INY-4937H
MANZ 1993 B-13	CA-INY-4908H
MANZ 1993 B-14	CA-INY-4909H
MANZ 1993 B-15	CA-INY-4938H
MANZ 1993 B-16	CA-INY-4910H

Table P.3.
CHRIS Trinomial Designations.

NPS Site Number	CHRIS Trinomial
MANZ 1993 B-17	CA-INY-4939H
MANZ 1993 B-18	CA-INY-4911H
MANZ 1993 B-19	CA-INY-4940H
MANZ 1993 B-20	CA-INY-4912H
MANZ 1993 B-21	CA-INY-4913H
MANZ 1993 B-22	CA-INY-4914H
MANZ 1993 B-23	CA-INY-4915H
MANZ 1993 B-24	CA-INY-4916/H
MANZ 1993 B-25	CA-INY-4941/H
MANZ 1993 B-26	CA-INY-4942H
MANZ 1993 B-27	CA-INY-4943H
MANZ 1993 B-28	CA-INY-4944H
MANZ 1993 B-29	CA-INY-4917H
MANZ 1993 B-30	CA-INY-4945H
MANZ 1993 B-31	CA-INY-4946H
MANZ 1993 B-32	CA-INY-4918H
MANZ 1993 B-33	CA-INY-4919H
MANZ 1993 B-34	CA-INY-4920H
MANZ 1993 B-35	CA-INY-4921H
MANZ 1993 B-36	CA-INY-4922H
MANZ 1993 B-37	CA-INY-4923H
MANZ 1993 B-38	CA-INY-4924H
MANZ 1994 A-1	CA-INY-4925/H
MANZ 1994 A-2	CA-INY-4926H
MANZ 1994 A-3	CA-INY-4927H
MANZ 1994 A-4	CA-INY-4928H
MANZ 1994 A-5	CA-INY-4929H
MANZ 1994 A-6	CA-INY-4930H
MANZ 1995 A-1	CA-INY-4948H
MANZ 1995 A-2	CA-INY-4949H
MANZ 1995 A-3	CA-INY-4860

References Cited



Adachi, Ken
1976 *The Enemy that Never Was.* McClelland and Stewart, Toronto.

Adams, John
1951 Potters' Parade. *Pottery and Glass* June 1951:53-58.

Adams, Ansel
1945 *Born Free And Equal.* U.S. Camera, New York.

1985 *An Autobiography.* Little, Brown and Company, Boston.

Adams, Cynthia J.
1986 CA-MNO-833, an Obsidian Stoneworking Camp in Long Valley, Mono County, California. MS, California Department of Transportation, Sacramento.

Advisory Council on Historic Preservation
1980 *Treatment of Archaeological Properties: A Handbook.* Advisory Council on Historic Preservation, National Park Service, Washington, D.C.

Albert, Lillian Smith, and Jane Ford Adams
1970 Essential Data Concerning China Buttons. In *Guidelines for Collecting China Buttons*, edited by Ruth Lamm, Beatrice and Lester Lorah, and Helen W. Schuler, National Button Society of America, Boyertown, Pennsylvania.

Albert, Lillian Smith, and Kathryn Kent
1949 *The Complete Button Book.* Doubleday and Company, Inc., Garden City, New York.

Alden, Aimee Neff
1995 *Collector's Encyclopedia of Early Noritake: Identification and Values.* Collector Books, Paducah, Kentucky.

Alexander, J. A.
1928 *The Life of George Chaffey: A Story of Irrigation Beginnings in California and Australia.* MacMillan and Company, Melbourne, Australia.

Amsden, Charles A.
1937 The Lake Mohave Artifacts. In "The Archaeology of Pleistocene Lake Mohave," by E.W.C. Campbell, W.H. Campbell, E. Antevs, C.A. Amsden, J.A. Barbieri, and F.D. Bode, pp. 51-95. *Southwest Museum Papers* 11, Los Angeles.

Anchor Hocking Glass Company
1996 "The History of Anchor Hocking 1905-1996." Anchor Hocking Glass Company Information. <http://anchorhocking.com/hist1.html> (July 5, 1996).

Anonymous
1983 "Metal Trouser and Brace Buttons" in *The Button Brief of the California State Button Society*, Summer 1983, pp.18-19.

Antevs, E.
1952 Climatic History and the Antiquity of Man. *University of California Archaeological Survey Reports* 16:23-31. Berkeley.

Arkush, Brooke S.
1986 Aboriginal Exploitation of Pronghorn in the Great Basin. *Journal of Ethnobiology* 6:239-255.

1987a A Summary of Work Completed During the 1986 Field Season at CA-MNO-2122: A Proto-Historic/Historic Site in Mono Basin, Mono County, California. MS, Bureau of Land Management, Bakersfield.

1987b Historic Northern Paiute Winter Houses in Mono Basin, California. *Journal of California and Great Basin Anthropology* 9:174-187.

Arkush, Brooke S. (continued)
1989 The Precontact and Postcontact Archaeology of the Mono Basin Paiute: An Examination of Cultural Continuity and Change. Ph.D. dissertation, Department of Anthropology. University of California, Riverside.

1990 The Protohistoric Period in the Western Great Basin. *Journal of California and Great Basin Anthropology* 12:28-36.

Armor, John, and Peter Wright
1988 *Manzanar: Commentary by John Hersey, Photographs by Ansel Adams*. Times Books, New York.

Association for Preservation Technology (APT)
1980 *1865 Russell and Erwin Manufacturing Company Illustrated Catalogue of American Hardware*. Association for Preservation Technology, Ottawa, Canada.

Austin, Mary
1932 *Earth Horizon: An Autobiography*. University of New Mexico Press, Albuquerque.

1974 *The Land of Little Rain*. University of New Mexico Press, Albuquerque.

Ayres, James E., and Gregory R. Seymour
1993 Life on a 1930s Homestead: Historical Archaeological Investigations of the Brown Homestead on the Middle Agua Fria River, Yavapai County, Arizona. *SWCA Anthropological Research Paper* 2. SWCA. Inc., Tucson, Arizona.

Babb, David E.
1992 History of Early Water Diversions and Their Impact on Owens Lake. In *The History of Water: Eastern Sierra Nevada, Owens Valley, White–Inyo Mountains, White Mountain Research Station Symposium, Volume 4*, edited by Clarence A. Hall, Jr., Victora Doyle-Jones and Barbara Widawski, pp. 263–267. White Mountain Research Station, Bishop, California.

Babbitt, Harold E., and Edward R. Baumann
1958 *Sewerage and Sewage Treatment*. John Wiley and Sons, New York.

Baker, Lillian
1981 *The Concentration Camp Conspiracy: A Second Pearl Harbor*. Webb Research Group, Medford, Oregon.

1984 *Redress and Reparations Demands by Japanese Americans*. Webb Research Group, Medford, Oregon.

1988 *Dishonoring America; The Collective Guilt of American Japanese*. Webb Research Group, Medford, Oregon.

1990 *American and Japanese Relocation in World War II; Fact, Fiction, and Fallacy*. Webb Research Group, Medford, Oregon.

Baker, Lillian (continued)
1991 *The Japanning of America: Redress and Reparations Demands by Japanese Americans*. Webb Research Group, Medford, Oregon.

1994 *Dishonoring America: The Falsification of World War II History*. Webb Research Group, Medford, Oregon.

Baldinger, Scott
1995 Bauer Ware. *Martha Stewart Living* 29:64-68.

Barber, Edwin Atlee
1967 *The Ceramics Collectors' Glossary*. Da Capo Press, New York. Originally published 1914 by the Walpole Society.

Basgall, Mark E.
1982 The Archaeology of Camp High Sierra (CA-MNO-1529): A Preliminary Report. MS, Inyo National Forest, Bishop, California.

1983 Archaeology of the Forest Service Forty Site (CA-MNO-529), Mono County, California. MS, Inyo National Forest, Bishop, California.

1984a Paleoindian Lithic Procurement in the Long Valley Caldera, Mono County, California. Paper presented at the Great Basin Anthropological Conference, Boise, Idaho.

1984b The Archaeology of MNO-1529: A Secondary Reduction Site in Mammoth Lakes, Mono County, California. MS, Inyo National Forest, Bishop, California.

1988 The Archaeology of CA-MNO-679: A Pre-Archaic Site in Long Valley Caldera, Mono County, California. In "Early Human Occupation in Far Western North American: The Clovis-Archaic Interface," edited by Judith A. Willig, C. Melvin Aikens, and John L. Fagan, pp. 103-120. *Nevada State Museum Anthropology Papers* 21. Carson City, Nevada.

1991 Archaeological Investigations at Lubkin Creek (CA-INY-30). *Society of California Archaeology Newsletter* 25(4):1-17.

Basgall, Mark E., and M.A. Giambastiani
1992 Providing Good Measure: A Report on Three Seasons of Archaeological Investigation on the Volcanic Tablelands, Mono and Inyo Counties, California. MS, Bureau of Land Management, Bishop, California.

Basgall, Mark E., and Robert W. Jobson
1986 An Archaeological Reconnaissance of the Sherwin Ski Area, Near Mammoth Lakes, Mono County, California. MS, Inyo National Forest, Bishop, California.

Basgall, Mark E., and Kelly R. McGuire
1988 *The Archaeology of CA-MNO-30: Prehistoric Culture Change in the Southern Owens Valley*. California Department of Transportation, Sacramento.

Basgall, Mark E., Kelly R. McGuire, and Amy Gilreath
1986 *Archaeological Test Excavations at CA-INY-30: A Multi-Component Prehistoric Site near Lone Pine, Inyo County, California.* California Department of Transportation, Sacramento.

Bates, Paul, Karen Bates, and Tom Bates
1989 *Collectors Guide to California Soda Bottles.* Interactive Books, Goodlettsville, Tennessee.

1990 *Collectors Guide to Arizona Soda Bottles.* Interactive Books, Goodlettsville, Tennessee.

1992 *Enjoy Coke: An In-Depth Guide to Coca-Cola Collectibles.* Interactive Books, Goodlettsville, Tennessee.

Baumhoff, Martin A., and J.S. Byrne
1959 Desert Side-notched Points as a Time-marker in California. *University of California Archaeological Survey Reports* 48:32-65. Berkeley.

Baxter, William K.
1942 New Address — Manzanar. *Westways* 34(8)8-9.

Beanland, Sarah, and Malcolm M. Clark
1994 The Owens Valley Fault Zone, Eastern California, and Surface Faulting Associated with the 1872 Earthquake. *U.S. Geological Survey Bulletin* 1982. U.S. Government Printing Office, Washington, D.C.

Behrensmeyer, A.K.
1978 Taphonomic and Ecologic Information From Bone Weathering. *Paleobiology* 4:150-162.

Bennyhoff, James A., and Richard E. Hughes
1987 Shell Bead and Ornament Exchange Networks Between California and the Great Basin. *Anthropological Papers of the American Museum of Natural History* 64(2). New York.

Berry, Claudia
1984 A Description of Lithic Collections from the Railroad and Transmission Line Corridors. *Museum of Northern Arizona Research Paper* 29. Flagstaff.

Bettinger, Robert L.
1973 The Archaeology of Portillo's Drill Site, 05-04-51-5, Mono County, California. MS, Inyo National Forest, Bishop, California.

1975 The Surface Archaeology of Owens Valley, Eastern California: Prehistoric Man-land Relations in the Great Basin. Ph.D. dissertation, Department of Anthropology, University of California, Riverside.

1976 The Development of Pinyon Exploitation in Central Eastern California. *Journal of California Anthropology* 3:27-46.

1977a Aboriginal Human Ecology in Owens Valley, Eastern California: Prehistoric Change in the Great Basin. *American Antiquity* 43:3-17.

Bettinger, Robert L. (continued)
1977b The Surface Archaeology of the Long Valley Caldera, Mono County, California. *Archaeological Research Unit Monograph* 1. Riverside, California.

1978 Archaeology of the Blue Flag Site (FS-05-04-53-7; CA-MNO-34), Mono County, California. MS, Inyo National Forest, Bishop, California.

1979 Curation, Statistics and Settlement Studies: A Reply to Munday and Lincoln. *American Antiquity* 44:352-359.

1980 Archaeology of the Triple R Site, FS-05-04-52-10 (CA-MNO-714), Mono County, California. MS, Inyo National Forest, Bishop, California.

1981a Sampling and Statistical Inference in the Owens Valley: A Reply to Hall. *American Antiquity* 46:656-660.

1981b Archaeology of the Lee Vining Site (CA-MNO-446), Mono County, California. MS, Inyo National Forest, Bishop, California.

1982a Archaeology East of the Range of Light: Aboriginal Human Ecology of the Inyo-Mono Region of Central-Eastern California. *Monographs in California and Great Basin Anthropology* 1. Davis, California.

1982b Aboriginal Exchange and Territoriality in Owens Valley, California. In *Contexts for Prehistoric Exchange.* Edited by J. Ericson and T. Earle, pp. 103-127. Academic Press, New York.

1983 Aboriginal sociopolitical organization in Owens Valley, California. In The Development of Political Organization in Native North America, edited by E. Tooker and M.H. Fried, pp. 45-58. *Proceedings of the American Ethnological Society*, 1979.

1989 The Archaeology of Pinyon House, Two Eagles, and Crater Middens: Three Residential Sites in the Owens Valley, Eastern California. *Anthropological Papers of the American Museum of Natural History* 67. New York.

1990 Aboriginal Life Above the Treeline: Alpine Villages in the White Mountains of California. *Society for California Archaeology Newsletter* 24(6):1-6.

1991 Aboriginal Occupation at High Altitude: Alpine Villages in the White Mountains of Eastern California. *American Anthropologist* 93:656-679.

Bettinger, Robert L., and Martin A. Baumhoff
1982 The Numic Spread: Great Basin Cultures in Competition. *American Antiquity* 47:485-503.

Bettinger, Robert L., and R. Oglesby
1985 Lichen Dating of Alpine Villages in the White Mountains, California. *Journal of California and Great Basin Anthropology* 7:202-224.

Bettinger, Robert L., and R. E. Taylor
1974 Suggested Revisions in Archaeological Sequences of the Great Basin in Interior Southern California. *Nevada Archaeological Survey Research Papers* 5:1-26.

Bettinger, Robert L., and Thomas F. King
1971 Interaction and Political Organization: A Theoretical Framework for Archaeology in the Owens Valley. *University of California Archaeological Survey Annual Report* 13:138-150. Berkeley.

Bettinger, Robert L., Michael Delacorte, and Robert J. Jackson
1984 Visual Sourcing of Eastern California Obsidians. *In* Obsidian Studies in the Great Basin, edited by Richard E. Hughes, pp. 63-78. *Contributions of the University of California Archaeological Research Facility* 45. Berkeley.

