Española Valley, Rio Grande and Tributaries, New Mexico

Appendix D

Cultural Resources

August 2015

DRAFT

US Army Corps of Engineers ®
Albuquerque District

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Executive Summary

The bosque is more than simply a location; it is a place of deep cultural importance to the people of Ohkay Owingeh, Santa Clara, and San Ildefonso. Along with the Rio Grande and its tributaries, the bosque is an integral part of the cultural landscape and its health and the health of the rivers are fundamentally intertwined with significant cultural practices. For most tribes, the landscape is an essential part of constructing social identity and the transmission and survival of historical and cultural knowledge and practice. People define themselves in relation to the landscape, and the landscape is an interface where the past gives meaning and context to the present. Loss of the bosque is more than simply the loss of plants and animals; it presents a real threat to customs, beliefs, and practices essential to the cultural identity and continuity of the people of Santa Clara, Ohkay Owingeh, and San Ildefonso. As such, the bosque itself is a vital cultural resource, and the protection of that cultural resource is one of the foundations of this restoration effort.

Section 106 of the National Historic Preservation Act [54 U.S.C. § 300101 et seq.] (NHPA) and its 36 CFR Part 800 implementing regulations require Federal agencies to take into account the effects of their undertakings (e.g., projects or permits) on historic properties. Currently, an undertaking has been defined in the form of a tentatively selected plan. As such, the responsibilities of the Corps will now move toward assessing potential effects to historic properties, and conducting consultation in accordance with Section 106 on determinations of eligibility and effect for any historic properties located within the APE with the New Mexico State Historic Preservation Office, the Tribal Historic Preservation Officer of Santa Clara Pueblo, the Pueblo of Ohkay Owingeh, and other Tribes.

All of the acreage for the proposed project is located on Tribal land. Tribal partners, in this case Ohkay Owingeh and Santa Clara, will be consulting parties. Section 106 mandates that the State Historic Preservation Office (SHPO) be a consulting party for any undertaking, except those taking place under the jurisdiction of a Tribe with a Federally recognized Tribal Historic Preservation Officer (THPO), in which case the THPO may assume the role otherwise played by the SHPO in the consultation process. As of 2014, Santa Clara Pueblo has an official THPO in place; therefore, all consultation for work on Santa Clara land will take place with the Santa Clara THPO. For work in Ohkay Owingeh, the New Mexico SHPO will be a consulting party.

The Rio Grande Valley has seen 14,500 years of human occupation, from the last Ice Age to the present. In 2009, the Corps began a broad-scale analysis of available information on cultural resources in the overall Española Valley study area, which at that time also encompassed San Ildefonso Pueblo for a total of close to 35,000 acres. Systematic analysis of data on hundreds of known archaeological sites from within this area allowed the identification of historical trends and the generation of some predictions for the nature and extent of cultural resources likely to occur within the proposed project area.

Traditional Cultural Properties (TCPs) are recognized and protected by the National Historic Preservation Act, and are defined and described in National Register Bulletin 38 (Parker and King 1990). A TCP is defined as a property "that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are

rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community" (Parker and King 1990:1). TCPs are often hard to recognize; they can even be a natural feature or a landscape. Indeed, the Rio Grande bosque throughout the proposed project area is an area of deep and ongoing cultural importance and meaning, and has the characteristics of a TCP. The health of the bosque ecosystem is deeply intertwined with past, present, and ongoing cultural practice, and the goals of this project – developed with ongoing involvement of and consultation with the Tribal sponsors – would provide positive benefits in supporting the future survival of those practices. In addition, Black Mesa, located on the northeast portion of San Ildefonso Pueblo and near the southern end of the proposed project area, was a stronghold of Tribal resistance to Spanish rule during the Pueblo Revolts of 1680 and 1696. Due to Black Mesa's importance in the Pueblo Revolt and its continued cultural importance in the lives of Tribal members, Black Mesa can be considered a Traditional Cultural Property, and it is also listed on the State Register for its association with important events in history (the Pueblo Revolt).

Tribes are the best source of knowledge on TCPs. However, the often deep religious and cultural significance of these properties require great care against widespread sharing of specific information about them . By working closely with Tribal partners, this project has been designed to provide positive benefit to the culturally vital bosque, while minimizing or avoiding negative impacts to TCPs and protecting the confidentiality of traditional knowledge.

Now that a recommended plan has been selected, an Area of Potential Effect (APE) must be designated. Based on current project plans, the current estimated APE is estimated to encompass a total of approximately 1,419 acres (925 acres within Santa Clara Pueblo and 494 acres within Ohkay Owingeh). In coordination with Santa Clara Pueblo, the Corps has initiated an archaeological survey for the APE within Santa Clara boundaries. At Ohkay Owingeh, consultation between the Corps, the Pueblo of Ohkay Owingeh, and the New Mexico SHPO is ongoing, with the goal of identifying an appropriate method and approach for avoiding effects to historic properties while maintaining the confidentiality of cultural information within the Pueblo.. Based on the analysis conducted in 2009, we expect surveys to find approximately 19 sites within the Santa Clara project area, though preliminary results from the ongoing survey at Santa Clara suggest fewer sites than expected.

There are seven properties currently formally listed on the State and/or National Register of Historic Places within or in close proximity to the expected APE. Most of these properties are unlikely to be affected by the proposed project. Black Mesa is in close proximity to the southern portion of the expected APE, and must be considered for potential viewshed or other effects.

After historic properties have been identified (either through traditional archaeological survey, or through alternative methods developed in consultation with the Pueblos and SHPO), the Corps will determine whether the project will have an effect on any historic property. The project can have: 1) no historic properties affected, if there are either no NRHP-eligible properties in the APE or impacts to properties within the APE will be avoided; 2) no adverse effect to historic properties, if there will be effects to historic properties, but those effects will not be adverse; or 3) an adverse effect to historic properties. The Corps will make determinations of effect and consult with the SHPO (for work outside of Santa Clara Pueblo) and the Santa Clara THPO (for work within Santa Clara Pueblo). Scoping letters will be sent to Tribes and others to determine

public, Tribal, and agency interest in the project. Project planning will be closely coordinated with the Tribal sponsors to ensure that any potential impacts to any TCPs are fully taken into account. If a project will have an adverse effect to a NRHP-eligible historic property, additional consultation is required to determine a resolution for adverse effects. Typically, resolution of adverse effects could include reporting on results of archaeological excavation, archival documentation, ethnographic interviews, and/or other mitigation measure(s) such as public outreach, but in the present case, development of alternative mitigation options that do not involve unnecessary dissemination of cultural information outside of the Pueblos would be a priority. Any resolution of adverse effect would have to be agreed on by the Tribal sponsors, the Corps and the SHPO before implementation. Consulting parties would codify mitigation measures in a Memorandum of Agreement (MOA). Preparing an MOA can be a lengthy process.

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1.1 Cultural Setting

The bosque is more than simply a location; it is a place of deep cultural importance to the people of Ohkay Owingeh, Santa Clara, and San Ildefonso. Along with the Rio Grande and its tributaries, the bosque is an integral part of the cultural landscape and its health and the health of the rivers are fundamentally intertwined with significant cultural practices. For most tribes, the landscape is an essential part of constructing social identity and the transmission and survival of historical and cultural knowledge and practice. People define themselves in relation to the landscape, and the landscape is an interface where the past gives meaning and context to the present. Loss of the bosque is more than simply the loss of plants and animals; it presents a real threat to customs, beliefs, and practices essential to the cultural identity and continuity of the people of Santa Clara, Ohkay Owingeh, and San Ildefonso. As such, the bosque itself is a vital cultural resource, and the protection of that cultural resource is one of the foundations of this restoration effort.

Section 106 of the National Historic Preservation Act [54 U.S.C. § 300101 et seq.] (NHPA) and its 36 CFR Part 800 implementing regulations require Federal agencies to take into account the effects of their undertakings (e.g., projects or permits) on historic properties, and afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on the undertaking. 36 CFR Part 800.1 requires the agency official, in this case the Corps, to initiate the Section 106 process early in the undertaking's planning, "so that a broad range of alternatives may be considered during the planning process for the undertaking." An extensive analysis of known cultural resources in the vicinity of the study area was performed during the feasibility portion of the planning process, prior to an undertaking being defined, with the goal of providing background information on historic properties to be used for general planning purposes.

Currently, an undertaking has been defined in the form of a tentatively selected plan. As such, the responsibilities of the Corps will now move toward assessing potential effects to historic properties, and conducting consultation in accordance with Section 106 on determinations of eligibility and effect for any historic properties located within the APE with the New Mexico State Historic Preservation Office, the Tribal Historic Preservation Officer of Santa Clara Pueblo, the Pueblo of Ohkay Owingeh, and other Tribes.

Historic properties are legally considered to be those properties (cultural resources) eligible for listing on the National Register of Historic Places (NRHP). To be eligible for listing, a property must have "the quality of significance in American history, architecture, archeology, engineering, and culture" that can be "present in districts, sites, buildings, structures, and objects" and which must "possess integrity of location, design, setting, materials, workmanship, feeling, and association" *and* meet at least one of the following four criteria (36 CFR 60.4):

(a) that are associated with events that have made a significant contribution to the broad patterns of our history; or

(b) that are associated with the lives of persons significant in our past; or

(c) that embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) that have yielded, or may be likely to yield, information important in prehistory or history.

There are many examples of historic properties, including archaeological sites, historic buildings, traditional cultural properties (TCPs), and historic districts. Not all properties are eligible for listing on the NRHP. For example, an archaeological site might consist of a small roadside trash scatter from the 1940s, which most likely will not meet the above eligibility criteria. The age of a site is also important when considering eligibility to the NRHP; generally speaking, to be considered "historic" a property should be 50 years or older in age, although rare exceptions (such as the 9/11 site in New York City) can be made.

Consultation is an important part of Section 106. All of the acreage for the proposed project is located on Tribal land. Tribal partners, in this case Ohkay Owingeh and Santa Clara, will be consulting parties.

Section 106 mandates that the State Historic Preservation Office (SHPO) be a consulting party for any undertaking, except those taking place under the jurisdiction of a Tribe with a Federally recognized Tribal Historic Preservation Officer (THPO), in which case the THPO may assume the role otherwise played by the SHPO in the consultation process. As of 2014, Santa Clara Pueblo has an official THPO in place; therefore, all consultation for work on Santa Clara land will take place with the Santa Clara THPO. For work in Ohkay Owingeh, the New Mexico SHPO will be a consulting party. The Corps, the SHPO, and the Santa Clara THPO will make and consult on determinations of historic properties eligibility to the NRHP, and determinations of effect. Further, other tribal and non-tribal consulting parties may become involved. Scoping letters will be sent out to determine public, tribal, and agency interest.

In 2009, the Corps began a broad-scale analysis of available information on cultural resources in the study area, which encompassed three pueblos and 35,000 acres. The following sections provide existing condition information on cultural resources in the Española Valley project area for planning purposes. For the initial feasibility analysis, conducted in 2009, the project area was defined by a buffer around the Española Valley, extending out one mile from the Rio Grande and some tributaries, totaling some 35,000 acres. San Ildefonso Pueblo was also a sponsor at the inception of this study, but the current project now only includes Ohkay Owingeh and Santa Clara. Section 1.1.1 provides a general background on the archaeological culture history of the region, from the first recorded occupation of humans during the last Ice Age to the present. Section 1.1.2 provides information on previously recorded cultural resources in the project area. An analysis of changing use in the area over time is included to better contextualize the cultural resources in the region. Section 1.1.3 provides a summary and management recommendations for future planning purposes.

1.1.1 General Background: Española Valley Culture History

The following culture history overview provides a general context for the last 14,500 years of known occupation in the project area—from the Ice Age to the present—and is based on the works of Cordell (1979) and Stuart and Gauthier (1988). Specific citations are provided from other referenced sources.

1.1.1.1 The Paleoindian Period (c. 12,500 BC to 5500 BC)

Humans were present in North America by approximately 12,500 BC (Feidel 1999), and the Paleoindian period dates from this time to approximately 5500 BC. The most distinctive artifact types associated with the Paleoindian period are lanceolate spear points, many of which exhibit distinct basal flutes (large flake scars extending from the point base). Throughout the Great Plains and the Southwest, these points have been found associated with large ice-age mammal species such as mammoths, mastodons, horse, and several extinct species of bison. While these finds have contributed to an image of Paleoindians as specialized big-game hunters, in reality they probably pursued more diverse subsistence strategies. The period appears to be characterized by low population densities and high mobility, resulting in Paleoindian sites being rare and having low archaeological visibility. There are currently no sites documented within the study area identified as Paleoindian sites.

1.1.1.2 The Archaic Period (5500 BC to AD 400/600)

The Archaic period extends from approximately 5500 BC to AD 400 and represents a continuation of a hunting-gathering lifestyle; however, the range of animal species is similar to those found today, without many of the larger species (e.g. mammoth, camels) that became extinct after the end of the last Ice Age (cf. Irwin-Williams 1973). This represents the primary difference from the preceding Paleoindian period. During the Archaic, both large and small animals were hunted and trapped. Based on the increasing presence of manos and metates (grinding stones usually used to grind corn or other seeds), it is clear that the processing of plants became more important later in the period. Towards the end of the Archaic, longer-term habitation sites that include shallow pithouses (structures at least partly dug into the ground) are found in central New Mexico.

Two major changes occurred towards the end of the Archaic. Indications of maize appear in the archaeological record by about 2000 BC; however, maize became relatively more common after 1000 BC. Finally, the bow and arrow appeared around AD 500 and replaced the spear as the primary weapon.

Note that although very few of the documented archaeological components in the study area can be confidently attributed to the Archaic period, almost one-third (65 of the 221) of the archaeological components documented in the study area are undated, and it is likely that many of these represent Archaic occupations. Traditionally, if a site contains ceramic sherds with or without chipped-stone artifacts, it can be confidentially assigned to the pueblo period (post AD 400), but if a site only contains chipped stone artifacts, it cannot be confidentially assigned to just the Archaic period (because Pueblo period people used chipped stone artifacts too). However, many large ceramic-lacking chipped-stone sites *likely* date to the Archaic period, although verifying this would require some form of absolute dating, such as radiocarbon dating of charred materials from a hearth or fire pit, which is not normally part of the survey-level recordation we have for these sites.

1.1.1.3 The Ancestral Pueblo Period (AD 400/600 to AD 1540)

The Archaic period is followed by the Ancestral Pueblo period. Depending on the location within New Mexico, between three and five major phases are recognized within this period and are identified based on a variety of characteristics, including house forms and construction techniques, settlement patterns, pottery types, and other elements of material culture. One of the key new developments during this period is the appearance and proliferation of pottery. Because stylistic changes in the ceramics over time are much better understood by archaeologists, the appearance of pottery makes Ancestral Pueblo sites much easier to place within a precise chronological sequence than preceramic sites.

The first chronological sequence developed for this period in the Southwest was the Pecos Classification (Kidder 1924: 84-88), which includes the Basketmaker III (AD 600-750), Pueblo I (AD 750-900), Pueblo II (AD 900-1100), Pueblo III (AD 1100-1300), and Pueblo IV (1300-1600) periods. Wendorf and Reed (1955) proposed an alternative sequence for the northern Rio Grande valley, which was defined largely on the basis of specific sets of changes in settlement pattern and site structure; these periods are termed Developmental (AD 400/600 to AD 1200), Coalition (AD 1200 to AD 1325), and Classic (AD 1325 to approximately AD 1540). The following discussion follows this classification scheme.

A number of general trends characterize the Ancestral Pueblo period in the northern Rio Grande valley. While hunting and gathering continued, reliance on agricultural products continually increased. Pithouse villages with larger communal structures indicate larger social groups living in one location for longer periods of time. Small living and storage rooms built on the ground surface (rather than into the ground, as with earlier pithouses) begin to appear early in this period, and increase in size and abundance. In later periods, above-ground architecture completely replaced pithouses for living and storage functions, with below-ground structures then being limited to communal and ceremonial use.

As populations increased, these small houses were replaced with large buildings of up to several hundred rooms made of rock and/or adobe. Not all of the rooms in these connected structures were necessarily occupied at once; often the large roomblocks grew by accretion, with older rooms being abandoned and new rooms being constructed over time. Overall, the Ancestral Pueblo period saw fundamental changes in architecture, shifts and growth in population, and increased agricultural reliance in the northern Rio Grande valley.

1.1.1.3.1 Developmental Period (AD 400/600 to AD 1200)

The Developmental period, dating between AD 400/600 and 1200, represents a time of gradual transition from the Archaic lifeway, and includes the appearance and spread of new technologies including ceramics and the bow and arrow. It is also characterized by the construction of more elaborate, substantial pithouses (Cordell 1979: 42; Schmader 1994). The period is often subdivided into Early (AD 600 to 900) and Late (AD 900 to 1200).

The Developmental period is characterized by increasing sedentism made possible by greater reliance on agriculture. Increased precipitation during this period made intensified maize cultivation possible. A more sedentary existence is suggested also by the presence of pottery and large pit structures that were occupied for longer periods during the year (Allen and McNutt 1955; Schmader 1994), and by increased numbers of storage cists both inside and outside

pithouses (Schmader 1994). Early Developmental ceramics consist of pottery types widely distributed throughout the Southwest, including both locally manufactured wares and others associated with the Mogollon culture area to the south (Anschuetz 1984). Early in the period, the associated ceramics are similar to those found throughout northern New Mexico; later in time, the stylistic attributes, including paint, design, and temper, become more locally distinctive. Pithouses during this time were more substantial than before, with structural elements reflecting a greater investment in domestic architecture.

Dispersed, seasonal settlements inhabited by people with fluid group memberships are believed to characterize this period. Surface structures appeared toward the end of the period, along with an increase in site size (Anschuetz 1984: 27; Wendorf and Reed 1955: 140).

The Developmental period also saw changes in climatic conditions. The Early Developmental period witnessed an overall increase in precipitation, but with short-term periodicity and great variance and unpredictability in precipitation levels. Anschuetz (1984) suggests that populations were growing and that this increased density constrained mobility and increased competition for limited subsistence resources. As a result, populations were forced to increase agricultural production, while uplands provided buffers against potential floods on the floodplain and would have allowed dispersion for dry farming during favorable periods of rainfall. During the eleventh century, rainfall patterns shifted to greater short-term predictability and longer-term periodicity. According to Anschuetz, this resulted in more intensive but seasonal use of upland areas, probably in response to increasing population densities.

1.1.1.3.2 Coalition Period (AD 1200 to 1325)

The Coalition Period, AD 1200 to 1325, is marked by a dramatic population increase in many portions of the northern Rio Grande region after around AD 1250, hypothesized to originate from an indeterminate combination of migration from other areas such as Mesa Verde, Chaco Canyon, or portions of west central New Mexico; and internal population growth. Crown et al. (1996) find strong evidence for population shifts throughout the region between AD 1150 and AD 1350; this was coincident with an overall trend toward increases in the number and density of sites, and a shift from dispersed habitations to aggregated residences. An important theme in the interpretation of this period is the relationship between a collapsing core area (the San Juan Basin) and its developing periphery (the Rio Grande valley) (Stuart and Gauthier 1988; Tainter 1987).

During this period, populations appear to shift throughout the northern Rio Grande. Before AD 1270 or so, populations in all areas seem to increase, but after this point the Gallina region (located northwest of the study area) is abandoned, while population levels peak in the Pajarito area (encompassing the area southeast of the study area) (Crown et al. 1996). Other areas experience different degrees of population growth, likely stemming both from internal population increase and the arrival of groups from elsewhere. Regardless of the actual pace or trajectory of population growth, all regions experience aggregation (the consolidation of greater numbers of people into smaller numbers of communities) at more or less the same time between AD 1250 and AD 1300 (Crown et al. 1996).

In some areas, this shift precedes population increase, but follows it in others. While the Española Valley study area is split up among three different archaeological districts as defined

by Crown et al. (1996) – Chama to the north, Pajarito to the southwest, and Santa Fe to the southeast – it is peripheral to all of them. Nonetheless, patterns noted for these three regions are potentially relevant to understanding the current study area. In the Chama District, aggregation appears to precede sharp population growth by approximately 50 to 75 years (Crown et al. 1996: 193), but this pattern is reversed in the Pajarito District (Crown et al. 1996: 196-197); population increase and aggregation are roughly coincident in the Santa Fe district (Crown et al. 1996: 198). An apparent jump in the percentage of population living in aggregated settlements in all three areas occurs around AD 1275 in both the Chama and Pajarito areas.

In general, Coalition period habitations continue the shift from pithouses to above-ground structures (Cordell 1979), and sites generally consist of linear or L-shaped room blocks (containing from two to 200 rooms, with structures containing between 13 and 30 rooms the most common) which tend to be located near major drainages (Stuart and Gauthier 1988). By their measure, Crown et al. (1996) note that nearly all habitation sites in the northern Rio Grande contained more than 50 rooms by AD 1300 (Crown et al. 1996: 199). In decorated ceramics, there is a shift from the use of mineral paint to organic paint represented by the appearance of Santa Fe Black-on-white (Cordell 1979).

1.1.1.3.3 Classic Period (AD 1325 to 1540)

Substantial social and technological change is evident during the Classic period, beginning around AD 1325 (Cordell 1978; Stuart and Gauthier 1988; Wendorf and Reed 1955). By this time, the majority of the northern Rio Grande population lived in large aggregated settlements (Crown et al. 1996), some containing more than 1,000 rooms (Stuart and Gauthier 1988). The development of glaze-paint pottery occurred during this period, allowing relatively fine-grained chronological placement based on a series of stylistic and technological changes in the Rio Grande Glaze sequence. Glaze wares replaced black-paint wares in most regions (with the exception of the Jemez area, where Jemez Black-on-white persists for some time), and the appearance of this technology has been interpreted as evidence for migration from the west (Shepard 1942: 197-199), diffusion of ideas from the Zuni and Little Colorado areas (Wendorf and Reed 1955: 150, 161), local development, or a combination of the three.

The end of the Classic period saw the arrival of the Spanish, first with Coronado's entrada of 1540, and then with the first establishment of a Spanish colony in 1598. By the time of European contact, some of the large Classic pueblos had already been abandoned for nearly a century. Theories on these abandonments include overpopulation, overexploitation of natural resources, drought, and conflict (Cordell 1979: 45). End dates for the Classic period have been alternatively designated as 1540, the year of Coronado's entry into the area; and approximately 1600, a time when the establishment of a permanent colony (1598) began to impinge significantly on Pueblo life. This report uses the earlier date, while recognizing the inherently arbitrary nature of using this as a cutoff.

1.1.1.4 The Historic Period (AD 1540 to Present)

This period is characterized by rapid change and acculturation (the exchange and adoption of cultural elements such as beliefs and behaviors between groups coming into contact with one another) among Indians, Spanish, Mexicans, and Americans. This period, dating from about AD 1540 to the present, can be seen as a series of phases reflecting aspects of social interaction between different groups. In broad outline, key elements of these include (in chronological

sequence): Spanish exploration followed by colonization; the Pueblo Revolt; the post-Revolt colonial period under Spanish and then Mexican rule; the annexation of New Mexico as a United States territory; and U.S. statehood.

Currently, there are four major linguistic groups among the Pueblo Indians of the Southwest—Zuni, Uto-Aztecan (Hopi), Tanoan, and Keres. The Tanoan language family is divided into three primary subgroups: Tiwa, Tewa, and Towa. Tewa dialects are spoken by the inhabitants of the pueblos of San Ildefonso, Santa Clara, and Ohkay Owingeh, the three pueblos with lands located within the boundaries of the study area.

When Coronado entered New Mexico in 1540, he found a series of large, aggregated villages concentrated along the length of the Rio Grande valley; the Rio Grande is one of the few parts of the Southwest where such aggregated population centers persisted into the Historic period. Coronado's entry into the Southwest was followed by intermittent additional Spanish forays until 1598, when Juan de Oñate established a permanent colony, with his primary base in the vicinity of Ohkay Owingeh near the location of modern Española (Simmons 1979).

Pueblo population faced a general decline during this period as a result of multiple factors, including disease. In addition to missionary efforts to convert indigenous groups to Christianity, this period was also characterized by concerted efforts by the Spanish to consolidate control over Pueblo populations through strategies such as *reducción* (Spicer 1962), a policy of forced concentration of populations into a smaller number of more easily controlled settlements. In some portions of the Rio Grande, these efforts likely led in part to native dispersal into peripheral areas in order to escape Spanish control (Kulisheck 2002). Beginning around 1650, the Spanish established their own farms in the growing gaps between Pueblo lands.

1.1.1.4.1 The Pueblo Revolts of 1680 and 1696

The last decades of the seventeenth century were characterized by significant upheaval, as conflict escalated between indigenous populations and the Spanish colonial presence. The Pueblo Revolt of 1680 was a unified action on the part of several pueblos, in alliance with other indigenous groups including Apache and Navajo, who together successfully drove the Spanish out of New Mexico for more than a decade (Knaut 1995; Sando 1979). Popé, one of the primary leaders of the Revolt, was from Ohkay Owingeh; and San Ildefonso, the largest Tewa village at this time, played a significant role in the Revolt as well (Edelman 1979). Twelve years later (AD 1692), Diego de Vargas led a Spanish contingent to retake New Mexico, beginning a process of reconquest that was intermittently violent between approximately 1692 and 1696. Continued resistance culminated in a second revolt in 1696, which was of smaller scale than the 1680 revolt and was not ultimately successful (Edelman 1979; Espinosa 1988). After the second revolt of 1696 was suppressed, there was never again such significant organized resistance by Rio Grande pueblos against Spanish rule.

Black Mesa, a steep mesa located within the present project area at the northeast portion of San Ildefonso Pueblo, has significant associations with these events. The mesa often served as a fortified area of retreat for inhabitants of San Ildefonso and allied pueblos during this period (Edelman 1979; Noble 1994; Spicer 1962). In 1694, a group of San Ildefonsans, Tanos, some Cochiti, and other Tewas held out on Black Mesa for a period of nine months before submitting again to Spanish rule, even using the Mesa as a base from which to raid Santa Fe (Spicer 1962:

164). Black Mesa would again serve as a retreat for members of San Ildefonso and others during the second revolt in 1696.

1.1.1.4.2 Post-Revolt Period

Before the Pueblo Revolt of 1680, Spanish settlers generally maintained scattered estates (haciendas) in close proximity to Pueblo villages, which served as sources of labor (Cordell 1978: 115), but after the reconquest this shifted to a focus on the greater security afforded by living in villages (ranchos). While the shift to rancho settlement is partly due to decreasing Pueblo population sizes and increasing Spanish population size (Cordell 1979: 118), it was also likely a response to both perceived threat of Pueblo action, and to increasingly common raids on both Spanish and Pueblo communities by Apache, Navajo, and Comanche groups. Early in the eighteenth century, these ranchos were still fairly scattered, but increasing need for greater security encouraged the construction of defensible plazas later in the century (Cordell 1979: 118).

The nineteenth century saw a series of geopolitical shifts resulting in New Mexico changing hands more than once. The Republic of Mexico was founded in 1821, but Mexican control over New Mexico only lasted a quarter of a century before New Mexico was annexed by the United States in 1846 (Cordell 1979; Weber 1982). Raiding on Pueblo and Hispanic communities by nomadic groups increased during the Mexican period, encouraging further aggregation for defense (Cordell 1979). Anglo settlers began to enter the area as well during this period, a pattern which intensified after annexation. Settlement and livestock grazing expanded into areas not previously grazed (Pratt et al. 1988: 53), and farming continued to be a central activity. Colonial-era remains in the study area are likely to include agricultural features such as acequias (irrigation ditches) (Cordell 1979).

The nineteenth and twentieth centuries saw further economic and political changes affecting New Mexico, including an increase in trade between New Mexico and the United States, manifested in part in the development of the Santa Fe Trail; growth of mining activities; the advent and development of railroad networks; and lumber operations. The town of Española, located in the vicinity of Oñate's original settlement, was founded sometime after the middle 1800s (Fugate and Fugate 1989: 208; Chilton et al. 1984: 520) between the pueblos of Santa Clara to the south and Ohkay Owingeh to the north, and grew with the arrival of the railroad in the late 1800s.

Annexation by the United States also led to the establishment of American military outposts throughout New Mexico, as well as conflict with and relocation of various indigenous groups, and the creation of Indian reservations. New Mexico became a state in 1912.

1.1.2 Specific Background: Documented Cultural Resources in the Española Valley

Whereas Section 1.1.1 provided general information on the culture history of the region, this section provides specific information based on previously recorded historic properties in the study area, using data available as of the mid-2000s, when the analysis was conducted.

1.1.2.1 ARMS Site and Survey Data

The New Mexico State Historic Preservation Division's Archaeological Records Management Section (ARMS) maintains the New Mexico Cultural Resources Information System (NMCRIS)

database of previously recorded archaeological surveys, sites, and registered properties. A search of this database yielded 190 previously documented archaeological sites in the project area.

In order to begin to characterize and better understand the cultural resources within the study area, the downloaded NMCRIS data were entered into a computer database and analyzed. These analyses provide important context for any future work in the project area, and are summarized in this section. The NMCRIS data by individual site includes information on the LA site number, count of lithic artifacts, ceramic artifacts, and historic artifacts, number (0, 1, 2-4, 5+) of habitation features (pit houses, kivas, etc.), number (0, 1, 2-4, 5+) of non-habitation features (hearths, roasting pits, ash stains, etc.), date range and number of components (different occupations), linked NMCRIS number, activity associated with the site (survey, test excavation, data recovery), NRHP eligibility and criteria, site size (in acres), and site location (upland or floodplain). This information is discussed first at the survey level in Section 1.1.2.1.1 , and then at the site level in Section 1.1.2.1.2 .

1.1.2.1.1 Survey Information

Table 1 provides summary information on previous cultural resources surveys in the vicinity of the study area.

As of the time of analysis, there had been a total of 176 cultural resources surveys documented in the study area, covering approximately 3,200 acres of land, or 9.06 percent of the study area. As a result of these surveys, a total of 103 archaeological sites were recorded. Note that although 190 total sites have been recorded, only 103 were recorded as part of a formal survey; the remaining sites are not associated with a formal survey.

Table 1. Summary of Previous Cultural Resources Surveys in the Study Area

Area	Total Acres	Acres Surveyed	Sites Recorded on Survey	Site Centers in Survey Area	Sites/100 Acres	Total Recorded Sites	Percent Surveyed	Extrapolated Total Sites in Entire Study Area
Ohkay Owingeh	7,973	554	16	8	1.44	25	6.9	115
Santa Clara	15,573	1,735	47	36	2.07	88	11.1	323
San Ildefonso	7,848	572	25	19	3.32	57	7.3	261
Non-Tribal	3,913	339	15	10	2.95	20	8.7	115
Total	35,307	3,200	103	73	2.28*	190	9.1*	814

**These totals are calculated for the entire study area, and are not sums of the rows above them.*

To estimate the average number of sites in an area, using the site center (a single point on the site, called a datum by archaeologists) along with the survey area provides a means to estimate overall site density without the bias that overall site counts have. Site boundaries (as opposed to site centers) should not be used for this calculation, because many surveys are linear (e.g., along a road) and use of site boundaries would over-represent the total number of sites in a block area.

In this case, 73 site centers were recorded in the vicinity of the study area. To calculate the number of sites one might expect for the entire study area, divide the total number of site centers (73) by the total surveyed acres (3,200) to get 0.0228 sites per acre. Multiply that amount by the total acreage in the vicinity of the study area area (35,307 acres) to get an estimate of 805 sites. For planning purposes, this means that although 190 archaeological sites have been recorded, there are likely approximately 615 sites that remain unrecorded overall in the vicinity of the study area.

For the entire state, approximately 12 percent of the land has been surveyed, compared to 9.1 percent for the project area. For New Mexico as a whole, as of November 6, 2006 there were a total of 9,072,164 acres surveyed and 148,540 sites recorded, or 1.63 sites per 100 acres. In the vicinity of the study area, the average is higher, at 2.28 sites per 100 acres. There is also a north-to-south trend in site density, with more sites located to the south than the north (3.32 per 100 acres in San Ildefonso, 2.07 per 100 acres at Santa Clara, and 1.44 per 100 acres at Ohkay Owingeh).

We know that approximately nine percent of the overall study area has been surveyed for cultural resources, but when was it surveyed? The earliest formal cultural resources surveys in the vicinity of the study area were conducted in 1975 (see Figure 1). From 1975 to 2005, there has been a slightly increasing trend in the number of surveys, as can be seen by the line in Figure 1. However, the majority of acres surveyed were surveyed between 1986 to 1998. The survey of the Santa Clara golf course in 1998 represents the single largest survey in the project area. Overall, only 15 percent of the formal surveys have been conducted within the last decade, representing only 488 of the total 35,307 acres in the project area, or 1.4 percent.

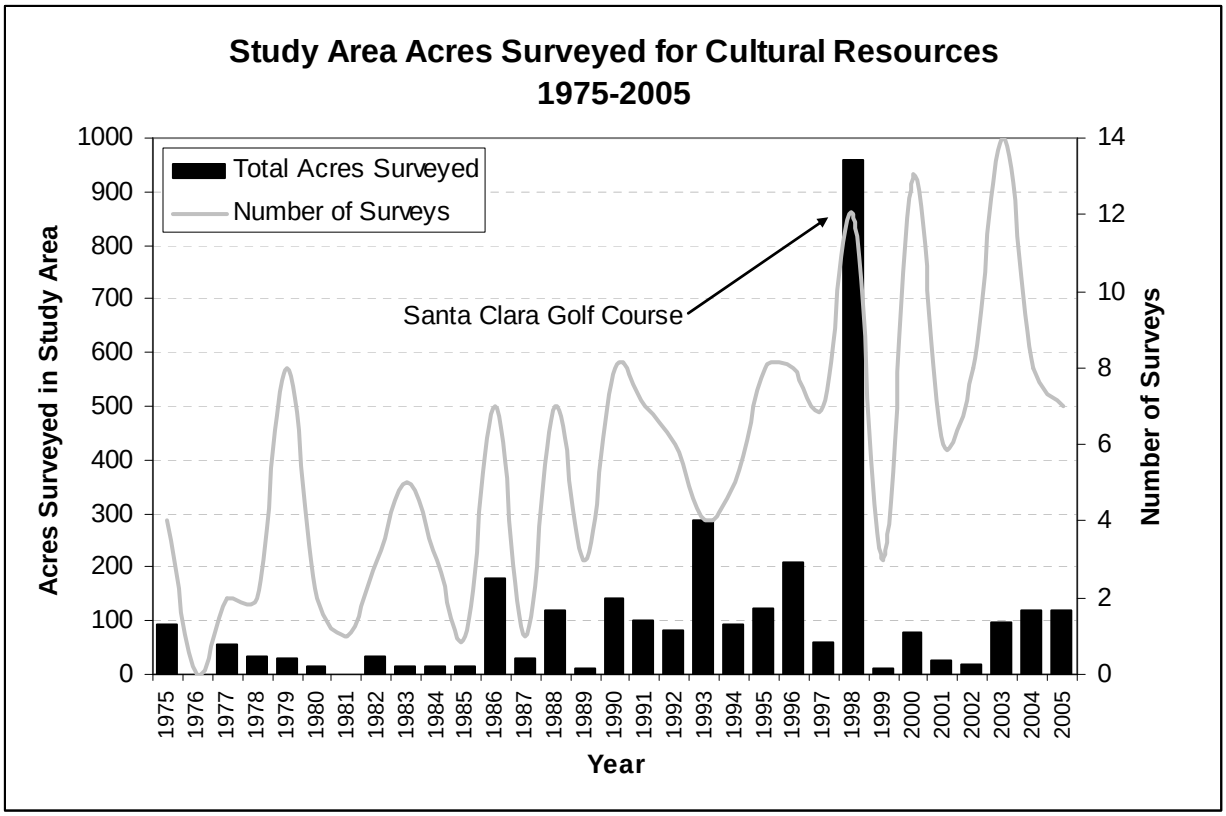

Figure 1. Project area cultural resources survey history (1975-2005).

1.1.2.1.2 Site-level Data

The previous section focused on survey-level information. The purpose of this section is to explore the site-specific information contained in the NMCRIS database, which will provide planning information on the types of sites that could be encountered on a project. Following is the methods and results of the site-level data analysis.

1.1.2.1.2.1 Methods

The ARMS database provides information on sites and general time periods associated with them. For example, site LA 43 dates to the Pueblo IV period, or AD 1300-1600. Figure 2 presents a chart of the occupational history of the Española Valley study area, expressed as the number of identified archaeological components per century over the last 2,000 years, based on available ARMS records. To create this chart, the date ranges provided in ARMS (e.g., AD 1300-1600) needed to be converted into units that could be plotted. Time was divided into 100-year periods. For this study, the date range for each site was partitioned among the 100-year periods it spanned, weighted by the fraction of the date range falling in each period. For example, a date from AD 120–450 crosses the 100–200, 200–300, 300–400, and 400–500 increments, or four periods. To avoid counting this date 4 times (once in each period) and therefore, in order to give each date range a proportional value of one, the date range was partitioned among the periods in proportion of the total range that overlaps with each period. In the above example, there are 330 total years (450-120=330), with 0.242 percent of this date range falling in the period AD 100-200 (200-120=80; 80/330=0.242), 0.303 percent each in AD

200-300 and AD 300-400 (300-200=100; 100/330=0.303), and 0.152 percent in AD 400-500 (450-400=50; 50/330=0.152). Using this method, dates with large ranges provide relatively little weight per period (and little influence to the occupation curves), while more precise dates with narrow ranges are more heavily weighted. Occupation in each period is then calculated as the sum of the weighted dates falling within the period. As such, the resulting distribution reflects a combination of both occupation density and date precision. The resulting analysis of this temporal information is presented in the following sections.

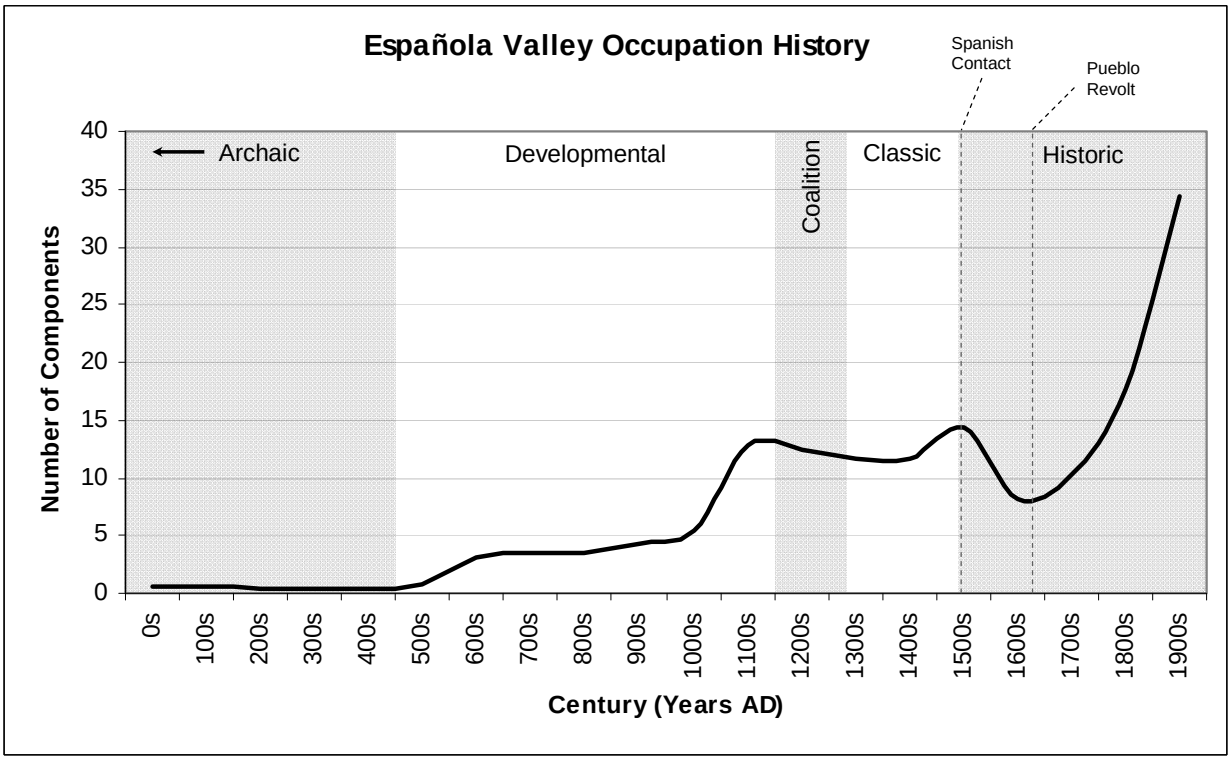

Figure 2. Occupational history of the Española Valley study area, expressed as the number of identified archaeological components over the last 2,000 years, based on available ARMS records.

1.1.2.1.2.2 Results of ARMS Study

Figure 3 shows the occupation history of the Española Valley as derived from our analysis of ARMS data for the study area, expressed as the number of identified archaeological components in the region over time. As noted above, there is no documented Paleoindian presence in the study area, and only meager definitive evidence of Archaic-period occupations (three out of 221 components). However, there are a substantial number of components containing chipped-stone artifacts that have not been assigned to a time period, and it is likely many of these date to the Archaic period. In addition, given the braided, aggrading nature of the Rio Grande channel, and the likelihood that Archaic hunter-gatherers probably camped in the bosque, Archaic portions of the record have probably been disproportionately lost due to stream geomorphic processes.

Despite these caveats, the trend presented in Figure 3 shows a substantial increase in archaeological components beginning approximately 1,500 years ago, which is consistent with overall trends for the Rio Grande Valley as described in the culture history section above. Figure 2 (above) shows the same data for the period covering only the last 2,000 years, and it is clear from this that cultural use of the Española Valley begins to increase during approximately the AD 600s, or the beginning of the Developmental period. The rate of increase accelerates during the AD 1100s, right at the end of the Developmental and the beginning of the Coalition periods. This is consistent with trends throughout the northern Rio Grande, as populations from the north and west (including the Chaco Canyon and Mesa Verde areas) likely migrated to the Rio Grande during this period. Overall cultural use of the area peaks slightly at the end of the Developmental period, dips slightly, and then peaks again at the end of the Classic period.

There is a dramatic shift with Spanish contact, however. Between initial Spanish contact in 1540 and the Pueblo Revolts of 1680 and 1696, the number of cultural manifestations in the study area drop by approximately 50 percent. The number of documented components then increases steadily again beginning in the 1700s and continuing to the present.

As the number of components shifts over the last 1,500 years, the nature of those occupations changes as well. Figure 4 shows the changing relative proportions of archaeological components in two topographic contexts within the study area after AD 600: the floodplain and the uplands. As this figure shows, the proportion of components on the floodplain remains below 20 percent throughout the early part of the sequence before beginning to rise during the 1100s, or the end of the Developmental phase. This increase in numbers of components on the floodplain continues throughout the Coalition and Classic phases until it peaks at more than 70 percent of all components during the 1600s. The steady increase in floodplain presence during this period occurs during a period of rough stability in the overall number of components between the 1100s and 1500s, as seen above in Figure 2. Given the dynamic nature of floodplain geomorphology, it is not surprising that earlier components are underrepresented and later components dominate the archaeologically visible record; earlier sites have a greater opportunity to either be eroded away or buried through fluvial action over time. However, these trends also suggest the possibility that, as the number of components is holding relatively steady, there is a progressive shift toward floodplain utilization. It is also notable that this shift toward the floodplain appears to continue after contact, even as the overall number of components drops between the 1500s and 1600s. In other words, this trend toward a floodplain focus continued through the 1600s even as the overall number of components in the Española Valley began to plummet.

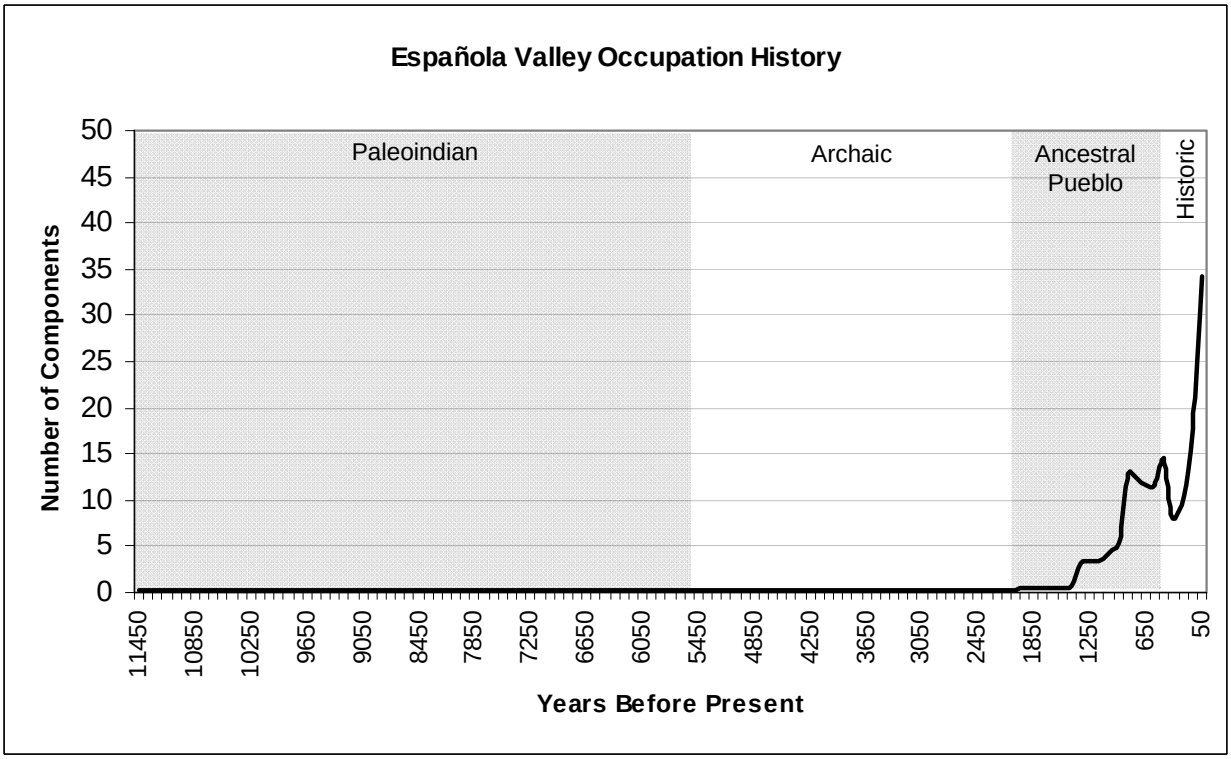

Figure 3. Occupational history of the Española Valley study area, expressed as the number of identified archaeological components over approximately the last 12,000 years, based on available ARMS records.

The possible trend in floodplain versus upland occupation is paralleled by a shift in site sizes. Figure 5 shows changing relative proportions of large sites (greater than or equal to five acres in area) versus small sites (less than five acres) through time. While the proportion of components representing large sites never exceeds 45 percent, the shape of the trend is quite similar to the floodplain shift in Figure 4: large sites make up 25 percent or less of components through the 1400s, at which point the proportion of large sites begins a steady increase to a peak of approximately 40 percent during the 1600s and 1700s. This trend reverses after the 1700s, with large sites making up less than 20 percent of post-1800 components. Figure 6 shows all three of these trends – overall number of components, as well as proportions of large sites and floodplain sites – in the same graph.

Taken together, these trends suggest an overall growth in cultural use of the Española Valley which was accompanied by increases in the relative proportions of sites on the floodplain and large sites. These two trends persist for a time even after the overall abundance of sites is suddenly and dramatically curtailed during the first 150 years after Spanish contact. When site frequency (number of components) begins to recover and increase again, these trends are reversed. In other words, cultural use of the Española Valley increases again after the Revolt period; however, this recovery also represents a shift in the character of these sites, reversing the trends in site size and location. The new sites tend once again to be smaller and less concentrated on the floodplain than during previous periods.

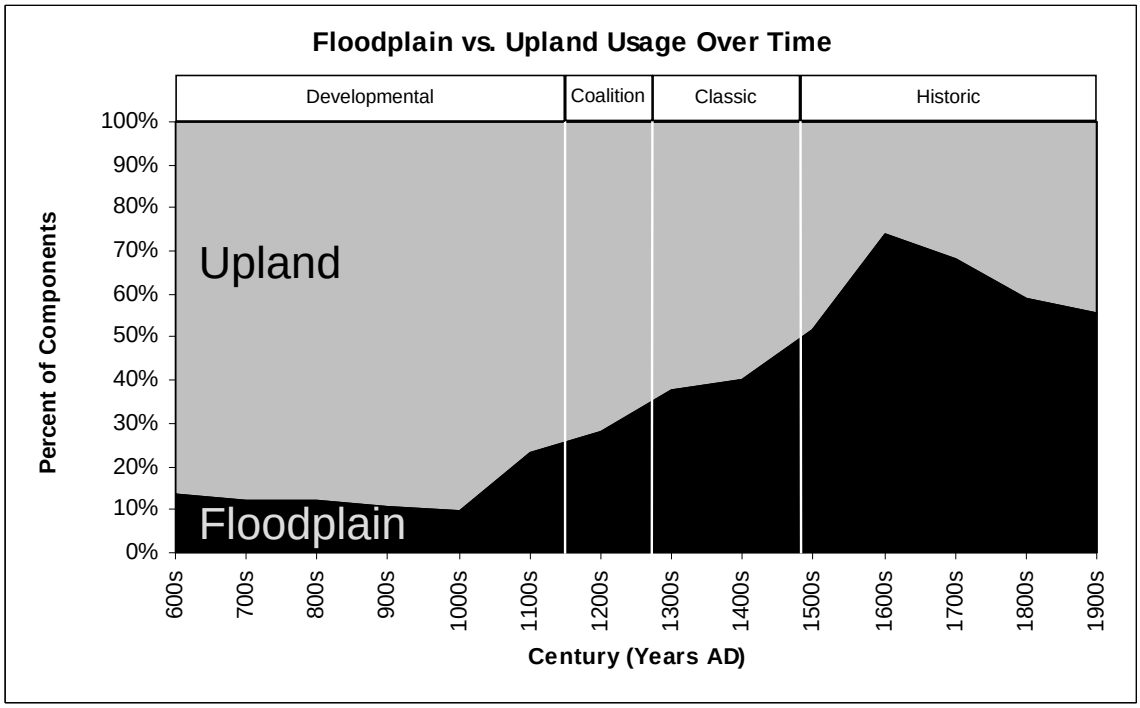

Figure 4. History of floodplain use versus upland use after AD 600, expressed as the proportion of components located in either zone during each century.

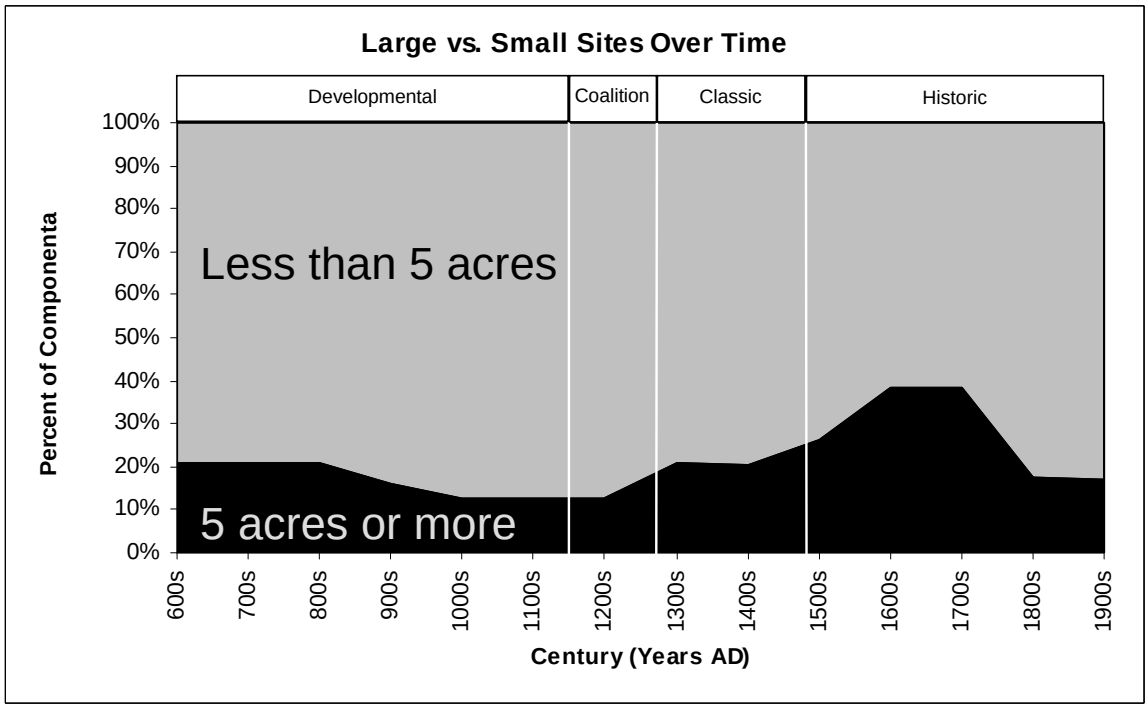

Figure 5. Trends in site size (area) after AD 600, expressed as proportion of large sites versus small sites during each century.

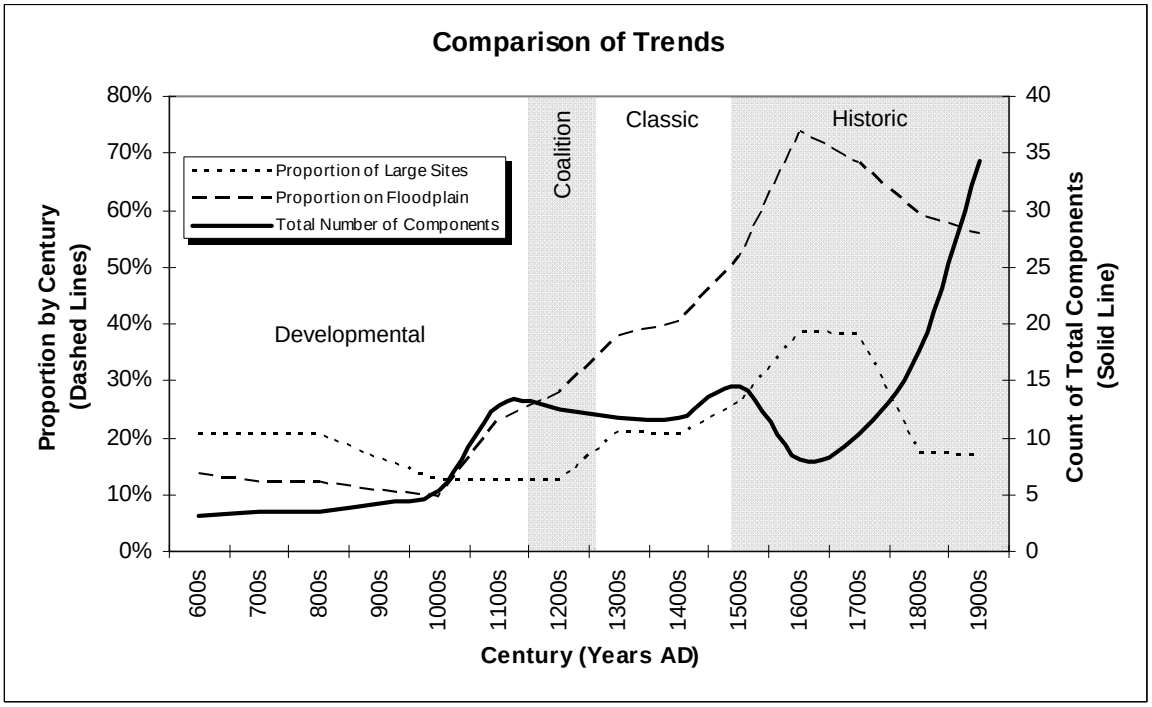

Figure 6. Comparison of trends in site size and site location, along with the occupation history curve from Figure 2.

