A window to the past: Analysis of flat glass recovered from West Point, Nevada

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University of Nevada, Las Vegas

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A window to the past: Analysis of flat glass recovered from West Point, Nevada

White, William G., M.A.
University of Nevada, Las Vegas, 1990
A WINDOW TO THE PAST: ANALYSIS OF FLAT GLASS RECOVERED FROM WEST POINT, NEVADA.

by

William G. White

A thesis submitted in partial fulfillment of the requirements for the degree of

Master of Arts

in

Anthropology

Department of Anthropology
University of Nevada, Las Vegas
May, 1990
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ABSTRACT

Numerous archeological studies have suggested that window glass can be used as a temporal indicator at nineteenth and early twentieth-century historic archeological sites. These conclusions are based on the study of window glass thickness fluctuations, saying that pane glass became thicker as the nineteenth-century progressed. Researchers in the Pacific Northwest have established a chronological scheme as a result of their studies.

This thesis presents a comparative archeological analysis of window glass collections recovered from five historic archeological sites located in southern Nevada spanning the years from 1866 to the 1960s. The comparative analysis is used to test the validity of the chronological scheme created by other researchers. The analysis also establishes the framework by which two specific research questions concerning the abandoned Mormon pioneer colony of West Point are evaluated.

Additionally, this study presents, in a descriptive and temporal fashion, the history of West Point and its subsequent use and reuse by later upper Moapa Valley settlers. The archeological and historical record, each
offering unique independence evidence, are used to solve the problem of which nine archeologically tested structures at West Point were used after the Mormons abandoned the area in 1871.

The results show that the Pacific Northwest chronological scheme does apply to southern Nevada glass collections with a slight variation. Also, this research supports the contention that window glass became thicker in the latter half of the nineteenth-century. Finally, historical and archeological data suggests that of the nine structures tested, three structures had no windows (storage), two structures were not occupied after Mormon abandonment, two structures are of Mormon origin and were used after the Mormon abandonment, and two structures are later additions to the study area.
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Like a faithful son, I cannot forget my parents. They have given me moral support and encouragement throughout my life and have allowed me to make my own mistakes - experience being the best teacher. I'm sure that they see the completion of this thesis not as a step to a graduate degree but rather a career change. I love them dearly.

Finally, I would like to acknowledge the Mormon pioneers of West Point who maintained a faith in themselves, faith in a higher order, and a devotion to their beliefs and each other. Their diaries speak of the hardships endured and the artifacts reveal patterns of daily life, but we, as their chroniclers, will never completely understand the joys, the sorrows, and the sacrifices made by these people in their common, shared experiences. Without them and the settlers who followed in later years, this study would not have been possible.

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CHAPTER I

INTRODUCTION

"The past is far more complicated than the written record can possibly suggest" (Layton 1977).

During the springs of 1987 and 1988, the author, assisted by students and volunteers, conducted preliminary archeological investigations at the site of West Point (26CKJ658), a pioneer Mormon community in southern Nevada first settled in 1868. The farm village site is located in the upper Moapa Valley adjacent to the Muddy River from which irrigation and domestic water was diverted (Figure 1). West Point was one of eight frontier Mormon communities to be organized in the Moapa Valley as part of the Muddy Mission. The purpose of the mission was to grow cotton, thus supporting the church's program of economic independence and self-sufficiency. The Mormon colony was the first Anglo effort to settle the upper valley. Subsequent activities included homesteading, housing and headquarters for reservation employees, ranching, and a camp for railroad construction crews, which spanned nearly a century and a half of occupation. The archeological investigations initiated by the students from the University of Nevada, Las Vegas, represent the latest
Figure 1. Location of the former community of West Point, Nevada. USGS Topographical Map, Moapa West Quadrangle, 7.5'.
activities on the property. As a product of that archeological investigation, this study examines the historical and archeological record that early valley pioneers left behind in their efforts to tame the wilderness.

PROBLEM, PURPOSE, AND DESIGN.

A transected ground survey located the remains of thirty-two architectural features on the landscape occupied by the former community of West Point. One structure, built of salvaged railroad ties in the 1940s, is of known recent origin. At the beginning of the archeological excavations, it was not known which of the remaining thirty-one structures were associated with the Mormon occupation or if the Mormon-built structures were used by later inhabitants or if the structures were built after the Mormon abandonment of the site. The archeological and historical record help solve these problems.

The central purpose of this study is two fold. First, this study presents historical data pertaining to the Mormon settlement of West Point and its subsequent use and reuse by other Anglo settlers. The historical chapter represents a descriptive and temporal reconstruction of events that occurred in the limited spacial context of this farm village. Local as well as more far reaching historical contexts set the stage for the temporal events attested to in the archeological record. The second and
primary purpose of this study is to formulate a comparative study of window pane glass and to test a chronological scheme proposed by other researchers as to its application in southern Nevada. Chapter III presents an objective analysis of window pane glass archeologically recovered from four southern Nevada historic sites. Based on the results obtained in Chapter III specific research questions pertaining to West Point are posed and answered in Chapter IV.

The primary data base of history consists of written documents while archeology depends on the systematic recovery and analysis of material remains of human behavior. The historical record, like the archeological record, is often incomplete. History and archeology are methods used in understanding past human experiences. The research within this study involves both methodologies in an effort to improve the final analysis. While archival and secondary research provide historical data, window glass fragments from the archeological sites form the basis of the archeological data. Combined, these two separate bodies of information, and the unique analysis each demands, contribute to the interpretation of the problems in the concluding chapter.

A VIEW OF WINDOW GLASS

The transparent pane of glass that is part of our everyday lives took many centuries to develop (Roenke
1978). For as long as there have been constructed structures, there have been windows. Narrow holes at first sufficed. Technological advances now allow skyscrapers to be covered with massive panels of glass. Windows fulfill a basic need for light and air, transforming, otherwise, dark structural interiors with cool breezes and light. Windows are our eyes to the immediate environment. Through windows we gaze at our surroundings and feel connected to the natural environment, all the while being protected from harsh and threatening elements. Window pane glass is both hard and fragile. It can shatter from impact with a well-aimed or misguided rock. At the same time, glass can survive for a thousand years to be recovered in an archeological context.

Window glass is but one of several categories of artifacts recovered from excavations at West Point, but it provides valuable insight in particular. It was through window glass that the settlers and later inhabitants of the area gazed upon the harsh desert valley landscape. It is through the varying thicknesses of window glass that this study seeks to answer questions which will contribute to interpretations. For the purpose of this study, window glass represents a view of the past.

ARCHEOLOGY AND HISTORY - TOOLS WITH A COMMON END

History, to say the least, is a complex word. It can be either general in meaning or it can be particular.
Human history, whether particular or general, is the result of humanity’s action - a complex process of inter-related factors and inter-actions between people, people and their cultural/physical environment, and humanity in time and space.

Overall, the largest part of humanity’s past is unwritten and as such, is incomplete. As the above statement implies, this view of the past includes prehistory as well as that phenomenon known as written or documented history. Particular history deals with "detailed specifics concerning discrete events or historical personages" (Deetz 1977:29). This view of the past implies documented historical records written by literate people.

In view of this general meaning of history, there appears to be a natural division, that between prehistory and written history. In a recent college level text book on the history of the American people, several pages are devoted to the summation of American history prior to the invasion of the continent by Europeans. Nash suggests that, "The recovery [and interpretation] of the past before there were extensive written records is the domain of archeology. Virtually our entire knowledge of Indian societies ... is drawn from the work of archeologists" (1986:7A).

To take this further, however, and assert that
archaeologists and anthropologists work exclusively with and
limit their studies to preliterate or primitive societies
or even to Native American groups would be a false
assumption. This implied, narrow scope of archeology/
anthropology is not justified as there has been studies
within the discipline not only of preliterate, but also of
non-literate and literate cultures as well.

Archeology is a subdiscipline of anthropology sharing
much of its theoretical approach and many of its
assumptions with Socio-Cultural Anthropology. Archeology
is also a scientific method of data recovery. Frost
defines archeology as "a number of techniques for
uncovering, preserving, and analyzing evidence about the
past" (1970:325). Archeology represents the study of past
peoples, either literate or non-literate, base on the
material remains that were deliberately abandoned,
discarded, accidentally lost or misplaced by their owners.
Archeology is the science of rubbish interpretation. These
material remains or artifacts are the products of repeated
human behavior and, as such, represent a silent source of
historical data. Whether a discipline or method of data
recovery, archeology represents a scholarly approach that
can enhance the interpretation of American history.

The apparent differences in the types of data
available to interpret human history has caused the
"professional jealousy of specialists" (Frost 1970:325).
Traditionally, historians have left prehistory to the "domain of archaeology" as suggested by Nash. Archeologists are, however, less shameful. As Frost puts it, "only a rash ... archeologist would dare to cross a disciplinary territorial boundary" (1970:325). A professional prejudice has prevented the integration of archeological data as a form of historic documentation and vice versa. From a historians point of view, "This prejudice has delayed recognition of the potential value of archeology for ... interpreting the remains of more recent periods of ... American history" (Jones 1973:51). A reason for this separation and isolation of the fields, as suggested by Wilderson, is the "relative late development of American history, there have always been enough written remains to keep historians from digging in the ground in search of information." Wilderson continues by saying, "On the other hand, archeologists originated in America with the anthropologists' interest in preliterate societies" (1975:116). Thus, archeologists are left to be buried in the dirt of trenches of prehistoric excavations while the historian is locked away in the dusty closets of written documents.

What we know about written history is left to us through accounts scribed by literate people. The historian is an accumulator of documented facts and acts as an interpreter of those facts after careful analysis. It is
through the eyes of the historian that we can capture
glimpses of our past. But that interpretation is not
necessarily a complete and accurate view. Historical
documents by their nature are colored by the subjectivity
of their authorship. Particular details and perspective
contexts are lost with time. There will always remain an
amount of uncertainty in a historical work because no
matter how hard a historian might try, some facts
concerning events in the past will remain elusive and
beyond reach.

People, even when literate, do not and would not
record everything. Written documents, rarely if at all,
record everyday mundane activities of a common household as
an example. The monotonous routine of everyday life is not
the subject of journals and diaries. Probate records can
give us some suggestion as to what kind of ceramics a
household used in the preparation and consumption of food,
but the record fails to tell us what they ate or in what
quantities. Less concerned with particular events and
personages, the "new" social history, however, is
contributing to the interpretations of the less attractive
and long ignored aspects of human activities (Gardner and
Adams 1983). The archeological record can, also, provide
insight into the problem of the overlooked aspects of
recorded history. Archeologists observe human behavior and
the neglected aspects of common people by interpreting the
material remains.

It is safe to say that American history and American archeology share a common goal; the scholarly analysis and interpretation of the American past. Despite this common goal, there remains the disciplinary division as noted earlier and most evident in the difference in their sources of data on which their respective analyses of the past are based. Historians recognize two types of data: primary and secondary sources. Primary sources are generated in the past and contain data. They include such material as photographs, wills, birth and death records, diaries, newspapers, court proceedings, tax returns, town plats, maps, and census records. In addition, oral history is viewed as a primary source. Secondary sources are interpretive writings by historians about the past. In the case mentioned above, Nash uses the interpretations or the writings of other disciplines to produce a comprehensive history of America. Schuyler suggests that, "historical research must be based on primary sources" and that, "it is the secondary, scholarly analysis that gives meaning to primary sources" (1979:275).

The archeologist deals with an entirely different set of documents. These documents are covered with a dust of a different sort and are revealed by the archeological technique of controlled excavation. Artifacts are the material remains of human behavior. Harrington suggests
that descriptions of excavated materials and site reports “must be recognized for what they are - historical data. They contribute ... a specialized kind of historical record, but in themselves they do not constitute history” (1955:1127). As with primary historical sources, artifacts do not speak for themselves, but they do have a story to impart. The archeologist uses recovered artifacts as his primary source of data in his interpretation of socio/cultural reconstructions. In historic interpretations, the archeologist is able to use both historic documents and artifacts as a basis for their interpretations. The documents of history and those of archeology require different techniques of handling and analysis, but both are complimentary to, not mutually exclusive of each other.

In reconstructing America's past, it is best if historians and archeologists are aware of certain inherent biases in themselves and with the data they use. As Donovan (1973:9) points out,

> It has become a cliche to assert that each age rewrites history for its own use and in light of its own experience ... Individual historians [and archeologists] brings to his task virtues and deficiencies, the enlightenment and prejudices, and the liberating and restricting experiences of his own time.

Not only do the historians and archeologists have their own personal biases which may affect the outcome of written history, but source documents are also affected, each in different ways. The historical record is often
incomplete and can suffer from distorted views that might
be out of context. Diaries and journals are biased by the
people who wrote them. Schuyler calls for caution
suggesting that, "The accuracy of primary, written sources
is very difficult to evaluate except when independent
sources of information, usually other documents, exist"
(1979:274). Historic documents may also be inadvertently
destroyed or in a bad state of preservation. Butterfield
(1965) develops this idea further by suggesting that the
historical record is repeatedly censured by contemporaries
and their descendants who preserve only the evidence which
supports a conservative, upper class portrait of events.
Deetz (1977) suggests that museums often bias their
collections in favor of the unusual or valuable, whereas
the common objects end up in the dumps which is, of course,
an interest to archeologists. Early examples of American
architecture are also biased as they are usually homes
representing some historical significance or particular
style. The homes of the affluent survive while homes of
the common yeoman do not.

The material record of archeology is affected by
similar and different forces of bias. Hardesty, commenting
on the Murphy Cabin site of the Donner tragedy, refers to
an archeological "image that has been destroyed by the
unequal removal and preservation of artifacts" (1985:17).
Looters and relic collectors have played a part in the
"removal of artifacts that are either large or valuable or easily visible" (1985:18). Preservation is a natural force with which the archeologist must contend. Not all artifacts are equally preserved in an archeological context; i.e. not all organic or small inorganic materials survive burial in the soil. The artifact record can also be biased by improper sampling and recovery methods.

Still archeology can make a significant contribution to American history. Hardesty states that, "Tangible evidence of the archeological record is a pathway to historical verification that is independent of documents, a way of confirming or refuting or adding to sometimes contradictory written accounts" (1985:2). Archeology can provide the necessary clues and stimulus to the past "which will send historians in search of new answers" (Wilderson 1975:119). Noel Hume contends that by "using the techniques and products of archeology, the historian is not only able to broaden his own knowledge but he can also make his studies more readily acceptable to the general public" (1964:220). Archeologists can "at times provide whole new ways of viewing historical questions" (Wilderson 1975:115). In addition to the above descriptions, archeology can provide the answers to the past when dealing with the preliterate and the non-literate aspects of American history.

By integrating both historical data and archeological
data and analyzing these primary sources under a common light, the historian and archeologist should be able to write a more detailed and comprehensive history. Historians would do better not to ignore the material remains of human behavior as a documentary resource. At the same time, the archeologist would do better not to ignore the written documents of history as observations of human behavior which produced and used those remains. Archeological and historical resources "complement each other like two essential pieces of a puzzle, and when joined they provide more than just the sum of their two pieces. This conjunction gives us a new vantage point from which to look into an always elusive past: it broadens our perspective" (Wilderson 1975:127).
CHAPTER II

HISTORICAL ANALYSIS

"Men who call the desert home, ... all gravitate to a common level, the grim struggle for existence" (Lawlor 1969).

INTRODUCTION

The historical interpretation of the people and the events that shaped the community of West Point and its subsequent use and reuse by other Moapa Valley settlers is crucial to this study. The primary purpose of this chapter is to discuss the history of West Point. In addition, brief histories are given for four additional historic sites: New St. Joseph; Sandy Town; the Blue Goose; and the Blue Diamond Adobe. The histories of New St. Joseph and Sandy Town are incorporated into the narrative on West Point. The Blue Goose and Blue Diamond Adobe histories are presented at the conclusion of events associated with West Point in basic chronological order. Window glass collections from all five sites form the basis of the comparative study in the archeological chapters.

Walter Averett, in 1959, wrote a light-hearted newspaper article briefly outlining the historical origin and demise of the Mormon community of West Point.
Averett's article is based on fragmented historical data and includes a common aspect of American western folklore, that of buried gold. As a historical writer, Averett recognized the lack of primary source material by stating that the story "just scratches the surface, ... those few lines cover about all that is known" concerning West Point. The article concludes with a posed question and challenge, "Who will write the real story of West Point?" (Review Journal 5/3/1959:39).

Over the years, many authors have written about the Mormon colony of West Point in their discourse on the Muddy Mission. Like Averett's article, these authors sum up the events of this early southern Nevada community in two or three paragraphs. The history of West Point, however does not end with the abandonment of the settlement in 1871 by the Mormons. Like other valleys in Nevada, it is the scene of continuous human activity from prehistoric times to the present.

Despite its geographical location on the Mormon frontier, West Point did not exist in figurative or literal isolation. Rather, it was part of a larger social and economic experiment which, in turn, was part of a world system. This thesis does not represent a history of that larger system but is the descriptive history of a particular place upon the Nevada landscape. It is a place where early and later Anglo settlers modified the desert.
valley landscape in a preconceived and culturally
determined manner. What follows than is an attempt to tell
the "real story" of West Point and its subsequent use and
reuse by other valley settlers.

FORMATION OF THE MUDDY MISSION

Much has been written concerning the Muddy Mission.
The purpose here is not to discuss the specifics of the
Muddy Mission, but will use the Muddy Mission as the basic
historic context within which to place the community of
West Point. Unless otherwise specifically quoted, the
following secondary sources are used as a basis for the
background to the formation of the Muddy Mission: Arrington
1979; Ellsworth 1987; Corbett 1968 & 1975; Fleming 1967;
1961; Leavitt 1934; McCarty 1981; Wonderly 1976.

In the late 1850s, the Mormon church established
several settlements in the Virgin River Basin as part of an
agricultural experiment in the church's program of economic
independence and self-sufficiency. These agricultural
settlements experimented in the production of semi-tropical
products such as cotton, grapes, figs, sugar cane, and
other produce. Despite great difficulties, the pioneers of
these early frontier communities in southwestern Utah
successfully demonstrated that semi-tropical produce and,
in particular, cotton, could be grown in the region.

The Mormon church expanded the development of the
southern colonies when the United States plunged itself into the Civil War. Because of the conflict, importation of cotton products from the east had all but ceased. Church officials quickly recognized the possibility of exporting limited cotton products to the war torn states after church and territorial needs were satisfied. In 1861, the church "called" several hundred heads of families to reinforce existing communities, to found new communities, and to develop the resources of Utah's Dixie. Their specific instructions were to grow cotton and to produce quality cotton goods which could be used in exchange for other necessities within the territory. This ideal goal of cotton specialization would never be as successful as envisioned.

Concerned, also, with the high cost of overland transportation of needed supplies, equipment, and church immigrants to develop the Kingdom of Zion, Mormon leaders envisioned using the Colorado River as a year round avenue of transportation into the interior of the western continent. Based on reports that the Colorado River could be navigated by steamers, Brigham Young sent Anson Call to locate and develop a steamer landing and warehouse at the highest point of navigation on the river. Call and his assistants located a suitable site on the north shore of the Colorado, several miles above the present day Hoover Dam. Construction of the warehouse and supporting
structures began in December of 1864 and completed by February of 1865. The recently formed Deseret Mercantile provided, in part, the financial assistance for this venture. The church appointed Call as the official agent for both the landing and the mercantile.

Call's Landing or Callville enjoyed limited success before submitting to human and environmental variables beyond the control and influence of the church. Between the years of 1865 and 1867 supplies, placed on shallow draft steamers for the up-river journey, were received at the landing from such distant ports as New York and San Francisco. Transportation of supplies from the landing was by wagon and packtrains to the town of St. George. The church hierarchy envisioned this inland water route as a path of immigration but this never materialized as Zion bound immigrants never used this route.

Several factors contributed to the abandonment of the landing in the early months of 1869. The Colorado River, at its best, was marginally navigable and its use was advisable only during the months of July through October. Poor roads between the landing and St. George made transportation of supplies difficult and costly, thus defeating the economic purpose of the venture. Completion of the transcontinental railroad in 1869, sealed the fate of this project and brought an end to the Mormon hopes of using the Colorado River in their efforts to build an
inland empire.

Like Call's Landing, the Muddy River Valley, later to be called the Moapa Valley, was of critical interest to the Mormon church for several reasons. The valley was viewed as a region that could provide agricultural support for the activities at the river landing. Settlements in the valley could also provide resting places for wagons traveling to and from the landing as well as wagons traversing the desert along the Mormon Road which connected Utah with southern California. Since the valley is at a lower elevation than the rest of Utah's Dixie, it has a longer and warmer growing season. In addition to the mild climate, at least during the winter months, the valley possesses redeemable land and an ample and constant supply of water with which to irrigate crops. Thus, the Muddy was a likely region in which to establish colonies that would strengthen the southern mission and the church in its efforts to become economically secure. Mormon settlements in the valley would also help the church's goal of isolation from the non-Mormon world by acting as a buffer zone between them and the Gentiles. Such a strategy would prevent the Gentiles from settling and utilizing the valley for themselves.

Several communities were organized between the years of 1865 and 1870 as part of the Muddy Mission. St. Thomas was the first to be founded with St. Joseph being soon settled.
after. Mill Point was the third community. Indian conflicts in Utah, however, caused the reorganization of settlers from Mill Point and St. Joseph into a loosely fortified settlement on the bluff overlooking the Point. This fort became the location of New St. Joseph. Sandy Town (two locations) was envisioned as a grand city on the sand bench above the Muddy River and to the northeast of New St. Joseph. These two settlement sites were abandoned as being impractical. Other communities included Overton, Junction City, and West Point (Figure 2).

Thomas Smith led a group of missionaries to the Muddy River Valley and organized the first settlement in January of 1865. This community became known as St. Thomas after its founder. St. Thomas was the most successful and stable of all the Muddy settlements founded during the 1860s.

Nine miles up stream from St. Thomas, a second group of missionary settlers established St. Joseph in May of that same year. St. Joseph, like St. Thomas, was surveyed into one-acre city lots upon which the missionaries build their homes. The land was further divided into a number of two and one-half acre and five acre lots for vineyards/orchards and farm fields. Luck of the draw at community meetings allocated city, orchard, and farm lots. Settlers in both colonies quickly set about the task of building homes, clearing fields, digging irrigation ditches, and planting crops.
Figure 2. Muddy Mission 1864 - 1871 (after Kimball 1988).
Three miles to the south of St. Joseph a grist mill was constructed taking advantage of the water flow from the Muddy River to power the mill. Orrawell Simon constructed the mill toward the end of 1865. The location of this third settlement is variously referred to as Simonville or Mill Point. Friction between settlers of St. Joseph and Mill Point soon developed because of community jealousies as to the better of the two locations for habitation. This soon changed, however.

Church officials advised the residents of St. Joseph, early in 1866, to relocate either at Mill Point or St. Thomas due to Indian conflicts in Utah and local unrest with Paiutes. The settlers of Mill Point constructed a fort on the bluff above the grist mill so as to provide the mill with some degree of protection. The fort, latter named New St. Joseph, consisted of two parallel rows of widely spaced adobe structures with the southeast end blocked in with additional buildings. A five mile extension to the St. Joseph canal brought water to the sandy bench but problems with drifting sand, which repeatedly filled sections of the canal, meant wasted labor by an undermanned mission. Water percolation in the porous soil also contributed to problems with getting water to the bench. A fire in August of 1868 partially destroyed the fort causing further hardships to the inhabitants of New St. Joseph. Mission leaders urged their fellow
brethren to move onto their city lots away from the fort.