Bettinger, Robert L., Michael Delacorte, and Kelly R. McGuire
1984 *Archaeological Excavations at the Partridge Ranch Site (CA-INY-2146), Inyo County, California.* California Department of Transportation, Sacramento.

Binford, L.R.
1978 *Nunamiut Ethnoarchaeology*. Academic Press, New York.

1980 Willow Smoke and Dogs' Tails: Hunter Gatherer Settlement Systems and Archaeological Site Formation. *American Antiquity* 45:1-17.

1981 *Bones: Ancient Men and Modern Myth*. Academic Press, New York.

1982 The Archaeology of Place. *Journal of Anthropological Archaeology* 1:5-31.

Blee, Catherine H.
1987 *Archeological Investigations in Skagway, Alaska, Volume 2: The Moore Residences, Klondike Gold Rush National Historical Park.* Denver Service Center, National Park Service, Denver, Colorado.

Bloomer, William W.
1991 Reduction Assemblage Models in the Interpretation of Lithic Technology at the Tosawhi Quarries, North-Central Nevada. *Journal of California and Great Basin Anthropology* 13:204-206.

Borden, F. W.
1971 The Use of Surface Erosion Observations to Determine Chronological Sequence in Artifacts from a Mojave Desert Site. *Archaeological Survey Association of Southern California Papers* 7.

Bouey, Paul D.
1990 Archaeological Test Excavations in the West Midden of CA-INY-30, Lubkin Canyon Road Realignment, Inyo County, California. MS, Inyo County, Department of Public Works, Independence.

Bouey, Paul D., and Mark E. Basgall
1984 Trans-Sierran Exchange in Prehistoric California and the Concept of Economic Articulation. In Obsidian Studies in the Great Basin, edited by Richard E. Hughes, pp. 135-172. *Contributions of the University of California Archaeological Research Facility* 45. Berkeley.

Bouscaren, Stephen J.
1985 Archaeological Excavations in the Lowlands of Northern Owens Valley: Report on the Sawmill Road Site (CA-INY-1386). MA. thesis, Department of Anthropology, University of California, Riverside.

Bouscaren, Stephen J. and Philip J. Wilke
1987 Excavations at Mammoth: Archaeological Data Recovery at Four Sites near Mammoth Creek, Mono County, California. MS, Mammoth County Water District, Mammoth Lakes, California.

Bouscaren, S., Matthew C. Hall, and J.D. Swenson
1982 Archaeological Test Excavations at Four Sites (CA-MNO-11, -823, -1644, -1645) near Mammoth Creek, Mono County, California. MS, Inyo National Forest, Bishop, California.

Brain, C.K.
1981 *The Hunters or the Hunted? An Introduction to African Cave Taphonomy*. University of Chicago Press, Chicago.

Bromley, David S.
1946 Evacuee Property Section Final Sectional Report. War Relocation Authority, Manzanar Relocation Center, California (UCLA Special Collections).

Buckles, William G., Mary Rossillon, Charles Haecker, Robert Lawrence, Cheryl Muceus, Nancy Buckles, Stephanie Hilvitz, Roger Moore, and Morris Anderson
1981 *Old Dallas Historical Archaeological Program: Dallas Creek Project.* Bureau of Reclamation, Salt Lake City, Utah.

Bureau of Land Management
1975 California Desert Program Archaeological Sample Units Records for the Owens Valley Planning Unit. MS, Bureau of Land Management, Bishop, California.

Burton, Jeffery F.
1980 Archaeological Survey Report: Deer-Earthquake Timber Compartments. MS, Inyo National Forest, Bishop, California.

1983 Archaeological Impact Study, Chance Valley Geothermal Power Plant. MS, Wood and Associates, Auburn, California.

Burton, Jeffery F. (continued)
1985a The Archaeology of the Chance Well Site, CA-MNO-458/630, Mono County, California. *Contributions to Trans-sierran Archaeology* 12. Trans-Sierran Archaeological Research, Tucson, Arizona.

1985b Test Excavation and Analysis of a Portion of Site CA-MNO-382, Mono County, California. MS, Wood and Associates, Auburn, California.

1986a Archaeological Investigations at Bajada Camp (CA-INY-2596), Inyo County, California. MS, Baxter Ranch, Independence, California.

1986b Cultural Resources of the Doe Ridge Project Area. MS, Triad Engineering, Mammoth Lakes, California.

1987 Cultural Resources of Conway Ranch, Mono Basin, California. MS, Triad Engineering, Mammoth Lakes, California.

1988 Volcanism, Obsidian Hydration, and Archaeological Reality in the Western Great Basin. Paper presented at the 53rd Annual Meeting of the Society for American Archaeology, Phoenix, Arizona.

1990a Cultural Resources of the Royal Gold Project Area, Mono County, California. *Contributions to Trans-sierran Archaeology* 24. Trans-Sierran Archaeological Research, Tucson, Arizona.

1990b An Archaeological Survey of the Contel Bishop to Inyokern Fiber Optics Line, Inyo and Kern Counties, California. *Contributions to Trans-sierran Archaeology* 22. Trans-Sierran Archaeological Research, Tucson, Arizona.

1991a Preliminary Report on the Archaeology of CA-MNO-905: A Single Component Stoneworking Site at Mammoth Lakes, California. *Contributions to Trans-sierran Archaeology* 27. Trans-Sierran Archaeological Research, Tucson, Arizona.

1991b The Archaeology of Sivu'ovi: The Archaic to Basketmaker Transition at Petrified Forest National Park. *Western Archeological and Conservation Center Publications in Anthropology* 55. National Park Service, Tucson, Arizona.

1992a Bajada Camp: A Single Component Hunting Site near Fish Springs, Owens Valley, California. *Pacific Coast Archaeological Society Quarterly* 28(4):26–40.

1992b Further Investigations at the Snowcreek Site, Mammoth Lakes, California. *Contributions to Trans-sierran Archaeology* 31. Trans-Sierran Archaeological Research, Tucson, Arizona.

1994a Archaeological Testing of Eight Sites Within the Proposed Sherwin Ski Area, Mono County, California. MS, Inyo National Forest, Bishop, California.

Burton, Jeffery F. (continued)
1994b Archaeological Investigations at the Mammoth Creek Site (CA-MNO-561), Mammoth Lakes, California. *Contributions to Trans-sierran Archaeology* 35. Trans-Sierran Archaeological Research, Tucson, Arizona.

1995 Archaeological Excavations at Two Sites Near Bridgeport, Mono County, California. *Contributions to Trans-sierran Archaeology* 40. Trans-Sierran Archaeological Research, Tucson, Arizona.

n.d. The Archaeology of CA-MNO-905: A Single Component Stoneworking Site at Mammoth Lakes, California. MS, Trans-Sierran Archaeological Research, Tucson, Arizona.

Burton, Jeffery F., and Mary M. Farrell
1990 Archaeological Test Excavations at the Snowcreek Site (CA-MNO-3), Mammoth Lakes, California. *Contributions to Trans-sierran Archaeology* 23. Trans-Sierran Archaeological Research, Tucson, Arizona.

1991 The Archaeology of Whisky Creek Rockshelter: A Late Prehistoric Site in Long Valley, California. *Contributions to Trans-sierran Archaeology* 26. Trans-Sierran Archaeological Research, Tucson, Arizona.

Busby, Colin I., John M. Findlay, and James C. Bard
1980 *A Cultural Resource Overview of the Bureau of Land Management Coleville, Bodie, Benton, and Owens Valley Planning Units, California.* Cultural Resources Publications, Bureau of Land Management, Bakersfield, California.

Busch, Jane
1981 An Introduction to the Tin Can. *Historical Archaeology* 15:95-104.

California Development Board
1917 Agricultural and Industrial Survey of Inyo County, California. California Development Board (Inyo County Library).

Cameron, Elisabeth
1986 *Encyclopedia of Pottery & Porcelain 1800-1960.* Facts on File Publications, New York.

Campbell, Elizabeth C.
1949 Two Ancient Archaeological Sites in the Great Basin. *Science* 109:340.

Campbell, Elizabeth C., and William H. Campbell
1935 The Pinto Basin Site: An Ancient Aboriginal Camping Ground in the California Desert. *Southwest Museum Papers* 9. Los Angeles.

Carter, Genevieve W.
1943 Toy Loan Library. War Relocation Authority, Manzanar, California. (Eastern California Museum, Independence).

Casteel, R.W.
1972 Some Biases in the Recovery of Archaeological Faunal Remains. *Proceedings of the Prehistoric Society* 38:382-388.

Census Bureau
1920 Fourteenth Census of the United States.

Chalfant, W.A.
1922 *The Story of Inyo.* Chalfant Press, Bishop, California.

Chipman, Jack
1992 *Collector's Encyclopedia of California Pottery.* Collector Books, Paducah, Kentucky.

Chuman, Frank
1976 *The Bamboo People: The Law and Japanese Americans.* Japanese American Research Project, Chicago, Illinois.

Clason, A.T., and W. Prummel
1977 Collecting, Sieving and Archaeozoological Research. *Journal of Archaeological Science* 4:171-175.

Clay, Vickie L., and Matthew C. Hall
1988 Results of the 1987 Field Season Cultural Resources Survey for the Historic and Archaeological Preservation Plan for the Lee Vining Creek Hydroelectric Project (FERC Project Number 1388) and the Rush Creek Hydroelectric Project (FERC Project Number 1389). MS, Southern California Edison Company, Rosemead, California.

Clewlow, C. William, Jr.
1967 Time and Space Relations of Some Great Basin Projectile Points. *University of California Archaeological Survey Reports* 70:141-149.

1980 Cultural Resources Technical Report on the Coso Geothermal Study Area. MS, Rockwell International, Newbury Park, California.

Clewlow, C. William, Robert F. Heizer, and Rainer Berger
1970 An Assessment of Radiocarbon Dates for the Rose Spring Site (CA-INY-372), Inyo County, California. *Contributions of the University of California Archaeological Research Facility* 7:64-72.

Clorox Company
1996 "The Clorox Company, 80 Years of History." Clorox Company Information. <http://www.clorox.com/history.html> (May 9, 1996).

Cohen, Irene J.
1994 Manzanar: A Japanese American Relocation Center Memorial. Master's thesis, School of Architecture, University of Illinois, Urbana-Champaign.

Cohen, Stan
1991 *V for Victory: America's Home Front During World War II.* Pictorial Histories, Missoula, Montana.

1995 *To Win the War: Home Front Memorabilia of World War II.* Pictorial Histories, Missoula, Montana.

Collins, Michael B.
1975 Lithic Technology as a Means of Processual Inference. In *Lithic Technology, Making and Using Stone Tools,* edited by Earl Swanson, pp. 15-34. Mouton, Paris.

Commission on Wartime Relocation and Internment of Civilians (CWRIC)
1982 *Personal Justice Denied.* Government Printing Office, Washington, D.C.

Conrat, Maisie, and Richard Conrat
1992 *Executive Order 9066: The Internment of 110,000 Japanese Americans.* California Historical Society Special Publication 51. San Francisco.

Cook, E. Fullerton
1948 *Remington's Practice of Pharmacy.* Mack Publishing Company, Easton, Pennsylvania.

Costello, Julia G., and Mary L. Maniery
1988 Rice Bowls in the Delta: Artifacts Recovered from the 1915 Asian Community of Walnut Grove, California. *Occasional Paper Institute of Archaeology* 16. University of California, Los Angeles.

Costello, Julia G., and Judith Marvin
1992 Supplemental Archaeological Survey Report and Historic Study Report for the Highway 395, Alabama Gates Four Lane Project, Inyo County, California. MS, California Department of Transportation, Sacramento.

1993 Recording the Los Angeles Aqueduct. *Society for California Archaeology Newsletter* 27(4):1-5.

Coville, Fredrick V.
1892 The Panamint Indians of California. *American Anthropologist* 5:351-361.

Crabtree, Don E.
1982 An Introduction to Flintworking, Second Edition. *Occasional Papers of the Idaho Museum of Natural History* 28. Pocatello.

Cragen, Dorothy Clora
1966 The First Townsite or Subdivision. In *Inyo 1866-1966,* edited by Mary A. Cavitt, Dorothy Cragen, John K. Smith, Alan H. Jacobs, and C. Lorin Ray, pp. 25-28. Chalfant Press, Bishop, California.

1975 *The Boys In the Sky-Blue Pants: The Men and Events at Camp Independence and Forts of Eastern California, Nevada and Utah — 1862-1877.* Pioneer Publishing Company, Fresno, California.

Cray, Ed
1978 *Levi's.* Houghton Mifflin Company, Boston, Massachusetts.

Crist, Michael K.
1981 A Cultural Resource Reconnaissance of the Paoha Hydroelectric Project, Mono County, California. MS, Keating and Associates, Placerville, California.

Crown Publishers
1969 *1902 Edition of the Sears, Roebuck Catalogue.* Bounty Books, New York.

Culley, John J.
1991 The Santa Fe Internment Camp and the Justice Department Program for Enemy Aliens. In *Japanese Americans: From Relocation to Redress,* edited by Roger Daniels, Sandra C. Taylor, and Harry H.L. Kitano, pp. 57-71. University of Washington Press, Seattle.

Curriden, Nancy T.
1981 The Lewis-Weber Site, A Tucson Homestead. *Western Archeological and Conservation Center Publications in Anthropology* 14. National Park Service, Tucson, Arizona.

Danckert, Ludwig
1981 *Directory of European Porcelain.* N.A.G. Press, London.

Daniels, Roger
1989 *Concentration Camps, North America: Japanese in the United States and Canada During World War II.* Robert E. Krieger, Malabar, Florida.

Daniels, Roger (continued)
1991 Introduction. In *Japanese Americans From Relocation to Redress,* Revised Edition, edited by Roger Daniels, Sandra C. Taylor, and Harry H.L. Kitano, pp. 132-133. University of Washington Press, Seattle.

1993 *Prisoners Without Trial: Japanese Americans in World War II.* Hill and Wang, New York.

1994 Dorothea Lange and the War Relocation Authority: Photographing Japanese Americans. In *Dorothea Lange: A Visual Life,* edited by Elizabeth Partridge, pp. 46-55. Smithsonian Institution Press.

Daniels, Roger, Sandra C. Taylor, and Harry H.L. Kitano (editors)
1991 *Japanese Americans From Relocation to Redress,* Revised Edition. University of Washington Press, Seattle.

Davis, Daniel S.
1982 *Behind Barbed Wire: The Imprisonment of Japanese Americans During World War II.* E.P. Dutton, New York.

Davis, Emma Lou
1959 A Child Burial near Mono Lake. *University of California Archaeological Survey Report* 1958-1959:69-73. Los Angeles.