1.1.2.2 Traditional Cultural Properties

Traditional cultural properties (TCPs) are recognized and protected by the National Historic Preservation Act, and are defined and described in National Register Bulletin 38 (Parker and King 1990). A TCP is defined as a property "that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community" (Parker and King 1990:1). TCPs are often hard to recognize; they can even be a natural feature or a landscape. Indeed, the Rio Grande bosque throughout the proposed project area is an area of deep and ongoing cultural importance and meaning, and has the characteristics of a TCP. The health of the bosque ecosystem is deeply intertwined with past, present, and ongoing cultural practice, and the goals of this project – developed with ongoing involvement of and consultation with the Tribal sponsors – would provide positive benefits in supporting the future survival of those practices. In addition, Black Mesa is located on the northeast portion of San Ildefonso Pueblo, and was a stronghold of tribal resistance to Spanish rule during the Pueblo Revolts of 1680 and 1696. Due to Black Mesa's importance in the Pueblo Revolt and its continued cultural importance in the lives of tribal members, Black Mesa can be considered a TCP, and it is also listed on the State Register for its association with important events in history (the Pueblo Revolt) (see Table 2).

Tribes are the best source of knowledge on TCPs. However, the often deep religious and cultural significance of these properties require great care against widespread sharing of specific information about them . By working closely with Tribal partners, this project has been designed

to provide positive benefit to the culturally vital bosque, while minimizing or avoiding negative impacts to TCPs and protecting the confidentiality of traditional knowledge.

Impacts to TCPs are often not just direct impacts from construction, but can include visual and auditory impacts. Again, close coordination with Tribal partners is critical, especially when working on Tribal land.

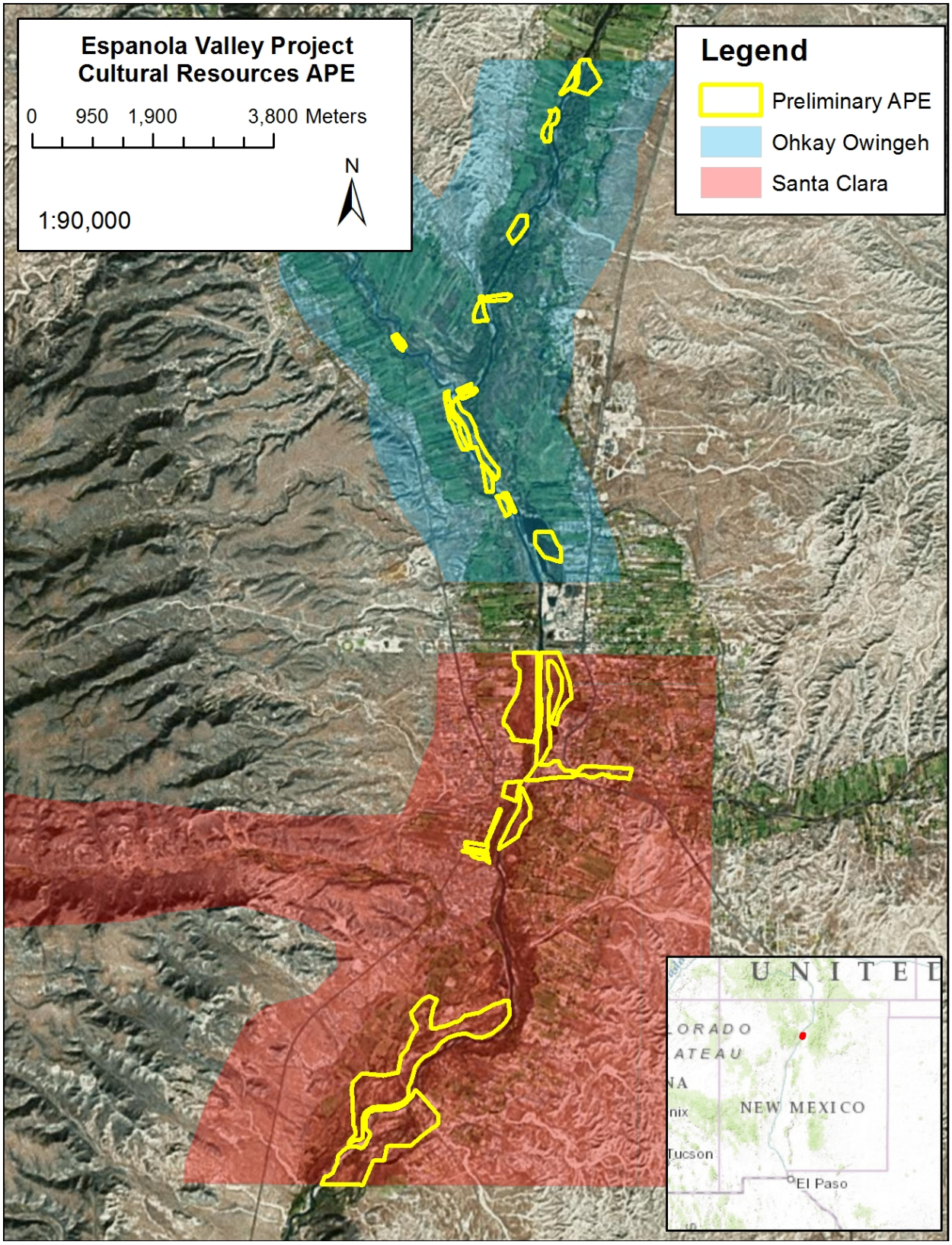

Figure 7. Preliminary area of potential effect for cultural resources for proposed project.

1.1.2.3 Expectations for Future Cultural Resources Surveys

Now that a tentatively selected plan has been identified, we may apply the estimates from the above analysis to the areas for which we expect to conduct archaeological surveys. For the purposes of Section 106, an area of potential effect (APE) must be designated. The APE includes any physical area of earth disturbance, including staging areas and access roads. Depending on the historic property, it could also include an area outside of construction, but within sensory limits (auditory/visual). It should also consider cumulative effects (such as downstream effects to historic properties). Based on current project plans, the current estimated APE is presented in Figure 7.

Characteristics of the expected APE are as follows:

1. For Section 106 purposes, the expected APE for the proposed project, as currently understood, totals approximately 1,419 acres (925 acres within Santa Clara Pueblo, and 494 acres within Ohkay Owingeh).
2. The entirety of the expected APE for this project falls within what would be categorized as “floodplain” or “lowland” areas in the above analysis.

Based on the analysis of NMCRIS data, it was expected that most sites in the APE would be expected to date to the pueblo/historic period. Expected site densities within the two Pueblos are approximately 2.07 sites per hundred acres at Santa Clara Pueblo, and 1.44 sites per hundred acres at Ohkay Owingeh (Appendix D). Given these estimates, we might expect cultural resources surveys of the expected APE to find approximately 19 sites within the Santa Clara study area, and seven sites within the Ohkay Owingeh study area. Based on the analysis above, most or all of these sites would be expected to date to the Pueblo or Historic periods. Not all of the sites may be eligible for listing on the National Register, but some may.

Based on the above analysis, it was expected that when sites are located, two-thirds will likely be small (less than one acre), one-sixth will be medium (one to five acres), and one-sixth will be large (more than five acres in size). Most (four-fifths) will contain features (such as fire pits and rock cairns), whereas one-fifth will be limited to artifacts scatters. Of the sites with features, three-fourths will only contain non-habitation features (no evidence for long-term residence). Preliminary results from the Santa Clara survey suggest fewer than expected sites, of fairly recent age and relatively small in extent.

1.1.2.4 State and National Register Listed Properties

The State and National Registers of Historic Places were created in order to identify and record significant historic properties so that they can be protected and preserved. The above discussed sites are considered eligible for the National Register, and as such are afforded protection, but they have not gone through the process of formal nominations. Formal listing of properties is, in practice, limited (usually by expense and effort) to those properties that are exceptional. There are seven properties currently formally listed on the State and/or National Registers of Historic Places within or in close proximity to the expected APE for the proposed project. State and National Register properties are protected resources, and any work proposed near them needs to consider its impact to the property. Two of these are the pueblos of the two Tribal sponsors. Most of these properties are unlikely to be affected by the kinds of projects that could be

anticipated by this study. While no features within the tentatively selected plan are located on San Ildefonso Pueblo, the Register-listed Black Mesa (located within San Ildefonso boundaries) is in close proximity to the southern portion of the expected APE, is listed here and must be considered for potential effects. Black Mesa is discussed in Section 1.1.1.4.1 , and in the following section.

Table 2. State and National Registered properties in the study area.

Name	State Register Date	National Register Date
San Gabriel de Yungue-Ouinge	12/20/1968	10/15/1966
Santa Clara Pueblo	12/30/1971	11/5/1974
San Juan Pueblo (Ohkay Owingeh)	7/28/1972	7/30/1974
La Iglesia y la Plaza de Santa Cruz de la Canada	2/9/1973	8/17/1973
Black Mesa	9/27/1974	N/A
Bond House	6/20/1978	3/6/1980
Chimayo Trading Post	4/3/1992	5/1/1999

1.1.3 Summary and Recommendations

The background information presented above provides a solid background for future identification of historic properties pursuant to Section 106 of the NHPA. Future steps are detailed below.

Identification of historic properties, as described in 36 CFR 800.4, is underway at Santa Clara primarily through archaeological surveys of the project APE, which are ongoing as of August 2015. Preliminary results suggest a smaller number of archaeological sites than originally expected within the Santa Clara APE, and all of relatively recent age. At Ohkay Owingeh, consultation between the Corps, the Pueblo of Ohkay Owingeh, and the New Mexico SHPO is ongoing, with the goal of identifying an appropriate method and approach for avoiding effects to historic properties while maintaining the confidentiality of cultural information within the Pueblo.

After historic properties have been identified (either through traditional archaeological survey, or through alternative methods developed in consultation with the Pueblos and SHPO), the next step in the Section 106 process (36 CFR 800.5) is to determine whether the project will have an effect on any historic property. The project can either have: 1) no historic properties affected, if there are either no NRHP-eligible properties in the APE or impacts to the historic properties that are in the APE will be avoided; 2) no adverse effect to historic properties, if there will be effects to historic properties, but those effects will not be adverse (significantly change the quality of those aspects of the property that make it eligible to the NRHP); or 3) an adverse effect to historic properties. The Corps will make formal determinations of effect, and will consult on those determinations with the SHPO (for work outside of Santa Clara Pueblo) and the Santa Clara THPO (for work within Santa Clara Pueblo). In addition, scoping letters will be sent to Tribes and others to determine public, Tribal, and agency interest in the project. Project planning will be closely coordinated with the Tribal sponsors to ensure that any potential impacts to any Traditional Cultural Properties are fully taken into account.

In the first two cases (no historic property affected or no adverse effect to historic property), Section 106 is completed with the agency's determination and SHPO and/or THPO concurrence.

If, however, a project will have an adverse effect to a NRHP-eligible historic property, additional consultation is required to determine what actions will be taken to resolve the adverse effects. Typically, resolution of adverse effects could include reporting on results of archaeological excavation, archival documentation, ethnographic interviews, and/or other mitigation measure(s) such as public outreach, but in the present case, development of alternative mitigation options that do not involve unnecessary dissemination of cultural information outside of the Pueblos would be a priority. Any resolution of adverse effect would have to be agreed on by the Tribal sponsors, the Corps and the SHPO before implementation. Consulting parties in the Section 106 process work to codify the mitigation measures in a memorandum of agreement (MOA). Preparing an MOA can be a lengthy process, and for planning purposes, expect any project that will have an adverse effect on a NRHP-eligible property to take a minimum of six additional months of consultation, and more depending on the level of public, Tribal, and agency involvement and the nature of the adverse effect.

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Española Valley, Rio Grande and Tributaries, New Mexico

Appendix E

Environmental Engineering

February 2015

DRAFT

US Army Corps
of Engineers ®
Albuquerque District

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EXECUTIVE SUMMARY

Currently, an undertaking has been defined in the form of a tentatively selected plan. As such, the responsibilities of the Corps will now move toward conducting a Phase I Environmental Site Assessment (ESA; ASTM 2247-02) for Forestland or Rural Property to determine the likelihood of the existence of Hazardous, Toxic & Radioactive Waste (HTRW). The ESA will be completed prior to the construction contract award. The detailed study areas are not contiguous, and but will be compiled into a single Phase I ESA for the Project. The Phase I ESA will be conducted in accordance with both an American Society for Testing and Materials (ASTM) standard and US Army Corps of Engineers protocol.

This report documents the existing conditions observed during the 2009 preliminary assessment. It also describes the future-without and future-with project scenarios and its impact to HTRW. Based on the information in the existing conditions report USACE anticipates minimal impact of the project on HTRW. USACE will finalize the Phase I ESA prior to award of a construction contract. If there are any HTRW issues identified USACE will inform the project manager, project delivery team, and local sponsor(s). USACE will follow USACE Engineering Regulation, HTRW Guidance for Civil Works Projects (ER 1165-2-132), which provides specific guidance for consideration of issues and problems associated with hazardous, toxic, and radioactive wastes (HTRW) which may be located within project boundaries or may affect or be affected by Corps Civil Works projects.

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Introduction

Currently, an undertaking has been defined in the form of a tentatively selected plan. As such, the responsibilities of the Corps will now move toward conducting a Phase I Environmental Site Assessment (ESA; ASTM 2247-02) for Forestland or Rural Property to determine the likelihood of the existence of Hazardous, Toxic & Radioactive Waste (HTRW). The ESA will be completed prior to the construction contract award. The detailed study areas are not contiguous, and but will be compiled into a single Phase I ESA for the Project. The Phase I ESA will be conducted in accordance with both an American Society for Testing and Materials (ASTM) standard and US Army Corps of Engineers protocol.

An existing conditions survey was conducted of the initial study area as part of the existing conditions report. An existing conditions survey generally includes walking the property and visually examining it in order to visually identify potential HTRW concerns. A walkover of the entire acreage comprising the initial study area spread across the two sponsoring Pueblos was not feasible. Because it was not within the study scope for this early phase of the project to conduct an in-depth investigation into potential HTRW concerns across the entire initial study area, a screening of existing conditions was performed using a set of environmental data records purchased from an environmental data vendor, Environmental Data Records (EDR), Inc.

The record set purchased (in March, 2008) from EDR includes a variety of sites maintained in publicly available environmental databases administered by numerous local, state, and Federal agencies. Additionally, a written inquiry was submitted electronically on November 30, 2007 to each of the two sponsoring Pueblos requesting available information on storage tanks, dump sites, and other, locally known, potential sites of environmental concern. Written information was provided by Ohkay Owingeh, which was formerly called San Juan Pueblo.

The city of Española is located between Ohkay Owingeh to the north and Santa Clara Pueblo to the south. Because Española is not located on sponsor (Pueblo) land, existing conditions were only surveyed within the city to the extent that any listed sources of environmental contamination in the city may have a potential impact to the surface or subsurface of either of the north- or south-adjacent Pueblos. One such site was identified in the EDR dataset: a Superfund site designated as the “North Railroad Avenue Plume” has its source within the city limits of Española. The records note that approximately 58 acres of land are underlain by the groundwater contamination associated with this Superfund site, and a portion of the 58-acre contaminant plume extends southward beneath the northern portion of Santa Clara Pueblo lands. The target contaminant is associated with dry cleaning solvents and, according to the records provided by EDR, has its source on the Norge Town Dry Cleaner and Laundromat property. The contaminant plume has impacted the aquifer utilized as the drinking water source for the city of Española and Santa Clara Pueblo. Numerous other gasoline stations and dry cleaning establishments included in the records are located in the city of Española, but it is the North Railroad Avenue Plume Superfund site that is known to have a current, direct impact to the groundwater underlying a portion of the northern part of Santa Clara Pueblo.

The EDR dataset contains four listed leaking underground storage tank (LUST) sites and twelve listed underground storage tank (UST) sites located on indian lands along North and South Riverside Drive. The area study map provided by EDR shows the locations of listed sites. The North and South Riverside Drive LUST and UST sites are interpreted to be located within the city of Española, and not within either Ohkay Owingeh or Santa Clara Pueblo.

Land within the boundaries of the two sponsoring Pueblos is predominantly rural, with agricultural acreage present along the river. Developed areas consist mainly of low-density populated villages within each Pueblo.

The EDR dataset lists seven sites within Ohkay Owingeh. It is important to keep in mind that inclusion of a property in the environmental records database does not necessarily designate a property as a site of environmental contamination. The property may simply hold a regulatory permit, thereby placing the property in the environmental records. Those seven sites are as follows:

- The Jemez Mountains Electric Cooperative, which the EDR study area map places at the intersection of Highway 84 at Highway 74, is listed as a current non-generator of hazardous waste under Resource Conservation and Recovery Act (RCRA) regulations. “Non-generator” status means the facility holds a RCRA permit as a hazardous waste generator, but currently the facility is not generating any hazardous waste. The Jemez Mountains Electric Cooperative property is also listed as a site where two registered USTs were removed.

- The New Mexico Department of Transportation (NMDOT) Alcalde Patrol Yard on Highway 68 is listed as a site where two registered USTs were removed.

- The P and O Service Station at 1313 Oñate Street is listed as a Facility Index System (FINDS) site, indicating “other pertinent environmental activity identified at site”, but the environmental records do not specify further what the activity is.

- The AS 7 to 11 Mini Mart property located at the corner of El Llano Road and Highway 68 is listed as both a LUST site and a site where three registered USTs were removed.

- The Hacienda de Salud property at 720 Hacienda Street is listed as a LUST site.

The EDR dataset contains records for three sites located within Santa Clara Pueblo:

- The Four Corners Water reclamation site located at 99 State Road 399 is listed as a FINDS site, and appears to hold a National Pollutant Discharge Elimination System (NPDES) permit for discharge of treated water.

- The Study Area Map included in the EDR records notes that the Yates Corporation is a non-coal mining operation located south and west of the Santa Fe Highway and east of State Road 399. The Yates Corporation site is listed as the “Arroyo Seco Pit”.

- The Poor Boy Sawmill, with a listed location on “Route 1”, is reported to be both a No Further Action LUST site (site soils and/or groundwater have been restored to regulatory criteria) and a site where a regulated UST was removed.

The environmental records set provided by EDR included a listing of “Orphan Sites”, which are properties that could not be included on the Study Area Map by the environmental data vendor due to “poor or inadequate address information” in the databases. USACE personnel were able to discern from the listed addresses that five of the orphan sites are located within the two sponsoring Pueblos.

Five orphan sites are located in Ohkay Owingeh. The P and L Grocery on State Road 74 is listed as a LUST and UST site. The same property also appears on the Orphans Summary List as a LUST and UST site location on indian lands. The San Juan Pueblo Shell Station on State Highway 68 is listed as a UST site on Ohkay Owingeh. The Ohkay Travel Center on Highway 68 is listed as a UST site on Ohkay

Owingeh. The San Juan Abandoned Dump site with a listed location of "1/2 mile west of Highway 285" is denoted as a site with No Further Remedial Action Planned (NFRAP). A NFRAP site is described as one where "to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site."

Written information provided by Ohkay Owingeh (formerly San Juan Pueblo) on known or potential sites of environmental concern consisted of a report entitled *Final Assessment Report, San Juan Pueblo Wetlands Identification.* The report was prepared by Tecumseh Professional Associates, Inc., in association with Advanced Sciences, Inc., and is dated September 30, 1994. Although the report focuses on wetlands issues, it does identify sites within the Pueblo boundaries that may be cause for environmental concern. The sites include former sand and gravel mining operations located along the river within the Pueblo, Pueblo sewage lagoons, domestic septic systems in general, illegal dumping of trash and septic waste, and fifteen known or potential storage tank locations. The report notes that although the identified or potential storage tanks were located within the boundaries of the Pueblo, all fifteen sites are located on privately owned land within the Pueblo boundaries. Non-point source agricultural runoff and environmental effects from fires within wetland areas were also noted in the report as potential environmental concerns. Although all known or potential sites were identified specifically for assessment of wetlands impacts, knowledge of the sites is nevertheless beneficial to identifying and inventorying HTRW concerns and threats to environmental media (e.g., groundwater, surface water, soil, air quality) within the Pueblo.

A second document provided by Ohkay Owingeh is a report on open dumps dated January 23, 2006 prepared by the Indian Health Service. The purpose of the report was to identify and survey existing open dumps, at the time of the report, on Ohkay Owingeh property. The report identifies nine open dumps on the reservation property, shows the locations of the dumps on a map in the report, and assigns local names to each of the dumpsites. Site survey forms are included in the report.

The sites identified in the set of environmental records and mentioned above are scattered across the portions of the two sponsoring Pueblos within the study area. Once the tentatively selected plan is approved, the Phase I ESA will provide a site-specific investigation.

As part of the Phase I ESA, then the Hazardous Materials personnel on the staff of the Pueblos will be interviewed. Residents and long-term employees of the Pueblos are the ideal individuals to interview for their knowledge of potential sites of environmental impact that would only be known by someone having a longtime association with and history of the Pueblo (e.g., local, isolated dump sites; former machinery and vehicle repair operations; and possible locations of heating oil and gasoline USTs). These sites, known only to local individuals, usually can be very important to establishing existing HTRW conditions, but these sites will not appear in the publicly available environmental records databases. As part of Phase I ESA activities, any known water quality sampling locations, to include wells and surface water sampling points, within and proximal to the selected study area(s) will also be inventoried and any readily available analytical data generated from past sampling will be examined.

USACE has determined that existing conditions have not undergone major changes since the existing conditions report. This will be verified during the Phase I ESA.

Future Without Project

The future without project scenario will not likely impact the existing HTRW conditions within the project area.

Future With Project

USACE has recently determined the tentatively selected plan, which identified site specific features. Thus, a Phase I ESA will be conducted using information derived from the F3 report and additional information, as required in ASTM 2247-02, Phase I Environmental Site Assessment for Forestland or Rural Property. USACE will finalize the Phase I ESA prior to award of a contract. Based on the information in the F3 USACE anticipates minimal impact of the project on HTRW.USACE will finalize the Phase I ESA prior to award of a contract. If there are any HTRW issues identified USACE will inform the project manager, and local sponsor(s). USACE will follow USACE Engineering Regulation, HTRW Guidance for Civil Works Projects (ER 1165-2-132), which provides specific guidance for consideration of issues and problems associated with hazardous, toxic, and radioactive wastes (HTRW) which may be located within project boundaries or may affect or be affected by Corps Civil Works projects.

Exhibit 1- EDR DataMap Area Study

EDR DataMap®
Area Study

Espanola Valley Watershed Project
Espanola, NM 87532

March 04, 2008

Inquiry number 2157753.1s

EDR® Environmental
Data Resources Inc

The Standard in Environmental Risk Information

440 Wheelers Farms Road
Milford, Connecticut 06461

Nationwide Customer Service

Telephone: 1-800-352-0050
Fax: 1-800-231-6802
Internet: www.edrnet.com

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

TARGET PROPERTY INFORMATION

ADDRESS

ESPANOLA, NM 87532
ESPANOLA, NM 87532

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records within the requested search area for the following databases:

FEDERAL RECORDS

Proposed NPL	Proposed National Priority List Sites
Delisted NPL	National Priority List Deletions
NPL LIENS	Federal Superfund Liens
CERC-NFRAP	CERCLIS No Further Remedial Action Planned
LIENS 2	CERCLA Lien Information
CORRACTS	Corrective Action Report
RCRA-TSDF	RCRA - Transporters, Storage and Disposal
RCRA-LQG	RCRA - Large Quantity Generators
ERNS	Emergency Response Notification System
HMIRS	Hazardous Materials Information Reporting System
DOT OPS	Incident and Accident Data
US CDL	Clandestine Drug Labs
US BROWNFIELDS	A Listing of Brownfields Sites
DOD	Department of Defense Sites
FUDS	Formerly Used Defense Sites
LUCIS	Land Use Control Information System
CONSENT	Superfund (CERCLA) Consent Decrees
UMTRA	Uranium Mill Tailings Sites
ODI	Open Dump Inventory
DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations
TRIS	Toxic Chemical Release Inventory System
TSCA	Toxic Substances Control Act
SSTS	Section 7 Tracking Systems
PADS	PCB Activity Database System
MLTS	Material Licensing Tracking System
RADINFO	Radiation Information Database
RAATS	RCRA Administrative Action Tracking System

STATE AND LOCAL RECORDS

SHWS	This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.
SWRCY	Recycling Facility Listing
INST CONTROL	Sites with Institutional Controls
VCP	Voluntary Remediation Program Sites

EXECUTIVE SUMMARY

TRIBAL RECORDS

INDIAN ODI ---------- Report on the Status of Open Dumps on Indian Lands

EDR PROPRIETARY RECORDS

Manufactured Gas Plants --- EDR Proprietary Manufactured Gas Plants

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified.

Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

FEDERAL RECORDS

NPL: Also known as Superfund, the National Priority List database is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund program. The source of this database is the U.S. EPA.

A review of the NPL list, as provided by EDR, and dated 10/02/2007 has revealed that there is 1 NPL site within the searched area.

Site	Address	Map ID	Page
NORTH RAILROAD AVENUE PLUME	***162 NORTH RAILROAD AVEN***	***25***	***78***

CERCLIS: The Comprehensive Environmental Response, Compensation and Liability Information System contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

A review of the CERCLIS list, as provided by EDR, and dated 01/09/2008 has revealed that there are 4 CERCLIS sites within the searched area.

Site	Address	Map ID	Page
OLD SANTA FE CNTY LANDFILL-SAN	***APPROX 1 MI PAST INT. O***	***10***	***26***
SANTA CLARA WETLANDS	***106 04' 30'N 36 00' 00'***	***18***	***47***
BRIDGES RADIATOR SHOP	***235 RIVERSIDE DRIVE***	***24***	***74***
NORTH RAILROAD AVENUE PLUME	***162 NORTH RAILROAD AVEN***	***25***	***78***

EXECUTIVE SUMMARY

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 09/11/2007 has revealed that there are 4 RCRA-SQG sites within the searched area.

Site	Address	Map ID	Page
ESPANOLA HOSPITAL	***1010 SPRUCE STREET***	***19***	***48***
RIO VALLEY MOTORS LLC	***531 ONATE ST***	***19***	***50***
HENRY VALENCIA INC	***618 N ONATE***	***19***	***55***
WALGREENS STORE NO 5157	***1115 N RIVERSIDE DRIVE***	***33***	***103***

RCRA-CESQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

A review of the RCRA-CESQG list, as provided by EDR, and dated 09/11/2007 has revealed that there are 11 RCRA-CESQG sites within the searched area.

Site	Address	Map ID	Page
GIL'S RENTALS	1900 N RIVERSIDE DRIVE	9	19
DOMINGUEZ RADIATOR	2024 N RIVERSIDE DR	9	24
WAL-MART-#06-2656	1610 NORTH RIVERSIDE DR	13	34
MCCURDY HIGH SCHOOL	261 MCCURDY RD	15	39
EZ WAY LAUNDRY	***258 S RIVERSIDE DR***	***24***	***67***
NORGETOWN LAUNDRY & DRYCLNRS	***162 NORTH RAILROAD AVEN***	***25***	***76***
VALLEY COLLISION	401 CALLE CHAVEZ	28	90
PROFESSIONAL TRANSMISSION SERV	406 CALLE CHAVEZ	28	93
ROY HONSTEIN OIL COMPANY	***210 LOS ALAMOS HWY.***	***32***	***101***
HONDA & ACURA AUTOMOTIVE	1109 N RIVERSIDE DRIVE	33	108
SWIFT LUBE, INC.	755 NORTH RIVERSIDE DRI	33	115

RCRA-NonGen: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA-NonGen list, as provided by EDR, and dated 09/11/2007 has revealed that there are 2 RCRA-NonGen sites within the searched area.

Site	Address	Map ID	Page
JEMEZ MOUNTAINS ELEC COOP INC	HWY 84 & HWY 285 4 M N	1	5
CENTRO CAMPESINO DE SALUD	***620 CORONADO ST***	***19***	***54***

EXECUTIVE SUMMARY

US ENG CONTROLS: A listing of sites with engineering controls in place.

A review of the US ENG CONTROLS list, as provided by EDR, and dated 07/16/2007 has revealed that there is 1 US ENG CONTROLS site within the searched area.

Site	Address	Map ID	Page
NORTH RAILROAD AVENUE PLUME	***162 NORTH RAILROAD AVEN***	***25***	***78***

US INST CONTROL: A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

A review of the US INST CONTROL list, as provided by EDR, and dated 07/16/2007 has revealed that there is 1 US INST CONTROL site within the searched area.

Site	Address	Map ID	Page
NORTH RAILROAD AVENUE PLUME	***162 NORTH RAILROAD AVEN***	***25***	***78***

ROD: Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid the cleanup.

A review of the ROD list, as provided by EDR, and dated 01/14/2008 has revealed that there is 1 ROD site within the searched area.

Site	Address	Map ID	Page
NORTH RAILROAD AVENUE PLUME	***162 NORTH RAILROAD AVEN***	***25***	***78***

MINES: Mines Master Index File. The source of this database is the Dept. of Labor, Mine Safety and Health Administration.

A review of the MINES list, as provided by EDR, and dated 11/20/2007 has revealed that there are 2 MINES sites within the searched area.

Site	Address	Map ID	Page
YATES CORPORATION		39	121
PAUL PARKER CONSTRUCTION		42	123

FTTS: FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act) over the previous five years. To maintain currency, EDR contacts the Agency on a quarterly basis.

A review of the FTTS list, as provided by EDR, and dated 01/15/2008 has revealed that there are 2 FTTS sites within the searched area.

Site	Address	Map ID	Page
MCCURDY SCHOOL	***261 MCCURDY ROAD P O BO***	***15***	***41***

EXECUTIVE SUMMARY

Site	Address	Map ID	Page
ESPANOLA PUBLIC SCHOOLS	***714 CALLE DON DIEGO***	***26***	***89***

HIST FTTS: A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

A review of the HIST FTTS list, as provided by EDR, and dated 10/19/2006 has revealed that there are 2 HIST FTTS sites within the searched area.

Site	Address	Map ID	Page
MCCURDY SCHOOL	***261 MCCURDY ROAD P O BO***	***15***	***41***
ESPANOLA PUBLIC SCHOOLS	***714 CALLE DON DIEGO***	***26***	***89***

ICIS: The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

A review of the ICIS list, as provided by EDR, and dated 07/27/2007 has revealed that there are 5 ICIS sites within the searched area.

Site	Address	Map ID	Page
ESPANOLA TRANSIT MIX (NMR05A31	1301 N. RIVERSIDE	16	45
ESPANOLA MERCANTILE CO.	1301 N. RIVERSIDE	16	45
ESPANOLA, CITY OF	405 N. PASEO DE ONAPE	23	63
GASAMAT #555	286 S RIVERSIDE DR	24	66
MUSTANG #183	902 RIVERSIDE DR	33	110

FINDS: The Facility Index System contains both facility information and "pointers" to other sources of information that contain more detail. These include: RCRIS; Permit Compliance System (PCS); Aerometric Information Retrieval System (AIRS); FATES (FIFRA [Federal Insecticide Fungicide Rodenticide Act] and TSCA Enforcement System, FTTS [FIFRA/TSCA Tracking System]; CERCLIS; DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes); Federal Underground Injection Control (FURS); Federal Reporting Data System (FRDS); Surface Impoundments (SIA); TSCA Chemicals in Commerce Information System (CICS); PADS; RCRA-J (medical waste transporters/disposers); TRIS; and TSCA. The source of this database is the U.S. EPA/NTIS.

A review of the FINDS list, as provided by EDR, and dated 01/04/2008 has revealed that there are 69 FINDS sites within the searched area.

Site	Address	Map ID	Page
P AND O SERVICE STATION	1313 ONATE ST	4	7
STOP N GO	2205 RIVERSIDE DR	8	9
HINDIS SHELL	2208 N RIVERSIDE DR	8	12

EXECUTIVE SUMMARY

Site	Address	Map ID	Page
SNOWBIRD EXPRESS MART	2306 N. RIVERSIDE DRIVE	8	13
BAKERS CONOCO	1811 N RIVERSIDE DR	9	17
ASBESTOS RENODEMO - FRANCISCO	1900 NORTH RIVERSIDE DR	9	18
GIL S RENTALS	1900 N RIVERSIDE DRIVE	9	18
DOUBLE S BODY SHOP	1901 N RIVERSIDE DR	9	23
OH KAY RV PARK	2016 RIVERSIDE DR.	9	23
DOMINGUEZ RADIATOR	2024 N RIVERSIDE DR	9	26
OLD SANTA FE CNTY LANDFILL-SAN	***APPROX 1 MI PAST INT. O***	***10***	***26***
WAL-MART STORE NO 2656	1610 N RIVERSIDE DR	13	34
GIANT #862	1616 N RIVERSIDE DR	13	36
JOHNS SERVICE INC	1626 N RIVERSIDE DR	13	38
SALAZAR ELEMENTARY	1000 ZUNI LANE	14	38
FAIRVIEW ELEMENTARY SCHOOL	1000 ZUNI LANE	14	38
MCCURDY HIGH SCHOOL	261 MCCURDY RD	15	39
MCCURDY SCHOOL	***261 MCCURDY ROAD P O BO***	***15***	***41***
QUIK STOP 4	1213 N RIVERSIDE DR	16	44
ESPANOLA TRANSIT MIX (NMR05A31	1301 N. RIVERSIDE	16	44
ESPANOLA MERCANTILE CO.	1301 N. RIVERSIDE	16	45
ESPANOLA TRANSIT MIX 1	1301 N RIVERSIDE DR	16	46
JOHN P. MONTOYA DEMOLISHED BUI	1301 RIVERSIDE DRIVE	16	46
SANTA CLARA WETLANDS	***106 04' 30'N 36 00' 00'***	***18***	***47***
ESPANOLA HOSPITAL	***1010 SPRUCE STREET***	***19***	***48***
VALLEY VIEW UNITED METHODIST C	827 SPRUCE	19	50
YORDY BUILDING DR. MURRAY RYAN	835 SPRUCE STREET	19	50
RIO VALLEY MOTORS LLC	***531 ONATE ST***	***19***	***50***
CENTRO CAMPESINO DE SALUD	***620 CORONADO ST***	***19***	***54***
RIO VALLEY MOTORS CO	505 S PASEO DE ONATE	19	55
PAT SALAZAR PRESTO LUBE AND CA	514 N. PASEO DE O?ATE	19	55
HENRY VALENCIA INC	***618 N ONATE***	***19***	***55***
ESPANOLA ALLSUPS	444 N RIVERSIDE	22	62
BIG ROCK CHEVRON	462 RIVERSIDE DR	22	62
ESPANOLA, CITY OF	405 N. PASEO DE ONAPE	23	65
THE BOND HOUSE CITY OF ESPANOL	405 N. PASEO DEL ONATE	23	65
GASAMAT #555	286 S RIVERSIDE DR	24	65
EZ WAY LAUNDRY	***258 S RIVERSIDE DR***	***24***	***67***
CHEVRON 65825212 ORPHAN SITE	256 S RIVERSIDE	24	69
ESPANOLA BULK PLANT	240 S RIVERSIDE	24	71
MINOS AUTOMOTIVE	138 S RIVERSIDE DR	24	73
HUNTER TRACTOR CO	211 N RIVERSIDE DR	24	74
BRIDGES RADIATOR SHOP	***235 RIVERSIDE DRIVE***	***24***	***74***
NORGE TOWN DRY CLEANERS - ESPA	162 N RAILROAD AVE	25	75
NORGETOWN LAUNDRY & DRYCLNRS	***162 NORTH RAILROAD AVEN***	***25***	***76***
ESPANOLA PUBLIC SCHOOLS	***714 CALLE DON DIEGO***	***26***	***89***
HOMEBOUND/HOSPITAL	714 CALLE DON DIEGO	26	89
VALLEY COLLISION	401 CALLE CHAVEZ	28	92
PROFESSIONAL TRANSMISSION SERV	412 CALLE CHAVEZ	28	93
PROFESSIONAL TRANSMISSION SERV	406 CALLE CHAVEZ	28	95
SAN PEDRO FOOD MART SHELL	509 S RIVERSIDE DR	30	99
LUPE GARCIA BEST HEATING	423 S RIVERSIDE DR	30	99
LOS NINOS CENTER	323 N. CORONADO	31	99
RODRIQUEZ ELEMENTARY	333 N. CORONADO AVE	31	99
ROY HONSTEIN OIL COMPANY	***210 LOS ALAMOS HWY.***	***32***	***101***
WALGREENS STORE NO 5157	***1115 N RIVERSIDE DRIVE***	***33***	***103***
COTTONWOOD RV PARK	1318 S RIVERSIDE DR	33	107
FAIRVIEW TRAILER COURT	1007 NORTH RIVERSIDE DR	33	107
WESTERN HOLIDAY MOTEL	1215 S RIVERSIDE DR, US	33	108

EXECUTIVE SUMMARY

Site	Address	Map ID	Page
HONDA & ACURA AUTOMOTIVE	1109 N RIVERSIDE DRIVE	33	110
CASPER UNLIMITED PARTNERSHIP O	901 RIVERSIDE DRIVE	33	110
MUSTANG #183	902 RIVERSIDE DR	33	113
SAN PEDRO MUSTANG	803 S RIVERSIDE	33	115
SWIFT LUBE, INC.	755 NORTH RIVERSIDE DRI	33	115
ALLSUPS 333	707 S RIVERSIDE DR	33	117
NEW MEXICO (STATE OF) HIGHWAY	115 HAMM PARKWAY	34	118
ESPANOLA (CITY OF) - WASTEWATE	308 LOWER SAN PEDRO RD	36	120
THE FOUR CORNERS WATER RECLAMA	99 STATE RD 399	38	121
EL RANCHO TRAILER PARK	64 EVERGREEN LANE	41	122

STATE AND LOCAL RECORDS

SWF/LF: The Solid Waste Facilities/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data come from the New Mexico Environmental Department's Solid Waste Facilities List.

A review of the SWF/LF list, as provided by EDR, and dated 03/05/2007 has revealed that there is 1 SWF/LF site within the searched area.

Site	Address	Map ID	Page
LA LOMA TRANSFER STATION		23	64

LUST: The Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. The data come from the New Mexico Environmental Department's List of Past & Current Leak Sites by Location.

A review of the LUST list, as provided by EDR, and dated 08/01/2006 has revealed that there are 20 LUST sites within the searched area.

Site	Address	Map ID	Page
A S 7 TO 11 MINI MART	***CORNER EL LLANO RD AND***	***5***	***8***
HACIENDA DE SALUD	720 HACIENDA ST	6	9
HENRY'S CHEVRON	RIVERSIDE DR	9	15
BAKERS CONOCO	***1811 N RIVERSIDE DR***	***9***	***17***
DOUBLE S BODY SHOP	***1901 N RIVERSIDE DR***	***9***	***23***
LOT NUMBER 3	716 1 N RIVERSIDE, LOT	16	42
POLK OIL	1213 N RIVERSIDE DR	16	44
RIO VALLEY MOTORS LLC	***531 ONATE ST***	***19***	***50***
THRIFTWAY 183	9O2 N RIVERSIDE DR	20	58
BIG ROCK CHEVRON	***437 RIVERSIDE DR***	***22***	***59***
BREWER SHELL	444 N RIVERSIDE	22	61
GREYHOUND/MINO'S	138 S RIVERSIDE DR	24	73
LOWER SAN PEDRO	S RIVERSIDE DR	30	96
SAN PEDRO FOOD	509 S RIVERSIDE DR	30	98
GIANT DBA GASAMAT 7555	803 S RIVERSIDE	33	113
ALLSUPS 333	***707 S RIVERSIDE DR***	***33***	***117***
GONZALES CHRYSLER	504 RIVERSIDE DR NE	33	118
GIANT STOP N GO #58	301 LOS ALAMOS HWY	35	119

EXECUTIVE SUMMARY

Site	Address	Map ID	Page
OLD STATE POLICE FACILITY DIST	***NM HWY 68 1 MILE S***	***37***	***120***
POOR BOY SAWMILL	***RTE 1***	***40***	***122***

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the New Mexico Environmental Department's Listing of Underground Storage Tanks.

A review of the UST list, as provided by EDR, and dated 08/01/2006 has revealed that there are 46 UST sites within the searched area.

Site	Address	Map ID	Page
EL CENTRO EXXON	HWY 84 285	1	3
VALLEY GULF AND QUICK STOP	HWY 84 285	1	4
NMDOT ALCALDE PATROL YARD 45 5	NM 68 MP 7 3	2	6
JEMEZ MOUNTAINS ELECTRIC COOPE	HWY 285 N	3	7
A S 7 TO 11 MINI MART	***CORNER EL LLANO RD AND***	***5***	***8***
GORDON CONSTRUCTION CO	710 AKIN LANE CORNER MO	7	9
STOP N GO	2205 RIVERSIDE DR	8	10
HINDIS SHELL	2208 N RIVERSIDE DR	8	11
TEXACO AMIGO MART 862	1616 N RIVERSIDE DR	8	15
HENRYS CHEVRON STATION	RIVERSIDE DR	9	16
BAKERS CONOCO	***1811 N RIVERSIDE DR***	***9***	***17***
MY TEE LUBE	RTE 2	9	18
ESPANOLA TRANSIT MIX	***PO BOX 38***	***9***	***21***
DOUBLE S BODY SHOP	***1901 N RIVERSIDE DR***	***9***	***23***
TRIPLE S GROCERY	514 ONATE	11	27
QUIK STOP 7	1225 PASEO DE ONATE	11	28
BIG RHOC EXPRESS	1308 N PASEO DE ONATE	11	31
DEPARTMENT OF PUBLIC SAFETY 8	US 84 285 CHAMA HWY	11	32
P AND O SERVICE STATION	1313 ONATE ST	11	32
RIO ARRIBA COUNTY MAINTENANCE	PO BOX 1256	12	33
MESA AUTO SALES	504 RIVERSIDE DR NE	13	35
JOHNS SERVICE INC	1626 N RIVER SIDE DR	13	36
MCCURDY HIGH SCHOOL	261 MCCURDY RD	15	40
OLD CHURCHES FRIED CHICKEN	716 1 N RIVERSIDE	16	42
QUIK STOP 4	1213 N RIVERSIDE DR	16	42
MAESTAS OIL CO	816 W ONATE ST	17	46
ESPANOLA HOSPITAL	1010 SPRUCE ST	19	48
RIO VALLEY MOTORS LLC	***531 ONATE ST***	***19***	***50***
CITY COMPOUND	N RAILROAD AVE	21	58
BIG ROCK CHEVRON	***437 RIVERSIDE DR***	***22***	***59***
ESPANOLA ALLSUPS	444 N RIVERSIDE	22	61
CHEVRON 65825212 ORPHAN SITE	256 S RIVERSIDE	24	69
ESPANOLA BULK PLANT	240 S RIVERSIDE	24	69
MINOS AUTOMOTIVE	138 S RIVERSIDE DR	24	72
HUNTER TRACTOR CO	211 N RIVERSIDE DR	24	73
FORMER CIRCLE K 716	706 BOND NW	26	88
NATIONAL GUARD ARMORY M	1010 ARMADA ST	27	90
PROFESSIONAL TRANSMISSION SERV	412 CALLE CHAVEZ	28	93
ESPANOLA CENTRAL OFFICE A	100 ONATE	28	95
EL PASIANO	STATE RD 76	29	96
SAN PEDRO FOOD MART SHELL	509 S RIVERSIDE DR	30	96
SAN PEDRO MUSTANG	803 S RIVERSIDE	33	114

EXECUTIVE SUMMARY

Site	Address	Map ID	Page
ALLSUPS 333	***707 S RIVERSIDE DR***	***33***	***117***
GIANT STOP N GO 58 AND BULK PL	***301 LOS ALAMOS HWY***	***35***	***118***
OLD STATE POLICE FACILITY DIST	***NM HWY 68 1 MILE S***	***37***	***120***
POOR BOY SAWMILL	***RTE 1***	***40***	***122***

LAST: N/A.

A review of the LAST list, as provided by EDR, and dated 05/01/2006 has revealed that there is 1 LAST site within the searched area.

Site	Address	Map ID	Page
GIANT STOP N GO 58 AND BULK PL	***301 LOS ALAMOS HWY***	***35***	***118***

AST: The Aboveground Storage Tank database contains registered ASTs. The data come from the New Mexico Environmental Department's Listing of Aboveground Storage Tanks.

A review of the AST list, as provided by EDR, and dated 08/01/2006 has revealed that there are 2 AST sites within the searched area.

Site	Address	Map ID	Page
ESPANOLA TRANSIT MIX	***PO BOX 38***	***9***	***21***
ROY HONSTEIN OIL CO BULK PLANT	210 LOS ALAMOS HWY	32	100

SPILLS: Hazardous materials spills data.

A review of the SPILLS list, as provided by EDR, and dated 01/12/2006 has revealed that there is 1 SPILLS site within the searched area.

Site	Address	Map ID	Page
Not reported	538 N. RIVERSIDE DRIVE,	22	62

DRYCLEANERS: A listing of drycleaner facility locations. The listing may contain facilities that are no longer there, or under different management.

A review of the DRYCLEANERS list, as provided by EDR, and dated 01/24/2007 has revealed that there is 1 DRYCLEANERS site within the searched area.

Site	Address	Map ID	Page
NORGETOWN LAUNDRY & CLEANERS	162 N. RAILROAD AVE.	25	75

EXECUTIVE SUMMARY

NPDES: General information regarding NPDES (National Pollutant Discharge Elimination System) permits.

A review of the NPDES list, as provided by EDR, and dated 12/13/2006 has revealed that there are 3 NPDES sites within the searched area.

Site	Address	Map ID	Page
RHOC EXPRESS RIVERSIDE	902 RIVERSIDE DRIVE	33	111
ESPANOLA (CITY OF) - WASTEWATE	308 LOWER SAN PEDRO RD	36	120
EL RANCHO TRAILER PARK	64 EVERGREEN LANE	41	122

ASBESTOS: Asbestos is a common fibrous rock found worldwide which has been used in various products for over 4500 years. It has been used in over 3000 different products such as textiles, paper, ropes, wicks, stoves, filters, floor tiles, roofing shingles, clutch facings, water pipe, cements, fillers, felt, fireproof clothing, gaskets, battery boxes, clapboard, wallboard, fire doors, fire curtains, insulation, brake linings, etc.

A review of the ASBESTOS list, as provided by EDR, and dated 04/01/2007 has revealed that there is 1 ASBESTOS site within the searched area.

Site	Address	Map ID	Page
CITY OF ESPA OLA, PUBLIC WORKS	405 N. PASEO DE ONATE	23	65

TRIBAL RECORDS

INDIAN RESERV: This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

A review of the INDIAN RESERV list, as provided by EDR, and dated 12/31/2005 has revealed that there are 4 INDIAN RESERV sites within the searched area.

Site	Address	Map ID	Page
SAN ILDEFONSO INDIAN RESERVATI		0	3
POJOAQUE INDIAN RESERVATION		0	3
SANTA CLARA INDIAN RESERVATION		0	3
SAN JUAN INDIAN RESERVATION		0	3

INDIAN LUST: A listing of leaking underground storage tank locations on Indian Land.

A review of the INDIAN LUST list, as provided by EDR, and dated 12/01/2006 has revealed that there are 4 INDIAN LUST sites within the searched area.

Site	Address	Map ID	Page
A'S 7-11 MINI MART	***2315 N. RIVERSIDE***	***8***	***13***
#41ESPANOLA MUSTANG	***286 S. RIVERSIDE DR.***	***24***	***66***
SAN PEDRO FOODMART #92	***240 S. RIVERSIDE DR.***	***24***	***70***
RHOC EXPRESS, RIVERSIDE	***902 N. RIVERSIDE DR.***	***33***	***112***

EXECUTIVE SUMMARY

INDIAN UST: A listing of underground storage tank locations on Indian Land.

A review of the INDIAN UST list, as provided by EDR, and dated 12/01/2006 has revealed that there are 12 INDIAN UST sites within the searched area.

Site	Address	Map ID	Page
#65 ESPANOLA SHAMROCK	2205 S. RIVERSIDE DRIVE	8	9
HINDI'S SHELL	2208 N. RIVERSIDE DR.	8	11
SNOWBIRD EXPRESS MART	2306 N. RIVERSIDE DRIVE	8	12
A'S 7-11 MINI MART	***2315 N. RIVERSIDE***	***8***	***13***
GIANT #862	1616 RIVERSIDE DRIVE NO	8	14
OHKAY RV PARK PHILLIPS 66	2068 N. RIVERSIDE DR.	9	26
QUICK STOP #7	1225 PASEO DE ONATE	11	30
JOHN'S SERVICE	1626 N. RIVERSIDE DRIVE	13	37
#41ESPANOLA MUSTANG	***286 S. RIVERSIDE DR.***	***24***	***66***
SAN PEDRO FOODMART #92	***240 S. RIVERSIDE DR.***	***24***	***70***
ESPANOLA BULK PLANT	240 S. RIVERSIDE DR.	24	72
RHOC EXPRESS, RIVERSIDE	***902 N. RIVERSIDE DR.***	***33***	***112***

EXECUTIVE SUMMARY

Please refer to the end of the findings report for unmapped orphan sites due to poor or inadequate address information.

MAP FINDINGS SUMMARY

Database	Total Plotted
FEDERAL RECORDS	
NPL	1
Proposed NPL	0
Delisted NPL	0
NPL LIENS	0
CERCLIS	4
CERC-NFRAP	0
LIENS 2	0
CORRACTS	0
RCRA-TSDF	0
RCRA-LQG	0
RCRA-SQG	4
RCRA-CESQG	11
RCRA-NonGen	2
US ENG CONTROLS	1
US INST CONTROL	1
ERNS	0
HMIRS	0
DOT OPS	0
US CDL	0
US BROWNFIELDS	0
DOD	0
FUDS	0
LUCIS	0
CONSENT	0
ROD	1
UMTRA	0
ODI	0
DEBRIS REGION 9	0
MINES	2
TRIS	0
TSCA	0
FTTS	2
HIST FTTS	2
SSTS	0
ICIS	5
PADS	0
MLTS	0
RADINFO	0
FINDS	69
RAATS	0
STATE AND LOCAL RECORDS	
SHWS	N/A
SWF/LF	1
SWRCY	0
LUST	20
UST	46

MAP FINDINGS SUMMARY

Database	Total Plotted
LAST	1
AST	2
SPILLS	1
INST CONTROL	0
VCP	0
DRYCLEANERS	1
NPDES	3
ASBESTOS	1
TRIBAL RECORDS	
INDIAN RESERV	4
INDIAN ODI	0
INDIAN LUST	4
INDIAN UST	12
EDR PROPRIETARY RECORDS	
Manufactured Gas Plants	0

NOTES:

Sites may be listed in more than one database

N/A = This State does not maintain a SHWS list. See the Federal CERCLIS list.