During the fort's occupation, efforts were made to develop a large city on the sand and gravel terrace to the northeast of New St. Joseph at the urging of church leaders. Some residents of the bench referred to this city as Sandy Town. City lots were surveyed one-half mile north of the fort after the fort's formation with construction of a few homes on these lots. The first location of Sandy Town (A) was soon deserted because of lack of manpower, drifting sand, and problems with the canal. A second Sandy Town (B) location was chosen one mile north and east of the first location, thus shortening the length of the canal. Homes were also built in this area. The church hierarchy offered encouragement in their sermons to work hard to prevail over the obstacles before them, but the missionaries lacked the optimism of their leaders.

Frustrated by futile efforts to realize a large city on this barren bench, the settlers abandoned all three bench sites with half the colonizers returning to the original village of St. Joseph. The other half crossed to the west side of the Muddy River and surveyed a townsite where construction of homes commenced early in 1870. This town became known as Overton.

Defeated by the harsh realities of the desert valley, some of the original missionaries returned to Utah reducing the labor force necessary to work on community projects. A
general church conference in October of 1867 called for 158 new missionaries to strengthen the Southern Mission including the mission on the Muddy. Upon arriving at the Muddy, many of those missionaries called to serve in that location were dissatisfied with residing on the sand bench. Some of the missionaries took it upon themselves to settle the upper Muddy Valley. Church leaders instructed the immediate return of this party either to reinforce the settlements on the lower Muddy or to return to Utah. Most chose to return to Utah. A reorganized effort to settle the upper valley in December of 1868 by another group of brethren resulted in the formation of West Point.

In the fall of 1868, under instructions passed down from Brigham Young, a settlement was established at the mouth of the Virgin River on the Colorado River. Junction City became the high point of navigation on the Colorado. Two families took up residence at this site, but the site was abandoned after a short time. In 1871 after the Mormons completely abandoned the Muddy Valley, Daniel Bonelli, the only Mormon to remain in the valley, moved his family to this site and developed a ranch and ferry. Bonelli also maintained his claim to property in St. Thomas.

UPPER MUDDY VALLEY - TROUBLED BEGINNINGS

West Point was the only Mormon colonization effort to be located in the upper reaches of the Muddy Valley. The
first mention of the upper valley being used as an area for potential settlement was in the late spring on 1865 when a second group of missionary settlers struggled to cross the desolate Mormon Mesa. Descending the mesa, they reached the upper valley and made camp close to where the Mormon Road crossed the river. At this temporary camp the settlers waited for the arrival of Thomas Smith who had organized the village of St. Thomas some months earlier. While waiting, Warren Foote and a small exploratory party proceeded up the valley to the head of the Muddy River, some five to six miles above their camp. Here they located the source of the Muddy as being several springs which issued from the bluffs. The water was reportedly as warm as dishwater. These men also found that the local Indians grew considerable amount of wheat (possibly corn) in "patches". After touring the immediate region, Foote concluded "that it was hardly safe to settle there" because the Indians occupied most of the land and were quite numerous (1975:184).

Thomas Smith and Andrew Gibbons arrived at the camp on May 26, 1865. Smith asked Foote to accompany him to look at the country, a second time for Foote. After a thorough exploration, in which some excellent land was located, the party came to the same conclusion reached previously by Foote. They reasoned that a settlement in the upper valley would not be wise because of its distance from St. Thomas,
some twenty-five miles.

Smith presided at a Sunday meeting on May 28th. He addressed the newly arrived colonists, some forty families, and recommended that they locate in the lower valley where inter-community assistance could afford mutual safety against the Native American population. He assured the gathering that the location he recommended was as "fully desirable as the Upper Muddy" (Foote 1975:185). The matter was agreed upon by those present and a few settlers began moving to the lower valley the next day.

The site that Smith recommended and Foote helped organize became known as St. Joseph. Despite Smith's assurance, the location was not without its own problems which also included Indians. The upper valley was neglected as a settlement area until the arrival of new settlers in December of 1867.

Wresting a living from a frontier wilderness such as the Muddy was a cooperative struggle. It was necessary from the start for the brethren to organize themselves in communities to ensure group survival and the temporary success of the mission. A cooperative community settlement was a practical way of "conquering an isolated and arid frontier" (Fite 1966:182). In defining a community, Arthur Morgan suggests "a community is an association of individuals and families that, out of inclination, habit, custom, and mutual interests, act in concert as a unit in
meeting common needs." Morgan further offers that "common group needs are met by unified action in a spirit of common acquaintance" (1942:20). The factors of social cohesion in the formation of a community are based on sharing common experiences, common threats and hardships, and common values and beliefs (Hine 1980). Economic, environmental, and religious isolation were also variables which contributed to the formation of communities on the Muddy. Most tasks, such as building homes, clearing fields, digging irrigation canals, and harvesting crops, required cooperative effort on a daily and person to person basis. The communities of St. Thomas and the reorganized communities of St. Joseph and Mill Point at the fort were well established social cohesion by October, 1867, when a general church conference called 158 missionary men to go with their families to the southern missions.

Missionaries from this call began arriving in the lower valley in December of that year. Camping at New St. Joseph, inter-group tensions soon developed between the established settlers and the recent arrivals. Abraham Kimball, a new arrival himself, wrote that,

> When I came to compare my circumstances with the old settlers I felt quite satisfied with my situation, although quite a feeling of jealousy arose between the old settlers and the newcomers, as the new ones could wear fine clothes and had better food, so they commenced talking about their neighbors which always terminated in bad feeling. Our newcomers did not associate with nor
treat the Bishop [Alma Bennet] as they should ... so a feeling of independence arose among us (1847-1889:62).

In reference to the newly arrived missionaries, a resident of New St. Joseph wrote that, "a dislike for [New] St. Joseph was precipitately growing among them. This noticeable on the part of some, a feeling to keep themselves separate and not commingle with the old settlers" (Clement 1844-1917:n.p.). It appears that the residents of New St. Joseph, an established cohesive community, were reluctant to accept the new arrivals. The new arrivals, a newly formed social group sharing the hardships of travel to the region, were, in turn, reluctant to interact with the old settlers because of imagined and real differences. In addition to a feeling of superiority by the new missionaries, they were also dissatisfied with the poor prospects of living and farming on lots laid out on the sand bench for the proposed Sandy Town. Despite the conflicts between the two groups, Bleak records that, "the settlers at [New] St. Joseph had been generous in sharing their land with the newcomers" (n.d.:A:394). The newcomers, however, did not care to hold the bleak and barren sand bench in stewardship.

Erastus Snow, appointed President of the Cotton Mission, was on the Muddy during the month of December visiting the settlements and delivering sermons to the missionaries. On December 15 and 16, Snow held three
meetings with the settlers residing at New St. Joseph. On the 17th, Snow traveled to the upper valley to select a location for a new settlement. After returning to St. George, Snow wrote to Andrew Gibbons giving him permission to "take 12 to 15 families, including those from Beaver Dams, to the upper Muddy and start a settlement" (Clements 1844-1917:n.p.). The whole region of the lower Virgin River experienced extensive floods during this period and it is probable that some residents of Beaver Dams had moved to the Muddy because of flood damage.

Andrew Gibbons, Indian interpreter for the mission, led a small group of restless missionaries to the upper valley to select a settlement location in pursuance of Snow's instructions. "Some of our men went exploring up the creek, hunting for a better place, as they were very much dissatisfied by this time" (Kimball 1847-1889:63). A townsite was selected and the exploring party rejoiced with the prospect of relocating to this region. "The report they gave of the upper valley, was so flattering, that all the new missionaries at [New] St. Joseph felt inclined to enlist for the new settlement" (Clement 1844-1917:n.p.). Under the leadership of Gibbons, at least fifteen families moved from the fort to the newly selected townsite and set to the hard task of building a community. "All hands were for improvements so we soon had some willow fences enough made, so that we did not have to herd our animals. We soon
had a fort laid out and a ditch made ... Some of the brethren had a large Army tent which was used for a meeting house” (Kimball 1847-1889:63). The colonizers were eager to develop a social identity with a geographical place they could call their own community and all seemed to be going well.

The Indians in the upper valley were not content to see their traditional homeland taken from them by these invaders and an angry mood prevailed on February 10, 1868. So much so that the Indians were armed with bows and arrows and confronted the settlers with blackened faces of war. Gibbons, once serving with Jacob Hamblin in an Indian Mission in 1858, was accustomed with Indian habits and negotiated with the warriors stressing the advantages of having the Mormons as friends and living near them. "This did not appear to satisfy the natives. The fact that the newcomers were well armed appeared to pacify the Indians more than any argument" (Bleak n.d.:A:395).

During the previous week, D. McArther, J. Moody, J. Argus, and H. Duncan of St. George arrived on the Muddy to visit the various settlements holding religious meetings (Journal History, Deseret News 2/5/1867). These home missionaries held two meetings at New St. Joseph on the 10th and proceeded to the upper valley for a meeting with the settlers there on the 11th of December (Clement 1844-1917:n.p.). Upon their return to St. George on the 16th,
they reported to James Bleak their concerns over events occurring on the upper Muddy. In addition to the above confrontation with local Paiutes, their report expressed their belief that if the exodus of the brethren from [New] St. Joseph is approved by the authorities, many of the older settlers of that place would move away, as they felt themselves too weak to resist an Indian attack ... It is further reported ... that the Indians on the Upper Muddy had some twenty acres of wheat [probably corn] planted; that livestock of the newcomers was running at large and that it was probable that when this stock should damage the Indian's wheat, difficulties would arise ... Some of the newly arrived missionaries on the Muddy evinced a spirit that they were amenable to no less in authority than President Brigham Young (Bleak n.d.:A:395).

A telegram was dispatched to Cotton Mission President Snow seeking his advice on the upper Muddy question. Snow, visiting Salt Lake City at the time, must have sought guidance from Brigham Young on the matter. On February 17, 1868, Bishop Gardner of St. George received the following telegram: "The brethren who are on the Upper Muddy must return to the place where they were sent, or else return home. [Signed] Brigham Young" (Bleak n.d.:A:396). The telegram or a message to that effect was dispatched to Gibbons and reached the upper Muddy settlement on the 19th (Clement 1844-1917:n.p.).

The colonists were angered and confused by this turn of events. Permission had been granted for them to settle there by one church authority and, now, the president of
the church commanded them to return. They felt misled and misrepresented by D. Moody and believed that if President Young was correctly informed, "he would allow them to return [to the upper valley]" (Clement 1844-1917:n.p.). One member suggested that, "someone had reported our case to President Young, as runaways" (Kimball 1847-1889:67). This same resident was away from the settlement collecting firewood when Gibbons received the message. Upon his return, Kimball found the camp in a somber mood.

Found quite a different spirit in camp so much so that one of my mules was seized with the same feeling, so when I went to let down the neck-yoke, she caught me by the muscle of the arm and gave me a fearful bite which caused me to express my feeling in an uncouth manner, better imagined than written (1847-1889:63).

The settlers returned to the lower valley and camped adjacent to New St. Joseph on February 22, 1868 (Clement 1884-1917:n.p.). Having been given a option, "quite a number of wilful spirits left ... for their homes in the north" and, by May, only twenty-five or thirty of the original 158 that had been called the previous October remained on the Muddy (Bleak n.d.:A:399 & 404).

In March, Erastus Snow made a visit to the Muddy Valley. His purpose was two fold: to locate a road between the Muddy Valley and St. George that would avoid the numerous crossings of the Virgin River, and to encourage those faithful missionaries who remained at the mission (Bleak n.d.:A:399)(Clement 1844-1917:n.p.). While there,
Snow adjusted the "unsettled condition of things at [New] St. Joseph" and the "question of the upper Muddy was settled negatively and conclusively" (Clement 1844-1917: n.p.).

Despite the official order to return, five families, who had been "washed out" at Beaver Dams, continued to occupy the upper valley. Joseph Young, nephew to Brigham, recorded in June that, "they are loth to leave this place, because they think there is no other spot in all the south that is so good" (Jenson, Deseret News 6/19/1868). Joseph recommended that after these reluctant settlers gathered their harvest of cotton in the fall they should move to a stronger settlement or "unless it shall be deemed wisdom to strengthen them with a few more families" (Jenson, Deseret News 6/19/1868). Perhaps, Joseph Young was instrumental in imparting some "wisdom" to Snow because a favorable decision was made in December 1868, for this outpost of Zion.

WEST POINT

Unable to cope with the rigors of the Muddy environment some missionaries quickly relocated to other more favorable locations throughout Utah. A semi-annual church conference was held at St. George in May 1868. At this conference, Bishop Alma Bennet of New St. Joseph begged the assembled congregation to send more help. Following Bennet's report, Snow stated that "anyone in St. George, or the surrounding
settlements was at liberty to go and settle the Muddy, and should have his blessings" (Bleak n.d.:A:404). Blessings or not, it is probable that few took this offer to relocate.

At the regular church conference at Salt Lake City in the fall of 1868, 150 men were called to go south. Joseph Young expected about 100 of those called to arrive on the Muddy during the winter. In an address to those new arrivals Young hoped that the new and old settlers would "amalgamate and unite together" (Clement 1844-1917:15). Young suggested four locations on the Muddy from which to choose as a place to settle, one of them being the upper valley. Young reminded the gathering, however, that "it was considered by Pres. Snow that not more than 25 families go to the upper Muddy" (Clement 1844-1917:15).

Joseph Young, along with a surveyor, met Snow in the upper valley. The purpose of this visit was to "permanently locate and organize the settlement" to be known as West Point (Clement 1844-1917:21)(Figure 3, in pocket). Leadership of the community was bestowed upon George Leavitt. The partitioning of land for this colony was completed sometime after December 15, 1868. It is not known from either the historical or archeological record if this officially surveyed community represents the same location of the earlier attempts at colonizing the area.

The Utah Legislature, in February 1869, approved the
organization of a new county called the Rio Virgin thinking that the land encompassing the Muddy was within their authority. In April, St. Joseph (Sandy Town) was chosen as the county seat, Joseph Young appointed Probate Judge, and the county divided into three precincts - St. Joseph, West Point, and Long Valley. The following citizens of West Point received appointments to serve in public positions: George Leavitt as Selectman; Newton Hall as Pound Keeper; Lorenzo Johnson as Justice of Peace; James Brinkerhoff as Road Supervisor; and for Constable, John Chamberlin (Jenson, Deseret News 4/3/1869). Another court meeting in June, 1870, appointed John Chamberlin to the position of Justice of Peace and Peter Corney as Constable for the West Point Precinct (Jenson, Deseret News 6/6/1870).

Snow returned to the Muddy Mission seeking subscriptions for capital stock in the construction of a cotton factory. Arriving at West Point on June 9, 1869, Snow found twenty families residing there and "they expected to have 2,000 bus. of wheat and a good crop of cotton" (Bleak n.d.:A:461). Being to their best interest this community managed to contribute $400.00 towards the cotton factory as the factory would be a much needed market and outlet for their raw cotton.

An effort was made by the U.S. Government to collect the scattered bands of the Southern Paiute tribe and place
them on a reservation. To this end an Indian Agent arrived in October to determine the feasibility of such a reservation being located on the Muddy. The Mormon inhabitants of the valley felt that such a reservation might interfere with the mission as it would break up and remove the settlements from the region. Others felt that "if rightly located and properly conducted [it] might be a benefit (Clement 1844-1917:n.p.). Agent Fenton concluded in his October report to recommend the upper valley as the site for the reservation (Fenton 1870A:645-646). Such a proposal meant that the residents of West Point would have to relocate which put the colonists into a "state of suspense and anxiety ... their future prospects which hitherto seemed bright" (Clement 1844-1917:n.p.).

Fluctuating around a stable core of families a portion of the population at West Point appears to have been highly mobil. Snow's visit in June, 1869, recorded twenty families. By March of 1870, Elder Musser wrote the editor of the Deseret News and reported eighteen families residing at the settlement (Jenson, 3/28/1870). The 1870 census, recorded in July, counted 138 people residing at West Point (U.S. Census 1870:256). The Rio Virgin County, Utah, census, from which the U.S. census derived, recorded nineteen families by last name, living in twenty-two separate households. There were forty-three adults and ninety-five children (Utah Census 1870)(Refer to Appendix
A).

West Point experienced severe floods in 1870 which caused considerable damage to the crops and hardship to the community. Ruth Cornia (listed as Casney in Utah census), having moved to West Point in December, 1868, remembered that, "the country was noted for floods and we had one every Sunday for three weeks covering our gardens ... the floods of water rushed down the canyons in torrents" (Hafner 1967:75). Such a damaging flood prompted a letter from Snow and Joseph Young in September, 1870, releasing the brethren from that location.

We sympathize with the brethren at West Point ... we are authorized to say to the brethren of that settlement, that if they prefer to vacate that place, they are at liberty to do so, and seek locations at St. Joseph, Overton, or St. Thomas, or any where else they may choose among the Saints (Bleak n.d.:B:37).

They were further urged to strengthen rather than weaken the settlements along the Muddy.

Demise of the community may have been a slow process with some settlers remaining until December, 1870, or until the complete abandonment of the Muddy Mission in the first months of 1871. As the missionaries began to move in the fall, Warren Foote "bought ... fruit trees, and building materials, lumber, poles, etc. off some of the brethren who left there and hauled it to St. Thomas" (1975:208). One family, who remained at West Point until December recalled that, "we weren't out of sight of our home before the
Indians set fire to it" (Hafner 1967:75). Historical documents fail to reveal the last date that West Point was occupied by the Mormons, but Nevada tax collectors pressing for back taxes to be paid in gold brought about the release of all missionaries from the Muddy Mission in 1871.

SHELTER AND SUBSISTENCE ON THE UPPER MUDDY

Wherever the Mormon church sent colonizers their basic needs remained the same. Because of the harsh and unforgiving elements of the desert suitable shelter was one of the most pressing and immediate needs that had to be satisfied. As these pioneers moved into new lands they brought with them "store bought" supplies of food. A second basic need to be satisfied was that of providing the family with a subsistence base that would ensure a continued source of food.

Temporary shelters took many forms and were used until more substantial and permanent dwellings could be built. Tents, lean-tos, and wagons, a form of movable shelter, served as temporary accommodations for new arrivals. In March, 1869, John Chamberlin and his pregnant wife lived on a surveyed city lot at West Point and in a letter he wrote, "got a willow Wickeup [sic] made[.] going to Plant goards [sic] in a few days[,] that is what [I'm] ganah [sic] shaded [shade it] with" (3/6/1869). By August, they had three city lots and a dugout. In another letter, an in-law asked Chamberlin about selling one of his city lots to
which he replied, "I should not like to sell it at present but if you will come Down here I have a surplus digout [sic] I will let you have" (9/5/1868[9]). In the same letter, Chamberlin tells of making adobe bricks presumably for the construction of a permanent residence. A progression can be seen from a simple wickiup, to a dugout, and finally to a more permanent adobe structure.

Temporary structures such as the dugout could be built with more sweat than initial cash outlay. Dugout construction consisted of digging into the side of a hill using the hill to form three sides of the room. The front could then be walled in using stone, adobe bricks or lumber and finished with a door and window. The roof was usually composed of logs or poles covered with plant material gathered from the nearby river or swamps. A soil roof is an alternative that was used, but this type of roof required a stronger framework of supporting poles.

Ruth Cornia, mentioned as resident of West Point, also lived in a temporary shelter before moving into an adobe home. Her first home consisted of "crooked black ash sticks set in the ground and wove in willows plastered in mud [wattle and daub construction]. Our door was a thick canvas ... The roof was covered with long bundles of flags [riparian plants] tied together" (Hafner 1967:74). Their daughter Hattie, one of twelve children, was born in this structure. The family soon purchased a city lot on a knoll.
and constructed a two-room adobe. The adobe had a roof composed of reeds gathered from the nearby Muddy River and the "floors were plastered with mud over which we spread straw and then laid a rag carpet" (Hafner 1967:74). Her husband made the door and window frames from logs hauled in from a distant timber source.

Having provided themselves with some form of protective shelter, the labor of the colonizer turned to creating a subsistence base before their supplies of food gave out. Farm fields had to be cleared of desert shrubs and garden plots planted. In reference to the men called in the fall of 1867, the Deseret News reported,

> The grubbing hoe is handled with amazing results by our young men ... They do not feed on as many dainties as are to be found in older settled counties; but [they] labor with a faith that defies obstacles. The desert howls, but must yield at their touch (Journal History, Deseret News 2/19/1868).

The Muddy Valley (Moapa) is blessed with a long growing season and mild winters. One resident of the upper valley recollected that, "trees grew as fast there in one season as they would in Salt Lake in three seasons" and that they "could raise six crops of lucerne [alfalfa] a year" (Hafner 1967:74-75). While Utah experienced killing frosts in April, 1869, Helen Chamberlin wrote her sister expressing that, "the gardens look fine[.j the pease [sic] are up[,] the radish are up[,] the berries and potatoes and all the garden stuff is up" (4/3/1869).
While the farm fields were devoted to raising cotton and wheat or corn, the garden plots were planted in vegetables. Two thousand bushels of wheat were expected to be harvested in the fall of 1869 by the families of West Point. This was in addition to a good cotton crop (Bleak n.d.:A:468). Garden plots yielded numerous varieties of vegetables. In August, 1869, Chamberlin wrote that the "garden and all looking fine[.] we have plenty of Watermellons [sic] and mushmellons [sic] and cucumbers and beans and corn." One month later, Chamberlin wrote that his family had "plenty green corn & beans[,] sweet Potatoes & other vegetables [sic]" (9/5/1869).

Vegetable diets were occasionally supplemented with dairy and meat products. John Chamberlin wrote that they "hante [haven't] any meat Down here but got 2 little Pigs[,] have meat after a little" (3/6/1869). Six months later, John again wrote "meat is like hens teeth[,] rather scarce" but that some milk and butter was available for consumption (9/5/1869). Being unable to take all of their possessions with them when West Point was abandoned and not wanting to leave anything for the Indians, one resident said, "My, we had a time eating chickens" (Hafner 1967:75).

IRRIGATION: MAKING THE DESERT BLOSSOM

By the time the Mormons moved into the Muddy Valley, irrigation of arid lands within the Great Basin was an established institution. In order to overcome the
agricultural limits of nature in the arid West, it was necessary to irrigate. Irrigation allowed for increased agricultural production by channeling water through canals to otherwise fertile but non-productive lands. These ditches also acted as a source of domestic water supply.

Redeeming the earth or "making the waste places blossom as the rose, and the earth yield abundantly of its diverse fruits" is mentioned by Arrington as one of the seven basic principles of Mormon economic growth (1966:25). This redemption was made possible by the Mormons who developed a system of public rather than private ownership and control in the diversion and use of water (Fite 1966:178-179). Dams to control the flow of water and ditches to deliver the water to the fields were constructed by cooperative effort for the community as a whole (Arrington 1966:53). Land, like water, was also held in common and only small plots of land were allocated to farmers so that the community could effectively use the water that was made available through their cohesive efforts (Fite 1966:179).