1961 The Mono Craters Petroglyphs, California. *American Antiquity* 27:236-239.

1962 Hunter-Gatherers of Mono Lake. *Masterkey* 36:22-28.

1963 The Desert Culture of the Western Great Basin: A Lifeway of Seasonal Transhumance. *American Antiquity* 29:202-212.

1964 An Archaeological Survey of the Mono Basin and Excavations of Two Rockshelters, Mono County, California. *University of California Archaeological Survey Annual Report* 1963-1964:251-392. Los Angeles.

1965 An Ethnography of the Kuzedika Paiute of Mono Lake, Mono County, California. *University of Utah Anthropological Papers* 8:1-56.

1975 The "Exposed Archaeology" of China Lake, California. *American Antiquity* 40:39-53.

1978 Ancient Californians: Rancholabrean Hunters of the Mohave Lakes Country. *Natural History Museum of Los Angeles County Science Series* 29.

Davis, J.T.
1961 Trade Routes and Economic Exchange Among the Indians of California. *University of California Archaeological Survey Report* 54:1-71.

Dean, Jeffrey S.
1978 Independent Dating in Archaeological Analysis. *In Advances in Archaeological Method and Theory,* Volume 1, edited by Michael B. Schiffer, pp. 223-225. Academic Press, New York.

DeBolt, Gerald
1994 *DeBolt's Dictionary of American Pottery Marks: Whiteware and Porcelain.* Collector Books, Paducah, Kentucky.

DeDecker, Mary
1966 *Mines of the Eastern Sierra.* La Siesta Press, Glendale, California.

1988 Owens Valley, Then and Now. In *Mountains to Desert, Selected Inyo Readings,* compiled by Friends of the Eastern California Museum, pp. 7-15. Eastern California Museum, Independence.

1992 The Death of a Spring. In *The History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains, White Mountain Research Station Symposium, Volume 4,* edited by Clarence A. Hall, Jr., Victora Doyle-Jones and Barbara Widawski, pp. 223–226. White Mountain Research Station, Bishop, California.

Delacorte, Michael G., and Kelly R. McGuire
1993 Archaeological Test Evaluations at Twenty-three Sites Located Along a Proposed Fiber Optics Route in Owens Valley, California. MS, Bureau of Land Management, Riverside.

Delacorte, Michael G., Matthew C. Hall., and Mark E. Basgall
1995 Report on the Evaluation of Twelve Archaeological Sites in the Southern Owens Valley, Inyo County, California. MS, California Department of Transportation, Sacramento.

DeWitt, John B.
1943 *Final Report, Japanese Evacuation from the West Coast, 1942.* Government Printing Office, Washington, D.C.

Drakard, David, and Paul Holdway
1983 *Spode Printed Ware.* Longman, London.

Drinnon, Richard
1987 *Keeper of Concentration Camps: Dillon S. Myer and American Racism.* University of California Press, Berkeley.

Driver, J.C.
1985 Zooarchaeology of Six Prehistoric Sites in the Sierra Blanca Region, New Mexico. *Museum of Anthropology, University of Michigan, Technical Reports* 17.

DuBois, C.
1935 Wintu Ethnography. *University of California Publications in American Archaeology and Ethnology* 36:1-148. University of California Press, Berkeley.

Embree, John F.
1943 The Relocation of Persons of Japanese Ancestry in the United States: Some Cases and Effects. *Journal of the Washington Academy of Science* 33:238-242.

Embrey, Sue Kunitomi, Authur A. Hansen, and Betty Kulberg Mitson
1986 *Manzanar Martyr: An Interview with Harry Y. Ueno.* Japanese American Oral History Project, California State University, Fullerton.

Embrey, Sue Kunitomi (editor)
1972 *The Lost Years, 1942-1946.* Manzanar Committee, Los Angeles.

Enfield, Rolin, and Grace Enfield
1964 Mammoth Creek Cave, Mono County, California. *University of California Archaeological Survey Annual Report* 1963-1964:393-242. Los Angeles.

Ericson, Jonathon E.
1977 Evolution of Prehistoric Exchange Systems: Results of Obsidian Dating and Tracing. Ph.D. dissertation, Department of Anthropology, University of California, Los Angeles.

Escritt, L.B.
1956 *Sewerage and Sewage Disposal, Calculations, Design, and Specification.* Contractors Record Limited, London.

Faust, Nicholas A.
1992 Classical Glass: The Casa Diablo Obsidian Inventory. In "A Programmatic Treatment Plan for the Prehistoric Obsidian Quarries on the Inyo National Forest, California and Nevada," by Linda A. Reynolds, Appendix A. MS, Inyo National Forest, Bishop, California.

Finley, Harold M.
1926 Los Angeles Makes Hay in Owens Valley. *Los Angeles Sunday Times Farm and Orchard Magazine* June 13, pp. 1-3.

Flenniken, J. Jeffrey
1985 Stone Tool Reduction Techniques as Cultural Markers. In *Stone Tool Analysis: Essays in Honor of Don E. Crabtree*, edited by Mark G. Plew, James C. Woods, and Max G. Pavesic, pp. 265-276. University of New Mexico Press, Albuquerque.

Flenniken, J. Jeffrey, and Anan W. Raymond
1986 Morphological Projectile Point Typology: Replication, Experimentation and Technological Analysis. *American Antiquity* 51:603-614.

Folwell, A. Prescott
1936 *Sewerage: The Designing, Constructing, and Maintaining of Sewerage Systems and Sewage Treatment Plants.* John Wiley and Sons, New York.

Fontana, Bernard L., and J. Cameron Greenleaf
1962 Johnny Ward's Ranch, A Study in Historic Archaeology. *The Kiva* 28(1-2).

Fowler, Catherine S., and Nancy P. Walter
1985 Harvesting Pandora Moth Larvae with the Owens Valley Paiute. *Journal of California and Great Basin Anthropology* 7:155-165.

Fratt, Lee
1992a Ground Stone in Arizona. In "Making and Using Stone Artifacts: Lithic Sites in Arizona," by Mark C. Slaughter, Lee Fratt, Kirk Anderson, Richard V.N. Ahlstrom, pp. 16-25. *SWCA Archaeological Report* 92-5. SWCA, Inc., Tucson, Arizona.

1992b Ground Stone and Other Non-flaked Stone Implements. In "Making and Using Stone Artifacts: Lithic Sites in Arizona," By Mark C. Slaughter, Lee Fratt, Kirk Anderson, Richard V.N. Ahlstrom, pp. 84-105. *SWCA Archaeological Report* 92-5. SWCA, Inc., Tucson, Arizona.

Freeman, P.
1977 The Development of Ceramic Colours and Decorating Techniques in the Staffordshire Potteries. Brochure. Gladstone Pottery Museum, Longton, Staffordshire, England.

Froesch, Charles, and Walter Prokosch
1946 *Airport Planning.* John Wiley and Sons, London.

Fryman, Robert J., and Teresita Majewski
1995 The Great Decal Debate: New Perspectives on a Polychrome Problem. Paper presented at the 1995 Conference on Historical and Underwater Archaeology, Washington, D.C.

Fuller, George W., James R. McClintock
1926 *Solving Sewage Problems.* McGraw-Hill, New York.

Gardiner, C. Harvey
1991 The Latin American Japanese and World War II. In *Japanese Americans From Relocation to Redress*, Revised Edition, edited by Roger Daniels, Sandra C. Taylor, and Harry H.L. Kitano, pp. 139-141. University of Washington Press, Seattle.

Garfinkel, Alan P.
1980a *A Cultural Resource Management Plan for the Fossil Falls/Little Lake Locality.* Cultural Resources Publications, Bureau of Land Management, Bakersfield, California.

1980b An Archaeological Survey along Highway 395 and Excavation of CA-MNO-389, Mono County, California. MS, California Department of Transportation, Sacramento.

Garrett, Jessie A., and Ronald C. Larson
1977 *Camp and Community: Manzanar and the Owens Valley.* Japanese American Oral History Project, California State University, Fullerton.

Garrow, Patrick H.
1982 *Archaeological Investigations on the Washington, D.C., Civic Center Site*, edited by Patrick H. Garrow. MS, Department of Housing and Community Development, Washington, D.C.

1984 The Identification and Use of Context types in Urban Archaeology. *Southeastern Archaeology* 3:91-96.

Gaston, Mary Frank
1983 *The Collector's Encyclopedia of Flow Blue China.* Collector Books, Paducah, Kentucky.

Gates, Dorothy Lydston
1977 The Manzanar I Remember. In *Saga of Inyo County,* edited by the Southern Inyo American Association of Retired Persons, p. 105. Taylor Publishing Company, Covina, California.

Gates, William C., Jr., and Dana E. Ormerod
1982 The East Liverpool, Ohio, Pottery District: Identification of Manufacturers and Marks. *Historical Archaeology* 16(1-2).

Gehret, Ellen J.
1976 *Rural Pennsylvania Clothing.* Liberty Cap Books, York, Pennsylvania.

Genoves, S.
1967 Proportionality of the Long Bones and their Relation to Stature among Mesoamericans. *American Journal of Physical Anthropology* 26:67-78.

Gilchrist, R., and H.C. Mytum
1986 Experimental Archaeology and Burnt Animal Bone From Archaeological Sites. *Circaea* 4:29-38.

Gilkey, John W.
1945 Internal Security Section Final Sectional Report. War Relocation Authority, Manzanar Relocation Center, California (UCLA Special Collections).

Gill, Thomas E., and Thomas A. Cahill
1992 Playa-generated Dust Storms from Owens Lake. In *The History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains, White Mountain Research Station Symposium, Volume 4*, edited by Clarence A. Hall, Jr., Victora Doyle-Jones and Barbara Widawski, pp. 63–71. White Mountain Research Station, Bishop, California.

Gillespie, Alan R.
1991 "Quaternary Subsidence of Owens Valley, California." In *Natural History of Eastern California and High-Altitude Research*, edited by Clarence A. Hall, Jr., Victora Doyle-Jones and Barbara Widawski, pp. 356–382. White Mountain Research Station, Bishop, California.

Gillio, David A., Frances Levine, and Douglas Scott
1980 *Some Common Artifacts Found at Historical Sites.* Cultural Resources Report 31. U.S.D.A. Forest Service, Southwest Region, Santa Fe, New Mexico.

Girdner, Audrie, and Anne Loftis
1969 *The Great Betrayal: The Evacuation of the Japanese-Americans During World War II.* MacMillan, London.

Glidden, Horace K., Hervey F. Law, and John E. Cowles
1946 *Airports: Design, Construction and Management.* McGraw-Hill, New York.

Godden, Geoffrey A.
1964 *Encyclopedia of British Pottery and Porcelain Marks.* Bonanza Books, New York.

1993 *Godden's Guide to European Porcelain.* Cross River Press, New York.

Goldberg, Susan K.
1984 Groundstone. In *Archaeological Investigations at Balsam Meadow, Fresno County, California*, by S.K. Goldberg and M.J. Moratto. Southern California Edison, Rosemead, California.

Goldberg, Susan J., Sally S. Salzman, Elizabeth J. Skinner, Jeffery F. Burton, Margaret E. Scully, John J. Holson, and Michael J. Moratto
1986 *Cultural Resources of the Crane Valley Hydroelectric Project Area, Madera County, California, Volume III, Archaeological Testing, Resource Evaluation, Impact assessment, and Management Planning.* Pacific Gas and Electric Company, San Francisco, California.

Goldberg, Susan K., Elizabeth Skinner, and Jeffery F. Burton
1990 *Archaeological Excavations at Sites CA-MNO-574, -577, -578, and -833: Stoneworking in Mono County, California.* California Department of Transportation, Sacramento.

Gorham, Hazel H.
1971 *Japanese and Oriental Ceramics.* Charles E. Tuttle, Rutland, Vermont.

Gorman, John
1967 *I Remember Manzanar.* Pinon Press, Bishop, California.

Grant, Campbell, James W. Baird, and J. Kenneth Pringle
1968 Rock Drawings of the Coso Range. *Maturango Museum Publications* 4. China Lake, California.

Grayson, D.K.
1984 *Quantitative Zooarchaeology: Topics in the Analysis of Archaeological Faunas.* Academic Press, Orlando.

1988 Danger Cave, Last Supper Cave, and Hanging Rock Shelter: The Faunas. *Anthropological Papers of the American Museum of Natural History* 66(1). New York.

Great Basin Foundation
1979 Culture Resources Inventory of the Little Lake Wildlife Area, Inyo County, California. MS, California Department of Fish and Game, Sacramento.

Great Britain Home Office, Departmental Committee on Lead, Etc., in Potteries
1910 *Report of the Departmental Committee Appointed to Inquire into the Dangers Attendant on the Use of Lead and the Danger or Injury to Health Arising from Dust and Other Causes in the Manufacture of Earthenware and China ..., Volume 1— Report.* Jas. Truscott & Son, London.

Greene, Linda W.
1981 Historic Resources Study: A History of Mining in Death Valley National Monument. National Park Service, Denver Service Center.

Greenwood, Roberta S., and John M. Foster
1987 *The Rincon Townsite: Cultural Resource Investigation.* U.S. Army Corps of Engineers, Los Angeles.

Greer, Georgeanna H.
1981 *American Stonewares, the Art and Craft of Utilitarian Potters.* Schiffer Publishing, Exton, Pennsylvania.

Grimshaw, Rex W.
1971 *The Chemistry and Physics of Clay and Allied Ceramic Materials,* 4th edition. Wiley, New York.

Groeneveld, David P.
1992 Owens Valley, California, Plant Ecology: Effects from Export Groundwater Pumping and Measures to Conserve the Local Environment. In *The History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains, White Mountain Research Station Symposium, Volume 4,* edited by Clarence A. Hall, Jr., Victora Doyle-Jones and Barbara Widawski, pp. 128–155. White Mountain Research Station, Bishop, California.

Gunn, Eva Lee
1951 The John Shepherd Family. MS, Eastern California Museum, Independence.

Gust, S.M.
1987 Analysis of the Faunal Remains from Town of Rincon. In *The Rincon Townsite: Cultural Resource Investigation*, by R.S. Greenwood and J.M. Foster, U.S. Army Corps of Engineers, Los Angeles.

Haggar, R.G.
1967 Pottery. In *A History of the County of Stafford*, edited by M. W. Greenslade and J. G. Jenkins, pp. 1-67. Oxford University Press, Oxford.

Hall, Matthew C.
1980 Surface Archaeology of the Bodie Hills Geothermal Area, Mono County, California. MS, Bureau of Land Management, Bakersfield, California.

1981 Land-use Change in Owens Valley Prehistory: A Matter of Statistical Inference. *American Antiquity* 46:648-656.

1983 Late Holocene Hunter-Gatherers and Volcanism in the Long Valley-Mono Basin Region: Prehistoric Culture Change in the Eastern Sierra Nevada. Ph.D. dissertation, Department of Anthropology, University of California, Riverside.