IND RES **SAN ILDEFONSO INDIAN RESERVATION** **INDIAN RESERV** **CIND100356**
Region **N/A**

SAN ILDEFONSO INDIAN RESE (County), NM

INDIAN RESERV:
Feature: Indian Reservation
Name: San Ildefonso Indian Reservation
Agency: BIA
State: NM

IND RES **POJOAQUE INDIAN RESERVATION** **INDIAN RESERV** **CIND100355**
Region **N/A**

POJOAQUE INDIAN RESERVATI (County), NM

INDIAN RESERV:
Feature: Indian Reservation
Name: Pojoaque Indian Reservation
Agency: BIA
State: NM

IND RES **SANTA CLARA INDIAN RESERVATION** **INDIAN RESERV** **CIND100354**
Region **N/A**

SANTA CLARA INDIAN RESERV (County), NM

INDIAN RESERV:
Feature: Indian Reservation
Name: Santa Clara Indian Reservation
Agency: BIA
State: NM

IND RES **SAN JUAN INDIAN RESERVATION** **INDIAN RESERV** **CIND100353**
Region **N/A**

SAN JUAN INDIAN RESERVATI (County), NM

INDIAN RESERV:
Feature: Indian Reservation
Name: San Juan Indian Reservation
Agency: BIA
State: NM

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1 **EL CENTRO EXXON** **UST** **U003190946**
HWY 84 285 **N/A**
ESPANOLA, NM 87532

UST:
Owner ID: 15989
Owner Name: HORN DISTRIBUTING CO INC
Owner Address: PO BOX 4999
Owner Address 2: Not reported
Owner City,St,Zip: SANTA FE, NM 87502
Owner Telephone: 505-471-0512
Facility ID: 27868
Secondary Address: Not reported
Tank ID: 24125
Tank Status: REMOVED

EL CENTRO EXXON (Continued) **U003190946**

Tank Type: Underground
Tank Capacity: 3000
Tank Substance: UNLEADED GASOLINE

Owner ID: 15989
Owner Name: HORN DISTRIBUTING CO INC
Owner Address: PO BOX 4999
Owner Address 2: Not reported
Owner City,St,Zip: SANTA FE, NM 87502
Owner Telephone: 505-471-0512
Facility ID: 27868
Secondary Address: Not reported
Tank ID: 24126
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 5000
Tank Substance: UNLEADED GASOLINE

Owner ID: 15989
Owner Name: HORN DISTRIBUTING CO INC
Owner Address: PO BOX 4999
Owner Address 2: Not reported
Owner City,St,Zip: SANTA FE, NM 87502
Owner Telephone: 505-471-0512
Facility ID: 27868
Secondary Address: Not reported
Tank ID: 24127
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: Not reported
Tank Substance: USED OIL

---

1 **VALLEY GULF AND QUICK STOP** **UST** **U003191492**
HWY 84 285 **N/A**
HERNANDEZ, NM 87537

UST:
Owner ID: 16719
Owner Name: MARTINEZ ALBERT
Owner Address: PO BOX 65
Owner Address 2: Not reported
Owner City,St,Zip: HERNANDEZ, NM 87537
Owner Telephone: 505-753-2616
Facility ID: 31447
Secondary Address: Not reported
Tank ID: 32305
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 2000
Tank Substance: GASOLINE UNKNOWN TYPE

Owner ID: 16719
Owner Name: MARTINEZ ALBERT
Owner Address: PO BOX 65
Owner Address 2: Not reported
Owner City,St,Zip: HERNANDEZ, NM 87537
Owner Telephone: 505-753-2616
Facility ID: 31447

VALLEY GULF AND QUICK STOP (Continued) **U003191492**

Secondary Address: Not reported
Tank ID: 32306
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 3000
Tank Substance: GASOLINE UNKNOWN TYPE

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1 JEMEZ MOUNTAINS ELEC COOP INC **RCRA-NonGen** **1000638181**
HWY 84 & HWY 285 4 M N CHAMA **NMD986675759**
ESPANOLA, NM 87532

RCRA-NonGen:
Date form received by agency: 06/12/2002
Facility name: JEMEZ MOUNTAINS ELEC COOP INC
Facility address: HWY 84 & HWY 285 4 M N CHAMA
ESPANOLA, NM 87532
EPA ID: NMD986675759
Mailing address: PO BOX 128
ESPANOLA, NM 87532
Contact: ALBERT BACA
Contact address: PO BOX 128
ESPANOLA, NM 87532
Contact country: US
Contact telephone: (505) 753-2105
Contact email: Not reported
EPA Region: 06
Land type: Facility is not located on Indian land. Additional information is not known.
Classification: Non-Generator
Description: Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:
Owner/operator name: MEMBERS OWN COOPERATIVE
Owner/operator address: PO BOX 128
ESPANOLA, NM 87532
Owner/operator country: Not reported
Owner/operator telephone: (505) 753-2105
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 01/01/0001
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: Unknown
Mixed waste (haz. and radioactive): Unknown
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: Unknown
Furnace exemption: Unknown
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No

JEMEZ MOUNTAINS ELEC COOP INC (Continued) **1000638181**

Off-site waste receiver: Commercial status unknown

Historical Generators:
Date form received by agency: 10/23/2000
Facility name: JEMEZ MOUNTAINS ELEC COOP INC
Classification: Unverified

Date form received by agency: 09/19/1991
Facility name: JEMEZ MOUNTAINS ELEC COOP INC
Classification: Large Quantity Generator

Hazardous Waste Summary:
Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

Waste code: D039
Waste name: TETRACHLOROETHYLENE

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 10/23/2000
Evaluation: COMPLIANCE ASSISTANCE VISIT
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

---

2 **NMDOT ALCALDE PATROL YARD 45 51** **UST** **U003190933**
NM 68 MP 7 3 **N/A**
ALCALDE, NM 87511

UST:
Owner ID: 15155
Owner Name: NEW MEXICO (STATE OF) NMSHD DISTRICT V
Owner Address: PO BOX 4127
Owner Address 2: ATTN BRIAN AINSWORTH
Owner City,St,Zip: SANTA FE, NM 87502
Owner Telephone: 505-827-9500
Facility ID: 26237
Secondary Address: Not reported
Tank ID: 20157
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 1000
Tank Substance: DIESEL

Owner ID: 15155
Owner Name: NEW MEXICO (STATE OF) NMSHD DISTRICT V
Owner Address: PO BOX 4127
Owner Address 2: ATTN BRIAN AINSWORTH
Owner City,St,Zip: SANTA FE, NM 87502

NMDOT ALCALDE PATROL YARD 45 51 (Continued) **U003190933**

Owner Telephone: 505-827-9500
Facility ID: 26237
Secondary Address: Not reported
Tank ID: 20158
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 1000
Tank Substance: GASOLINE UNKNOWN TYPE

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3 **JEMEZ MOUNTAINS ELECTRIC COOPERATIVE INC (A)** **UST** **U003190955**
HWY 285 N **N/A**
ESPANOLA, NM 87532

UST:
Owner ID: 14507
Owner Name: JEMEZ MOUNTAIN ELECTRIC COOPERATIVE INC
Owner Address: PO BOX 128
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-2105
Facility ID: 28732
Secondary Address: HERNANDEZ YARD
Tank ID: 26231
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 4000
Tank Substance: UNLEADED GASOLINE

Owner ID: 14507
Owner Name: JEMEZ MOUNTAIN ELECTRIC COOPERATIVE INC
Owner Address: PO BOX 128
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-2105
Facility ID: 28732
Secondary Address: HERNANDEZ YARD
Tank ID: 26232
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 1000
Tank Substance: UNLEADED GASOLINE

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4 **P AND O SERVICE STATION** **FINDS** **1009430214**
1313 ONATE ST **110022746359**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

5 A S 7 TO 11 MINI MART — **LUST** — **U001387424**
CORNER EL LLANO RD AND HWY 68 — **UST** — **N/A**
FAIRVIEW, NM 87533

LUST:

Priority Rank:	50
Mitigating Factor Score:	2
Total Score To Assign Relative Rank:	3103
Release ID:	4043
Facility ID:	26333
Date Release Reported:	10/02/2002
Status:	**Cleanup, Responsible Party**
Status Date:	12/27/2004
Project Manager:	Danny Valenzuela

UST:

Owner ID:	13954
Owner Name:	Not reported
Owner Address:	Not reported
Owner Address 2:	Not reported
Owner City,St,Zip:	Not reported
Owner Telephone:	Not reported
Facility ID:	26333
Secondary Address:	Not reported
Tank ID:	20437
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	8000
Tank Substance:	UNLEADED PLUS

Owner ID:	13954
Owner Name:	Not reported
Owner Address:	Not reported
Owner Address 2:	Not reported
Owner City,St,Zip:	Not reported
Owner Telephone:	Not reported
Facility ID:	26333
Secondary Address:	Not reported
Tank ID:	20438
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	10000
Tank Substance:	UNLEADED GASOLINE

Owner ID:	13954
Owner Name:	Not reported
Owner Address:	Not reported
Owner Address 2:	Not reported
Owner City,St,Zip:	Not reported
Owner Telephone:	Not reported
Facility ID:	26333
Secondary Address:	Not reported
Tank ID:	20439
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	2000
Tank Substance:	USED OIL

6 **HACIENDA DE SALUD** **LUST** **U003711613**
720 HACIENDA ST **N/A**
ESPANOLA, NM 87532

LUST:

Priority Rank:	Not reported
Mitigating Factor Score:	Not reported
Total Score To Assign Relative Rank:	Not reported
Release ID:	3413
Facility ID:	6039
Date Release Reported:	07/28/1998
Status:	**Referred to Ground Water Quality Bureau**
Status Date:	11/06/2002
Project Manager:	UNKNOWN

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7 **GORDON CONSTRUCTION CO** **UST** **U003543525**
710 AKIN LANE CORNER MOUNTAI **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	14477
Owner Name:	GORDON CONSTRUCTION CO
Owner Address:	710 AKIN LANE CORNER MOUNTA
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-2178
Facility ID:	28367
Secondary Address:	Not reported
Tank ID:	25337
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	500
Tank Substance:	UNLEADED GASOLINE

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8 **STOP N GO** **FINDS** **1009424466**
2205 RIVERSIDE DR **110022701968**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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8 **#65 ESPANOLA SHAMROCK** **INDIAN UST** **1009401181**
2205 S. RIVERSIDE DRIVE **N/A**
ESPANOLA, NM 87532

Indian UST:

Region:	6
Facility ID:	P027NM
Tribe:	Santa Clara Pueblo
Tank ID:	1
Tank Status:	Currently In Use
Substance:	Gasoline
Installation date:	1985-04-01 00:00:00

#65 ESPANOLA SHAMROCK (Continued) **1009401181**

Owner Name: Polk Oil Company

Region: 6
Facility ID: P027NM
Tribe: Santa Clara Pueblo
Tank ID: 2
Tank Status: Currently In Use
Substance: Gasoline
Installation date: 1985-04-01 00:00:00
Owner Name: Polk Oil Company

Region: 6
Facility ID: P027NM
Tribe: Santa Clara Pueblo
Tank ID: 3
Tank Status: Currently In Use
Substance: Gasoline
Installation date: 1985-04-01 00:00:00
Owner Name: Polk Oil Company

---

8 **STOP N GO** **UST** **U001387986**
2205 RIVERSIDE DR **N/A**
ESPANOLA, NM 87532

UST:
Owner ID: 14169
Owner Name: POLK OIL CO INC
Owner Address: PO BOX 1559
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-2365
Facility ID: 30418
Secondary Address: Not reported
Tank ID: 30081
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 12000
Tank Substance: UNLEADED PLUS

Owner ID: 14169
Owner Name: POLK OIL CO INC
Owner Address: PO BOX 1559
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-2365
Facility ID: 30418
Secondary Address: Not reported
Tank ID: 30082
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 12000
Tank Substance: UNLEADED GASOLINE

Owner ID: 14169
Owner Name: POLK OIL CO INC
Owner Address: PO BOX 1559
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532

STOP N GO (Continued) **U001387986**

Owner Telephone: 505-753-2365
Facility ID: 30418
Secondary Address: Not reported
Tank ID: 30083
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 8000
Tank Substance: SUPER UNLEADED

---

8 **HINDIS SHELL** **UST** **U003850263**
2208 N RIVERSIDE DR **N/A**
ESPANOLA, NM 87532

UST:
Owner ID: 13954
Owner Name: Not reported
Owner Address: Not reported
Owner Address 2: Not reported
Owner City,St,Zip: Not reported
Owner Telephone: Not reported
Facility ID: 51206
Secondary Address: Not reported
Tank ID: 34147
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 20000
Tank Substance: UNLEADED GASOLINE

Owner ID: 13954
Owner Name: Not reported
Owner Address: Not reported
Owner Address 2: Not reported
Owner City,St,Zip: Not reported
Owner Telephone: Not reported
Facility ID: 51206
Secondary Address: Not reported
Tank ID: 34148
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 20000
Tank Substance: DIESEL, UNLEADED GASOLINE

---

8 **HINDI'S SHELL** **INDIAN UST** **1009401179**
2208 N. RIVERSIDE DR. **N/A**
ESPANOLA, NM 87532

INDIAN UST:
Region: 6
Facility ID: P223NM
Tribe: San Juan Pueblo
Tank ID: 1
Tank Status: Currently in Use
Substance: Gasoline
Installation date: 2002-05-03 00:00:00
Owner Name: Mike Hindi

HINDI'S SHELL (Continued) **1009401179**

Region: 6
Facility ID: P223NM
Tribe: San Juan Pueblo
Tank ID: 2
Tank Status: Currently in Use
Substance: Gasoline
Installation date: 2002-05-03 00:00:00
Owner Name: Mike Hindi

Region: 6
Facility ID: P223NM
Tribe: San Juan Pueblo
Tank ID: 3
Tank Status: Currently in Use
Substance: Diesel
Installation date: 2002-05-03 00:00:00
Owner Name: Mike Hindi

---

8 **HINDIS SHELL** **FINDS** **1009423033**
2208 N RIVERSIDE DR **110022718415**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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8 **SNOWBIRD EXPRESS MART** **INDIAN UST** **1009388421**
2306 N. RIVERSIDE DRIVE **N/A**
ESPANOLA, NM 87532

INDIAN UST:
Region: 6
Facility ID: 0037NM
Tribe: San Juan Pueblo
Tank ID: 1
Tank Status: Currently In Use
Substance: Gasoline
Installation date: 1997-09-01 00:00:00
Owner Name: TSAY Corp. (San Juan Pueblo)

Region: 6
Facility ID: 0037NM
Tribe: San Juan Pueblo
Tank ID: 2
Tank Status: Currently In Use
Substance: Gasoline
Installation date: 1997-09-01 00:00:00
Owner Name: TSAY Corp. (San Juan Pueblo)

Region: 6
Facility ID: 0037NM
Tribe: San Juan Pueblo
Tank ID: 3

SNOWBIRD EXPRESS MART (Continued) **1009388421**

Tank Status:	Currently In Use
Substance:	Diesel
Installation date:	1997-09-01 00:00:00
Owner Name:	TSAY Corp. (San Juan Pueblo)

---

8 **SNOWBIRD EXPRESS MART** **FINDS** **1010045139**
2306 N. RIVERSIDE DRIVE **110028143364**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

ICIS (Integrated Compliance Information System) is the Integrated Compliance Information System and provides a database that, when complete, will contain integrated Enforcement and Compliance information across most of EPA's programs. The vision for ICIS is to replace EPA's independent databases that contain Enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions. This information is maintained in ICIS by EPA in the Regional offices and its Headquarters. A future release of ICIS will replace the Permit Compliance System (PCS) which supports the NPDES and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities occurring in the Region that support Compliance and Enforcement programs. These include; Incident Tracking, Compliance Assistance, and Compliance Monitoring.

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8 **A'S 7-11 MINI MART** **INDIAN UST** **1009388355**
2315 N. RIVERSIDE **INDIAN LUST** **N/A**
ESPANOLA, NM 87532

INDIAN UST:

Region:	6
Facility ID:	P018NM
Tribe:	San Juan Pueblo
Tank ID:	1
Tank Status:	Permanently Out of Use
Substance:	Gasoline
Installation date:	1982-10-15 00:00:00
Owner Name:	Mike Hindi

Region:	6
Facility ID:	P018NM
Tribe:	San Juan Pueblo
Tank ID:	2
Tank Status:	Permanently Out of Use
Substance:	Gasoline
Installation date:	1982-10-15 00:00:00
Owner Name:	Mike Hindi

Region:	6
Facility ID:	P018NM
Tribe:	San Juan Pueblo
Tank ID:	3
Tank Status:	Permanently Out of Use

A'S 7-11 MINI MART (Continued) **1009388355**

Substance: Used Oil
Installation date: 1988-12-01 00:00:00
Owner Name: Mike Hindi

INDIAN LUST:
Region: 6

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8 **GIANT #862** **INDIAN UST** **1009388519**
1616 RIVERSIDE DRIVE NORTH **N/A**
ESPANOLA, NM 87532

INDIAN UST:
Region: 6
Facility ID: P155NM
Tribe: San Juan Pueblo
Tank ID: 1
Tank Status: Currently In Use
Substance: Gasoline
Installation date: 2000-09-01 00:00:00
Owner Name: Giant Industries, Inc.

Region: 6
Facility ID: P155NM
Tribe: San Juan Pueblo
Tank ID: 2
Tank Status: Currently In Use
Substance: Gasoline
Installation date: 2000-09-01 00:00:00
Owner Name: Giant Industries, Inc.

Region: 6
Facility ID: P155NM
Tribe: San Juan Pueblo
Tank ID: 3
Tank Status: Currently In Use
Substance: Diesel
Installation date: 2000-09-01 00:00:00
Owner Name: Giant Industries, Inc.

Region: 6
Facility ID: P155NM
Tribe: San Juan Pueblo
Tank ID: 4
Tank Status: Currently In Use
Substance: Mixture
Installation date: 2000-09-01 00:00:00
Owner Name: Giant Industries, Inc.

8 **TEXACO AMIGO MART 862** **UST** **U003758012**
1616 N RIVERSIDE DR **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	14300
Owner Name:	AMIGO PETROLEUM
Owner Address:	5620 MODESTO NE
Owner Address 2:	PO BOX 93025
Owner City,St,Zip:	ALBUQUERQUE, NM 87199
Owner Telephone:	505-242-6597
Facility ID:	47693
Secondary Address:	Not reported
Tank ID:	33536
Tank Status:	**CURRENTLY IN USE**
Tank Type:	Underground
Tank Capacity:	15000
Tank Substance:	UNLEADED GASOLINE

Owner ID:	14300
Owner Name:	AMIGO PETROLEUM
Owner Address:	5620 MODESTO NE
Owner Address 2:	PO BOX 93025
Owner City,St,Zip:	ALBUQUERQUE, NM 87199
Owner Telephone:	505-242-6597
Facility ID:	47693
Secondary Address:	Not reported
Tank ID:	33537
Tank Status:	**CURRENTLY IN USE**
Tank Type:	Underground
Tank Capacity:	12000
Tank Substance:	SUPER UNLEADED

Owner ID:	14300
Owner Name:	AMIGO PETROLEUM
Owner Address:	5620 MODESTO NE
Owner Address 2:	PO BOX 93025
Owner City,St,Zip:	ALBUQUERQUE, NM 87199
Owner Telephone:	505-242-6597
Facility ID:	47693
Secondary Address:	Not reported
Tank ID:	33538
Tank Status:	**CURRENTLY IN USE**
Tank Type:	Underground
Tank Capacity:	20000
Tank Substance:	DIESEL

---

9 **HENRY'S CHEVRON** **LUST** **S101647009**
RIVERSIDE DR **N/A**
ESPANOLA, NM 87532

LUST:

Priority Rank:	82
Mitigating Factor Score:	2
Total Score To Assign Relative Rank:	2932
Release ID:	456
Facility ID:	28504
Date Release Reported:	04/19/1991
Status:	**Cleanup, State Lead with CAF**
Status Date:	10/15/1993

HENRY'S CHEVRON (Continued) **S101647009**

Project Manager: Lorena Goerger

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9 **HENRYS CHEVRON STATION** **UST** **U000374136**
RIVERSIDE DR **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	14866
Owner Name:	CORDOVA HENRY
Owner Address:	PO BOX 3908
Owner Address 2:	FARIVIEW STATION
Owner City,St,Zip:	ESPANOLA, NM 87533
Owner Telephone:	505-753-2348
Facility ID:	28504
Secondary Address:	Not reported
Tank ID:	25639
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	5000
Tank Substance:	SUPER UNLEADED

Owner ID:	14866
Owner Name:	CORDOVA HENRY
Owner Address:	PO BOX 3908
Owner Address 2:	FARIVIEW STATION
Owner City,St,Zip:	ESPANOLA, NM 87533
Owner Telephone:	505-753-2348
Facility ID:	28504
Secondary Address:	Not reported
Tank ID:	25640
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	8000
Tank Substance:	UNLEADED PLUS

Owner ID:	14866
Owner Name:	CORDOVA HENRY
Owner Address:	PO BOX 3908
Owner Address 2:	FARIVIEW STATION
Owner City,St,Zip:	ESPANOLA, NM 87533
Owner Telephone:	505-753-2348
Facility ID:	28504
Secondary Address:	Not reported
Tank ID:	25641
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	8000
Tank Substance:	UNLEADED GASOLINE

Owner ID:	14866
Owner Name:	CORDOVA HENRY
Owner Address:	PO BOX 3908
Owner Address 2:	FARIVIEW STATION
Owner City,St,Zip:	ESPANOLA, NM 87533
Owner Telephone:	505-753-2348
Facility ID:	28504
Secondary Address:	Not reported
Tank ID:	25642

HENRYS CHEVRON STATION (Continued) **U000374136**

Tank Status: **REMOVED**
Tank Type: Underground
Tank Capacity: 500
Tank Substance: USED OIL

---

9 **BAKERS CONOCO** **FINDS** **1009420393**
1811 N RIVERSIDE DR **110022688144**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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9 **BAKERS CONOCO** **LUST** **U003190937**
1811 N RIVERSIDE DR **UST** **N/A**
ESPANOLA, NM 87532

LUST:

Priority Rank:	Not reported
Mitigating Factor Score:	Not reported
Total Score To Assign Relative Rank:	Not reported
Release ID:	766
Facility ID:	26836
Date Release Reported:	06/16/1991
Status:	**No Further Action Required**
Status Date:	03/20/1992
Project Manager:	UNKNOWN

UST:

Owner ID:	14383
Owner Name:	BAKERS CONOCO
Owner Address:	1811 NORTH RIVERSIDE DR
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-7898
Facility ID:	26836
Secondary Address:	Not reported
Tank ID:	21654
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	5000
Tank Substance:	UNLEADED GASOLINE

Owner ID:	14383
Owner Name:	BAKERS CONOCO
Owner Address:	1811 NORTH RIVERSIDE DR
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-7898
Facility ID:	26836
Secondary Address:	Not reported
Tank ID:	21655
Tank Status:	**REMOVED**

BAKERS CONOCO (Continued) **U003190937**

Tank Type: Underground
Tank Capacity: 2000
Tank Substance: UNLEADED GASOLINE

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9 **MY TEE LUBE** **UST** **U003190963**
RTE 2 **N/A**
ESPANOLA, NM 87532

UST:
Owner ID: 14725
Owner Name: TURNBOW BEN
Owner Address: 1312 NORTH RIVERSIDE DR
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-6006
Facility ID: 29527
Secondary Address: BOX 108 B
Tank ID: 27927
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 500
Tank Substance: USED OIL

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9 **ASBESTOS RENODEMO - FRANCISCO LODGE** **FINDS** **1009428112**
1900 NORTH RIVERSIDE DRIVE **110022784664**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

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9 **GIL S RENTALS** **FINDS** **1010439119**
1900 N RIVERSIDE DRIVE **110031359839**
ESPANOLA, NM 87533

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

9 GIL'S RENTALS **RCRA-CESQG** **1010324908**
1900 N RIVERSIDE DRIVE **NMR000012427**
ESPANOLA, NM 87533

RCRA-CESQG:

Date form received by agency:	04/11/2007
Facility name:	GIL'S RENTALS
Facility address:	1900 N RIVERSIDE DRIVE ESPANOLA, NM 87533
EPA ID:	NMR000012427
Mailing address:	PO BOX 3738 ESPANOLA, NM 87533
Contact:	VICTOR P ARCHULETA
Contact address:	N RIVERSIDE DRIVE ESPANOLA, NM 87533
Contact country:	US
Contact telephone:	505-753-2833
Contact email:	Not reported
EPA Region:	06
Land type:	Private
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	GILBERT SANCHEZ
Owner/operator address:	N RIVERSIDE DRIVE ESPANOLA, NM 87533
Owner/operator country:	US
Owner/operator telephone:	Not reported
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	01/01/1971
Owner/Op end date:	Not reported

Owner/operator name:	GILBERT SANCHEZ
Owner/operator address:	N RIVERSIDE DRIVE ESPANOLA, NM 87533
Owner/operator country:	US
Owner/operator telephone:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	01/01/1971
Owner/Op end date:	Not reported

Handler Activities Summary:

GIL'S RENTALS (Continued) **1010324908**

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No
Off-site waste receiver:	Commercial status unknown

Hazardous Waste Summary:

Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

Waste code: D002
Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.

Waste code: D008
Waste name: LEAD

Violation Status: No violations found

Evaluation Action Summary:

Evaluation date:	04/10/2007
Evaluation:	COMPLIANCE ASSISTANCE VISIT
Area of violation:	Not reported
Date achieved compliance:	Not reported
Evaluation lead agency:	State

9 ESPANOLA TRANSIT MIX — **UST** — **U001386932**
PO BOX 38 — **AST** — **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	15258
Owner Name:	ESPANOLA TRANSIT MIX
Owner Address:	PO BOX 38
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-2145, 2
Facility ID:	27914
Secondary Address:	Not reported
Tank ID:	24207
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	10000
Tank Substance:	DIESEL

Owner ID:	15258
Owner Name:	ESPANOLA TRANSIT MIX
Owner Address:	PO BOX 38
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-2145, 2
Facility ID:	27914
Secondary Address:	Not reported
Tank ID:	24208
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	10000
Tank Substance:	GASOLINE UNKNOWN TYPE

AST:

Facility ID:	27914
Facility Addr 2:	Not reported
Tank ID:	35883
Capacity:	5000
Tank Status:	CURRENTLY IN USE
Substance:	DIESEL
Tank Type:	Aboveground
Owner ID:	15258
Owner Name:	ESPANOLA TRANSIT MIX
Owner Addr:	PO BOX 38
Owner Addr2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Phone:	505-753-2145, 2

Facility ID:	27914
Facility Addr 2:	Not reported
Tank ID:	35884
Capacity:	5000
Tank Status:	CURRENTLY IN USE
Substance:	DIESEL
Tank Type:	Aboveground
Owner ID:	15258
Owner Name:	ESPANOLA TRANSIT MIX
Owner Addr:	PO BOX 38
Owner Addr2:	Not reported

ESPANOLA TRANSIT MIX (Continued) **U001386932**

Owner City,St,Zip: ESPANOLA, NM 87532
Owner Phone: 505-753-2145, 2

Facility ID: 27914
Facility Addr 2: Not reported
Tank ID: 35885
Capacity: 5000
Tank Status: CURRENTLY IN USE
Substance: DIESEL
Tank Type: Aboveground
Owner ID: 15258
Owner Name: ESPANOLA TRANSIT MIX
Owner Addr: PO BOX 38
Owner Addr2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Phone: 505-753-2145, 2

Facility ID: 27914
Facility Addr 2: Not reported
Tank ID: 35886
Capacity: 5000
Tank Status: CURRENTLY IN USE
Substance: DIESEL
Tank Type: Aboveground
Owner ID: 15258
Owner Name: ESPANOLA TRANSIT MIX
Owner Addr: PO BOX 38
Owner Addr2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Phone: 505-753-2145, 2

Facility ID: 27914
Facility Addr 2: Not reported
Tank ID: 35887
Capacity: 5000
Tank Status: CURRENTLY IN USE
Substance: DIESEL
Tank Type: Aboveground
Owner ID: 15258
Owner Name: ESPANOLA TRANSIT MIX
Owner Addr: PO BOX 38
Owner Addr2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Phone: 505-753-2145, 2

Facility ID: 27914
Facility Addr 2: Not reported
Tank ID: 36674
Capacity: 6000
Tank Status: CURRENTLY IN USE
Substance: UNLEADED GASOLINE
Tank Type: Aboveground
Owner ID: 16269
Owner Name: SUPREME LLC DBA ROY HONSTEIN OIL CO A
Owner Addr: 210 LOS ALAMOS HWY
Owner Addr2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532

ESPANOLA TRANSIT MIX (Continued) **U001386932**

Owner Phone: 505-753-3255

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9 **DOUBLE S BODY SHOP** **FINDS** **1009428464**
1901 N RIVERSIDE DR **110022780392**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

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9 **DOUBLE S BODY SHOP** **LUST** **U003190944**
1901 N RIVERSIDE DR **UST** **N/A**
ESPANOLA, NM 87532

LUST:

Priority Rank:	Not reported
Mitigating Factor Score:	Not reported
Total Score To Assign Relative Rank:	Not reported
Release ID:	2053
Facility ID:	27776
Date Release Reported:	10/13/1993
Status:	**No Further Action Required**
Status Date:	04/19/1994
Project Manager:	UNKNOWN

UST:

Owner ID:	16741
Owner Name:	SALAZAR ERNEST J
Owner Address:	138 VALLEY DRIVE
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-4840
Facility ID:	27776
Secondary Address:	Not reported
Tank ID:	23883
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	500
Tank Substance:	USED OIL

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9 **OH KAY RV PARK** **FINDS** **1008337955**
2016 RIVERSIDE DR. **110022324787**
ESPANOLA, NM 87572

FINDS:
Other Pertinent Environmental Activity Identified at Site

ICIS (Integrated Compliance Information System) is the Integrated Compliance Information System and provides a database that, when complete, will contain integrated Enforcement and Compliance information across most of EPA's programs. The vision for ICIS is to

OH KAY RV PARK (Continued) **1008337955**

replace EPA's independent databases that contain Enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions. This information is maintained in ICIS by EPA in the Regional offices and its Headquarters. A future release of ICIS will replace the Permit Compliance System (PCS) which supports the NPDES and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities occurring in the Region that support Compliance and Enforcement programs. These include; Incident Tracking, Compliance Assistance, and Compliance Monitoring.

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9 **DOMINGUEZ RADIATOR** **RCRA-CESQG** **1010324812**
2024 N RIVERSIDE DR **NMR000011478**
ESPANOLA, NM 87532

RCRA-CESQG:

Date form received by agency:	06/29/2006
Facility name:	DOMINGUEZ RADIATOR
Facility address:	2024 N RIVERSIDE DR ESPANOLA, NM 87532
EPA ID:	NMR000011478
Mailing address:	PO BOX 1123 ALCALDE, NM 87511
Contact:	SINION DOMINGUEZ
Contact address:	PO BOX 1123 ALCALDE, NM 87511
Contact country:	US
Contact telephone:	505-747-1919
Contact email:	Not reported
EPA Region:	06
Land type:	Private
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	SINION DOMINGUEZ
Owner/operator address:	PO BOX 1123 ALCALDE, NM 87511
Owner/operator country:	US
Owner/operator telephone:	Not reported
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	09/01/2005

DOMINGUEZ RADIATOR (Continued) **1010324812**

Owner/Op end date: Not reported

Owner/operator name: MALITON ORTIZ
Owner/operator address: PO BOX 1123
ALCALDE, NM 87511
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 09/01/2005
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No
Off-site waste receiver: Commercial status unknown

Hazardous Waste Summary:
Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

Waste code: D008
Waste name: LEAD

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 06/28/2006
Evaluation: COMPLIANCE ASSISTANCE VISIT
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

9 DOMINGUEZ RADIATOR — **FINDS** — **1010457616**, **110031341625**
2024 N RIVERSIDE DR
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

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9 OHKAY RV PARK PHILLIPS 66 — **INDIAN UST** — **1009388357**, **N/A**
2068 N. RIVERSIDE DR.
ESPANOLA, NM 87532

INDIAN UST:

Region:	6
Facility ID:	0019NM
Tribe:	San Juan Pueblo
Tank ID:	1
Tank Status:	Currently In Use
Substance:	Gasoline
Installation date:	1995-08-01 00:00:00
Owner Name:	TSAY Corp. (San Juan Pueblo)

Region:	6
Facility ID:	0019NM
Tribe:	San Juan Pueblo
Tank ID:	2
Tank Status:	Currently In Use
Substance:	Gasoline
Installation date:	1995-08-01 00:00:00
Owner Name:	TSAY Corp. (San Juan Pueblo)

---

10 OLD SANTA FE CNTY LANDFILL-SANTA CLARA — **CERCLIS FINDS** — **1000984221**, **NM0001035385**
APPROX 1 MI PAST INT. OF 399 & 285
ESPANOLA, NM 87532

CERCLIS:

Site ID:	0604953
Federal Facility:	Not a Federal Facility
NPL Status:	Not on the NPL
Non NPL Status:	NFRAP

CERCLIS Site Contact Name(s):

Contact Name:	Ladonna Walker
Contact Tel:	(214) 665-6666
Contact Title:	Site Assessment Manager (SAM)

Contact Name:	Philip Ofosu
Contact Tel:	(214) 665-3178
Contact Title:	Site Assessment Manager (SAM)

Site Description: THE COUNTY OF SANTA FE OPERATED A LANDFILL ON SANTA CLARA PUEBLO LANDS. IT IS

OLD SANTA FE CNTY LANDFILL-SANTA CLARA (Continued) **1000984221**

NOT KNOWN IF THE PUEBLO HAD ANY AGREEMENT WITH THE COUNTY FOR DUMPING OR WHAT WAS DUMPED ON SITE. THERE IS A POSSIBILITY THAT HAZ. WASTES MAY HAVE BEEN DISPOSE.

CERCLIS Assessment History:

Action:	DISCOVERY
Date Started:	Not reported
Date Completed:	05/01/1993
Priority Level:	Not reported
Action:	PRELIMINARY ASSESSMENT
Date Started:	10/09/1997
Date Completed:	10/09/1997
Priority Level:	Low
Action:	SITE INSPECTION
Date Started:	10/15/1998
Date Completed:	10/16/2001
Priority Level:	NFRAP (No Futher Remedial Action Planned

FINDS:

Other Pertinent Environmental Activity Identified at Site

CERCLIS (Comprehensive Environmental Response, Compensation, and Liability Information System) is the Superfund database that is used to support management in all phases of the Superfund program. The system contains information on all aspects of hazardous waste sites, including an inventory of sites, planned and actual site activities, and financial information.

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11 **TRIPLE S GROCERY** **UST** **U002223169**
514 ONATE **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	16933
Owner Name:	MAESTAS RANDY
Owner Address:	TRIPLE S GROCERY
Owner Address 2:	514 ONATE
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-7838
Facility ID:	31204
Secondary Address:	Not reported
Tank ID:	31796
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	10000
Tank Substance:	UNLEADED GASOLINE
Owner ID:	16933
Owner Name:	MAESTAS RANDY
Owner Address:	TRIPLE S GROCERY
Owner Address 2:	514 ONATE
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-7838
Facility ID:	31204

TRIPLE S GROCERY (Continued) **U002223169**

Secondary Address: Not reported
Tank ID: 31797
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 6000
Tank Substance: UNLEADED GASOLINE

Owner ID: 16933
Owner Name: MAESTAS RANDY
Owner Address: TRIPLE S GROCERY
Owner Address 2: 514 ONATE
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-7838
Facility ID: 31204
Secondary Address: Not reported
Tank ID: 31798
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 10000
Tank Substance: DIESEL, UNLEADED GASOLINE

Owner ID: 16933
Owner Name: MAESTAS RANDY
Owner Address: TRIPLE S GROCERY
Owner Address 2: 514 ONATE
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-7838
Facility ID: 31204
Secondary Address: Not reported
Tank ID: 31799
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 10000
Tank Substance: UNLEADED GASOLINE

---

11 **QUIK STOP 7** **UST** **U003543526**
1225 PASEO DE ONATE **N/A**
ESPANOLA, NM 87532

UST:
Owner ID: 14169
Owner Name: POLK OIL CO INC
Owner Address: PO BOX 1559
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-2365
Facility ID: 30103
Secondary Address: Not reported
Tank ID: 29255
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 10000
Tank Substance: DIESEL

Owner ID: 14169
Owner Name: POLK OIL CO INC
Owner Address: PO BOX 1559
Owner Address 2: Not reported

QUIK STOP 7 (Continued) **U003543526**

Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-2365
Facility ID: 30103
Secondary Address: Not reported
Tank ID: 29256
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 10000
Tank Substance: SUPER UNLEADED

Owner ID: 14169
Owner Name: POLK OIL CO INC
Owner Address: PO BOX 1559
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-2365
Facility ID: 30103
Secondary Address: Not reported
Tank ID: 29257
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 10000
Tank Substance: UNLEADED GASOLINE

Owner ID: 14169
Owner Name: POLK OIL CO INC
Owner Address: PO BOX 1559
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-2365
Facility ID: 30103
Secondary Address: Not reported
Tank ID: 29258
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 3000
Tank Substance: UNLEADED GASOLINE

Owner ID: 14169
Owner Name: POLK OIL CO INC
Owner Address: PO BOX 1559
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-2365
Facility ID: 30103
Secondary Address: Not reported
Tank ID: 29259
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 20000
Tank Substance: DIESEL

Owner ID: 14169
Owner Name: POLK OIL CO INC
Owner Address: PO BOX 1559
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532

QUIK STOP 7 (Continued) **U003543526**

Owner Telephone: 505-753-2365
Facility ID: 30103
Secondary Address: Not reported
Tank ID: 29260
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 20000
Tank Substance: SUPER UNLEADED, UNLEADED GASOLINE

---

11 **QUICK STOP #7** **INDIAN UST** **1009388394**
1225 PASEO DE ONATE **N/A**
ESPANOLA, NM 87532

INDIAN UST:

Region: 6
Facility ID: P030NM
Tribe: Santa Clara Pueblo
Tank ID: 1
Tank Status: Currently In Use
Substance: Gasoline
Installation date: 1985-05-01 00:00:00
Owner Name: Polk Oil Company

Region: 6
Facility ID: P030NM
Tribe: Santa Clara Pueblo
Tank ID: 2
Tank Status: Currently In Use
Substance: Gasoline
Installation date: 1985-05-01 00:00:00
Owner Name: Polk Oil Company

Region: 6
Facility ID: P030NM
Tribe: Santa Clara Pueblo
Tank ID: 3
Tank Status: Currently In Use
Substance: Gasoline
Installation date: 1985-05-01 00:00:00
Owner Name: Polk Oil Company

Region: 6
Facility ID: P030NM
Tribe: Santa Clara Pueblo
Tank ID: 4
Tank Status: Currently In Use
Substance: Diesel
Installation date: 1985-05-01 00:00:00
Owner Name: Polk Oil Company

Region: 6
Facility ID: P030NM
Tribe: Santa Clara Pueblo
Tank ID: 5
Tank Status: Currently In Use
Substance: Diesel
Installation date: 1998-01-01 00:00:00
Owner Name: Polk Oil Company

QUICK STOP #7 (Continued) **1009388394**

Region:	6
Facility ID:	P030NM
Tribe:	Santa Clara Pueblo
Tank ID:	6
Tank Status:	Currently In Use
Substance:	Gasoline
Installation date:	1998-01-01 00:00:00
Owner Name:	Polk Oil Company

Region:	6
Facility ID:	P030NM
Tribe:	Santa Clara Pueblo
Tank ID:	7
Tank Status:	Currently In Use
Substance:	Gasoline
Installation date:	1998-01-01 00:00:00
Owner Name:	Polk Oil Company

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11 **BIG RHOC EXPRESS** **UST** **U003723636**
1308 N PASEO DE ONATE **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	14284
Owner Name:	SUPREME LLC DBA ROY HONSTEIN OIL CO A
Owner Address:	210 LOS ALAMOS HWY
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-3255
Facility ID:	46395
Secondary Address:	Not reported
Tank ID:	33436
Tank Status:	**CURRENTLY IN USE**
Tank Type:	Underground
Tank Capacity:	Not reported
Tank Substance:	DIESEL, UNLEADED PLUS

Owner ID:	14284
Owner Name:	SUPREME LLC DBA ROY HONSTEIN OIL CO A
Owner Address:	210 LOS ALAMOS HWY
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-3255
Facility ID:	46395
Secondary Address:	Not reported
Tank ID:	33437
Tank Status:	**CURRENTLY IN USE**
Tank Type:	Underground
Tank Capacity:	20000
Tank Substance:	UNLEADED GASOLINE

11 **DEPARTMENT OF PUBLIC SAFETY 8** **UST** **U003190943**
US 84 285 CHAMA HWY **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	14231
Owner Name:	DEPARTMENT OF PUBLIC SAFETY
Owner Address:	4491 CERRILLOS RD
Owner Address 2:	Not reported
Owner City,St,Zip:	SANTA FE, NM 87507
Owner Telephone:	505-827-9094
Facility ID:	27692
Secondary Address:	Not reported
Tank ID:	23676
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	2000
Tank Substance:	GASOLINE UNKNOWN TYPE

---

11 **P AND O SERVICE STATION** **UST** **U001891818**
1313 ONATE ST **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	16369
Owner Name:	GURULE PRESILIANO
Owner Address:	PO BOX 1815
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-4269
Facility ID:	29827
Secondary Address:	Not reported
Tank ID:	28599
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	4000
Tank Substance:	GASOLINE UNKNOWN TYPE

Owner ID:	16369
Owner Name:	GURULE PRESILIANO
Owner Address:	PO BOX 1815
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-4269
Facility ID:	29827
Secondary Address:	Not reported
Tank ID:	28600
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	3000
Tank Substance:	GASOLINE UNKNOWN TYPE

Owner ID:	16369
Owner Name:	GURULE PRESILIANO
Owner Address:	PO BOX 1815
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-4269
Facility ID:	29827
Secondary Address:	Not reported

P AND O SERVICE STATION (Continued) **U001891818**

Tank ID: 28601
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 8000
Tank Substance: GASOLINE UNKNOWN TYPE

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12 RIO ARRIBA COUNTY MAINTENANCE **UST** **U002223145**
PO BOX 1256 **N/A**
ESPANOLA, NM 87532

UST:

Owner ID: 17060
Owner Name: RIO ARRIBA COUNTY
Owner Address: PO BOX 1256
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-9992
Facility ID: 30238
Secondary Address: Not reported
Tank ID: 29593
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 560
Tank Substance: UNLEADED GASOLINE

Owner ID: 17060
Owner Name: RIO ARRIBA COUNTY
Owner Address: PO BOX 1256
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-9992
Facility ID: 30238
Secondary Address: Not reported
Tank ID: 29594
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 2000
Tank Substance: UNLEADED GASOLINE

Owner ID: 17060
Owner Name: RIO ARRIBA COUNTY
Owner Address: PO BOX 1256
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-9992
Facility ID: 30238
Secondary Address: Not reported
Tank ID: 29595
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 2000
Tank Substance: DIESEL

13 WAL-MART STORE NO 2656 **FINDS** **1008926781**
1610 N RIVERSIDE DR **110022704377**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

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13 WAL-MART-#06-2656 **RCRA-CESQG** **1004754427**
1610 NORTH RIVERSIDE DR **NMR000004473**
ESPANOLA, NM 87532

RCRA-CESQG:

Date form received by agency:	10/30/2000
Facility name:	WAL-MART-#06-2656
Facility address:	1610 NORTH RIVERSIDE DR ESPANOLA, NM 87532
EPA ID:	NMR000004473
Mailing address:	UNKNOWN UNKNOWN ESPANOLA, NM 87532
Contact:	UNKNOWN UNKNOWN
Contact address:	UNKNOWN UNKNOWN ESPANOLA, NM 87532
Contact country:	US
Contact telephone:	UNKNOWN
Contact email:	Not reported
EPA Region:	06
Land type:	Facility is not located on Indian land. Additional information is not known.
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	UNKNOWN
Owner/operator address:	UNKNOWN ESPANOLA, NM 87532

WAL-MART-#06-2656 (Continued) **1004754427**

Owner/operator country: Not reported
Owner/operator telephone: UNKNOWN
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 01/01/0001
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: Unknown
Mixed waste (haz. and radioactive): Unknown
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: Unknown
Furnace exemption: Unknown
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No
Off-site waste receiver: Commercial status unknown

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 10/23/2000
Evaluation: COMPLIANCE ASSISTANCE VISIT
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

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13 **MESA AUTO SALES** **UST** **U003190961**
504 RIVERSIDE DR NE **N/A**
ESPANOLA, NM 87532

UST:
Owner ID: 13850
Owner Name: MESA AUTO SALES INC
Owner Address: 504 RIVERSIDE DR NE
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-7101
Facility ID: 29380
Secondary Address: Not reported
Tank ID: 27596
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 1000
Tank Substance: GASOLINE UNKNOWN TYPE

13 **GIANT #862**
1616 N RIVERSIDE DR
ESPANOLA, NM 87532

FINDS **1009428590**
110022741149

FINDS:
Other Pertinent Environmental Activity Identified at Site

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13 **JOHNS SERVICE INC**
1626 N RIVER SIDE DR
ESPANOLA, NM 87532

UST **U003332041**
N/A

UST:

Owner ID:	17241
Owner Name:	AULT KENNETH L
Owner Address:	1626 N RIVER SIDE DR
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-5204
Facility ID:	28779
Secondary Address:	Not reported
Tank ID:	26319
Tank Status:	**CURRENTLY IN USE**
Tank Type:	Underground
Tank Capacity:	10000
Tank Substance:	UNLEADED GASOLINE

Owner ID:	17241
Owner Name:	AULT KENNETH L
Owner Address:	1626 N RIVER SIDE DR
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-5204
Facility ID:	28779
Secondary Address:	Not reported
Tank ID:	26320
Tank Status:	**CURRENTLY IN USE**
Tank Type:	Underground
Tank Capacity:	8000
Tank Substance:	UNLEADED PLUS

Owner ID:	17241
Owner Name:	AULT KENNETH L
Owner Address:	1626 N RIVER SIDE DR
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-5204
Facility ID:	28779
Secondary Address:	Not reported
Tank ID:	26321
Tank Status:	**CURRENTLY IN USE**
Tank Type:	Underground
Tank Capacity:	8000
Tank Substance:	SUPER UNLEADED

Owner ID:	17241
Owner Name:	AULT KENNETH L

JOHNS SERVICE INC (Continued) **U003332041**

Owner Address: 1626 N RIVER SIDE DR
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-5204
Facility ID: 28779
Secondary Address: Not reported
Tank ID: 26322
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 8000
Tank Substance: PETROLEUM (UNKNOWN TYPE)

Owner ID: 17241
Owner Name: AULT KENNETH L
Owner Address: 1626 N RIVER SIDE DR
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-5204
Facility ID: 28779
Secondary Address: Not reported
Tank ID: 26323
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 6000
Tank Substance: PETROLEUM (UNKNOWN TYPE)

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13 **JOHN'S SERVICE** **INDIAN UST** **1009388359**
1626 N. RIVERSIDE DRIVE **N/A**
ESPANOLA, NM 87532

INDIAN UST:
Region: 6
Facility ID: P020NM
Tribe: San Juan Pueblo
Tank ID: 1
Tank Status: Currently In Use
Substance: Gasoline
Installation date: 1990-02-01 00:00:00
Owner Name: Kenny Ault

Region: 6
Facility ID: P020NM
Tribe: San Juan Pueblo
Tank ID: 2
Tank Status: Currently In Use
Substance: Gasoline
Installation date: 1990-02-01 00:00:00
Owner Name: Kenny Ault

Region: 6
Facility ID: P020NM
Tribe: San Juan Pueblo
Tank ID: 3
Tank Status: Currently In Use
Substance: Gasoline
Installation date: 1990-02-01 00:00:00
Owner Name: Kenny Ault

JOHN'S SERVICE (Continued) **1009388359**

Region:	6
Facility ID:	P020NM
Tribe:	San Juan Pueblo
Tank ID:	4
Tank Status:	Permanently Out of Use
Substance:	Gasoline
Installation date:	1974-06-15 00:00:00
Owner Name:	Kenny Ault

Region:	6
Facility ID:	P020NM
Tribe:	San Juan Pueblo
Tank ID:	5
Tank Status:	Permanently Out of Use
Substance:	Gasoline
Installation date:	1974-06-15 00:00:00
Owner Name:	Kenny Ault

---

13 **JOHNS SERVICE INC** **FINDS** **1009429076**
1626 N RIVERSIDE DR **110022750076**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

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14 **SALAZAR ELEMENTARY** **FINDS** **1008289225**
1000 ZUNI LANE **110021830447**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

NCES (National Center for Education Statistics) is the primary federal entity for collecting and analyzing data related to education in the United States and other nations and the institute of education sciences.

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14 **FAIRVIEW ELEMENTARY SCHOOL** **FINDS** **1009427333**
1000 ZUNI LANE **110022784227**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

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15 MCCURDY HIGH SCHOOL
261 MCCURDY RD
ESPANOLA, NM 87532
FINDS 1009424986
110022782504

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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15 MCCURDY HIGH SCHOOL
261 MCCURDY RD
ESPANOLA, NM 87532
RCRA-CESQG 1010324888
NMR000012229

RCRA-CESQG:

Date form received by agency:	02/07/2007
Facility name:	MCCURDY HIGH SCHOOL
Facility address:	261 MCCURDY RD ESPANOLA, NM 87532
EPA ID:	NMR000012229
Mailing address:	MCCURDY RD ESPANOLA, NM 87532
Contact:	PATRICIA A ALVARADO
Contact address:	MCCURDY RD ESPANOLA, NM 87532
Contact country:	US
Contact telephone:	505-753-7221
Contact email:	Not reported
EPA Region:	06
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	MCCURDY HIGH SCHOOL
Owner/operator address:	MCCURDY RD ESPANOLA, NM 87532
Owner/operator country:	US
Owner/operator telephone:	505-753-7221

MCCURDY HIGH SCHOOL (Continued) **1010324888**

Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 01/01/1912
Owner/Op end date: Not reported

Owner/operator name: MCCURDY HIGH SCHOOL
Owner/operator address: MCCURDY RD
ESPANOLA, NM 87532
Owner/operator country: US
Owner/operator telephone: 505-753-7221
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 01/01/1912
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No
Off-site waste receiver: Commercial status unknown

Violation Status: No violations found

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15 **MCCURDY HIGH SCHOOL** **UST** **1001746018**
261 MCCURDY RD **N/A**
ESPANOLA, NM 87532

UST:
Owner ID: 17395
Owner Name: MCCURDY SCHOOL
Owner Address: 261 MCCURDY ROAD
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-7221
Facility ID: 29319
Secondary Address: Not reported
Tank ID: 27452
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 1000
Tank Substance: UNLEADED GASOLINE

Owner ID: 17395
Owner Name: MCCURDY SCHOOL
Owner Address: 261 MCCURDY ROAD
Owner Address 2: Not reported

MCCURDY HIGH SCHOOL (Continued) **1001746018**

Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-7221
Facility ID: 29319
Secondary Address: Not reported
Tank ID: 33305
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 1000
Tank Substance: UNLEADED GASOLINE

---

15 MCCURDY SCHOOL **FINDS 1004563752**
261 MCCURDY ROAD P O BOX 127 **FTTS 110011698350**
ESPANOLA, NM 87532 **HIST FTTS**

FINDS:
Other Pertinent Environmental Activity Identified at Site

NCDB (National Compliance Data Base) supports implementation of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Toxic Substances Control Act (TSCA). The system tracks inspections in regions and states with cooperative agreements, enforcement actions, and settlements.

FTTS INSP:
Inspection Number: Not reported
Region: 06
Inspection Date: Not reported
Inspector: CAMPBELL BM
Violation occurred: No
Investigation Type: AHERA, Enforcement, SEE Conducted
Investigation Reason: For Cause, Follow-Up
Legislation Code: TSCA
Facility Function: User

HIST FTTS INSP:
Inspection Number: 19930809VI003 1
Region: 06
Inspection Date: Not reported
Inspector: CAMPBELL BM
Violation occurred: No
Investigation Type: AHERA, Enforcement, SEE Conducted
Investigation Reason: For Cause, Follow-Up
Legislation Code: TSCA
Facility Function: User

16 **LOT NUMBER 3** **LUST** **S103490405**
716 1 N RIVERSIDE, LOT NUMBER 3 **N/A**
ESPANOLA, NM 87532

LUST:

Priority Rank:	Not reported
Mitigating Factor Score:	Not reported
Total Score To Assign Relative Rank:	Not reported
Release ID:	1759
Facility ID:	29734
Date Release Reported:	05/04/1995
Status:	**No Further Action Required**
Status Date:	07/30/1999
Project Manager:	UNKNOWN

---

16 **OLD CHURCHES FRIED CHICKEN** **UST** **U003973663**
716 1 N RIVERSIDE **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	16912
Owner Name:	CIMINO DOMINIC
Owner Address:	716-A N. RIVERSIDE
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	Not reported
Facility ID:	29734
Secondary Address:	LOT NUMBER 3
Tank ID:	36873
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	500
Tank Substance:	Not reported

---

16 **QUIK STOP 4** **UST** **U003667411**
1213 N RIVERSIDE DR **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	14169
Owner Name:	POLK OIL CO INC
Owner Address:	PO BOX 1559
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-2365
Facility ID:	30100
Secondary Address:	Not reported
Tank ID:	29241
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	10000
Tank Substance:	LEADED GASOLINE

Owner ID:	14169
Owner Name:	POLK OIL CO INC
Owner Address:	PO BOX 1559
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532

QUIK STOP 4 (Continued) **U003667411**

Owner Telephone: 505-753-2365
Facility ID: 30100
Secondary Address: Not reported
Tank ID: 29242
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 6000
Tank Substance: UNLEADED GASOLINE

Owner ID: 14169
Owner Name: POLK OIL CO INC
Owner Address: PO BOX 1559
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-2365
Facility ID: 30100
Secondary Address: Not reported
Tank ID: 29243
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 10000
Tank Substance: UNLEADED PLUS

Owner ID: 14169
Owner Name: POLK OIL CO INC
Owner Address: PO BOX 1559
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-2365
Facility ID: 30100
Secondary Address: Not reported
Tank ID: 29244
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 10000
Tank Substance: UNLEADED GASOLINE

Owner ID: 14169
Owner Name: POLK OIL CO INC
Owner Address: PO BOX 1559
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-2365
Facility ID: 30100
Secondary Address: Not reported
Tank ID: 29245
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 10000
Tank Substance: SUPER UNLEADED

16 **POLK OIL** **LUST** **S105426759**
1213 N RIVERSIDE DR **N/A**
ESPANOLA, NM 87532

LUST:

Priority Rank:	Not reported
Mitigating Factor Score:	Not reported
Total Score To Assign Relative Rank:	Not reported
Release ID:	121
Facility ID:	30100
Date Release Reported:	06/14/1989
Status:	**No Further Action Required**
Status Date:	01/04/1991
Project Manager:	Danny Valenzuela

Priority Rank:	Not reported
Mitigating Factor Score:	Not reported
Total Score To Assign Relative Rank:	Not reported
Release ID:	450
Facility ID:	30100
Date Release Reported:	06/14/1989
Status:	**No Further Action Required**
Status Date:	02/21/2006
Project Manager:	Danny Valenzuela

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16 **QUIK STOP 4** **FINDS** **1009428759**
1213 N RIVERSIDE DR **110022763106**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

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16 **ESPANOLA TRANSIT MIX (NMR05A318)** **FINDS** **1008337034**
1301 N. RIVERSIDE **110022321815**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

ICIS (Integrated Compliance Information System) is the Integrated Compliance Information System and provides a database that, when complete, will contain integrated Enforcement and Compliance information across most of EPA's programs. The vision for ICIS is to replace EPA's independent databases that contain Enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions. This information is maintained in ICIS by EPA in the Regional offices and its Headquarters. A future release of ICIS will replace the Permit Compliance System (PCS) which supports the NPDES and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities occurring in the Region that support Compliance and Enforcement programs. These include; Incident Tracking, Compliance Assistance, and Compliance Monitoring.

16 ESPANOLA MERCANTILE CO. **FINDS** **1008216651**
1301 N. RIVERSIDE **110022415527**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

Not reported

PCS (Permit Compliance System) is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

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16 ESPANOLA TRANSIT MIX (NMR05A318) **ICIS** **1010279802**
1301 N. RIVERSIDE **N/A**
ESPANOLA, NM 87532

ICIS:

Enforcement Action ID:	06-2005-1962
FRS ID:	110022321815
Program ID:	FRS 110022321815
Action Name:	ESPANOLA MERCANTILE CO. (NMR05A318)
Facility Name:	ESPANOLA TRANSIT MIX (NMR05A318)
Facility Address:	1301 N. RIVERSIDE ESPANOLA, New Mexico 87532
Enforcement Action Type:	CWA 309A AO For Compliance
Facility County:	RIO ARRIBA
EPA Region #:	6
Program ID:	FRS 110022321815
Facility Name:	ESPANOLA TRANSIT MIX (NMR05A318)
Address:	1301 N. RIVERSIDE ESPANOLA NM 87532
Tribal Indicator:	No
Fed Facility:	Not reported
NAIC Code:	Not reported
SIC Code:	1442

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16 ESPANOLA MERCANTILE CO. **ICIS** **1010286517**
1301 N. RIVERSIDE **N/A**
ESPANOLA, NM 87532

ICIS:

Enforcement Action ID:	06-2006-1712
FRS ID:	110022415527
Program ID:	FRS 110022415527
Action Name:	ESPANOLA MERCANTILE COMPANY
Facility Name:	ESPANOLA MERCANTILE CO.
Facility Address:	1301 N. RIVERSIDE ESPANOLA, New Mexico 87532
Enforcement Action Type:	CWA 309G2B AO For Class II Penalties
Facility County:	RIO ARRIBA
EPA Region #:	6
Program ID:	FRS 110022415527
Facility Name:	ESPANOLA MERCANTILE CO.

ESPANOLA MERCANTILE CO. (Continued) **1010286517**

Address: 1301 N. RIVERSIDE ESPANOLA NM 87532
Tribal Indicator: No
Fed Facility: No
NAIC Code: Not reported
SIC Code: Not reported

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16 **ESPANOLA TRANSIT MIX 1** **FINDS** **1009421868**
1301 N RIVERSIDE DR **110022708257**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

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16 **JOHN P. MONTOYA DEMOLISHED BUILDING** **FINDS** **1009428682**
1301 RIVERSIDE DRIVE **110022749775**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

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17 **MAESTAS OIL CO** **UST** **U003190958**
816 W ONATE ST **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	16032
Owner Name:	MARTINEZ ABE E
Owner Address:	816 WEST ONATE ST
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-7754
Facility ID:	29229
Secondary Address:	Not reported
Tank ID:	27230
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	10000
Tank Substance:	UNLEADED GASOLINE

Owner ID:	16032
Owner Name:	MARTINEZ ABE E
Owner Address:	816 WEST ONATE ST
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-7754
Facility ID:	29229

MAESTAS OIL CO (Continued) **U003190958**

Secondary Address: Not reported
Tank ID: 27231
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 3000
Tank Substance: UNLEADED GASOLINE

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18 SANTA CLARA WETLANDS **CERCLIS 1000984220**
106 04' 30'N 36 00' 00'W **FINDS NM0001035377**
ESPANOLA, NM 87532

CERCLIS:
Site ID: 0604950
Federal Facility: Not a Federal Facility
NPL Status: Not on the NPL
Non NPL Status: ESI Start Needed

CERCLIS Site Contact Name(s):
Contact Name: Ladonna Walker
Contact Tel: (214) 665-6666
Contact Title: Site Assessment Manager (SAM)

Contact Name: Philip Ofosu
Contact Tel: (214) 665-3178
Contact Title: Site Assessment Manager (SAM)

Site Description: SITE AREA IS SITUATED IN A SIMI-URBAN SETTING WITH INDISCRIMINATE & UNREGULATED DUMPING OCCURING ON-SITE FROM LOCAL BUSINESSES & RESIDENTS.