The practice of irrigation was not new to the upper valley of the Muddy. The Deseret News published a lengthy and glowing letter concerning the Muddy Valley written by Joseph Young. Young was impressed with native efforts at irrigation and so described,

The Indians have raised considerable wheat here, most of which was very good. They were harvesting when we were there, and I must say, to their credit, that I
never saw finer grain in my life. They plant in hills, from one to two feet apart and irrigate after, but do not allow the water to stand and soak the land. I attribute the large heads and full berries to this way of farming (Jenson, Deseret News 6/19/1869).

When Mormon settlers moved into the upper valley they, too, took to irrigating the land. Abraham A. Kimball recalled in his reminiscences that, "all hands were for improvements so we soon had ... a ditch made" (1847-1889:63). A year and a half later, Snow and several home missionaries traveled to West Point seeking support for a telegraph line and a cotton factory. At this time, Snow noted that the settlers of this community "did not have to make any general water ditch as the Muddy would run on to any of their land by cutting through the sod on the banks" (Bleak n.d.:A:468).

Lieutenant George M. Wheeler, having passed through the Muddy Valley on a reconnaissance mission in September, 1869, does not specifically mention in his report Mormon irrigation practices. He does, however, state that, "the limited amount of water of the Muddy will not irrigate more than about fifteen hundred acres; so that, in case vast extent of the finest vegetable mould existed, it must lie desert and arid for the want of irrigation" (Wheeler 1870:8).

The Mormons had a somewhat more optimistic view as to the number of acres that could be watered through the use
of diversion canals. An assessment of irrigation canals was made in the last month of 1869. This inventory was accomplished for the purpose of acquiring "alternate sections of public lands lying contiguous to any main canal" (Bleak n.d.:A:510). Through this assessment, the survey found that the upper Muddy region had four canals which measured 5.2 feet in average width, 1.9 feet in average depth, and totaled thirteen miles in length. The estimated cost of construction was $18,000 and the number of acres of useful land was 1,700. The lower Muddy, as a point of comparison, had ten canals for a total length of 52.2 miles and had 6,230 acres of useful land (Bleak n.d.:A:512).

It is unclear from the historical documents whether the Mormon farmers of the upper valley actually had 1,700 acres of irrigated land in production or if that number reflected potential acres that could be irrigated by the four canals. Interesting to note, also, is that in a six month period from Snow's visit when he observed no "general water ditch" to the period when an inventory of canals was made, that four canals, thirteen miles in length, appeared. It seems that the industrious labors of the West Point settlers resulted in the blossoming of canals if nothing else. The possibility does exist that the farm fields, probably located on the surrounding flood plains, could have been watered by cutting through the sod on the banks. West
Point, however, which is located on a gravel terrace above the flood plain, would have required irrigation ditches to provide the community with needed domestic and garden water. In any event, irrigation was a necessity to West Point.

COMMUNICATIONS

Settlements scattered throughout the geographic influence of the Mormon church were often isolated both socially and economically during this time. This was certainly true with the Muddy Mission. To overcome this isolation and overwhelming sense of loneliness it was necessary to maintain contact with other settlements and, in turn, with the outside world via Salt Lake City. Mail and telegraphic systems were two ways that helped break down the barrier imposed by geographic isolation.

Joseph Young recognized the importance of receiving regular mail service. Writing to the *Deseret News* Young reported, "We are getting up a petition to forward to Captain Hooper for a mail route, from St. Joseph to Eagle Valley, via West Point, Long Valley, Clover Valley, Washington and Panaca" (Jenson, 2/8/1869). Young also instructed George Leavitt to get a petition going for the establishment of a post office at West Point. As result of the petition, a post office was established in the community on September 20, 1869 (Corbett 1968:137). Until that time some of the residents of West Point received
their mail at St. Joseph (Chamberlin 1869). St. Joseph post office opened in August, 1867, as part of Pah Ute County, Arizona (Harris 1973:45).

In the early months of 1867, a telegraph line was completed connecting St. George with Salt Lake City and a company formed, the Deseret Telegraph Company, to handle its operation. Construction of the line was a cooperative effort between communities which the line served. This line "facilitated the effective administration of the expanding spiritual and temporal interests of the church; increased the security of the outlying settlements from attack of Indians; and helped ... to overcome the feelings of isolation" (Arrington 1966:230).

Seeking support for an extension to the telegraphic line to serve the Muddy Mission, Snow came to the valley in June, 1869. After speaking to the lower settlements and gaining their support, Snow addressed the residents of West Point at a 4 P.M. assembly on the 9th. Those present gave the "endorsement ... by vote to do their portion to secure telegraphic communications" (Bleak n.d.:A:468). Their "portion" of it would have been to provide men for a labor force and wagons with teams to haul materials. By the time the valley was abandoned a year and a half later the telegraph line had not been started.

MILITARY EXPEDITION ON THE MUDDY

A military expedition under the leadership of
Lieutenant George M. Wheeler paused briefly on the upper Muddy after reuniting with a second part of his command led by Lieutenant D. W. Lockwood. Lt. Lockwood was instructed to make a "reconnaissance of the country due south, passing through Pahranagat Valley to St. Thomas at the junction of the Virgin and Muddy Rivers" (Wheeler 1870:19). At the same time, Lt. Wheeler explored the Clover Valley and Meadow Valley leading to the Muddy. The purpose of this expedition was to locate a more direct route to be used in the movement of troops from states adjoining Nevada to Arizona (Bartlett 1962:337).

With supplies, animals and men nearly exhausted, Lt. Lockwood and his detachment arrived at West Point on September 15, 1869. On the following day, the party left West Point and "succeeded in getting about four miles below what is known as the California Crossing, when the team mules gave out ... The animals, worn out by constant marching and want of proper forage, could not haul even half the load through the heavy sand" (Wheeler 1870:20).

Lt. Wheeler, being in the same trying situation, left his command in the Meadow Valley on the 14th to ride ahead to the Muddy settlements for assistance. Two days later Lt. Wheeler encountered Lockwood in a reunion that Wheeler summed up as a "rather sorry meeting" (Wheeler 1870:7). Together, the two young Army officers rode on to St. Joseph where they purchased grain for the animals progressing down
Meadow Valley. Having accomplished this, Wheeler set out to establish a camp location closer to West Point. While at this camp,

The most was made of the interval before the other wagons should come up in physical recuperation of both men and animals. Finally, on the afternoon of the 22d September, the parties hauled slowly into camp - a scarecrow, exhausted looking set - sadly wanting on the part of the animals, then in a semi-starving condition, good grain, grass, and water, and the men needed a few nights of sound repose (Wheeler 1870:7).

Lt. Wheeler took this time of recuperation to explore areas in close proximity to the Muddy Valley including the three Mormon settlements of West Point, St. Joseph, and St. Thomas.

The Army camp adjacent to West Point drew frequent visits by local Indians and Mormons alike. The Indians "came both for curiosity and to see what they can steal". The Mormons came to "vend the productions of their little ranches and gardens" (Wheeler 1870:7).

Clement, a resident of a lower valley settlement, mentions this military expedition in his journal. "This month some U.S. Soldiers camped at the upper Muddy. They found some animals owned by Muddy settlers which had the Gov'mnt brand on them and took them" (Clement 1844-1917: n.p.). Fresh government horses helped in the departure of Wheeler's expedition from the valley commencing on the morning of the 29th. On a return visit, Lt. Wheeler and
Lockwood passed through the region two years later making mention only of St. Thomas (Wheeler 1872:85) (Figure 4).

NATIVE CONFRONTATIONS

Having had the best of their traditional lands occupied by the Mormons, various bands of the Southern Paiute on the Muddy soon found their age-old and time tested ways of life increasingly difficult to maintain. Traditional subsistence patterns, in this fragile environment, were disrupted by over grazing domestic livestock, technologically advanced hunting techniques, and general agricultural activities of the settlers. An Indian Agent's report stated that there was but "little game left in all this country" (Ingalls 1913:87). As an adaptive strategy for survival in an environment hard pressed to accommodate both cultures, the Indians began to trade with and work for these white invaders. On the other end of the continuum, the natives took to begging and stealing resulting in numerous conflicts both in the upper and lower valleys.

Varying opinions were held by the Mormons concerning the Native Americans. Negative views, recorded in the historical documents, are most prominent expressions of their attitudes. "These Indians were considered about the worst specimens of the race. They lived in almost a state of nudity, and were among the worst thieves on the continent ... much wisdom is required to get along with them pleasantly" (Jenson, Deseret News 5/19/1859). One
Figure 4. 1871 map showing location of West Point, other communities, and mining districts as the result of Lt. Wheeler's military expeditions (Wheeler 1872).
resident of West Point found that the "Indians were all around us watching every move, and such dirty, filthy, half naked creatures" (Hafner 1967:74).

Such ethnocentric attitudes expressed the general American view of the period, but official church policies were favorable in the treatment of all Indians. The Native American, seen as descendants of the Lost Tribes of Israel in Mormon ideology, resulted in a benevolent policy of treatment toward them (Kelly & Fowler 1986:387). Joseph Young wrote, "Through the kind though determined course pursued towards them, by our brethren ... the are greatly changed for the better, and ... they are the best working of all the tribes" (Jenson, Deseret News 6/19/1869).

Sermons concerning the treatment of the Paiutes were given to the settlers to reinforce the policies of the church. Such a sermon was delivered by Snow at the newly organized settlement of West Point in December, 1868. Speaking to the assembled missionaries, Snow said to "shoot them with biscuits." Ruth Cornia, commenting on that first sermon, continues by saying that, "We had plenty of that to do, as they were always begging and stealing" (Hafner 1967:74).

The earliest attempt at establishing a settlement in the upper valley failed because of a misunderstanding with church authorities and a confrontation between the natives and the missionaries. With bows in hand, blackened faces,
and in an angry mood, the Paiutes advanced on the new arrivals demanding pay for the land that had been taken from them. Gibbons parlayed with the natives and the dispute pacified, not by successful argument, but by the "fact that the newcomers were well armed" (Bleak n.d.:394). Several months later settlers of the officially recognized settlement of West Point tried to prevent such future conflicts by purchasing the land. "This kind of traffic was forbidden, & the matter adjusted" by church authority (Clement 1844-1917:21).

Agricultural crops were a constant temptation to the Indians. During the summer of 1869, Indians of the Muddy were reinforced by other outside groups. The region was experiencing a drought during this time and the valley with its domestic crops represented a source of food much easier to exploit than less productive areas in the surrounding desert. Hunger and increased numbers made the Indians "bolder and meaner." Visiting church leadership found that the "families have been annoyed to a great extent this season by the Indians taking wheat from their fields ... they [Indians] operate not only in the night time, but during the day openly & boldly enter fields & carry off large quantities" (Clement 1844-1917:21).

Domestic livestock was another common target for the Muddy Paiutes. Unguarded or stray livestock soon found their way into Indian hands. Cattle were often driven into
the nearby river or into swamp areas where they were drowned and then eaten. Horses, being of more value to both Indian and settler, were simply stolen, but natives soon learned that they could be paid for their recovery. One resident spoke that the Indians "would drive our horses away and hide them, then come back and want pay for finding them for us" (Hafner 1967:74).

The Paiutes, frequently caught in the act of theft, suffered various forms of punishment for their acts of self-preservation. Early in 1869, Indians killed a calf near West Point and the perpetrators apprehended. Chamberlin wrote to a relative that "we tied them up and Blacknaked [whipped] 'em[.] I ges [sic] they will know better next time[.] Made them sing kihi kihi[.] they have ben [sic] good as little pigs" (3/6/1869).

In November, 1870, tempers flared on both sides over the killing of a cow. Some Indians were caught in the act of killing a cow belonging to William Rydalch of West Point. They stubbornly resisted any attempt by the settlers to reclaim the cow and became very "hostile and saucy." The Paiutes of the Muddy, reinforced by the Chemehuevi band, at war with the Mojave Indians and seeking refuge in the valley, out numbered the settlers. The men of West Point sought help from the lower settlements. Bishop Leithead responded.

An express reached me on Monday morning, the 21st. I immediately started with 10
men from each of the settlements on the lower valley and reached West Point the same night. With West Point boys we numbered, next morning, about 45 men, well armed. The Indians numbered 100 or over; who came well armed with guns, bows and arrows etc. I told them that, if they would produce the thieves, we would take pay for the cow, either in money, or a good gun, but in the future we could not, and would not submit so easily. They immediately paid for the cow; but during the talk ... we carried our point, never backed an inch (Bleak n.d.:B:67-69).

This show of force by the settlers must have convinced the Indians because no further incidents of this nature are recorded for West Point. Instead, a more pressing problem of back taxes and Lincoln County tax collectors occupied the concerns of the Mormons on the Muddy.

BACK TAXES AND MISSION ABANDONMENT

Political jurisdiction over the area that is now southeastern Nevada seems to have been a subject of confusion and controversy in the late 1860s. Early settlers of the Muddy Valley paid taxes and sent representatives to the territorial capitol of Arizona under the impression that they were part of Pah Ute County. They soon realized, however, that land northwest of the Colorado River was not within the political control of Arizona. With that, the territorial legislature of Utah acted quickly to create Rio Virgin County on February 15, 1869. In reality, the National Congress granted the state of Nevada, in May of 1866, the land west of the 114 degree
line and those portions of land north of the middle of the Colorado River (Figure 5). The officers of Lincoln County, Nevada, early in 1870, sent assessors and tax collectors to the Mormon settlements demanding taxes for the past two years.

Having paid taxes in both Utah and Arizona, the settlers refused to pay Nevada's demands because of the uncertainty surrounding the exact location of the state boundary line. Isaac James and Captain Monroe made the official survey in 1870 locating the state boundary line several miles east of the settlements (Angel 1881:479). This placed Mormon property under the jurisdiction of the miner-dominated politics of Nevada.

Upon hearing the results of the survey, Brigham Young sent a communication to the Muddy settlements and read to the gathered settlers on December 20, 1870. In this letter, Young gave praise to those desert pioneers who had done "noble work in making and sustaining that outpost of Zion, against many difficulties, and exposure and toil" (Bleak n.d.:B:67). The letter advised the settlers to decide upon their future course of action. After some discussion and deliberation, the missionaries "resolved that we abandon the Muddy" and the resolution "passed by a vote of 61 for and 2 against" (Bleak n.d.:B:72).

Preparations were made over the next two months to abandon both the upper and lower valleys of the Muddy.
Figure 5. Land additions from other territories to make the present Nevada state boundaries (after Harris 1973).
The demise of West Point and the other Mormon settlements of the lower valley, "outposts of Zion", was complete by the first months of 1871. The abandonment of the valley by the Mormons opened the doors of settlement to Gentile souls.

HOMESTEADERS MOVE IN

On the heals of the hastily departed Mormon brethren, a second wave of settlers entered into both the upper and lower valleys with the intentions of claiming the abandoned farms and improvements the Mormons had left behind. Despite rumors of turning the entire valley into an Indian reservation, newspapers such as the Pioche Daily Record encouraged resettlement of the valley. Hamilton McKane, having returned from the area while looking for farm property, reported to the Pioche Daily Record that, "There are about thirty farms located and under cultivation, but thousand of acres ... are vacant and subject to homestead and pre-emption entry." McKane sums up by saying, "It cannot be that these magnificent lands will be unclaimed much longer" (2/12/1873:3). Less than a month later, the Pioche Daily Record would say that, "Our items and articles directing attention to the large extent of unoccupied farming land in the Muddy Valley have not been without effect. A number of farmers and stock raisers are coming there ... The agricultural interests of Lincoln County will soon be important" (3/4/1873:3).
Two homesteading settlers, by the last name of Rector and Johnson, set about claiming 320 acres in the upper valley as their own. The 320 acres claimed by them is referred to as the "Ranch at West Point" in the Lincoln County Tax Assessment Books. The county taxed Rector and Johnson $7.10 on a total land and improvement value of $200.00 for the year of 1872 (Lincoln County 1872:125). Rector and Johnson relinquished their possessory land claim to the U.S. Government a few years later.

With so many settlers taking advantage of Nevada's pre-emption law and ready made farms, quarrels and disputes occasionally occurred between homesteaders on adjoining parcels of land. Such an altercation took place on the forenoon of March 11, 1873, at or near the former community of West Point. Robert Moon and Harrison Pleasant argued over the encroachment of a boundary line between the two pieces of property. Both being gentlemen, they agreed to have the matter refereed and quite a number of valley residents gathered at Rector's West Point homestead to hear arguments from each side. As the meeting progressed, tempers flared and the exchange of heated words led to bodily contact. Bystanders managed to separate the two combatants which gave Moon the time and opportunity to draw his revolver and cry out, "Stand off!" Everyone separated and Moon "fired four shots in rapid succession. The deceased was ... shot through and through. At the forth
shot he fell dead, not the quivering of a muscle being visible" (Pioche Daily Record 3/27/1873:3). Moon was promptly arrested. Justice Logan of Logandale (former community of St. Joseph) officiated over an inquest and later turned Moon over to the Grand Jury on a charge of murder. Grander disputes were, however, in the offing.

**MOAPA RESERVATION**

The first efforts to recommend the formation of a reservation for the Southern Paiute occurred in October, 1869. Special Indian Agent R. N. Fenton spent the first two weeks of his new assignment assessing the valley for its potential as a reservation and holding talks with thirty headmen representing several Paiute bands. During those talks, the headmen complained bitterly to Fenton that the "Great Father" in Washington neglected the Paiutes by not distributing annuities and presents to them. The Paiutes offered to "comply with any arrangement the government may make for their general benefit ... and anxious to be place on a reservation, and there engage in farming" (Fenton 1870A:645). In his report to the Commissioner of Indian Affairs, Fenton recommended seven hundred to one thousand acres on land in the upper Muddy Valley as the location for the reservation. He also suggested that the "agent for these Indians be furnished ... with necessary clothing, subsistence stores, and all kinds of farming implements; also sufficient funds to be
expended in erecting buildings, for the purchase of horses, mules and wagons; also, for the purchase of beef cattle, a grist mill, &c." (Fenton 1870A:646). Andrew Gibbons, leader of the first attempt to settle the upper valley, acted as Fenton's interpreter and received $250 for a six month period for his services (Fenton 1870C:4).

While acting as the agent for the Southern Paiute, Fenton removed the agency headquarters from St. Thomas to Hiko and then to the mining camp of Pioche. Fenton reasoned that it was "more convenient for the transaction of the business connected with" the agency (Fenton 1870B:1). The agency headquarters returned to St. Thomas three years later and, finally, to West Point.

Assuming the duties as Indian Agent in August, 1871, Charles Powell left Pioche in September with a wagon load of supplies and distributed the same among the Indians in his charge. Arriving at St. George, Powell sent a report to the Acting Commissioner of Indian Affairs concerning the status of the Paiutes that he encountered. Agent Powell found that the former agent had neglected the "Pi-ute" causing them to lose confidence and to "look with suspicion on all Government agents." Powell continued the report by saying that the Muddy was a "splendid valley" and that the Indians maintained "some ten to fifteen small farms, and considering that they have no farming implements, ... their ambition is most praiseworthy" (Powell 1871:2). He
summarized the surrounding countryside as being "unmitigated desert and yielding nothing." He felt that the Muddy Valley was "the proper place for a reservation." Powell concluded his report, "I cannot too earnestly recommend the establishment of a Reservation for these Indians on the Muddy at St. Thomas. It is most important and to the best interest of the Indian Service and an appropriation of $65,000 to establish this Reservation" (Powell 1871:5). There were but a handful of homesteaders in the valley at this time, but increasing daily.

In 1872, the establishment of a reservation for the Paiutes remained unresolved. The Commissioner of Indian Affairs, Francis Walker, commented that the 2,500 "Pi-Utes" living in the southeastern part of Nevada roamed about at will because no reserve was set aside for them. Walker also pointed out that neither the Government nor the Paiutes had ever signed a treaty. He suggested that due to their "unsettled condition" there was very little that could be done for them in the form of Government help. Instead of urging a separate reservation on the Muddy, Walker recommended the removal of the Southern Paiute to other existing Nevada reserves, or "upon the Uintah reservation in Utah, where they could receive suitable care and proper instruction in the arts of civilized life" (Walker 1872:59).

Agent G. W. Ingalls, having replaced Powell in August,
1872, set about making a "very thorough examination" of the agency. He found the Paiutes scattered throughout southwestern Utah, northwestern Arizona, all of Lincoln County and parts of Nye County. He estimated the Indian population to be between three and four thousand and divided into thirty-one bands of which five bands resided in the Muddy Valley - one band each living at or near each of the abandoned Mormon farm villages including West Point.

Like the preceding agents, Ingalls recommended the Muddy Valley as the site of a reserve, "extending from St. Thomas on the south to West Point on the north and the full width of the valley east and west, being about two miles" (Ingalls 1872A:6). In a report issued a few days later, Ingalls expressed an urgency in setting aside this portion of Lincoln County because of incoming homesteaders. He stated, "I am convinced much of this land will be occupied by Mormon & white squatters this winter with a view of speculation on the government at some future time provided it [the Government] should wish to have them [the land] for use of these Indians" (Ingalls 1872B:2).

Indeed, white homesteaders filtered into the valley taking up residence in and around the abandoned Mormon settlements. Newspaper editorials that condemned the use of the valley as a reservation, in turn, supported the new settlers in their claims and efforts to tame this desert.
valley. The editors of the *Pioche Daily Record* had "little apprehension that the Interior Department" would "tolerate so flagrant an outrage upon the industrious settlers ... as to rob them of their hard-earned homes." The article concludes, "There is no kind of necessity for ousting from their homes citizens of Lincoln County, who have made settlement in good faith, and giving their cultivated fields over to Pi-Ute Indians" (4/17/1873:2). Not only did the paper see the proposed reservation as an outrage to the white community, but, assuredly, it was "an injustice to seize upon improved property for the use of Indians" (*Pioche Daily Record* 5/4/1873:2). The editors went as far as to suggest that even the Indians "opposed" and were "especially averse to the proposition. They argue that the presence of white settlers among them stimulates the Indian to industrious habits and prevents demoralization among them" (*Pioche Daily Record* 6/14/1873:3).

The *Pioche Daily Record* not only questioned the soundness of a reservation so close to the mining community of Pioche, some ninety miles distance, but they even attacked the credibility of Agent Ingalls. A traveler passing through the Muddy reported that he had seen "a bevy of half-famished bucks and squaws cutting away the most putrid portion of their flabby and stinking salt Pork [Government issued]. They are very much dissatisfied, saying they ... have never received an once of flour or
anything else in the eating line, though an abundance had been promised them by Mr. Ingalls" (Pioche Daily Record 6/7/1873:3). Even after the reservation became a fact of life, the paper lashed out at Ingalls by saying, "it is reasonable to suppose that ... he has 'put up a job' on the white settlers" of the valley (Pioche Daily Record 9/10/1873:2).