1984 Obsidian, Paleoeconomy, and Volcanism in the Eastern Sierra Nevada. Paper presented at the Great Basin Anthropological Conference, 19th Biennial Meeting, Boise, Idaho.

1986 Report on a Cultural Resources Survey of Proposed Electrical Interconnection Routes, Inyo and Mono Counties, California, United States Bureau of Land Management, Los Angeles Department of Water and Power, and Southern California Edison Lands. MS, Bureau of Land Management, Bishop, California.

1987 Report on Archaeological Investigations at CA-MNO-2183 and a Cultural Resources Survey of Adjacent Properties near Casa Diablo Hot Spring, Mono County, California. MS, Carey and Thomas, Brea, California.

1990 The Oxbow Archaeological Incident: Investigations at Twenty-three Locations Between Owens Valley, Eastern California, and Walker Basin, Southwestern Nevada. MS, Inyo National Forest, Bishop, California.

1991 Notes on Archaeological Investigations Along the Oxbow Powerline Corridor, Central-eastern California and Southwestern Nevada. *Society for California Archaeology Newsletter* 25(6):1-6.

Hall, Matthew C., and Robert J. Jackson
1990 Obsidian Hydration Rates in California. In "Current Directions in California Obsidian Studies," edited by Richard E. Hughes, pp. 31-58. *Contributions of the University of California Archaeological Research Facility* 48. Berkeley.

Hall, Matthew C., and James P. Barker
1975 Background to Prehistory of the El Paso/Red Mountain Desert Region. MS, Archaeological Research Unit, Riverside, California.

Hamer, Frank, and Janet Hamer
1986 *The Potter's Dictionary of Materials and Techniques.* Rev. ed. Watson-Guptill Publications, New York.

Haney, Jefferson W.
1992 Acorn Exploitation in the Eastern Sierra Nevada. *Journal of California and Great Basin Anthropology* 14:94-109.

Hannah, Frances
1986 *Ceramics: Twentieth-Century Design.* E.P. Dutton, New York.

Hansen, Arthur A.
1991 *Japanese American World War II Evacuation History Project: Part II, Administration.* Meckler Publishing, Westport, Connecticut.

Hansen, Arthur A., and David A. Hacker
1974 The Manzanar Riot: An Ethic Perspective. *Amerasia Journal* 2:112– 57.

Hansen, Arthur A., and Betty E. Mitson
1974 *Voices Long Silent: An Oral Inquiry into the Japanese American Evacuation.* Japanese American Project, California State University, Fullerton.

Hansen, Arthur A., Debra Gold Hansen, Sue Kunitomi Embrey, Jane C. Wehrey, Garnette Long, and Kathleen Frazee
1995 *An Annotated Bibliography for Manzanar National Historic Site.* National Park Service, Denver Service Center.

Hardesty, Donald L.
1990 Historical Archaeology in the Intermountain West: Retrospect and Prospect. Paper presented at the Society for Historical Archaeology Conference on Historical and Underwater Archaeology, Tucson, Arizona.

1991 Toward an Historical Archaeology of the Intermountain West. *Historical Archaeology* 25:29-35.

Harrington, Mark Raymond
1949 A New Old House at Little Lake. *The Masterkey* 23:135-136.

1950 Pinto Man at Little Lake. *Desert Magazine* 13(11):22-24.

1951 Latest from Little Lake. *The Masterkey* 25: 188-191.

1952 The Fossil Falls Site. *The Masterkey* 26:191-195.

Harrington, Mark Raymond (continued)
1953 A Cave near Little Lake. *The Masterkey* 27: 77-82.

1957 A Pinto Site at Little Lake, California. *Southwest Museum Papers* 17.

Heide, Robert, and John Gilman
1995 *Home Front America: Popular Culture of the World War II Era.* Chronicle Books, San Francisco.

Heizer, Robert F., and Martin A. Baumhoff
1961 The Archaeology of Two Sites at Eastgate, Churchill County, Nevada. *University of California Anthropological Records* 20(4):119-149. Berkeley.

Heizer, Robert F., and C. William Clewlow, Jr.
1968 Projectile Points from Site NV-CH-15, Churchill County, Nevada. *University of California Anthropological Survey Reports* 71:59-88. Berkeley.

Heizer, Robert F., and Thomas R. Hester
1978 Great Basin. In *Chronologies in New World Archaeology*, edited by R. E. Taylor and Clement W. Meighan, pp. 147-199. Academic Press, New York.

Heizer, Robert F., Martin A. Baumhoff, and C. William Clewlow, Jr.
1968 The Archaeology of South Fork Shelter, Elko County, Nevada. *University of California Anthropological Survey Reports* 71:1-58. Berkeley.

Herskovitz, Robert M.
1978 Fort Bowie Material Culture. *University of Arizona Anthropological Papers* 31. University of Arizona Press, Tucson.

Hersey, John
1988 A Mistake of Terrifically Horrible Proportions. In *Manzanar: Commentary by John Hersey, Photographs by Ansel Adams,* by John Armor and Peter Wright, pp. 1-66. Times Books, New York.

Hildebrandt, William
1981 Interlaken Right of Way Project Archaeological Impact Study. MS, Inyo National Forest, Bishop, California.

1988 Vertebrate Faunal Remains. In *The Archaeology of CA-INY-30: Prehistoric Culture Change in the Southern Owens Valley, California,* by M.E. Basgall and K.R. McGuire, pp. 324-336. California Department of Transportation, Sacramento.

Hildebrandt, William (continued)
1989 Archaeological Survey for a Proposed Soda Ash Plant, Inyo County, California. MS, Lake Minerals Corporation, Lone Pine, California.

Hildebrandt, William R., and Amy J. Gilreath
1988 Prehistoric Land-use Change in the Coso Volcanic Filed, Inyo County, California. Paper presented at the 21st Great Basin Anthropological Conference, Park City, Utah.

Hirabayashi, Gordon K.
1991 The Japanese Canadians and World War II. In *Japanese Americans From Relocation to Redress*, Revised Edition, edited by Roger Daniels, Sandra C. Taylor, and Harry H.L. Kitano, pp. 139-141. University of Washington Press, Seattle.

Hirabayashi, Lane Ryo, and James Hirabayashi
1984 A Reconsideration of the United States Military's Role in the Violation of Japanese-American Citizenship Rights. In *Ethnicity and War*, edited by Winston A. Van Horne and Thomas V. Tonnesen, pp. 87-110. University of Wisconsin, American Ethnic Studies Coordinating Committee, Milwaukee.

1989 The "Credible" Witness: The Central Role of Richard S. Nishimoto in JERS. In *Views from Within: The Japanese American Evacuation and Resettlement Study*, edited by Yuji Ichioka, pp. 65-94. Asian American Studies Center, Los Angeles.

Hockett, B.S.
1991 Toward Distinguishing Human and Raptor Patterning on Leporid Bones. *American Antiquity* 56:667-679.

Hoffman, Abraham
1984 *Vision or Villainy: Origins of the Owens Valley-Los Angeles Water Controversy.* Texas A&M University Press, College Station.

Hoffmeister, D.F.
1986 *Mammals of Arizona.* University of Arizona Press, Tucson.

Hoover, John E. (editor)
1975 *Remington's Pharmaceutical Sciences.* Mack Publishing Company, Easton, Pennsylvania.

Hough, Walter
1903 Archaeological Fieldwork in Northeastern Arizona: The Museum Gates Expedition of 1901. *Annual Report of the Smithsonian Institution,* 1901, Washington, D.C.

Houston, Jeanne Wakatsuki, and James D. Houston
1973 *Farewell to Manzanar.* Bantam Books, New York.

Hughes, Elizabeth, and Marion Lester
1991 *The Big Book of Buttons.* New Leaf Publishers, Sedgwick, Maine.

Hughes, Richard E.
1982 Age and Exploitation of Obsidian from the Medicine Lake Highland, California. *Journal of Archaeological Science* 9:173-185.

1983 X-ray Fluorescence Characterization of Obsidian. In "The Archaeology of Monitor Valley 2: Gatecliff Shelter," David Hurst Thomas, pp. 401-408. *Anthropological Papers of the American Museum of Natural History* 59(1). New York.

1984 Obsidian Sourcing Studies in the Great Basin: Problems and Prospects. In "Obsidian Studies in the Great Basin," edited by Richard E. Hughes, pp. 1-19. *Contributions of the University of California Archaeological Research Facility* 45. Berkeley.

1985 Obsidian Source Use at Hidden Cave. In "The Archaeology of Hidden Cave, Nevada," by David Hurst Thomas, pp. 332-353. *Anthropological Papers of the American Museum of Natural History* 61(1). New York.

1988 The Coso Volcanic Field Reexamined: Implications for Obsidian Sourcing and Hydration Dating Research. *Geoarchaeology* 3:253-265.

1989 A New Look at Mono Basin Obsidians. In "Current Directions in California Obsidian Studies," edited by Richard E. Hughes, pp. 1-12. *Contributions of the University of California Archaeological Research Facility* 48.

1993 Trace Element Geochemistry of Volcanic Glass from the Obsidian Cliffs Flow, Three Sisters Wilderness, Oregon. *Northwest Science* 67:199-207.

1990 Obsidian Sources at James Creek Shelter, and Trace Element Geochemistry of Some Northeastern Nevada Volcanic Glasses. In "The Archaeology of James Creek Shelter," edited by Robert G. Elston and Elizabeth E. Budy, pp. 297-305. *University of Utah Anthropological Papers* 115.

Hughes, Richard E. (continued)
n.d. Intrasource Chemical Variability of Artifact-Quality Obsidians from the Casa Diablo Area, California. *Journal of Archaeological Science* 21. In press.

Hughes, Richard E., and James A. Bennyhoff
1986 Early Trade. In *Handbook of North American Indians, Volume 11: Great Basin*, edited by Warren L. d'Azevedo, pp. 238-255. Smithsonian Institution, Washington, D.C.

Hughes, Richard E., and Robert L. Bettinger
1984 Obsidian and Prehistoric Sociocultural Systems in California. In "Exploring the Limits: Frontiers and Boundaries in Prehistory," edited by S.P. DeAtley and F.J. Findlow, pp. 153-172. *British Archaeological Reports, International Series* 223.

Hughes, Richard E., and William B. Lees
1991 Provenance Analysis of Obsidian from Two Late Prehistoric Archaeological Sites in Kansas. *Transactions of the Kansas Academy of Science* 94:38-45.

Hull-Walski, Deborah A., and James E. Ayres
1989 *The Historical Archaeology of Dam Construction Camps in Central Arizona, Volume 3: Laboratory Methods and Data Computerization.* Dames and Moore, Phoenix.

Huxford, Bob, and Sharon Huxford
1992 *The Collector's Encyclopedia of Fiesta.* 7th ed. Collector Books, Paducah, Kentucky.

Ichioka, Yuji
1989 *Views from Within: The Japanese American Evacuation and Resettlement Study.* Asian American Studies Center, University of California, Los Angeles.

Ingles, L.G.
1965 *Mammals of the Pacific States* . Stanford University Press, Stanford.

Inoshita, Msaji
1995 The Story of One Japanese-American Family: Gila River Japanese Resettlement Camp. Arizona Historical Society Spring Lecture Series, WWII: The Arizona Homefront. Tucson.

Irwin, Charles N.
1980 The Shoshoni Indians of Inyo County, California: The Kerr Manuscript. *Ballena Press Publications in Archaeology, Ethnology and History* 15. Socorro, New Mexico.

Ishimaru, Stone S.
1987 *War Relocation Authority, Manzanar Relocation Center, Manzanar, 1942–1945.* TecCom Productions, Los Angeles.

Israel, Fred L. (editor)
1968 *1897 Sears Roebuck Catalogue.* Chelsea House, New York.

Jack, Robert N., and I.S.E. Carmichael
1969 The Chemical 'Fingerprinting' of Acid Volcanic Rocks. *California Division of Mines and Geology, Special Paper* 100:17-32. San Francisco.

Jack, Robert N.
1976 Prehistoric Obsidian in California I: Geochemical Aspects. In *Advances in Obsidian Glass Studies: Archaeological and Geochemical Perspectives*, edited by R.E. Taylor, pp. 183-217. Noyes Press, Park Ridge, New Jersey.

Jackson, Robert J.
1985 An Archaeological Survey of the Wet, Antelope, Railroad, and Ford Timber Sale Compartments in the Inyo National Forest. MS, Inyo National Forest, Bishop, California.

1986 Archaeological Investigations at the Triple R Site (CA-MNO-714). MS, Inyo National Forest, Bishop, California.

Jackson, Robert J., and Robert L. Bettinger
1985 Projectile Points. In An Archaeological Survey of the Wet, Antelope, Railroad, and Ford Timber Sale Compartments in the Inyo National Forest, by Robert J. Jackson, pp. 49-70. MS, Inyo National Forest, Bishop, California.

Jackson, Thomas
1984 A Reassessment of Obsidian Production Analysis for the Bodie Hills and Casa Diablo Quarry Areas. In "Obsidian Studies in the Great Basin," edited by Richard E. Hughes, pp. 117-134. *Contributions of the University of California Archaeological Research Facility* 45. Berkeley.

James, Steven R.
1990 Monitoring Archaeofaunal Changes During the Transition to Agriculture in the American Southwest. *Kiva* 56:25-44.

1994 Hohokam Hunting and Fishing Patterns at Pueblo Grande: Results of the Archaeofaunal Analysis. In "The Pueblo Grande Project, Volume 5: Environment and Subsistence," edited by S. Kwiatkowski. *Soil Systems Publications in Archaeology* 20, Phoenix.

Japanese American Curriculum Project (JACP)
1973 *Wartime Hysteria: The Role of the Press in the Removal of 110,000 persons of Japanese Ancestry during World War II, a Gathering of Actual Newspaper and Magazine Clippings.* Japanese American Curriculum Project, San Mateo, California.

Jaques, Dennis
1992 Preliminary Evaluation of Vegetation Changes from 1906 to 1968 to 1982 in the Southern Half of Owens Valley, California. In *The History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains, White Mountain Research Station Symposium, Volume 4*, edited by Clarence A. Hall, Jr., Victoria Doyle-Jones and Barbara Widawski, pp. 444-445. White Mountain Research Station, Bishop, California.

Jennings, Jesse D.
1986 Prehistory: Introduction. In *Handbook of North American Indians,* volume 11, Great Basin, edited by W.L. d'Azevedo, pp. 113-119. Washington, D.C.