CERCLIS Assessment History:
Action: DISCOVERY
Date Started: Not reported
Date Completed: 10/07/1992
Priority Level: Not reported

Action: PRELIMINARY ASSESSMENT
Date Started: Not reported
Date Completed: 10/23/1995
Priority Level: Low

Action: SITE INSPECTION
Date Started: Not reported
Date Completed: 09/21/2001
Priority Level: High

FINDS:
Other Pertinent Environmental Activity Identified at Site

CERCLIS (Comprehensive Environmental Response, Compensation, and Liability Information System) is the Superfund database that is used to support management in all phases of the Superfund program. The system contains information on all aspects of hazardous waste sites, including an inventory of sites, planned and actual site activities, and financial information.

19 ESPANOLA HOSPITAL — **UST** — **U003711611**
1010 SPRUCE ST — **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	16149
Owner Name:	ESPANOLA HOSPITAL
Owner Address:	1010 SPRUCE ST
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-1111
Facility ID:	5606
Secondary Address:	Not reported
Tank ID:	19957
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	10000
Tank Substance:	DIESEL

---

19 ESPANOLA HOSPITAL — **RCRA-SQG** — **1004565291**
1010 SPRUCE STREET — **FINDS** — **NMD986677060**
ESPANOLA, NM 87532

RCRA-SQG:

Date form received by agency:	10/24/2000
Facility name:	PRESBYTERIAN ESPANOLA HOSPITAL
Facility address:	1010 SPRUCE ST ESPANOLA, NM 87532
EPA ID:	NMD986677060
Mailing address:	SPRUCE ST ESPANOLA, NM 87532
Contact:	JERRY MARTINEZ
Contact address:	1010 SPRUCE ST ESPANOLA, NM 87532
Contact country:	US
Contact telephone:	(505) 753-7111
Contact email:	Not reported
EPA Region:	06
Land type:	Facility is not located on Indian land. Additional information is not known.
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	ESPANOLA HOSPITAL PRESBY HEALTHCARE SVC
Owner/operator address:	1010 SPRUCE ST ESPANOLA, NM 87532
Owner/operator country:	Not reported
Owner/operator telephone:	(505) 753-7111
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	01/01/0001
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	Unknown

ESPANOLA HOSPITAL (Continued) **1004565291**

Mixed waste (haz. and radioactive):	Unknown
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	Unknown
Furnace exemption:	Unknown
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No
Off-site waste receiver:	Commercial status unknown

Historical Generators:

Date form received by agency:	04/02/1992
Facility name:	PRESBYTERIAN ESPANOLA HOSPITAL
Classification:	Conditionally Exempt Small Quantity Generator

Hazardous Waste Summary:

Waste code:	D000
Waste name:	Not Defined
Waste code:	D011
Waste name:	SILVER
Violation Status:	No violations found

Evaluation Action Summary:

Evaluation date:	10/24/2000
Evaluation:	COMPLIANCE ASSISTANCE VISIT
Area of violation:	Not reported
Date achieved compliance:	Not reported
Evaluation lead agency:	State

FINDS:

Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

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19 **VALLEY VIEW UNITED METHODIST CHURCH CHURCH SANCTUARY** **FINDS** **1009420339**
827 SPRUCE **110022719995**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

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19 **YORDY BUILDING DR. MURRAY RYAN** **FINDS** **1009429364**
835 SPRUCE STREET **110022733112**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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19 **RIO VALLEY MOTORS LLC** **RCRA-SQG** **1000401417**
531 ONATE ST **FINDS** **NMD035734953**
ESPANOLA, NM 87532 **LUST**
UST

RCRA-SQG:

Date form received by agency:	10/24/2000
Facility name:	RIO VALLEY MOTORS LLC
Facility address:	531 ONATE ST ESPANOLA, NM 87532
EPA ID:	NMD035734953
Mailing address:	ONATE ST ESPANOLA, NM 87532
Contact:	ERNESTINA BACA
Contact address:	531 ONATE ST ESPANOLA, NM 87532
Contact country:	US
Contact telephone:	(505) 753-2121
Contact email:	Not reported
EPA Region:	06
Land type:	Private
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	HUNTER CL
Owner/operator address:	UNKNOWN UNKNOWN, NM 00000
Owner/operator country:	Not reported
Owner/operator telephone:	(000) 000-0000
Legal status:	Private
Owner/Operator Type:	Operator

RIO VALLEY MOTORS LLC (Continued) **1000401417**

Owner/Op start date: Not reported
Owner/Op end date: Not reported

Owner/operator name: JOE C LEESEE
Owner/operator address: 531 ONATE ST
ESPANOLA, NM 87532
Owner/operator country: Not reported
Owner/operator telephone: (505) 753-2121
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 01/01/0001
Owner/Op end date: Not reported

Owner/operator name: JOHN ANDERSON
Owner/operator address: 531 ONATE ST
ESPANOLA, NM 87532
Owner/operator country: Not reported
Owner/operator telephone: (505) 753-2121
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: Not reported
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: Unknown
Mixed waste (haz. and radioactive): Unknown
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: Unknown
Furnace exemption: Unknown
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No
Off-site waste receiver: Commercial status unknown

Historical Generators:
Date form received by agency: 05/26/1998
Facility name: RIO VALLEY MOTORS LLC
Classification: Small Quantity Generator

Hazardous Waste Summary:
Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

RIO VALLEY MOTORS LLC (Continued) **1000401417**

Waste code: D002
Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.

Waste code: D008
Waste name: LEAD

Waste code: D018
Waste name: BENZENE

Waste code: D022
Waste name: CHLOROFORM

Waste code: D035
Waste name: METHYL ETHYL KETONE

Waste code: D039
Waste name: TETRACHLOROETHYLENE

Waste code: D040
Waste name: TRICHLOROETHYLENE

Waste code: F003
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Waste code: F005
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Facility Has Received Notices of Violations:
Regulation violated: Not reported
Area of violation: Generators - General
Date violation determined: 09/30/1987
Date achieved compliance: 10/07/1987
Violation lead agency: State
Enforcement action: WRITTEN INFORMAL
Enforcement action date: 09/30/1987
Enf. disposition status: Not reported

RIO VALLEY MOTORS LLC (Continued) **1000401417**

Enf. disp. status date: Not reported
Enforcement lead agency: State
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 10/24/2000
Evaluation: COMPLIANCE ASSISTANCE VISIT
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 09/30/1987
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: 10/07/1987
Evaluation lead agency: State

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

LUST:
Priority Rank: Not reported
Mitigating Factor Score: Not reported
Total Score To Assign Relative Rank: Not reported
Release ID: 2238
Facility ID: 1415
Date Release Reported: Not reported
Status: **No Further Action Required**
Status Date: 09/30/1994
Project Manager: UNKNOWN

UST:
Owner ID: 306
Owner Name: HUNTER MOTOR CO
Owner Address: 531 ONATE ST
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-2121
Facility ID: 1415
Secondary Address: Not reported
Tank ID: 18258
Tank Status: **REMOVED**
Tank Type: Underground
Tank Capacity: 1000
Tank Substance: USED OIL

19 CENTRO CAMPESINO DE SALUD — **FINDS** — **1000419886**
620 CORONADO ST — **RCRA-NonGen** — **NMD990753899**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

RCRA-NonGen:

Date form received by agency:	06/30/1980
Facility name:	CENTRO CAMPESINO DE SALUD
Facility address:	620 CORONADO ST ESPANOLA, NM 87532
EPA ID:	NMD990753899
Mailing address:	CORONADO ST ESPANOLA, NM 87532
Contact:	ELOY DURAN
Contact address:	620 CORONADO ST ESPANOLA, NM 87532
Contact country:	US
Contact telephone:	(505) 753-7218
Contact email:	Not reported
EPA Region:	06
Classification:	Non-Generator
Description:	Handler: Non-Generators do not presently generate hazardous waste

Owner/Operator Summary:

Owner/operator name:	CENTRO CAMPESINO DE SALUD INC
Owner/operator address:	UNKNOWN UNKNOWN, NM 00000
Owner/operator country:	Not reported
Owner/operator telephone:	(000) 000-0000
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	01/01/0001
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	Unknown
Mixed waste (haz. and radioactive):	Unknown
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	Unknown
Furnace exemption:	Unknown
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No

CENTRO CAMPESINO DE SALUD (Continued) **1000419886**

Used oil transfer facility: No
Used oil transporter: No
Off-site waste receiver: Commercial status unknown

Violation Status: No violations found

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19 **RIO VALLEY MOTORS CO** **FINDS** **1009427518**
505 S PASEO DE ONATE **110022748918**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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19 **PAT SALAZAR PRESTO LUBE AND CARWASH** **FINDS** **1009429845**
514 N. PASEO DE O?ATE **110022746279**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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19 **HENRY VALENCIA INC** **RCRA-SQG** **1000372644**
618 N ONATE **FINDS** **NMD981907520**
ESPANOLA, NM 87532

RCRA-SQG:

Date form received by agency:	10/24/2000
Facility name:	HENRY VALENCIA INC
Facility address:	618 N ONATE ESPANOLA, NM 87532
EPA ID:	NMD981907520
Mailing address:	PO BOX 1344 ESPANOLA, NM 87532
Contact:	PHILLIP SALAZAR
Contact address:	PO BOX 1344 ESPANOLA, NM 87532
Contact country:	US
Contact telephone:	(505) 753-2356
Contact email:	Not reported
EPA Region:	06
Land type:	Facility is not located on Indian land. Additional information is not known.
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

HENRY VALENCIA INC (Continued) **1000372644**

Owner/Operator Summary:

Owner/operator name:	VALENCIA, HENRY
Owner/operator address:	UNKNOWN UNKNOWN, NM 00000
Owner/operator country:	Not reported
Owner/operator telephone:	(000) 000-0000
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	01/01/0001
Owner/Op end date:	Not reported

Owner/operator name:	VALENCIA HENRY
Owner/operator address:	UNKNOWN UNKNOWN, NM 00000
Owner/operator country:	Not reported
Owner/operator telephone:	(000) 000-0000
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	Unknown
Mixed waste (haz. and radioactive):	Unknown
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	Unknown
Furnace exemption:	Unknown
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No
Off-site waste receiver:	Commercial status unknown

Historical Generators:

Date form received by agency:	03/11/1987
Facility name:	HENRY VALENCIA INC
Classification:	Small Quantity Generator

Hazardous Waste Summary:

Waste code:	D001
Waste name:	IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.
Waste code:	D006

HENRY VALENCIA INC (Continued) **1000372644**

Waste name: CADMIUM

Waste code: D008
Waste name: LEAD

Waste code: D018
Waste name: BENZENE

Waste code: D027
Waste name: 1,4-DICHLOROBENZENE

Waste code: D035
Waste name: METHYL ETHYL KETONE

Waste code: D039
Waste name: TETRACHLOROETHYLENE

Waste code: D040
Waste name: TRICHLOROETHYLENE

Waste code: F003
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Waste code: F005
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 10/24/2000
Evaluation: COMPLIANCE ASSISTANCE VISIT
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA

HENRY VALENCIA INC (Continued) **1000372644**

program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

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20 **THRIFTWAY 183** **LUST** **S103924500**
9O2 N RIVERSIDE DR **N/A**
ESPANOLA, NM 87532

LUST:

Priority Rank:	149
Mitigating Factor Score:	2
Total Score To Assign Relative Rank:	2584
Release ID:	455
Facility ID:	31833
Date Release Reported:	08/01/1986
Status:	**Aggr Cleanup Completed, Resp Party**
Status Date:	03/06/2003
Project Manager:	Lorena Goerger

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21 **CITY COMPOUND** **UST** **U003543521**
N RAILROAD AVE **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	15900
Owner Name:	ESPANOLA (CITY OF)
Owner Address:	405 N PASEO DE ONATE
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-2377
Facility ID:	27385
Secondary Address:	Not reported
Tank ID:	22933
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	1000
Tank Substance:	UNLEADED GASOLINE

Owner ID:	15900
Owner Name:	ESPANOLA (CITY OF)
Owner Address:	405 N PASEO DE ONATE
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-2377
Facility ID:	27385
Secondary Address:	Not reported
Tank ID:	22934
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	1000
Tank Substance:	LEADED GASOLINE

Owner ID:	15900
Owner Name:	ESPANOLA (CITY OF)
Owner Address:	405 N PASEO DE ONATE
Owner Address 2:	Not reported

CITY COMPOUND (Continued) **U003543521**

Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-2377
Facility ID: 27385
Secondary Address: Not reported
Tank ID: 22935
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 2000
Tank Substance: DIESEL

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22 BIG ROCK CHEVRON **LUST 1001169404**
437 RIVERSIDE DR **UST N/A**
ESPANOLA, NM 87532

LUST:
Priority Rank: 59
Mitigating Factor Score: 2
Total Score To Assign Relative Rank: 3055
Release ID: 393
Facility ID: 26929
Date Release Reported: 06/29/1970
Status: Investigation, State Lead, CAF
Status Date: 10/28/1992
Project Manager: Danny Valenzuela

UST:
Owner ID: 14284
Owner Name: SUPREME LLC DBA ROY HONSTEIN OIL CO A
Owner Address: 210 LOS ALAMOS HWY
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-3255
Facility ID: 26929
Secondary Address: Not reported
Tank ID: 21913
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 8000
Tank Substance: UNLEADED GASOLINE

Owner ID: 14284
Owner Name: SUPREME LLC DBA ROY HONSTEIN OIL CO A
Owner Address: 210 LOS ALAMOS HWY
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-3255
Facility ID: 26929
Secondary Address: Not reported
Tank ID: 21914
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 8000
Tank Substance: UNLEADED GASOLINE

Owner ID: 14284
Owner Name: SUPREME LLC DBA ROY HONSTEIN OIL CO A
Owner Address: 210 LOS ALAMOS HWY

BIG ROCK CHEVRON (Continued) **1001169404**

Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-3255
Facility ID: 26929
Secondary Address: Not reported
Tank ID: 21915
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 3000
Tank Substance: UNLEADED GASOLINE

Owner ID: 14284
Owner Name: SUPREME LLC DBA ROY HONSTEIN OIL CO A
Owner Address: 210 LOS ALAMOS HWY
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-3255
Facility ID: 26929
Secondary Address: Not reported
Tank ID: 21916
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 10000
Tank Substance: UNLEADED GASOLINE

Owner ID: 14284
Owner Name: SUPREME LLC DBA ROY HONSTEIN OIL CO A
Owner Address: 210 LOS ALAMOS HWY
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-3255
Facility ID: 26929
Secondary Address: Not reported
Tank ID: 21917
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 10000
Tank Substance: UNLEADED PLUS

Owner ID: 14284
Owner Name: SUPREME LLC DBA ROY HONSTEIN OIL CO A
Owner Address: 210 LOS ALAMOS HWY
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-3255
Facility ID: 26929
Secondary Address: Not reported
Tank ID: 21918
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 10000
Tank Substance: SUPER UNLEADED

22 **BREWER SHELL** **LUST** **S105426738**
444 N RIVERSIDE **N/A**
ESPANOLA, NM 87532

LUST:

Priority Rank:	58
Mitigating Factor Score:	2
Total Score To Assign Relative Rank:	3056
Release ID:	2549
Facility ID:	1219
Date Release Reported:	02/20/1995
Status:	**Investigation, Responsible Party**
Status Date:	04/09/1996
Project Manager:	Susan Von Gonten

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22 **ESPANOLA ALLSUPS** **UST** **U003667405**
444 N RIVERSIDE **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	300
Owner Name:	BREWER BROTHERS
Owner Address:	3200 CANDELARIA RD NE
Owner Address 2:	Not reported
Owner City,St,Zip:	ALBUQUERQUE, NM 87107
Owner Telephone:	Not reported
Facility ID:	1219
Secondary Address:	Not reported
Tank ID:	17759
Tank Status:	**CURRENTLY IN USE**
Tank Type:	Underground
Tank Capacity:	10000
Tank Substance:	DIESEL

Owner ID:	300
Owner Name:	BREWER BROTHERS
Owner Address:	3200 CANDELARIA RD NE
Owner Address 2:	Not reported
Owner City,St,Zip:	ALBUQUERQUE, NM 87107
Owner Telephone:	Not reported
Facility ID:	1219
Secondary Address:	Not reported
Tank ID:	17760
Tank Status:	**CURRENTLY IN USE**
Tank Type:	Underground
Tank Capacity:	10000
Tank Substance:	SUPER UNLEADED

Owner ID:	300
Owner Name:	BREWER BROTHERS
Owner Address:	3200 CANDELARIA RD NE
Owner Address 2:	Not reported
Owner City,St,Zip:	ALBUQUERQUE, NM 87107
Owner Telephone:	Not reported
Facility ID:	1219
Secondary Address:	Not reported
Tank ID:	17761
Tank Status:	**CURRENTLY IN USE**
Tank Type:	Underground
Tank Capacity:	10000

ESPANOLA ALLSUPS (Continued) **U003667405**

Tank Substance: UNLEADED GASOLINE

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22 **ESPANOLA ALLSUPS** **FINDS** **1009424217**
444 N RIVERSIDE **110022701799**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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22 **BIG ROCK CHEVRON** **FINDS** **1005656721**
462 RIVERSIDE DR **110010777739**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

ICIS (Integrated Compliance Information System) is the Integrated Compliance Information System and provides a database that, when complete, will contain integrated Enforcement and Compliance information across most of EPA's programs. The vision for ICIS is to replace EPA's independent databases that contain Enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions. This information is maintained in ICIS by EPA in the Regional offices and its Headquarters. A future release of ICIS will replace the Permit Compliance System (PCS) which supports the NPDES and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities occurring in the Region that support Compliance and Enforcement programs. These include; Incident Tracking, Compliance Assistance, and Compliance Monitoring.

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22 **SPILLS** **S106561351**
538 N. RIVERSIDE DRIVE, ESPANOLA **N/A**
ESPANOLA, NM

SPILL:

Facility ID:	1142
Incident Date:	1/21/2000
Date Received:	Not reported
Status:	**Response/Investigation**
Type:	Airborne Odor Release/Complaint
Source:	Nail Experts
Lead Bureau:	Air Quality
Substances Spilled:	Not reported
Other Parameters:	Not reported
Quantity:	Not reported
Units:	Not reported
Media Impacted:	Not reported
Desctiption:	Strong - over powering smell of chemicals used for treating nails. Only one door - building without ventilation. Complaint included next door hair salon

(Continued) **S106561351**

- simular problems with inadequate ventilation.

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23 **ESPANOLA, CITY OF** **ICIS** **1010265429**
405 N. PASEO DE ONAPE **N/A**
ESPANOLA, NM 87532

ICIS:

Enforcement Action ID:	06-2006-1750
FRS ID:	110000734607
Program ID:	FRS 110000734607
Action Name:	ESPANOLA, CITY OF (NM0029351)
Facility Name:	ESPANOLA, CITY OF
Facility Address:	405 N. PASEO DE ONAPE ESPANOLA, New Mexico 87532
Enforcement Action Type:	CWA 309A AO For Compliance
Facility County:	RIO ARRIBA
EPA Region #:	6
Program ID:	FRS 110000734607
Facility Name:	ESPANOLA, CITY OF
Address:	405 N. PASEO DE ONAPE ESPANOLA NM 87532
Tribal Indicator:	Yes
Fed Facility:	No
NAIC Code:	Not reported
SIC Code:	4952
Enforcement Action ID:	06-2005-1912
FRS ID:	110000734607
Program ID:	FRS 110000734607
Action Name:	ESPANOLA, CITY OF (NM0029351)
Facility Name:	ESPANOLA, CITY OF
Facility Address:	405 N. PASEO DE ONAPE ESPANOLA, New Mexico 87532
Enforcement Action Type:	CWA 309G2B AO For Class II Penalties
Facility County:	RIO ARRIBA
EPA Region #:	6
Program ID:	FRS 110000734607
Facility Name:	ESPANOLA, CITY OF
Address:	405 N. PASEO DE ONAPE ESPANOLA NM 87532
Tribal Indicator:	Yes
Fed Facility:	No
NAIC Code:	Not reported
SIC Code:	4952
Enforcement Action ID:	06-2005-1892
FRS ID:	110000734607
Program ID:	FRS 110000734607
Action Name:	ESPANOLA, CITY OF (NM0029351)
Facility Name:	ESPANOLA, CITY OF
Facility Address:	405 N. PASEO DE ONAPE ESPANOLA, New Mexico 87532
Enforcement Action Type:	CWA 309A AO For Compliance
Facility County:	RIO ARRIBA
EPA Region #:	6
Program ID:	FRS 110000734607
Facility Name:	ESPANOLA, CITY OF

ESPANOLA, CITY OF (Continued) **1010265429**

Address:	405 N. PASEO DE ONAPE ESPANOLA NM 87532
Tribal Indicator:	Yes
Fed Facility:	No
NAIC Code:	Not reported
SIC Code:	4952

Enforcement Action ID:	06-2004-2348
FRS ID:	110000734607
Program ID:	FRS 110000734607
Action Name:	ESPANOLA, CITY OF (NM0029351)
Facility Name:	ESPANOLA, CITY OF
Facility Address:	405 N. PASEO DE ONAPE ESPANOLA, New Mexico 87532
Enforcement Action Type:	CWA 309A AO For Compliance
Facility County:	RIO ARRIBA
EPA Region #:	6

Program ID:	FRS 110000734607
Facility Name:	ESPANOLA, CITY OF
Address:	405 N. PASEO DE ONAPE ESPANOLA NM 87532
Tribal Indicator:	Yes
Fed Facility:	No
NAIC Code:	Not reported
SIC Code:	4952

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23 **LA LOMA TRANSFER STATION** **SWF/LF** **S105421192**
N/A

, NM

SWF/LF:

Facility Status:	Open
Facility Phone:	(505) 753-4452
Owner Name:	Espanola (City of)
Owner Contact:	Leroy Archuleta
Owner Address:	405 N. Paseo de Onate
Owner Address2:	Not reported
Owner City,St,Zip:	Espanola, NM 87532-
Owner Phone:	(505) 747-6100
Facility Contact:	Not reported
Facility Mailing Address:	405 N. Paseo de Onate
Facility Mailing Address2:	Not reported
Facility Mailing City:	Espanola
Facility Mailing State:	NM
Facility Mailing Zip:	87532
Section:	3
Township:	11N

23 **ESPANOLA, CITY OF** **FINDS** **1004564840**
405 N. PASEO DE ONAPE **110000734607**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

Not reported

PCS (Permit Compliance System) is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

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23 **CITY OF ESPA OLA, PUBLIC WORKS YARD TRAN** **ASBESTOS** **S108190312**
405 N. PASEO DE ONATE **N/A**
ESPANOLA, NM

ASBESTOS:
Tracking Number: 3984304003
Building Name: City Hall
Asbestos Status: Asbestos Renovation
Start Date: 09/05/06
Finish Date: 09/16/06

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23 **THE BOND HOUSE CITY OF ESPANOLA** **FINDS** **1009426226**
405 N. PASEO DEL ONATE **110022724658**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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24 **GASAMAT #555** **FINDS** **1005656719**
286 S RIVERSIDE DR **110010777720**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

ICIS (Integrated Compliance Information System) is the Integrated Compliance Information System and provides a database that, when complete, will contain integrated Enforcement and Compliance information across most of EPA's programs. The vision for ICIS is to replace EPA's independent databases that contain Enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions. This information is maintained in ICIS by EPA in the Regional offices and its Headquarters. A future release of ICIS will replace the Permit Compliance System (PCS) which supports the NPDES and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities occurring in the Region that support Compliance and Enforcement programs. These include;

GASAMAT #555 (Continued) **1005656719**

Incident Tracking, Compliance Assistance, and Compliance Monitoring.

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24 **#41ESPANOLA MUSTANG** **INDIAN UST** **1009388446**
286 S. RIVERSIDE DR. **INDIAN LUST** **N/A**
ESPANOLA, NM 87532

INDIAN UST:

Region:	6
Facility ID:	P048NM
Tribe:	Santa Clara Pueblo
Tank ID:	1
Tank Status:	Currently In Use
Substance:	Gasoline
Installation date:	1967-03-01 00:00:00
Owner Name:	Polk Oil Company
Region:	6
Facility ID:	P048NM
Tribe:	Santa Clara Pueblo
Tank ID:	2
Tank Status:	Currently In Use
Substance:	Gasoline
Installation date:	1967-03-01 00:00:00
Owner Name:	Polk Oil Company
Region:	6
Facility ID:	P048NM
Tribe:	Santa Clara Pueblo
Tank ID:	3
Tank Status:	Currently In Use
Substance:	Gasoline
Installation date:	1967-03-01 00:00:00
Owner Name:	Polk Oil Company

INDIAN LUST:

Region:	6

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24 **GASAMAT #555** **ICIS** **1010272362**
286 S RIVERSIDE DR **N/A**
ESPANOLA, NM 87532

ICIS:

Enforcement Action ID:	06-2000-0942
FRS ID:	110010777720
Program ID:	FRS 110010777720
Action Name:	GASAMAT #555
Facility Name:	GASAMAT #555
Facility Address:	286 S RIVERSIDE DR ESPANOLA, New Mexico 87532
Enforcement Action Type:	RCRA 9006 Field Citation (UST)
Facility County:	RIO ARRIBA
EPA Region #:	6
Program ID:	FRS 110010777720
Facility Name:	GASAMAT #555

GASAMAT #555 (Continued) **1010272362**

Address:	286 S RIVERSIDE DR ESPANOLA NM 87532
Tribal Indicator:	No
Fed Facility:	Not reported
NAIC Code:	Not reported
SIC Code:	5541

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24 EZ WAY LAUNDRY **FINDS** **1000849647**
258 S RIVERSIDE DR **RCRA-CESQG** **NMD986684595**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

RCRA-CESQG:

Date form received by agency:	10/24/2000
Facility name:	EZ WAY LAUNDRY
Facility address:	258 S RIVERSIDE DR ESPANOLA, NM 87532
EPA ID:	NMD986684595
Mailing address:	S RIVERSIDE DR ESPANOLA, NM 87532
Contact:	Not reported
Contact address:	Not reported Not reported
Contact country:	Not reported
Contact telephone:	Not reported
Contact email:	Not reported
EPA Region:	06
Land type:	Facility is not located on Indian land. Additional information is not known.
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	EDDIE ORTIZ
Owner/operator address:	258 S RIVERSIDE DR

EZ WAY LAUNDRY (Continued) **1000849647**

ESPANOLA, NM 87532
Owner/operator country: Not reported
Owner/operator telephone: (505) 753-3895
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 01/01/0001
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: Unknown
Mixed waste (haz. and radioactive): Unknown
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: Unknown
Furnace exemption: Unknown
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No
Off-site waste receiver: Commercial status unknown

Historical Generators:
Date form received by agency: 07/15/1993
Facility name: EZ WAY LAUNDRY
Classification: Conditionally Exempt Small Quantity Generator

Hazardous Waste Summary:
Waste code: F001
Waste name: THE FOLLOWING SPENT HALOGENATED SOLVENTS USED IN DEGREASING: TETRACHLOROETHYLENE, TRICHLOROETHYLENE, METHYLENE CHLORIDE, 1,1,1-TRICHLOROETHANE, CARBON TETRACHLORIDE, AND CHLORINATED FLUOROCARBONS; ALL SPENT SOLVENT MIXTURES/BLENDS USED IN DEGREASING CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 10/24/2000
Evaluation: COMPLIANCE ASSISTANCE VISIT
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

24 **CHEVRON 65825212 ORPHAN SITE** **FINDS** **1009429893**
256 S RIVERSIDE **110022755115**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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24 **CHEVRON 65825212 ORPHAN SITE** **UST** **U003190938**
256 S RIVERSIDE **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	15464
Owner Name:	CHEVRON USA INC MARKETING DEPT
Owner Address:	PO BOX 5004
Owner Address 2:	ATTN PERMIT DESK
Owner City,St,Zip:	SAN RAMON, CA 94583
Owner Telephone:	510-842-9002
Facility ID:	27322
Secondary Address:	Not reported
Tank ID:	22780
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	1000
Tank Substance:	EMPTY, USED OIL

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24 **ESPANOLA BULK PLANT** **UST** **U003913189**
240 S RIVERSIDE **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	299
Owner Name:	BREWER DON
Owner Address:	1301 WEST MAIN
Owner Address 2:	Not reported
Owner City,St,Zip:	ARTESIA, NM 88210
Owner Telephone:	505-748-1248
Facility ID:	1220
Secondary Address:	Not reported
Tank ID:	17762
Tank Status:	**EXEMPT**
Tank Type:	Underground
Tank Capacity:	10000
Tank Substance:	UNLEADED GASOLINE

Owner ID:	299
Owner Name:	BREWER DON
Owner Address:	1301 WEST MAIN
Owner Address 2:	Not reported
Owner City,St,Zip:	ARTESIA, NM 88210
Owner Telephone:	505-748-1248
Facility ID:	1220
Secondary Address:	Not reported
Tank ID:	17763

ESPANOLA BULK PLANT (Continued) **U003913189**

Tank Status:	**EXEMPT**
Tank Type:	Underground
Tank Capacity:	5000
Tank Substance:	UNLEADED GASOLINE
Owner ID:	299
Owner Name:	BREWER DON
Owner Address:	1301 WEST MAIN
Owner Address 2:	Not reported
Owner City,St,Zip:	ARTESIA, NM 88210
Owner Telephone:	505-748-1248
Facility ID:	1220
Secondary Address:	Not reported
Tank ID:	17764
Tank Status:	**EXEMPT**
Tank Type:	Underground
Tank Capacity:	5000
Tank Substance:	UNLEADED GASOLINE
Owner ID:	299
Owner Name:	BREWER DON
Owner Address:	1301 WEST MAIN
Owner Address 2:	Not reported
Owner City,St,Zip:	ARTESIA, NM 88210
Owner Telephone:	505-748-1248
Facility ID:	1220
Secondary Address:	Not reported
Tank ID:	17765
Tank Status:	**EXEMPT**
Tank Type:	Underground
Tank Capacity:	5000
Tank Substance:	DIESEL

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24 **SAN PEDRO FOODMART #92** **INDIAN UST** **1009401180**
240 S. RIVERSIDE DR. **INDIAN LUST** **N/A**
ESPANOLA, NM 87532

INDIAN UST:

Region:	6
Facility ID:	P026NM
Tribe:	Santa Clara Pueblo
Tank ID:	1
Tank Status:	Currently In Use
Substance:	Gasoline
Installation date:	1991-06-01 00:00:00
Owner Name:	Brewer Brothers
Region:	6
Facility ID:	P026NM
Tribe:	Santa Clara Pueblo
Tank ID:	2
Tank Status:	Currently In Use
Substance:	Gasoline
Installation date:	1991-01-01 00:00:00
Owner Name:	Brewer Brothers
Region:	6
Facility ID:	P026NM

SAN PEDRO FOODMART #92 (Continued) **1009401180**

Tribe: Santa Clara Pueblo
Tank ID: 3
Tank Status: Currently In Use
Substance: Gasoline
Installation date: 1991-01-01 00:00:00
Owner Name: Brewer Brothers

Region: 6
Facility ID: P026NM
Tribe: Santa Clara Pueblo
Tank ID: 4
Tank Status: Permanently Out of Use
Substance: Gasoline
Installation date: 1965-01-01 00:00:00
Owner Name: Brewer Brothers

Region: 6
Facility ID: P026NM
Tribe: Santa Clara Pueblo
Tank ID: 5
Tank Status: Permanently Out of Use
Substance: Gasoline
Installation date: 1965-01-01 00:00:00
Owner Name: Brewer Brothers

Region: 6
Facility ID: P026NM
Tribe: Santa Clara Pueblo
Tank ID: 6
Tank Status: Permanently Out of Use
Substance: Gasoline
Installation date: 1965-01-01 00:00:00
Owner Name: Brewer Brothers

Region: 6
Facility ID: P026NM
Tribe: Santa Clara Pueblo
Tank ID: 7
Tank Status: Permanently Out of Use
Substance: Used Oil
Installation date: 1965-01-01 00:00:00
Owner Name: Brewer Brothers

INDIAN LUST:
Region: 6

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24 **ESPANOLA BULK PLANT** **FINDS** **1009424219**
240 S RIVERSIDE **110022701824**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

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24 **ESPANOLA BULK PLANT** **INDIAN UST** **1009388552**
240 S. RIVERSIDE DR. **N/A**
ESPANOLA, NM 87532

INDIAN UST:

Region:	6
Facility ID:	P170NM
Tribe:	Santa Clara Pueblo
Tank ID:	1
Tank Status:	Permanently Out of Use
Substance:	Gasoline
Installation date:	1971-06-15 00:00:00
Owner Name:	Brewer Brothers

Region:	6
Facility ID:	P170NM
Tribe:	Santa Clara Pueblo
Tank ID:	2
Tank Status:	Permanently Out of Use
Substance:	Gasoline
Installation date:	1971-06-15 00:00:00
Owner Name:	Brewer Brothers

Region:	6
Facility ID:	P170NM
Tribe:	Santa Clara Pueblo
Tank ID:	3
Tank Status:	Permanently Out of Use
Substance:	Gasoline
Installation date:	1971-06-15 00:00:00
Owner Name:	Brewer Brothers

Region:	6
Facility ID:	P170NM
Tribe:	Santa Clara Pueblo
Tank ID:	4
Tank Status:	Permanently Out of Use
Substance:	Diesel
Installation date:	1971-06-15 00:00:00
Owner Name:	Brewer Brothers

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24 **MINOS AUTOMOTIVE** **UST** **U003667410**
138 S RIVERSIDE DR **N/A**
ESPANOLA, NM 87537

UST:

Owner ID:	16895
Owner Name:	ROMERO BELARMINO
Owner Address:	RT 1 BOX 167AA
Owner Address 2:	Not reported
Owner City,St,Zip:	SANTA FE, NM 87506
Owner Telephone:	505-581-3711
Facility ID:	29432
Secondary Address:	Not reported
Tank ID:	27713
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	8000
Tank Substance:	EMPTY, PETROLEUM (UNKNOWN TYPE)

MINOS AUTOMOTIVE (Continued) **U003667410**

Owner ID: 16895
Owner Name: ROMERO BELARMINO
Owner Address: RT 1 BOX 167AA
Owner Address 2: Not reported
Owner City,St,Zip: SANTA FE, NM 87506
Owner Telephone: 505-581-3711
Facility ID: 29432
Secondary Address: Not reported
Tank ID: 27714
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 8000
Tank Substance: EMPTY, PETROLEUM (UNKNOWN TYPE)

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24 **GREYHOUND/MINO'S** **LUST** **S101646995**
138 S RIVERSIDE DR **N/A**
ESPANOLA, NM 87537

LUST:
Priority Rank: 439
Mitigating Factor Score: 3
Total Score To Assign Relative Rank: 410
Release ID: 74
Facility ID: 29432
Date Release Reported: 02/01/1989
Status: Aggr Cleanup Completed, St Lead, CAF
Status Date: 03/27/2003
Project Manager: Danny Valenzuela

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24 **MINOS AUTOMOTIVE** **FINDS** **1009423155**
138 S RIVERSIDE DR **110022696368**
ESPANOLA, NM 87537

FINDS:
Other Pertinent Environmental Activity Identified at Site

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24 **HUNTER TRACTOR CO** **UST** **U003667408**
211 N RIVERSIDE DR **N/A**
ESPANOLA, NM 87532

UST:
Owner ID: 14529
Owner Name: HUNTER TRACTOR CO
Owner Address: 211 NORTH RIVERSIDE DR
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-2188
Facility ID: 28626
Secondary Address: Not reported
Tank ID: 25983
Tank Status: REMOVED

HUNTER TRACTOR CO (Continued) **U003667408**

Tank Type: Underground
Tank Capacity: 560
Tank Substance: USED OIL

Owner ID: 14529
Owner Name: HUNTER TRACTOR CO
Owner Address: 211 NORTH RIVERSIDE DR
Owner Address 2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Telephone: 505-753-2188
Facility ID: 28626
Secondary Address: Not reported
Tank ID: 25984
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: Not reported
Tank Substance: DIESEL

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24 **HUNTER TRACTOR CO** **FINDS** **1009421121**
211 N RIVERSIDE DR **110022671848**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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24 **BRIDGES RADIATOR SHOP** **CERCLIS** **1003108981**
235 RIVERSIDE DRIVE **FINDS** **NM0000605365**
ESPANOLA, NM 87532

CERCLIS:
Site ID: 0605365
Federal Facility: Not a Federal Facility
NPL Status: Not on the NPL
Non NPL Status: SI Ongoing

CERCLIS Site Contact Name(s):
Contact Name: Ladonna Walker
Contact Tel: (214) 665-6666
Contact Title: Site Assessment Manager (SAM)

Contact Name: Philip Ofosu
Contact Tel: (214) 665-3178
Contact Title: Site Assessment Manager (SAM)

CERCLIS Site Alias Name(s):
Alias Name: BRIDGES RADIATER SHOP
Alias Address: 235 RIVERSIDE DRIVE
ESPANOLA, NM 87532
Site Description: Please reference the Pre-CERCLIS Screening Report. There are no records of waste disposal, & piping from a waste tank empties outside onto the soil. This tank is currently being used for Trichloro Ethane (antifreez.) Since there are

BRIDGES RADIATOR SHOP (Continued) **1003108981**

not any records of waste disposal, the list of contaminants may include BTEX and metals. For a complete listing please refer to the Pre-CERCLIS Screening Report.

CERCLIS Assessment History:

Action:	DISCOVERY
Date Started:	Not reported
Date Completed:	03/07/2001
Priority Level:	Not reported

FINDS:

Other Pertinent Environmental Activity Identified at Site

CERCLIS (Comprehensive Environmental Response, Compensation, and Liability Information System) is the Superfund database that is used to support management in all phases of the Superfund program. The system contains information on all aspects of hazardous waste sites, including an inventory of sites, planned and actual site activities, and financial information.

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25 **NORGE TOWN DRY CLEANERS - ESPANOLA** **FINDS** **1009430637**
162 N RAILROAD AVE **110022746670**
ESPANOLA, NM 87532

FINDS:

Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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25 **NORGETOWN LAUNDRY & CLEANERS** **DRYCLEANERS** **S108348306**
162 N. RAILROAD AVE. **N/A**
ESPANOLA, NM 87532

DRYCLEANERS:

Contact:	SERAFIN ROYBAL
Phone #:	Not reported
Sic Code:	7216
Perc Dry Cleaner:	F
Perc Usage:	0
Machine Type:	Not reported
Make/Model:	Not reported
Serial Number:	Not reported
Capacity:	Not reported

25 NORGETOWN LAUNDRY & DRYCLNRS — **FINDS** — **1004565202**
162 NORTH RAILROAD AVENUE — **RCRA-CESQG** — **NMD986673705**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

AFS (Aerometric Information Retrieval System (AIRS) Facility Subsystem) replaces the former Compliance Data System (CDS), the National Emission Data System (NEDS), and the Storage and Retrieval of Aerometric Data (SAROAD). AIRS is the national repository for information concerning airborne pollution in the United States. AFS is used to track emissions and compliance data from industrial plants. AFS data are utilized by states to prepare State Implementation Plans to comply with regulatory programs and by EPA as an input for the estimation of total national emissions. AFS is undergoing a major redesign to support facility operating permits required under Title V of the Clean Air Act.

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

CERCLIS (Comprehensive Environmental Response, Compensation, and Liability Information System) is the Superfund database that is used to support management in all phases of the Superfund program. The system contains information on all aspects of hazardous waste sites, including an inventory of sites, planned and actual site activities, and financial information.

RCRA-CESQG:

Date form received by agency:	02/11/1991
Facility name:	NORGETOWN LAUNDRY & DRYCLNRS
Facility address:	162 N RAIL RD AVE ESPANOLA, NM 87532
EPA ID:	NMD986673705
Mailing address:	RTE 1 BOX 102-A SANTA FE, NM 87501
Contact:	SERAFIN ROYBAL
Contact address:	RTE 1 BOX 102-A SANTA FE, NM 87501
Contact country:	US
Contact telephone:	(505) 455-7855
Contact email:	Not reported
EPA Region:	06
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely

NORGETOWN LAUNDRY & DRYCLNRS (Continued) **1004565202**

hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	SERAFIN ROYBAL JR
Owner/operator address:	UNKNOWN UNKNOWN, NM 00000
Owner/operator country:	Not reported
Owner/operator telephone:	(000) 000-0000
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	Unknown
Mixed waste (haz. and radioactive):	Unknown
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	Unknown
Furnace exemption:	Unknown
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No
Off-site waste receiver:	Commercial status unknown

Hazardous Waste Summary:

Waste code:	F002
Waste name:	THE FOLLOWING SPENT HALOGENATED SOLVENTS: TETRACHLOROETHYLENE, METHYLENE CHLORIDE, TRICHLOROETHYLENE, 1,1,1-TRICHLOROETHANE, CHLOROBENZENE, 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE, ORTHO-DICHLOROBENZENE, TRICHLOROFLUOROMETHANE, AND 1,1,2-TRICHLOROETHANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE HALOGENATED SOLVENTS OR THOSE LISTED IN F001, F004, OR F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.
Violation Status:	No violations found

25 NORTH RAILROAD AVENUE PLUME
162 NORTH RAILROAD AVENUE
ESPANOLA, NM 87532

CERCLIS **1000482423**
NPL **NMD986670156**
ROD
US ENG CONTROLS
US INST CONTROL

CERCLIS:

Site ID:	0604299
Federal Facility:	Not a Federal Facility
NPL Status:	Currently on the Final NPL
Non NPL Status:	Not reported

CERCLIS Site Contact Name(s):

Contact Name:	Rosemary Vazquez
Contact Tel:	(214) 665-6622
Contact Title:	Community Involvement Coordinator
Contact Name:	Petra Sanchez
Contact Tel:	(214) 665-6686
Contact Title:	Remedial Project Manager (RPM)
Contact Name:	Ladonna Walker
Contact Tel:	(214) 665-6666
Contact Title:	Site Assessment Manager (SAM)

CERCLIS Site Alias Name(s):

Alias Name:	ESPANOLA WELLS
Alias Address:	Not reported RIO ARRIBA, NM
Alias Name:	ESPANOLA WELLS
Alias Address:	703 BOND ST/104 S. RAILROAD AVENUE ESPANOLA, NM 87532
Alias Name:	NORTH RAILROAD AVENUE
Alias Address:	703 BOND ST/104 S. RAILROAD AVENUE ESPANOLA, NM 87532
Alias Name:	NORTH RAILROAD AVENUE PLUME
Alias Address:	703 BOND ST/104 S. RAILROAD AVENUE ESPANOLA, NM 87532
Alias Name:	NORTH RAILROAD AVENUE PLUME
Alias Address:	162 NORTH RAILROAD AVENUE ESPANOLA, NM 87532

Site Description: The North Railroad Avenue Plume Superfund Site is in Espa?ola, New Mexico and consists of a contaminated ground water plume approximately 58 acres in area. The plume extends in an elliptical shape, originating from the Norge Town Dry Cleaner and Laundromat facility, to approximately 3/4 mile south of 113 North Railroad Avenue. The geographic coordinates of the Site are 35 degrees, 59 minutes, 31.0 seconds (35/ 59’ 31") latitude and 106/ 4’ 53" west longitude. The Site is within the 100-year flood-plain for the Rio Grande, as defined by the Federal Emergency Management Agency. The Rio Grande is located approximately 0.5 mile east of the source. The U. S. Environmental Protection Agency (EPA) is the lead agency for selecting the remedy for the Site. The NMED has been the lead agency for performing the Remedial Investigation/Feasibility Study (RI/FS) and will continue to be the lead agency for implementing the Remedial Design (RD) and the Remedial Action (RA) with support from the Pueblo of Santa Clara and EPA. Activities at the Site are currently Fund-financed.The aquifer in which the plume is located is the only source of drinking water for the City of Espanola and the Santa Clara Pueblo. As of the 1990 Census, approximately 78.4percent of the population in Espanola was connected to the

NORTH RAILROAD AVENUE PLUME (Continued) **1000482423**

municipal water system. Current trends in population growth reveal estimated population growth within the City from 11,908 people in the year 2000, to 13,657 people in the year 2050. Total ground water extracted in 1998 was 428,129,000 gallons. The City of Espanola is currently preparing a Phase II Water System Master Plan, which will consider future growth and expansion of the water system service area.Above the plume, on the surface, the land is occupied by mixed commercial, light industry, residential, and rural properties. Paved roads, unpaved and paved lots, landscaped yards with gardens, and buildings occupy the northern area of the Site. This surface land is primarily fee land, that is, it is owned by private individuals, the City, County, or state. The southern portion of the Site is Santa Clara Pueblo trust land, meaning that it is land owned by the Pueblo. Riparian woodlands near the Rio Grande occupy thesouthern portion of the Site. The entire Site is within the exterior boundary of the Santa Clara Pueblo.The area within the town of Espa?ola that is in the vicinity of the Site is zoned as a Central Business District with a Historic Zone Overlay. Land uses in the vicinity of the Site include land that is within and outside the jurisdiction of the City of Espa?ola and includes commercial, light industrial, residential, and small-scale agriculture. These are the reasonably anticipated future landuses for the Site. The potential future use of ground water will continue to be as a drinking water source for the community. The aquifer in which the plume is located is currently the only source of drinking water for the City of Espa?ola and the Santa Clara Pueblo.Both businesses and residences are above the ground water plume. The nearest residence is located 250 feet to the east of the Norge Town facility. Some of the nearby residences use well water for irrigation; however, investigations conducted by NMED determined that the wells in the vicinity of the plume were not affected by the contaminants, with the exception of one private well. Private wells in the vicinity of the Site will continue to be sampled to ensure protection and to determine whether the plume has reached any private wells.Several buildings lie over the plume. The northernmost building on the Site is the Norge Town facility. An unpaved parking area surrounds it. In the next lot south of the Norge Town facility are two office buildings, both surrounded by paved lots or concrete sidewalks. One of these buildings is currently vacant. To the south of these buildings across Hunter Street is an automobile dealership, Rio Valley Ford. This property consists of several buildings and paved parking areas. To the west of the dealership, across Calle Espinosa, is a school building (Las Cumbres Learning Center) which serves physically challenged children from Northern New Mexico. On the southwest side, there is an outdoor play area behind this building. The play area consists of a variety of surfaces including concrete, wood chips, grass, sand, and tile. A paved lot is to the east of the learning center. Currently, there is an empty, unpaved lot tothe south of the learning services building. South of the learning center and the automobile dealership, across Paseo de Onate, are several businesses including a hardware store, a furniture store, an office building, an auto transmission repair shop, the municipal courthouse, and an auto tow-yard.Residences also occupy this area. Riparian woodlands, pasture land and small-scale agricultural areas are found to the south of the residential/commercial area across State Road 201. The plaza area and a residential area lie to the west of the plume. A junior high school is one block east of the Norge Town facility. The plaza includes a park area, tourist center, and a post office. To the north of the Site is a mostly residential area, but a day care facility is located a few blocks north. A community center with a swimming pool and library is located a few blocks to the northwest of the Norge Town facility. The offices of the City of Espanola are located a few blocks to the north and northwest of the Norge Town facility. The southern portion of the Site is occupied by residences, commercial buildings, and the riparian woodlands (bosque).In the southern most portion of the Site, the plume

NORTH RAILROAD AVENUE PLUME (Continued) **1000482423**

crosses onto Pueblo lands and includes the bosque area. The leading edge of the plume currently intersects the Rio Grande and adjacent riparian/wetland areas. The river and adjacent bosque is used for obtaining natural resources such as fishing and hunting of small game, as well as for gathering edible and medicinal plants. Recreational swimming is also part of the land use of the river and bosque. There are agricultural lands near the southern plume location, including both crops and livestock.The Site consists of contaminated soil and ground water containing chlorinated solvents, including tetrachloroethylene (PCE); trichloroethylene (TCE); cis 1,2-dichloroethylene (cis-1,2-DCE), and trans-1,2-dichloroethylene (trans-l, 2-DCE). The contaminated plume affects an aquifer which isthe only drinking water source in the City of Espa?ola and lies within the exterior boundaries of the Santa Clara Pueblo. The actual source of contamination resulting from the Norge Town facility was the lint trap in which waste water and other material were formerly deposited. This lint trap has been cleaned out, filled with sand, and is no longer in use. Norge Town Dry Cleaners and Laundromat is still operating, but there is no evidence to indicate that the operation is contaminating ground water. The current operator has submitted copies of waste manifests to the New Mexico Environment Department (NMED), indicating that the wastes are handled in accordance with Resource Conservation and Recovery Act (RCRA) regulations for conditionally exempt small quantity generators. Waste manifests submitted to NMED indicate that wastes from the Norge Town facility are disposed of by an approved hazardous waste handler.The chlorinated solvents contamination was discovered in ground water samplescollected in December 1989. The samples were collected from two City of Espa?ola municipal supply wells by the New Mexico Environmental Improvement Division (NMEID), the predecessor of the NMED. As a result of the findings described above, both wells were disconnected within a few weeks of receiving results that the wells were contaminated above the MCLs.A Superfund Preliminary Assessment (PA) report was performed by the NMEID in July 1990. PCE and TCE were identified as the primaryContaminants of Potential Concern (COPCs). Ground water was considered to be the primary pathway of concern. Surface water was considered to be a potential pathway due to the location of an open ditch that runs into the Santa Clara Ditch. Air and soil pathways were not evaluated at this time. Based on this assessment, a Screening Site Assessment was conducted in September 1991.March 1992 NMED submitted a Screening Site Inspection (SSI) Report to EPA for work performed in September through November 1991. Eighteen private wells were identified within the 1,000-foot radius of the municipal wells. Ten of these wells were sampled during the SSI. One of the private irrigation wells was contaminated with PCE, TCE, and 1,2-DCE. Based on these results, a Listing Site Inspection (LSI) was conducted in 1993. The LSI Report was submitted to EPA by NMED in April. During this investigation, four wells were drilled and sampled in the vicinity of Chavez Street. Boreholes were also drilled at various potential source areas to determine if these locations had released PCE and TCE into the environment. The NMED completed the City of Espa?ola, New Mexico Wellhead Protection Study in January 1994. This study provides information on the Espa?ola municipal wells and community wells. The report also describes other possible contamination sources and private wells located within the 1,000-foot wellhead protection area of each municipal and community well.In April 1995 High levels of PCE ranging from100 micrograms per liter (ug/L) to 1000 ug/L were detected in samples collected from monitoring wells that were installed as part of two leaking underground storage tank (LUST) investigations. The LUST investigations included the following sites: Exxon El Centre near the comer of Onate Street and Delgado Street to the west of the Norge Town facility; Circle K Store south of Onate Street between Hill Street and Bond Street in the area of the current Espanola Plaza to the southwest of theNorge Town facility. A plume containing benzene, toluene, ethylbenzene, and xylene (BTEX) was found to be associated

NORTH RAILROAD AVENUE PLUME (Continued) **1000482423**

with the Exxon El Centro Site. This BTEX ground water plume may have commingled with the PCE originating from the Norge Town facility and affected the fate and transport of the contaminants in this area.December 1996 The NMED Ground Water Quality Bureau Superfund Oversight Section prepared the Espanola Wells Site 1996 Investigation Report. Effluent from the washing machines of the Norge Town facility drained through the lint trap and into the Espa?ola sewer system. During this investigation, PCE concentrations of 100 to 100,000 ug/L were found in ground water down-gradient from the Norge Town facility. Relatively low concentrations were detected in ground water directly up-gradient of the facility. High levels of PCE, as well as degradation products of PCE (TCE and 1,2-DCE) and several semi-volatile organic contaminants (SVOCs) were found in the lint trap immediately adjacent to the Norge Town facility. June through August 1997, A sub-surface investigation was conducted adjacent to the Norge Town facility by the NMED. This investigation included drilling one boring to investigate Site stratigraphy and installing five monitoring wells to delinineate the plume. The new monitoring wells, private wells, and pre-existing monitoring wells installed for performing the LUST investigation were sampled and evaluated. The lint trap adjacent to the Norge Town facility was also cleaned out and investigated. During this investigation, PCE concentrations as high as 6,900 ug/L were discovered in the shallow monitoring wells closest to the Norge Town facility lint trap. A clay layer was discovered at approximately 25 feet below ground surface (bgs) beneath the Norge Town facility. Contamination was not found below this clay layer.June 1998 The NMED Ground Water Quality Bureau Superfund Oversight Section prepared an RI/FS Work Plan. The Work Plan summarizes all investigation activities conducted at the Site before June 1998, and outlines additional investigation activities required to characterize the Site. It was approved by EPA in July 1998, A Health and Safety Plan and a Community Relations Plan were developed for the Site in concert with the RI/FS Work Plan. The Quality Assurance Project Plan (QAPP) was approved by EPA in July 1998. July 1998 The Site was Proposed to the National Priorities List (NPL) on July 20, 1998, primarily due to the threat of contamination to municipal water supply wells. The EPA added the Site to the final NPL on January 19,1999, with a Hazard Ranking Score of 50.There are two leaking Underground Storage Tank sites that are adjacent to, but not part of the Site. In the past, these leaking tanks released contamination, including benzene, toluene, ethylbenzene, and xylene (BTEX) to ground water. The BTEX contamination is to the west of the Site. Currently, this BTEX plume does not appear to be commingled with thechlorinated solvent plume although they may have mixed in the past because the daughter products that have been measured could be the result of enhanced degradation from the presence of the BTEX compounds.A Record of Decision for this site was completed September 27, 2001.