In all fairness to Ingalls, the paper and the citizens of Lincoln County found fault with all the agents who had held the post of Indian Agent for southeastern Nevada. Indeed, the whole Indian Bureau suffered from the worst evils of the spoils system. "Appointments usually went to men with no other qualifications than faithful party service ... all too many brought to their assignments gross incompetence, a deliberate intent to profit by corruption, or both" (Utley 1984:42). Daniel Bonelli, the only Mormon not to abandon the valley in 1871, accused the previous agents of strutting "about the streets of some far off mining town [Pioche] and 4/5, perhaps 9 tenths of the Govt. appropriations have been swallowed up by the whisky shop, the gambling hall and the den of infamy" (1871:1).

Despite the clamor of the newspaper and the citizens of Lincoln County, President U. S. Grant signed a Executive Order establishing the Moapa River Reserve on March 12, 1873 (Atkins 1886:343). This version of the reserve encompassed all of the Muddy Valley and vast areas of
treeless mountains, deserts of drifting sand and barren rock. Agent Ingalls, in Washington D.C. at the time of the signing, wrote to the Acting Commissioner, H. Clum, stating that the reserve "boundaries embrace a much greater area than is actually necessary." He continued, "in fact, there is but a very small portion of this territory that is at all suitable" (Ingalls 1873:3). As if to mourn the loss of a friend, the Reese River Reveille published, "In spite of the protests of the white settlers ... and against the wishes of the better class of Indians ... it has come to pass that an Indian reservation has been provided for" (In Pioche Daily Record 9/19/1873:2).

During the summer of 1873, Agent Ingalls and John W. Powell received appointments as Special Commissioners to examine the condition of Indians living in Utah, Nevada, and northwestern Arizona. This two man commission studied the prospects of gathering the scattered bands of roving Indians and placing them upon existing reservations (Ingalls 1913:89-94). As part of their duties, Ingalls and Powell were to "inquire into the nature and amount of the claims of the present white settlers on the reservation [Moapa] ... with a desire to protect the Government against unjust claims, and ... to do no injustice to the claimants" (Ingalls 1913:95). The Commissioners found seventeen settlers occupied most of the available land and controlled the water of the Muddy River. Their report recommended
appropriations of $32,050 be made to pay the claims of these settlers (Ingalls 1913:114). The Commissioners also recommended that the newly established Moapa Reserve be expanded to the east and west, a contradiction to what Ingalls had felt earlier. Suitable agricultural land along the Virgin River necessitated eastern expansion, while western expansion to Gass Mountain provided the reservation with a sorely needed timber source. With expansion of the boundaries, the estimated 2,327 Indians, projected to share the reserve, would be self-sufficient within a few years (Ingalls 1913:100-101).

Following the recommendations of the Special Commission and their superiors, President U. S. Grant increased the size of the Moapa Reservation with an Executive Order dated February 12, 1874 (Atkins 1886:344). All totaled, the reservation now encompassed approximately 3,900 square miles of land (Kelly & Fowler 1986:388). A month after the reservation expansion, the Pioche Daily Record informed its readership that the government was in "full control" of the Muddy Valley (3/19/1874:2).

Inflamed by false newspaper accounts, complaints and criticisms from settlers continued to be voiced against Agent Ingalls. Daniel Bonelli wrote to ask for a reconsideration and adjustment to his property appraisal of $5,700 submitted by the Special Commission. He continued by saying that the reservation "embraces a vast desert
territory full of metalliferous ranges of undeveloped but
great prospective value which should be left free for
development" (Bonelli 1874:1-2). The Beaver Enterprise
falsely reported that Agent Ingalls had "secured an
appropriation of $52,000 to buy claims on the Muddy" (In
Pioche Daily Record 1/21/1874:2). In reality, Mrs. Isaac
Jennings, claiming to "represent the opinions and views of
those interested in the valley", used her influence with
the sympathetic Senators and Representatives of Nevada to
defeat the appropriations of funds in Congress (Barnes
1874:6).

Rather than appropriate funds to buy out white settlers
living within the Moapa Reserve, the government reversed
two previous Executive Orders and reduced the reservation
to a fraction of its former size. Congress and the
President restored all but one thousand acres of land to
public domain on March 3, 1875 (Royce 1899:878). Indian
Agents Bateman (Pyramid Lake Agency) and Barnes located the
new reserve in the upper Muddy Valley taking in portions of
the former community of West Point. Rector and Johnson,
holding claim to the land and improvements made at West
Point, relinquished possession to the government for a
payment of $1,800 (Atkins 1886:344).

William Vandever, a U.S. Indian Inspector, approved the
selection of the reduced reservation and forwarded his
report to the Office of Indian Affairs. In part, the meets
and bounds for the reservation reads, "Commencing at a stone set in the ground ... where on is cut 'U.S. No. 1', which stone marks the northeast corner of the reservation, standing on a small hill known as West Point." Further, this boundary marker was located, "eighteen feet in a northeasterly direction from the corner of a building designated as the office and medical depository on said reservation" (Atkins 1886:334) (Note: This stone was located during the spring, 1987, archeological field season. Refer to X, Figure 3). Secretary of the Interior, C. Delano, made the final approval for the Moapa Reservation on July 3, 1875 (Atkins 1886:335).

Fredrick Dellenbaugh, the artist accompanying John W. Powell on his Colorado River expeditions, confirms that West Point was in use in conjunction with the reservation. Dellenbaugh and his traveling companions reached West Point on the afternoon of January 22, 1876. While sitting around the campfire that night, Dellenbaugh records, "Some of the old houses have been rebuilt for quarters for the employees of the Muddy Indian Reservation" (1876:22).

With the reduction of the reservation and because of its geographical isolation, government authorities began a policy of neglect which led to corruption by ineffectual Indian Agents, farmers-in-charge, and encouraged by surrounding settlers. Agent Barnes, being appointed to the position of Nevada Indian Agent late in 1875, relocated
himself to the Pyramid Lake Agency, thus making supervision of the Moapa Agency non-existent. Benjamin Holland, a farmer-in-charge while Barnes resided in the north, was shot and killed by four white men in an incident related to cattle stealing. After this incident, Robert Logan appointed himself in charge of the agency but was soon driven from the reservation by Barnes and arrested for cattle theft (Inter-Tribal Council of Nevada 1976:99). W. R. Bradfute, appointed as the new resident farmer in 1879, was found to be "neither honest nor competent" in an investigation of conditions on the agency by Agent Spencer a year later (Zanjani 1986:243). Using Indian land and equipment, white settlers planted their own crops and took advantage of Indian cattle and team mules. Conditions became so bad on the agency that the Paiutes refused to live upon the land that had been set aside for their specific use and protection (Inter-Tribal Council of Nevada 1976:99-103).

The Public Land Survey reached the reservation in 1881. U.S. Deputy Surveyor R. H. Woods, assisted by four men, resurveyed the reservation (BLM n.d.). Their findings placed the reservation a half mile northwest of where it had been located by the Bateman and Barnes survey of 1875. Woods states, "By retracing reservation lines I find them to have been run with the magnetic meridian, hence to adopt them to the true meridian, the course must be
Consequently, adding error to error, the degree correction made by Woods and his crew rendered void any of the previous agency boundary markers established by Bateman and Barnes. Woods' survey and resulting plat was accepted and approved on December 24, 1881, by the Surveyor Generals Office, Virginia City, Nevada (BLM n.d.).

Conditions continued to deteriorate on the reservation as a result of the government's unofficial policy of shirked responsibility. In an annual agent's report, W. Gibson wrote that he had been informed of the government's intention to abandon the Moapa Agency. Gibon's 1886 report indicates that there were only twenty-four Indians living on the agency. Twelve of those being adult males. Gibson found that the reserve "is almost inaccessible to transport supplies. The Indians living there have received no Government aid either through me or my predecessor" (1886:195).

Closure of the reservation was encouraged by the editors of the Pioche Weekly Record. The editors proclaimed, "There is now being a move inaugurated to have the Government open the land of the Moapa Reservation for public entry. The reservation is of no earthly benefit to the Red-skins ... it is nothing more than right for the Government to open this land for settlement" (10/16/1886:2). Within this same article the paper printed a short
summation of history and description of West Point.

All that now remains to mark the spot of West Point is a house or two occupied by the agent, a couple piles of adobe bricks that indicate where houses once stood, and the tracing of water ditches that once ran through the village, irrigating the crops raised by the settlers on their little fenced patches of land (Pioche Weekly Record 10/16/1866:2).

In 1887, Special Agent H. Welton went to the agency to close out reservation affairs. Welton was also directed to investigate charges of corruption against the farmer-in-charge, W. Bradfute. Welton fired Bradfute, made several recommendations to his superiors, and appointed L. J. Harris as trustee for the agency (Inter-Tribal Council of Nevada 1976:102-103). Luman Harris, a local cattle rancher, maintained several possessory land claims adjoining the reservation on the west (Lincoln County 1885:82). Harris later became involved in a land dispute with the government over reservation land.

THE PICKETT RANCH

The 1881 Public Land Survey made by Woods displaced and realigned the reservation boundaries one-half mile to the north and west. Luman Harris, being in the position of reservation trustee, became aware of this boundary conflict sometime during the 1890s. As a result, Harris encouraged his friend, James Pickett, to lay claim to the disputed land placed outside of the adjusted reservation boundary (Inter-Tribal Council of Nevada 1976:103).
Acting on this information, James Pickett and William B. Stanley filed possessory land claims with the State of Nevada in April of 1895. Stanley, a resident of Pioche, applied for forty acres of land and paid a first payment of $10.00 on land that cost $1.25 an acre. On behalf of Pickett, Stanley applied for 80.3 acres and paid $20.10 as a first payment. Stanley listed Pickett's address as Moapa, Nevada (NDSL 1989) (Figure 6). Two years later, Luman Harris applied for another forty acres on behalf of Pickett. Both of Pickett's land claims became patented on May 7, 1904 (NDSL 1989). Thus, what remained of West Point, consisting of a few deteriorated reservation buildings and a lot of rubble piles, became the property of Pickett.

A state census taker visited the Moapa Precinct on June 25, 1900. There he recorded a household consisting of two single white males. The head of household is listed as Luman Harris, age 67 years, hailing from New York and is listed as a farmer by occupation. The other male is James Pickett, 65 years of age, from Illinois, and is also a farmer by trade (U.S. Census 1900). Harris is not listed in the Lincoln County Tax Assessment Books for this year and was probably residing with Pickett on Pickett's tax assessed property. Indeed, an inspection trip by Supervisor Holland this same year found Harris occupying the former reservation buildings on the "disputed land and
Figure 6. The Moapa Post Office, c. 1889, probably the site of the Mormon settlement of West Point. (Photograph courtesy of Ferron-Bracken Collection, University of Nevada, Las Vegas Library).
had disposed the Indians" (Inter-Tribal Council of Nevada 1976:103).

In 1902, a resurvey was made of the Moapa Reservation. This survey found the 1881 Public Land Survey to be at fault and that the original Bateman and Barnes survey to be correct. Immediately, the conflict became apparent. A letter was sent to Carson City from the Commissioner of the U.S. General Land Office. In part the letter reads, "On account of the erroneous condition of the official surveyed plats of townships which adjoin the Moapa River Indian Reservation, and to secure adjustments there of, you are directed to withdraw from all form of disposal the following tracts of land" (BLM n.d.). The described tracts included that occupied by Harris and Pickett.

After years of neglect, the government took a renewed interest in the reservation. Despite the conflict over the reserve's misplaced boundaries and the disputed land and buildings occupied by Harris and Pickett, both tenants refused to dislocate from their claims. Finally, in 1903, the Department of the Interior agreed to let the 1881 Public Survey stand as the official survey. Dissatisfied with the decision, Indian Agent Manchester recommended that Harris "be run out of the country" (Inter-Tribal Council of Nevada 1976:103). Harris did remove himself from the valley. Pickett remained behind to continue working the 120.3 acre ranch/homestead. Harris died in
1904 and Pickett sold Harris's half interest in the land at an estate sale at Moapa (formally West Point) (DeLamar Lode 7/12/1904:1).

RAILROAD COMES TO MOAPA

Thoughts of connecting the "City of the Saints" (Salt Lake City) with the "City of the Angeles" (Los Angeles) via railroad service were entertained in the late 1880s. The scheme would not become a reality until the turn of the century and the uniting of two opposing forces. The Oregon Short Line, under the aegis of the Union Pacific, had completed grading operations from Milford, Utah, to Pioche, Nevada, by September, 1890. Rail laying began early in October but was terminated after eight miles as the Union Pacific was suffering from serious financial difficulties (Myrick 1963:625).

By 1900, two companies vied for the right to build a rail line from Utah to California; the Oregon Short Line under the reorganized leadership of E. H. Harriman and the newly formed San Pedro, Los Angeles, and Salt Lake under the ruthless control of William Clark. Numerous legal and physical confrontations resulted as the two company crews fought to obtain the right-of-way into Nevada. At one point both companies were grading separate rail beds down the Meadow Valley Wash south of Caliente, each company intent on building independent lines to California (Myrick 1963:642). Despite intense competition, the Lincoln County
Record reported "that all railroad work down the Wash will be suspended for thirty days" (11/15/1901:4). Thirty days stretched into a nineteen month delay in work activities.

Behind the scene negotiations between the two competing railroads led to a compromise agreement. This agreement, in 1902, resulted in a joint ownership of the Salt Lake Route by both concerned parties and continued operation as the San Pedro, Las Angeles, and Salt Lake (Myrick 1963:643). In July, 1903, bids were sought from contractors for a "stretch of 85 miles from Caliente to Moapa River [Muddy] and 15 miles from Daggett [California] to the edge of the desert" (Lincoln County Record 7/17/1903:4). During this month, fifteen contractors traveled the length of the proposed route and submitted their bids before the deadline of August 1 (Lincoln County Record 7/24/1903:4). The Utah Construction Company won the right to construct the roadbed section between Caliente and the Moapa River beginning work in August of 1903 (Lincoln County Record 8/14/1903:4).

The Utah Construction Company quickly set about the task of grading the beds in preparation of track laying. By September, the U.C. Co. had established its headquarters at Caliente, had received seventy-five car loads of materials and supplies, and had approximately one thousand men working along a forty-five mile stretch of the road (Lincoln County Record 9/18/1903:1). Five months later the
U.C. Co. was awarded the contract to grade the rail line between the Moapa Valley and Las Vegas. By this time there were an estimated two thousand men working on the line and work was progressing at four points: from Caliente south; north from Daggett; and north and south from the California and Nevada state line (Lincoln County Record 3/4/1904:1). Grading crews working in advance of rail layers finished the grade to the Moapa Valley in March, 1904. In April, the DeLamar Lode reported that the "steel gang is within four miles of Moapa and ... bridge men are kept hustling to keep out of its way" (4/5/1904:4). Construction trains made daily runs between Caliente and the Moapa Valley by May (Lincoln County Record 5/6/1904:4).

Exactly when West Point became known as Moapa or when the valley was no longer referred to as the Muddy River Valley is not clear from the historical data. Most probable West Point was being referred to as Moapa when the area was granted its own post office in 1889 (Figure 6) prior to the plans of the railroad (Averett 1963:70)(Harris 1973:37). Charles A. Herman, a surveyor for the U.S. Department of Minerals, surveyed the townsite of Moapa (West Point) in October, 1903 (Pat Olsen: personal communications 1987). This proposed surveyed townsite encompassed portions of land claimed by James Pickett. Those portions of Moapa controlled by Pickett are listed in a probate notice for the death of Harris as the "Pickett..."
and Stanley Townsite" (DeLamar Lode 7/12/1904:1). The DeLamar Lode refers to Moapa by stating that, "the main town will probably be at the reservation, while the depot will be about a mile distance, in the foothills" (5/12/1904:1). The West Point/Pickett Ranch location of Moapa lasted several years until a new townsite of Moapa was created at its present location in 1907 (Las Vegas Age 8/24/1907:6).

Moapa was the location of increased activities as grading and rail crews modified the desert landscape in an attempt to meet up with the crews pushing in from California. In hopes of relieving the crews of daily job monotony and their pay checks, several saloons in Caliente closed their doors only to reopen them in Moapa. The Wedge family, accompanied by "Miss Maggie", moved down the line with the intentions of opening and operating a store in Moapa (Lincoln County Record 12/11/1903:4). A newspaper editor went as far as referring to Moapa as the "Coming Metropolis" by stating that, "Moapa will be the principle town along the line of the railroad, and in time is destined to become the county seat of Lincoln County" (DeLamar Lode 1/4/1904:1).

Then, as now, July 4th was time of celebration and picnics for towns throughout the country. In 1904, Moapa was no exception. The day was made memorable by a "couple of prize fights, innumerable drunks, and accompanying
disturbances" (Lincoln County Record 7/8/1904:4). Such celebrations often resulted in tales of humor as reflected in this "strange but true" newspaper account.

A strange story comes from Moapa. A saloon keeper had sent for ten gallons of whiskey and let it out overnight. A hobo coming along saw a chance to get a cheap drink, and boring a small hole in the keg, inserted a straw and began to drink. The mosquitoes there are large and numerous and his clothes were thin so he had to drink as he could find time. He noticed that the liquor did not seem to affect him, but thinking he would eventually get full, kept on. As daylight was dawning he had drank all the whiskey but was still sober as a preacher. The mosquitoes, however, was acting funny and close observation showed they were drunk. They had sucked the alcohol out of his veins as he drew it through the straw, and the water in the liquor had come out in sweat, induced by his hard work. It is a strange circumstance but is vouched for by a number of reliable citizens (DeLamar Lode 7/12/1904:6).

Neither townsite of West Point nor Moapa ever reached their full envisioned potential. In reality, Moapa may have contained nothing more than a few saloons and the site of a railroad camp (Olsen 1986:18). By 1907, Pickett continued to cultivate farm crops on his property and the SP, LA, & SL opened their new rail station a few miles to the southeast of the former community of West Point/Moapa (Las Vegas Age 6/8/1907:4). Immediately, businesses and a settlement began to concentrate around the station and there was talk of a new townsite (Las Vegas Age 8/24/1907:4). The Moapa Commercial Co. advised the Las
*Vegas Age* that it had "decided to survey and place on the market, September 20th, the townsite of Moapa" (present location) (9/12/1907:6). Thus, the former community of West Point/Moapa slipped into obscurity for the final time as did James Pickett. It is thought that Pickett is buried, along with other early pioneer settlers, at the West Point Cemetery which overlooks the remains of the former community. His grave was marked by a single headboard carved with the initials JMP with no date (Review Journal 5/3/1959:38).

**PERKINS PROPERTY: HALF-INTERESTS**

Since Pickett's death, several people have held half-interests in the property containing portions of West Point and the Pickett Ranch. George S. Averbach of Salt Lake City obtained an undivided half-interest on the property in 1911. This interest was deeded to Joseph F. Perkins around 1918 and later deeded to Frank Perkins in 1946 (Melvin Close: personal communications 1989). Frank Perkins constructed a structure consisting of scavenged railroad ties over the remnants of one of the early irrigation canals. This structure is, also, in close proximity to the Pickett Ranch House; suspected former reservation headquarters (Structure 3, Figure 3). Frank and his twin brother, 'Little' Joseph Perkins, ran a few cattle on the property for several years (Clyde Perkins: personal communications 1989). The property is presently owned in
undivided half-interests by John Hendricks, Clyde Perkins, and Melvin Close.

In the proceeding sections, brief summary histories have been presented for New St. Joseph and Sandy Town. A more detailed history is discussed for the settlement of West Point. In the two following sections, brief histories are outlined for the Blue Goose and the Blue Diamond Adobe. The glass collections from all five historic archeological sites are use in the comparative analysis in the next chapter.

THE BLUE GOOSE

The Blue Goose was a brothel that provided recreational activities and female companionship for the miners of Goodsprings, Nevada. Mine activities began in the area with a group of Mormons mining lead on the slopes of Mt. Potosi in the 1850s. This attempt failed, but activity renewed in the late 1860s only to fail again. One miner, Joseph Good, remained in the area to raise cattle. The local spring used by Good's herd became known as Goodsprings. As new mines were discovered, renewed interest and mining development occurred in the 1880s. The permanent settlement of Goodsprings began in 1886. The boom years for the community occurred from 1905 to 1921. The historical record fails to mention the Blue Goose until 1916 when a devastating flood, from a July cloudburst, surged through the community. At this time, a flooded
stream separated the town and the brothel houses forcing the rescue of the ladies and their male guests. The red light district, in 1916, contained three houses and employed twenty women. A mining slump in the 1920s caused many of the prostitutes and miners to seek work elsewhere (Becker 1981).

BLUE DIAMOND ADOBE

The early origin of this adobe remains a mystery. The adobe is located adjacent to Cottonwood Springs. This spring served as a water hole for travelers on the Old Spanish Trail/Mormon Road (Myhrer and White 1989). Because of the proliferation of springs in the area and a confusion of names associated with those springs, written accounts do not allow for precise dating. Local legends suggest that the structure was built in the 1860s by frustrated miners from Ivanpah, California. Lt. George Wheeler, on a military expedition, described the spring in 1871. His report fails to mention any structure at this time. An early resident of the Las Vegas Valley, James Wilson, Sr., filed a homestead claim in 1876 on land that encompassed another local spring. Wilson, Sr. used Cottonwood Spring to water his cattle herd and may have built this adobe as a line shack. James Pickett, in 1893, filed an affidavit with the military on behalf of Wilson, Sr. At this time, Pickett claimed residence at Cottonwood Ranch (Ritenour 1975).
The first patent claim for the structure, land and spring was made in 1901 by Charles Stewart. The claim was sold to the San Pedro, Las Angeles, and Salt Lake Railroad two years later. The property was later acquired by the Blue Diamond Corporation who built a small company town around the spring to house miners working at the local gypsum mine. The adobe served as a residence for several individuals and families. The structure was even used as a community meeting place for the local Boy Scouts. The structure fell into disuse after the 1960s (Ritenour 1975).
CHAPTER III

ARCHEOLOGICAL ANALYSIS

INTRODUCTION

The primary purpose of this thesis is to formulate a comparative study of window pane glass. The analysis in this chapter uses archeological glass collections from two mid-nineteenth-century archeological sites and two archeological sites that span both the late nineteenth and early twentieth-century. The information generated from the analysis of flat glass from these four historic sites forms the basis of comparison to a chronological scheme developed by Chance and Chance (1976) and further refined by Roenke (1978). Once a correlation is established with the chronological scheme the analysis of flat glass recovered from West Point is used to answer specific research questions concerning the archeological interpretations of that site. That analysis and results are presented in the next chapter. Window glass thickness and its distribution in modes are the primary variables in this study. The glass assemblages are from the archeological collections of Sandy Town, New St. Joseph, Blue Diamond Adobe, the Blue Goose, and West Point, all located in southern Nevada (Figure 7). First, it is
necessary to establish the background and its relevancy to this project by reviewing previous works concerning the archeological analysis of window pane glass.