Jensen, Karolyn Jackmen
1993 Analysis of Artifacts from Butte Camp. In "Return to Butte Camp: A Japanese-American World War II Relocation Center," by Orit Tamir, Scott C. Russell, Karolyn Jackmen Jensen, and Shereen Lerner, pp. 113-128. *Cultural Resources Report* 82. Archaeological Consulting Services, Ltd. Tempe, Arizona.

Johnson, David F.
1948a *Uniform Buttons, Volume I, Descriptions and Values.* Century House, Watkins Glen, New York.

1948b *Uniform Buttons, Volume II Illustrations and Index.* Century House, Watkins Glen, New York.

Johnson, Jerald J.
1993 Manos and Metates in Northern California: An Example of the Need for More Stringent Application of the Scientific Method. In "There Grows a Green Tree: Papers in Honor of David A. Fredrickson," edited G. White, P. Mikkelsen, W.R. Hildebrandt, and M.E. Basgall, pp. 335-350. *Center for Archaeological Research at Davis Publication* 11. Davis, California.

Jones, Olive, and Catherine Sullivan
1989 *The Parks Canada Glass Glossary for the Description of Containers, Tableware, Flat Glass, and Closures.* Canadian Parks Service, Ottawa.

Jones, Vera T.
1977 Manzanar. In *Saga of Inyo County,* edited by the Southern Inyo American Association of Retired Persons, p. 106. Taylor Publishing Company, Covina, California.

Jones, W. Unite
1946 *The Button Industry.* Pitman Publishing, London.

Kahrl, William l.
1982 *Water and Power: The Conflict over Los Angeles' Water Supply in the Owens Valley.* University of California Press, Berkeley.

1988 The Politics of California Water: Owens Valley and the Los Angeles Aqueduct, 1900-1927, In *Mountains to Desert, Selected Inyo Readings,* compiled by Friends of the Eastern California Museum, pp. 117-194. Eastern California Museum, Independence.

Kelly, Roger
1992 Historical Archeology of Confinement: Manzanar Case Study. MS, Western Regional Office, National Park Service, San Francisco.

1993 Bobby Socks and Barbed Wire at "Ringo-en:" Historical Archeology of Confinement at Manzanar. Paper presented at the Society for California Archaeology 27th Annual Meeting, Asilomar.

Kelly, I.T.
1932 Ethnography of the Surprise Valley Paiute. *University of California Publications in American Archaeology and Ethnology* 31.

Kerr, Ann
1985 *Russell Wright Dinnerware: Designs for the American Table.* Collector Books, Paducah, Kentucky.

Kerri, Kenneth D., Bill B. Dendy, John Bradt, and William Crooks
1992 *Operation of Wastewater Treatment Plants, Volume I: A Field Study Training Program.* Hornet Foundation, California State University, Sacramento.

Ketchum, William C., Jr.
1971 *The Pottery and Porcelain Collector's Handbook.* Funk and Wagnalls, New York.

1983 *Pottery and Porcelain.* Knopf, New York.

Kilgore, Margaret, A.
1988 "Tales of the Building of the First Los Angeles Aqueduct," in *Mountains to Desert, Selected Inyo Readings.* Compiled by Friends of the Eastern California Museum, pp. 195-217. Eastern California Museum, Independence.

Knopf, Adolph, and Edwin Kirk
1918 A Geological Reconnaissance of the Inyo Range and the Eastern Slope of the Southern Sierra Nevada, California, with a Section on the Stratigraphy of the Inyo Range. *United States Geological Survey Professional Paper* 110. Government Printing Office, Washington, D.C.

Kobori, L.S., C.I. Busby, J.C. Bard, and J.M. Findlay
1980 A Class II Cultural Resources Inventory of the Bureau of Land Management's Bodie and Coleville Planning Units, California. MS, Bureau of Land Management, Bakersfield.

Korth, W.W.
1979 Taphonomy of Microvertebrate Fossil Assemblages. *Annals of Carnegie Museum, Carnegie Museum of Natural History* 48:235-285.

Kovel, Ralph M., and Terry H. Kovel
1953 *Dictionary of Marks — Pottery and Porcelain.* Crown Publishers, New York.

1986 *Kovels' New Dictionary of Marks: Pottery and Porcelain, 1850 to the Present.* Crown Publishers, New York.

Kroeber, Alfred L.
1925 Handbook of the Indians of California. *Bureau of American Ethnology Bulletin* 78. Washington, D.C.

Kunitsugu, Kango (editor)
1990 *The First Rohwer Reunion.* Rohwer Reunion Committee, Gardena, California.

Lamb, Sydney M.
1958 Linguistic Prehistory in the Great Basin. *International Journal of American Linguistics* 24:95-100.

Lanning, E. P.
1963 Archaeology of the Rose Spring Site, Iny-372. *University of California Publications in American Archaeology and Ethnology* 49:237-336. Berkeley.

Lawton, H.W, P.J. Wilke, M. DeDecker, and W.M. Mason
1976 Agriculture among the Paiute of Owens Valley. *Journal of California Anthropology* 3:13-50.

Leff, Mark H.
1991 The Politics of Sacrifice on the American Home Front in World War II. *Journal of American History* 77:1296.

Lehman, Anthony L.
1970 *Birthright of Barbed Wire: The Santa Anita Assembly Center for the Japanese.* Westernlore, Los Angeles.

Lehner, Lois
1980 *Complete Book of American Kitchen and Dinner Wares.* Wallace-Homestead, Des Moines, Iowa.

1988 *Lehner's Encyclopedia of U.S. Marks on Pottery, Porcelain, and Clay.* Collector Books, Paducah, Kentucky.

Leibowitz, Joan
1985 *Yellow Ware: The Transitional Ceramic.* Schiffer Publishing, Exton, Pennsylvania.

Lief, Alfred
1965 *A Close-Up of Closures: History and Progress.* Glass Container Manufacturers Institute, New York.

Leonard, N. Nelson, III
1974 An Archaeological Reconnaissance of the Proposed Mammoth Lakes Development. MS, Dempsey Construction, Mammoth Lakes, California.

Levie, A.
1963 *The Meat Handbook.* Avi Publishing Company, Westport, Connecticut.

Levine, Ellen
1995 *A Fence Away from Freedom: Japanese Americans and World War II.* G.P. Putnam's Sons, New York.

Library of Congress
1995 "Dorothea Lange." Women Come to the Front: Journalists, Photographs, and Broadcasters During World War II. <http://lcweb.loc.gov/exhibits/wcf/wcf0013.html> (February 5, 1996).

Likes, Robert C., and Glenn R. Day
1975 *From this Mountain: Cerro Gordo.* Chalfant Press, Bishop, California.

Liljelad, Sven, and Catherine S. Fowler
1986 Owens Valley Paiute. In *Handbook of North American Indians*, Volume 11: Great Basin, edited by W.L. d'Azevedo, pp. 412-434. Smithsonian Institution, Washington, D.C.

Lingeman, Richard R.
1970 *Don't You Know There's a War On? The American Home Front, 1941-1945.* Putman, New York.

Little, W. Morse, M.D.
1945 Health Section Final Sectional Report. War Relocation Authority, Manzanar Relocation Center, California (UCLA Special Collections).

Litts, Elyce
1988 *The Collector's Encyclopedia of Geisha Girl Porcelain.* Collector Books, Paducah, Kentucky.

Loew, Oscar
1876 Notes Upon the Ethnology of Southern California and Adjacent Regions. In *Annual Report of the U.S. War Department, Report of the Chief of Engineers for 1876,* Volume 23 (Appendix J.J) Part H.4, pp. 541-547. Washington, D.C.

Lorraine, Dessamae
1968 An Archaeologist's Guide to Nineteenth Century Glass. *Historical Archaeology* 2:35-44.

Los Angeles Department of Water and Power
1905-51 Records. Real Estate Division Archives, Northern Field Office, Bishop, California.

Luscomb, Sally C.
1979 *The Collector's Encyclopedia of Buttons.* Crown Publishers, Inc., New York.

Lyman, R.L.
1984 Bone Density and Differential Survivorship of Fossil Classes. *Journal of Anthropological Archaeology* 3:259-299.

1994 *Vertebrate Taphonomy.* Cambridge University Press, Cambridge.

1977 Analysis of Historic Faunal Remains. *Historical Archaeology* 11:67-73.

Lyman, R.L., and G.L. Fox
1989 A Critical Evaluation of Bone Weathering as an Indication of Bone Assemblage Formation. *Journal of Archaeological Science* 16:293-317.

MacNair, James L.
1945 Motor Transport and Maintenance Section Final Sectional Report. War Relocation Authority, Manzanar Relocation Center, California (UCLA Special Collections).

McCarthy, Helen, Robert A. Hicks, and Clinton M. Blount
1985 A Functional Analysis of Bedrock Mortars: Western Mono Food Processing in the Southern Sierra Nevada. In "Cultural Resources of the Crane Valley Hydroelectric Project Area, Volume I," by INFOTEC Research, Inc. and Theodoratus Cultural Research, Inc., pp. 303-346. MS, Pacific Gas and Electric Company, San Francisco.

McConnell, Horce R., and Henry A. Hill
1946 Agriculture Section Final Sectional Report. War Relocation Authority, Manzanar Relocation Center, California (UCLA Special Collections).

McGinnis, S.M.
1984 *Freshwater Fishes of California.* University of California Press, Berkeley.

McGrath, Roger D.
1988 "No Goodee Cowman," in *Mountains to Desert, Selected Inyo Readings.* Compiled by Friends of the Eastern California Museum, pp. 17–73. Eastern California Museum, Independence.

McGuire, Kelly R., and Alan P. Garfinkel
1980 *Archaeological Investigations in the Southern Sierra Nevada: The Bear Mountain Segment of the Pacific Crest Trail.* Cultural Resources Publications, Bureau of Land Management, Bakersfield, California.

McNamara, E. P.
1948 *Ceramics,* Vol. III. Pennsylvania State University, State College.

McPherrin, John W. (editor)
1947 *American Druggist Blue Book, 18th Edition.* Hearst Magazines Inc, New York.

McWilliams, Carey
1942 Moving the West Coast Japanese. *Harpers Magazine* 185:359-369.

Madden, Milton Thomas
1969 A Physical History of the Japanese Relocation Camp Located at Rivers, Arizona. Master's thesis, University of Arizona, Tucson.

Majewski, Teresita
1994 The Recognition of Style in Late 19th-Century Ceramics: Implications for Archaeological Interpretation. Paper Presented at the 1994 Conference on Historical and Underwater Archaeology, Vancouver, British Columbia.

Majewski, Teresita, and Michael J. O'Brien
1987 The Use and Misuse of Nineteenth-Century English and American Ceramics in Archaeological Analysis. In *Advances in Archaeological Method and Theory*, edited by Michael B. Schiffer, pp. 97-209. Academic Press, San Diego.

Mallery, G.
1886 Pictographs of the North American Indians: A Preliminary Paper. *Bureau of American Ethnology Annual Report* 4:3-256. Washington, D.C.

1893 Picture-writing of the American Indians. *Bureau of American Ethnology Annual Report* 10:3-807.

Manzanar Commercial Club
1919 *Manzanar, Owens River Valley, Inyo County, California.* Manzanar Commercial Club, Manzanar (Eastern California Museum).

Manzanar Fixed Assets Inventory
1945 Manzanar Fixed Assets Inventory. Manzanar Relocation Center, California (UCLA Special Collections).

Martin, Emilie
1992 Water's Role in Early History of Inyo National Forest. In *The History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains, White Mountain Research Station Symposium, Volume 4*, edited by Clarence A. Hall, Jr., Victoria Doyle-Jones and Barbara Widawski, pp. 285-293. White Mountain Research Station, Bishop, California.

Matranga, P.F., and S.M. Stearns
1982 Archaeological Investigations along SR 359, Mineral County, Nevada. MS, Archaeological Section, Nevada Department of Transportation, Carson City.

Matzer, Marla
1995 Hollywood: Coming Soon to a Town Near You. *Spy* 9(2):37-44.

Maxwell, D.B.S.
1993 Beer Cans: A Guide for the Archaeologist. *Historical Archaeology* 27:37-44.

Mehringer, Peter J., Jr.
1986 Prehistoric Environments. In *Handbook of North American Indians 11: Great Basin*, edited by Warren L. D'Azevedo, pp. 31-50. Smithsonian Institution, Washington, D.C.

Mehringer, Peter J., Jr., and John C. Shepherd
1978 Holocene History of Little Lake, Mohave Desert, California. In "Ancient Californians: Rancholabrean Hunters of the Mohave Lakes Country," E.L. Davis, editor, pp. 153-166. *Natural History Museum of Los Angeles County Science Series* 29.

Meighan, Clement W.
1955 Notes on the Archaeology of Mono County, California. In "Papers in California Archaeology 27-29, pp. 6-28. *University of California Archaeological Survey Reports* 28. Berkeley.

Meighan, Clement W., and P. I. Vanderhoeven
1978 Obsidian Dates II: A Compendium of the Obsidian Hydration Determinations Made at the UCLA Obsidian Hydration Laboratory. *University of California, Institute of Archaeology Monograph* VI. Los Angeles.

Mentholatum Company Ltd.
1996 Mentholatum Company Information. <http://www.webscot.com/sba/menthol.htm> (September 23, 1996).

Merriam, C. Hart
1955 *Studies of California Indians.* University of California Press, Berkeley.

Merritt, Ralph P.
1946 Project Director's Final Report. War Relocation Authority, Manzanar Relocation Center, California (UCLA Special Collections).

Merritt, Ralph P., Jr.
1987 Death Valley—Its Impounded Americans. *Death Valley '49ers Encampment Keepsake* 49.

Michael, William
1993 *At the Plow and in the Harvest Field: Indian Conflict and Accommodation in the Owens Valley 1860-1880.* Master's thesis, Department of History, University of Oklahoma, Norman.

Michels, Joseph W.
1964 Archaeological Investigations of the Mammoth Junction Site (MNO-382). MS, California Department of Transportation, Sacramento.

Miller, George L.
1980 Classification and Economic Scaling of 19th Century Ceramics. *Historical Archaeology* 14:1-40.

Miller, George L., and Meredith Moodey
1986 Of Fish and Sherds: A Model for Estimating Vessel Populations from Minimal Vessel Counts. *Historical Archaeology* 20:59-85.

Miller, George L., and Catherine Sullivan
1984 Machine-Made Glass Containers and the End of Production for Mouth-Blown Bottles. *Historical Archaeology* 18:81-96.

Miller, Gordon R.
1977 Los Angeles and the Owens River Aqueduct. Ph.D. dissertation, Department of History, Claremont Graduate School.

Mitson, Betty E., and Arthur A. Hansen
1974 Voices long Silent: An Oral Inquiry into the Japanese American Excavation. Oral History Program, California State University, Fullerton.