CERCLIS Assessment History:

Action:	DISCOVERY
Date Started:	Not reported
Date Completed:	08/01/1990
Priority Level:	Not reported
Action:	PRELIMINARY ASSESSMENT
Date Started:	Not reported
Date Completed:	10/01/1990
Priority Level:	High
Action:	SITE INSPECTION
Date Started:	03/08/1992
Date Completed:	03/08/1992
Priority Level:	High

NORTH RAILROAD AVENUE PLUME (Continued) **1000482423**

Action: EXPANDED SITE INSPECTION
Date Started: 09/27/1993
Date Completed: 03/31/1998
Priority Level: Recommended for HRS Scoring

Action: PROPOSAL TO NATIONAL PRIORITIES LIST
Date Started: Not reported
Date Completed: 07/28/1998
Priority Level: Not reported

Action: NON-NATIONAL PRIORITIES LIST POTENTIALLY RESPONSIBLE PARTY SEARCH
Date Started: 12/30/1993
Date Completed: 01/01/1999
Priority Level: Not reported

Action: FINAL LISTING ON NATIONAL PRIORITIES LIST
Date Started: Not reported
Date Completed: 01/19/1999
Priority Level: Not reported

Action: Notice Letters Issued
Date Started: Not reported
Date Completed: 01/30/2001
Priority Level: Not reported

Action: RECORD OF DECISION
Date Started: Not reported
Date Completed: 09/27/2001
Priority Level: Final Remedy Selected at Site

Action: COMBINED REMEDIAL INVESTIGATION/FEASIBILITY STUDY
Date Started: 09/09/1996
Date Completed: 09/27/2001
Priority Level: Not reported

Action: ISSUE REQUEST LETTERS (104E)
Date Started: Not reported
Date Completed: 02/07/2002
Priority Level: Not reported

Action: REMEDIAL DESIGN
Date Started: 09/15/1999
Date Completed: 02/14/2003
Priority Level: Not reported

Action: ISSUE REQUEST LETTERS (104E)
Date Started: Not reported
Date Completed: 03/17/2003
Priority Level: Not reported

Action: NATIONAL PRIORITIES LIST RESPONSIBLE PARTY SEARCH
Date Started: 01/26/1999
Date Completed: 06/02/2003
Priority Level: Search Complete, No Viable PRPs

Action: Notice Letters Issued
Date Started: Not reported

NORTH RAILROAD AVENUE PLUME (Continued) **1000482423**

Date Completed: 10/22/2003
Priority Level: Not reported

Action: ISSUE REQUEST LETTERS (104E)
Date Started: Not reported
Date Completed: 10/22/2003
Priority Level: Not reported

Action: TECHNICAL ASSISTANCE GRANT
Date Started: 03/06/2001
Date Completed: 03/05/2004
Priority Level: Not reported

Action: REMEDIAL ACTION
Date Started: 09/08/2004
Date Completed: Not reported
Priority Level: Not reported

Action: REMOVAL NEGOTIATIONS
Date Started: Not reported
Date Completed: 09/29/2004
Priority Level: Not reported

NPL:
EPA ID: NMD986670156
EPA Region: 06
Federal: N
Final Date: 1/19/1999

Site Details:
Site Name: NORTH RAILROAD AVENUE PLUME
Site Status: Final
Site Zip: 87532
Site City: ESPANOLA
Site State: NM
Federal Site: No
Site County: RIO ARRIBA
EPA Region: 06
Date Proposed: 07/28/98
Date Deleted: Not reported
Date Finalized: 01/19/99

Substance Details:
NPL Status: Currently on the Final NPL
Substance ID: Not reported
Substance: Not reported
CAS #: Not reported
Pathway: Not reported
Scoring: Not reported

NPL Status: Currently on the Final NPL
Substance ID: C324
Substance: CIS-1,2-DICHLOROETHYLENE
CAS #: 156-59-2
Pathway: GROUND WATER PATHWAY

NORTH RAILROAD AVENUE PLUME (Continued) **1000482423**

Scoring: 4

NPL Status: Currently on the Final NPL
Substance ID: U079
Substance: TRANS-DICHLOROETHYLENE, 1,2-
CAS #: 156-60-5
Pathway: GROUND WATER PATHWAY
Scoring: 4

NPL Status: Currently on the Final NPL
Substance ID: U210
Substance: TETRACHLOROETHENE
CAS #: 127-18-4
Pathway: GROUND WATER PATHWAY
Scoring: 4

NPL Status: Currently on the Final NPL
Substance ID: U228
Substance: TRICHLOROETHYLENE (TCE)
CAS #: 79-01-6
Pathway: GROUND WATER PATHWAY
Scoring: 2

Summary Details:

Conditions at Proposal July 28, 1998): A plume of contaminated ground water has been identified in Espanola, Rio Arriba County, New Mexico. The precise extent of the plume has not yet been identified; however, based on analyses of ground waterfrom 7 wells, it is approximately 16 acres in area. The primary contaminants detected in the ground water plume are trichloroethene, tetrachloroethene, cis-1,2-dichloroethene, and trans-1,2-trichloroethene. Adequate information is not currently available to directly attribute contamination detected at the potential sources to the ground water plume, therefore, the site has been scored based on a contaminated ground water plume with no source identified. Based on analytical results fromvarious investigations conducted in the town of Espanola, a plume of contaminated ground water at concentrations ranging up to 525 micrograms per liter ug/L) has been identified. The ground water pathway contamination is of concern because of thedocumentation of observed releases in ground water 2 public supply wells, 2 private drinking water wells, and 3 monitoring wells) and the fact that the contaminated aquifer is the sole source of drinking water in the area. Two public supply wellsdisplayed concentrations that exceeded health-based benchmarks cancer risk and/or MCL). Use of these public supply wells were discontinued in December 1989 and January 1990, respectively. Status January 1999): EPA is considering various alternatives for this site. The description of the site release) is based on information available at the time the site was scored. The description may change as additional information is gathered on the sources and extent of contamination.See 56 FR 5600, February 11, 1991, or subsequent FR notices.

Site Status Details:
NPL Status: Final
Proposed Date: 07/28/1998
Final Date: 01/19/1999
Deleted Date: Not reported

Narratives Details:
NPL Name: NORTH RAILROAD AVENUE PLUME

NORTH RAILROAD AVENUE PLUME (Continued) **1000482423**

City: ESPANOLA
State: NM

ROD:
Full-text of USEPA Record of Decision(s) is available from EDR.

US ENG CONTROLS:
EPA ID: NMD986670156
Site ID: 0604299
Name: NORTH RAILROAD AVENUE PLUME
Address: 162 NORTH RAILROAD AVENUE
ESPANOLA, NM 87532
EPA Region: 06
County: RIO ARRIBA
Event Code: Not reported
Actual Date: Not reported

Action ID: 001
Action Name: REMEDIAL ACTION
Action Completion date: / /
Planned Complet. date: 09/30/2020
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Bioremediation (In-Situ)

Action ID: 001
Action Name: REMEDIAL ACTION
Action Completion date: / /
Planned Complet. date: 09/30/2020
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Component Separation, (N.O.S.)

Action ID: 001
Action Name: REMEDIAL ACTION
Action Completion date: / /
Planned Complet. date: 09/30/2020
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Extraction

Action ID: 001
Action Name: REMEDIAL ACTION
Action Completion date: / /
Planned Complet. date: 09/30/2020
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Vapor Extraction

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2001
Planned Complet. date: 09/30/2001
Operable Unit: 01
Contaminated Media : Groundwater

NORTH RAILROAD AVENUE PLUME (Continued) **1000482423**

Engineering Control: Bioremediation (In-Situ)

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2001
Planned Complet. date: 09/30/2001
Operable Unit: 01
Contaminated Media : Groundwater
Engineering Control: Natural Attenuation

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2001
Planned Complet. date: 09/30/2001
Operable Unit: 01
Contaminated Media : Liquid Waste
Engineering Control: Bioremediation (In-Situ)

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2001
Planned Complet. date: 09/30/2001
Operable Unit: 01
Contaminated Media : Liquid Waste
Engineering Control: Component Separation, (N.O.S.)

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2001
Planned Complet. date: 09/30/2001
Operable Unit: 01
Contaminated Media : Liquid Waste
Engineering Control: Directional Wells (Enhancement)

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2001
Planned Complet. date: 09/30/2001
Operable Unit: 01
Contaminated Media : Liquid Waste
Engineering Control: Disposal

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2001
Planned Complet. date: 09/30/2001
Operable Unit: 01
Contaminated Media : Liquid Waste
Engineering Control: Natural Attenuation

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2001
Planned Complet. date: 09/30/2001
Operable Unit: 01
Contaminated Media : Liquid Waste
Engineering Control: Other, (N.O.S.)

NORTH RAILROAD AVENUE PLUME (Continued) **1000482423**

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2001
Planned Complet. date: 09/30/2001
Operable Unit: 01
Contaminated Media : Liquid Waste
Engineering Control: Recovery Wells

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2001
Planned Complet. date: 09/30/2001
Operable Unit: 01
Contaminated Media : Liquid Waste
Engineering Control: Recycling

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2001
Planned Complet. date: 09/30/2001
Operable Unit: 01
Contaminated Media : Liquid Waste
Engineering Control: Treatment, (N.O.S.)

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2001
Planned Complet. date: 09/30/2001
Operable Unit: 01
Contaminated Media : Soil
Engineering Control: Discharge

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2001
Planned Complet. date: 09/30/2001
Operable Unit: 01
Contaminated Media : Soil
Engineering Control: Gas Collection/Treatment

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2001
Planned Complet. date: 09/30/2001
Operable Unit: 01
Contaminated Media : Soil
Engineering Control: Monitoring

Action ID: 001
Action Name: RECORD OF DECISION
Action Completion date: 09/27/2001
Planned Complet. date: 09/30/2001
Operable Unit: 01
Contaminated Media : Soil
Engineering Control: Soil Vapor Extraction (SVE)

NORTH RAILROAD AVENUE PLUME (Continued) **1000482423**

US INST CONTROL:

EPA ID:	NMD986670156
Site ID:	0604299
Name:	NORTH RAILROAD AVENUE PLUME
Action Name:	RECORD OF DECISION
Address:	162 NORTH RAILROAD AVENUE ESPANOLA, NM 87532
EPA Region:	06
County:	RIO ARRIBA
Event Code:	Not reported
Inst. Control:	Groundwater use/well drilling regulation
Actual Date:	Not reported
Planned Complet. Date:	09/30/2001
Complet. Date:	09/27/2001
Operable Unit:	01
Contaminated Media :	Groundwater

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26 **FORMER CIRCLE K 716** **UST** **U003190949**
706 BOND NW **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	16456
Owner Name:	CARPENTER A B
Owner Address:	1717 NORFOLK AVENUE 3
Owner Address 2:	Not reported
Owner City,St,Zip:	LUBBOCK, TX 79416
Owner Telephone:	Not reported
Facility ID:	28112
Secondary Address:	Not reported
Tank ID:	24702
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	8000
Tank Substance:	GASOLINE UNKNOWN TYPE

Owner ID:	16456
Owner Name:	CARPENTER A B
Owner Address:	1717 NORFOLK AVENUE 3
Owner Address 2:	Not reported
Owner City,St,Zip:	LUBBOCK, TX 79416
Owner Telephone:	Not reported
Facility ID:	28112
Secondary Address:	Not reported
Tank ID:	24703
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	8000
Tank Substance:	GASOLINE UNKNOWN TYPE

26 ESPANOLA PUBLIC SCHOOLS — **FINDS** **1004565154**
714 CALLE DON DIEGO — **FTTS** **110011429695**
ESPANOLA, NM 87537 — **HIST FTTS**

FINDS:
Other Pertinent Environmental Activity Identified at Site

NCDB (National Compliance Data Base) supports implementation of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) and the Toxic Substances Control Act (TSCA). The system tracks inspections in regions and states with cooperative agreements, enforcement actions, and settlements.

FTTS INSP:

Inspection Number:	Not reported
Region:	06
Inspection Date:	Not reported
Inspector:	CAMPBELL BM
Violation occurred:	Yes
Investigation Type:	AHERA, Enforcement, SEE Conducted
Investigation Reason:	Neutral Scheme, Region
Legislation Code:	TSCA
Facility Function:	User

HIST FTTS INSP:

Inspection Number:	19950809VI003 1
Region:	06
Inspection Date:	Not reported
Inspector:	CAMPBELL BM
Violation occurred:	Yes
Investigation Type:	AHERA, Enforcement, SEE Conducted
Investigation Reason:	Neutral Scheme, Region
Legislation Code:	TSCA
Facility Function:	User

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26 HOMEBOUND/HOSPITAL — **FINDS** **1008279649**
714 CALLE DON DIEGO — **110021726211**
ESPANOLA, NM 87537

FINDS:
Other Pertinent Environmental Activity Identified at Site

NCES (National Center for Education Statistics) is the primary federal entity for collecting and analyzing data related to education in the United States and other nations and the institute of education sciences.

27 **NATIONAL GUARD ARMORY M** **UST** **U003190964**
1010 ARMADA ST **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	14145
Owner Name:	NEW MEXICO (STATE OF) - ARMORY BOARD
Owner Address:	10 BATAN BLVD
Owner Address 2:	Not reported
Owner City,St,Zip:	SANTA FE, NM 87505
Owner Telephone:	505-474-1877
Facility ID:	29557
Secondary Address:	Not reported
Tank ID:	27978
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	1000
Tank Substance:	DIESEL

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28 **VALLEY COLLISION** **RCRA-CESQG** **1009218002**
401 CALLE CHAVEZ **NMR000010629**
ESPANOLA, NM 87532

RCRA-CESQG:

Date form received by agency:	12/14/2005
Facility name:	VALLEY COLLISION
Facility address:	401 CALLE CHAVEZ ESPANOLA, NM 87532
EPA ID:	NMR000010629
Mailing address:	CALLE CHAVEZ ESPANOLA, NM 87532
Contact:	ANTHONY VANDERVOSSEN
Contact address:	CALLE CHAVEZ ESPANOLA, NM 87532
Contact country:	US
Contact telephone:	(999) 999-9999
Contact email:	Not reported
EPA Region:	06
Land type:	Private
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	ANTHONY VANDERVOSSEN
Owner/operator address:	CALLE CHAVEZ ESPANOLA, NM 87532

VALLEY COLLISION (Continued) **1009218002**

Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Operator
Owner/Op start date: 01/01/1989
Owner/Op end date: Not reported

Owner/operator name: ANTHONY VANDERVOSSEN
Owner/operator address: CALLE CHAVEZ
ESPANOLA, NM 87532
Owner/operator country: US
Owner/operator telephone: Not reported
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 01/01/1989
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No
Off-site waste receiver: Commercial status unknown

Hazardous Waste Summary:
Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

Waste code: D018
Waste name: BENZENE

Waste code: D035
Waste name: METHYL ETHYL KETONE

Waste code: D036
Waste name: NITROBENZENE

Waste code: D038
Waste name: PYRIDINE

VALLEY COLLISION (Continued) **1009218002**

Waste code: D040
Waste name: TRICHLOROETHYLENE

Waste code: F003
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Waste code: F005
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: TOLUENE, METHYL ETHYL KETONE, CARBON DISULFIDE, ISOBUTANOL, PYRIDINE, BENZENE, 2-ETHOXYETHANOL, AND 2-NITROPROPANE; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS OR THOSE SOLVENTS LISTED IN F001, F002, OR F004; AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 10/18/2005
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

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28 **VALLEY COLLISION** **FINDS** **1009317255**
401 CALLE CHAVEZ **110024432005**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

28 **PROFESSIONAL TRANSMISSION SERVICE** **UST** **U003190970**
412 CALLE CHAVEZ **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	16146
Owner Name:	MEDINA JOHN
Owner Address:	412 CALLE CHAVEZ
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-6900
Facility ID:	30059
Secondary Address:	Not reported
Tank ID:	29129
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	550
Tank Substance:	USED OIL

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28 **PROFESSIONAL TRANSMISSION SERVICE** **FINDS** **1009425564**
412 CALLE CHAVEZ **110022747615**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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28 **PROFESSIONAL TRANSMISSION SERVICE** **RCRA-CESQG** **1009218001**
406 CALLE CHAVEZ **NMR000010611**
ESPANOLA, NM 87532

RCRA-CESQG:

Date form received by agency:	12/14/2005
Facility name:	PROFESSIONAL TRANSMISSION SERVICE
Facility address:	406 CALLE CHAVEZ ESPANOLA, NM 87532
EPA ID:	NMR000010611
Mailing address:	CALLE CHAVEZ ESPANOLA, NM 87532
Contact:	JOHN MEDINA
Contact address:	CALLE CHAVEZ ESPANOLA, NM 87532
Contact country:	US
Contact telephone:	(505) 927-3659
Contact email:	Not reported
EPA Region:	06
Land type:	Private
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less

PROFESSIONAL TRANSMISSION SERVICE (Continued) **1009218001**

of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	JOHN MEDINA
Owner/operator address:	CALLE CHAVEZ ESPANOLA, NM 87532
Owner/operator country:	US
Owner/operator telephone:	(505) 927-3659
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	01/01/1989
Owner/Op end date:	Not reported

Owner/operator name:	JOHN MEDINA
Owner/operator address:	CALLE CHAVEZ ESPANOLA, NM 87532
Owner/operator country:	US
Owner/operator telephone:	(505) 927-3659
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	01/01/1989
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No
Off-site waste receiver:	Commercial status unknown

Hazardous Waste Summary:

Waste code:	D001
Waste name:	IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

PROFESSIONAL TRANSMISSION SERVICE (Continued) **1009218001**

Waste code: F003
Waste name: THE FOLLOWING SPENT NON-HALOGENATED SOLVENTS: XYLENE, ACETONE, ETHYL ACETATE, ETHYL BENZENE, ETHYL ETHER, METHYL ISOBUTYL KETONE, N-BUTYL ALCOHOL, CYCLOHEXANONE, AND METHANOL; ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONLY THE ABOVE SPENT NON-HALOGENATED SOLVENTS; AND ALL SPENT SOLVENT MIXTURES/BLENDS CONTAINING, BEFORE USE, ONE OR MORE OF THE ABOVE NON-HALOGENATED SOLVENTS, AND, A TOTAL OF TEN PERCENT OR MORE (BY VOLUME) OF ONE OR MORE OF THOSE SOLVENTS LISTED IN F001, F002, F004, AND F005, AND STILL BOTTOMS FROM THE RECOVERY OF THESE SPENT SOLVENTS AND SPENT SOLVENT MIXTURES.

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 10/18/2005
Evaluation: COMPLIANCE ASSISTANCE VISIT
Area of violation: Not reported
Date achieved compliance: Not reported
Evaluation lead agency: State

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28 **PROFESSIONAL TRANSMISSION SERVICE** **FINDS** **1009317254**
406 CALLE CHAVEZ **110024431998**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

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28 **ESPANOLA CENTRAL OFFICE A** **UST** **U003667406**
100 ONATE **N/A**
ESPANOLA, NM 87532

UST:
Owner ID: 302
Owner Name: GTE SOUTHWEST INC
Owner Address: PO BOX 1001
Owner Address 2: ATTN KEN BEARD TXD1971A
Owner City,St,Zip: SAN ANGELO, TX 76902
Owner Telephone: 214-717-7840
Facility ID: 1221
Secondary Address: Not reported
Tank ID: 17766
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 500
Tank Substance: DIESEL

29 **EL PASIANO** **UST** **U003711664**
STATE RD 76 **N/A**
SANTA CRUZ, NM 87532

UST:

Owner ID:	17145
Owner Name:	SALAZAR ANGIE G
Owner Address:	PO BOX 51
Owner Address 2:	Not reported
Owner City,St,Zip:	SANTA CRUZ, NM 87567
Owner Telephone:	505-753-6723
Facility ID:	26317
Secondary Address:	MCCURDY RD INTERSECTION
Tank ID:	20395
Tank Status:	**CURRENTLY IN USE**
Tank Type:	Underground
Tank Capacity:	4000
Tank Substance:	UNLEADED GASOLINE

Owner ID:	17145
Owner Name:	SALAZAR ANGIE G
Owner Address:	PO BOX 51
Owner Address 2:	Not reported
Owner City,St,Zip:	SANTA CRUZ, NM 87567
Owner Telephone:	505-753-6723
Facility ID:	26317
Secondary Address:	MCCURDY RD INTERSECTION
Tank ID:	20396
Tank Status:	**CURRENTLY IN USE**
Tank Type:	Underground
Tank Capacity:	4000
Tank Substance:	UNLEADED GASOLINE

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30 **LOWER SAN PEDRO** **LUST** **S101646997**
S RIVERSIDE DR **N/A**
ESPANOLA, NM 87532

LUST:

Priority Rank:	19
Mitigating Factor Score:	1
Total Score To Assign Relative Rank:	7094
Release ID:	87
Facility ID:	29179
Date Release Reported:	03/03/1989
Status:	**Investigation, State Lead, CAF**
Status Date:	03/04/1989
Project Manager:	Danny Valenzuela

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30 **SAN PEDRO FOOD MART SHELL** **UST** **U001892003**
509 S RIVERSIDE DR **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	314
Owner Name:	BREWER OIL COMPANY
Owner Address:	2701 CANDELARIA NE
Owner Address 2:	Not reported
Owner City,St,Zip:	ALBUQUERQUE, NM 87107

SAN PEDRO FOOD MART SHELL (Continued) **U001892003**

Owner Telephone: 505-884-2040
Facility ID: 1772
Secondary Address: Not reported
Tank ID: 19154
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 2000
Tank Substance: UNLEADED GASOLINE

Owner ID: 314
Owner Name: BREWER OIL COMPANY
Owner Address: 2701 CANDELARIA NE
Owner Address 2: Not reported
Owner City,St,Zip: ALBUQUERQUE, NM 87107
Owner Telephone: 505-884-2040
Facility ID: 1772
Secondary Address: Not reported
Tank ID: 19155
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 4000
Tank Substance: UNLEADED GASOLINE

Owner ID: 314
Owner Name: BREWER OIL COMPANY
Owner Address: 2701 CANDELARIA NE
Owner Address 2: Not reported
Owner City,St,Zip: ALBUQUERQUE, NM 87107
Owner Telephone: 505-884-2040
Facility ID: 1772
Secondary Address: Not reported
Tank ID: 19156
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 300
Tank Substance: UNLEADED GASOLINE

Owner ID: 314
Owner Name: BREWER OIL COMPANY
Owner Address: 2701 CANDELARIA NE
Owner Address 2: Not reported
Owner City,St,Zip: ALBUQUERQUE, NM 87107
Owner Telephone: 505-884-2040
Facility ID: 1772
Secondary Address: Not reported
Tank ID: 19150
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 10000
Tank Substance: SUPER UNLEADED

Owner ID: 314
Owner Name: BREWER OIL COMPANY
Owner Address: 2701 CANDELARIA NE
Owner Address 2: Not reported
Owner City,St,Zip: ALBUQUERQUE, NM 87107
Owner Telephone: 505-884-2040

SAN PEDRO FOOD MART SHELL (Continued) **U001892003**

Facility ID: 1772
Secondary Address: Not reported
Tank ID: 19151
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 10000
Tank Substance: UNLEADED GASOLINE

Owner ID: 314
Owner Name: BREWER OIL COMPANY
Owner Address: 2701 CANDELARIA NE
Owner Address 2: Not reported
Owner City,St,Zip: ALBUQUERQUE, NM 87107
Owner Telephone: 505-884-2040
Facility ID: 1772
Secondary Address: Not reported
Tank ID: 19152
Tank Status: CURRENTLY IN USE
Tank Type: Underground
Tank Capacity: 10000
Tank Substance: UNLEADED PLUS

Owner ID: 314
Owner Name: BREWER OIL COMPANY
Owner Address: 2701 CANDELARIA NE
Owner Address 2: Not reported
Owner City,St,Zip: ALBUQUERQUE, NM 87107
Owner Telephone: 505-884-2040
Facility ID: 1772
Secondary Address: Not reported
Tank ID: 19153
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 1000
Tank Substance: UNLEADED GASOLINE

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30 **SAN PEDRO FOOD** **LUST** **S106118300**
509 S RIVERSIDE DR **N/A**
ESPANOLA, NM 87532

LUST:
Priority Rank: 296
Mitigating Factor Score: 3
Total Score To Assign Relative Rank: 667
Release ID: 1301
Facility ID: 1772
Date Release Reported: 06/05/1992
Status: Aggr Cleanup Completed, Resp Party
Status Date: 12/09/2003
Project Manager: Susan Von Gonten

Map ID Direction Distance Distance (ft.)	Site	Database(s)	EDR ID Number EPA ID Number
30	**SAN PEDRO FOOD MART SHELL** **509 S RIVERSIDE DR** **ESPANOLA, NM 87532**	**FINDS**	**1009422786** **110022718228**

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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30	**LUPE GARCIA BEST HEATING** **423 S RIVERSIDE DR** **ESPANOLA, NM 87532**	**FINDS**	**1009429519** **110022759264**

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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31	**LOS NINOS CENTER** **323 N. CORONADO** **ESPANOLA, NM 87532**	**FINDS**	**1008279647** **110021726042**

FINDS:
Other Pertinent Environmental Activity Identified at Site

NCES (National Center for Education Statistics) is the primary federal entity for collecting and analyzing data related to education in the United States and other nations and the institute of education sciences.

31	**RODRIQUEZ ELEMENTARY** **333 N. CORONADO AVE** **ESPANOLA, NM 87532**	**FINDS**	**1008276980** **110021692088**

FINDS:
Other Pertinent Environmental Activity Identified at Site

NCES (National Center for Education Statistics) is the primary federal entity for collecting and analyzing data related to education in the United States and other nations and the institute of education sciences.

32 ROY HONSTEIN OIL CO BULK PLANT — **AST** — **A100280095**
210 LOS ALAMOS HWY — **N/A**
ESPANOLA, NM 87532

AST:

Facility ID:	48400
Facility Addr 2:	Not reported
Tank ID:	33885
Capacity:	7500
Tank Status:	CURRENTLY IN USE
Substance:	GASOLINE UNKNOWN TYPE
Tank Type:	Aboveground
Owner ID:	16269
Owner Name:	SUPREME LLC DBA ROY HONSTEIN OIL CO A
Owner Addr:	210 LOS ALAMOS HWY
Owner Addr2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Phone:	505-753-3255

Facility ID:	48400
Facility Addr 2:	Not reported
Tank ID:	33886
Capacity:	20000
Tank Status:	CURRENTLY IN USE
Substance:	DIESEL
Tank Type:	Aboveground
Owner ID:	16269
Owner Name:	SUPREME LLC DBA ROY HONSTEIN OIL CO A
Owner Addr:	210 LOS ALAMOS HWY
Owner Addr2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Phone:	505-753-3255

Facility ID:	48400
Facility Addr 2:	Not reported
Tank ID:	33887
Capacity:	20000
Tank Status:	CURRENTLY IN USE
Substance:	DIESEL
Tank Type:	Aboveground
Owner ID:	16269
Owner Name:	SUPREME LLC DBA ROY HONSTEIN OIL CO A
Owner Addr:	210 LOS ALAMOS HWY
Owner Addr2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Phone:	505-753-3255

Facility ID:	48400
Facility Addr 2:	Not reported
Tank ID:	33888
Capacity:	20000
Tank Status:	CURRENTLY IN USE
Substance:	GASOLINE UNKNOWN TYPE
Tank Type:	Aboveground
Owner ID:	16269
Owner Name:	SUPREME LLC DBA ROY HONSTEIN OIL CO A
Owner Addr:	210 LOS ALAMOS HWY
Owner Addr2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532

ROY HONSTEIN OIL CO BULK PLANT (Continued) **A100280095**

Owner Phone: 505-753-3255

Facility ID: 48400
Facility Addr 2: Not reported
Tank ID: 33889
Capacity: 10000
Tank Status: CURRENTLY IN USE
Substance: DIESEL
Tank Type: Aboveground
Owner ID: 16269
Owner Name: SUPREME LLC DBA ROY HONSTEIN OIL CO A
Owner Addr: 210 LOS ALAMOS HWY
Owner Addr2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Phone: 505-753-3255

Facility ID: 48400
Facility Addr 2: Not reported
Tank ID: 33890
Capacity: 3000
Tank Status: CURRENTLY IN USE
Substance: KEROSENE
Tank Type: Aboveground
Owner ID: 16269
Owner Name: SUPREME LLC DBA ROY HONSTEIN OIL CO A
Owner Addr: 210 LOS ALAMOS HWY
Owner Addr2: Not reported
Owner City,St,Zip: ESPANOLA, NM 87532
Owner Phone: 505-753-3255

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32 **ROY HONSTEIN OIL COMPANY** **FINDS** **1004754441**
210 LOS ALAMOS HWY. **RCRA-CESQG** **NMR000004614**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

RCRA-CESQG:
Date form received by agency: 02/07/2001
Facility name: ROY HONSTEIN OIL COMPANY
Facility address: 210 LOS ALAMOS HWY.
ESPANOLA, NM 87532
EPA ID: NMR000004614
Mailing address: LOS ALAMOS HWY.
ESPANOLA, NM 87532
Contact: JOHN FRANCISCO

ROY HONSTEIN OIL COMPANY (Continued) **1004754441**

Contact address:	210 LOS ALAMOS HWY. ESPANOLA, NM 87532
Contact country:	US
Contact telephone:	(505) -75-3-32
Contact email:	Not reported
EPA Region:	06
Land type:	Facility is not located on Indian land. Additional information is not known.
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	ELBERTA HOSTEIN
Owner/operator address:	210 LOS ALAMOS HWY. ESPANOLA, NM 87532
Owner/operator country:	Not reported
Owner/operator telephone:	(505) -75-3-32
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	01/01/0001
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	Unknown
Mixed waste (haz. and radioactive):	Unknown
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	Unknown
Furnace exemption:	Unknown
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No
Off-site waste receiver:	Commercial status unknown

Violation Status: No violations found

Evaluation Action Summary:

Evaluation date: 02/06/2001

ROY HONSTEIN OIL COMPANY (Continued) **1004754441**

Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Not reported
Date achieved compliance:	Not reported
Evaluation lead agency:	State

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33 WALGREENS STORE NO 5157 **RCRA-SQG 1001493514**
1115 N RIVERSIDE DRIVE **FINDS NMR000003079**
ESPANOLA, NM 87532

RCRA-SQG:

Date form received by agency:	08/16/1999
Facility name:	WALGREENS STORE NO 5157
Facility address:	1115 N RIVERSIDE DRIVE ESPANOLA, NM 87532
EPA ID:	NMR000003079
Mailing address:	N RIVERSIDE DRIVE ESPANOLA, NM 87532
Contact:	MARK MCLEOD
Contact address:	1115 N RIVERSIDE DRIVE ESPANOLA, NM 87532
Contact country:	US
Contact telephone:	(505) 753-6993
Contact email:	Not reported
EPA Region:	06
Land type:	Private
Classification:	Small Small Quantity Generator
Description:	Handler: generates more than 100 and less than 1000 kg of hazardous waste during any calendar month and accumulates less than 6000 kg of hazardous waste at any time; or generates 100 kg or less of hazardous waste during any calendar month, and accumulates more than 1000 kg of hazardous waste at any time

Owner/Operator Summary:

Owner/operator name:	WALGREENS STORES
Owner/operator address:	1115 N RIVERSIDE DRIVE ESPANOLA, NM 87532
Owner/operator country:	Not reported
Owner/operator telephone:	(505) 753-6993
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	Not reported
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	Unknown
Mixed waste (haz. and radioactive):	Unknown
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	Unknown
Furnace exemption:	Unknown
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No

WALGREENS STORE NO 5157 (Continued) **1001493514**

Used oil transporter: No
Off-site waste receiver: Commercial status unknown

Hazardous Waste Summary:
Waste code: D011
Waste name: SILVER

Facility Has Received Notices of Violations:
Regulation violated: FR - 262.34(d)(5)(i)
Area of violation: Generators - General
Date violation determined: 08/14/2003
Date achieved compliance: Not reported
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 262 appendix #16
Area of violation: Generators - Manifest
Date violation determined: 08/14/2003
Date achieved compliance: Not reported
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 262 appendix #20
Area of violation: Generators - Manifest
Date violation determined: 08/14/2003
Date achieved compliance: Not reported
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 262.42(b)
Area of violation: Generators - General
Date violation determined: 08/14/2003
Date achieved compliance: Not reported
Violation lead agency: State
Enforcement action: Not reported

WALGREENS STORE NO 5157 (Continued) **1001493514**

Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 262.34(d)(4),262.34(a)(2)
Area of violation: Generators - General
Date violation determined: 08/14/2003
Date achieved compliance: Not reported
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 262.34(d)(4),262.24(a)(1&4)
Area of violation: Generators - General
Date violation determined: 08/14/2003
Date achieved compliance: Not reported
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 262.34(d)(4),262.34(a)(3)
Area of violation: Generators - General
Date violation determined: 08/14/2003
Date achieved compliance: Not reported
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported
Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Regulation violated: FR - 262.34(d)(5)(ii)(a,b,c)
Area of violation: Generators - General
Date violation determined: 08/14/2003
Date achieved compliance: Not reported
Violation lead agency: State
Enforcement action: Not reported
Enforcement action date: Not reported

WALGREENS STORE NO 5157 (Continued) **1001493514**

Enf. disposition status: Not reported
Enf. disp. status date: Not reported
Enforcement lead agency: Not reported
Proposed penalty amount: Not reported
Final penalty amount: Not reported
Paid penalty amount: Not reported

Evaluation Action Summary:
Evaluation date: 08/14/2003
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - Manifest
Date achieved compliance: Not reported
Evaluation lead agency: State

Evaluation date: 08/14/2003
Evaluation: COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation: Generators - General
Date achieved compliance: Not reported
Evaluation lead agency: State

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

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33 **WALGEENS STORE NO 5157** **HAZNET** **S105726668**
1115 N RIVERSIDE DR **N/A**
ESPANOLA, NM 87532

HAZNET:
Gepaid: NMR000003079
Contact: Mark Mcleod
Telephone: 5057536993
Facility Addr2: Not reported
Mailing Name: Not reported
Mailing Address: 1115 N Riverside Dr
Mailing City,St,Zip: Espanola, NM 87532
Gen County: Not reported
TSD EPA ID: Not reported
TSD County: 99
Waste Category: Laboratory waste chemicals
Disposal Method: Not reported
Tons: 0.25
Facility County: Not reported

Gepaid: NMR000003079
Contact: Mark Mcleod
Telephone: 5057536993
Facility Addr2: Not reported
Mailing Name: Not reported
Mailing Address: 1115 N Riverside Dr
Mailing City,St,Zip: Espanola, NM 87532

WALGEENS STORE NO 5157 (Continued) **S105726668**

Gen County:	Not reported
TSD EPA ID:	Not reported
TSD County:	99
Waste Category:	Laboratory waste chemicals
Disposal Method:	Recycler
Tons:	0.87
Facility County:	Not reported

Gepaid:	NMR000003079
Contact:	Mark Mcleod
Telephone:	5057536993
Facility Addr2:	Not reported
Mailing Name:	Not reported
Mailing Address:	1115 N Riverside Dr
Mailing City,St,Zip:	Espanola, NM 87532
Gen County:	Not reported
TSD EPA ID:	Not reported
TSD County:	99
Waste Category:	Laboratory waste chemicals
Disposal Method:	Recycler
Tons:	2.08
Facility County:	Not reported

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33 **COTTONWOOD RV PARK** **FINDS** **1010013867**
1318 S RIVERSIDE DR **110028278254**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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33 **FAIRVIEW TRAILER COURT** **FINDS** **1008196890**
1007 NORTH RIVERSIDE DR. **110020832928**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

Not reported

PCS (Permit Compliance System) is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

33 WESTERN HOLIDAY MOTEL — **FINDS** — **1010031361**, **110028002364**
1215 S RIVERSIDE DR, US HWY 285
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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33 HONDA & ACURA AUTOMOTIVE — **RCRA-CESQG** — **1010324813**, **NMR000011486**
1109 N RIVERSIDE DRIVE
ESPANOLA, NM 87532

RCRA-CESQG:

Date form received by agency:	06/29/2006
Facility name:	HONDA & ACURA AUTOMOTIVE
Facility address:	1109 N RIVERSIDE DRIVE ESPANOLA, NM 87532
EPA ID:	NMR000011486
Mailing address:	N RIVERSIDE DRIVE ESPANOLA, NM 87532
Contact:	JOSEPH QUINTANA
Contact address:	N RIVERSIDE DRIVE ESPANOLA, NM 87532
Contact country:	US
Contact telephone:	505-747-8000
Contact email:	Not reported
EPA Region:	06
Land type:	Private
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	JOSEPH QUINTANA
Owner/operator address:	N RIVERSIDE DR ESPANOLA, NM 87532
Owner/operator country:	US
Owner/operator telephone:	505-747-8000
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	01/01/2005
Owner/Op end date:	Not reported
Owner/operator name:	RICK SALAZAR

HONDA & ACURA AUTOMOTIVE (Continued) **1010324813**

Owner/operator address: N RIVERSIDE DR
ESPANOLA, NM 87532
Owner/operator country: US
Owner/operator telephone: 505-747-8000
Legal status: Private
Owner/Operator Type: Owner
Owner/Op start date: 01/01/2005
Owner/Op end date: Not reported

Handler Activities Summary:
U.S. importer of hazardous waste: No
Mixed waste (haz. and radioactive): No
Recycler of hazardous waste: No
Transporter of hazardous waste: No
Treater, storer or disposer of HW: No
Underground injection activity: No
On-site burner exemption: No
Furnace exemption: No
Used oil fuel burner: No
Used oil processor: No
User oil refiner: No
Used oil fuel marketer to burner: No
Used oil Specification marketer: No
Used oil transfer facility: No
Used oil transporter: No
Off-site waste receiver: Commercial status unknown

Hazardous Waste Summary:
Waste code: D001
Waste name: IGNITABLE HAZARDOUS WASTES ARE THOSE WASTES WHICH HAVE A FLASHPOINT OF LESS THAN 140 DEGREES FAHRENHEIT AS DETERMINED BY A PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER. ANOTHER METHOD OF DETERMINING THE FLASH POINT OF A WASTE IS TO REVIEW THE MATERIAL SAFETY DATA SHEET, WHICH CAN BE OBTAINED FROM THE MANUFACTURER OR DISTRIBUTOR OF THE MATERIAL. LACQUER THINNER IS AN EXAMPLE OF A COMMONLY USED SOLVENT WHICH WOULD BE CONSIDERED AS IGNITABLE HAZARDOUS WASTE.

Waste code: D002
Waste name: A WASTE WHICH HAS A PH OF LESS THAN 2 OR GREATER THAN 12.5 IS CONSIDERED TO BE A CORROSIVE HAZARDOUS WASTE. SODIUM HYDROXIDE, A CAUSTIC SOLUTION WITH A HIGH PH, IS OFTEN USED BY INDUSTRIES TO CLEAN OR DEGREASE PARTS. HYDROCHLORIC ACID, A SOLUTION WITH A LOW PH, IS USED BY MANY INDUSTRIES TO CLEAN METAL PARTS PRIOR TO PAINTING. WHEN THESE CAUSTIC OR ACID SOLUTIONS BECOME CONTAMINATED AND MUST BE DISPOSED, THE WASTE WOULD BE A CORROSIVE HAZARDOUS WASTE.

Waste code: D008
Waste name: LEAD

Violation Status: No violations found

Evaluation Action Summary:
Evaluation date: 06/28/2006
Evaluation: COMPLIANCE ASSISTANCE VISIT
Area of violation: Not reported
Date achieved compliance: Not reported

HONDA & ACURA AUTOMOTIVE (Continued) **1010324813**

Evaluation lead agency: State

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33 **HONDA & ACURA AUTOMOTIVE** **FINDS** **1010457617**
1109 N RIVERSIDE DRIVE **110031341634**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

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33 **CASPER UNLIMITED PARTNERSHIP OL S DINER** **FINDS** **1009424883**
901 RIVERSIDE DRIVE **110022764837**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

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33 **MUSTANG #183** **ICIS** **1010265350**
902 RIVERSIDE DR **N/A**
ESPANOLA, NM 87532

ICIS:

Enforcement Action ID:	06-2000-0943
FRS ID:	110010696504
Program ID:	FRS 110010696504
Action Name:	MUSTANG #183
Facility Name:	MUSTANG #183
Facility Address:	902 RIVERSIDE DR ESPANOLA, New Mexico 87532
Enforcement Action Type:	RCRA 9006 Field Citation (UST)
Facility County:	RIO ARRIBA
EPA Region #:	6

Program ID:	FRS 110010696504
Facility Name:	MUSTANG #183
Address:	902 RIVERSIDE DR ESPANOLA NM 87532
Tribal Indicator:	No
Fed Facility:	Not reported
NAIC Code:	Not reported
SIC Code:	5411

Program ID:	FRS 110010696504
Facility Name:	MUSTANG #183
Address:	902 RIVERSIDE DR ESPANOLA NM 87532
Tribal Indicator:	No

MUSTANG #183 (Continued) **1010265350**

Fed Facility: Not reported
NAIC Code: Not reported
SIC Code: 5541

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33 RHOC EXPRESS RIVERSIDE **NPDES** **S107795934**
902 RIVERSIDE DRIVE **N/A**
ESPANOLA, NM 87401

NM NPDES:

NMED ID:	2925
DP Number:	451
Permit Name:	Thriftway Markespanola Plate
Facility Type:	Hydrocarbon Remediation of Ground Water
Waste Type:	Industrial
Start Date:	1990-03-07 00:00:00
Expiration Date:	1995-05-26 00:00:00
Responsible Party:	Not reported
GW Permit Contact:	GWPPS NFA
GW Permit Contact Phone:	505-827-2900
Township:	21N
Range:	08E
Section:	35
Lat Degrees:	36
Lat Minutes:	0
Lat Seconds:	0
Latitude:	36
Lon Degrees:	-106
Lon Minutes:	3
Lon Secinds:	14
Longitude:	-106.053889
Gallons per Day:	43000
Depth to GW:	10
Activity Number:	PRD20020001
Permitting Activity Type:	Discharge Permit (Pre-Idea)
Permit Activity Status:	Issued
Activity Status Date:	1990-03-07

NMED ID:	2925
DP Number:	451
Permit Name:	Thriftway Markespanola Plate
Facility Type:	Hydrocarbon Remediation of Ground Water
Waste Type:	Industrial
Start Date:	1990-03-07 00:00:00
Expiration Date:	1995-05-26 00:00:00
Responsible Party:	Not reported
GW Permit Contact:	GWPPS NFA
GW Permit Contact Phone:	505-827-2900
Township:	21N
Range:	08E
Section:	35
Lat Degrees:	36
Lat Minutes:	0
Lat Seconds:	13.8629
Latitude:	Not reported
Lon Degrees:	-106
Lon Minutes:	3
Lon Secinds:	48.625900000000001

RHOC EXPRESS RIVERSIDE (Continued) **S107795934**

Longitude:	Not reported
Gallons per Day:	43000
Depth to GW:	10
Activity Number:	PRD20020001
Permitting Activity Type:	Discharge Permit (Pre-Idea)
Permit Activity Status:	Issued
Activity Status Date:	1990-03-07

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33 **RHOC EXPRESS, RIVERSIDE** **INDIAN UST** **1009388449**
902 N. RIVERSIDE DR. **INDIAN LUST** **N/A**
ESPANOLA, NM 87532

INDIAN UST:

Region:	6
Facility ID:	P049NM
Tribe:	Santa Clara Pueblo
Tank ID:	1
Tank Status:	Permanently Out of Use
Substance:	Gasoline
Installation date:	1978-05-01 00:00:00
Owner Name:	Roy Honstein Oil Co.

Region:	6
Facility ID:	P049NM
Tribe:	Santa Clara Pueblo
Tank ID:	2
Tank Status:	Permanently Out of Use
Substance:	Gasoline
Installation date:	1978-05-01 00:00:00
Owner Name:	Roy Honstein Oil Co.

Region:	6
Facility ID:	P049NM
Tribe:	Santa Clara Pueblo
Tank ID:	3
Tank Status:	Permanently Out of Use
Substance:	Gasoline
Installation date:	1978-05-01 00:00:00
Owner Name:	Roy Honstein Oil Co.

Region:	6
Facility ID:	P049NM
Tribe:	Santa Clara Pueblo
Tank ID:	4
Tank Status:	Permanently Out of Use
Substance:	Gasoline
Installation date:	1978-05-01 00:00:00
Owner Name:	Roy Honstein Oil Co.

Region:	6
Facility ID:	P049NM
Tribe:	Santa Clara Pueblo
Tank ID:	5
Tank Status:	Currently In Use
Substance:	Diesel
Installation date:	2004-09-17 00:00:00
Owner Name:	Roy Honstein Oil Co.

RHOC EXPRESS, RIVERSIDE (Continued) **1009388449**

Region:	6
Facility ID:	P049NM
Tribe:	Santa Clara Pueblo
Tank ID:	6
Tank Status:	Currently In Use
Substance:	Gasoline
Installation date:	2004-09-17 00:00:00
Owner Name:	Roy Honstein Oil Co.

Region:	6
Facility ID:	P049NM
Tribe:	Santa Clara Pueblo
Tank ID:	7
Tank Status:	Currently In Use
Substance:	Gasoline
Installation date:	2004-09-17 00:00:00
Owner Name:	Roy Honstein Oil Co.

INDIAN LUST:
Region: 6

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33 **MUSTANG #183** **FINDS** **1005656720**
902 RIVERSIDE DR **110010696504**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

ICIS (Integrated Compliance Information System) is the Integrated Compliance Information System and provides a database that, when complete, will contain integrated Enforcement and Compliance information across most of EPA's programs. The vision for ICIS is to replace EPA's independent databases that contain Enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions. This information is maintained in ICIS by EPA in the Regional offices and its Headquarters. A future release of ICIS will replace the Permit Compliance System (PCS) which supports the NPDES and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities occurring in the Region that support Compliance and Enforcement programs. These include; Incident Tracking, Compliance Assistance, and Compliance Monitoring.

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33 **GIANT DBA GASAMAT 7555** **LUST** **S106022715**
803 S RIVERSIDE **N/A**
ESPANOLA, NM 87532

LUST:

Priority Rank:	456
Mitigating Factor Score:	3
Total Score To Assign Relative Rank:	379
Release ID:	3605
Facility ID:	31810
Date Release Reported:	09/23/1999
Status:	**Investigation, Responsible Party**

GIANT DBA GASAMAT 7555 (Continued) **S106022715**

Status Date: 06/12/2001
Project Manager: Danny Valenzuela

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33 SAN PEDRO MUSTANG **UST** **U003415063**
803 S RIVERSIDE **N/A**
ESPANOLA, NM 87532

UST:

Owner ID:	14169
Owner Name:	POLK OIL CO INC
Owner Address:	PO BOX 1559
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-2365
Facility ID:	31810
Secondary Address:	Not reported
Tank ID:	33095
Tank Status:	**CURRENTLY IN USE**
Tank Type:	Underground
Tank Capacity:	10000
Tank Substance:	DIESEL

Owner ID:	14169
Owner Name:	POLK OIL CO INC
Owner Address:	PO BOX 1559
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-2365
Facility ID:	31810
Secondary Address:	Not reported
Tank ID:	33096
Tank Status:	**CURRENTLY IN USE**
Tank Type:	Underground
Tank Capacity:	15000
Tank Substance:	UNLEADED GASOLINE

Owner ID:	14169
Owner Name:	POLK OIL CO INC
Owner Address:	PO BOX 1559
Owner Address 2:	Not reported
Owner City,St,Zip:	ESPANOLA, NM 87532
Owner Telephone:	505-753-2365
Facility ID:	31810
Secondary Address:	Not reported
Tank ID:	33097
Tank Status:	**CURRENTLY IN USE**
Tank Type:	Underground
Tank Capacity:	15000
Tank Substance:	UNLEADED PLUS

33 **SAN PEDRO MUSTANG**
803 S RIVERSIDE
ESPANOLA, NM 87532
FINDS **1009423025**
110022718308

FINDS:
Other Pertinent Environmental Activity Identified at Site

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33 **SWIFT LUBE, INC.**
755 NORTH RIVERSIDE DRIVE
ESPANOLA, NM 87532
FINDS **1009317408**
110024436617

FINDS:
Other Pertinent Environmental Activity Identified at Site

RCRAInfo is a national information system that supports the Resource Conservation and Recovery Act (RCRA) program through the tracking of events and activities related to facilities that generate, transport, and treat, store, or dispose of hazardous waste. RCRAInfo allows RCRA program staff to track the notification, permit, compliance, and corrective action activities required under RCRA.