PREVIOUS STUDIES

In 1974 and 1975, David and Jennifer Chance excavated portions of Fort Vancouver, referred to as the Kanaka Village and the Vancouver Barracks. Spanning the years from the 1830s to 1900, the village and the barracks represent at least two distinct components. One component comprises the Hudson Bay Company's operations while the other represents the occupation by the U.S. Army. The stratigraphic controls at the site contributed to distinct collections. Diagnostic artifacts and historical documentation permitted the establishment of relatively narrow ranges of dates. Chance and Chance measured over 30,000 window pane sherds from twelve assemblages. Frequency polygons (graphs) allowed the resulting mode distributions to be graphically presented. Based on their findings, the archeologists suggested a chronological scheme of age ranges for the primary modes of glass thickness. Those ranges are as follows (Chance and Chance 1976:252):

<table>
<thead>
<tr>
<th>DATE</th>
<th>PRIMARY MODE IN USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1830-1840</td>
<td>0.045 INCH</td>
</tr>
<tr>
<td>1835-1845</td>
<td>0.055 INCH</td>
</tr>
<tr>
<td>1840-1850</td>
<td>0.065 INCH</td>
</tr>
<tr>
<td>1850-1860</td>
<td>0.075 INCH</td>
</tr>
<tr>
<td>1855-1885</td>
<td>0.085 INCH</td>
</tr>
<tr>
<td>1870-1900</td>
<td>0.095 INCH</td>
</tr>
</tbody>
</table>

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Figure 7. Location of the archeological sites of West Point, New St. Joseph, Sandy Town, Blue Goose and the Blue Diamond Adobe.
The results of their study demonstrate an apparent thickening of window glass through time. The archeologists suspect a functional correlation between increased pane thickness and increased window pane size which is to say that a greater area of window pane requires a thicker glass to support its own weight. The authors suggest that thickness data "has some value in dating unstratified sites. Such a tool is of particular value where sites lack historical documentation or more diagnostic materials" (Chance and Chance 1976:252).

George Teague and Lynette Shenk (1977) reported their results on the excavation of a nineteenth-century mining complex in Death Valley, California. The archeological team excavated portions of a borax processing plant, a townsite, and some Chinese quarters. The limited time span for the Harmony Borax Works of Death Valley is 1883 to 1888. The authors feel that by applying information obtained from their window glass data a comparison could be made to further test and refine the Chance and Chance proposition. A sample size measurement of 195 window pane sherds represented a total collection of 541 glass fragments. The mode for the total sample measured is 0.095 inches. This mode agreed with the suggested age range of the Chance and Chance chronological scheme. Arrangement of the measured sample into their separate archeological loci, however, indicated that the mode is less valuable than the
mean. Teague and Shenk found that separate means for four collection areas deviated little from the total sample mean (1977:126). Unlike the means, two of the four modes deviated far below the mode for the total sample. The authors conclude that for their information the "mean is a more reliable indicator than the mode when actual values and a small sample are combined" (Teague and Shenk 1977:127).

Karle Roenke (1978) presents a historical review of the technological innovations in the manufacturing of window glass. In addition, Roenke tests the hypothesis proposed in the Chance and Chance study by investigating the glass collections from fifteen historic archeological sites in the Pacific Northwest. The archeological sites, ranging from 1810 to the 1880s, produced a study sample of 21,965 window pane sherds. These sherds were measured for thickness as well as other variables. Plotting the thickness data, in the form of modes, on frequency polygons and a cumulative percentage ogive allowed graphic presentation of the data. The resulting graphs show that window glass was becoming thicker during the nineteenth-century. Innovations in the manufacturing of machine made glass allowed the standardization of window glass thickness in the early part of the twentieth-century. Having divided the sites into two groups based on their building periods, Roenke found that 0.069 inches represents the combined mean
sample thickness for sites built prior to 1850. The mean measurement of 0.083 inches represents the glass thickness of sites post-dating 1850. As a result of the analysis, Roenke offers a refined chronological scheme (1978:116):

<table>
<thead>
<tr>
<th>DATE</th>
<th>PRIMARY MODE IN USE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1810-1825</td>
<td>0.055 INCH</td>
</tr>
<tr>
<td>1820-1825</td>
<td>0.055 INCH</td>
</tr>
<tr>
<td>1830-1840</td>
<td>0.045 INCH</td>
</tr>
<tr>
<td>1835-1845</td>
<td>0.045-0.055 INCH</td>
</tr>
<tr>
<td>1845-1855</td>
<td>0.065 INCH</td>
</tr>
<tr>
<td>1850-1865</td>
<td>0.075 INCH</td>
</tr>
<tr>
<td>1855-1885</td>
<td>0.085 INCH</td>
</tr>
<tr>
<td>1870-1900</td>
<td>0.095 INCH</td>
</tr>
<tr>
<td>1900-1915</td>
<td>0.105 INCH</td>
</tr>
</tbody>
</table>

Roenke is quick to point out, however, that the chronological scheme is not a substitute for other artifactual or documentary sources in dating a site. Roenke cautions that the chronological scheme put forth in his study is a regional scheme specific to the Northwest. "Different regions of the country, possessing different sources of supply and/or methods of transportation, may reflect different thickness modes" (Roenke 1978:117).

More recently, Catherine Blee (1988) conducted excavations at the Moore cabin and house site in Skagway, Alaska. Her analysis reveals a different modal distribution, one of decreasing thickness. The period of occupation for the Moore cabin and house site is from 1888 to 1980. Analyzing a total of 335 window pane sherds from stratified deposits, the study attempts to determine if the trend of increasing thickness continued into the twentieth-century. Previous studies concentrated on sites from the
nineteenth-century. Blee observes that pane glass from the original cabin site has a modal thickness of 0.094 inches. This compares favorably with the Chance and Chance (1976), Teague and Shenk (1977), and the Roenke (1978) studies. In contradiction to the model, however, glass from the Moore house has a modal thickness of 0.078 inches. The house post-dates 1896. The author suggests that the decreasing thickness may be the result of economic rather than technological factors. Manufacturers of glass may have reacted to union demands and a poor economy by producing thinner window glass. "Thinner window glass is cheaper window glass both to produce and to purchase" (Blee 1988:165). On a local level, Blee suggests that buildings in Skagway constructed prior to 1900 will exhibit a modal thickness of 0.094 while glass from structures post-dating that year will have modal thickness of 0.078 inches. Further studies are needed to test this proposal in that region. It is possible that the glass used in the house construction was salvaged from another structure of an earlier date.

RESEARCH QUESTION

Research questions, specific to southern Nevada, can be formulated by drawing on the results of previous works. Chance and Chance (1976) proposed that window glass thickness increased as the nineteenth-century progressed and as a result they developed a chronological scheme.
Subsequently, Roenke (1978) tested the hypothesis and based on his findings he was able to refine the chronological scheme. This scheme of age ranges for primary modes of glass thickness has minor variations, but, in general, it shows increased glass thickness through time. Using modes of thickness as the primary variable, other researchers found favorable comparisons and generally support the hypothesis. Minor exceptions to the scheme may be the result of regional differences in source of supply and methods of transportation (Roenke 1978:117).

Given the data from previous work, the following question can be asked concerning the thickness of window pane glass collected from mid-nineteenth-century and early twentieth-century archeological sites located in southern Nevada:

**Question:** Do the chronological schemes proposed by Lance and Chance, and Roenke apply to archeological collections of window glass recovered from four southern Nevada sites?

**HYPOTHESIS, OBSERVATION, AND EXPECTATIONS**

A tentative answer to the preceding question is formulated in the following hypothesis:

**Hypothesis:** The primary modes for window glass thickness, representing and derived from four historic archeological sites in southern Nevada, and reflecting the age of those sites will correspond to age ranges in the
chronological scheme suggested in the Northwest studies. Based on the observation that window glass did increase in thickness relative to time during the nineteenth-century, it is expected that there is a correlation between the glass thickness in southern Nevada and the age range scheme offered by Northwest researchers. Specifically, it is expected that New St. Joseph and Sandy Town, being contemporaneous with dates of 1866 to 1870, will have a primary mode of 0.085 inches. The primary mode for the Blue Goose, with suggested dates of 1886 to 1921 which correspond to the growth and boom years of Goodsprings, is expected to range from 0.085 to 0.105 inches. Further, it is expected that the Blue Diamond Adobe, with initial construction between the years of 1871 to 1893 and continued use through the 1960s, will have a wide range of glass thickness, but that the primary mode will reflect thicker glass equivalent to 0.105 inch or thicker.

DATA RECOVERY - THE SITES

NEW ST. JOSEPH, 26CK3077. The architectural remains of New St. Joseph, 1866-1868, are located on the western edge of a sand and gravel terrace overlooking the lower Moapa Valley, now adjacent to the Overton Airport. This former community was laid out as a rectangular, U shaped fort approximately 600 feet in length and 160 feet in width with the northwest end left open for expansion. Individual structures were built end to end, separated by a space.
Construction of a county road and airport has destroyed much of the northeastern wing of the fort community. Thirteen structures have been identified with eight structures being fully or partially excavated by field classes in historic archeology from the University of Nevada, Las Vegas. Excavations at this site began in 1975 and continued, sporadically, until 1986. The total artifact assemblage consists of cultural material from excavated and surface collected units. Detailed archeological and historical data concerning this site and the Muddy Mission is found in Grattan (1982), Kimball (1988), Kowalewski (1984), and Wonderly (1976).

SANDY TOWN. Archeologically, Sandy Town is represented by structural remains at two locations. Sandy Town A, 1866-1869, is located .5 miles north of the fort community of New St. Joseph. The remains of Sandy Town B, 1869-1870, are .5 miles north of location A. Both townsites were laid out according to the "Plat of Zion" using cardinal directions with uniformly spaced building lots. A total of twenty-seven structures have been recorded at location A, while location B contains twenty-four architectural foundations. Numerous structural loci have been destroyed through airport and road construction. Real estate development now threatens the remaining features. Archeological work at the Sandy Town locations was limited to mapping, testing of the main water canal at several
locations, and partial excavation of two structures at location B. The archeology was conducted in 1979 and 1980 by field classes in historic archeology from the University of Nevada, Las Vegas. McCarty (1981) and Kimball (1988) discuss the archeological and historical aspects of Sandy Town.

BLUE GOOSE. The archeological site of the Blue Goose is located one-fourth mile north of Goodsprings and is hidden from the community by a hill. Testing at the site was conducted in the fall of 1979 by an archeological field class from the University of Nevada, Las Vegas. Archeology at the Blue Goose was limited to surface collection. A collection strategy was developed using a random sample of the whole site and two systematic non-random samples in areas of high artifact concentrations. Beer bottle and ceramic makers marks as well as tin cans were utilized to suggest the time span for activities associated with this isolated loci. Artifactual analysis suggests that the site was occupied during the years that correspond to the growth and boom years of Goodsprings, 1886-1921. The greatest overlap of manufacturing dates is between 1900 and 1920. Becker (1981) discusses the archival and archeological manifestations of the Blue Goose.

BLUE DIAMOND ADOBE. Archeological investigations of this structure, by the University of Nevada, Las Vegas, began in 1972 and continued through 1977. The site was
surface collected and twenty-nine excavation units examined. Much of the adobe structure was intact when the excavation began, but years of neglect have caused much damage. Detailed drawings were made of the intact portions. This one-room structure measures approximately 21 feet 6 inches by 14 feet 2 inches. The long axis orientation is east/west. The walls are constructed of sun dried adobe brick. Individual bricks measure 4 inches thick, 6 inches wide, and 14 inches in length. The walls support a gable roof and rests on a stone foundation made of locally collected limestone. The structure has been modified over the years and, presently, has three doors and one window. The window glass collected and used in this study represents only a small portion of the cultural material recovered in the field work. The analysis of the artifact collection remains to be completed. The initial construction of this structure is suggested to be from 1871 to 1893 and saw continued use into the 1960s.

DATA ANALYSIS - METHODOLOGY

This comparative study focuses on the raw data of window glass thickness. Basic statistics, in the form of mean, median, and mode, help in the quantitative handling of the raw data. Graphs are used to plot the resulting information for visual representation.

To test the first hypothesis, a total of 3,298 window pane sherd s were measured for thickness. This figure
represents the total number of glass sherds from four archeological sites: New St. Joseph; Sandy Town; Blue Goose; and the Blue Diamond Adobe. These glass collections are stored at the archeological laboratory on the campus of the University of Nevada, Las Vegas. Consulting the artifact catalogs insured the recovery of the total number of collected glass fragments from each site. Examination of the collections resulted in the recovery of a few misidentified window fragments from clear glass bottle assemblages. Identification of window glass, in all instances, is based on sherds having two flat, parallel surfaces and visibly consistent thickness between surfaces. The use of a Helios micrometer allowed precise measurement to be made in thousandths of an inch. This unit of measure is maintained to correspond with other studies. The measurements were made along the edges of each sherd. The majority of the glass fragments exhibited uniform thickness. The midpoint between maximum and minimum thickness was recorded for those few specimens that measured a minor range of thicknesses.

For final analysis and ease of handling, the raw thickness data was incorporated into a computer program. The APP-STAT program in combination with the APPLE IIGS computer simplified this phase of the study. The APP-STAT package is "user friendly" and has the basic statistical functions necessary for a study of this type. This program
allows the sorting of information in ascending or descending order. The Non-Parametric statistical function calculates the mean and median while the Descriptive Statistic function determines the standard deviation. Primary and secondary mode are manually determined by locating the most frequent tabulated thickness represented on the print-out form.

Statistical data and frequency distributions of glass thickness are represented in graphic and table form. Class intervals are used to simplify the frequency distributions of varying thicknesses. Thicknesses within a class interval are rounded to the midpoint of each class. Class intervals and midpoints allow the refined manageability of the raw data. The classes used in this study correspond with those used by Roenke (1978) in his study. Graphs and charts represent frequency distributions. Statistical information is displayed in table form. The statistical data for each site are presented separately to be more useful in future comparative research by other investigators.

For statistical purposes, in this study, the most important characteristic in a set of raw data is their tendency to cluster around a single central point - measure of central tendency. Common measurements of central tendency include mean, median, and mode. The mean expresses the average in a set of measurable values, but
the mean is affected by the magnitude of extremes. The median, however, is unaffected by extreme values and is defined as that number which has an equal number of values above and below it. The mode, on the other hand, is merely the most common value represented in the distribution of the raw data (Thomas 1976). The mean, median, and mode are given for all of the following collections even though the mode is the primary variable in this study.

DATA ANALYSIS - RESULTS

SANDY TOWN. Twenty-six glass sherds were recovered from excavations at the Sandy Town B location. The minimum thickness for this collection measured 0.046 while the maximum thickness measured 0.110 of an inch. The mean, median, and mode for the collection is 0.056 inch. With the exception of a solitary glass fragment measuring 0.110 inch in thickness, the window sherds probably represent a single glass pane as twenty-five fragments were excavated from the same unit. Until further testing is accomplished at the Sandy Town locations, this small number of sherds is not representative of the site. The glass fragments were recovered from one excavation unit located at one structure. Because of the small sample size and Sandy Town's temporal and historical association with New St. Joseph, this collection is added to and considered as part of the numerical values derived from the New St. Joseph collection.
NEW ST. JOSEPH/SANDY TOWN (combined). Nine hundred and fifty-four glass sherds were measured from the New St. Joseph collection. This figure represents the total number of measurable sherds recovered. New St. Joseph suffered from a fire in 1868 and numerous pieces of window glass attest to that fact. The fire melted some of the window glass resulting in distorted surfaces and these specimens are not included in this study. Combining the New St. Joseph collection with that of Sandy Town brought the total measurable collection to 980 window pane sherds. The minimum thickness measured at 0.041 while the maximum at 0.136 inch. The basic statistics for the combined collection is represented in Table 1. The frequency distribution of glass sherds by classes and class modes is shown in Table 2. Graphic representation of the frequency distribution by class midpoint is displayed in Figure 8.

Table 1. Basic statistics for New St. Joseph/Sandy Town.

<table>
<thead>
<tr>
<th>N:</th>
<th>Min:</th>
<th>Max:</th>
<th>Range:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>980</td>
<td>0.041</td>
<td>0.136</td>
<td>0.095</td>
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<tr>
<td>Mean:</td>
<td>0.074</td>
<td>Median:</td>
<td>0.072</td>
<td>Mode:</td>
</tr>
<tr>
<td>Standard Deviation:</td>
<td>0.0149</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

BLUE GOOSE. This collection is represented by a total of 163 window pane sherds. The minimum measurement is 0.049 and the maximum is 0.145 inch. The mean and median
Table 2. Frequency distribution of window glass sherds arranged in classes by thicknesses measured in thousandths of an inch. Primary modes are underlined.

<table>
<thead>
<tr>
<th>Class Midpoints</th>
<th>.035</th>
<th>.055</th>
<th>.065</th>
<th>.075</th>
<th>.085</th>
<th>.095</th>
<th>.105</th>
<th>.115</th>
<th>.125</th>
<th>.135</th>
<th>.145</th>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New St. Joseph/</td>
<td>0</td>
<td>14</td>
<td>156</td>
<td>212</td>
<td>273</td>
<td>187</td>
<td>74</td>
<td>49</td>
<td>15</td>
<td>5</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Sandy Town</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>100</td>
</tr>
<tr>
<td>Blue Goose</td>
<td>5</td>
<td>0</td>
<td>1</td>
<td>10</td>
<td>16</td>
<td>76</td>
<td>16</td>
<td>27</td>
<td>17</td>
<td>15</td>
<td>3</td>
<td>103</td>
</tr>
<tr>
<td>Blue Diamond Adobe</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>18</td>
<td>193</td>
<td>82</td>
<td>38</td>
<td>193</td>
<td>135</td>
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<td>476</td>
<td>172</td>
<td>218</td>
<td>218</td>
<td>114</td>
<td>114</td>
<td>3288</td>
<td>104</td>
</tr>
</tbody>
</table>

Table 2. Frequency distribution of window glass sherds arranged in classes by thicknesses measured in thousandths of an inch. Primary modes are underlined.
are 0.095 and 0.089 inch respectively. Unlike mode for the New St. Joseph/Sandy Town combined collection, the mode for the Blue Goose is bimodal with 0.083 and 0.084 inch represented with 10 sherds each. The statistical and graphic presentation for the Blue Goose is represented in Tables 2 and 3, and Figure 8.

Table 3. Basic statistics for the Blue Goose.

<table>
<thead>
<tr>
<th>N:</th>
<th>Min:</th>
<th>Max:</th>
<th>Range:</th>
</tr>
</thead>
<tbody>
<tr>
<td>163</td>
<td>0.049</td>
<td>0.145</td>
<td>0.096</td>
</tr>
</tbody>
</table>

Mean: 0.095  Median: 0.089  Mode (bimodal): 0.083 & 0.084

Class Mode: 0.085  Standard Deviation: 0.0172

BLUE DIAMOND ADOBE. The glass sherds in this collection represent the largest number measured as a single collection. A total of 2,155 fragments of window pane glass were measured. Blee makes an observation that the quantity of glass sherds in the archeological record "tends to increase with the length of occupation, since the longer a window is present, the greater its chances of being broken" (1988:158). This seems to hold true for this single, small adobe structure. The maximum measurement is recorded at 0.141 with the minimum at 0.045 inch. The mean, median, and mode are 0.115, 0.124, and 0.125 inch respectively. The class mode is represented by the class midpoint of 0.125 inch. When the frequency distribution is
Figure 8. Frequency distribution for window glass thickness for the total sample of four sites.
plotted out in graph form a pattern different from those of New St. Joseph/Sandy Town and the Blue Goose is revealed (Figure 8). This distribution is discussed in the synthesis section. Refer to Tables 2 and 4 and Figure 8 for quantitative representation of this collection.

Table 4. Basic statistics for the Blue Diamond Adobe.

<table>
<thead>
<tr>
<th>N:</th>
<th>Min:</th>
<th>Max:</th>
<th>Range:</th>
</tr>
</thead>
<tbody>
<tr>
<td>512</td>
<td>0.031</td>
<td>0.141</td>
<td>0.110</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mean:</th>
<th>Median:</th>
<th>Mode:</th>
<th>Class Mode:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.080</td>
<td>0.080</td>
<td>0.075</td>
<td>0.085</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard Deviation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.016</td>
</tr>
</tbody>
</table>

PRE AND POST - 1870 BUILDING PERIODS. After analyzing each collection and presenting the results in statistical, tabular, and graphic form, the collections are further combined in pre and post-1870 initial building periods based on information presented in the historical chapter. As a review, the initial building periods of each of the four sites included in this chapter are: New St. Joseph, 1866-1868; Sandy Town (location B), 1869-1870; Blue Goose, 1886-1921; and Blue Diamond Adobe, 1871-1960s. Using the beginning dates of each site, the combined collections of New St. Joseph and Sandy Town are used to represent the pre-1870 building period. The data obtained from the Blue Goose and Blue Diamond Adobe collections are combined to denote the post-1870 building period. The frequency
distribution of the data from these combined collections is displayed in Figure 9. The Ogive for the cumulative percentage of that data distribution is exhibited in Figure 10.

SYNTHESIS OF ANALYSIS

The underlying approach to any scientific endeavor is the methodical and logical sequencing of research stages (Rathje and Schiffer 1982). Within this chapter, a specific research question was posed, with a tentative answer to the question formulated as a hypothesis. To test the hypothesis, expectable consequences are postulated. The expectations specify the relevant data which, in this thesis, is the change of the modal thickness of window glass through time. The relevant data is obtained from window glass collections recovered from four historic archeological sites in southern Nevada. The data analysis consists of quantitative manipulation of the raw data by means of computer with the results displayed in tabular and graphic forms. Finally, the analyzed results are synthesized as to whether the evidence supports or refutes the stated hypothesis.

In this section, the research question and the tentative answer or hypothesis is restated. Following that is a discussion to evaluate the findings in relation to the hypothesis. The synthesis of the analysis will either refute or support the stated hypothesis.
Figure 9. Frequency Distribution of window glass thickness for combined samples from the sites with initial building periods prior to 1870 and post-1870.
Figure 10. Ogive for cumulative percentages for sites with initial building periods of pre and post-1870.

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QUESTION AND HYPOTHESIS. Do the chronological schemes proposed by Chance and Chance (1976), and Roenke (1978) apply to archeological collections of window glass retrieved from southern Nevada sites? The hypothesis states: the primary window glass thickness modes representing and derived from four historic archeological sites in southern Nevada, correspond to age ranges in the suggested chronological schemes. The expectations for this hypothesis specifies there is a correlation between glass thickness found in the southern Nevada collections and the age range scheme offered by researchers from the Northwest.

SYNTHESIS. Using the primary mode, by which the age range scheme is developed, previous researchers assigned years to particular modes. New St. Joseph and Sandy Town are contemporaneous in time having been organized as settlements within a few years of each other. Their initial building periods fall between the years of 1866 and 1869 with the abandonment of both settlements by 1870. Based on these dates, it is expected that these two settlements would have a primary mode of 0.085 inch based on the age range proposed by Chance and Chance (1976), and Roenke (1978). The primary mode for New St. Joseph and Sandy Town combined is 0.075 inch with a secondary mode of 0.065 inch (Table 2). For the primary mode thickness of 0.075 inch Chance and Chance (1976:252) assigned the years of 1850-1860 and Roenke (1978:116) assigns the dates of
1850-1865. Based on their schemes there is an overlap of ten years, 1855-1865 in the Roenke study, and a five year period, 1855-1860 in the Chance and Chance study when both modes of 0.075 and 0.085 inch glass were available to the consumer.