Mone, Sheila L.
1986 CA-MNO-574, a Secondary Reduction Site in Long Valley, Mono County, California. MS, California Department of Transportation, Sacramento.

Moodey, Meredith
1988 *Ceramics from the Franklin Glassworks: Acquisition Patterns and Economic Stress.* Master's thesis, Department of Anthropology, College of William and Mary, Williamsburg, Virginia.

Moore, Mark W., and Shelly Raven
1991 Archaeological Testing and Evaluation of CA-MNO-1202 for the Southern California Edison Company Mammoth Service Center Extension and a Storm Drain and Sedimentation Project (Town of Mammoth Lakes) in Mammoth Lakes, Mono Lakes, California. MS, Southern California Edison Company, Rosemead, California.

Moratto, Michael J.
1972 A Study of Prehistory in the Southern Sierra Nevada Foothills, California. Ph.D. dissertation, Department of Anthropology, University of Oregon, Eugene.

1984 *California Archaeology.* Academic Press, New York.

Moratto, Michael J., Thomas F. King, and Wallace B. Woolfenden
1978 Archaeology and California's Climate. *Journal of California Anthropology* 5:147-162.

Moyle, P.B.
1976 *Inland Fishes of California.* University of California Press, Berkeley.

Munday, F. C., and T. R. Lincoln
1979 A Comment on Bettinger: Problems in Archaeological Interpretation. *American Antiquity* 44:345-351.

Munsell Color
1975 *Munsell Soil Color Charts.* Macbeth, Baltimore.

Myer, Dillon S.
1971 *Uprooted Americans: The Japanese Americans and the War Relocation Authority During World War II.* University of Arizona Press, Tucson.

Nadeau, Remi A.
1950 *The Water Seekers.* Chalfant Press, Bishop, California.

Napton, L.K., and E.A. Greathouse
1986 Archaeological Investigations at Mount Hicks-Alkali Lake, Nevada. Paper presented at the Twentieth Great Basin Anthropological Conference, Las Vegas.

National Park Service
1989 Study of Alternatives for Manzanar War Relocation Center. National Park Service, Western Regional Office, San Francisco.

1995 Manzanar National Historic Site, California, Draft General Management Plan and Environmental Impact Statement. MS, Western Regional Office, National Park Service, San Francisco.

Nelson, Douglas W.
1970 Heart Mountain: The History of an American Concentration Camp. Master's thesis, Department of History, University of Wyoming.

Nelson, Lee H.
1968 Nail Chronology as an Aid to Dating Old Buildings. *American Association for State and Local History Technical Leaflet* 48.

Newcomb, Rexford, Jr.
1947 *Ceramic Whitewares: History, Technology, and Applications.* Pitman, New York.

Newman, T. Sell
1970 A Dating Key for Post-Eighteenth Century Bottles. *Historical Archaeology* 4:70-75.

Nielsen, Aksol G., and Rollin C. Fox
1945 Community Activity Section Final Sectional Report. War Relocation Authority, Manzanar Relocation Center, California (UCLA Special Collections).

Nishimoto, Richard S.
1995 *Inside an American Concentration Camp: Japanese American Resistance at Poston, Arizona.* University of Arizona Press, Tucson.

Nomura, Shi
1979 Points of Interest, Camp Manzanar. MS, Eastern California Museum, Independence, California.

Norwood, Richard H., Charles S. Bull, and Ronald Quinn
1980 *A Cultural Resources Overview of the Eureka, Saline, Panamint and Darwin Region, East Central, California.* Cultural Resources Publications, Bureau of Land Management, Riverside, California.

Ogaawa, Dennis M., and Evarts C. Fox, Jr.
1991 Japanese Internment and Relocation: The Hawaii Experience. In *Japanese Americans From Relocation to Redress*, Revised Edition, edited by Roger Daniels, Sandra C. Taylor, and Harry H.L. Kitano, pp. 135-138. University of Washington Press, Seattle.

Okihiro, Gary Y.
1973 "Japanese Resistance in America's Concentration Camps: A Re-evaluation." *Amerasia Journal* 2:20–34.

1984 Religion and Resistance in America's Concentration Camps. *Phylon* 45:220-233.

Olsen, Stanley J.
1964 Mammal Remains from Archaeological Sites: Part I. Southeastern and Southwestern United States. *Papers of the Peabody Museum of American Archaeology and Ethnology* 56(1). Harvard University, Cambridge.

1968 Fish, Amphibian and Reptile Remains from Archaeological Sites: Part I. Southeastern and Southwestern United States. *Papers of the Peabody Museum of American Archaeology and Ethnology* 56(2). Harvard University, Cambridge.

1972 Osteology for the Archaeologist: No. 4. North American Birds. *Papers of the Peabody Museum of American Archaeology and Ethnology* 56(4). Harvard University, Cambridge.

Ostrom, Vincent
1953 *Water and Politics: A Study of Water Policies and Administration in the Development of Los Angeles.* Haynes Foundation, Los Angeles.

Pakiser, L.C., M.F. Kane, and W.H. Jackson
1964 Structural Geology and Volcanism of Owens Valley Region, California—A Geophysical Study. *Geological Society Professional Paper* 438. Government Printing Office, Washington, D.C.

Partridge, Elizabeth (editor)
1994 *Dorothea Lange: A Visual Life.* Smithsonian Institution Press, Washington, D.C.

Patterson, Leland W.
1990 Characteristics of Bifacial-Reduction Flake-Size Distribution. *American Antiquity* 55:550-558.

Payne, Harriet Chaffey
1993 The Chaffeys in Owens Valley. *Newsletter for Friends of the Eastern California Museum* 9(2):1-6.

Peak, Ann S.
1975 Cultural Resource Assessment of the Bodie Road from State Highway 395 to a Point near the State Park of Bodie, Mono County, California. MS, Mono County Department of Public Works, Bridgeport, California.

1976 Final Report On the Excavations of CA-MNO-607, Adobe Valley, Mono County, California. Ann Peak and Associates. MS, California Department of Transportation, Sacramento.

Peak, A.S., and R.A. Gerry
1976 Final Report on Test Excavations of CA-MNO-607, Adobe Valley, Mono County, California. MS, California Department of Transportation, Sacramento.

Peterson, R.T.
1990 *A Field Guide to Western Birds.* Houghton Mifflin Company, Boston.

Phillps, Sandra S.
1993 A Friendship of Differences. In *Ansel Adams, New Light: Essays on His Legacy and Legend,* edited by Michael Read, pp. 51-62. The Friends of Photography, San Francisco.

Powell, Douglas R., and Harold E. Klieforth
1991 Weather and Climate. In *Natural History of the White-Inyo Range, Eastern California,* edited by C.A. Hall, Jr., pp. 3-26. University of California Press, Berkeley.

Praetzellis, Mary, Betty Rivers, and Jeanette K. Schulz
1983 Ceramic Marks from Old Sacramento. *California Archaeological Reports* 22. Department of Parks and Recreation, Sacramento.

Pullin, Anne Goffken
1986 *Glass Signatures, Trademarks and Trade Names From the Seventeenth to Twentieth Century.* Wallace-Homestead, Randnor, Pennsylvania.

Putnam, Hazel Elizabeth
1965 *Bottle Identification.* H.E. Putnam, Jamestown, California.

Randall, Mark E.
1971 Early Marbles. *Historical Archaeology* 5:102-105.

Rawlins, E.A.
1977 *Bentley's Textbook of Pharmaceutics.* Baillière Tindall, London.

Reid, J. Jefferson, and Stephanie M. Whittlesey
1982 Archaeological Research for the Practical Prehistorian. In "Cholla Project Archaeology, Volume 1: Introduction and Special Studies," edited by J. Jefferson Reid, pp. 13-26. *Arizona State Museum Archaeological Series* 161. Tucson.

Rhode, David B.
1994 Direct Dating of Brown Ware Ceramics Using Thermoluminescence and Its Relation to the Numic Spread. In *Across the West: Human Population Movement and the Expansion of the Numa,* edited by David B. Madsen and David Rhode, pp. 124-133. University of Utah Press, Salt Lake City.

Rhodes, Daniel
1973 *Clay and Glazes for the Potter.* Chilton, Philadelphia.

Rhodes, Diane Lee
1988 *Archeological Investigations in Skagway, Alaska, Volume 3: The Mill Creek Dump and the Peniel Mission, Klondike Gold Rush National Historical Park.* Denver Service Center, National Park Service, Denver, Colorado.

Riddell, Francis A.
1958 The Eastern California Border: Cultural and Temporal Affinities. *University of California Publications in American Archaeology and Ethnology* 42:41-48. Berkeley.

Riddell, Francis A. (continued)
1963 Report on the Test Excavations of the Rose Spring Site, Inyo County, California. *University of California Publications in American Archaeology and Ethnology* 49:282-286. Berkeley.

Riddell, Harry S., Jr.
1951 Archaeology of a Paiute Village Site in Owens Valley. *University of California Archaeological Survey Report* 12. Berkeley.

Riddell, Harry S., Jr., and Francis A. Riddell
1956 The Current Status of Archaeological Investigations in Owens Valley. *University of California Archaeological Survey Report* 42. Berkeley.

Rifkind, Carole
1980 *A Field Guide to American Architecture.* Times Mirror, New York.

Rock, Jim
1978 Artifact Field Guide. MS, Klamath National Forest, Eureka, California.

1980a Tin Cans: A Few Basics. MS, Klamath National Forest, Eureka, California.

1980b American Bottles: A Few Basics. MS, Klamath National Forest, Eureka, California.

1984 Cans in the Countryside. *Historical Archaeology* 18:97-111.

Röntgen, Robert E.
1981 *Marks on German, Bohemian and Austrian Porcelain, 1710 to the Present.* Schiffer Publishing Company, Atglen, Pennsylvania.

Roosevelt, Eleanor
1945 Japanese Relocation Camps. MS, Franklin D. Roosevelt Library, Hyde Park, New York.

Rostow, Eugene V.
1945 "Our Worst Wartime Mistake." *Harper's* 191:193–201.

Rozen, Kenneth C.
1981 Patterned Associations Among Lithic Technology, Site Content, and Time: Results of the TEP St. Johns Lithic Analysis. In "Prehistory of the St. Johns Area, East-Central Arizona: The TEP St. Johns Project," edited by Deborah A. Westfall, pp. 157-232. *Arizona State Museum Archaeological Series* 153. Tucson.

Russell, Scott C.
1993 The Economy of the Gila River Relocation Center. In "Return to Butte Camp: A Japanese-American World War II Relocation Center," by Orit Tamir, Scott C. Russell, Karolyn Jackmen Jensen, and Shereen Lerner, pp. 55-94. *Cultural Resources Report* 82. Archaeological Consulting Services, Ltd. Tempe, Arizona.

Sakoda, James M.
1989 The "Residue:" The Unsettled Minidokans, 1943-1945, In *Views from Within: The Japanese American Evacuation and Resettlement Study,* edited by Yuji Ichioka, pp. 247-286. Asian American Studies Center, Los Angeles.

Sandridge, Arthur M., and Oliver E. Sisler
1946a Engineering Section Final Sectional Report. War Relocation Authority, Manzanar Relocation Center, California (UCLA Special Collections).

1946b Industrial Section Final Sectional Report. War Relocation Authority, Manzanar Relocation Center, California (UCLA Special Collections).

Sauder, Robert A.
1994 *The Lost Frontier: Water Diversion in the Growth and Destruction of Owens Valley Agriculture.* University of Arizona Press, Tucson.

Sawyer-Lang, Monique
1989 *Recovery of Additional Information from the Gila River Farms Expansion Area: A Study of a Japanese-American Relocation Center.* Cultural Resource Report No. 53. Archaeological Consulting Services, Tempe, Arizona.

Scheidlinger, Carla R.
1992 Owens Valley Wetlands: Inventory and Description. In *The History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains, White Mountain Research Station Symposium, Volume 4*, edited by Clarence A. Hall, Jr., Victoria Doyle-Jones and Barbara Widawski, pp. 445–446. White Mountain Research Station, Bishop, California.

Schiffer, Michael B.
1976 *Behavioral Archaeology.* Academic Press, New York.

1987 *Formation Processes of the Archaeological Record.* University of New Mexico Press, Albuquerque.

Schiffer, Nancy N.
1986 *Japanese Porcelain 1800-1950.* Schiffer Publishing, West Chester, Pennsylvania.

Schroeder, Joseph J., Jr. (editor)
1971 *1908 Sears, Roebuck Catalogue, a Treasured Replica from the Archives of History.* DBI Books, Northfield, Illinois.

1973 *1923 Sears, Roebuck Catalogue, Thrift Book of a Nation.* Digest Books, Northfield, Illinois.

Schulz, P.D., and S.M. Gust
1983 Faunal Remains and Social Status in 19th Century Sacramento. *Historical Archaeology* 17:44-53.

Schuyler, Robert L. (editor)
1978 *Historical Archaeology: A Guide to Substantive and Theoretical Contributions.* Baywood Publishing Company, Farmingdale, New York.

Scovill, Douglas H., Garland J. Gordon, and Keith M. Anderson
1972 Guidelines for the Preparation of Statements of Environmental Impacts on Archaeological Resources. MS, Western Archaeological Center, National Park Service, Tucson, Arizona.

Seabrook, John
1995 The Spinach King. *The New Yorker* February 20-27, pp. 222-235.

Shaffer, B.S.
1992 Quarter-Inch Screening: Understanding Biases in Recovery of Vertebrate Faunal Remains. *American Antiquity* 57:129-136.

Sharp, Robert P.
1972 *Geology Field Guide to Southern California.* Kendall/Hunt, Dubuque, Iowa.

Shipman, P., G. Foster, and M. Schoeninger
1984 Burnt Bones and Teeth: An Experimental Study of Color, Morphology, Crystal Structure and Shrinkage. *Journal of Archaeological Research* 11:307-325.

Sibley, Carol
1945 Manzanar ... An Impression: The Story of Ralph Merritt '07. *California Monthly* August-September 1945. University of California Alumni Association, Berkeley.

Simonis, Don
n.d. Milk Can Typology for Dating Historical Sites. MS, Bureau of Land Management, Kingman, Arizona.

Singer, C.A., and J.E. Ericson
1977 Quarry Analysis at Bodie Hills, Mono County, California: A Case Study. In *Exchange Systems in Prehistory,* edited by T.K. Earle and J.E. Ericson, pp. 171-190. Academic Press, New York.

Sisson, S., and J.D. Grossman
1953 *The Anatomy of the Domestic Animals.* W.B. Saunders Company, Philadelphia.

Smith, Charles R.
1978 Tubatulabal. In *Handbook of North American Indians*, Volume 8: California, edited by R.F. Heizer, pp. 437-445. Smithsonian Institution, Washington, D.C.