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33 **SWIFT LUBE, INC.**
755 NORTH RIVERSIDE DRIVE
ESPANOLA, NM 87532
RCRA-CESQG **1009218009**
NMR000010694

RCRA-CESQG:

Date form received by agency:	10/18/2005
Facility name:	SWIFT LUBE, INC.
Facility address:	755 NORTH RIVERSIDE DRIVE ESPANOLA, NM 87532
EPA ID:	NMR000010694
Mailing address:	NORTH RIVERSIDE DRIVE ESPANOLA, NM 87532
Contact:	M.KIM MONTOYA
Contact address:	NORTH RIVERSIDE DRIVE ESPANOLA, NM 87532
Contact country:	Not reported
Contact telephone:	505-753-2480
Contact email:	Not reported
EPA Region:	06
Land type:	Private
Classification:	Conditionally Exempt Small Quantity Generator
Description:	Handler: generates 100 kg or less of hazardous waste per calendar month, and accumulates 1000 kg or less of hazardous waste at any time; or generates 1 kg or less of acutely hazardous waste per calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste; or generates 100 kg or less of any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste during any calendar month, and accumulates at any time: 1 kg or less of acutely hazardous waste; or 100 kg or less of

SWIFT LUBE, INC. (Continued) **1009218009**

any residue or contaminated soil, waste or other debris resulting from the cleanup of a spill, into or on any land or water, of acutely hazardous waste

Owner/Operator Summary:

Owner/operator name:	M. KIM MONTOYA
Owner/operator address:	NORTH RIVERSIDE DRIVE ESPANOLA, NM 87532
Owner/operator country:	US
Owner/operator telephone:	505-753-2480
Legal status:	Private
Owner/Operator Type:	Operator
Owner/Op start date:	02/14/1997
Owner/Op end date:	Not reported

Owner/operator name:	M. KIM MONTOYA
Owner/operator address:	NORTH RIVERSIDE DRIVE ESPANOLA, NM 87532
Owner/operator country:	US
Owner/operator telephone:	505-753-2480
Legal status:	Private
Owner/Operator Type:	Owner
Owner/Op start date:	02/14/1997
Owner/Op end date:	Not reported

Handler Activities Summary:

U.S. importer of hazardous waste:	No
Mixed waste (haz. and radioactive):	No
Recycler of hazardous waste:	No
Transporter of hazardous waste:	No
Treater, storer or disposer of HW:	No
Underground injection activity:	No
On-site burner exemption:	No
Furnace exemption:	No
Used oil fuel burner:	No
Used oil processor:	No
User oil refiner:	No
Used oil fuel marketer to burner:	No
Used oil Specification marketer:	No
Used oil transfer facility:	No
Used oil transporter:	No
Off-site waste receiver:	Commercial status unknown

Facility Has Received Notices of Violations:

Regulation violated:	Not reported
Area of violation:	Used Oil - Generators
Date violation determined:	08/30/2006
Date achieved compliance:	08/30/2006
Violation lead agency:	State
Enforcement action:	Not reported
Enforcement action date:	Not reported
Enf. disposition status:	Not reported
Enf. disp. status date:	Not reported
Enforcement lead agency:	Not reported
Proposed penalty amount:	Not reported
Final penalty amount:	Not reported

SWIFT LUBE, INC. (Continued) **1009218009**

Paid penalty amount: Not reported

Evaluation Action Summary:

Evaluation date:	08/30/2006
Evaluation:	COMPLIANCE EVALUATION INSPECTION ON-SITE
Area of violation:	Used Oil - Generators
Date achieved compliance:	08/30/2006
Evaluation lead agency:	State

Evaluation date:	10/18/2005
Evaluation:	COMPLIANCE ASSISTANCE VISIT
Area of violation:	Not reported
Date achieved compliance:	Not reported
Evaluation lead agency:	State

---

33 **ALLSUPS 333** **FINDS** **1009428506**
707 S RIVERSIDE DR **110022784968**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

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33 **ALLSUPS 333** **LUST** **U003190934**
707 S RIVERSIDE DR **UST** **N/A**
ESPANOLA, NM 87532

LUST:

Priority Rank:	Not reported
Mitigating Factor Score:	Not reported
Total Score To Assign Relative Rank:	Not reported
Release ID:	1997
Facility ID:	26525
Date Release Reported:	09/16/1993
Status:	**No Further Action Required**
Status Date:	12/19/2003
Project Manager:	Susan Von Gonten

UST:

Owner ID:	16400
Owner Name:	ALLSUPS CONVENIENCE STORES INC
Owner Address:	PO BOX 1907
Owner Address 2:	Not reported
Owner City,St,Zip:	CLOVIS, NM 88101
Owner Telephone:	505-769-2311
Facility ID:	26525
Secondary Address:	Not reported
Tank ID:	20917
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	10000
Tank Substance:	GASOLINE UNKNOWN TYPE

ALLSUPS 333 (Continued) **U003190934**

Owner ID: 16400
Owner Name: ALLSUPS CONVENIENCE STORES INC
Owner Address: PO BOX 1907
Owner Address 2: Not reported
Owner City,St,Zip: CLOVIS, NM 88101
Owner Telephone: 505-769-2311
Facility ID: 26525
Secondary Address: Not reported
Tank ID: 20918
Tank Status: REMOVED
Tank Type: Underground
Tank Capacity: 6000
Tank Substance: GASOLINE UNKNOWN TYPE

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33 **GONZALES CHRYSLER** **LUST** **S106426155**
504 RIVERSIDE DR NE **N/A**
ESPANOLA, NM 87532

LUST:
Priority Rank: Not reported
Mitigating Factor Score: Not reported
Total Score To Assign Relative Rank: Not reported
Release ID: 2489
Facility ID: 29380
Date Release Reported: 01/22/1995
Status: Referred to US EPA
Status Date: 09/06/1996
Project Manager: UNKNOWN

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34 **NEW MEXICO (STATE OF) HIGHWAY DEPARTMENT CONSTRUCTION OFFICE** **FINDS** **1009430832**
115 HAMM PARKWAY **110022782103**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

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35 **GIANT STOP N GO 58 AND BULK PLANT** **UST** **U003711612**
301 LOS ALAMOS HWY **LAST** **N/A**
ESPANOLA, NM 87532

UST:
Owner ID: 15479
Owner Name: GIANT STOP N GO OF NM INC
Owner Address: 23733 NORTH SCOTTSDALE RD
Owner Address 2: Not reported
Owner City,St,Zip: SCOTTSDALE, AZ 85252
Owner Telephone: 602-585-8888
Facility ID: 28328
Secondary Address: Not reported
Tank ID: 25244
Tank Status: REMOVED

GIANT STOP N GO 58 AND BULK PLANT (Continued) **U003711612**

Tank Type:	Underground
Tank Capacity:	10000
Tank Substance:	UNLEADED GASOLINE

Owner ID:	15479
Owner Name:	GIANT STOP N GO OF NM INC
Owner Address:	23733 NORTH SCOTTSDALE RD
Owner Address 2:	Not reported
Owner City,St,Zip:	SCOTTSDALE, AZ 85252
Owner Telephone:	602-585-8888
Facility ID:	28328
Secondary Address:	Not reported
Tank ID:	25245
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	3000
Tank Substance:	KEROSENE

LAST:

Facility ID:	4379
fadd2:	Not reported
fadd3:	Not reported
Responsible Party:	Giant Industries Arizona Inc
Release Date:	1995-10-11 00:00:00
Current Status:	Cleanup, Responsible Party
Cleanup Date:	**Not reported**

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35 **GIANT STOP N GO #58** **LUST** **S102642080**
301 LOS ALAMOS HWY **N/A**
ESPANOLA, NM 87532

LUST:

Priority Rank:	151
Mitigating Factor Score:	2
Total Score To Assign Relative Rank:	2576
Release ID:	2790
Facility ID:	28328
Date Release Reported:	11/20/1995
Status:	**Cleanup, Responsible Party**
Status Date:	06/15/2002
Project Manager:	Susan Von Gonten

Priority Rank:	152
Mitigating Factor Score:	2
Total Score To Assign Relative Rank:	2576
Release ID:	4379
Facility ID:	28328
Date Release Reported:	03/15/2004
Status:	**Cleanup, Responsible Party**
Status Date:	03/18/2004
Project Manager:	Susan Von Gonten

36 **ESPANOLA (CITY OF) - WASTEWATER TREATMEN** **NPDES** **S107795490**
308 LOWER SAN PEDRO RD **N/A**
ESPANOLA, NM 87532

NM NPDES:

NMED ID:	2634
DP Number:	230
Permit Name:	Espanola (City of) - WWTP
Facility Type:	Sludge Disposal Facility
Waste Type:	Domestic
Start Date:	Not reported
Expiration Date:	Not reported
Responsible Party:	Richard Lucero
GW Permit Contact:	Christina Kelso
GW Permit Contact Phone:	505-827-2782
Township:	20N
Range:	08E
Section:	10
Lat Degrees:	Not reported
Lat Minutes:	Not reported
Lat Seconds:	Not reported
Latitude:	Not reported
Lon Degrees:	Not reported
Lon Minutes:	Not reported
Lon Secinds:	Not reported
Longitude:	Not reported
Gallons per Day:	15100
Depth to GW:	5
Activity Number:	PRD20040001
Permitting Activity Type:	DP-Renewal
Permit Activity Status:	Deemed Administratively Complete
Activity Status Date:	2004-01-16

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36 **ESPANOLA (CITY OF) - WASTEWATER TREATMENT PLANT** **FINDS** **1009424215**
308 LOWER SAN PEDRO RD **110022701762**
ESPANOLA, NM 87532

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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37 **OLD STATE POLICE FACILITY DISTRICT 7** **LUST** **U003190967**
NM HWY 68 1 MILE S **UST** **N/A**
ESPANOLA, NM 87532

LUST:

Priority Rank:	Not reported
Mitigating Factor Score:	Not reported
Total Score To Assign Relative Rank:	Not reported
Release ID:	2125
Facility ID:	29771
Date Release Reported:	12/16/1993
Status:	**No Further Action Required**
Status Date:	06/22/1994
Project Manager:	UNKNOWN

OLD STATE POLICE FACILITY DISTRICT 7 (Continued) **U003190967**

UST:

Owner ID:	16761
Owner Name:	QUINTANA TONY H
Owner Address:	ROUTE 1 BOX 7 B
Owner Address 2:	Not reported
Owner City,St,Zip:	SANTA CRUZ, NM 87567
Owner Telephone:	505-753-4758
Facility ID:	29771
Secondary Address:	ESPANOLA
Tank ID:	28433
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	2000
Tank Substance:	GASOLINE UNKNOWN TYPE

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38 **THE FOUR CORNERS WATER RECLAMA** **FINDS** **1007648716**
99 STATE RD 399 **110020064277**
ESPANOLA, NM 87532

FINDS:

Other Pertinent Environmental Activity Identified at Site

Not reported

PCS (Permit Compliance System) is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

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39 **YATES CORPORATION** **MINES** **M000071279**
N/A

SANTA FE (County), NM

MINES:

Mine ID:	2900823
SIC code(s):	14410 00000 00000 00000 00000 00000
Entity name:	ARROYO SECO PIT
Company:	YATES CORPORATION
State FIPS code:	35
County FIPS code:	049
Status:	4
Status date:	19880801
Operation Class:	non-Coal Mining
Number of shops:	2
Number of plants:	0
Latitude:	35 57 08
Longitude:	106 03 12

40 **POOR BOY SAWMILL** **LUST** **U003190969**
RTE 1 **UST** **N/A**
ESPANOLA, NM 87532

LUST:

Priority Rank:	Not reported
Mitigating Factor Score:	Not reported
Total Score To Assign Relative Rank:	Not reported
Release ID:	3303
Facility ID:	30030
Date Release Reported:	10/31/1997
Status:	**No Further Action Required**
Status Date:	09/02/1998
Project Manager:	Lorena Goerger

UST:

Owner ID:	17307
Owner Name:	BARBARA ANN MICHAEL PERSONAL REP OF
Owner Address:	SOPHIE C HAYES ESTATE
Owner Address 2:	PO BOX 8009
Owner City,St,Zip:	SANTA FE, NM 87504
Owner Telephone:	505-986-6082
Facility ID:	30030
Secondary Address:	PO BOX 366
Tank ID:	29062
Tank Status:	**REMOVED**
Tank Type:	Underground
Tank Capacity:	2000
Tank Substance:	EMPTY, GASOLINE UNKNOWN TYPE

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41 **EL RANCHO TRAILER PARK** **FINDS** **1009424116**
64 EVERGREEN LANE **110022684665**
SANTA FE, NM 87506

FINDS:
Other Pertinent Environmental Activity Identified at Site

NM-TEMPO (New Mexico - Tools for Environmental Management and Protection Organizations) is an Integrated Management System

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41 **EL RANCHO TRAILER PARK** **NPDES** **S107795470**
64 EVERGREEN LANE **N/A**
SANTA FE, NM 87506

NM NPDES:

NMED ID:	2830
DP Number:	871
Permit Name:	El Rancho Trailer Park
Facility Type:	Mobile Home Park/Subdivision
Waste Type:	Domestic
Start Date:	2003-09-05 00:00:00
Expiration Date:	2008-09-05 00:00:00
Responsible Party:	Rudolpho Vigil
GW Permit Contact:	Gerald Knutson
GW Permit Contact Phone:	505-827-2996
Township:	19N
Range:	08E

EL RANCHO TRAILER PARK (Continued) **S107795470**

Section:	10
Lat Degrees:	Not reported
Lat Minutes:	Not reported
Lat Seconds:	Not reported
Latitude:	Not reported
Lon Degrees:	Not reported
Lon Minutes:	Not reported
Lon Secinds:	Not reported
Longitude:	Not reported
Gallons per Day:	6000
Depth to GW:	15
Activity Number:	PRD20030001
Permitting Activity Type:	DP-Renewal
Permit Activity Status:	Issued
Activity Status Date:	2003-09-05

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42 **PAUL PARKER CONSTRUCTION** **MINES** **M000071280**
N/A

SANTA FE (County), NM

MINES:

Mine ID:	2900824
SIC code(s):	14410 00000 00000 00000 00000 00000
Entity name:	OGLEBAY-NORTON US HI
Company:	PAUL PARKER CONSTRUCTION
State FIPS code:	35
County FIPS code:	049
Status:	2
Status date:	19940502
Operation Class:	non-Coal Mining
Number of shops:	0
Number of plants:	0
Latitude:	35 52 10
Longitude:	106 09 37

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
ARROYO SECO	U003107111	RODRIGOS	US 84 285	87532	UST
CANJILON	U003190287	R 1 MICROWAVE FACILITY	W OF US 84	87532	UST
COUNTY	S107600401	ESPANOLA TRANSFER STATION	ON 31 MI RD NEAR FAIRVIEW	87532	SWF/LF
COUNTY	S105421482	CORDOVA TRANSFER STATION	CLOSED	87532	SWF/LF
COUNTY	S107600409	VELARDE TRANSFER STATION	FACILITY CLOSED	87532	SWF/LF
ESPANOL	1009320150	ESPANOLA, CITY OF (NM0029351)	118 HAMM PARKWAY ROAD	87532	FINDS
ESPANOLA	1003875997	OLD ESPANOLA CITY LF AT SANTA CLARA	HIGHWAY 285 AT HIGHWAY 399	87532	CERC-NFRAP
ESPANOLA	1000984219	ARROYO SECO SALVAGE YARD	35 57’ 55’N 106 02’ 26’W	87532	CERCLIS, FINDS
ESPANOLA	S105959700	EXXON HWY 68	HWY 68 AND E PUEBLO DR, 745 N RIVER	87532	LUST
ESPANOLA	U003732526	RAS 60181	HWY 68 AND E PUEBLO DR	87532	UST
ESPANOLA	S106426108	EXXON EL CENTRO	HWY 84 285	87532	LUST
ESPANOLA	S105426774	CIRCLE K #716	706 BOND NW	87532	LUST
ESPANOLA	S108190313	ESPANOLA SCHOOL DISTRICT	116 CALLE ESPINOZA		ASBESTOS
ESPANOLA	1009704146	ESPANOLA JUNIOR HIGH SCHOOL	116 CALLE ESPINOZA	87532	FINDS
ESPANOLA	1010324920	THE PRINT WORKS	1007 CALLE LOPEZ	87532	RCRA-CESQG
ESPANOLA	1000980999	HEAVY METAL	CATHERINE LANE	87532	FINDS, RCRA-CESQG
ESPANOLA	1004754304	UNITED PARCEL SERVICE	CHAMA HWY RT BOX 279	87532	FINDS, RCRA-CESQG
ESPANOLA	U003850222	RIO GRANDE FOREST PRODUCTS	N CHAMA HWY US 84	87532	AST
ESPANOLA	1009797081	ESPANOLA TRANSIT MIX - CONCRETE PLANT	CORNER RIVERSIDE AND FAIRVIEW	87532	FINDS
ESPANOLA	1009797077	ESPANOLA TRANSIT MIX - EL JAY WET SCREEN	CORNER OF RIVERSIDE AND FAIRVI	87532	FINDS
ESPANOLA	1009424464	ESPANOLA SCHOOL DISTRICT	714 DON DIEGO ST	87532	FINDS
ESPANOLA	1010003786	ESPANOLA MUNICIPAL SCHOOLS	HUNTER STREET	87532	FTTS
ESPANOLA	1008179608	ESPANOLA MUNICIPAL SCHOOLS	HUNTER STREET	87532	HIST FTTS
ESPANOLA	1004564859	ESPANOLA HIGH SCHOOL	HUNTER ST PO BOX 249)	87532	FINDS, FTTS, HIST FTTS
ESPANOLA	U003711614	RIO CHAMA CHEVRON	19698 N HWY 84 285	87532	UST
ESPANOLA	1006837800	ESPANOLA LANDFILL	INDUSTRIAL PARK RD.		FINDS
ESPANOLA	1010251854	NAMBE MILLS - ESPANOLA FOUNDRY	JOHNNY A ROYBAL INDUSTRAL PARK	87532	ICIS
ESPANOLA	1006665409	NAMBE MILLS - ESPANOLA FOUNDRY	JOHNNY A ROYBAL INDUSTRAL PARK	87532	FINDS
ESPANOLA	1009718461	ESPANOLA VALLEY HIGH SCHOOL	1111 EL LLANO ROAD	87532	FINDS
ESPANOLA	1004565409	ESPANOLA SAWMILL	1 MI N OF ESPANOLA ON US 84	87532	FINDS
ESPANOLA	U003913202	DUKE CITY LUMBER, ESPANOLA MILL	OLD CHAMA HWY	87532	UST
ESPANOLA	1009420441	DUKE CITY LUMBER, ESPANOLA MILL	OLD CHAMA HWY	87532	FINDS
ESPANOLA	1009424221	ESPANOLA CENTRAL OFFICE A	100 ONATE	87532	FINDS
ESPANOLA	1009388401	TRIPLE S SHORT STOP	514 ONATE STREET NW	87532	INDIAN UST
ESPANOLA	U003965213	QUIK STOP 6	120 ONATE ST	87532	UST
ESPANOLA	U003732525	QUIK STOP NO12	1313 PAEO DE ONATE	87532	UST
ESPANOLA	1002980152	BLM ESPANOLA LANDFILL	T20N R9E SEC 6 NMPH	87532	CERC-NFRAP
ESPANOLA	1009388406	ESPANOLA ALLSUPS #314	344 RICHARDS	87532	INDIAN UST, INDIAN LUST
ESPANOLA	93334927	RIO GRANDE RIVER NORTH OF ESPANOLA NM	RIO GRANDE RIVER NORTH OF ESPANOLA NM		ERNS
ESPANOLA	1010250561	ESPANOLA TRANSIT MIX MAIN WET SAND CRUSHER	NORTH RIVERSIDE DR.	87532	ICIS
ESPANOLA	1006263487	ESPANOLA TRANSIT MIX MAIN WET SAND CRUSHER	NORTH RIVERSIDE DR.	87532	FINDS
ESPANOLA	1009388387	BIG ROCK CHEVRON	462 RIVERSIDE DR.	87532	INDIAN UST, INDIAN LUST
ESPANOLA	U003973673	RHOC EXPRESS RIVERSIDE	9O2 N RIVERSIDE DR	87532	UST

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
ESPANOLA	1009629317	SANTA CLARA TRAVEL CENTER	NM SR 30 & TRIBAL RD. 611	87532	INDIAN UST
ESPANOLA	1008039339	VALLEY ESTATES WATER AND SEWER ASSOCIATI	VALLEY ESTATES	87532	FINDS
HERNANDEZ	1009424072	VALLEY GULF AND QUICK STOP	HWY 84 285	87537	FINDS
HERNANDEZ	1009388362	MONTOYA'S GROCERY	HWY 84 AND 285 (#19350)	87537	INDIAN UST
HERNANDEZ	U001149344	ROSS SALAZARS GENERAL STORE	HWY 84	87537	UST
HERNANDEZ	U001891755	MONTOYA GROCERY	HWY 84	87537	UST
HERNANDEZ	S108190327	ESPANOLA SCHOOL DISTRICT	HWY. 84/285	87537	ASBESTOS
HERNANDEZ	1009388368	SALAZAR GENERAL STORE AND BAR	19281 ONATE ST.HWY 285 AND 84	87537	INDIAN UST
LA MESILLA	U003191791	RESIDENTIAL	RTE 1	87532	UST
PORTABLE SOURCE	1009421857	ESPANOLA TRANSIT MIX - H AND B 4369 ASPHALT	PORTABLE SOURCE	87532	FINDS
PUEBLO OF SAN JUAN	U001387889	P AND L GROCERY A	STATE RD 74	87566	LUST, UST
SAN JUAN	1003875932	SAN JUAN OPEN DUMP	1 1/2 MI. E. OF HWY 285	87566	CERC-NFRAP
SAN JUAN	1003875967	SAN JUAN SEWAGE LAGOONS	0.5 MI W OF HWY 285	87566	CERC-NFRAP
SAN JUAN PUEBLO	1009388471	SAN JUAN PUEBLO SHELL STATION	SH 68	87566	INDIAN UST
SAN JUAN PUEBLO	1009388364	P&L GROCERY	BLDG 252STATE HWY 74	87566	INDIAN UST, INDIAN LUST
SAN JUAN PUEBLO	1009388424	OHKAY TRAVEL CENTER	N. HWY. 68	87566	INDIAN UST
SAN JUAN PUEBLO	1003875996	SAN JUAN ABANDONED DUMP	1/2 MILE WEST OF HIGHWAY 285	87566	CERC-NFRAP
SANTA CRUZ	1009388390	EL PASINO	HWY 76 & MCCURDY RD. E OF ESPANOLA	87567	INDIAN UST
SANTA FE	S106612420	CAFE DEL ARROYO	HWY 84 285 , ARROYO SECO	87532	LUST
SANTA FE	1009388573	KICKS 66	SOUTHBOUND SIDE HWY. 84	87506	INDIAN UST
SANTA FE	1004754434	C F COLLISION & ACCESSORIES	27726 I-25 WEST FRONTAGE RD	87506	RCRA-SQG, FINDS
VELARDE	U001891308	CONNIE GARCIAS GENERAL STORE	HWY 68	87566	UST
VELARDE	U003193425	MIKE MARTINEZ TEXACO	HWY 68	87532	UST

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

FEDERAL RECORDS

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 10/02/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 25

Source: EPA
Telephone: N/A
Last EDR Contact: 01/28/2008
Next Scheduled EDR Contact: 04/28/2008
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 10/02/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 25

Source: EPA
Telephone: N/A
Last EDR Contact: 01/28/2008
Next Scheduled EDR Contact: 04/28/2008
Data Release Frequency: Quarterly

DELISTED NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 10/02/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 25

Source: EPA
Telephone: N/A
Last EDR Contact: 01/28/2008
Next Scheduled EDR Contact: 04/28/2008
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 02/19/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: No Update Planned

CERCLIS: Comprehensive Environmental Response, Compensation, and Liability Information System

CERCLIS contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLIS contains sites which are either proposed to or on the National Priorities List (NPL) and sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 01/09/2008
Date Data Arrived at EDR: 02/05/2008
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 15

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 02/05/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: Quarterly

CERCLIS-NFRAP: CERCLIS No Further Remedial Action Planned

Archived sites are sites that have been removed and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Date of Government Version: 12/03/2007
Date Data Arrived at EDR: 12/06/2007
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 76

Source: EPA
Telephone: 703-412-9810
Last EDR Contact: 12/06/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: Quarterly

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 12/09/2007
Date Data Arrived at EDR: 01/07/2008
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/12/2007
Date Data Arrived at EDR: 12/18/2007
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 64

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Quarterly

RCRA-TSDF: RCRA - Transporters, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 09/11/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 25

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 02/25/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 09/11/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 25

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 02/25/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 09/11/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 25

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 02/25/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 09/11/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 25

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 02/25/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

RCRA-NonGen: RCRA - Non Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 09/11/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 25

Source: Environmental Protection Agency
Telephone: 214-665-6444
Last EDR Contact: 02/25/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 07/16/2007
Date Data Arrived at EDR: 08/03/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 69

Source: Environmental Protection Agency
Telephone: 703-603-8905
Last EDR Contact: 01/02/2008
Next Scheduled EDR Contact: 03/31/2008
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 07/16/2007
Date Data Arrived at EDR: 08/03/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 69

Source: Environmental Protection Agency
Telephone: 703-603-8905
Last EDR Contact: 01/02/2008
Next Scheduled EDR Contact: 03/31/2008
Data Release Frequency: Varies

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 01/24/2007
Date Made Active in Reports: 03/12/2007
Number of Days to Update: 47

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 01/23/2008
Next Scheduled EDR Contact: 04/21/2008
Data Release Frequency: Annually

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 10/01/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 25

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 01/17/2008
Next Scheduled EDR Contact: 04/14/2008
Data Release Frequency: Annually

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 11/14/2007
Date Data Arrived at EDR: 11/29/2007
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 83

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 02/27/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Varies

CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 25

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 12/28/2007
Next Scheduled EDR Contact: 03/24/2008
Data Release Frequency: Quarterly

US BROWNFIELDS: A Listing of Brownfields Sites

Included in the listing are brownfields properties addresses by Cooperative Agreement Recipients and brownfields properties addressed by Targeted Brownfields Assessments. Targeted Brownfields Assessments-EPA's Targeted Brownfields Assessments (TBA) program is designed to help states, tribes, and municipalities--especially those without EPA Brownfields Assessment Demonstration Pilots--minimize the uncertainties of contamination often associated with brownfields. Under the TBA program, EPA provides funding and/or technical assistance for environmental assessments at brownfields sites throughout the country. Targeted Brownfields Assessments supplement and work with other efforts under EPA's Brownfields Initiative to promote cleanup and redevelopment of brownfields. Cooperative Agreement Recipients-States, political subdivisions, territories, and Indian tribes become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the U.S. EPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities.

Date of Government Version: 01/03/2008
Date Data Arrived at EDR: 01/17/2008
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 34

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 01/17/2008
Next Scheduled EDR Contact: 03/10/2008
Data Release Frequency: Semi-Annually

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 703-692-8801
Last EDR Contact: 02/08/2008
Next Scheduled EDR Contact: 05/05/2008
Data Release Frequency: Semi-Annually

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 08/31/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 41

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 01/02/2008
Next Scheduled EDR Contact: 03/31/2008
Data Release Frequency: Varies

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 12/09/2005
Date Data Arrived at EDR: 12/11/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 31

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 12/10/2007
Next Scheduled EDR Contact: 03/10/2008
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 09/01/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 25

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 01/21/2008
Next Scheduled EDR Contact: 04/21/2008
Data Release Frequency: Varies

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 01/14/2008
Date Data Arrived at EDR: 01/22/2008
Date Made Active in Reports: 01/30/2008
Number of Days to Update: 8

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 01/02/2008
Next Scheduled EDR Contact: 03/31/2008
Data Release Frequency: Annually

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 07/13/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: Varies

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 12/28/2007
Date Data Arrived at EDR: 12/28/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 27

Source: EPA, Region 9
Telephone: 415-972-3336
Last EDR Contact: 12/26/2007
Next Scheduled EDR Contact: 03/24/2008
Data Release Frequency: Varies

MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 11/20/2007
Date Data Arrived at EDR: 01/03/2008
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 48

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 01/03/2008
Next Scheduled EDR Contact: 03/24/2008
Data Release Frequency: Semi-Annually

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 04/27/2007
Date Made Active in Reports: 07/05/2007
Number of Days to Update: 69

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/29/2008
Next Scheduled EDR Contact: 06/16/2008
Data Release Frequency: Annually

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2002
Date Data Arrived at EDR: 04/14/2006
Date Made Active in Reports: 05/30/2006
Number of Days to Update: 46

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 01/28/2008
Next Scheduled EDR Contact: 04/14/2008
Data Release Frequency: Every 4 Years

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/22/2008
Date Made Active in Reports: 01/30/2008
Number of Days to Update: 8

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/22/2008
Date Made Active in Reports: 01/30/2008
Number of Days to Update: 8

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 03/13/2007
Date Made Active in Reports: 04/27/2007
Number of Days to Update: 45

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 01/28/2008
Next Scheduled EDR Contact: 04/14/2008
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System

The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 07/27/2007
Date Data Arrived at EDR: 08/13/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 59

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 01/15/2008
Next Scheduled EDR Contact: 04/14/2008
Data Release Frequency: Quarterly

PADS: PCB Activity Database System

PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 04/12/2007
Date Data Arrived at EDR: 06/08/2007
Date Made Active in Reports: 08/29/2007
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 02/07/2008
Next Scheduled EDR Contact: 05/05/2008
Data Release Frequency: Annually

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 10/04/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 25

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 01/02/2008
Next Scheduled EDR Contact: 03/31/2008
Data Release Frequency: Quarterly

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 10/30/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 01/31/2008
Next Scheduled EDR Contact: 04/28/2008
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 01/04/2008
Date Data Arrived at EDR: 01/10/2008
Date Made Active in Reports: 02/20/2008
Number of Days to Update: 41

Source: EPA
Telephone: (214) 665-2200
Last EDR Contact: 01/02/2008
Next Scheduled EDR Contact: 03/31/2008
Data Release Frequency: Quarterly

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: No Update Planned

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 03/06/2007
Date Made Active in Reports: 04/13/2007
Number of Days to Update: 38

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 12/13/2007
Next Scheduled EDR Contact: 03/10/2008
Data Release Frequency: Biennially

STATE AND LOCAL RECORDS

SHWS: This state does not maintain a SHWS list. See the Federal CERCLIS list and Federal NPL list.

State Hazardous Waste Sites. State hazardous waste site records are the states' equivalent to CERCLIS. These sites may or may not already be listed on the federal CERCLIS list. Priority sites planned for cleanup using state funds (state equivalent of Superfund) are identified along with sites where cleanup will be paid for by potentially responsible parties. Available information varies by state.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: Department of the Environment
Telephone: 505-827-2918
Last EDR Contact: 02/04/2008
Next Scheduled EDR Contact: 04/21/2008
Data Release Frequency: N/A

SWF/LF: Solid Waste Facilities

Solid Waste Facilities/Landfill Sites. SWF/LF type records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. Depending on the state, these may be active or inactive facilities or open dumps that failed to meet RCRA Subtitle D Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 03/05/2007
Date Data Arrived at EDR: 03/06/2007
Date Made Active in Reports: 03/22/2007
Number of Days to Update: 16

Source: New Mexico Environment Department
Telephone: 505-827-0347
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Semi-Annually

SWRCY: Recycling Facility Listing
A listing of recycling facility locations.

Date of Government Version: 03/05/2007
Date Data Arrived at EDR: 03/06/2007
Date Made Active in Reports: 03/22/2007
Number of Days to Update: 16

Source: Environment Department
Telephone: 505-827-0197
Last EDR Contact: 03/03/2008
Next Scheduled EDR Contact: 06/02/2008
Data Release Frequency: Varies

LUST: Leaking Underground Storage Tank Priorization Database
Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state.

Date of Government Version: 08/01/2006
Date Data Arrived at EDR: 10/06/2006
Date Made Active in Reports: 11/08/2006
Number of Days to Update: 33

Source: New Mexico Environment Department
Telephone: 505-984-1741
Last EDR Contact: 01/29/2008
Next Scheduled EDR Contact: 04/28/2008
Data Release Frequency: Varies

UST: Listing of Underground Storage Tanks
Registered Underground Storage Tanks. UST's are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA) and must be registered with the state department responsible for administering the UST program. Available information varies by state program.

Date of Government Version: 08/01/2006
Date Data Arrived at EDR: 09/27/2006
Date Made Active in Reports: 10/23/2006
Number of Days to Update: 26

Source: New Mexico Environment Department
Telephone: 505-984-1741
Last EDR Contact: 12/28/2007
Next Scheduled EDR Contact: 03/24/2008
Data Release Frequency: Varies

LAST: Leaking Aboveground Storage Tank Sites
A listing of leaking aboveground storage tank sites.

Date of Government Version: 05/01/2006
Date Data Arrived at EDR: 05/01/2006
Date Made Active in Reports: 06/05/2006
Number of Days to Update: 35

Source: Environment Department
Telephone: 505-984-1926
Last EDR Contact: 01/29/2008
Next Scheduled EDR Contact: 04/28/2008
Data Release Frequency: Quarterly

AST: Aboveground Storage Tanks List
Aboveground tanks that have been inspected by the State Fire Marshal.

Date of Government Version: 08/01/2006
Date Data Arrived at EDR: 09/27/2006
Date Made Active in Reports: 10/20/2006
Number of Days to Update: 23

Source: Environment Department
Telephone: 505-984-1926
Last EDR Contact: 12/28/2007
Next Scheduled EDR Contact: 03/24/2008
Data Release Frequency: Varies

SPILLS: Spill Data
Hazardous materials spills data.

Date of Government Version: 01/12/2006
Date Data Arrived at EDR: 01/23/2006
Date Made Active in Reports: 02/27/2006
Number of Days to Update: 35

Source: Environment Department
Telephone: 505-827-0166
Last EDR Contact: 01/23/2008
Next Scheduled EDR Contact: 04/21/2008
Data Release Frequency: Varies

INST CONTROL: Sites with Institutional Controls
Sites included in the Voluntary Cleanup listing that have Institutional Controls in place.

Date of Government Version: 09/30/2007
Date Data Arrived at EDR: 01/25/2008
Date Made Active in Reports: 01/31/2008
Number of Days to Update: 6

Source: Environment Department
Telephone: 505-827-2754
Last EDR Contact: 01/25/2008
Next Scheduled EDR Contact: 04/21/2008
Data Release Frequency: Varies

VCP: Voluntary Remediation Program Sites
Sites involved in the Voluntary Remediation Program.

Date of Government Version: 09/30/2007
Date Data Arrived at EDR: 01/25/2008
Date Made Active in Reports: 01/31/2008
Number of Days to Update: 6

Source: Environment Department
Telephone: 505-827-2754
Last EDR Contact: 01/25/2008
Next Scheduled EDR Contact: 04/21/2008
Data Release Frequency: Varies

DRYCLEANERS: Drycleaner Facility Listing
A listing of drycleaner facility locations. The listing may contain facilities that are no longer there, or under different management.

Date of Government Version: 01/24/2007
Date Data Arrived at EDR: 01/31/2007
Date Made Active in Reports: 03/22/2007
Number of Days to Update: 50

Source: Environment Department
Telephone: 505-222-9507
Last EDR Contact: 01/21/2008
Next Scheduled EDR Contact: 04/21/2008
Data Release Frequency: No Update Planned

NPDES: List of Discharge Permits
General information regarding NPDES (National Pollutant Discharge Elimination System) permits.

Date of Government Version: 12/13/2006
Date Data Arrived at EDR: 05/16/2007
Date Made Active in Reports: 06/14/2007
Number of Days to Update: 29

Source: Environment Department
Telephone: 505-827-2918
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/12/2008
Data Release Frequency: Semi-Annually

ASBESTOS: List of Asbestos Demolition and Renovations Jobs
Asbestos is a common fibrous rock found worldwide which has been used in various products for over 4500 years. It has been used in over 3000 different products such as textiles, paper, ropes, wicks, stoves, filters, floor tiles, roofing shingles, clutch facings, water pipe, cements, fillers, felt, fireproof clothing, gaskets, battery boxes, clapboard, wallboard, fire doors, fire curtains, insulation, brake linings, etc.

Date of Government Version: 04/01/2007
Date Data Arrived at EDR: 05/09/2007
Date Made Active in Reports: 05/30/2007
Number of Days to Update: 21

Source: New Mexico Environment Department
Telephone: 505-827-1494
Last EDR Contact: 02/08/2008
Next Scheduled EDR Contact: 05/05/2008
Data Release Frequency: Varies

TRIBAL RECORDS

INDIAN RESERV: Indian Reservations
This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 02/08/2008
Next Scheduled EDR Contact: 05/05/2008
Data Release Frequency: Semi-Annually

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 02/25/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 11/27/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 09/05/2007
Date Data Arrived at EDR: 10/02/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 9

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Semi-Annually

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 12/03/2007
Date Data Arrived at EDR: 12/06/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 22

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 06/01/2007
Date Data Arrived at EDR: 06/14/2007
Date Made Active in Reports: 07/05/2007
Number of Days to Update: 21

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 12/12/2007
Date Data Arrived at EDR: 12/12/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 43

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 11/30/2007
Date Data Arrived at EDR: 11/30/2007
Date Made Active in Reports: 12/28/2007
Number of Days to Update: 28

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 12/01/2006
Date Data Arrived at EDR: 12/01/2006
Date Made Active in Reports: 01/29/2007
Number of Days to Update: 59

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 06/01/2007
Date Data Arrived at EDR: 06/14/2007
Date Made Active in Reports: 07/05/2007
Number of Days to Update: 21

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 12/12/2007
Date Data Arrived at EDR: 12/12/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 43

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Semi-Annually

INDIAN UST R1: Underground Storage Tanks on Indian Land
A listing of underground storage tank locations on Indian Land.

Date of Government Version: 12/01/2006
Date Data Arrived at EDR: 12/01/2006
Date Made Active in Reports: 01/29/2007
Number of Days to Update: 59

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 11/27/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

INDIAN UST R9: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 11/30/2007
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

INDIAN UST R5: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 12/21/2007
Date Data Arrived at EDR: 12/21/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 34

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 09/05/2007
Date Data Arrived at EDR: 10/02/2007
Date Made Active in Reports: 10/11/2007
Number of Days to Update: 9

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Semi-Annually

INDIAN UST R8: Underground Storage Tanks on Indian Land
No description is available for this data

Date of Government Version: 12/03/2007
Date Data Arrived at EDR: 12/06/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 49

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 02/15/2008
Next Scheduled EDR Contact: 05/19/2008
Data Release Frequency: Quarterly

EDR PROPRIETARY RECORDS

Manufactured Gas Plants: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 11/26/2007
Date Data Arrived at EDR: 11/29/2007
Date Made Active in Reports: 02/05/2008
Number of Days to Update: 68

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 02/28/2008
Next Scheduled EDR Contact: 05/26/2008
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2006
Date Data Arrived at EDR: 04/27/2007
Date Made Active in Reports: 06/08/2007
Number of Days to Update: 42

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 01/07/2008
Next Scheduled EDR Contact: 04/07/2008
Data Release Frequency: Annually

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Child Day Care Providers
Source: Office of Child Development
Telephone: 505-827-7946

Flood Zone Data: This data, available in select counties across the country, was obtained by EDR in 1999 from the Federal Emergency Management Agency (FEMA). Data depicts 100-year and 500-year flood zones as defined by FEMA.

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002 and 2005 from the U.S. Fish and Wildlife Service.

STREET AND ADDRESS INFORMATION

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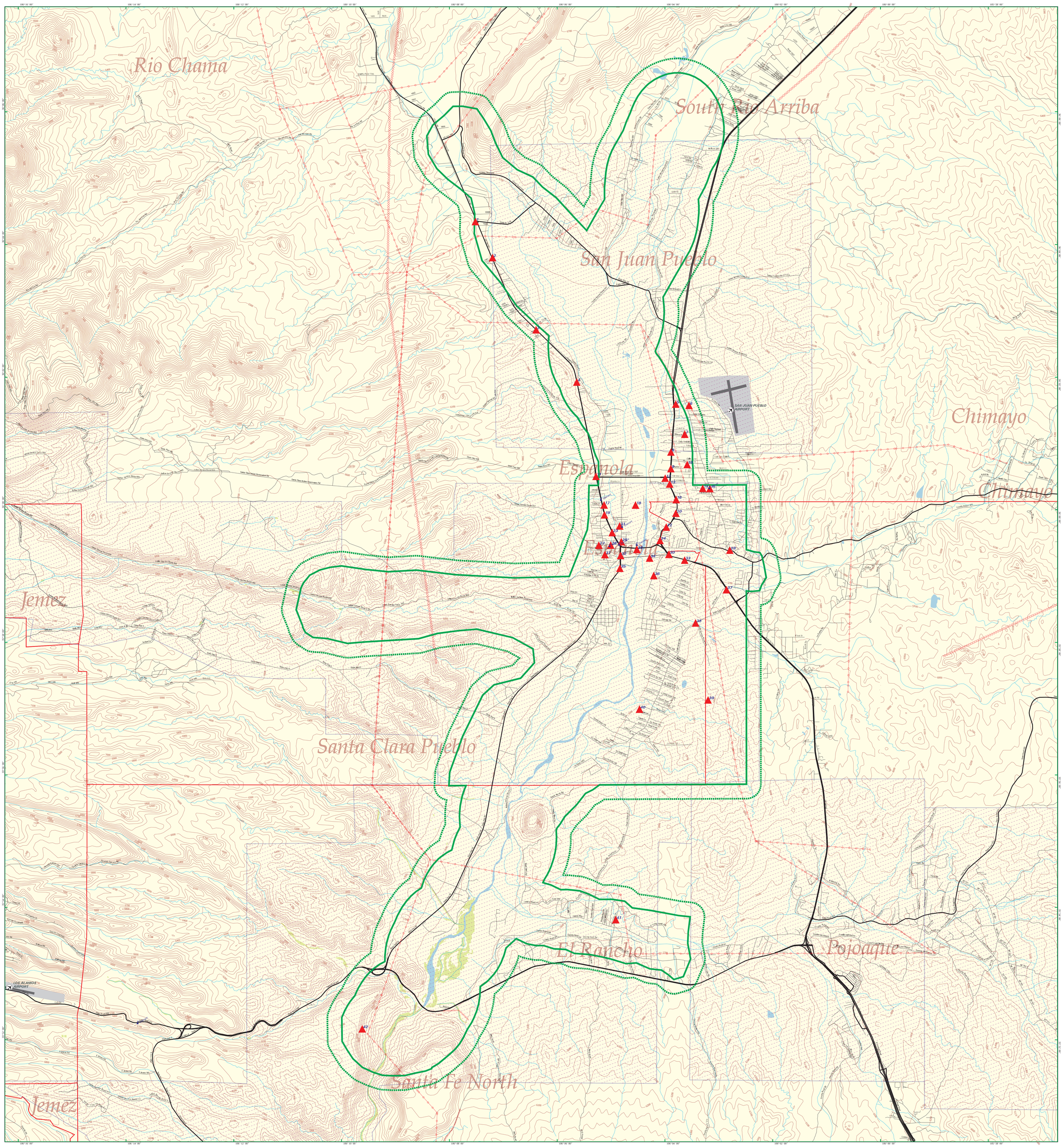
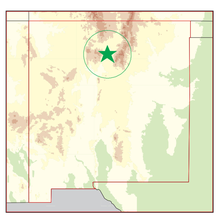


EDR DataMap® −Area Study

Espanola Valley Watershed Project

EDR® Environmental Data Resources Inc



Espanola, NM

- Listed Sites
- Earthquake Epicenters (Richter 5 or greater)
- Search Boundary
- Roads
- Major Roads
- Waterways
- Railroads
- Contour Lines
- Pipelines
- Powerlines
- Fault Lines
- Water
- Superfund Sites
- Federal DOD Sites
- Indian Reservations BIA
- National Wetland Inventory

N

0 1 2

Scale in Miles

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Española Valley, Rio Grande and Tributaries, New Mexico

Appendix F

Geotechnical Engineering

August 2015

DRAFT

US Army Corps
of Engineers ®
Albuquerque District

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1 - Geotechnical Engineering

1.1 Existing Vicinity Geologic Conditions

Numerous faults of varying orientation, scale, age, fault zone materials, displacement and structural style are present throughout the Española Basin. The two most significant are the Black Mesa fault zone and the Los Barrancos structural zone.

The Black Mesa fault zone in the northern part of the Española Basin consists of several down-to-the-east normal faults including the Black Mesa fault, the largest controlling structure. The Black Mesa fault is a northeast-southwest trending normal fault with a minimum displacement of 1,969 feet and a maximum displacement believed to be up to 3,937 feet. Most of the deformation along the Black Mesa fault occurred between 3 and 7 million years ago during a tectonically active period of the Rio Grande Rift. The Black Mesa fault may have acted as one of the master faults that formed the half graben that resulted in the Española Basin. The Chamita syncline is located east of Black Mesa and formed less than 6 million years ago, likely due to movement along the Black Mesa fault. (Koning and Manley 2003)

The Los Barrancos structural zone is a north trending 5 km wide zone that lies in the middle of the study area east of the Rio Grande and mostly between the Pojoaque River and Arroyo Seco. It is bounded to the west by a northwest trending fault north of Santa Clara pueblo and the northwest trending Huerfano fault and to the east by the Los Barrancos monocline and the Pojoaque-Road fault system. The Los Barrancos structural zone is characterized by an abundance of down-to-the-east steeply dipping faults becoming longer with more significant displacements towards the west. These faults were active during the early and late Miocene. (Koning 2002)

The Pojoaque-Road fault system is a north trending fault zone extending through much of the study area. The southern extent of this fault system is composed of steeply dipping down-to-the-west faults with minor displacement of up to 59 feet. Towards the north the fault changes to a down-to-the-east fault with displacements of 164 to 197 feet. (Koning 2002)

1.1.1 Site geology

Sediments within the study area consist mainly of alluvial deposits overlying the Ancha Formation, the Puye Formation and the sediments and rocks of the Santa Fe Group. The stratigraphy of the study area is discontinuous and varies laterally with inter-fingered layers of clays, silts, sands, and gravels typical of an arid alluvial setting. Alluvial deposits surrounding the rivers and tributary arroyos are recent to Pliocene age, unconsolidated, fine to coarse grained clays, silts, sands and gravels, and are thickest around the channels of the Rio Grande and Rio Chama (Figure 5).

The late Pliocene Ancha Formation and the middle Pliocene Puye Formation overly the Santa Fe Group in western parts of the study area. The Ancha formation consists mostly of weakly to moderately consolidated, non-cemented sands and gravels with some localized areas of clay and

silt. The Puye Formation consists of weakly lithified gravels and cobbles. The Pliocene to middle Miocene deposits of the Santa Fe Group consist of unconsolidated fine to coarse grained sediments inter-layered with weakly cemented sandstones, siltstones, mudstones and conglomerates. Major rock units within the Santa Fe Group in the study area include the Tesuque and Chamita Formations. Basalt flows and pyroclastic flows from the Pleistocene to late Miocene are commonly found inter-bedded with sedimentary deposits throughout the basin.

1.1.2 Subsurface

Subsurface information specific to proposed construction sites is currently not available. Depth to bedrock is unknown but not expected to be within the proposed limits of foundations. A subsurface investigation was not conducted. As the project alternatives are developed in greater detail, a subsurface investigation will be planned to investigate the subsurface conditions at those specific locations. Subsurface information from the proposed Los Vigiles Grade Reduction Facility (GRF), Española, New Mexico; is provided in a summary table below. This information was obtained in the general vicinity of this project and in 2007.

7HSA-02
7HSA-01
7HSA-04
7HSA-03
0
100M
0
100yd

Borehole ID	sample `depth (ft.)	USCS Classifica-tion	liquid limit	plasticity index	Blow count Per 6”	gravimetric moisture content	% finer than US #4 sieve (by weight)	% finer than US #40 sieve (by weight)	% finer than US #200 sieve (by weight)
7HSA-01	**0**	**SM**	**NV**	**NP**	**10,8,5**	**10.5**	**98**	**86**	**37**
7HSA-01	**-2.5**	**SC**	**26**	**10**	**1,12,22**	**25.9**	**97**	**84**	**43**
7HSA-01	**-5**	**SP**	**NV**	**NP**	**4,13,21**	**11.7**	**75**	**42**	**4**
7HSA-01	**-7.5**	**GP**	**NV**	**NP**	**8,16,17**	**7.6**	**45**	**20**	**2.3**
7HSA-01	**-10**	**GP**	**NV**	**NP**	**10,27,44**	**5.3**	**47**	**21**	**3**
7HSA-01	**-12.5**	**GW**	**NV**	**NP**	**6,18,11**	**14.8**	**38**	**14**	**2.9**
7HSA-01	**-15**	**SP**	**NV**	**NP**	**9,19,50**	**8.3**	**58**	**16**	**2.6**
7HSA-01	**-17.5**	**SM**	**NV**	**NP**	**2,15,35**	**14**	**98**	**73**	**16**
7HSA-01	**-20**	**SC**	**25**	**8**	**4,15,39**	**11.7**	**98**	**80**	**20**
7HSA-01	**-22.5**	**SP-SM**	**NV**	**NP**	**13,20,25**	**15.1**	**100**	**74**	**12**
7HSA-01	**-25**	**SP-SM**	**NV**	**NP**	**7,14,37**	**14.5**	**100**	**62**	**10**
7HSA-01	**-27.5**	**SM**	**NV**	**NP**	**10,14,20**	**16.8**	**--**	**91**	**17**
7HSA-01	**-30**	**SM**	**NV**	**NP**	**6,19,22**	**15.9**	**--**	**80**	**14**
7HSA-02	0	SM	NV	NP	6,3,5	4.8	97	88	19
7HSA-02	-2.5	CL	31	9	1,4,8	28.3	--	99	95
7HSA-02	-5	SM	22	3	2,4,11	25	90	82	49
7HSA-02	-7.5	SP-SM	NV	NP	4,3,6	17.1	78	67	5.9
7HSA-02	-10	GP	NV	NP	28,32,19	7.1	43	18	3.9
7HSA-02	-12.5	SP-SM	NV	NP	25,45,50	11.6	72	31	9.4
7HSA-02	-15	SP-SM	NV	NP	11,19,30	14.6	83	61	8.2
7HSA-02	-17.5	SP-SM	NV	NP	10,18,18	17.6	100	87	11
7HSA-02	-20	SM	NV	NP	15,30,50	14.7	--	78	13
7HSA-02	-22.5	--	--	--	--	--	--	--	--
7HSA-02	-25	SP-SM	NV	NP	12,19,22	15.9	100	68	6.9
7HSA-02	-27.5	SP-SM	NV	NP	11,14,38	16.5	--	70	9.5
7HSA-02	-30	SP-SM	NV	NP	6,24,38	17.2	--	55	7.8
7HSA-03	**0**	**SM**	**NV**	**NP**	**2,37,32**	**3.3**	**64**	**60**	**17**
7HSA-03	**-2.5**	**GP**	**NV**	**NP**	**13,11,9**	**2.7**	**45**	**22**	**3.3**
7HSA-03	**-5**	**SP-SM**	**NV**	**NP**	**9,46,47**	**1.8**	**51**	**23**	**4.6**
7HSA-03	**-7.5**	**GP-GM**	**NV**	**NP**	**27,19,30**	**6.6**	**48**	**20**	**5.1**
7HSA-03	**-10**	**GP**	**NV**	**NP**	**13,30,42**	**7.2**	**44**	**20**	**3.6**
7HSA-03	**-12.5**	**GP**	**NV**	**NP**	**28,15,10**	**6.5**	**50**	**15**	**1.8**
7HSA-03	**-15**	**SP**	**NV**	**NP**	**9,9,4**	**8.7**	**77**	**17**	**2.5**
7HSA-03	**-17.5**	**GP**	**NV**	**NP**	**16,23,18**	**8.1**	**46**	**24**	**3**

7HSA-03	**-20**	**SP**	**NV**	**NP**	**37,22,33**	**12.5**	**74**	**12**	**2.8**
7HSA-03	**-22.5**	**SP-SM**	**NV**	**NP**	**27,50**	**11.9**	**86**	**33**	**4.8**
7HSA-03	**-25**	**--**	**--**	**--**	**7,7,12**	**--**	**--**	**--**	**--**
7HSA-03	**-27.5**	**SP-SM**	**NV**	**NP**	**3,20,25**	**17.7**	**100**	**59**	**9.8**
7HSA-03	**-30**	**SP-SM**	**NV**	**NP**	**11,33,50**	**16.3**	**100**	**52**	**5.2**
7HSA-04	0	GW-GM	NV	NP	6,13,21	2	42	21	6
7HSA-04	-2.5	SP-SM	NV	NP	4,25,32	3.4	77	52	6.9
7HSA-04	-5	GP-GM	NV	NP	12,20,15	2.3	42	19	4.7
7HSA-04	-7.5	GP-GM	NV	NP	33,21,20	7.5	48	22	4.7
7HSA-04	-10	SP	NV	NP	10,5,7	11.7	66	32	2.3
7HSA-04	-12.5	SP	NV	NP	9,17,7	10.1	69	28	1.9
7HSA-04	-15	SP	NV	NP	44,37,46	13.3	74	30	3.6
7HSA-04	-17.5	--	--	--	50	--	--	--	--
7HSA-05	**0**	**SP-SM**	**NV**	**NP**	**12,10,6**	**3.7**	**60**	**37**	**12**
7HSA-05	**-2.5**	**GP-GM**	**NV**	**NP**	**7,6,12**	**6.1**	**50**	**25**	**4.6**
7HSA-05	**-5**	**GP**	**NV**	**NP**	**8,20,29**	**1.5**	**26**	**14**	**4.2**
7HSA-05	**-7.5**	**--**	**--**	**--**	**45,27,17**	**--**	**--**	**--**	**--**
7HSA-05	**-10**	**SP**	**NV**	**NP**	**20,9,9**	**12.5**	**71**	**21**	**2.6**
7HSA-05	**-12.5**	**SP**	**NV**	**NP**	**50**	**12**	**70**	**11**	**2.2**
7HSA-05	**-15**	**GP-GM**	**NV**	**NP**	**26,50**	**7.1**	**48**	**21**	**5.9**
7HSA-05	**-17.5**	**SP-SM**	**NV**	**NP**	**32,50**	**7.7**	**59**	**16**	**5.1**
7HSA-05	**-20**	**SP**	**NV**	**NP**	**17,39,30**	**14.4**	**73**	**35**	**3.6**
7HSA-05	**-22.5**	**GP**	**NV**	**NP**	**22,21,17**	**7.6**	**47**	**15**	**2.1**
7HSA-05	**-25**	**SP**	**NV**	**NP**	**18,25,22**	**22.3**	**--**	**71**	**3.4**
7HSA-05	**-27.5**	**SP-SM**	**NV**	**NP**	**14,40,42**	**11.2**	**71**	**34**	**7.6**
7HSA-05	**-30**	**SP-SM**	**NV**	**NP**	**35,22,30**	**12.3**	**74**	**66**	**11**

1.2 Expected Future with Project Conditions

It is expected that the soils present within the proposed areas for construction of the grade restoration features (GRFs) will be highly permeable and consist of boulders, cobbles, gravels, sands, silts, and clays. Depth to groundwater table is expected to be shallow within the proposed areas for construction of GRFs. Depth to bedrock is unknown but not expected to be within the proposed limits of the GRF foundations. There are no expected issues related to geotechnical engineering aspects of this project; therefore, the necessary information requiring collection and analysis can be performed once the project moves into design.

APPENDIX G – CLIMATE CHANGE PLANNING, NORTHERN NEW MEXICO

Ariane Pinson, USACE Albuquerque District

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1.1 Current Climate in the Española Basin of New Mexico

The NOAA National Weather Service Cooperative Observer (COOP) station with a relatively complete record is located at Alcalde (Station 290245), along the Rio Grande northeast of Ohkay Owingeh Pueblo. The period of record for this station is 1953 through October 2012.

The climate at Alcalde is arid continental with large daily and seasonal temperature differences. Summers tend to be hot and dry; winters tend towards cool and humid. Peak precipitation occurs during the late summer/early fall during the peak of the North American Monsoon (monsoon), with a secondary peak in winter. Spring and fall tends towards warm and dry.

The monthly period of record temperature summary at Alcalde (Table 1) shows that monthly average daytime maximum temperatures (Tmax) are above freezing in all months. Winter Tmax averages 47.7°F, with few winter days with Tmax <=32°F. Monthly overnight minimum temperatures (Tmin) average 17.1°F in winter , but can reach as low as -34°F. In summer, Tmax averages 87.4°F. July is the hottest month, with an average of 16 days with temperatures above 90°F and occasional days where temperatures peak as high as 102°F. Monthly overnight low temperatures (Tmin) average 69.9°F in summer.

At Alcalde, precipitation averages 10.01” per year (Table 2). In most months, precipitation is 0.75” or less, but is higher during the monsoon season: July receives an average of 1.37”, August 1.89”, September 1.26”, and October 1.04”. Precipitation may fall as snow from October through April, with average monthly snowfall peaking in December at 2.8”.

1.1.1 Topographic Effects

Topography significantly influences local climate in winter and summer.

- In winter, the dominant pattern is for storms to move into the region from the west or northwest; much of the precipitation falls over the western and central portions of the Jemez Mountains, and the amount declines rapidly moving east of the Sierra de los Valles and down slope to the Rio Grande.

- During the monsoon season, thunderstorm development is encouraged by daytime surface heating over the Pajarito Plateau and Sierra de los Valles. Daytime surface heating causes air to rise, initiating convection that can pull in air from lower areas to the southeast (Bowen 1996). This convection leads to the formation of thunderstorms over the plateau. Westerly winds in the upper atmosphere can push these storms east towards the Rio Grande as well as advect precipitation into the area.

- There is approximately 5500 feet of elevation difference from the headwaters of Santa Clara Creek to its confluence with the Rio Grande. Sites at higher elevations are generally cooler and wetter compared to low elevation sites near the Rio Grande.

- There is a large east-to-west precipitation gradient across the Pajarito Plateau, with White Rock on the eastern margin of the plateau receiving approximately 13 cm less precipitation than Los Alamos close to the center of the Plateau. Areas to the west of Los

Alamos have approximately 13 cm more rain than the official station in at the lab (Bowen 1992, 1996). Small elevation changes can lead to larger differences in precipitation and other climate variables.

- The Sangre de Cristo mountains prevent moisture from the Plains from entering the region. The region effectively lies in the rainshadow of the Sangres with respect to moisture transported northwestward from the Gulf of Mexico.

Table 1 Alcalde, New Mexico, Period of Record General Climate Summary – Temperature.

Station:(290245) ALCALDE															
From Year=1953 To Year=2012															
	Monthly Averages			Daily Extremes				Monthly Extremes				Max. Temp.		Min. Temp.	
	Max.	Min.	Mean	High	Date	Low	Date	Highest Mean	Year	Lowest Mean	Year	>= 90 F	<= 32 F	<= 32 F	<= 0 F
	°F	°F	°F	°F	dd/yyyy or yyyymmdd	°F	dd/yyyy or yyyymmdd	°F	-	°F	-	# Days	# Days	# Days	# Days
January	45.7	15.2	30.4	70	31/1971	-34	07/1971	38.8	1986	24.2	1963	0.0	1.8	30.4	1.6
February	51.4	20.2	35.6	73	26/1986	-12	03/2011	42.3	1995	28.2	1964	0.0	0.5	26.5	0.2
March	59.5	25.3	42.4	84	21/2004	1	02/2002	48.6	1986	36.1	1962	0.0	0.0	26.2	0.0
April	68.2	32.4	50.3	88	29/1992	8	01/1963	56.0	1989	44.7	1973	0.0	0.0	15.8	0.0
May	76.8	40.4	58.6	98	30/2000	18	02/1967	63.7	1996	53.9	1957	0.7	0.0	3.3	0.0
June	86.4	48.2	67.3	101	19/1989	31	07/1969	70.4	2012	64.5	1955	10.3	0.0	0.0	0.0
July	89.2	55.4	72.3	102	14/1971	39	01/1972	75.5	1980	69.7	2004	15.8	0.0	0.0	0.0
August	86.4	53.9	70.1	100	19/1973	34	28/1992	73.4	1983	63.8	1992	9.3	0.0	0.0	0.0
September	80.4	44.8	62.6	95	08/1977	23	22/1971	66.9	1998	58.2	2006	1.5	0.0	0.9	0.0
October	70.4	33.0	51.7	90	01/1980	9	22/1996	55.3	1963	47.7	1970	0.0	0.0	15.5	0.0
November	56.8	22.9	39.8	79	15/1975	-11	28/1976	43.5	1965	34.8	1957	0.0	0.1	27.0	0.1
December	46.1	16.0	31.1	68	02/1995	-12	21/1953	38.9	1980	24.1	1976	0.0	1.8	30.2	0.6
Annual	68.1	34.0	51.0	102	19710714	-34	19710107	52.8	1989	49.5	1955	37.7	4.2	175.8	2.5
Winter	47.7	17.1	32.4	73	19860226	-34	19710107	37.6	1986	28.5	1977	0.0	4.1	87.1	2.4
Spring	68.2	32.7	50.4	98	20000530	1	20020302	54.9	1989	47.4	1973	0.7	0.0	45.3	0.0
Summer	87.4	52.5	69.9	102	19710714	31	19690607	71.7	1977	66.5	1992	35.5	0.0	0.0	0.0
Fall	69.2	33.6	51.4	95	19770908	-11	19761128	54.3	1963	48.6	1957	1.5	0.1	43.4	0.1

Data online: http://www.wrcc.dri.edu/cgi-bin/cliGCStT.pl?nm0245
Table updated on Oct 31, 2012
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

Table 2 Alcalde, New Mexico, Period of Record General Climate Summary – Precipitation.

Station:(290245) ALCALDE														
From Year=1953 To Year=2012														
	Precipitation											Total Snowfall		
	Mean	High	Year	Low	Year	1 Day Max.		>= 0.01 in.	>= 0.10 in.	>= 0.50 in.	>= 1.00 in.	Mean	High	Year
	in.	in.	-	in.	-	in.	dd/yyyy or yyyymmdd	# Days	# Days	# Days	# Days	in.	in.	-
January	0.39	1.92	2005	0.00	1959	0.72	18/1979	3	1	0	0	2.6	14.5	1987
February	0.34	1.05	1986	0.00	1962	0.56	23/1985	3	1	0	0	2.2	13.0	1986
March	0.52	2.15	1994	0.00	1955	0.78	10/1974	3	2	0	0	1.8	14.0	1985
April	0.60	3.33	1994	0.00	1956	1.28	24/1980	3	2	0	0	0.2	3.5	2004
May	0.73	2.59	1986	0.00	1974	0.87	15/2010	4	2	0	0	0.0	2.0	1978
June	0.78	2.72	1966	0.00	1957	1.60	10/1969	4	2	0	0	0.0	0.0	1953
July	1.37	3.31	2006	0.02	2005	1.50	11/1964	8	4	1	0	0.0	0.0	1953
August	1.89	4.87	1957	0.04	1982	2.00	30/1989	9	5	1	0	0.0	0.0	1953
September	1.26	3.73	2002	0.00	1956	1.98	13/1958	6	3	1	0	0.0	0.0	1953
October	1.04	4.08	1998	0.00	1955	1.53	18/1957	4	3	1	0	0.2	4.5	1991
November	0.62	3.98	1978	0.00	1956	1.30	18/1991	3	2	0	0	1.0	11.3	1972
December	0.48	2.45	2007	0.00	1957	1.22	01/2007	3	1	0	0	2.8	14.5	2006
Annual	10.01	16.16	1986	2.66	1956	2.00	19890830	52	28	5	1	10.8	20.0	1963
Winter	1.21	3.71	2008	0.00	1981	1.22	20071201	8	4	0	0	7.6	23.3	2007
Spring	1.84	4.02	2004	0.00	1981	1.28	19800424	11	6	1	0	2.1	14.0	1985
Summer	4.04	7.78	1967	1.14	1974	2.00	19890830	20	10	2	0	0.0	0.0	1953
Fall	2.92	6.08	2002	0.18	1956	1.98	19580913	13	7	2	0	1.2	12.3	1972

Data online: http://www.wrcc.dri.edu/cgi-bin/cliGCStT.pl?nm0245
Table updated on Oct 31, 2012
For monthly and annual means, thresholds, and sums:
Months with 5 or more missing days are not considered
Years with 1 or more missing months are not considered
Seasons are climatological not calendar seasons
Winter = Dec., Jan., and Feb. Spring = Mar., Apr., and May
Summer = Jun., Jul., and Aug. Fall = Sep., Oct., and Nov.