This minor difference is best expressed by Roenke when he offers, "Different regions of the country, possessing different sources of supply and/or methods of transportation, may reflect different thickness modes" (1978:117). Based on that, it can be argued that sites closer to coastal ports along the west coast received glass shipments from English and east coast American glass plants more quickly than those located at greater distances from the coast. Early historic sites located in the interior of the western states and dependent upon slow overland transportation systems over greater distances would receive shipments of glass less often with extended arrival times. Thus, the modal thickness of 0.075 inch was the glass available on the frontier when New St. Joseph and Sandy Town were organized. The testing of this argument could be accomplished by the study of other glass collections from similar Mormon colony sites in the Great Basin of the same time period. Generally, this glass collection supports the hypothesis.

The Blue Goose glass collection, also, supports the hypothesis. The primary mode for the Blue Goose is 0.085
inch with a secondary mode of 0.105 inch (Table 2). The suggested initial building period for this house of recreation is 1886 with occupation continuing into 1921. The date range for 0.085 in the Chance and Chance study is 1855-1885 (1976:252). Roenke (1978:127) argues with this same time frame. Teaque and Shenk (1977) found the Harmony Borax Works to have a mode of 0.095 inch for the years of 1883-1888. The Chance and Chance, and Roenke studies offer a fifteen year overlap between 1870 and 1885 that both 0.085 and 0.095 inch glass was available. Roenke suggest that the 0.105 inch mode falls between years of 1900 and 1915. All three mode thicknesses are well represented in the Blue Goose collection for the years that this structure was in use, thus supporting the age range scheme.

The exact years of initial construction for the Blue Diamond Adobe are not known. Based on scanty historical documentation the initial building period might have occurred between 1871 and 1893. When the frequency distribution is plotted in graph form (Figure 8) an interesting pattern is revealed. The primary mode for the collection is 0.125 inch (Table 2) reflecting glass thickness well past the turn of the century. This is expected since the structure was used into the 1960s. The secondary mode is bimodal and is represented by 0.115 and 0.075 inch followed by a tertiary mode of 0.085 inch (Table 2). Chance and Chance suggest that several thickness modes
"may illustrate the case of an initial installation of window glass plus later repairs or modifications" (1976: 248). From the evidence it would appear there is the initial construction phase represented by the modes of 0.075 and 0.085 inch, followed at a later time by repairs based on the modal thicknesses of 0.115 and 0.125 inch. Acceptance of this hypothesis based on the New St. Joseph and Blue Goose collections suggests that the Blue Diamond was constructed between the years of 1850 and 1885 and that it was used past the turn of the century.

The evidence presented above has shown that the time range schemes suggested by researchers in the Northwest for window glass thickness modes, generally, applies to southern Nevada equally well. Further, minor differences in mode/date alignments are the result of transportation systems and sources of glass supply. In general, the evidence offered in this chapter supports the contention that window glass became thicker as the nineteenth-century progressed. The hypothesis is accepted.
CHAPTER IV

WEST POINT ANALYSIS

INTRODUCTION

The historical context for West Point is developed in Chapter II. From that chapter it can be suggested that several individual architectural structures at this community saw continued or interrupted use after the Mormons abandoned the area in 1871. As a review, use of the area included the original Mormon settlement, a 320 acre homestead for Rector and Johnson, Moapa Reservation Headquarters and employee housing, and an 80 acre homestead/ranch for James Pickett as well as a camp for railroad workers. Historical documents fail to indicate which of the numerous structural remains located at the present site were occupied during later years.

In Chapter III, a favorable relationship is demonstrated between a chronological scheme based on glass thickness modes and measured glass collections recovered from four southern Nevada historic archeological sites. This glass thickness mode and date range scheme is useful as a relative dating technique for archeologically recovered window glass from nineteenth-century and early twentieth-century historic sites. For this chapter, this
relative dating technique is used to answer specific research questions concerning the occupation of West Point. The same research format is used as established in the previous chapter. The methodology is the same.

WEST POINT - PRESENT CONTEXT

The archeological site of West Point is located approximately 50 miles northeast of Las Vegas and one mile west of the present railroad siding town of Moapa (Figure 1). The Muddy River, which flows through the Moapa Valley, has its source at a series of warm springs a few miles to the northwest of the site and is part of the White River drainage. From this perennial stream the original settlers diverted their irrigation and domestic water. A narrow canyon, referred to as "The Narrows", separates the upper from the lower Moapa Valley.

The Mormon colonists constructed West Point on a low, unconsolidated gravel terrace above the flood plain of the Muddy River. Elevation for the site varies from 1574 feet to 1640 feet above sea level. The area is dissected by numerous dry washes which originate on a higher terrace to the north and northeast. This higher terrace or mesa is a detached remnant of the Muddy Creek Formation (Longwell et al 1965). The dry washes coming from the mesa drain to the lowest areas of the site where they deposit alluvial material after heavy, sporadic summer rains. These low areas, southeast and northwest of the community, probably
served as orchard and farm fields for the settlers (Figure 3).

The biota represented in the West Point area is diversified and represents several biotic zones which, often, overlap with no clear separation between zones. Within the larger creosote bush community, the desert riparian community dominates the site. Present on the site are mesquite trees (*Prosopis juliflora*), cat claw (*Acacia greggii*), and salt cedar (*Tamarix gallica*) (Bradly and Deacon 1965:28-30). Fauna of this community include lizards, snakes, and small mammals such as cottontail rabbits (*Sylvilagus audubonii*) and jackrabbits (*Lepus californicus*). The rabbits are sought by local hunters who add modern artifacts to the archeological deposits as an on-going cultural process.

During the spring semester of 1987, archeological excavations began at the site. Surface collection and partial excavations were conducted on two exposed stone foundations and in an area that exhibited numerous fragments of burnt daub. Students, enrolled in the historical archeology field class from the University of Nevada, Las Vegas, were supervised by Dr. Claude Warren and the author.

Fall of that same year, the author conducted a transected ground survey of approximately 100 acres to locate and record architectural features. Using
volunteers, West Point was mapped with an alidade and plain table. The surface survey resulted in the location of thirty-two architectural features which consisted of six dugouts and twenty-six structural foundations. Several abandoned irrigation canals and numerous can and bottle scatters were also recorded. Mapping of the site put the structural loci into a visible spacial relationship suggestive of the "City of Zion" plat with equally spaced lots arranged in cardinal directions (Figure 3).

The following spring, 1988, saw renewed activity by a field class in historical archeology. Partial excavations were concentrated at four structures which included a storage structure and a dugout. Material evidence recovered through spring, 1988, suggests this site has the potential for studying cultural change, cultural continuity, Mormon vs. Gentile material patterns, frontier vs. railroad (Victorian) material patterns, and Indian acculturation. As such, this historic site is a significant cultural resource and is eligible for nomination to the National Register of Historic Places under criteria A and D of 36 CFR 60.4 as implemented by the National Historic Preservation Act of 1966, as amended.

RESEARCH QUESTIONS

The following questions pertain specifically to the excavations at West Point.

QUESTION 1: Do the excavated structures at West Point
represent a single building and occupation period of a relatively short duration followed by abandonment, and/or

QUESTION 2: Do the excavated structures represent an initial building and occupation period followed by repair and modification to the structures by subsequent occupations over an extended period or at later dates?

HYPOTHESES, OBSERVATIONS, AND EXPECTATIONS

Tentative answers to the questions stated above are formulated in the following hypotheses.

HYPOTHESIS 1: Window glass recovered from various excavated structures at West Point exhibit a single primary thickness mode representing an initial building period of short duration. This statement is based on the observation that "a building constructed at a given time exhibits a single mode of window pane thickness" (Chance and Chance 1976:248)(Roenke 1978:43). The statement assumes that window glass, used in the initial construction, was purchased from the same supplier in quantity. It is expected that the glass collections from West Point structures will exhibit a thickness mode of 0.075 inch which corresponds to the thickness mode found for glass collections from New St. Joseph/Sandy Town (Refer to Table 2). West Point, New St. Joseph, and Sandy Town are historically contemporaneous.

HYPOTHESIS 2: The primary and secondary modal distributions indicate subsequent reuse of an abandoned
structure with repairs to broken windows or modifications to standing structures and/or the existence of a number of structures, non-extant, on the site through time. This hypothesis is generated from several observations. First, the quantity of glass sherds in the archeological record "tends to increase with the length of occupation, since the longer a window is present, the greater its chances of being broken" (Blee 1988:158). Secondly, the recovery of glass from a structure/loci that exhibits several thickness modes "may illustrate the case of an initial installation of window glass plus later repairs or modifications" (Chance and Chance 1976:248). Through time repairs and modifications will reflect the modes of different glass shipments from various suppliers at different locations. And lastly, it is assumed that the presence of window glass, in addition to other architectural artifacts, indicates the "presence of non-extant structures by the implication that windows must be present before glass could be broken" (Blee 1988:158). It is expected that some of the structures at West Point were occupied over an extended period of time. This extended period of occupation is expected to be exhibited in primary and secondary modal distributions and/or modes that correspond to a later age range than the initial organization of West Point as a community. Through time use of individual structure/loci is expected to show modes that correspond not only to the
modes of New St. Joseph/Sandy Town but, also, for the Blue Diamond Adobe and the Blue Goose archeological sites.

DATA ANALYSIS - THE RESULTS

To answer the questions posed above it is, first, necessary to observe the distribution of the total West Point collection and, secondly, to look at its individual parts. The total collection comprises 512 window pane sherds. This collection is made up of glass fragments recovered from seven structures and one locus with no apparent structural remains. The basic statistics for the total collection is represented in Table 5 with the frequency distribution in Table 6 (West Point combined) and graphically in Figure 11.

| Table 5. Basic statistics for West Point combined. |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| N:              | Min:            | Max:            | Range:          |
| 512             | 0.031           | 0.141           | 0.110           |
| Mean:           | Median:         | Mode:           | Class Mode:     |
| 0.080           | 0.080           | 0.075           | 0.085           |
| Standard Deviation: |
| 0.016           |

During the spring of 1987, the field class excavated portions of two structures and a locus exhibiting architectural remains but no extant structural details. Structure 1 is a storage unit with probable associations to the Mormon occupation of the area. Only two fragments of glass were recovered in a surface collection prior to
<table>
<thead>
<tr>
<th>Site Locations</th>
<th>West Point #1 and 2</th>
<th>West Point #3</th>
<th>West Point Railroad Tie</th>
<th>West Point (Other)</th>
<th>West Point (Combined)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Midpoints</td>
<td>0.035</td>
<td>0.045</td>
<td>0.055</td>
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<td>3</td>
<td>7</td>
<td>11</td>
<td>48</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>36</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>8</td>
<td>14</td>
<td>87</td>
<td>141</td>
</tr>
</tbody>
</table>

Table 6. Frequency distributions of window glass sherds from West Point arranged in classes by thickness. Primary modes are underlined.
Figure 11. Frequency distribution for window glass thickness for the total West Point sample.
excavation. These two sherds measure 0.042 and 0.070 inch. Structure 2, in reality, represents a locus with no extant structural remains. Rather, Structure 2 is represented archeologically by architectural artifacts such as nails, burnt daub, and window glass. Blee suggests that such artifacts indicate the "presence of non-extant structures by the implication that windows must be present before glass can be broken" (1988:158). Because of Structure 1's proximity to Structure 2, the glass recovered from these two areas are combined as a single measurable collection within the total West Point collection. The statistical and frequency distribution results of this part of the whole are presented in Table 7 and 6, respectively. Figure 12 represents the distribution in graphic form.

Table 7. Basic statistics for West Point Structure 1 & 2.

<table>
<thead>
<tr>
<th>N</th>
<th>Min:</th>
<th>Max:</th>
<th>Range:</th>
</tr>
</thead>
<tbody>
<tr>
<td>91</td>
<td>0.042</td>
<td>0.115</td>
<td>0.073</td>
</tr>
</tbody>
</table>

Mean: 0.091 Median: 0.087 Mode: 0.110 Class Mode: 0.085

Standard Deviation: 0.015

The collection for Structure 3, also excavated in 1987, contains a total of 223 window glass sherds. This individual collection, part of the whole, represents the largest number of sherds recovered from West Point to date. Unlike the Structure 1 and 2 collection, the mean, mode,
and median are closer in measurements. The basic statistics are presented in Table 8. The frequency distribution of this collection is in Table 6 and Figure 12.

Table 8. Basic statistics for West Point Structure 3.

<table>
<thead>
<tr>
<th>N:</th>
<th>Min:</th>
<th>Max:</th>
<th>Range:</th>
</tr>
</thead>
<tbody>
<tr>
<td>223</td>
<td>0.031</td>
<td>0.141</td>
<td>0.110</td>
</tr>
</tbody>
</table>

Mean: 0.076  Median: 0.075  Mode (bimodal): 0.070 and 0.075

Class Mode: 0.075  Standard Deviation: 0.016

A field class from the University of Nevada, Las Vegas, in the spring of 1988 excavated four structures and surface collected two others. The excavation of one small structure, number 22, resulted in no glass collected. This structure is a storage unit and, probably, did not have windows. The other three partially excavated structures, numbers 4A, 9A, and 19, resulted in the collection of only four window sherds. Arranged by structure, the sherds measure: #4A, 0.077 inch; #9A, 0.077 inch; and #19, 0.050 and 0.087 inches. The lack of glass recovered from these three habitational structures is discussed in the concluding chapter. The four sherds are included in the total West Point sample, but are not analyzed as a separate collection. Their frequency distribution is, however, plotted in Table 6 as West Point other.
Figure 12. Frequency distribution for window glass thickness for individual West Point structures.
A non-random and a random "grab" sample surface collection was made in association with two structures. Structure 20, thought to be associated with the Mormon occupation, was surface collected in eight 5 x 5 foot collection units. This non-random surface collection resulted in 162 window sherds and the information is represented in Table 6 and 9 and Figure 12. The Railroad Tie structure is known to have been built in the 1940s. A random "grab" sample was collected in and around this structure which remains partially standing. The basic statistical results for this structure are printed in Table 10 with frequency distributions in Table 6 and graphically in Figure 12.


<table>
<thead>
<tr>
<th>N:</th>
<th>Min:</th>
<th>Max:</th>
<th>Range:</th>
</tr>
</thead>
<tbody>
<tr>
<td>162</td>
<td>0.059</td>
<td>0.140</td>
<td>0.081</td>
</tr>
</tbody>
</table>

Mean: 0.079  Median: 0.076  Mode: 0.075  Class Mode: 0.075  

PRE AND POST - 1870 BUILDING PERIODS. The individual collections from West Point were also combined into pre and post-1870 study units. The pre-1870 units are represented by Structures 3 and 20. These two structures are assigned this classification based on architectural similarities (cardinal orientation and construction
materials) and class modes of window glass thickness (Refer to Table 6). These two structures are the product of early

Table 10. Basic statistics for Railroad Tie Structure.

<table>
<thead>
<tr>
<th>N</th>
<th>Min</th>
<th>Max</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>32</td>
<td>0.071</td>
<td>0.092</td>
<td>0.021</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mean</th>
<th>Median</th>
<th>Mode</th>
<th>Class Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.084</td>
<td>0.085</td>
<td>0.085</td>
<td>0.085</td>
</tr>
</tbody>
</table>

Mormon colonization efforts. Structure 2, non-extant, is placed, along with the Railroad Tie Structure, in the post-1870 building period. The Railroad Tie house dates from the 1940s while Structure 2 is placed in this classification based on other archeological evidence along with a different class mode reflecting a later date (Refer to Table 6). The presence of wire nails and a railroad button recovered at this loci suggests a later time frame than the original occupation of West Point (DuBarton et al. 1987). Figure 13 presents the frequency distribution of the collections. Figure 14 graphically shows the cumulative percentages for the frequency distribution.

SYNTHESIS OF ANALYSIS

As in Chapter III, each research question and the hypothesis is restated. Following this is a discussion to evaluate the findings in relation to each hypothesis. The synthesis of the analysis will either refute or support the
Figure 13. Frequency distribution of window glass thickness for combined samples from West Point Structures with initial building periods prior to 1870 and post-1870.
Figure 14. Ogive for cumulative percentages for West Point Structures with initial building periods prior to 1870 and post-1870.
stated hypothesis.

QUESTION AND HYPOTHESIS 1. Do the excavated structures/loci represent a single building and occupation period of a relatively short duration followed by abandonment? The hypothesis states that window glass recovered from various excavated structures at West Point exhibit a single thickness mode representing an initial building period of short duration. It is expected that the individual glass collections will exhibit a single thickness mode similar to the thickness mode found for New St. Joseph/Sandy Town.

The individual glass collections from West Point structures fail to exhibit a single thickness mode. For that matter, total collections from each of the four primary study sites fail to show a single mode of thickness. Instead, the collections show a wide range of thicknesses clustered around a primary mode. Of the West Point structures, the Railroad Tie structure exhibits the least variation in thickness representing a single phase of construction and occupation.

The primary modes for Structures 3 and 20 correspond to the primary mode for New St. Joseph, but like New St. Joseph, they show an extensive range of thicknesses. Such a match suggests that these two structures are associated with the Mormon occupation of West Point and are contemporary with New St. Joseph/Sandy Town. Primary modes
for Structure 1 and 2, and the Railroad Tie structure match the Blue Goose primary mode. This suggests that these two structures are not contemporary with the Mormon occupation of West Point but are the result of later developments on the property.

Four other structures at West Point were tested and only a few fragments of window glass were recovered. There are three possible explanations as to why so little glass was recovered. One possibility is that these structures had no windows. Secondly, window glass was a precious commodity in a frontier economy of scarcity so that window panes were removed and taken with the settlers when they abandoned the area. Lastly, it is possible that operating in an economy of scarcity, window panes left behind by some families would have been salvaged by others. For these structures, different artifacts other than window glass are necessary for determining their association with Mormon and/or later occupations of West Point.

Direct evidence for this hypothesis is lacking. The only structure to closely support the hypothesis of a single mode is the Railroad Tie structure. It has the smallest range of glass thicknesses when compared to the rest of the collections and thus, probably represents a single phase of construction and occupation of short duration.

QUESTION AND HYPOTHESIS 2. Do the excavated
structures/loci represent an initial building period followed by repair and modification to the structure by subsequent occupations over an extended period or at later time periods? The hypothesis reads that the major and minor distribution of thickness indicates subsequent repair of broken windows and modification to standing structures and/or the existence of a number of structures, non-extant, on the site through time. It is expected that some of the West Point structures were occupied over an extended time and that through time use would be revealed in major and minor modal distributions corresponding to New St. Joseph, the Blue Goose, and the Blue Diamond Adobe.

Based on frequency distributions, major and minor modes are easily determined (Refer to Table 2). The New St. Joseph/Sandy Town collection has a major or primary mode of 0.075 inch while the minor mode is 0.065 inch. These two modes are adjacent to each other. In the Blue Goose collection, the primary mode is 0.085 inch with a secondary mode of 0.105 inch separated by a class thickness of 0.095 inch. This suggests that there was an initial construction phase followed by subsequent repairs at a later time. This pattern of initial construction followed by subsequent repairs is best shown by the Blue Diamond Adobe. This collection has two distinct groupings. The initial construction is represented by a mode of 0.075 inch followed a mode of 0.085 inch. Extensive window repair to
the structure is reflected in the mode of 0.125 inch.

In comparison, the West Point combined collection resembles, most closely, the New St. Joseph collection and the early construction phase of the Blue Diamond Adobe. The total collection suggests that West Point was constructed in a single period with no subsequent repairs to windows. Such a suggestion would support hypothesis 1, but this is not the case when looking at the individual parts of the whole.

The West Point combined collection represents the general picture of all the structures/loci that were excavated. A refined view, however, is gained by looking at the results of major and minor modes of the individual structures (Refer to Table 6). Structures 1 and 2 have a primary mode of 0.085 inch and a secondary mode of 0.115 inch with several class thicknesses separating the two modes. This pattern suggests that this locus, representing a non-extant structure, had an initial construction phase after the Mormon occupation and that repairs were made to this structure at even a later date. Structure 3 has a major mode of 0.075 followed by a minor mode of 0.085 inch. Structure 20 also reflects the pattern of Structure 3. These two structures correspond with a initial construction period of New St. Joseph as reflected in the primary modes. The secondary modes of 0.085 inch corresponds with later developments such as found at the Blue Goose and the
initial construction of the Blue Diamond Adobe. This suggests continuous occupation of these structures without a period of extended abandonment. Both structures exhibit a wide range of glass thicknesses. The Railroad Tie structure, known to have been built in the 1940s, has a primary mode of 0.085 and a minor mode of 0.095 inch. The range of thickness is so narrow and the majority of glass fragments fall into the primary mode that it is safe to say this represents a single building phase of a short duration. With the exception of the Railroad Tie structure, the evidence as exhibited by glass collections from individual structures, tends to support hypothesis 2.

In this chapter, two hypotheses have been proposed and tested based on measurements of thickness on window glass fragments. The evidence does not support the first hypothesis. Further research is needed to redefine the statement to make it a workable and acceptable hypothesis. The evidence presented in this chapter has shown that the second hypothesis is supported in that some of the structures located at West Point have had continuous occupation beyond the initial settlement of the area by the Mormons in 1868. Also, evidence suggests that other structures were built in the area at later dates.
CHAPTER V

CONCLUSION

The purpose of this study is to present an objective comparative archeological analysis of window glass to evaluate a chronological scheme and to answer specific research questions concerning West Point. Additionally, this study presents historical data which pertains to the Mormon settlement of West Point and its subsequent use by later inhabitants. The fields of archeology and history represent methods which use unique, independent sources of evidence. By integrating the historical record and the archeological data and analyzing these complementing sources under a common light it is possible to better understand the poorly recorded historical happenings of West Point.

The history of West Point is complex and lacks significant amounts of detailed primary sources beyond the general outlining of temporal events. The documents show, however, that West Point was the scene of numerous settlement activities beyond the initial colonization and abandonment by the Mormons. West Point became a homestead for Rector and Johnson. The interests of these two men were soon purchased by the U.S. Government and a portion

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of West Point was incorporated into the Moapa Indian Reservation. A few of the old Mormon structures were used as reservation employee housing. The Public Land Survey of 1881 determined that the reservation boundaries were wrong and relocated the boundaries a half mile to the northwest. Following this several years later, James Pickett filed a possessory land claim on the disputed land. Pickett, along with Harris, occupied the government buildings and dispossessed the Paiutes. At the turn of the century, the Pickett Ranch became part of the short lived Moapa townsite. Moapa temporarily flourished as a railroad camp sporting several saloons. For business reasons the townsite of Moapa moved to its present location adjacent to the railroad tracks. The Pickett Ranch, the old site of West Point and the original location of Moapa, was purchased and held in undivided half interests by numerous persons after Pickett's death.

What the history of West Point neglects to tell us is which of the thirty-two identified structures on the subject property were built by the Mormons, which ones may have been built at a later date, and which, if any, of the original Mormon structures were occupied beyond Mormon abandonment of the community. Lacking the historical documentation to solve this problem, archeological analysis of window glass supplies the missing documentation. By looking at thickness modes of window pane glass, a single
archeological class of artifacts, retrieved from West Point, some patterns of structural use and reuse can be determined.

Comparative analysis of window glass collections from four historic archeological sites indicates that the chronological scheme proposed by researchers in the Northwest generally applies to southern Nevada as well. Research in this study found a slight variation, but the minor change to the scheme is probably the result of regional differences in the source of manufacturing and supply as well as the method of transportation. Based on the evidence presented for southern Nevada, there is a thickening of window glass through the nineteenth-century and this conclusion represents a favorable correlation with other studies.