Smith, Henry S.
1977 Manzanar. In *Saga of Inyo County,* edited by the Southern Inyo American Association of Retired Persons, p. 104. Taylor Publishing Company, Covina, California.

Smith, Page
1995 *Democracy on Trail: The Japanese American Evacuation and Relocation In World War II.* Simon and Schuster, New York.

Spaulding, Jonathan
1995 *Ansel Adams and the American Landscape: A Biography.* University of California Press, Berkeley.

Spear, Beveridge Ross
1977 William Lyle Hunter, Explorer. In *Saga of Inyo County,* edited by the Southern Inyo American Association of Retired Persons, pp. 163-164. Taylor Publishing Company, Covina, California.

Speth, J.D., and K.A. Spielmann
1983 Energy Source, Protein Metabolism, and Hunter-Gatherer Subsistence Strategies. *Journal of Anthropological Archaeology* 2:1-31.

Spicer, Edward H., Asael T. Hansen, Katherine Luomala, and Marvin K. Opler
1969 *Impounded People: Japanese-Americans in the Relocation Centers.* University of Arizona Press, Tucson.

Spira, T.P.
1991 Plant Zones. In *Natural History of the White-Inyo Range, Eastern California,* edited by C.A. Hall, Jr., pp. 77-86. University of California Press, Berkeley.

Stanley, Jerry
1994 *I am an American: A True Story of Japanese Internment.* Crown Publishers, New York.

Stebbins, R.C.
1985 *Amphibians and Reptiles of Western North America.* McGraw-Hill, New York.

Stein, Pat H.
1988 Homesteading in the Depression: A Study of Two Short-lived Homesteads in the Harquahala Valley, Arizona. MS, Northland Research, Flagstaff, Arizona.

1990 *Homesteading in Arizona: 1862-1940.* Arizona State Historic Preservation Office, Phoenix.

Stenger, Alison
1993 Sourcing and Dating of Asian Porcelains by Elemental Analysis. In *Hidden Heritage: Historical Archaeology of the Overseas Chinese,* compiled and edited by Priscilla Wegars, pp. 315-331. Baywood, Amityville, New York.

Sterud, Gene L.
1965 Preliminary Report of Archaeological Investigations at the Mammoth Junction Site: A Second Season (1964). MS, California Department of Transportation, Environmental Studies Branch, Sacramento.

Steward, Julian H.
1929 Petroglyphs of California and Adjoining States. *University of California Publications in American Archaeology and Ethnology* 33:233-350. Berkeley.

1930 Irrigation without Agriculture. *Papers of the Michigan Academy of Science, Arts, and Letters* 12:149-156.

1933 Ethnography of the Owens Valley Paiute. *University of California Publications in American Archaeology and Ethnology* 34:355-440. Berkeley.

1934 Two Paiute Autobiographies. *University of California Publications in American Archaeology and Ethnology* 33:428-438. Berkeley.

1938 Basin-Plateau Aboriginal Sociopolitical Groups. *Bureau of American Ethnology Bulletin* 120. Smithsonian Institution, Washington, D.C.

Stewart, Omer C.
1939 The Northern Paiute Bands. *University of California Anthropological Records* 2(3). Berkeley.

1941 Culture Element Distributions XIV: Northern Paiute. *University of California Anthropological Records* 4:361-446. Berkeley.

Stitt, Irene
1974 *Japanese Ceramics of the Last 100 Years.* Crown Publishers, New York.

Storer, Tracy I., and Robert L. Usinger
1963 *Sierra Nevada Natural History.* University of California Press, Berkeley.

Sullivan, Alan P., and Kenneth C. Rozen
1985 Debitage Analysis and Archaeological Interpretation. *American Antiquity* 50:755-779.

Sullivan, Mary, Monique Sawyer-Lang, Richard W. Effland, Jr., and Margerie Green
1987 An Archaeological Survey of the Gila Farms Expansion, Pinal County, Arizona. Archaeological Consulting Services, Ltd., Tempe.

Sutton, Mark Q.
1986 A Consideration of the Numic Spread. Ph.D. dissertation, University of California, Riverside.

Suzuki, Peter T.
1981 Anthropologists in the Wartime Camps for Japanese Americans. *Dialectical Anthropology* 6:23–60.

Swenson, James D.
1981 An Archaeological Assessment of the Proposed Site of a Solar Pond Electric Power Generating Facility at Owens Lake, Inyo County, California. MS, California State Lands Commission, Sacramento.

Szuter, C.R.
1984 Faunal Exploitation and the Reliance on Small Animals Among the Hohokam. In "Hohokam Archaeology Along the Salt-Gila Aqueduct Central Arizona Project, Volume VII: Environment and Subsistence," edited by L.S. Teague and P.L. Crown. Arizona State Museum *Archaeological Series* 150. University of Arizona, Tucson.

1989 Spatial and Temporal Intrasite Variability in the Faunal Assemblage from Las Colinas. In "The 1982-1984 Excavations at Las Colinas: Environment and Subsistence," edited by D.A. Graybill, pp. 117-149. Cultural Resource Management Division, Arizona State Museum *Archaeological Series* 162(5). University of Arizona, Tucson.

1991 *Hunting by Prehistoric Horticulturalists in the American Southwest.* Garland Publishing, New York.

1992 Seasonality and Resource Use: Analysis of the Rye Creek Faunal Assemblages. In "The Rye Creek Project: Archaeology in the Upper Tonto Basin," by M.D. Elson and D.B. Craig, pp. 409-427. *Center for Desert Archaeology Anthropological Papers* 11. Tucson.

Tadlock, W. Lewis, and Jean Tadlock
1972 Preliminary Report of Archaeological Investigations at the Hot Creek Hatchery Site, Mono County, California, MNO-611. MS, Department of Anthropology, California State University, Long Beach.

Tajiri, Vincent (editor)
1990 *Through Innocent Eyes: Writings and Art from the Japanese American Internment by Poston I Schoolchildren.* Keiro Services, Los Angeles.

Tamir, Orit, Scott C. Russel, Karolyn Jackman Jensen, and Shereen Lerner
1993 Return to Butte Camp: A Japanese-American World War II Relocation Center. *Cultural Resources Report* 82. Archaeological Consulting Services, Ltd. Tempe, Arizona.

Tateishi, John
1984 *And Justice of All: An Oral History of the Japanese American Detention Camps.* Random House, New York.

Taylor, Paul S.
1942 Our Stakes in the Japanese Exodus. *Survey Graphic* 31:373-375.

Teague, George A.
1980 Reward Mine and Associated Sites, Historical Archeology on the Papago Reservation. *Western Archeological and Conservation Center Publications in Anthropology* 11. National Park Service, Tucson, Arizona.

Teague, George A., and Lynette O. Shenk
1977 Excavations at Harmony Borax Works, Historical Archeology at Death Valley National Monument. *Western Archeological and Conservation Center Publications in Anthropology* 6. National Park Service, Tucson, Arizona.

tenBroek, Jacobus, Edward N. Barnhart, and Floyd W. Matson
1954 *Prejudice, War, and the Constitution: Causes and Consequences of the Evacuation of the Japanese Americans in World War II.* University of California Press, Berkeley.

Thomas, David H.
1973 An Empirical Test for Steward's Model of Great Basin Settlement Patterns. *American Antiquity* 38:155-176.

1981 How to Key the Projectile Points from Monitor Valley. *Journal of California and Great Basin Anthropology* 3:7-44.

Thomas, David H. (continued)
1983 The Archaeology of Monitor Valley 2: Gatecliff Shelter. *Anthropological Papers of the American Museum of Natural History* 59(1). New York.

Thomas, David H., Lorann S.A. Pendleton, and Stephen C. Cappannari
1986 Western Shoshone. In *Handbook of North American Indians*, Volume 11: Great Basin, edited by W.L. d'Azevedo, pp. 262-283. Smithsonian Institution, Washington, D.C.

Thomas, Dorothy Swaine
1952 *The Salvage: Japanese American Evacuation and Resettlement.* University of California Press, Berkeley.

Titus, Clyde R.
1983 The Gardens at Manzanar: Preliminary Report. MS, Eastern California Museum, Independence, California.

Tod, Jack H.
1977 *A History of the Electrical Porcelain Industry in the United States.* Privately printed, Phoenix, Arizona.

Toulouse, Julian Harrison
1971 *Bottle Makers and Their Marks.* Thomas Nelson, New York.

Turnbaugh, Sarah Peabody
1985 Introduction. In *Domestic Pottery of the Northeastern United States, 1625-1850*, edited by Sarah Peabody Turnbaugh, pp. 1-26. Academic Press, Orlando.

Turner, Arnie L., Joseph P. King, Roberta Becker, and Richard H. Brooks
1978 Final Report on the Intensive Archaeological Survey of the Sawmill Timber Sale Compartment, Mono County, California. MS, Inyo National Forest, Bishop, California.

Turner, George B.
1964 *Slim Rails through the Sand.* Trans-Anglo Books, Corona del Mar, California.

United States Department of the Interior
1946 *Wartime Exile: The Exclusion of the Japanese Americans From the West Coast.* Government Printing Office, Washington, D.C. (reprinted 1975, AMS Press, New York).

Uyeda, Clifford I.
1995 *Due Process: Americans of Japanese Ancestry and the United States Constitution.* National Japanese American Historical Society, San Francisco.

Vigel, J.C., A. Fuls, E. Visser, and B. Becker
1993 Pretoria Calibration Curve for Short Lived Samples. *Radiocarbon* 35:73-86.

Van Horn, Lawrence F.
1995 Native American Consultations and Ethnographic Assessment: The Paiutes and Shoshones of Owens Valley, California. MS, National Park Service, Denver Service Center.

von Werlhof, Jay
1965 Rock Art of Owens Valley, California. *University of California Archaeological Survey Reports* 65. Berkeley.

Vorster, Peter
1992 The Development and Decline of Agriculture in the Owens Valley. In *The History of Water: Eastern Sierra Nevada, Owens Valley, White-Inyo Mountains, White Mountain Research Station Symposium, Volume 4,* edited by Clarence A. Hall, Jr., Victoria Doyle-Jones and Barbara Widawski, 268- 284. White Mountain Research Station, Bishop, California.

Walter, Nancy Peterson
1986 The Land Exchange Act of 1937: Creation of the Indian Reservations at Bishop, Big Pine, and Lone Pine, California Through a Land Trade Between the United States of America and the City of Los Angeles. Ph.D. dissertation, Department of Anthropology, Union Graduate School.

Walton, John
1988 Picnic at Alabama Gates: The Owens Valley Rebellion, 1904–1927. In *Mountains to Desert, Selected Inyo Readings.* Compiled by Friends of the Eastern California Museum, pp. 219-249. Eastern California Museum, Independence.

1992 *Western Times and Water Wars: State, Culture, and Rebellion in California.* University of California Press, Berkeley.

War Relocation Authority
1942-46 Records. Special Collections, University of California, Los Angeles.

Ward, Barbara McLean, Tracey E. Adkins, Gregory C. Colati, and Karin E. Cullity
1994 *Produce and Conserve, Share and Paly Square: The Grocer and the Consumer on the Home-Front Battlefield During World War II.* Strawbery Banke Museum, Postsmouth, New Hampshire.

Ware, Caroline Farrar
1942 *The Consumer goes to War, a Guide to Victory on the Home Front.* Funk and Wagnalls, New York.

Warren, C.N., and R.H. Crabtree
1986 Prehistory of the Southwestern Area. In *Handbook of North American Indians*, Volume 11: Great Basin, edited by W.L. d'Azevedo, pp. 183-193. Smithsonian Institution, Washington, D.C.

Waters, Jennifer A.
1995 Rodent Consumption Among the Classic Period Hohokam at Pueblo Grande. Master's thesis, Department of Anthropology, Arizona State University, Tempe.

Watts, A. S.
1939 Classification of Ceramic Dinnerware. *Bulletin of the American Ceramic Society* 18:314-315.

Weaver, Richard A.
1992 Negative Archaeological Survey Report: Manzanar Turn Lane(s). MS, California Department of Transportation, Sacramento.

Weaver, Richard A., and Mark E. Basgall
1986 Aboriginal Exploitation of Pandora Moth Larvae in East-Central California. *Journal of California and Great Basin Anthropology* 8:161-179.

Weaver, Richard A., Stephen J. Bouscaren, and Philip J. Wilke
1984 Test Excavation and Comparative Analysis of Site CA-MNO-1654, near Mammoth Lakes, Mono County, California. MS, Inyo National Forest, Bishop, California.

Weaver, R.A., M.M. Farrell, D.E. Lipp, W.T. Taylor, and R. Giansanti
1982 AMS Resource Narrative: Cultural Resource Management Program, Inyo National Forest, Forest Land and Resources Management Plan. Ms on file, Inyo National Forest, Bishop, California.

Weaver, Richard A., and Matthew C. Hall
1984 The Archaeology of Obsidian Stoneworking Camps in the Western Great Basin. Paper presented at the Great Basin Anthropological Conference, 19th Biennial Meeting, Boise, Idaho.

Webber, Bert
1992 *Silent Siege — III: Japanese Attacks on North America in World War II — Ships Sunk, Air Raids, Bombs Dropped, Civilians Killed.* Webb Research Group, Medford, Oregon.

Weglyn, Michi
1976 *Years of Infamy: The Untold Story of America's Concentration Camps.* Morrow Quill, New York.

Wehrey, Jane C.
1993 Report on Manzanar Pre-camp Period: Data and Sources and Suggestions and Sources for Further Research on Attitudes of Owens Valley Townspeople During Manzanar Camp. MS, Western Archeological and Conservation Center, Tucson.

Wehrey, Jane C. (continued)
1994 Layers of Meaning in a Place and Its Past. MS, Oral History Program, California State University, Fullerton.

Wenter, Lyle G., and Rollin C. Fox
1945 Manzanar Cooperative Enterprise, Inc. Final Sectional Report. War Relocation Authority, Manzanar Relocation Center, California (UCLA Special Collections).

Werner, Ross, Earl White, and Ben T. Hagerty
1939 Detailed Invoice of Structure Improvements Situate on Inyo County Area Properties Owned by the Department of Water and Power of the City of Los Angeles, California. MS, Department of Water and Power, Bishop, California.

Wetherbee, Jean
1985 *A Second Look at White Ironstone.* Wallace-Homestead, Lombard, Illinois.

Wheat, M.M.
1967 *Survival Arts of the Primitive Paiutes.* University of Nevada Press, Reno.

Wheeler A., and A.K.G. Jones
1989 *Fishes.* Cambridge Press, Cambridge.

White, Beatrice H.
1946 A Barrack Becomes a Home. *Forecast for Home Economists* 62(1):54-56.