1.2 Climate Drivers in Northern New Mexico

The climate in northern New Mexico is determined in large part by its location at the boundary between the arid subtropics and the humid mid-latitudes in the interior of the United States (continental, non-coastal location), and its position along the southern margin of the Rocky Mountains.

Atmospheric heating is greatest at the equator, and decreases towards the poles because of the curvature of the earth. Hadley circulation is the result: hot air rises at the equator, producing a band of rain along the Intertropical Convergence Zone, then moves northward in the Northern Hemisphere to the subtropics, where the air descends and warms by compression producing a zone of semi-permanent high pressure. The result is an arid zone located at approximately 23 to 35°N latitude that includes the major Northern Hemisphere deserts: Chihuahuan, Sonoran, Sahara, Saudi and Thar. As the earth orbits the sun, the earth's tilt allows the zone of descending air to move northward in the summer and southward in the winter. With the onset of fall/winter, the southward movement of the zone of high pressure allows the jet stream to move over the region, bringing with it storms systems (midlatitude cyclones) that typically bring steady precipitation over large areas (Moran 2009).

Northern New Mexico is located at 34 to 37°N, right at the boundary of the subtropics and the midlatitudes. It experiences a midlatitude climate in the winter months, characterized by large area storm systems moving along the path of the jet stream. Because the region is in the interior of the North American continent, these storms lose much of their moisture as precipitation over the Sierra Nevada and Rocky Mountains between their origin over the northwest Pacific Ocean and their arrival in New Mexico. Consequently, these storms often bring less precipitation to New Mexico than to areas to the north or west. These storms are typically "rejuvenated" as they encounter sources of moisture east of the Rockies, producing greater precipitation over the plains of eastern New Mexico than in the central part of the state.

With the onset of spring/summer, the zone of dry, descending air expands northward, pushing aside the jet stream and associated storm systems. This produces the dry, windy conditions typical of April, May and June in the region. Without the summer monsoon, northern New Mexico would have its peak precipitation during the winter months and would have little or no summer precipitation. However, location is everything. In summer, high pressure to the east and low pressure to the west frequently funnels low- and mid-level moisture north from the eastern Pacific and Gulf of Mexico. Over New Mexico, daily heating causes this moisture-laden air to rise and produce thunderstorms over the region. These intense, short-lived summer storms are typically limited in area, producing rain in different places on different days. This pattern of summer precipitation is called the "North American Monsoon" (NAM). Northern New Mexico is located in the northern part of the NAM area, outside the core monsoon region, and therefore does not receive ample NAM precipitation every year. The NAM may last from mid-July through the end of September. Particularly in the latter half of the NAM, remnant hurricanes may become entrained in monsoonal flow, producing a small number of days of widespread rain across the region.

Climate across the region is highly variable from year-to-year. The major driver of winter precipitation is the variation in tropical Pacific Ocean sea-surface temperatures and pressures

known as the El Niño-Southern Oscillation (ENSO). El Niño years are years in which the eastern tropical Pacific Ocean surface is warm, producing moister air over the ocean that feeds into winter storm systems, producing wet winters in the Southwestern U.S. including New Mexico. Dry winters occur when the eastern tropical Pacific Ocean surface is cool, which reduces evaporation and results in dry air over the ocean. Less moisture is available for storm formation and winter precipitation in the Southwestern U.S. is reduced (Sheppard et al. 2002).

Recent overviews of climate change in the Southwestern United States (SWUS) have been provided in (Garfin et al. 2013), (Melillo et al. 2014), and NOAA (2013b). Important syntheses of climate change impacts to New Mexico and Colorado include New Mexico Office of the State Engineer (2006) and Ray et al. (2008).

1.2.1 Recent Temperature Trends

1.2.1.1 Global, National and Western U.S. Temperature Trends

Temperatures in the West have shown a relatively steady rise beginning in the early 20th Century. The rise stalled during the middle part of the century during the post-war economic boom as increasing atmospheric pollution reduced the amount of sunlight entering the lower atmosphere, and then continued to rise following implementation of laws regulating environmental and atmospheric pollution.

The consensus view is that recent increases in temperature in the Western U.S. exceed observations in the historic record beginning in the late 19th Century (USGCRP 2009). Across the Mountain West, average annual temperatures for 2001-2009 were 0.8°C (1.4°F) higher relative to the average for 1895-2000 (MacDonald 2010). Temperature increases were greater in areas to the south and at lower elevation. Particularly troubling have been increases in winter (January, February, March, or JFM) temperatures. The observational record of 1950-1999 shows an increase in maximum average JFM temperatures of 1.53°C (2.8°F) and an increase in minimum average JFM temperatures of 1.72°C (3°F) (Bonfils et al. 2008). Rising winter temperatures have contributed to a contraction of 8 days in the number of days below freezing, and a corresponding lengthening of the frost-free period. Detection and attribution modeling studies indicate that these patterns cannot be replicated in models of natural climate forcing (models that exclude human greenhouse gas emissions but include the effects of cyclical changes in ocean surface temperature, solar variation and changes in volcanic aerosol concentrations), but are robustly replicated in models that also include human greenhouse gas emissions (Bonfils et al. 2008).

In the Southwestern U.S. as a whole, encompassing New Mexico, Colorado, Arizona, Utah, Nevada, and California, the decade 2001-2010 was the warmest of all decades from 1901-2010, with temperatures increasing approximately 0.9°C±0.3°C over the period 1901-2010 (Hoerling et al. 2013). Rising temperatures increased the frequency of heat waves, reduced the frequency of cold waves, and contributed to the expansion of the growing season by 17 days (7%) during 2001-2010 compared to the average season length for the 20th Century. The period since 1950 in the Southwest has been warmer than any comparable period in at least 600 years, according to paleoclimate records (Hoerling et al. 2013).

At the regional level, several recent studies have examined trends in temperature. Tebaldi et al. (2012) use low elevation National Weather Service Cooperative Observer Program (COOP) station data and corrected climate data from the NOAA Historical Climatology Network (HCN) to estimate that average annual temperatures in New Mexico warmed at an average rate of 0.219°F (0.10°C) per decade from 1912 to 2011 but at the faster rate of 0.678°F) (0.34°C) per decade since 1970. The same pattern of faster recent warming was also observed in annual average daytime maximum high temperature (Tmax) and annual average nighttime minimum temperature (Tmin).

Enquist and Gori (2008) examined temperature trends as part of a study of changes in habitat and species vulnerability in wilderness areas under a warming climate. They find that over the period 1970-2006, the average rate of temperature increase in wilderness areas in Northern New Mexico was 0.648°F/decade (0.36°C/decade), with Tmin increasing on average at a rate of 0.684°F/decade (0.38°C/decade), approximately 0.072°F/decade faster (0.04°C/decade) than Tmax.

Rates of warming in high elevation areas may be considerably greater than the regional average. In a recent analysis of National Weather Service and SNOTEL site data in the San Juan Mountains, Rangwala and Miller (2010) detect a rate of warming of 1.8°F (1°C) per decade from 1990 to 2005. Lower elevation sites experienced greatest warming during the winter months, warming in winter at an average rate of 2.7°F (1.5°C) per decade. Higher elevation sites experienced their greatest warming during the summer months, with temperatures increasing at a rate of 2.7°F (1.5°C) per decade during this season. The differences in the season of greatest warming are likely due to the cooling effects on air temperatures of snow on the ground. Increases in winter minimum temperatures increased faster than winter maximum temperatures at lower elevations, while summer maximum temperatures rose faster than summer minimum temperatures at higher elevations.

1.2.2 Recent Precipitation Trends

Warming-driven changes to global atmospheric circulation will affect when, where, and by how much precipitation will change. These changes will be superimposed on already highly-variable precipitation patterns resulting from the interplay of long- and short-term climate cycles (e.g., Pacific Decadal Oscillation (PDO) vs. ENSO). Because of the high inter-annual, decadal and longer-term variability in precipitation, detecting changes in precipitation has been more challenging than detecting changes in temperature.

The period of greatest aridity in New Mexico was not the Dust Bowl years of the 1930s but the period 1950-1956 when average annual precipitation remained below the long term average (Swetnam and Betancourt 1998, Sheppard et al. 2002, Gutzler 2003). Average precipitation years from 1965 through 1975 were followed by the period 1976 through 1997/1998 when warm, wet winters and erratic summer precipitation were the norm (Swetnam and Betancourt 1998, Sheppard et al. 2002, Gutzler 2003). These conditions gave way by 1999/2000 to conditions that were warmer and drier than at any period in the 20th Century or the preceding 1200+ years (MacDonald et al. 2008, Woodhouse et al. 2010). Since 2001, large portions of the Southwest have experienced drought, with particularly widespread and severe drying in 2002, 2003, 2007, 2009, 2011 and 2012. During these extremes, precipitation across the region averaged 22-25%

below the average for the 20th Century (MacDonald 2010), leading to a significant reduction in soil moisture and stream flow. The decade 2001-2010 has had the second-largest area affected by drought (after the period 1951-1960) and the most severe average drought conditions of any decade since 1901 (Hoerling et al. 2013). This drought was ongoing through March 2013 (National Drought Mitigation Center 2013) and is anticipated to persist through winter 2014 (NOAA 2013a).

Despite or because of this variation, no trends have been observed in annual water year precipitation from 1895/96 through 2010/11 for the six-state Southwest (NOAA 2013b). Seasonal time series show no trends for winter, spring and summer, and fall shows a slight upward, but not statistically-significant, trend. In addition, there has been no overall trend in the frequency of extreme precipitation events across the Southwest (NOAA 2011). Throughout the 20th century and into the early 21st century, the number of 1-day-duration and 5-year return interval precipitation events fluctuated, but remained within the range of early 20th century values.

1.3 Historical Climate Trends in Northern New Mexico

1.3.1 Data and Methodology

Three sources of climate data were used to investigate recent climate trends in the Upper Rio Grande in northern New Mexico (Table 3, Figure 1):

- USDA Natural Resource Conservation Service SNOTEL (snowpack telemetry) stations provided temperature and precipitation data beginning in 1989 (slightly earlier for some stations). SNOTEL sites in this region are positioned to provide a representative spatial sample of snowpack conditions (Molotch and Bales 2006) and may not provide a spatially representative sample of climate data. Monthly average values for temperature and precipitation were obtained from the National Climate Data Center (NOAA National Climate Data Center 2013) for the period of record ending in December 2012.

- NOAA National Weather Service Cooperative Observer Network (COOP) sites provided the bulk of the data from lower elevation settings. COOP sites are located to collect agriculturally-relevant climate data. Monthly average values for temperature and precipitation were obtained from the National Climate Data Center (NOAA National Climate Data Center 2013). The period of record for COOP sites in this study is January 1971 through December 2012.

- NOAA National Weather Service Historical Climatology Network 2 (HCN) data were used, where possible. Four HCN sites occur in the study area, primarily but not exclusively in valley floor settings. Monthly average values for temperature and precipitation were obtained from the National Climate Data Center (NOAA National Climate Data Center 2013). The period of record for the HCN sites used in this study is January 1971 through December 2012.

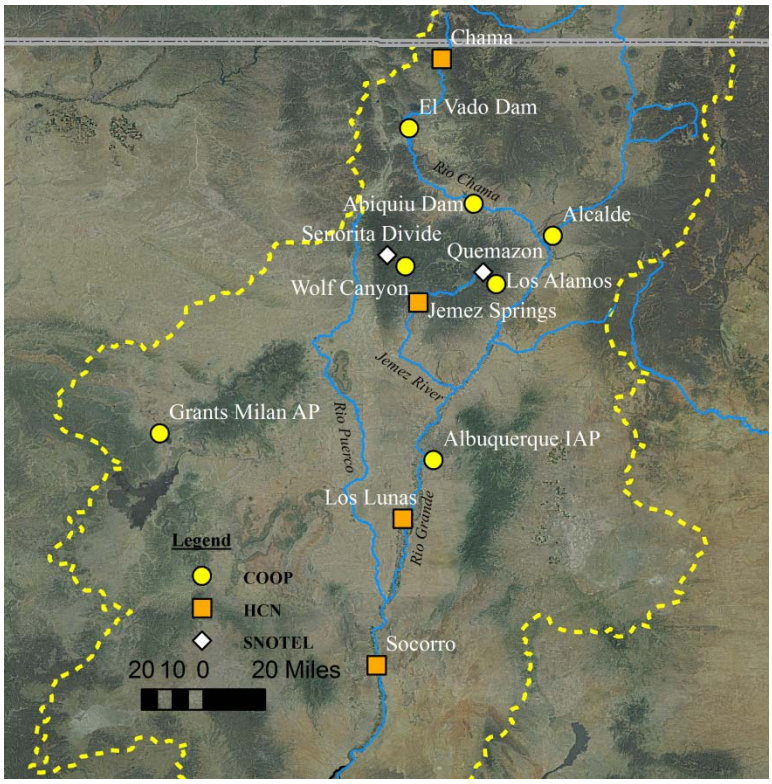


Figure 1: Map showing sites used in the analysis (site names keyed to Table 3).

Table 3 Sites used for trends analysis (see locator map, Figure 1).

Station	Id	Type	Latitude	Longitude	Elev. (ft.)	Aspect (deg.)	Slope (deg.)
Jemez Mountains							
Los Alamos	295084	COOP	35.864440	-106.321390	7424	36.47	5.32
Quemazon	06P01S 708	SNOTEL	35.920000	-106.383330	9500	191.63	25.02
Senorita Divide	06P10S 744	SNOTEL	36.000000	-106.833330	8600	85.84	8.98
Wolf Canyon	299820	COOP	35.947780	-106.746940	8220	227.03	11.95
Rio Chama and Jemez River Valleys							
Abiquiu Dam	290041	COOP	36.240280	-106.427780	6380	131.33	4.43
Alcalde	290245	COOP	36.090830	-106.056670	5680	268.89	4.12
Chama	291664	HCN	36.917780	-106.578060	7850	208.58	1.25
El Vado Dam	292837	COOP	36.592780	-106.730000	6740	159.58	2.58
Jemez Springs	294369	HCN	35.778330	-106.687220	6262	179.38	6.17
Middle Rio Grande							
Albuquerque IAP	290234	COOP	35.041670	-106.615280	5310	326.44	0.75
Socorro	298387	HCN	34.082780	-106.883060	4585	147.48	0.40
Los Lunas	295150	HCN	34.767500	-106.761110	4840	119.59	0.83
Grants Milan AP	293682	COOP	35.166390	-107.899170	6520	181.79	1.43

Mountain climates are complex and vary over short distances due to aspect and relief, which influence temperature and precipitation via cold air drainage, down and up-canyon winds, variation in the duration of direct vs. indirect insolation, vegetation cover, duration of snow cover, and other factors (Beniston 2006, Barry 2008). Changes at individual stations may differ from regional climate trends (Pepin et al. 2005) in ways that are strongly influenced by landscape position, topography and elevation (Lundquist and Cayan 2007). Valley floors may lag regional warming, particularly in winter months, due to the increasing frequency and severity of temperature inversions under more stable, anticyclonic conditions (Daly et al. 2010) of high pressure and clear skies, as are anticipated to become more common in the southwestern United States (Seth et al. 2011).

Because of these complexities, additional data processing was not undertaken: some locations in each data set exhibited trends counter to the remainder of the sites, and these data may reflect real, but local climate differences. They may also reflect changes to station equipment, setup and location, and NCDC data are corrected for many of these factors.

Because of the landscape diversity in the study area, the sites were grouped into physiographic units for analysis. Sites used for the analysis of temperature and precipitation trends were grouped into the following units (Figure 1, Table 3):

- Jemez Mountains – Three sites are located in the Jemez Mountains, which are southwest of the Tusas Mountains. These consist of two SNOTEL sites and one COOP site. The two SNOTEL sites are located in high elevation settings at 8600 and 9500 ft. asl while the COOP site is at 8220 ft asl. In addition, this category includes one COOP site located at Los Alamos on the Pajarito Plateau at 7424 ft. asl.

- Rio Chama and Jemez River Valleys – This category includes three sites located in the Rio Chama Valley. These sites consist of one HCN site and two COOP sites ranging in elevation from 6380 to 7850 ft. asl. This category also includes one COOP site in the Española Basin at Alcalde (5680 ft. asl), in the vicinity of the Rio Chama-Rio Grande confluence, and the HCN Jemez Springs site in the Jemez River Valley at 6262 ft asl.

- Middle Rio Grande – This category includes the COOP site of Albuquerque IAP located on the bajada above the floodplain at 4576 ft elevation. It also includes the two HCN sites of Los Lunas and Socorro, which are located directly in the floodplain of the Rio Grande at 4585 and 4840 ft. asl, respectively. The Middle Rio Grande also includes the COOP site of Grants Milan Airport at 6520 ft. asl in the Rio Puerco Valley.

Because the distribution of monthly means is skewed, trends are assessed nonparametrically using the Regional Kendal Test (Helsel and Frans 2006). For this analysis, the Regional Kendall Test yields the annual trend (Thiel-Sen's slope) and statistical significance of the trend by physiographic unit. All analyses are conducted using the RKT package in R (Marchetto 2012). Statistical significance was evaluated at the 0.1 (90% confidence) level.

1.3.2 Historic Temperature Trends in the Study Area

Temperature has risen significantly at stations in northern New Mexico (**Table 4**), particularly in the months of January and March, and in the summer months from May through September. Daytime high temperatures (Tmax) have risen at about 1°F/decade from May through November in the Middle Rio Grande, and at approximately half that rate in the narrow Mountain River Valley stations along the Rio Chama and Jemez River. Rates of warming have been slower in the Jemez Mountain stations. Only in March is there a significant, region-wide warming trend of approximately 1°F/decade.

Nighttime low temperatures (Tmin) have also risen significantly in many months, particularly in the period April through September when a warming trend of approximately 0.5°F/decade was observed. Increases in Tmin were particularly evident in the Jemez Mountains, with significant rates of increase in excess of >0.59°F/decade in all months except February and December. As a result of this warming, there is a trend towards increasing numbers of late spring days with night time temperatures warmer than 32°F.

Historic precipitation trends in the study area (**Table 5**) show little in the way of significant trends, although all three regions are experiencing small downward trends in annual precipitation totals. Significant, negative trends are observed in November in the Jemez Mountains and adjoining Mountain River Valleys, and September in the Middle Rio Grande. These trends are associated with significant decreasing trends in the number of days per month where precipitation is greater than 0.1”, but not in days with larger precipitation events. This suggests that the decreasing precipitation trends are the result of decreasing frequency of light rain/snow events rather than a decrease in larger storm events in these months.

Table 4 Temperature trends, 1971-2012.

Numbers given in **bold** are significant at α=0.1.

Trend in Minimum Temperature (Tmin, °F/decade)

Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mountain River Valleys	**0.97**	0.43	0.05	**0.54**	0.41	0.22	**0.45**	**0.65**	0.27	0.00	0.00	-0.05
Middle Rio Grande	0.63	0.59	0.36	**1.21**	**1.35**	**0.97**	**0.77**	**0.77**	**0.58**	0.36	0.49	0.29
Jemez Mountains	**1.03**	0.27	**0.65**	**0.59**	**0.72**	**0.65**	**0.83**	**0.68**	**0.67**	**0.68**	**0.79**	0.23
Region	**0.90**	0.45	**0.56**	**0.45**	**0.49**	**0.45**	0.22	**0.40**	0.20	0.20	0.00	0.16

Trend in Maximum Temperature (Tmax, °F/decade)

Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mountain River Valleys	**1.21**	0.14	**1.21**	0.58	**0.94**	**0.63**	0.40	**0.59**	**0.58**	0.16	0.81	0.00
Middle Rio Grande	**1.28**	0.23	**0.90**	0.68	**1.35**	**0.85**	**0.77**	**1.12**	**1.13**	**0.72**	**1.03**	0.29
Jemez Mountains s	0.05	**-0.83**	**0.85**	0.47	**0.76**	0.36	0.23	0.41	0.38	-0.20	0.67	**-0.79**
Region	**0.76**	0.22	**1.10**	0.36	0.40	**0.65**	0.31	**0.45**	**0.58**	0.00	0.23	0.09

Trend in Average Temperature (Tavg, °F/decade)

Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mountain River Valleys	**1.08**	0.29	**0.65**	0.52	**0.67**	0.43	**0.41**	**0.61**	**0.45**	0.00	0.41	-0.07
Middle Rio Grande	**1.01**	0.47	**0.59**	**0.85**	**1.42**	**0.90**	**0.77**	**0.90**	**0.86**	**0.49**	**0.70**	0.25
Jemez Mountains	0.58	-0.22	**0.72**	0.52	**0.76**	0.50	**0.50**	**0.59**	0.52	0.25	0.67	-0.22
Region	**0.90**	0.34	**0.81**	0.36	**0.45**	**0.52**	**0.25**	**0.40**	**0.41**	0.07	0.16	0.09

Change/decade in the number of days in a month with maximum temperature less than or equal to 32.0 F (DX32)

Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mountain River Valleys	**-0.48**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Middle Rio Grande	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jemez Mountains	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.37**	**0.77**
Region	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

(Continued on next page)

Change/decade in the number of days in a month with minimum temperature less than or equal to 32.0 F (DT32)

Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mountain River Valleys	0.00	0.00	0.00	-0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Middle Rio Grande	0.00	0.00	0.00	**-1.58**	0.00	0.00	0.00	0.00	0.00	0.00	-0.50	0.00
Jemez Mountains	0.00	0.00	0.00	**-0.38**	**-0.80**	0.00	0.00	0.00	0.00	**-0.83**	0.00	0.00
Region	0.00	0.00	0.00	**-0.45**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 5 Precipitation trends, 1971-2012.

Numbers given in **bold** are significant at α=0.1.

Trend in total monthly precipitation (in./decade)

Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mountain River Valleys	-0.02	0.02	-0.06	0.11	-0.07	-0.04	0.04	0.00	0.00	0.04	**-0.11**	0.08
Middle Rio Grande	-0.04	-0.03	0.00	0.00	-0.05	0.03	0.05	-0.13	**-0.14**	0.00	-0.05	0.02
Jemez Mountains	-0.11	0.00	**-0.21**	0.07	-0.14	-0.03	-0.09	-0.06	-0.09	0.08	**-0.20**	0.19
Region	0.00	-0.01	0.00	0.05	0.01	-0.02	-0.04	-0.06	0.00	0.05	-0.02	0.02

Change/decade in the number of days in a month with greater than or equal to 1.0 inch of precipitation (DP10)

Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mountain River Valleys	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Middle Rio Grande	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jemez Mountains	0.00	0.00	**0.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Region	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Change/decade in the number of days in month with greater than or equal to 0.5 inch of precipitation (DP05)

Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mountain River Valleys	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Middle Rio Grande	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Jemez Mountains	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	0.00
Region	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Change/decade in the number of days in month with greater than or equal to 0.1 inch of precipitation (DP10)

Region	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mountain River Valleys	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.36**	0.00
Middle Rio Grande	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**-0.26**	0.00	0.00	0.00
Jemez Mountains	0.00	0.00	0.00	0.00	-0.26	0.00	0.00	0.00	0.00	0.00	**-0.36**	0.45
Region	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

1.4 Projected Climate Futures

Greenhouse gases include carbon dioxide, methane, water vapor, and various other gases. Over long geologic time frames (thousands of years), the rate of natural emissions of these gases is roughly balanced by the rate of natural uptake. However, over shorter time frames (decades to centuries), emissions from all sources may not be balanced by natural uptake, and therefore these gases may accumulate in the atmosphere where they function to trap heat. The net rate of greenhouse gas accumulation in the atmosphere, consisting emissions minus processes that may remove these gases from the atmosphere, is a key determining factor in the rate of future warming: on average, higher rates of carbon accumulation equate to faster warming. Consequently, when projected climate changes and impacts are discussed, it is important to know what future rate of greenhouse gas accumulation is being assumed.

The rate of future emission and accumulation of greenhouse gases can be modeled, but are highly dependent on social, political, demographic, land use, political and future technological changes. Two sets of future greenhouse gas emission scenarios are in wide use in climate modeling. These include the scenarios detailed in the Special Report on Emissions Scenarios (SRES) used for the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report (IPCC 2000, 2007) and the relative concentration pathways (RCPs) used in the Fifth Assessment Report (IPCC 2013).

In the SRES scenarios, B1 represents a future of rapid low carbon fuels development and widespread technology sharing, resulting in a slow rise in greenhouse gas emissions that plateaus or declines beginning mid-century. The A2 scenario represents a future in which low-carbon energy technology development is fragmented and slow, and the technology is not widely shared. Under the A2 scenario, greenhouse gas emissions rise continuously and warming occurs quickly. The A1B scenario is an intermediate scenario in which a balanced approach to energy development occurs inclusive of both fossil and non-fossil fuel sources. Emissions under A1B are intermediate between A2 and B1 over the 21st Century.

More recently, the IPCC has shifted to the use of RCPs as a means of modeling projected greenhouse gas concentrations. RCPs make assumptions about how greenhouse gas concentration in the atmosphere may evolve over time with less emphasis on the socioeconomic and technological drivers. The RCPs were used to drive models for the IPCC Fifth Assessment Report. Although four RCPs were specified, RCP 4.5 is generally taken as the likely lower future bound of greenhouse gas concentrations and RCP 8.5 is generally taken as the likely upper future bound of greenhouse gas concentrations when assessing possible future climate changes in a region. RCP 2.6 is only achievable with immediate large-scale reductions in greenhouse gas emissions, and represents the least-impact outcome given current technology and greenhouse gas emissions.

The SRES and RCP approaches have converged on projected future greenhouse gas concentrations in the atmosphere. RCP 8.5 produces mean future warming comparable to the SRES A1FI scenario, which is slightly greater than the more commonly used for modeling SRES A2 (high emissions) scenario; RCP 4.5 produces warming comparable to the SRES B1 (low emissions) scenario (Knutti and Sedlacek 2013).

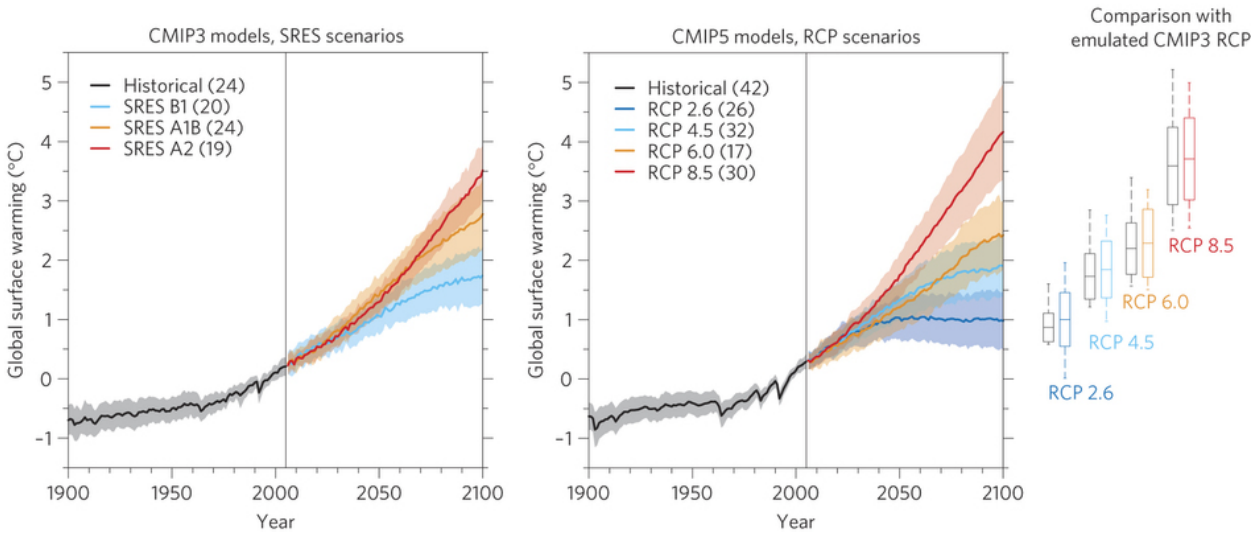


Figure 2 Comparison of projected global mean annual temperatures under various SRES and RCP scenarios (Knutti and Sedlacek, 2013:Fig. 1).

Evolving greenhouse gas concentrations are one input into global circulation models (GCMs), which model global climate at a coarse resolution (2° latitude x 2° longitude). Model outputs are typically downscaled to produce regional or local projections of future climate. A projection can be thought of as a possible future climate state, as compared to a prediction, which is a more specific statement of what climate is likely to be at a specific point in the future.

1.4.1 Projected Changes in Temperature, Precipitation

Three major studies have provided model projections downscaled to the Upper Rio Grande in Northern New Mexico. They are the studies of Hurd and Coonrod (2007) and of Reclamation et al. (2013), and data provided online by USGS (2013).

In their 2007 study, Hurd and Coonrod (2007) use three global climate models driven by the A1B "business as usual" SRES scenario to model hydrology and stream flow changes for the periods 2020-2039 and 2070-2089 in the Upper Rio Grande. The baseline period for model comparison in this study was not specified, but is assumed to be the late 20th Century. The SRES A1B scenario posits continued development of the existing mix of energy technologies. The three models are chosen because one represents a slightly "wetter" projection, one a slightly "drier" projection and one a "middle of the road precipitation" projection.

In their models, average annual temperatures increased by 1.7-3.2°F (0.95 to 1.76°C) by 2030 and 5.5-7.9°F (3.06 to 4.40°C) by 2080. Temperature increases are projected to be greatest in summer under the dry scenario, presumably reflecting decreases in summer cloudiness resulting from a reduced monsoon (under the dry scenario, precipitation declines steeply in the summer months).

Hurd and Coonrod models project variable changes in precipitation, with the model with a dry bias showing precipitation decreases during the monsoon season while the models with wetter

biases showed slight gains in summer precipitation. The gains were balanced by decreases in late fall and late winter precipitation, which were more exaggerated later in the 21st C.

Climate change in the Upper Rio Grande basin was modeled by Reclamation (2011b, a) using the Hybrid Delta-ensemble (HDe) approach (Brekke et al. 2010) employing output from 16 models from the CMIP3 multi-model dataset. The outputs are average monthly precipitation and surface air temperature generated from a suite of 16 CMIP3 models forced by 3 IPCC SRES scenarios for future greenhouse gas emissions (112 model realizations total). The scenarios chosen are the A2 (high emissions), A1B (business-as-usual emissions) and B1 (low emissions) scenarios. The baseline period is the 1990s. The spatial resolution of the model is 1/8° (about 12 x 12 km).

The basin-average mean-annual temperature is projected to increase by approximately 1.8-3.3°C (5-6°F) during the 21st Century (Reclamation 2011a) relative to the 1990s. Temperature changes are anticipated to be uniform over the basin and to increase steadily through time.

All future scenarios for both the 2010-2039 and the 2040-2069 periods showed average temperatures above those of the historical baseline of 1950-1999. In the period 2010-2039 (Figure 3), the median warming is projected at 2.5°F (1.4°C), with a range of 1-4°F (0.5-2.25°C). The majority of models predict between 2 and 3°F warming. Precipitation was much more variable, ranging from about -16 to +12% relative to the baseline, with the majority of models predicting a change of between -5% and +4%.

In the period 2040-2069 (Figure 4), warming is more pronounced. Median warming is projected to be approximately 4.25°F (2.4°C), ranging from a low of just above 1°F to a high close to 7°F (3.9°C), and with the majority of warming ranging from about 3.75 to 5.25°F. These findings are similar to other studies previously cited which anticipate increases of 2-4°C by 2050 (Barnett and Pierce 2009) and 4-6°C by 2080 (USGCRP, 2009).

Median precipitation declines by about 2.5% relative to the historic baseline, with 50% of the values ranging between -10% to +2.5%, and the limits of the full dataset ranging from about-22% to +15% relative to the baseline. The projected declines are less than the 10-20% declines projected for the West in 2080-2090 by the US Global Change Research Program (USGCRP, 2009), but in line with the 0-10% declines cited by Barnett and Pierce (2009).

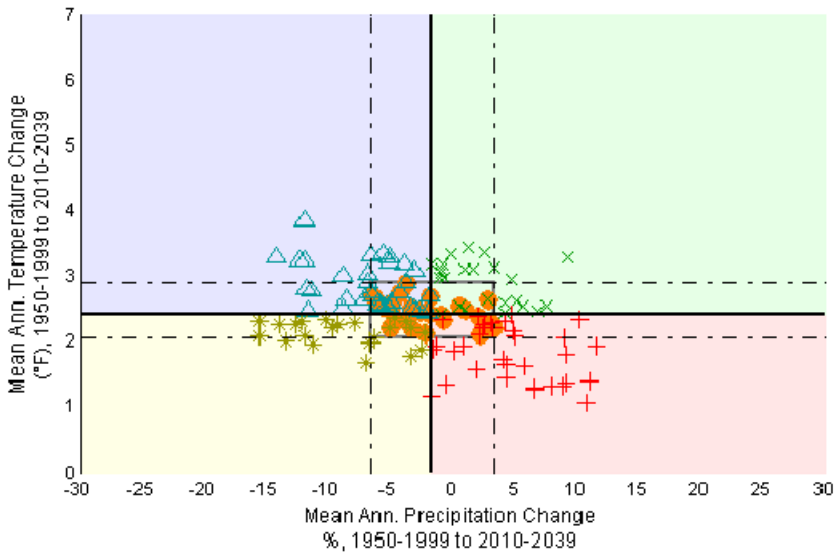


Figure 3: Modeled changes in temperature and precipitation in the period 2010-2039.

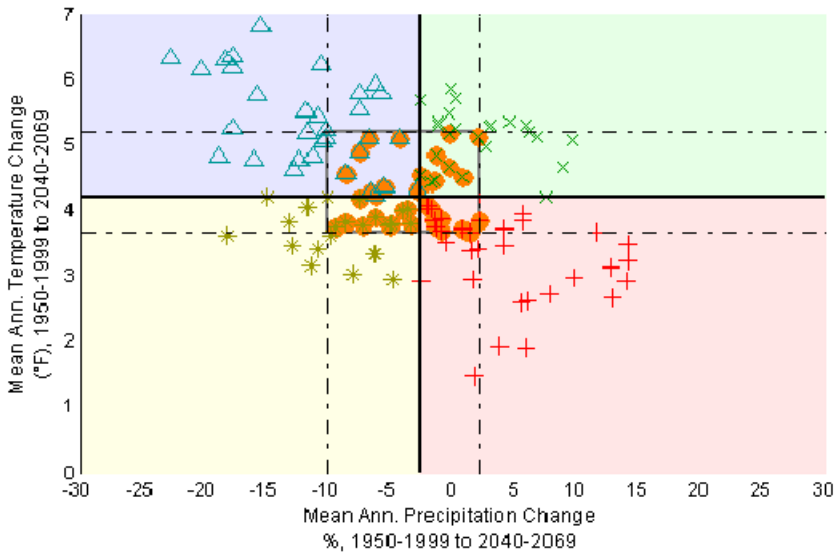


Figure 4: Modeled changes in temperature and precipitation in the period 2040-2069.

Finally, the USGS (2013) has provided online access the NASA Earth Exchange Downscaled Climate Projections (NEX-DCP30) dataset. This dataset is comprised of downscaled climate scenarios for the conterminous United States that are derived from the General Circulation Model runs conducted under the Coupled Model Intercomparison Project Phase 5 (CMIP5) (Taylor et al. 2012) and across the four RCP greenhouse gas emissions scenarios (Meinshausen et al. 2011). These datasets provide a set of high resolution, bias-corrected climate change projections that can be used to evaluate climate change impacts on processes that are sensitive to finer-scale climate gradients and the effects of local topography on climate conditions.

The NEX-DCP30 models project a net increase in Tmin and Tmax over the course of the 21st Century for Sandoval County, New Mexico (Figure 5). Model increases are greatest in the summer and winter months, with a projected average increases in January and July Tmin of approximately 5°F for the period 2070-2099 compared to the average for 1971-2000 under the RCP 4.5 scenario, and 8.5°F under the RCP 8.5 scenario. Spring and fall increases in Tmin are projected to be slightly smaller, on the order of 5 to 7°F. Increases in Tmax for 2070-2099 compared to 1971-2000 are projected to be slightly greater, with increases of approximately 5.1-8.7°F projected in January for RCP 4.5 and 8.5, respectively, and 5.3-10°F for July for RCP 4.5 and 8.5, respectively.

The NEX-DCP30 model runs project little change in the distribution of precipitation by month over the 21st Century, with the exception of projected decreases in precipitation in April and May of approximately 0.003 to 0.005 in/day for RCP 4.5 and 8.5, respectively, averaged for 2070-2099 compared to the average for 1971-2000.

1.4.2 Summary of Model Projections for Temperature and Precipitation

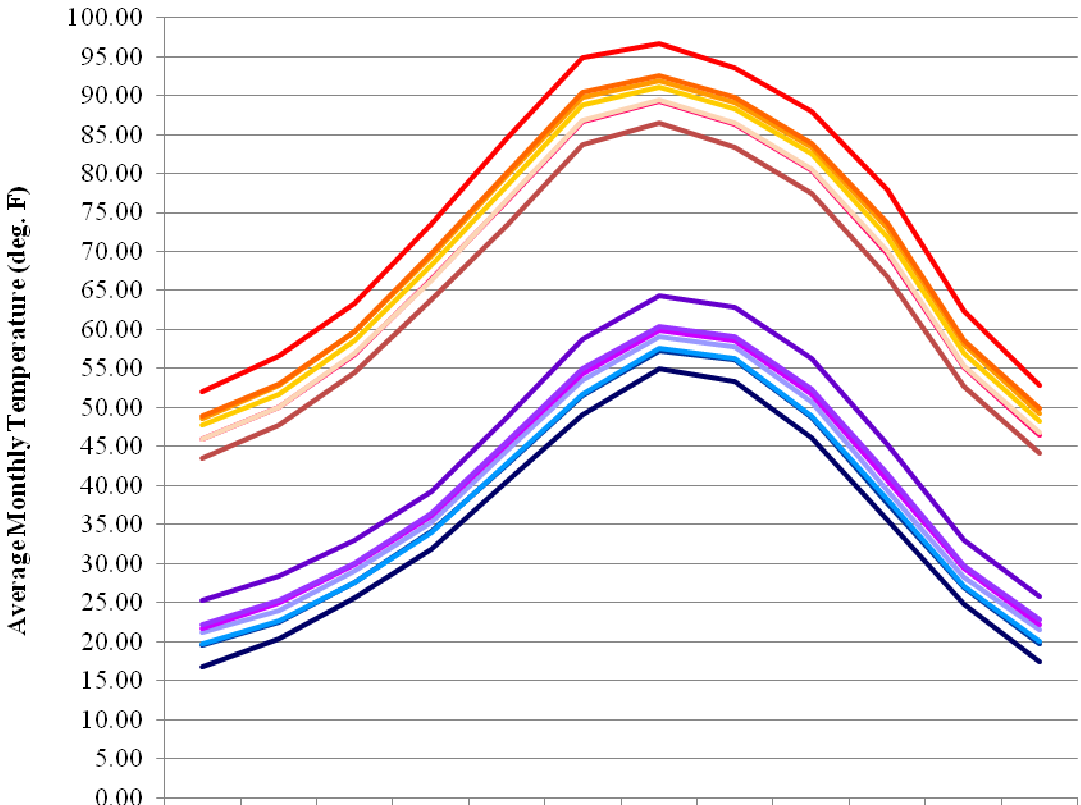
Historic trends indicate warming in recent decades has averaged approximately 0.65°F/decade in the study area, but has occurred much faster (1.8°F/decade) in the San Juan Mountains in the Rio Grande headwaters. Precipitation change exhibits no statistically-significant trend.

Models project substantial warming over the 21st Century of 5-7°F by 2100 as compared to late 20th averages. Modeling using recent RCP scenarios suggests warming may reach as much as 8.5 to 10°F by 2100 under plausible high emissions (large radiative forcing) scenarios, which is slightly higher than earlier estimates. Even with no net changes in precipitation, such warming will exert profound effects on regional hydrology by altering snowpack, spring runoff and evaporation rates.

1.5 Hydrologic Impacts

1.5.1 Projected Hydrologic Changes

Hydrologic changes have been studied primarily at the regional and watershed levels, with most efforts focused on the Colorado and Upper Rio Grande Basins rather than tributary flows. However, there is no reason to expect that the Jemez Mountains will respond differently than the Southern Rocky Mountains as a whole, therefore that tributaries in the watershed should respond substantially differently from the Jemez River, the major drainage in the Jemez Mountains.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1971-2000 Tmin	16.80	20.34	25.68	31.90	40.53	49.04	54.97	53.38	46.19	35.56	24.76	17.42
2010-2039 RCP 4.5 Tmin	19.53	22.47	27.67	34.14	42.74	51.57	57.37	56.09	48.84	37.83	26.94	19.69
2040-2069 RCP 4.5 Tmin	21.14	23.94	29.11	35.29	44.44	53.46	59.10	57.80	50.79	39.42	28.22	21.54
2070-2099 RCP 4.5 Tmin	21.69	24.92	29.94	36.09	45.31	54.28	59.97	58.53	51.67	40.75	29.33	22.12
2010-2039 RCP 8.5 Tmin	19.65	22.68	27.65	34.00	42.88	51.76	57.57	56.23	48.98	38.20	27.06	20.05
2040-2069 RCP 8.5 Tmin	22.14	25.22	30.03	36.50	45.56	54.93	60.46	59.17	52.36	41.51	29.80	22.90
2070-2099 RCP 8.5 Tmin	25.25	28.34	32.96	39.25	48.82	58.75	64.27	62.79	56.24	45.37	33.07	25.75
1971-2000 Tmax	43.45	47.72	54.51	63.79	73.42	83.77	86.56	83.38	77.50	66.81	52.74	44.21
2010-2039 RCP 4.5 Tmax	46.01	49.99	56.86	66.48	76.45	86.57	89.25	86.37	80.42	69.76	55.18	46.52
2040-2069 RCP 4.5 Tmax	47.74	51.73	58.64	68.30	78.51	88.81	91.13	88.29	82.56	71.81	56.91	48.23
2070-2099 RCP 4.5 Tmax	48.55	52.78	59.69	69.37	79.73	89.75	91.88	89.06	83.29	73.02	58.09	49.18
2010-2039 RCP 8.5 Tmax	46.00	50.12	56.97	66.39	76.56	86.76	89.43	86.51	80.58	70.01	55.36	46.71
2040-2069 RCP 8.5 Tmax	48.88	53.06	59.71	69.75	80.13	90.37	92.59	89.74	83.91	73.62	58.59	49.83
2070-2099 RCP 8.5 Tmax	52.11	56.62	63.29	73.49	84.54	94.89	96.61	93.53	87.95	77.93	62.38	52.91

Figure 5 Projected temperature change in Sandoval County, NM, based on the NASA NEX-DCP30 dataset.

1.5.1.1 Projected Changes for the Southwestern U.S.

Reductions in snowpack, declines in snow water equivalence, and advances in snowmelt are all projected to contribute to substantial declines in flows in the Southwest's rivers (Cayan et al. 2013). Studies of the Colorado River show that flow on the Colorado River is likely to be reduced by 10 to 30% (see discussion in Barnett and Pierce 2009). Since the headwaters of the Rio Grande are located farther south than those of the Colorado, it is probable that projected declines in flow in the Rio Grande will equal or exceed those for the Colorado River (Cayan et al. 2013). Because climate change impacts to Colorado River flows are better studied than impacts to the Rio Grande, projected changes in Colorado River flows are summarized before more detailed consideration of Rio Grande flows.

Models of future Colorado River flows consistently show reductions in average flow across the 21st century. Coupled ocean-atmosphere global climate models downscaled to the western U.S. were used to drive a Variable Infiltration Capacity (VIC) land surface model to study changes in streamflow as a result of climate change (Christensen et al. 2004, Leung et al. 2004). Modelers drove the model using a moderate emissions scenario (close to the mean of models used in the 2009 IPCC reports). For the Colorado River basin, annual predicted runoff was 14%, 18% and 17% below the historical average for the periods 2010-2039, 2040-2069 and 2070-2098, respectively. However, due to earlier spring snowmelt and higher evaporation rates, it is predicted that the total basin storage in regional reservoirs could decline by as much as 36%, 32% and 40% for these periods, respectively.

Reduced runoff and changes in snowpack have a secondary effect on groundwater systems by reducing the amount of water available for recharge. As surface water sources become scarce, groundwater sources may be increasingly relied upon to satisfy water needs. As aquifers are drawn down, the relationship between surface water and ground water may change, reducing surface flow in rivers where groundwater is a significant contributor to surface flow.

Reduced total runoff will likely be accompanied in the future by increases in peak discharge. Precipitation is expected to become more concentrated in time, with fewer but larger storms separated by periods of increased aridity. Aridity will significantly alter vegetation structure, with more xeric vegetation and with reduced canopy covers exposing more ground to erosion via rainsplash and other processes. During high-precipitation events, the exposed surfaces may funnel greater share of runoff to streams, contributing higher peak flows than at present.

1.5.1.2 Projected Changes in the Upper Rio Grande

There are fewer projections of hydrologic change in the Rio Grande than for the Colorado River, but the impacts are anticipated to be broadly similar. Changes in temperature and precipitation patterns are expected to drive changes in snowpack:

- Overall, the freezing altitude is projected to rise and snowpack volume to decrease as temperatures rise. Higher temperatures will delay the date at which precipitation falls as snow in the fall and cause a 4-6 week earlier shift in the date at which precipitation reverts to rain in the spring. The altitude at which a winter snowpack will develop is anticipated to rise. In the 2005, the RMCO (2005) noted that 10 of the previous 16

years in the Rio Grande Basin had snowpack below the long-term average, a trend that has continued since.

- The snow water content of the snowpack has also declined (Mote et al. 2005), and this trend is anticipated to continue. Compared to the water content of the April snowpack for the period 1950-1999, modeling studies of the Colorado River watershed project that the content of water contained in April snowpack will decline by approximately 38% by the end of the 21st century in models driven by the A2 (high emissions) scenario (Christensen and Lettenmaier 2007). Similar reductions in snow water equivalence are predicted for all watersheds in the West.

- Regional climate models driven by the A2 (high emissions) scenario indicate that the snowpack may be non-existent south of 36°N (approximately the latitude of the City of Española, New Mexico) by 2100 (Gutzler et al. 2006). The same study showed reductions in snow water equivalence of approximately one-third to one-half (approximately 50-200 mm of water) compared to the 1961-1985 average in the San Juan Mountains.

Increases in temperature and increases in evaporation are likely to lead to increasing soil moisture deficit:

- In many modeling studies, the increase in summer evaporation appears to plateau – but only because there is no more surface soil moisture to evaporate (Diffenbaugh et al. 2005). Evaporation over reservoirs and other open water is expected to increase directly with temperature. Prolonged droughts relative to those of the 20th century are expected (Gutzler et al. 2006).

- Regional models driven by the A2 (high emissions) emissions scenario show a pronounced soil moisture deficit in the spring (March-May) season, particularly in northwest New Mexico where soil moisture is projected to decrease by 5 mm water (20% relative to 1961-1985 simulated baseline). In the models, this deficit is driven by earlier spring snow melt accompanied by higher temperatures and greater evaporation (Gutzler et al. 2006).

The future flows in the Rio Grande are expected to decline, as discussed in recent studies:

- For the Rio Grande basin above Elephant Butte, declines in snow water equivalence, annual runoff, December-March runoff and April-July runoff are all anticipated (Reclamation 2011b).

- A sensitivity study was conducted to assess how snowmelt runoff in the Rio Grande might be affected by a 4°C (7.2°F) increase in temperature in wet, normal and dry years, as well as for a "normalized year" based on the average condition for the period 1957-1994 (Rango and Martinec 2008). For the Rio Grande, a greater share of runoff is projected to occur in the winter (October-March) than in the summer (April-September) and the runoff peak was shifted from May to April. Overall runoff also decreased.

- In addition to advancing the date of peak spring flood, increases in summer surface temperatures are expected to strengthen convection over the region, producing a more vigorous hydrologic cycle in which storms are more intense (Carnell and Senior 1998). Whether storm frequency declines as well is not clear. Larger magnitude summer storms may drive bigger magnitude flood events, while concentrating spring runoff earlier in the season may increase the magnitude of spring floods. However, lower overall snowpack volume and SWE, and earlier snowpack melting, are expected to drive down low summer flows (Gleick 2000). In other words, the stream's base flows decline, but are punctuated by larger magnitude summer flood events.

1.5.1.3 Upper Rio Grande Impact Assessment

Currently, the most detailed assessment of climate change impacts to northern New Mexico is provided by the Upper Rio Grande Impact Assessment (Reclamation et al. 2013). This study modeled projected flows in the Rio Grande above Elephant Butte Dam for the period 1950-2099 under SRES A2 (high emissions), A1B (moderate emissions) and B1 (low emissions) scenarios using 112 CMIP3 model realizations. The modeled climate outputs were passed to a Variable Infiltration Capacity (VIC) model to generate simulated overland flow that was routed down the Rio Grande and its tributaries using the URGSim model. Modeling assumed no changes to current dam operations, irrigation practices or other socio-economic practices in the future in order to assess the impact of climate change on current river flows.

The models project a decline in average Rio Grande stream flows of approximately one third (Figure 6), along with a reduction of at least one fourth in imported San Juan-Chama Project water. The model simulations consistently project decreasing snowpack, an earlier and smaller spring snowmelt runoff, and an increase in the frequency, intensity and duration of both droughts and floods (Reclamation et al. 2013).

Native inflows to the San Luis Valley in the Upper Rio Grande are anticipated to decline by approximately 33% by the end of the 21st Century compared to today (Reclamation et al. 2013). This would likely reduce consumptive use in the San Luis Valley by about 25%, and result in an approximately 50% decline in downstream water deliveries to New Mexico by the end of the 21st Century (Reclamation et al. 2013).

Simulated flows for the Rio Grande at Otowi show steep declines in peak spring runoff and early summer flows, but little shift in the timing of peak runoff (Reclamation et al. 2013). Annual average flows are projected to decrease 29% on average at Otowi gage (from about 1,400 cfs during the historic period (1950-1999) to about 1,000 cfs by the 2090s) (Reclamation et al. 2013).

At the Central Avenue gage in Albuquerque, flows are anticipated to decrease 36%, from an annual average of approximately 1,100 cfs during the historic period (1950-1999) to less than 700 cfs by the 2090s (Reclamation et al. 2013). May through August flows are likely to be reduced significantly, but there is likely to be little advance in spring runoff timing (Reclamation et al. 2013).

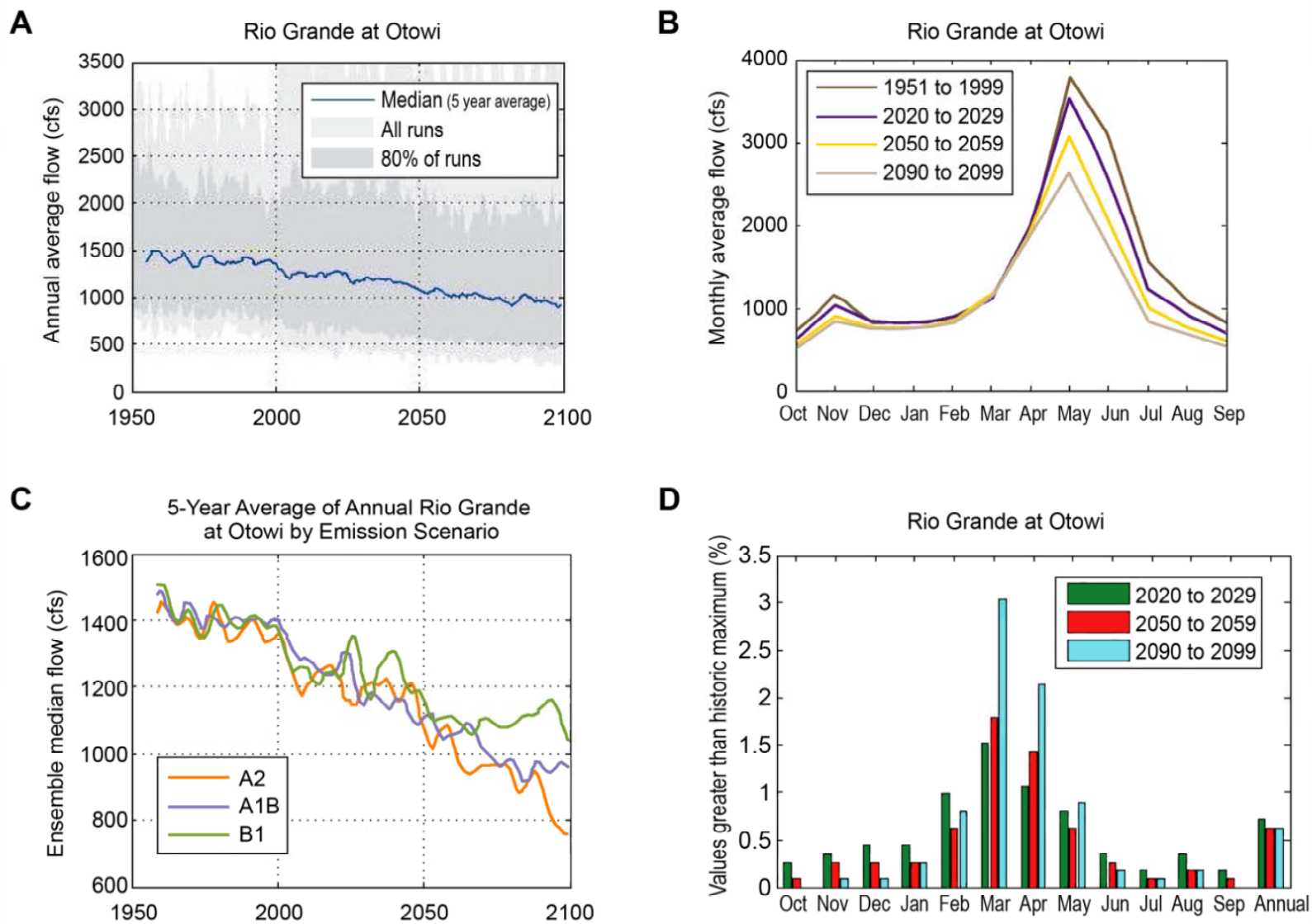


Figure 6 Projected Rio Grande flows at Otowi Gage (Reclamation et al. 2013: Fig. 31).