The comparative analysis that supported the chronological scheme established the frame work by which two specific research questions concerning West Point were evaluated. The results of those findings are integrated with historical documentation to contribute to the concluding interpretations that follow.

During the archeological work at West Point, nine structures were tested or surface collected. Five of those structures lacked any significant or comparable window glass collections. Although some of the structural excavations are incomplete, total excavations are not
expected to increase the number of window sherds for the individual structures. Several answers as to why there is a lack of glass for these structures are posed in Chapter IV. Explanations include: the structures had no windows; window were removed by settlers upon abandonment of the area; or window panes left behind were salvaged by others.

Archaeological excavations on three of the no-glass structures offers partial explanation. The total excavation of Structures 1 and 22 suggests that these two buildings were used as storage structures and as such, probably never had windows. Structure 9A is a dugout and it too may have been utilized as a storage structure and contained no windows. Much of this structure remains to be excavated, however.

Historical documentation offers an explanation for the remaining two no-glass structures. As the Mormons began to abandon West Point after damaging floods in the summer and fall of 1870, Warren Foote is known to have salvaged building materials from structures abandoned by the brethren of West Point (1975:208). One resident of the community stated that they took every item of importance, not wanting the Native Americans to lay claim to the possessions (Hafner 1967:75). Assuming that habitational Structures 4A and 19 had windows, it is clear to see that the windows were either removed as a valuable commodity by their owners or salvaged at a later date. In either case,
because of the lack of window glass retrieved in archeological collection, these two structures were not reoccupied at a later time, at least by Anglo settlers. There is, however, archeological evidence to suggest that Structure 4A was occupied at one time by Native Americans. They probably did not have use of window glass as an architectural element.

Structures 3 and 20, the locus of a non-extant structure, and a railroad tie structure, dating from the 1940s, represent the only structures from which measurable collections of window glass fragments were recovered. Local informants contend that Structure 3 is the former resident of James Pickett (Olsen 1986). There is also some archeological evidence to suggest that this structure was at one time the headquarters for the Moapa Reservation before the reservation boundaries were realigned to the northwest in 1881. A stone marked with 'U.S. No. 1' is located to the northeast of Structure 3. This stone is similar to one described in historical documents marking the northeast corner of the reservation and was located near the "corner of a building designated as the office and medical depository" (Atkins 1886:334). Further, historical documents tell us that Harris and Pickett occupied the government buildings and "disposed the Indians" (Inter-Tribal Council of Nevada 1976:103). The glass collection tends to support the assumption that this structure was
occupied continuously after Mormon abandonment of the area. The mode for this collection is 0.075 inch which corresponds with the mode for New St. Joseph/Sandy Town supporting the assumption that this structure was built during the Mormon occupation of West Point. The secondary mode is 0.085 inch which corresponds with later developments such as the Blue Goose. Other archeological evidence suggests a continuous occupation of the structure (Appendix C). Structure 3 is probably the most significant of all the structures in the archeological study of Mormon vs. non-Mormon material patterns and frontier vs. railroad material patterns.

Structure 20 also exhibits the same glass thickness mode pattern as Structure 3. In addition, there is a break of two class sizes, 0.105 and 0.115 inch, in the total range before showing a slight increase of 0.125 inch (Table 6). This indicates a possible replacement of a broken window at a later date. Due to the isolated nature of this structure it is doubtful that the glass collection was contaminated by a later, stray broken window. The window glass evidence tends to suggest that this structure was used continuously. Historical documentation is lacking for this structure and only archeological excavation will reveal its story.

Structure or Locus 2 represents a non-extant architectural feature. The primary mode for window glass
thickness is 0.085 inch with a secondary mode of 0.115 inch. This pattern is similar to that of the Blue Goose. Historically, the subject area was the original townsite of Moapa and, as such, served as a camp for railroad crews. Given this information and the conclusion reached by the glass collection, this locus of artifacts is associated with late nineteenth and turn-of-the-century activities of the area.

The last structure to be discussed is the Railroad Tie Structure. This structure is associated with a known time span and historical context. There is no mystery associated with it except to explain the thinness of the glass. If we accept the hypothesis that window glass became thicker in time than why does this 1940s structure have a glass thickness mode of 0.085 inch? The chronological scheme offered by other researchers suggests that this mode is better associated with sites dating from 1855 to 1885. A couple of explanations can be offered. The salvage of construction materials is an ongoing cultural process in the American West. Discarded railroad ties have been salvaged from discard for use in home and out-building construction as long as the railroad has been in the West. It is possible that the window material was salvaged from an earlier existing structure just as the ties were salvaged to provide protection from the elements. The most likely explanation, however, is that during the
mid-twentieth-century single-strength glass could be purchased in a variety of sizes. This is also true today. Considering the structure was built during the wartime economy of the 1940s, it would have been logical to purchase thinner glass.

This study attempts a comparative archaeological study of window pane glass. In addition, it presents a descriptive and temporal historical reconstruction for the pioneer Mormon community of West Point and its subsequent reuse by other settlers. Each field offers unique evidence. Combined, the information contributes to a better understanding of the history of West Point. This study represents the foundation of research and document analysis, both historical and archaeological, that still needs to be done. The area that West Point, Pickett's Ranch, and Moapa once covered is a rich, intact archaeological site and has the potential to test and answer many questions concerning Anglo use and adaptation to this often times hostile desert valley environment.
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APPENDIX A

1870 UTAH CENSUS FOR WEST POINT
AND HOUSEHOLD ANALYSIS

On July 2, 1870, a census taker recorded twenty-two separate households in the community of West Point. A total of 138 persons (20 adult males, 23 adult females, 60 male children, and 35 female children) were recorded as living in the settlement at the time. Below is a list of the inhabitants of that community as each household was visited by the census taker. The actual census is here shortened to show family head, age of family head, wife/wives of family head, age of wife/wives, and the number of male and female children in that order. Following the census is an analysis of the community describing various categories such as household and family sizes, adult male and female ages, and male and female children ages.

Leavitt, George (41), Janette (33), Nancy (29), 3 males, 5 females.
Cherry, Osworth (25), Phebe (17), 4 males, 0 females.
Murdock, Joseph (48), Elizabeth (31), Benetty (25), 0 males, 0 females.
Beinkechug, James (52), Rebecca (34), 5 males, 2 females.
Hall, Newton (51), Sarah (46), 3 males, 2 females.  
Sarah A. (31), 1 male, 2 females.

Rice, Asaph (52), Mary (40), 5 males, 4 females.  
Louisa (43), 6 males, 1 female.

Young, Alfred (42), Rhoda (40), 5 males, 1 female.  
Young, Jahuth (39), Malinda (34), 3 males, 4 females.

Webb, Willis (25), Kiily (30), 0 males, 1 female.  
Wolsey, Joseph (20), Mary (21), 1 male, 1 female.

Casney, Peter (40), Ruth (39), 4 males, 2 females.  
Myers, William (60), Olive (45), 0 males, 0 females.  
Martha (50), 1 males, 0 females.

Allen, Louis (57), 2 males, 5 females.  
Allen, Rial (25), Susan (21), 1 male, 0 females.

Davis, Albert (28), Malifre (23), 0 males, 1 female.  
Chamberlain, John (28), Ellen (24), 2 males, 0 females.

Baird, Brigham (24) (in residence with Chamberlain).  
Combs, George (47), Hariett (37), 5 males, 2 females.

Rydalch, William (20), Margrott (22), 1 male, 0 females.

Myers, John (55), Sarah (47), 2 males, 1 female.

---

**HOUSEHOLD/FAMILY SIZE**

The census taker visited and recorded twenty-two separate households in the community of West Point on July 2, 1870. The household, here, is defined as a group of people sharing domestic activities and living quarters under the same roof. Arranged by last names, however,
those twenty-two households broke down into nineteen families and one adult bachelor who boarded with the Chamberlain family. Three polygynous families maintained multiple households: Leavitt; Hall; and Rice. Two polygynous families maintained single households: Murdock and W. Myers. In regards to the Murdock family, it is possible that Benetty was related to Joseph rather than a wife since the census lists her as a domestic servant rather than that of house keeper. The remaining families consisted of thirteen nuclear families and one single-parent family. Louis Allen's wife, Elizabeth, died and was buried in the West Point Cemetery sometime before the census.

The following information is calculated using simple statistics and the figures given in the census. Figures represent number of persons.

**HOUSEHOLD SIZE:** (22 households, 138 individuals) *

**MEAN:** 6.3  **MEDIAN:** 6  **MINIMUM:** 2  **MAXIMUM:** 11

* Figures include single live-in adult male.

As a point of comparison with other Mormon communities in the Moapa Valley, the 1870 Census listed St. Thomas with 150 people in thirty-one households; St. Joseph, 193 people in forty-three households; and Overton, 119 people in twenty-six households (Ellsworth 1987:11). The people per household mean for these three communities are: St. Thomas, 4.8; St. Joseph, 4.5; and Overton, 4.6. These are compared
with the 6.3 persons per household for the West Point community. It is plain to see that West Point maintained larger households on the average than its sister communities in the lower valley.

**FAMILY SIZE:** (19 Families) *
Mean: 7.2  Median: 6.5  Minimum: 2  Maximum: 19

**NUCLEAR FAMILY SIZE:** (13 Families) **
Mean: 5.5  Median: 4  Minimum: 2  Maximum: 19

**FAMILY SIZE, PLURAL WIVES:** (4 Families) ***
Mean: 13.8  Median: 13  Minimum: 10  Maximum: 19

* Does not include single live-in adult male.
** Does not include L. Allen family as wife was dead.
*** Does not include the family of W. Myers as the wives were of the age to have children living away from home and may not represent the true family size.

**ADULT MALES AND FEMALES**

The census taker recorded eighteen married males, one widower, twenty-three married women, and one bachelor. Of the males, thirteen are listed as farmers, one farm laborer, five day laborers, and one carpenter. All of the married women listed their occupations as housekeepers with the exception of Benetty Murdock who claimed to be a domestic servant. Six males were foreign born with four from England and two born in Canada. There were seven foreign born women residing at West Point: England, 4; Scotland, 1; Denmark, 1; and Canada, 1. Six males were
born in the east coast states (New York, 5 and New Jersey, 1), five males from southern states (Tennessee, 3; Kentucky, 1; and Alabama, 1), and the remaining three males hailed from mid-continent states (Iowa, Illinois, and Ohio). Four females claimed southern states as home (Tennessee, 2; Kentucky, 1; and Virginia, 1), two from mid-continent states (Illinois and Indiana), and four from New York and one from Vermont. The remaining women were born west of the Mississippi River with one from Nebraska and four from Utah. The four women born in Utah were probably born into families of the first Mormon pioneers to enter the Great Basin.

The following figures represent age in years for adult males and females at West Point.

**MALE AGE:** (20 Adult Males)

- MEAN: 38.9
- MEDIAN: 40.5
- MINIMUM: 20
- MAXIMUM: 60

**FEMALE AGE:** (23 Adult Females)

- MEAN: 32.3
- MEDIAN: 30.5
- MINIMUM: 17
- MAXIMUM: 50

**AGE AT WHICH MARRIED WOMEN BECAME MOTHERS:** (19 Females)

- MEAN: 22.3
- MEDIAN: 21
- MINIMUM: 16
- MAXIMUM: 32

Age is based on live children living at home and determined by subtracting oldest child's age from parent's age. Figures do not include two childless females and the two wives of W. Myers whose older children, if any, were probably living away from home.

**AGE AT WHICH MARRIED MEN BECAME FATHERS:** (17 Males)
The figures for fathers do not include one single adult male, one childless husband, and W. Myers because of unknown family size.

CHILDREN OF WEST POINT

A total of ninety-five children were recorded as living at home with their parents at West Point. Fifteen male children are listed as assisting their fathers as farm workers. Of those working in the fields, fourteen also managed to attend school. A total of forty-six children, thirty males and sixteen females, attended school. The eldest daughter of the Louis Allen family kept house for this household and family. The one listed son of the W. Myers family could have been the son of either Olive or Martha. This family may have had older children living away from the community of West Point.

The following figures represent age in years.

MALE CHILDREN AGE: (60 Males)
MEAN: 8.8 MEDIAN: 8.5 MINIMUM: 2 months MAXIMUM: 19

FEMALE CHILDREN AGE: (35 Females)
MEAN: 8.5 MEDIAN: 8.5 MINIMUM: 2 months MAXIMUM: 18
APPENDIX B

WEST POINT ARCHITECTURAL REMAINS

A ground survey was conducted in the fall of 1987. This survey resulted in the location of thirty-two architectural features (Refer to Figure 3). Included in this count are the remains of a structure built with railroad ties dating from the 1940s. The structures located at West Point represent the efforts of early Moapa Valley pioneers to provide themselves with suitable shelter from a hostile desert environment. The foundations and dugout depressions, which mark the locations of households and families upon the culturally modified landscape are, in themselves, archeological artifacts. These artifacts reveal basic information concerning construction techniques, architectural style, floor plans, and types of material used in the construction of these structures. This section describes the basic architectural information for those structures encountered during the survey. Appendix C records in detail those structures that were excavated as the result of archeological field work.

Upon arriving in the area, the settlers fashioned temporary shelters and, as time permitted, they built more substantial homes and out-buildings. These permanent
structures at West Point share basic characteristics with structures built at Mormon settlements in the lower valley (Kimball 1988, McCarty 1981, Shepperson and Warren 1979). Two common characteristics are stone foundations and walls constructed of adobe bricks. Historical documentation suggest that exterior doorways were framed in wood which, in turn, supported wooden doors. Documentation also supports the contention that roofing material consisted of cane thatch, "flags", that was lashed to a frame work of poles and sticks. Archeological evidence has been found in the lower valley to support the written record.

The use of adobe in the Moapa Valley as a building material reflects a cultural adaptation to a frontier desert environment. Operating in an economy of scarcity, the raw material for making adobe bricks was readily available to the Mormons from local resources. The use of adobe as well as other native material reflects the "poor development of the lumber industry on the frontier" (Hardesty 1988:86) and the simple scarcity of trees in the area. As the Mormons expanded into the Great Basin, adobe construction was a technology that did not require a lot of technological savvy or skill beyond a basic understanding of the material. Adobe construction represents a folk/vernacular solution that easily fulfills the basic need of shelter in semi-arid and arid environments. Adobe is a time proven form of housing which is "simple, universal,
timeless mud" and has an "extraordinary propensity" to return to its source (Iowa 1985:9) and, thus, into the archeological record.

All that remains of the early structures of West Point are adobe stains upon the landscape and a few exposed stone foundations that supported the adobe walls. The information listed below reflects several categories of information. Each structure was assigned a number (Refer to Figure 3). Several structures are located in proximity to each other in clusters and are, thus, assigned a number and letter designation. The information about each structure is arranged by structure number followed by structure configuration (shape), long axis orientation (east/west or north/south), foundation type (construction material), foundation dimensions, square feet of open space, and suggested structure type (function). The square feet of open space is determined by subtracting the square footage of the foundation from the overall outside foundation dimensions. The foundations measured from twelve to fourteen inches in width. The square feet of open space is also subject to the variable of internal walls that were not visible at the time of recordation. Some of the categories are unknown since erosion has not exposed the foundations. Future excavations will help determine these unknowns. Dugouts may have, at one time, served as temporary habitational structures and then, at a
later time, used for utility as a storage structure. With the exception of Structure 2, the dugouts, and the Railroad Tie Structure, all of the structures appear to have used adobe as the primary wall construction material.

**BASIC STRUCTURE INFORMATION**

<table>
<thead>
<tr>
<th>Structure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structure 1.</td>
<td>Rectangular; east/west; cobblestone; 16ft.2in.x12ft.2in.; 144 sq. ft.; utility.</td>
</tr>
<tr>
<td>Structure 2.</td>
<td>Unknown for all categories.</td>
</tr>
<tr>
<td>Structure 3.</td>
<td>Rectangular; east/west; sandstone/cobblestone; 30ft.x12ft.4in.; 289 sq. ft.; habitation.</td>
</tr>
<tr>
<td>Structure 4A.</td>
<td>Rectangular; north/south; sandstone/calcium carbonate nodules (limes); 26ft.4in.x15ft.4in.; 288 sq. ft.; habitation.</td>
</tr>
<tr>
<td>Structure 4B.</td>
<td>Unknown for all categories.</td>
</tr>
<tr>
<td>Structure 4C.</td>
<td>Rectangular; north/south; cobblestone; 21ft.x13ft.; 209 sq. ft.; habitation.</td>
</tr>
<tr>
<td>Structure 4D.</td>
<td>Rectangular (dugout); east/west; unknowns.</td>
</tr>
<tr>
<td>Structure 5.</td>
<td>Square; east/west; sandstone/liras; 13ft.x12ft.8in.; 117 sq. ft.; habitation.</td>
</tr>
<tr>
<td>Structure 6A.</td>
<td>All categories unknown.</td>
</tr>
<tr>
<td>Structure 6B.</td>
<td>Rectangular (dugout); north/south; cobblestone walls; width (east/west) 15 ft.; unknowns.</td>
</tr>
<tr>
<td>Structure 7A.</td>
<td>All categories unknown.</td>
</tr>
<tr>
<td>Structure 7B.</td>
<td>Rectangular (dugout); east/west; unknowns.</td>
</tr>
<tr>
<td>Structure 8.</td>
<td>Rectangular; north/south; cobble/sandstone; 25ft.2in.x15ft.4in.; 309 sq. ft.; habitation.</td>
</tr>
<tr>
<td>Structure 9A.</td>
<td>Rectangular (dugout); north/south; cobble/sandstone walls capped with adobe; 15ft.6in.x10ft.8in.; 165 sq. ft.; habitation.</td>
</tr>
</tbody>
</table>
Structure 9B. Square; north/south; cobblestone; 16ft. x 15ft.10in.; 165 sq. ft.; habitation.

Structure 10. All categories unknown.

Structure 11. All categories unknown.

Structure 12A. Square; north/south; sandstone; 16ft.10in. x 16ft.6in.; 210 sq. ft.; habitation.

Structure 12B. Rectangular; north/south; sandstone; 6ft. 3in. x 5ft.6in.; 15 sq. ft.; utility.

Structure 13. Square; north/south; cobblestone; 14ft. x 13ft.2in.; 134 sq. ft.; habitation.

Structure 14. Rectangular; east/west; sandstone; 14ft. x 11ft.; 108 sq. ft.; habitation.

Structure 15. Rectangular; east/west; sandstone; 26ft. 3in. x 14ft.2in.; 295 sq. ft.; habitation.

Structure 16. Rectangular; east/west; sandstone; 26ft. x 16ft.; 336 sq. ft.; habitation.

Structure 17A. Rectangular; north/south; cobblestone; 14ft. 3in. x 12ft.2in.; 125 sq. ft.; habitation.

Structure 17B. Rectangular; north/south; cobblestone; 5ft. 4in. x 4ft.8in.; 9 sq. ft.; utility.

Structure 18. Rectangular (dugout; east/west; unknowns.

Structure 19. Rectangular; north/south; sandstone/cobblestone; 25ft.6in. x 14ft.6in.; 294 sq. ft.; habitation.

Structure 20. Rectangular; east/west; sandstone/limes; 28ft.6in. x 15ft.8in.; 362 sq. ft.; habitation.

Structure 21A. All categories unknown.

Structure 21B. Rectangular (dugout); north/south; unknowns.

Structure 22. Rectangular; north/south; limes; 7ft. x 6ft. 2in.; 30 sq. ft.; utility.

Railroad Tie Structure. Measurements not made.

A ground survey of the West Point area revealed a total
thirty-two architectural features. The majority of these features are above ground remains with the exception being six dugouts. Five of the dugouts are constructed into the sides of low banks below and adjacent to above ground structures. One dugout, Structure 9A, was dug into level ground. There are two known utility structures, Structure 1 and 22. This structural type was revealed through excavation. The other suggested utility structures remain to be tested. The majority of the above ground structures appear to be habitational dwellings. Again, this needs to be tested. Of the above ground structures, twelve have the long axis orientation north/south while eight are aligned east/west. The Railroad Tie Structure is not associated with the Mormon occupation of the area and represents the last habitational use of the West Point area.
APPENDIX C

EXCAVATED STRUCTURE DESCRIPTIONS AND ASSOCIATED ARTIFACT ASSEMBLAGES

Below is a description and illustration of each structure that was completely or partially excavated at West Point during the spring of 1987 and 1988. Included are the artifact assemblages of each excavated structure and a chance encounter with trash in Canal B. The assemblage is broken down into broad, general categories based on function rather than material of manufacture, the exception being the category of Unclassifiable. It is hoped that this scheme reflects some degree of cultural reality. The detailed analysis of the recovered artifacts is beyond the scope of this thesis, is a thesis in its own right, and remains to be completed.

STRUCTURE 1

This structure is rectangular in shape with the long axis of 16 ft. 2 inches by 12 ft. 2 inches (exterior dimensions) on the short side (Figure 15). The foundation, the only visible architectural element, is composed of undressed sub-angular and rounded cobblestones obtained locally. The width of the exterior foundation is 14 inches while the interior foundation is 10 inches.
Figure 15. Structure 1 floor plan and profile views.
The structure is divided into four rooms and is located on the eastern edge of an eroding gravel bench four to five feet above a dry wash. Room A, which measures roughly 2 ft. in width and 8 ft. 4 inches in length, has a floor that is lined with sandstone slabs. It is thought that this room acted as a central hall to gain access to Rooms B, C, and D. The probable entrance into this structure would have been through the west end of Room A. Room B and D are roughly similar in size - 3 ft. in width and 8 ft. 4 inches in length. Room C measures 4 ft. 5 inches by 10 ft. 3 inches. The floor in these three rooms consist of compacted gravel with a possible thin addition of adobe.

With few exceptions, all of the artifactual material was recovered from the surface or mixed within the wall fall. In direct association with the floor was a single metal button, one bottle cork, a few pieces of clear bottle glass, and a couple of seeds. Based on room configuration and the lack of artifacts recovered on the floor, it is thought that this structure functioned in some storage/utility capacity. Similar structures have been recorded in the lower valley (Kimball 1988, McCarty 1981). Orientation of the structure to "Mormon North" suggests that it is associated with the Mormon occupation of West Point.

**ARTIFACT ASSEMBLAGE, STRUCTURE 1**

<table>
<thead>
<tr>
<th>GROUP</th>
<th>CLASS</th>
<th>TYPE</th>
<th>NUMBER OF ITEMS*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal</td>
<td>Clothing</td>
<td>Button</td>
<td>1</td>
</tr>
</tbody>
</table>
Personal

Clothing  Fabric  4
          Fabric, Rubberized  1
          Bottle  29 (amber)
                  4 (amethyst)
                  181 (aqua)
                  76 (clear)
                  49 (dark green)

          Bottle, Stopper  1
          Can, Round  2
          Can, Unidentified  259.9 grams

Domestic

Container

Food Wrap Foil, Tin  10
Window Pane Glass  2
Horseshoe  1
Maintenance

Organic Refuse

Bone Unidentified  13
Seed Cultigen  2
Non-cultigen  9
Shell, Egg Unidentified  1

Unclassifiable

Wood Chips  169.1 grams

* Number of items is given in either a numerical count or in weight. Those items that are expressed in weight are badly fragmented and are easier to express in a weight rather than a count.