White, David R.
1990 An Analysis of Subsurface Obsidian Flake Density at CA-MNO-1202, Mammoth Lakes, Mono County, California. MS, Southern California Edison Company, Rosemead, California.

Whitley, David S.
1987 Socioreligious Context and Rock Art in East-Central California. *Journal of Anthropological Archaeology* 6:159-188.

Whitney, Helen Elizabeth
1947 Care of Homeless Children of Japanese Ancestry. Master's thesis, University of California, Berkeley.

Whitney, Stephen
1979 *A Sierra Club Naturalist's Guide to the Sierra Nevada.* Sierra Club Books, San Francisco.

Wilke, Philip J.
1983 An Archaeological Assessment of Certain Sites on Lower Cottonwood Creek, Inyo County, California. MS, Inyo National Forest, Bishop, California.

Wilke, P.J., and H.W. Lawton (editors)
1976 The Expedition of Captain J.W. Davidson from Fort Tejon to the Owens Valley in 1859. *Ballena Press Publications in Archaeology, Ethnology, and History* 8. Socorro, New Mexico.

Wilson, John P.
1984 Fort Huachuca in the Early Prohibition Era: Monitoring the Removal of Site BG-NGB-20, Southern Arizona Auxiliary Field, Fort Huachuca, Arizona. MS, Fort Huachuca Historical Museum.

Wood, Gussie M.
1977a The Kispert Ranch on Georges Creek. In *Saga of Inyo County,* edited by the Southern Inyo American Association of Retired Persons, pp. 113-114. Taylor Publishing Company, Covina, California.

1977b Union District School — On Georges Creek. In *Saga of Inyo County,* edited by the Southern Inyo American Association of Retired Persons, p. 89. Taylor Publishing Company, Covina, California.

Worthy, Linda H.
1982 Classification and Interpretation of Late-Nineteenth and Early-Twentieth-Century Ceramics. In *Archaeology of Urban America: The Search for Pattern and Process*, edited by Roy S. Dickens, Jr., pp. 329-360. Academic Press, New York.

Wright, J.W.A.
1879 The Owens River War and the Cement Hunters. In *San Francisco Daily Evening Post*, November 8 and 22.

Yohe, Robert M., II
1992 A Reevaluation of Western Great Basin Cultural Chronology and Evidence for the Timing of the Introduction of the Bow and Arrow to Eastern California Based on New Excavations at the Rose Spring Site (CA-INY-372). Ph.D. Dissertation, Department of Anthropology, University of California, Riverside.

Zumwalt, Betty
1980 *Ketchup, Pickles, Sauces: 19th Century Food in Glass*. Mark West Publishers, Sand Point, Indiana.

Collections

Aerial Photograph Archives,
Department of Geography, UCLA
Owens Valley photographs ca. 1929–1931

Bureau of Land Management Bakersfield District
(Project Plans and Reports: RG 49, Box 3)
Directory of Surplus Real Property 4/47
Merritt notes ca. 1944

Eastern California Museum
Assessors Records
Manzanar Community File
Remembrances: Gunn, Perry, Rotharmel, Wellington
Shepherd File

Inyo County Court House
Assessors Office Records
Recorders Office Records

National Archives,
Cartographic Division, Washington, D.C.
Manzanar Relocation Center blueprints

National Archives,
Sierra Pacific Division, San Bruno, California
Manzanar Relocation Center Fixed Asset Inventory 1945

Special Collections, UCLA
War Relocation Authority Archive (Collection No. 122)
- Manzanar Relocation Center Files
  - Block Manager's Daily Reports 1942–1945
  - Engineering Folder
  - Merritt Memorandum 1/7/46
  - Merritt Office Files 1942-1946
  - Merritt Scrapbook, 1–8/44
  - Photographs
  - Project Report 11/30/43
  - Progress Reports 4/15/42–7/30/43
  - Quarterly Reports 9/30/42–12/31/42
  - Section Report 3/30/43
  - Semi-Annual Reports 6/30/43–6/30/45
  - Valediction 1945
- War Relocation Authority Files 1942-1946
- Wartime Civilian Control Administration Files 1942

Special Collections, Univ. of Arizona
U.S. War Relocation Authority 1942-1947 (MS 42)
- Photographs
- Quarterly Reports 9/30/42–12/31/42
- Semi-Annual Reports 6/30/43–6/30/45

WCCA Records (MS 239)
- Miscellaneous Reports

Newspapers and Periodicals

Associated Press 12/6/42, 12/10/42
Fresno Bee 1/31/43
Inyo Independent 3/6/42–11/5/42
Inyo Register 12/4/24, 8/28/95
Life 3/6/42
Los Angeles Daily News 3/25/42
Los Angeles Examiner 3/10/42–4/23/42
Los Angeles Times 6/13/26, 11/16/26, 8/13/43, 12/2/46
Los Angeles Times Farm and Orchard Magazine 11/20/27
Manzanar Free Press 6/6/42–9/8/45
Manzanar Sentry 5/18/42
Newsweek 2/2/42, 3/6/42
Owens Valley Progress Citizen 6/11/43, 11/9/45
People's World 4/28/42
San Francisco Chronicle 11/22/45
Time 3/6/42, 4/6/42, 5/18/42, 6/1/42



*U.S. GPO 2000-0-584-809

Western Archeological and Conservation Center ❖ Publications in Anthropology

National Park Service ❖ 1415 North Sixth Avenue ❖ Tucson, Arizona ❖ 85705

1. Saguaro National Monument: An Archeological Overview, *by V. K. Pheriba Stacy and Julian Hayden.*
2. Fifty Years of Archeology in the California Desert: An Archeological Overview of Joshua Tree National Monument, *by Thomas F. King.*
3. Lake Mead National Recreation Area: An Ethnographic Overview, *by David E. Ruppert.*
4. Walnut Canyon National Monument: An Archeological Overview, *by Patricia A. Gilman.*
5. An Archeological Assessment of Canyon de Chelly National Monument, *by James A. McDonald.*
6. Excavations at Harmony Borax Works: Historical Archeology at Death Valley National Monument, *by George A. Teague and Lynette O. Shenk.*
7. Country Nodes: An Anthropological Evaluation of William Key's Desert Queen Ranch, Joshua Tree National Monument, California, *by Patricia Parker Hickman.*
8. An Archeological Overview of Redwood National Park, *by Michael J. Moratto.*
9. The Archeology of Lake Mead National Recreation Area: An Assessment, *by Carole McClellan, David A. Phillips, Jr., and Mike Belshaw.*
10. An Archeological Overview of Petrified Forest National Park, *by Yvonne G. Stewart.*
11. Reward Mine and Associated Sites: Historical Archeology on the Papago Reservation, *by George A. Teague.*
12. Excavations at Gu Achi: A Reappraisal of Hohokam Settlement and Subsistence in the Arizona Papagueria, *by W. Bruce Masse.*
13. One Hundred Years in the California Desert: An Overview of Historic Archeological Resources at Joshua Tree National Monument, *by Patricia Parker.*
14. The Lewis-Weber Site: A Tucson Homestead, *by Nancy T. Curriden.*
15. The Canyon del Muerto Survey Project: Anasazi and Navajo Archeology in Northeastern Arizona, *by Patricia L. Fall, James A. McDonald, and Pamela C. Magers.*
16. Tumacacori Plaza Excavation 1979: Historical Archeology at Tumacacori National Monument, Arizona, *by Lee Fratt.*
17. Excavation at Tumacacori 1979/1980: Historic Archeology at Tumacacori National Monument, Arizona, *by C. Michael Barton, Kay C. Simpson, and Lee Fratt.*
18. Archeology in Yosemite National Park: The Wawona Testing Project, *by John C. Whittaker.*
19. An Archeological Research Design for Yosemite National Park, *by Michael J. Moratto.*
20. Archeological Investigations in the Central Sierra Nevada: The 1981 El Portal Project, *by Mark F. Baumler and Scott L. Carpenter.*
21. Excavations at the Oasis of Mara, Joshua Tree National Monument, *by Martyn D. Tagg.*
22. Archeological Survey in the Eastern Tucson Basin, Saguaro National Monument, *by Kay C. Simpson and Susan J. Wells.*
23. Archeological Survey in Northeastern Death Valley National Monument, *by C. Michael Barton.*
24. The Archeology of Faraway Ranch, Arizona: Prehistoric, Historic and 20th Century, *by Mark F. Baumler.*
25. Patterns of Lithic Use at AZ Q:1:42, Petrified Forest National Park, Arizona: Data Recovery Along the Mainline Road, *by A. Trinkle Jones.*
26. Test Excavations in the Wawona Valley, Report of the 1983 and 1984 Wawona Archeological Projects, Yosemite National Park, California, *by Richard G. Ervin.*
27. The Timba-Sha Survey and Boundary Fencing Project: Archeological Investigations at Death Valley National Monument, *by Martyn D. Tagg.*
28. A Cross Section of Grand Canyon Archeology: Excavations at Five Sites Along the Colorado River, *by A. Trinkle Jones.*
29. None.
30. Kalaupapa, More than a Leprosy Settlement: Archeology in Kalaupapa National Monument, *by Gary F. Somers.*
31. Tonto National Monument: An Archeological Survey, *by Martyn D. Tagg.*
32. Survey And Excavations in Joshua Tree National Monument, *by Richard G. Ervin.*
33. Hale-o-Keawe Archeological Report: Archeology at Pu'uhonua o Honaunau National Historical Park, *by Edmund J. Ladd.*
34. Test Excavations at Sites B-105, B-107, and B-108: Archeology at Pu'uhonua o Honaunau National Historical Park, *by Edmund J. Ladd.*
35. Ki'ilae Village Test Excavations: Archeology at Pu'uhonua o Honaunau National Historical Park, *by Edmund J. Ladd.*
36. The Archeology of Gila Cliff Dwellings, *by Keith M. Anderson, Gloria J. Fenner, Don P. Morris, George A. Teague and Charmion McKusick.*
37. Miscellaneous Historic Period Archeological Projects in the Western Region, *by Martyn D. Tagg.*
38. Pueblo Period Archeology at Four Sites, Petrified Forest National Park, *by A. Trinkle Jones.*
39. Walnut Canyon National Monument: An Archeological Survey, *by Anne R. Baldwin and J. Michael Bremer.*
40. The Tuzigoot Survey and Three Small Verde Valley Projects, *by Martyn D. Tagg.*
41. Lake Mead: Developed Area Surveys, *by Richard G. Ervin.*
42. The Camp at Bonita Cañon, *by Martyn D. Tagg.*
43. Excavations at Site A-27, Archeology at Pu'uhonua o Honaunau National Historical Park, *by Edmund J. Ladd.*
44. A Settlement Pattern Analysis of a Portion of Hawaii Volcanoes National Park, *by Thegn Ladefoged, Gary F. Somers, and M. Melia Lane-Hamasaki.*
45. Contributions to the Archeology of Petrified Forest National Park, 1985-1986, *by A. Trinkle Jones.*
46. Archeological Survey of Lower Vine Ranch, Death Valley National Monument, *by Krista Deal and Lynne M. D'Ascenzo.*
47. Excavations at John Young's Homestead, Kawaihae, Hawaii, 1988, *by Paul H. Rosendahl and Laura A. Carter.*
48. Archeological Survey and Testing at Petrified Forest National Park, 1987, *by Susan J. Wells.*
49. An Archeological Overview of Great Basin National Park, 1988, *by Krista Deal.*
50. Archeological Survey and Architectural Study of Montezuma Castle National Monument, 1988, *by Susan J. Wells and Keith M. Anderson.*
51. Petrified Forest National Park Boundary Survey, 1988: The Final Season, *by Susan J. Wells.*
52. None.
53. Archeological Survey and Site Assessment at Great Basin National Park, *by Susan J. Wells.*
54. Archeological Investigations at Puerco Ruin, Petrified Forest National Park, Arizona, *by Jeffery F. Burton.*
55. The Archeology of Sivu'ovi: The Archaic to Basketmaker Transition at Petrified Forest National Park, *by Jeffery F. Burton.*
56. The Shivwits Plateau Survey: Archeology at Lake Mead National Recreation Area, *by Susan J. Wells.*
57. San Miguel de Guevavi: The Archeology of an Eighteenth Century Jesuit Mission on the Rim of Christendom, *by Jeffery F. Burton.*
58. An Ahupua'a Study, the 1971 Archeological Work at Kaloko Ahupua'a, North Kona, Hawai'i: Archeology at Kaloko-Honokōhau National Historical Park, *by Ross Cordy, Joseph Tainter, Robert Renger, and Robert Hitchcock.*
59. Remnants of Adobe and Stone: The Surface Archeology of the Guevavi and Calabazas Units, Tumacacori National Historical Park, Arizona, *by Jeffery F. Burton.*
60. Tuzigoot Burials, *by Keith M. Anderson.*
61. Archeological Survey at Organ Pipe Cactus National Monument, Southwestern Arizona: 1989-1991, *by Adrianne G. Rankin.*
62. Days in the Painted Desert and Petrified Forests of Northern Arizona: Contributions to the Archeology of Petrified Forest National Park, 1988-1992, *by Jeffery F. Burton.*
63. When is a Great Kiva? Excavations at McCreery Pueblo, Petrified Forest National Park, Arizona, *by Jeffery F. Burton.*
64. Archeological Investigations at Great Basin National Park: Testing and Site Recording in Support of the General Management Plan, *by Susan J. Wells.*
65. Archeological Survey of Saguaro National Monument, 1994: The Saguaro Land Acquisition and Trails Inventory, *by Kevin D. Wellman.*
66. An Archeological Survey Plan for the Western Region of the National Park Service, *by Susan J. Wells.*
67. Three Farewells to Manzanar: The Archeology of Manzanar National Historic Site, California, *by Jeffery F. Burton.*
68. Archeological Survey of Grizzly Ridge 1995: A Section 110 Planning Survey, Black Canyon of the Gunnison National Monument, *by Gregory L. Fox.*
69. Cultural Resources of the Tucson Mountain District, Saguaro National Park, *by Susan J. Wells and Stacie A. Reutter.*
70. Archeological Investigations at the Upper Ruin, Tonto National Monument, *by Gregory L. Fox and Elaine A. Guthrie*
71. A Research Design for the Upper and Lower Ruins, Tonto National Monument, *by Mark D. Elson.*
72. The Archeology of Somewhere: Archeological Testing Along U.S. Highway 395, Manzanar National Historic Site, California, *by Jeffery F. Burton.*
73. Archeological Investigations at Tonto National Monument: Excavation of Rooms 15 and 16, AZ U:8:48 (ASM) -1998, *by Gregory L. Fox.*
74. Confinement and Ethnicity: An Overview of World War II Japanese American Relocation Sites, *by Jeffery F. Burton, Mary M. Farrell, Florence B. Lord, and Richard W. Lord.*