STRUCTURE 2

Excavation at this structure amounted to surface scrapings of 1 to 2 inches of loose soil which lay upon a compacted surface of soil polygons. No architectural details were exposed with the exception of a single post hole partially surrounded by two rocks. Large irregular blocks of sandstone are randomly placed and eroding out of the east/northeast bank of the gravel bench.

This structure is characterized by the fragmentary presence of fired daub spread over a wide area. Wattle and daub construction is basically a framework of interwoven
sticks that are plastered with mud. The burnt daub suggests that the structure was extensively burned. Recovered pieces of daub indicate the impressions of sticks ranging in size from 1/8 to 3/4 inch. A stone foundation would not be expected for this type of construction. Post holes would be expected, however, as features associated with major architectural elements supporting the frame work of wattle.

Documentary evidence suggests that some Mormon families did construct this type of dwelling upon their arrival to West Point. "Our first residence was built of crooked black ash sticks set in the ground and wove in with willows plastered with mud" (Hafner 1967:74).

Archeological evidence offers several interpretations for this dwelling. DuBarton (1967:62) suggests that "this structure was occupied by different groups from 1868 onwards who made repairs and changes to the structure periodically." It is felt by this researcher that this ghost structure may have been of Mormon origin and that the material evidence represents sheet trash deposits associated with later occupations in the immediate area. An alternative to this line of thought is that Structure 2 was built at the turn of the century for use associated with railroad construction crews. Material evidence suggests a lack of family related artifacts. A single metal button with a steam locomotive impressed into its
surface suggests the railroad. The window glass recovered from this structure is of a later date as discussed in previous sections. Whatever the interpretation for this structure it does deserve more work in the future.

**ARTIFACT ASSEMBLAGE, STRUCTURE 2**

<table>
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<td>Footwear</td>
<td>Eyelet</td>
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<td></td>
<td>Grooming</td>
<td>Comb Tooth</td>
<td>1</td>
</tr>
<tr>
<td>Domestic</td>
<td>Container</td>
<td>Bottle</td>
<td>76 (amber)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>66 (amethyst)</td>
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<tr>
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<td></td>
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<td>Can, Round</td>
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<td>Can,</td>
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<td></td>
<td>ed</td>
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</tr>
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<td>Food Prep</td>
<td>Oven, Dutch</td>
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<tr>
<td>Food Serv</td>
<td>Tableware</td>
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<td></td>
</tr>
<tr>
<td>Illumination</td>
<td>Oil Lamp</td>
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<td></td>
</tr>
<tr>
<td>Maintenance</td>
<td>Bucket Handle</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Architecture</td>
<td>Daub</td>
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<tr>
<td>Fasteners</td>
<td>Nail, Cut</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Nail, Wire</td>
<td>23</td>
<td></td>
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<tr>
<td></td>
<td>Wire</td>
<td>10</td>
<td></td>
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<tr>
<td>Window</td>
<td>Pane Glass</td>
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<td>Firearms</td>
<td>Casings</td>
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<tr>
<td>Weapons</td>
<td>Bone</td>
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<tr>
<td>Organic Refuse</td>
<td>Seed</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Non-culti-</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>gen</td>
<td></td>
<td>1 gram</td>
</tr>
<tr>
<td>Shell, Egg</td>
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<td></td>
<td>1 gram</td>
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<tr>
<td>Unclassifiable</td>
<td>Metal</td>
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<td>Paper</td>
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</tr>
<tr>
<td></td>
<td>Rubber</td>
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</tr>
<tr>
<td></td>
<td>Wood</td>
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</table>

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Surficial excavation was conducted to ascertain the dimensions and floor plan of this structure (Figure 16). A small 2 ft. by 2 ft. test unit was excavated in an effort to locate and determine the nature of the floor. Several out-buildings were noted by not defined nor tested. The material remains gathered in this limited effort hints at early Mormon use, possible Indian use, and most certainly, late 19th and turn of the century habitational use of this structure.

All that remains of the architectural details of this structure is a sandstone foundation. This foundation is composed of undressed, irregular slabs and blocks of sandstone in various sizes. The stones are held in place by adobe mud. The width of the foundation is 15 inches and is of unknown depth. The overall foundation length is 30 ft. and 12 ft. 4 in. in width. The long axis of the foundation is oriented in an east/west cardinal direction. Partial excavation of the foundation revealed two rooms. Room A roughly measures 14 ft. 6 inches in length and 9 ft. 10 inches in width. Room B measures 11 ft. 9 inches in length with the same width as Room A. This asymmetrical plan is called a "hall-parlor" house type and "may be considered the quintessential Utah house during the second half of the nineteenth century" (Carter and Goss 1988:14).

Further investigation was confined to Room B. Adjacent
Figure 16. Structure 3 floor plan.
to the east wall, an internal fireplace hearth was uncovered. The hearth was made of the same irregular sandstone slabs as the foundation. The hearth measured 3 ft. in width while extending into the room a depth of 4 ft. 6 inches. A large mound of adobe rubble indicates the chimney collapsed outward toward the east. The external doorway for this structure was not determined nor was the internal passageway between the two rooms.

The cultural material that was recovered has a high variability and would be expected for a structure that was used for an extended period of time. The material evidence suggests the presence of a family at one time. The single 2 ft. by 2 ft. test unit in Room B exposed extensive kitchen midden and personal/domestic related items. Structure orientation and configuration are consistent with other Mormon structures in the valley lending support to the contention that this structure was built in the late 1860s. Artifactual remains suggest a continuous occupation past the turn of the century. This structure represents a great opportunity to study cultural continuity and change.

ARTIFACT ASSEMBLAGE, STRUCTURE 3

<table>
<thead>
<tr>
<th>GROUP</th>
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<th>TYPE</th>
<th>NUMBER OF ITEMS</th>
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<td></td>
<td>Buttons</td>
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</tr>
<tr>
<td></td>
<td>Fabric</td>
<td>6</td>
<td></td>
</tr>
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<td></td>
<td>Garment Hook</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Suspender Grip</td>
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<td></td>
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<tr>
<td></td>
<td>Communication Reading</td>
<td>50 (newspaper)</td>
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### Personal

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<th>Category</th>
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<td>Footwear</td>
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<td>Lace Hooks</td>
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<td>Nails</td>
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<td></td>
<td>Uppers</td>
<td>15 (leather)</td>
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<td>Grooming</td>
<td>Comb Teeth</td>
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<tr>
<td></td>
<td>Toothbrush</td>
<td>3</td>
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<tr>
<td>Health Care</td>
<td>Spectacles</td>
<td>1 (lens)</td>
</tr>
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<td>Maintenance</td>
<td>Thimble</td>
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<td></td>
<td>Straight Pin</td>
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<td>Pocket Tool</td>
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<td>1</td>
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<tr>
<td>Recreation</td>
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### Domestic

<table>
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<tr>
<th>Category</th>
<th>Item</th>
<th>Quantity</th>
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</thead>
<tbody>
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<td>188 (amethyst)</td>
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<td>54 (aqua)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>181 (clear)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>23 (green)</td>
</tr>
<tr>
<td></td>
<td>Bottle, Stopper</td>
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</tr>
<tr>
<td></td>
<td>Crown Cap</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Can, Round</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Can, Unidentified</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Can Key</td>
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</tr>
<tr>
<td>Food Prep</td>
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<td>Food Serv</td>
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<td>121</td>
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<td></td>
<td>Utensil</td>
<td>2</td>
</tr>
<tr>
<td>Furnishings</td>
<td>Decorative Tack</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Leg Caps</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Legs</td>
<td>2 (cast iron)</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Paint, Brush Hairs</td>
<td>1 (group)</td>
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### Architecture

<table>
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<tr>
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<tr>
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<td>Linoleum</td>
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<tr>
<td>Fasteners</td>
<td>Nails, Cut</td>
<td>57</td>
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<tr>
<td></td>
<td>Nails, Wire</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Staple</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Wire</td>
<td>31</td>
</tr>
<tr>
<td>Fencing</td>
<td>Barbwire</td>
<td>3</td>
</tr>
<tr>
<td>Security</td>
<td>Pad Lock</td>
<td>1</td>
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<tr>
<td>Window</td>
<td>Pane Glass</td>
<td>223</td>
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### Weapons

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Firearms</td>
<td>Casings</td>
<td>16 (+37 frag)</td>
</tr>
<tr>
<td></td>
<td>Percussion Caps</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Primers</td>
<td>3</td>
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### Husbandry

<table>
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<tr>
<th>Category</th>
<th>Item</th>
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</thead>
<tbody>
<tr>
<td>Maintenance</td>
<td>Harness</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Rivets/Burrs</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Horseshoe Nail</td>
<td>1</td>
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</tbody>
</table>

### Organic Refuse

<table>
<thead>
<tr>
<th>Category</th>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bone</td>
<td>Unidentified</td>
<td>946.8 grams *</td>
</tr>
<tr>
<td>Seed</td>
<td>Cultigen</td>
<td>142</td>
</tr>
<tr>
<td></td>
<td>Non-cultigen</td>
<td>170 **</td>
</tr>
</tbody>
</table>

### Unclassifiable

<table>
<thead>
<tr>
<th>Category</th>
<th>Item</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal</td>
<td>Copper</td>
<td>3</td>
</tr>
</tbody>
</table>
A large portion of the collection contains bones that exhibit some degree of butchering. Preliminary identification suggests that the occupants of this dwelling had access to pig, cow, goat/sheep, deer, rabbit, raccoon, duck, and chicken (White et al. 1987).

** The majority of this item is Pinyon Pine nuts.

STRUCTURE 4A

This structure is located on a gravel terrace knoll which overlooks the floodplain and the most likely area for Mormon farm fields. Structure 4A is one of four architectural features on this knoll and this cluster of buildings are on the extreme western edge of the West Point community. Excavation in the spring of 1988 was begun to determine if this structure had been used after the Mormon abandonment in 1871. Surface evidence indicated possible use by the Native population.

Partial excavation revealed a mixed stone foundation and areas of adobe brick (Figure 17). The perimeter foundation was composed of undressed, irregular blocks and slabs of sandstone and limestone. The internal foundation, dividing Room A and B, consisted of both sandstone and subangular cobblestones. The external foundation measured 15 ft. 4 inches by 26 ft. 4 inches with the long axis...
Figure 17. Structure 4A floor plan and profile views.
orientation of cardinal north/south. The foundation varied in width from 18 to 14 inches and was 18 inches in depth. A single course of adobe bricks were uncovered along the internal dividing foundation. A break in the brick pattern near the west end of the wall indicates a possible passage way between Rooms A and B. A north/south adobe wall, with no apparent supporting foundation, was located in Room B. This wall was composed of odd-sized and broken bricks and was two courses high.

The floor plan of this structure represents a hall-parlor type house with the internal addition of two small storage rooms. A total of four rooms were defined during excavation. Room A measures roughly 12 ft. 8 inches by 10 ft. 1 inch. Room B measures 7 ft. 8 inches in width and 12 ft. 7 inches in length. Room C and D were room additions constructed after the initial house construction. Room C, measuring 4 ft. 2 inches by 6 ft. 6 inches, had a slab-lined floor of red sandstone (Figure 18). Room D had a floor that was partially lined with mixed stone. This room roughly measures 4 ft. 2 inches wide and 5 ft. 1 inch in length. Neither Room A nor Room B had prepared floors. No fireplaces were located for this structure before the end of excavation although one is suspected to be located on the internal side of the north wall of Room A. Entrance to this structure is thought to be located along the east wall of Room A. Adjacent to the east and south external walls
Figure 18. Structure 4A. Room A foreground, Room C center, and Room D background.
are extensive midden deposits which remain to be investigated.

The material remains collected from this structure indicate at least two occupations by two different cultural groups. Architectural features and orientation are similar and consistent with other known Mormon structures in the area suggesting that this habitational structure was of Mormon origin. Low diversity in material remains also support the contention that this structure was at one time occupied by Mormon settlers. Found below the adobe wall collapse and mixed with Anglo material were artifacts associated with a limited Indian occupation. This assemblage included lithic debitage, a fragment of groundstone, projectile points, bifaces and trade beads. The trade beads were recovered along the outer edge of an ash lens that was centered in the southern half of Room A. Some of the Anglo material can probably be attributed to a transitional Indian group/family in contact with the reservation and white settlers in the area. Despite this contact, however, the Native occupants maintained many traditional ways. It is probable that this structure was used as one of the reservation buildings either officially or unofficially.

ARTIFACT ASSEMBLAGE, STRUCTURE 4A

<table>
<thead>
<tr>
<th>GROUP</th>
<th>CLASS</th>
<th>TYPE</th>
<th>NUMBER OF ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal</td>
<td>Adornment</td>
<td>Bead</td>
<td>17</td>
</tr>
</tbody>
</table>

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Dugouts were often constructed as temporary shelters and used until more permanent homes could be fashioned. The five dugouts built at West Point are visible as wide trenches dug into hillslopes and adjacent to above ground
structures. A sixth dugout, Structure 9A, is unique as this structure was dug into level ground and is the only known Mormon dugout of this type to have been constructed in the valley (Figure 19).

The walls of this dugout were constructed using a mixture of building materials and techniques. After the structure had been dug to the desired depth of approximately four feet below the ground surface the soil walls were lined with rock. The rock used in the below surface walls consisted of subangular and rounded cobblestones as well as irregular, undressed blocks and slabs of sandstone. Some of the stones were laid up in the wall vertically while others were put in place horizontally (Figure 20). The stones were set in using an adobe mortar. The thickness of the wall is only one stone thick, ranging from 6 to 9 inches. The walls lean slightly outward from the base. It is thought that as the lower walls approached the surface the wall took on the above ground appearance of a foundation being a foot wide or more. Only a small section at the head of the stairwell remains to suggest this foot wide foundation at the surface. Upon this surface foundation the builder used adobe brick to an unknown height to finish the above ground portion of the structure. Adobe bricks and rubble were mixed with rock wall fall resting upon the surface of the floor. The floor appears to have been prepared with a thin slip of adobe.
Figure 19. Structure 9A (dugout) showing southern entrance with stairs.
Figure 20. Structure 9A partial wall profiles showing uncollapsed wall sections and entrance steps.
Entrance to this shelter was gained through a single stairwell in the south wall. The stairway consisted of six steps of various tread widths and rise depths. The minimum rise is 3 inches and the maximum is 12 inches. The overall length of the stairwell is 6 ft. 4 inches. The top step measures 25 inches between the walls while the last step opens up to 32 inches between the walls at floor level. The stairwell walls are constructed of rounded and subangular cobblestones with small pebbles used as fillers.

This dugout has a cardinal north/south length of 15 ft. 6 inches and an east/west width of 10 ft. 8 inches (Figure 21). The function of this structure could not be determined and will require further testing to locate a fireplace, if any, and to determine the number of rooms, if more than one.

The following artifact assemblage has two divisions: those artifacts located on the surface and mixed into the first foot of excavated soil and those artifacts located in association with the floor. The low diversity in artifacts and structural orientation support the belief that this was a Mormon structure that was never reoccupied after abandonment.

ARTIFACT ASSEMBLAGE, STRUCTURE 9A

<table>
<thead>
<tr>
<th>GROUP</th>
<th>CLASS</th>
<th>TYPE</th>
<th>NUMBER OF ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal</td>
<td>Footwear</td>
<td>Eyelet</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Grooming</td>
<td>Comb Tooth</td>
<td>1</td>
</tr>
<tr>
<td>Domestic</td>
<td>Container</td>
<td>Bottle</td>
<td>2 (amber)</td>
</tr>
</tbody>
</table>
STRUCTURE 19

The floor plan for this structure is the typical hall-parlor (Figure 22). Room A is nearly square with dimensions of 12 ft. 6 inches by 12 ft. Room B is 12 ft. 6 inches by 10 ft. 6 inches. The exterior foundation length is 25 ft. 6 inches and has a width of 14 ft. 6 inches. The foundation is consistent with other foundations in the community in that it is constructed with irregular blocks and slabs of sandstone. The foundation that supported the internal adobe wall, dividing Room A and Room B, is constructed of subangular cobblestones.

The dwelling is constructed in such a manner so that the floor of Room B is four inches lower than that of Room A. This height difference is also constructed in a split level or stepped foundation along the east and west exterior walls. The difference in foundation heights occurs at the location of the internal dividing wall. A single course of adobe bricks is found on the internal wall.
Figure 21. Structure 9A floor plan.
Figure 22. Structure 19 floor plan and profile.
which corresponded to the same level as a single course of bricks on the west wall of Room B. The foundation stones of Room A rise above this course of bricks. It is thought that the foundation was built in this manner to better accommodate a slight slope in the landscape to the north rather than representing two different building phases.

Room B, the smaller of the two rooms, contained a fireplace that is incorporated into the internal wall. This fireplace is 4 ft. wide and 2 ft. deep and did not have a stone hearth area. A passage way between the two rooms was detected by the well worn top surfaces of adobe bricks on the east side of the fireplace. The floors in both rooms are compacted gravely soils. Whole and fragmentary adobe bricks were recorded and their sizes are consistent with other structures that contained measurable bricks - 4 3/4 to 5 inches wide, 10 inches in length, and 3 3/4 inch in thickness.

The single largest category of artifact in the assemblage for this structure was that of cut nails. This fact, coupled with low artifact diversity and structural orientation to the cardinal direction supports the notion that this structure was of Mormon origin. The lack of turn of the century and Indian related material point to the conclusion that this structure was only occupied for a short time.

ARTIFACT ASSEMBLAGE, STRUCTURE 19
<table>
<thead>
<tr>
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</thead>
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</tr>
<tr>
<td></td>
<td></td>
<td>Buckle</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Button</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Footwear</td>
<td>Eyelet</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sole</td>
<td>1</td>
</tr>
<tr>
<td>Domestic</td>
<td>Recreation</td>
<td>Optical Lens</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Container</td>
<td>Can Lid.</td>
<td>1 (friction)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Can, Unidentified</td>
<td>82.6 grams</td>
</tr>
<tr>
<td></td>
<td>Food Serv</td>
<td>Tableware</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Furnishing</td>
<td>Fireplace Poker</td>
<td>1</td>
</tr>
<tr>
<td>Architectural</td>
<td>Fasteners</td>
<td>Nails, Cut</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>Window</td>
<td>Pane Glass</td>
<td>2 (0.05 &amp; 0.087 in.)</td>
</tr>
<tr>
<td>Weapons</td>
<td>Firearms</td>
<td>Bullet</td>
<td>1 (spent)</td>
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<tr>
<td></td>
<td></td>
<td>Casings</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Percussion Cap</td>
<td>2</td>
</tr>
<tr>
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<td>Bone</td>
<td>Unidentified</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Seed</td>
<td>Cultigen</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-cultigen</td>
<td>37</td>
</tr>
<tr>
<td>Unclassifiable</td>
<td>Metal</td>
<td></td>
<td>210.3 grams</td>
</tr>
<tr>
<td></td>
<td>Wood</td>
<td></td>
<td>1</td>
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</tbody>
</table>

STRUCTURE 22

Outhouses are stratigraphic storage pits of archeological information, the kind on information that only outhouses can reveal and that only enthusiastic excavators are willing to expose. Two student excavators took on the responsibility of excavating this structure in the hopes that it was an outhouse. This was not the case, however, and excavation exposed an isolated storage structure of probable Mormon construction and use.

The foundation for this structure roughly measures 7 ft. in length and 6 ft. 2 inches in width. The long axis orientation is cardinal north/south. Irregular slabs of
sandstone and chunks of caliche were used to construct the foundation. A single course of rock was placed upon the ground surface. Stones were lacking in many areas as the foundation was not continuous. Excavators were able to trace the wall outline in soil color differences where stone were lacking. Since the foundation lacked the strength of other foundations observed in the area it is thought that the wall height for this structure was probably less than the height of a person.

Compacted organic material in the form of wood chips was exposed in the northern half of this structure. This layer of organics was also found to the east and north exterior side of the structure. At first it was thought that the structure was associated with wood chopping activities. Upon closer inspection of the foundation it was revealed that the organic material was continuous under the foundation stone suggesting that the structure had been constructed on top of this organic debris at a later date. The lack of personal artifacts in addition to the size of the structure indicates that it was used in some storage or utility capacity.

ARTIFACT ASSEMBLAGE, STRUCTURE 22

<table>
<thead>
<tr>
<th>GROUP</th>
<th>CLASS</th>
<th>TYPE</th>
<th>NUMBER OF ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>Container</td>
<td>Can,</td>
<td>91.3 grams</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unidentified</td>
<td></td>
</tr>
<tr>
<td>Architectural</td>
<td>Construction Mat.</td>
<td>Lumber</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Fasteners</td>
<td>Nails, Cut</td>
<td>2</td>
</tr>
</tbody>
</table>
Organic Refuse  Bone  Unidentified  3  
Organic Refuse  Seed  Cultigen  31 
Organic Refuse  Seed  Non-cultigen  25 
Wood  Chips  19.3 grams

CA\NALS

When the Mormons moved into the Great Basin they found that their success as agriculturalist was dependent upon several factors including the use of irrigation canals to transport water to their fields and homes. Thus, irrigation canals became cultural manifestations upon the landscape.

In addition to architectural foundations of abandoned structures, the ground survey located several neglected canals (Figure 23). It is thought that Canals A, C, and E represent major channels while Canals B, B, B, and D are lateral ditches (Refer to Figure 3). Historical documents have not been located to establish the sequence of canal building. Except for a chance encounter with trash in Canal B, archaeologically assigning a channel to a particular occupation of West Point would be difficult. An educated guess, however, can be offered suggesting that Canals A, B, B1, B2, and D are associated with the Mormon occupation of West Point and that Canals C and E are later manifestations on the landscape in an attempt to water the desert.

The community of West Point was organized on a gravel bench above the flood plains of the Muddy River. The
Figure 23. Students standing in portion of abandoned Canal A, Spring 1988.
topsoil/subsoil matrix is similar to that of the Sand Bench area in the lower valley. Upon the Sand Bench the Mormons constructed and tried to maintain an irrigation canal that would have fed water to Sandy Towns A, B, and New St. Joseph. To help prevent the loss of water through these porous soils the Mormons lined the canal with clay (McCarty 1981). Excavations were conducted on portions of Canal A and B to determine if the clay lining technique was used on these canals. The resulting wall profiles failed to detect any such linings of clay. This suggests that the loss of water in these porous soils was either not a serious problem or was not a concern to these settlers who lived upstream from their brethren.

Below are the artifacts recovered from the excavation of Canal B. Apparently, a portion of this canal was used for trash disposal from the nearby Railroad Tie Structure.

**ARTIFACT ASSEMBLAGE, CANAL B:**

<table>
<thead>
<tr>
<th>GROUP</th>
<th>CLASS</th>
<th>TYPE</th>
<th>NUMBER OF ITEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>Container</td>
<td>Bottle</td>
<td>1 (clear)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Can, Round</td>
<td>2 (sanitary)</td>
</tr>
<tr>
<td>Food Serv</td>
<td>Tableware</td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>