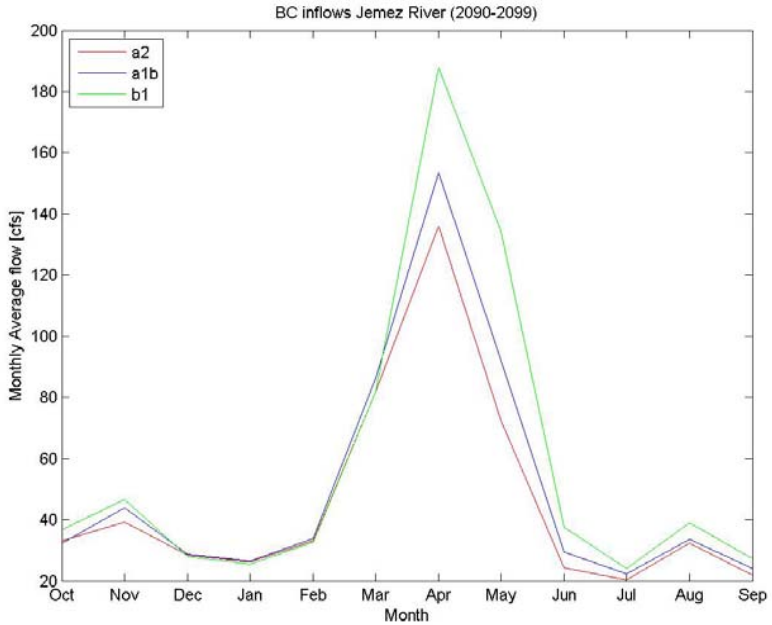


Figure 7 Jemez River monthly average flows in 2090-2099 under different projected emissions scenarios (unpublished data, Reclamation).

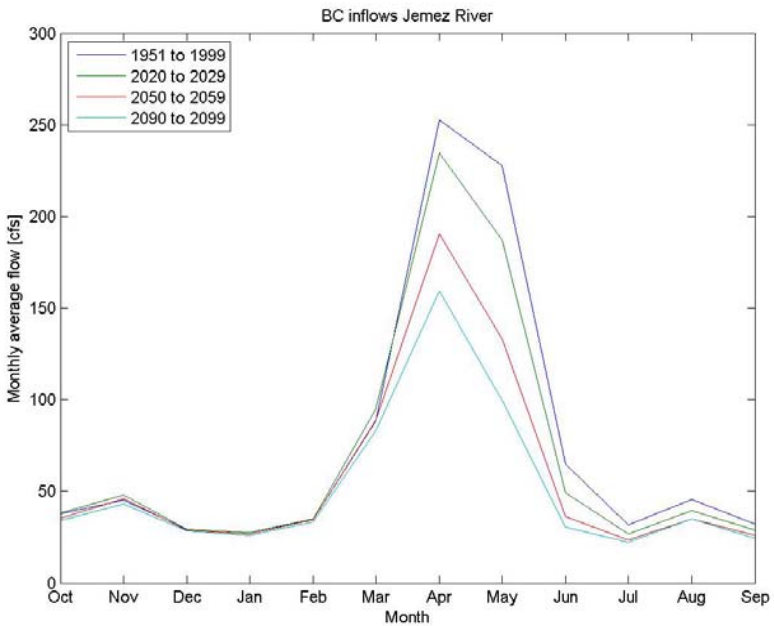


Figure 8 Jemez River monthly average flows, model averages (unpublished data, Reclamation).

Models also show that despite lower average flows, the probability of flows that exceed the historic maximum are likely to increase in frequency over the 21st Century reflecting changes in surface vegetation, hydrologic conditions, and the likelihood that precipitation will concentrate in larger precipitation events with longer dry gaps between these precipitation events than occurred historically (Reclamation et al. 2013). The likelihood of floods larger than historic maximum floods peaks in March and April at 3 and 2%, respectively (Reclamation et al. 2013).

The projected changes for the Jemez River are illustrative of how mountain tributary flows in northern New Mexico may change in the future. Models project declines in Jemez River flows show (Reclamation, unpublished data): for the period 2090-2099, average monthly flows under the SRES B1 scenarios, peak spring flows are likely to be less than 200cfs, declining to under 140 cfs under the SRES A2 (high emissions) scenario (**Error! Reference source not found.**).

The evolution of average monthly Jemez River flows for different time periods is shown in Figure 8 (Reclamation, unpublished data). This graphic shows that, compared to historic period flows, future flows in the Jemez River are likely to decline over the 21st Century, with the strongest decline during the spring runoff period resulting from declines in Jemez Mountain snowpack due to warmer winter temperatures, higher rates of snowpack melting and sublimation, and increased evaporation rates.

1.6 Projected Impacts to Riparian and Aquatic Ecosystems

Riparian and aquatic ecosystems along the Rio Grande and tributaries are likely to be affected not only by changes in stream flow that alter water quantity and seasonal water availability, but also by resultant changes in water quality (temperature, nutrients, dissolved oxygen, pollutant concentration), and increases in riparian evaporation affecting riparian plant communities.

Projected impacts to the Middle Rio Grande riparian areas (Friggens et al. 2013) that are likely to be broadly applicable to northern New Mexico riparian areas include:

- Reduced riparian habitat due to decreased stream flows and longer drought.
- Decline in cottonwood gallery forests due to lower flows, more frequent wildfires, disease.
- Loss/reduction of native vegetation and replacement by invasive tree and grass species due to fire and lower water tables, and changes in spring runoff timing/volumes.
- Increasingly arid conditions would favor replacement of grassland and woodland habitats with scrubland, accompanied by reductions in vegetation cover.
- Increased duration of drought, with increases in droughts lasting 5 years or more and increases in drought intensity.

Temperature increases are likely to drive up potential evapotranspiration across the region. However, increases in actual evapotranspiration are likely to be truncated in riparian areas due to lack of available soil moisture. Thus, riparian water consumption among the Rio Grande from

Cochiti to Elephant Butte Reservoirs, including the Jemez River Valley, is anticipated to only decline by small amounts as other factors draw down regional water tables and reduce overbanking flows (Reclamation et al. 2013). By century's end, most of the actual water consumption in the riparian zone is anticipated to occur in April and May, when water is most available; however, water is projected to be decreasingly available over the remainder of the growing season (Reclamation et al. 2013). As a result, water stress in the bosque is likely to increase across the 21st Century, particularly in the May-September months (Reclamation et al. 2013). Riparian-dependent species are considered highly vulnerable to such changes.

Federally-listed threatened and endangered species are among the species most vulnerable to climate change in the Middle Rio Grande. The Southwestern Willow Flycatcher (*Empidonax traillii extimus,* flycatcher) is considered the most vulnerable bird species, with the Western Yellow-Billed Cuckoo (*Coccyzus americanus occidentalis,* cuckoo, a candidate species) ranking a close fourth among species studied (Friggens et al. 2013). Both the flycatcher and cuckoo depend on riparian habitat, are sensitive to high temperatures, and vulnerable to changes in phenology that may produce mismatches between food availability and need during nesting or migration (Friggens et al. 2013).

Among the mammals, the recently-listed New Mexico meadow jumping mouse (*Zapus hudsonius luteus*) is considered the most vulnerable species as it is also a riparian obligate species with limited range (Friggens et al. 2013). This species is anticipated to be vulnerable due to (Friggens et al. 2013):

- Loss of habitat and associated dense vegetation structure.
- Limited ability to disperse in the face of habitat change and drought-induced habitat fragmentation.
- Intolerance of heat and desiccation.
- Short lifespan, which might limit its ability to survive and reproduce under protracted drought conditions.
- Disruption of soil temperature cues triggering emergence from hibernation and whether phenological changes in other species will affect the availability of food following hibernation.

Aquatic species are also vulnerable to changes in climate. The Rio Grande cutthroat *(Oncorhynchus clarki virginalis*) (candidate species) trout is a cold-water salmonid endemic to the Rio Grande, Canadian and Pecos river basins currently occupying approximately 12% of its historic range, primarily restricted to isolated stream headwaters (Zeigler et al. 2012). Stream temperature increases, changes to stream flow (including river drying under drought conditions), and changes to water quality due to wildfire and other sources (which becomes increasingly significant as subpopulations become isolated in stream headwaters areas) are anticipated to increase this species' vulnerability to climate change (Zeigler et al. 2012).

The endangered Rio Grande silvery minnow (*Hybognathus amarus*) is also anticipated to be vulnerable to climate change in the Middle Rio Grande from Cochiti Dam to Elephant Butte Reservoir. Advances in the timing of spring runoff may result in flows that are too cold for successful spawning, reductions in spring runoff flows may reduce the frequency of overbanking floods necessary for nursery habitat, and reductions in later summer base flow may result in substantial river drying (M. Porter, personnal communication, USFWS 2007).

Among Amphibians, the Federally endangered Jemez Mountain salamander (*Plethodon neomexicanus*) is likely to be significantly affected by habitat drying. Salamanders must maintain adequate skin moisture to survive, and under dry conditions they suffer dehydration, reduced foraging activity, increased metabolic rate, and increased oxygen consumption (USFWS 2013). Together, these increase energy demand, limit movement, increase the storage of metabolic wastes, decrease burst locomotion, and sometimes directly leading to death (USFWS 2013). Higher temperatures also make salamanders more susceptible to pathogens and disease (USFWS 2013). Regional drying may also result in increased habitat fragmentation and net habitat loss (USFWS 2013). Finally, the projected increases in wildfire frequency and severity are also likely to result in severe reductions in available habitat as dead timbers, litter, and moist soil environments are destroyed and a drier, warmer, more open landscape is created (USFWS 2013). Other amphibians particularly vulnerable to climate change impacts include the Northern leopard frog (*Lithobates pipiens*), the Western chorus frog (*Pseudacris triseriata*), and the barred tiger salamander (*Ambystoma marvortium)* (Friggens et al. 2013).

1.7 Projected Impacts to Project Features

Table 6 outlines the vulnerability of proposed management measures to climate change, summarizes climate change impacts and risks, and suggests possible mitigation actions to reduce the risk of climate change impacts to project features over the lifespan of the project.

Table 6 Climate change impacts to project features.

Measure	Vulnerability	Projected Climate Change Impacts and Qualitative Risks	Possible Mitigation Actions
River Channel Stabilization Features (E-1): Managing gradual channel incision or rapid head cutting, mainly through: • Grade control structures (Rio Grande and Rio Chama) • Boulder placement • Bendway or J-hook weirs	River Channel Features: • Destruction by large floods.	Projected Climate Change Impacts: • Possible increase in magnitude and frequency of largest flood events due to increased precipitation intensity (fewer but larger, more intense, storm events); monsoon may intensify and hurricanes in monsoon source region may increase in size and strength. River Channel Features: • Larger floods might damage or destroy features.	• Design structures for possible larger floods. • Size structures and materials for higher water velocities. • Construct additional structures if appropriate to address larger flood pulses.
High Flow Channels (E-2): Increase floodplain habitat connectivity with the adjacent river through construction of high flow channels to bring spring runoff into the bosque (partially recreating the historic braided stream morphology).	High Flow Channels: • Failure to fill due to low spring runoff. • Aggradation due to increases in stream sediment load. • Water temperature changes.	Projected Climate Change Impacts: • Smaller snowpacks resulting from a) warmer winter temperatures → reduced mountain snowfall and increasing winter rain (shift from water storage to direct runoff) and b) decreases in winter precipitation and increases in spring temperatures/evaporation. Possible loss of snowpack below the Colorado Border by 2100. • Advances in spring runoff timing → lower spring peak flows and colder peak runoff stream temperatures. • Increased frequency and duration of drought. • Possible increase in magnitude and frequency of largest flood events (see E-1). • Increases in wildfire in Rio Grande tributaries. Risks to High Flow Channels:	• Combine high flow channels with grade control structures and other features to raise channel bed elevation. • Construct multiple channels that activate at different flows. • Channel maintenance to remove sediment. • Use larger terrace lowering features within high flow channels.

Measure	Vulnerability	Projected Climate Change Impacts and Qualitative Risks	Possible Mitigation Actions
		• Reduced headwaters snowpack and earlier spring runoff timing → reduced stream flows at high flow channels and reduced water availability for channels (reductions in total runoff volumes, runoff peak discharges, and runoff duration above the minimum needed to wet channels). • More frequent, more intense, or longer droughts would reduce stream flows at high flow channels and reduce water availability for channels. • Where upstream watersheds have been affected by drought, wildfire or other large-scale vegetation changes, increased tributary sediment loads may contribute to channel aggradation in high flow channels. • Colder spring runoff temperatures (due to earlier runoff timing) may result in water too cold for successful Rio Grande silvery minnow spawning / recruitment.	
Terrace Lowering (E-3): Increase groundwater-surface water connectivity and enhanced floodplain habitat through: • Terrace lowering (to create floodplain habitat that is more frequently inundated). • Riparian swales (to create diverse, off-channel floodplain habitat). • Wetlands (to create diverse wetland habitat). • Floodplain ponds (to create diverse open water habitat).	Terrace Lowering: • Failure to flood due to low spring runoff / drought. • Erosion during flood events. Riparian Swales, Wetlands, and Floodplain Ponds: • Decreased water due to lower water table. • Temperature/precipitation/evaporation changes outside species' tolerances. • Changes in water quality (increased nutrients, lower dissolved oxygen). • Changes in precipitation	Projected Climate Change Impacts: • Smaller snowpacks, advances in spring runoff timing → reductions in total runoff volumes, decreases in runoff peak discharges, and decreases in late summer base flow (see E-2). • Increased air temperature → increased evaporation, transpiration, and plant growth. • Increased air temperature → increased surface water temperatures. • Increased frequency and duration of drought. • Possible increase in magnitude and frequency of largest flood events (see E-1). Risks to Terrace Lowering: • Reductions in spring runoff flows (peak, duration above minimum) may be insufficient to adequately flood terrace, affecting vegetation establishment and community composition. • Aggradation and island growth.	• Use excavated materials for berms to direct sediment laden flow away from constructed features. • Combine high flow channels with grade control structures and other features to raise channel bed elevation. • Increase terrace slope to create steeper depth gradient during inundation.

Measure	Vulnerability	Projected Climate Change Impacts and Qualitative Risks	Possible Mitigation Actions
	intensity →excess storm water runoff in . • Sediment aggradation within terrace features.	Risks to Swales, Wetlands and Ponds: • Reductions in stream flow may reduce near-surface groundwater availability/recharge and water table height, and may affect rates and amounts of seasonal water table rise and fall (water quantity). • Temperature/precipitation/evaporation changes outside species' tolerances. • Temperature/precipitation/evaporation changes → changes in water quality (increased nutrients, lower dissolved oxygen).	
Modify Irrigation Infrastructure (E-4): Provide flexibility to use existing sponsor water rights to improve and maintain riparian floodplain habitat patches by increasing groundwater availability in areas distant to the river channel, through: • Relocation of irrigation diversion structures to areas of the river stabilized through measure E-1.	Irrigation Structures: • Failure to fill (insufficient flow). • Destruction by large floods. • Sedimentation behind diversion dams.	Projected Climate Change Impacts: • Smaller snowpacks, advances in spring runoff timing → reductions in total runoff volumes, decreases in runoff peak discharges, and decreases in late summer base flow (see E-2). • Increased frequency and duration of drought. • Possible increase in magnitude and frequency of largest flood events (see E-1). Risks to Irrigation Structures: • Reduced headwaters snowpack and earlier spring runoff timing → reduced stream flows at irrigation structures and reduced water availability for irrigation (reductions in both runoff and mid- to late-summer base flows). • Where upstream watersheds have been affected by drought, wildfire or other large-scale vegetation changes, increased tributary sediment loads may contribute to increased siltation behind diversion dams.	• Design intakes to accommodate low flow/drought conditions. • Flexibility to move intakes to accommodate low flows/drought conditions.
Nonstructural Restoration Measures (E-5): The goal is to improve ecosystem restoration through alternative means. These include: • Water allocations (where rights exceed use, can reallocate excess water to ecosystem restoration on a	Nonstructural Restoration Measures: • Water allocation measures are vulnerable to reductions in water availability at all scales. • Zoning and easements should contribute to system resiliency to climate change, reducing vulnerability.	Trends and Projections: • Smaller snowpacks, advances in spring runoff timing → reductions in total runoff volumes, decreases in runoff peak discharges, and decreases in late summer base flow (see E-2). • Increased frequency and duration of drought. Risks to Nonstructural Restoration Measures: • Projected reductions in stream flow of approximately 25% by	

Measure	Vulnerability	Projected Climate Change Impacts and Qualitative Risks	Possible Mitigation Actions
voluntary basis). • Zoning changes (prevent future floodplain development). • Easements (prevent future floodplain development).		2100 may lead to priority water calls, and may reduce the "excess over use" anticipated for ecosystem restoration use.	
Vegetation Management (V-1): Remove exotic plant species. The purpose of this measure is to remove exotic plant species which have invaded the bosque and out compete with native plant species. Exotic species removal will provide higher quality habitat, create more water flow, and potentially allow the water table to rise. This would also reduce fuel loads in the bosque.	Vegetation Management, Removal of Exotics: • No significant vulnerabilities.	Projected Climate Change Impacts: • Increased temperature and decreased soil moisture/precipitation → increased wildfire hazard. • Increased frequency of wildfire, drought, and loss of native species create disturbance regimes favorable to establishment and persistence of weedy exotic species. Risks to Removal of Exotics: • No climate change risks exist to the removal of exotics. • Exotics removal would dampen increased wildfire risk by increasing vegetation spacing and reducing ladder fuels.	
Vegetation Management (V-2): Establish native plant species. The purpose of this measure is to replant and establish the cottonwood riparian gallery forest and complementary native plants. This would provide higher quality habitat than currently exists, and assist the water corridors in returning to their historical, healthy state.	Vegetation Management, Establishment of Native Plant Species: • Hydrologic regime parameters outside of species' tolerances for establishment, reproduction. • Temperature, precipitation not favorable for species' tolerances for establishment, reproduction.	Projected Climate Change Impacts: • Smaller snowpacks, advances in spring runoff timing → reductions in total runoff volumes, decreases in runoff peak discharges, and decreases in late summer base flow (see E-2). • Increased air temperature → increased evaporation, transpiration, and plant growth. • Increased air temperature → increased surface water temperatures. • Increased frequency and duration of drought. • Increased temperature and decreased soil moisture/precipitation → increased wildfire hazard. Risks to Establishment of Native Plant Species: • Altered hydrologic regimes reduce native species establishment success (e.g., cottonwoods, willows) and favor establishment of weedy exotics. This might include alterations to spring runoff, to	• Select appropriate, high habitat quality drought tolerant plant species for re-vegetation. • Construct grade control structures and other features to raise channel bed elevation.

Measure	Vulnerability	Projected Climate Change Impacts and Qualitative Risks	Possible Mitigation Actions
		surface water-groundwater interaction during seedling establishment, and to declines in stream base flow. • Temperature/precipitation/evaporation changes outside species' tolerances → sudden tree/vegetation die-off, reproductive failure, and species extirpation. • Temperature/precipitation/evaporation changes → increases in water demand during growing season. • Prolonged drought may encourage woody vegetation on bars and banks, promoting channel stabilization and entrenchment. • Reductions in frequency of all but the largest floods may reduce the formation of bars and other seasonal bare ground essential to native vegetation establishment. • Altered wildfire regime may inhibit native vegetation establishment and reproduction on the floodplain.	
Flood Risk Management (F-1): Non-structural flood risk management. The purpose of this measure is to reduce the potential for flood damages and potentially increase the available over bank areas which can be reclaimed within the water corridors. These include: • Property acquisition. • Rezoning / flood easements. • Dry floodproofing. • Wet floodproofing. • Structure elevation. • Floodwall / ring levee (closed ring levee or closed flood wall around San Juan Public School). • Flood warning system.	Flood Risk Management, Non-Structural Measures: • Changes in probable maximum flood / design flood. • Changes in flood duration. • Sedimentation and channel aggradation.	Projected Climate Change Impacts: • Smaller snowpacks, advances in spring runoff timing may lead to reductions in total runoff volumes, decreases in runoff peak discharges, and decreases in late summer base flow (see E-2), which may reduce flood risk. • Increased frequency and duration of drought may reduce mainstem flood risk but may also contribute to altering tributary hydrology through vegetation loss and changes in soil infiltration. • Changes in tributary hydrology that might impact the main stem (such as sedimentation that forces the mainstem onto the floodplain against the levee for a prolonged period). • Possible increase in magnitude and frequency of largest flood events (see E-1). • Increased temperature and decreased soil moisture/precipitation → increased wildfire hazard. Risks to Non-Structural Measures: • Peak flow and flow duration along ring levee/floodwall may increase for the largest flood events. • Wildfire and drought changes to tributary hydrology may alter	

Measure	Vulnerability	Projected Climate Change Impacts and Qualitative Risks	Possible Mitigation Actions
		flood magnitude beyond the design flood, and may contribute to rapid sedimentation in the main channel affecting levee performance.	
Flood Risk Management (F2): Structural flood risk management . The purpose of this is to reduce flood risk of economic improvements within the over banks and improve conveyance capacity to existing channels. These include: • Levee.	Flood Risk Management, Levee: • Changes in large flood or design flood. • Changes in flood duration. • Sedimentation and channel aggradation.	Projected Climate Change Impacts: • Smaller snowpacks, advances in spring runoff timing may lead to reductions in total runoff volumes, decreases in runoff peak discharges, and decreases in late summer base flow (see E-2), which may reduce flood risk. • Increased frequency and duration of drought may reduce mainstem flood risk but may also contribute to altering tributary hydrology through vegetation loss and changes in soil infiltration. • Changes in tributary hydrology that might impact the main stem (such as sedimentation that forces the mainstem onto the floodplain against the levee for a prolonged period). • Possible increase in magnitude and frequency of largest flood events (see E-1). • Increased temperature and decreased soil moisture/precipitation → increased wildfire hazard. Risks to Levees: • Largest flood events may exceed the design flood capacity. • Peak flow and flow duration along levee may increase for the largest flood events. • Wildfire and drought changes to tributary hydrology may alter flood magnitude beyond the design flood, and may contribute to rapid sedimentation in the main channel affecting levee performance.	

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Española Valley, Rio Grande and Tributaries, New Mexico
Detailed Feasibility Study

Appendix I – Plan Formulation

August 2015

US Army Corps
of Engineers®
Albuquerque District

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1 - Study Authority

This report was prepared as a response to the following Congressional authorities:

Flood Control Act 18 Aug 1941, Section 4, Public Law (PL) 228, 77th Congress, 1st Session, H.R. 4911, which states in part:

> Section 4. The Secretary of War is hereby authorized and directed to cause preliminary examinations and surveys for flood control, to be made under the direction of the Chief of Engineers, in drainage areas of the United States and its territorial possessions, which include the following named localities, and the Secretary of Agriculture is authorized and directed to cause preliminary examinations and surveys for runoff and water-flow retardation and soil erosion prevention on such drainage areas; the cost thereof to be paid from appropriations heretofore or hereafter made for such purpose: PROVIDED, That after the regular or formal reports made on any examination, survey, project, or work under way or proposed are submitted to Congress, no supplemental or additional report or estimate shall be made unless authorized by law except that the Secretary of War may cause a review of any examination or survey to be made and a report thereon submitted to the Congress if such review is required by the national defense or by changed physical or economic conditions; AND PROVIDED FURTHER, That the Government shall not be deemed to have entered upon any project for the improvement of any waterway or harbor mentioned in this Act until the project for the proposed work shall have been adopted by law:
>
> Rio Grande and Tributaries, New Mexico.

BARBARA BOXER, CALIFORNIA, *CHAIRMAN*

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RUTH VAN MARK, *MINORITY STAFF DIRECTOR*

United States Senate
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
WASHINGTON, DC 20510–6175

December 10, 2009

The Honorable Harry Reid
Majority Leader
United States Senate
Washington, DC 20510

Dear Majority Leader Reid:

Pursuant to the provisions of 33 U.S.C. §542, I am transmitting herewith the one resolution approved by the Committee on Environment and Public Works on December 10, 2009.

Sincerely,

Barbara Boxer
Chairman

Enclosure
cc: The Honorable Mitch McConnell, Minority Leader (w/enc.)
The Honorable Daniel K. Inouye, Chairman, Senate Committee on Appropriations (w/enc.)
The Honorable Thad Cochran, Ranking Minority Member, Senate Committee on Appropriations (w/enc.)
The Honorable James L. Oberstar, Chairman, House Committee on Transportation and Infrastructure (w/enc.)
The Honorable John L. Mica, Ranking Minority Member, House Committee on Transportation and Infrastructure (w/enc.)
The Honorable Jo-Ellen Darcy, Assistant Secretary of the Army, Civil Works (w/enc.)

111th Congress
1st Session

United States Senate

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

COMMITTEE RESOLUTION

ESPANOLA VALLEY, RIO GRANDE AND TRIBUTARIES, NEW MEXICO

RESOLVED BY THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS OF THE UNITED STATES SENATE

That the Secretary of the Army is requested to review the report of the Chief of Engineers on the Rio Grande and Tributaries transmitted to Congress on June 27, 1949, and other pertinent reports, with a view to determining whether any modifications of the recommendations contained therein are advisable in the interest of flood control, ecosystem restoration and other allied purposes on the Rio Grande and its tributaries in New Mexico.

Barbara Boxer
Chairman

Ranking Minority Member

Adopted: Dec. 10, 2009

2 - Study Information

2.1 Study area

The study area is located in southern Rio Arriba County and includes a small portion of northern Santa Fe County. Study area boundaries are the 0.2% chance exceedance event floodplains for the Rio Grande and Rio Chama from the northern border of Ohkay Owingeh Pueblo, through the Santa Clara Pueblo lands and to the southern border of San Ildefonso. The lowest reaches of the tributaries of the Rio Grande (Santa Cruz River, Arroyo Guachupangue, and the Rio Pojoaque), are also included in the study area (Figures 1 - 5).

The City of Española lies within the study area and extends along both the east and west banks of the Rio Grande. Española is approximately 25 miles north-northwest of Santa Fe and 85 miles south of the New Mexico-Colorado border. The 2000 U.S. Census determined that 9,688 of Rio Arriba County's 41,190 people lived within Española.

Ohkay Owingeh Pueblo is the northernmost pueblo in the study area. It is mainly situated north of the Rio Grande /Rio Chama confluence and includes both banks of the upstream (north of the confluence) Rio Grande and Rio Chama. Ohkay Owingeh Pueblo’s Rio Grande and Rio Chama corridors are a heavily “checker boarded” area with many private, non-Indian in-holdings close by, including those belonging to the City of Española.

Santa Clara Pueblo is located south of the Ohkay Owingeh Pueblo and is separated from Ohkay Owingeh Pueblo by non-Tribal land. Santa Clara Pueblo is situated immediately next to the City of Española along the Rio Grande, south of the Rio Chama confluence (denoted in Appendix B as the “downstream Rio Grande”) and includes three tributaries that flow directly into the Rio Grande. They include: the Santa Cruz River, which flows into the Rio Grande from the east; Arroyo Guachupangue, which flows into the Rio Grande from the west; and, the Santa Clara Creek, which is south of the Guachupangue and flows into the Rio Grande from the west. Santa Clara Pueblo’s Rio Grande corridor is a heavily “checker boarded” area with many private, non-Indian in-holdings close by, including those belonging to the City of Española. The majority of the City of Española is located within the exterior boundaries of Santa Clara Pueblo.

Santa Clara creek was removed from the study after the Las Conchas fire in the late summer of 2011. Due to the heavy losses of vegetation in the upper watershed which resulted in increased damages from higher frequency precipitation events, Santa Clara Pueblo requested a new flood risk management (FRM) study be started under the Continuing Authorities Program Section 205, as well as a watershed assessment under the Tribal Partnership Program.

San Ildefonso Pueblo is the southernmost pueblo within the study area. It lies south of the City of Española and Santa Clara Pueblo along the Rio Grande. San Ildefonso is also situated at the

downstream end of the Rio Pojoaque, which flows into the Rio Grande from the east. Figure II-1 demonstrates a visual representation of the study area.

This study area falls within New Mexico Congressional District number 3.

Pueblo - Any of some 25 Native American peoples living in established villages in northern and western New Mexico and northeast Arizona.

pueblo - A permanent village or community of any of the Pueblo peoples, typically consisting of multilevel adobe or stone apartment dwellings of terraced design clustered around a central plaza.

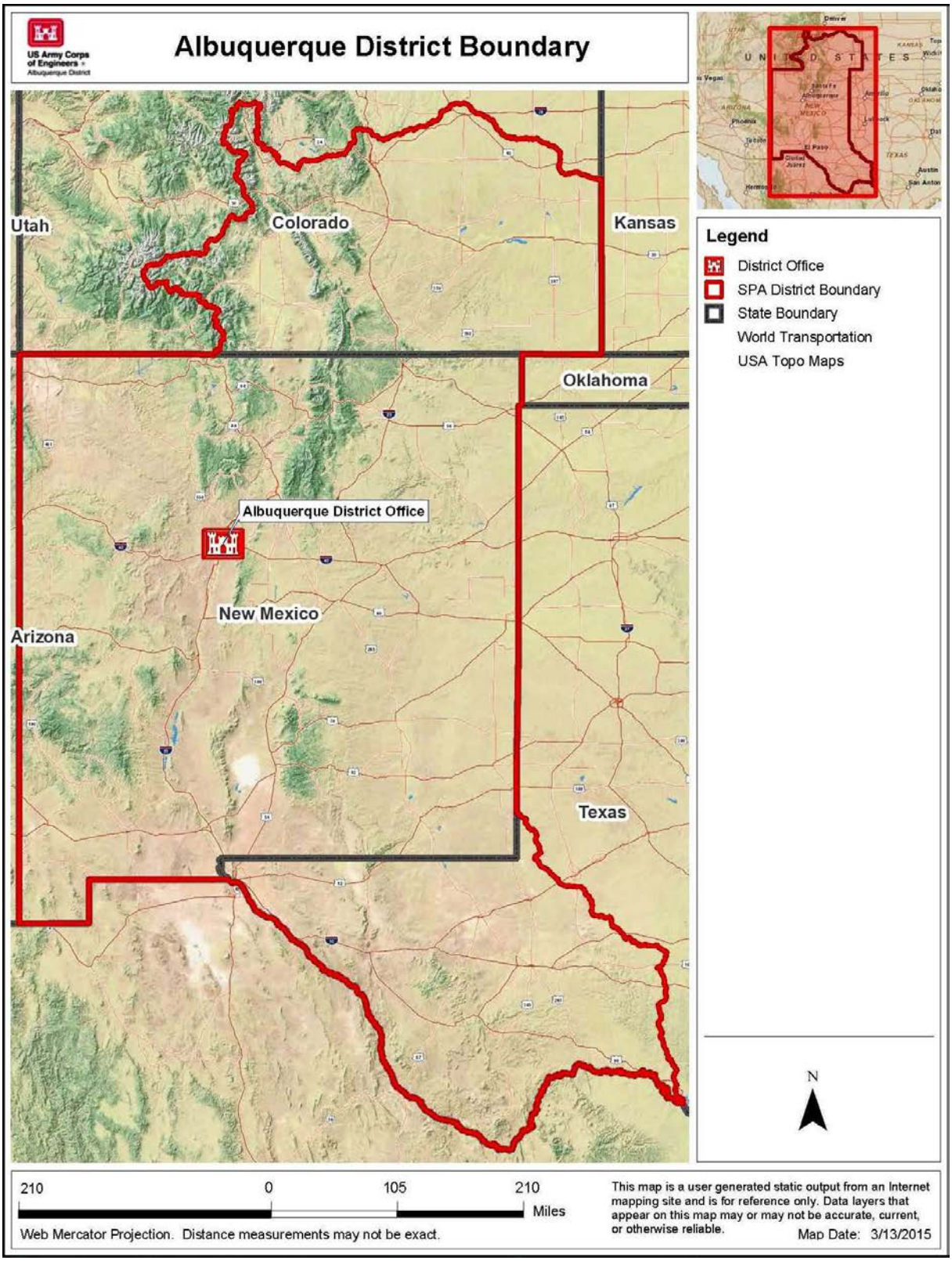


Figure 1 Albuquerque (SPA) district boundary.

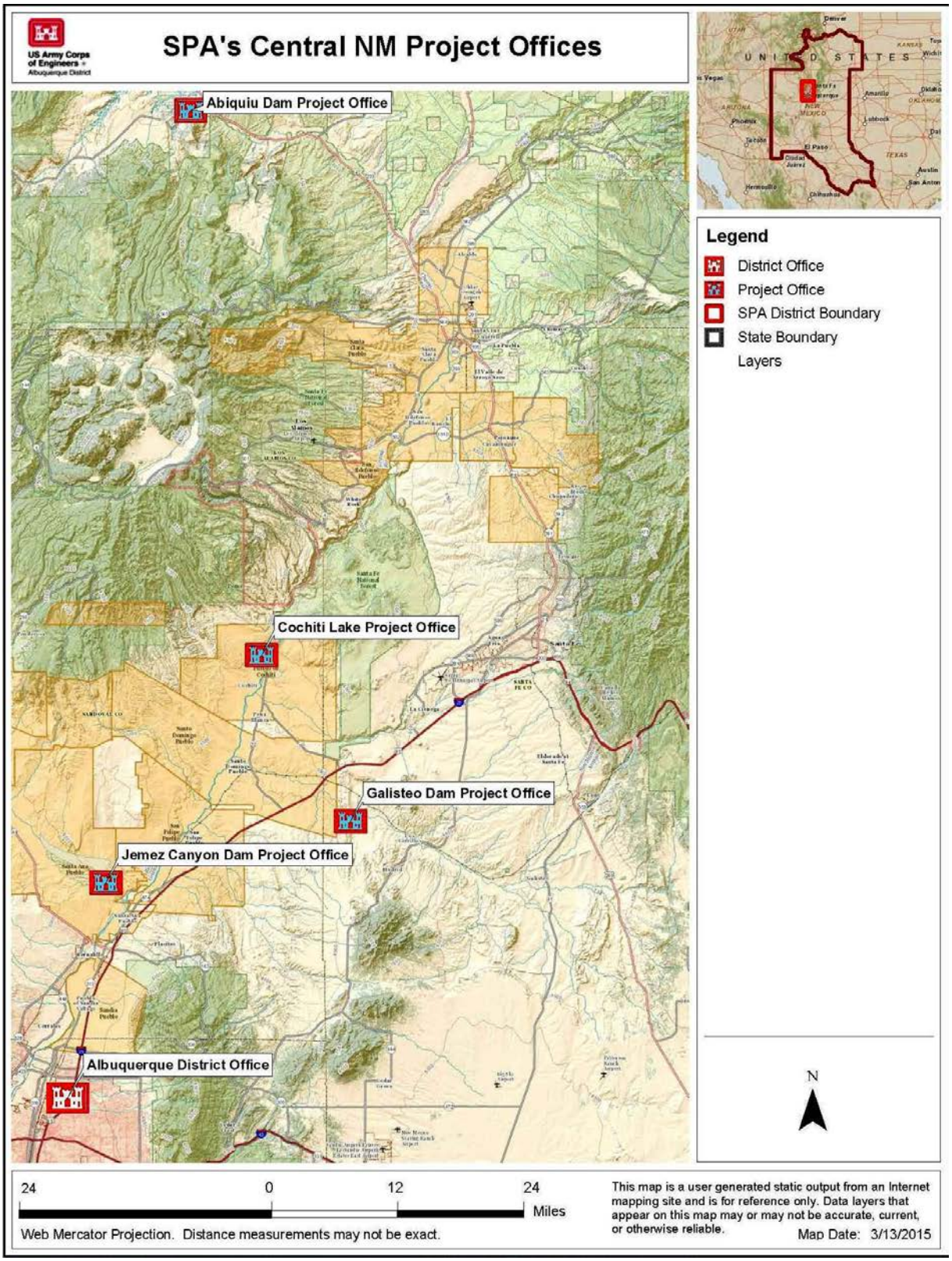


Figure 2 SPA's central New Mexico project offices.

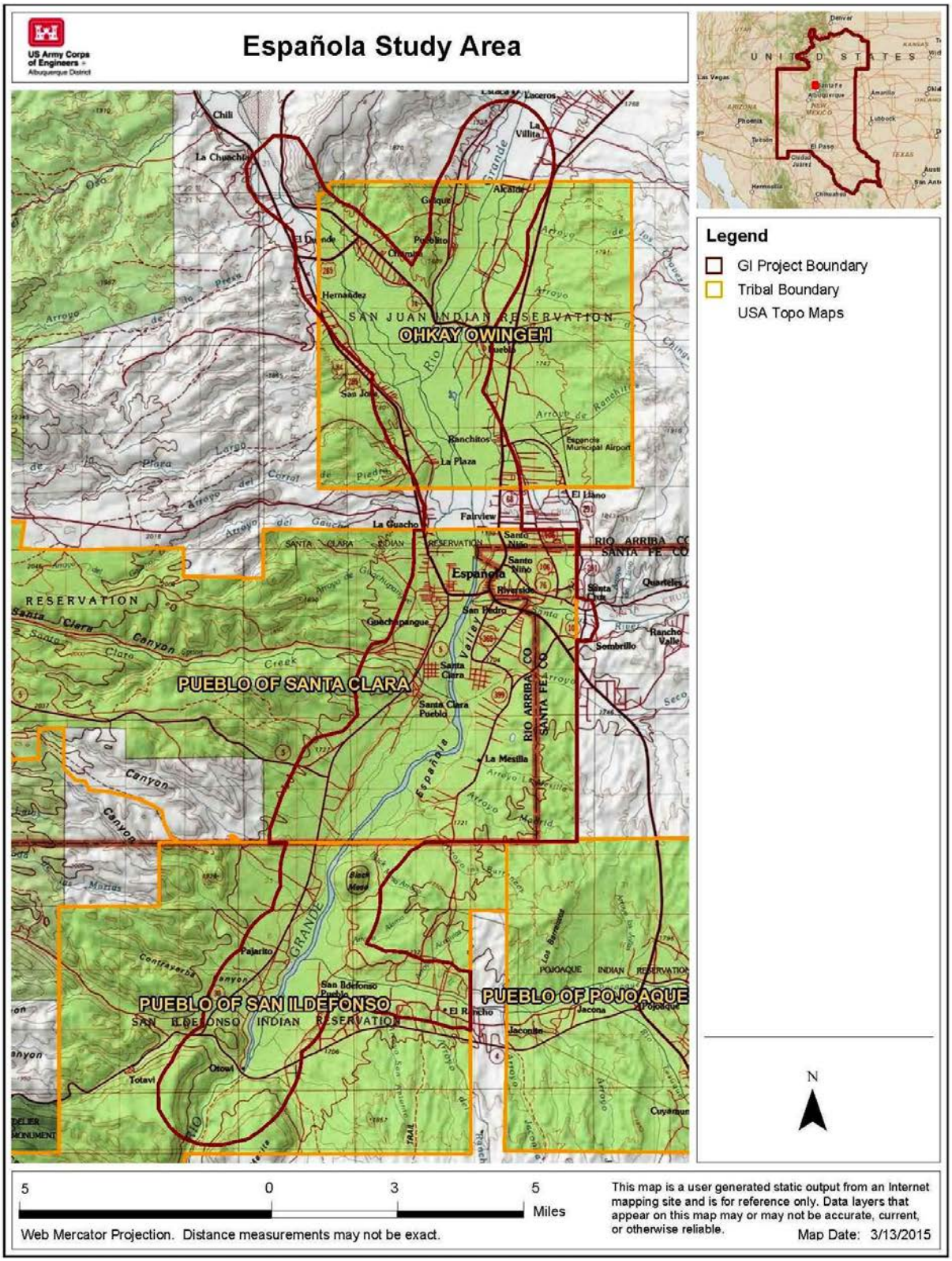


Figure 3 Española study area.

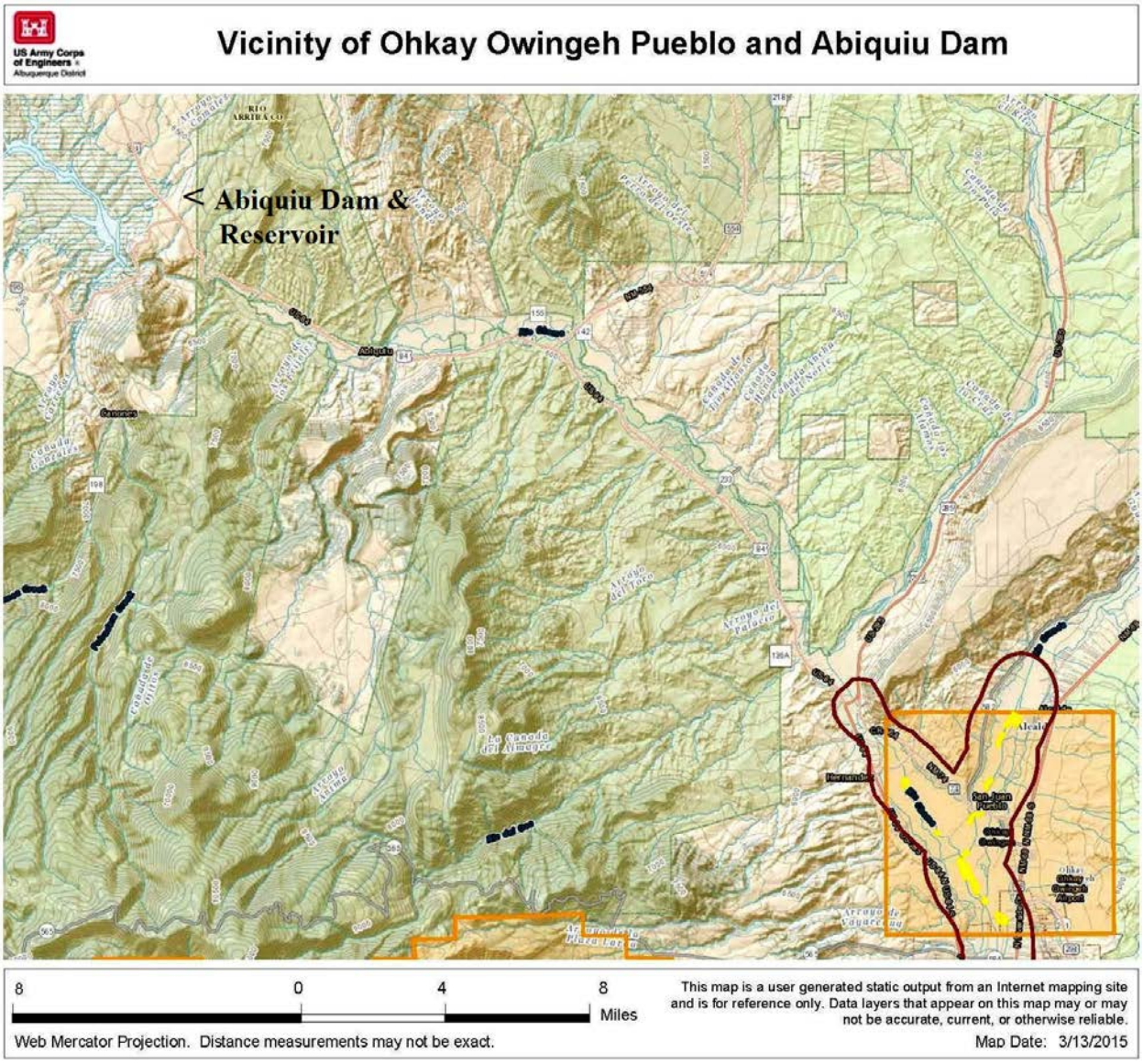


Figure 4 Study area in the vicinity of the Ohkay Owingeh Pueblo and Abiquiu Dam and Reservoir.

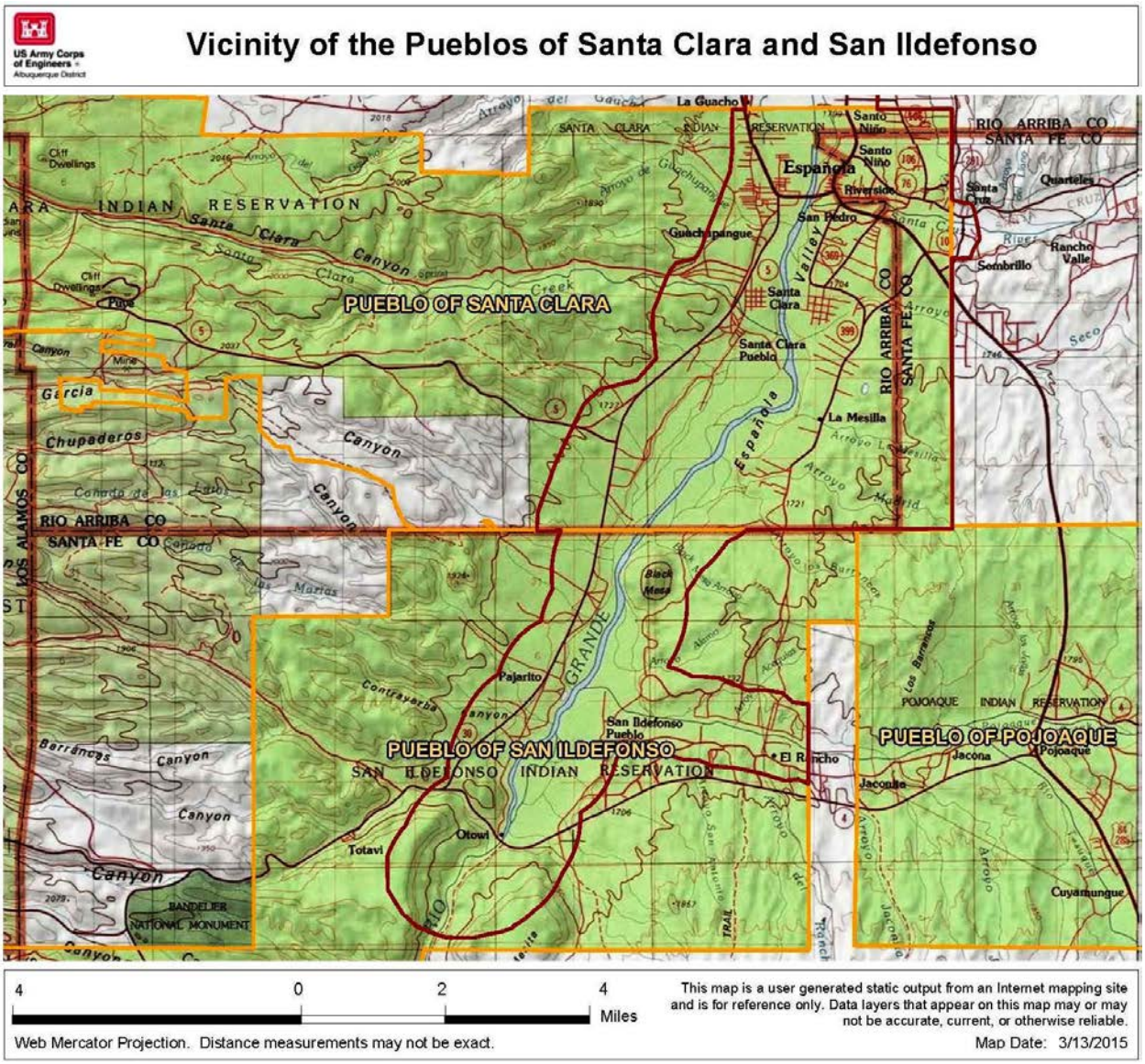


Figure 5 Vicinity of the pueblos of Santa Clara and San Ildefonso.

2.2 Study purpose and study scope

The Española Valley, Rio Grande and Tributaries, New Mexico, Detailed Feasibility Study (Study) is being conducted by the U.S. Army Corps of Engineers (USACE), Albuquerque District (SPA), and the Pueblos of Ohkay Owingeh (formerly San Juan Pueblo), Santa Clara, and San Ildefonso. The purpose of this study was to determine whether or not there was a Federal interest in the implementation of a project along the Rio Grande and its tributaries' floodplains within the study area. This study was to determine whether or not FRM, ecosystem restoration, and recreation alternatives are technically feasible, economically practicable, sound with respect

to environmental considerations, and legally acceptable. The three tribes, as the non-Federal sponsors, support the project purposes to provide FRM, ecosystem restoration, and passive recreation.

This report describes the existing conditions within the study area and the future without-project conditions. Conditions that exist at the time of the study are collectively called the existing condition. The future without-project condition is the same as the "No Action" alternative, and describes what is expected to happen in the absence of a Federal action resulting from this study. The significant natural, economic, and social resources described in the existing and future without-project conditions are compared.

This decision document presents the results of the existing and future-without-project conditions, evaluations of alternatives, and the recommended plan of the general investigation effort. Specifically, the decision document:

- Provides a complete presentation of study results and findings, so that readers may reach independent conclusions regarding the reasonableness of existing and future conditions.
- Assures compliance with applicable laws, Executive Orders, and policies, in accordance with budgetary priorities.
- Provides a sound and documented basis for the evaluation and justification of the District Engineer's Recommendation.

2.3 Need for the project/proposed action

2.3.1 Flood risk management

Scurlock (1998) documented floods of greater than 10,000 cubic feet / second (cfs) within the Española Valley, to include the Pueblos of Ohkay Owingeh, Santa Clara and San Ildefonso, for the years 1835, 1874, 1880, 1884, 1901, 1903, 1912 (29,000 cfs), 1920 (24,400 cfs), 1921 (100,000 cfs), 1941, 1942, and 1951. SPA also has documentation for the floods of 1969 and 1977. The National Oceanic and Atmospheric Administration (NOAA) and the U.S. Geological Survey (USGS) have records of historic flood crests. USGS has determined that the flood stage at the Otowi gage begins at 9 feet. Their website has recorded flood stages for following years: 1904 (14.50 feet), 1920 (14.10 feet), 1941 (13.54 feet), 1911 (13.10 feet), 1905 (12.05 feet), 1916 (10.93 feet), 1942 (10.22 feet), 1919 (10.10 feet), 1924 (10.06 feet), and 1985 (9.96 feet).

Figure 6 Española Valley floods of 1941.

Figure 7 Española Valley floods of 1942 showing ponding and saturation of this structure's adobe walls.

Figure 8 Española Valley floods of 1951 showing ponding days after Rio Grande floodwaters receded.

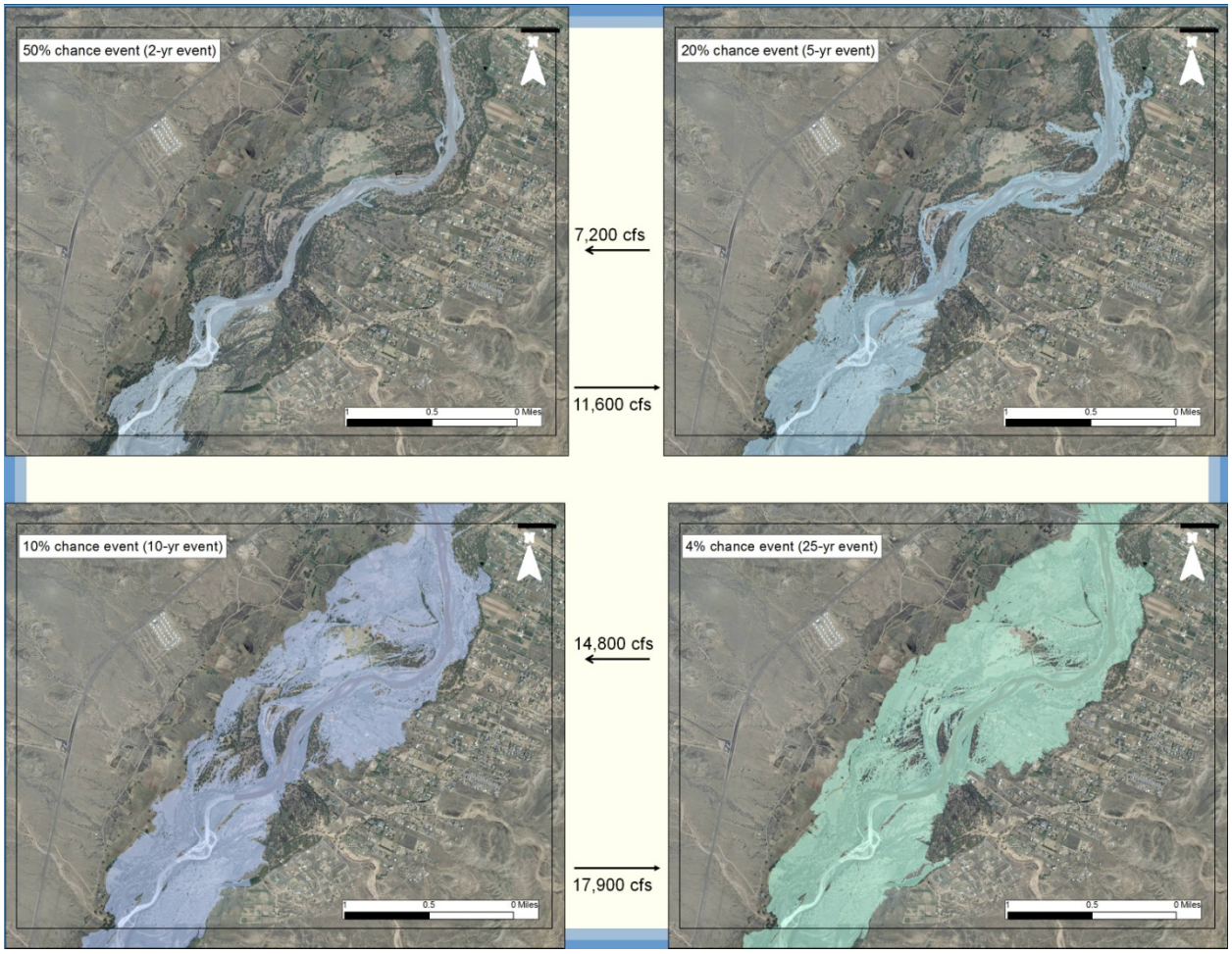


Figure 9 Existing conditions flood plain mapping for the 50%, 20%, 10% and the 4% chance exceedance precipitation events.

Figure 10 Existing conditions flood plain mapping for the 0.2% chance exceedance precipitation event.

2.3.2 Ecosystem Restoration

Figure 11 High terrace on preventing Rio Grande overbanking on Ohkay Owingeh Pueblo during spring runoff in 2009.

Figure 12 Exotic species (Russian olive) lining the Rio Grande's bank on Ohkay Owingeh Pueblo during spring runoff in 2009.

Figure 13 Functioning high flow channel at Ohkay Owingeh Pueblo during spring runoff in 2009.

Even during spring runoff or larger monsoon events, most of the historic high flow channels throughout the study area do not receive flows from the Rio Grande or its tributaries.

Figure 14 Cottonwood galleries on the floodplain at Ohkay Owingeh Pueblo during spring runoff in 2009.

Most of the cottonwoods are the same age; in some areas, the cottonwoods are reaching senescence. This photo demonstrates little undergrowth and part of what undergrowth there is exotic Russian olive.

Figure 15 Cottonwood gallery forest on a Rio Grande terrace at Santa Clara Pueblo during spring runoff in 2009.

Figure 16 Mature cottonwood gallery with Russian olive on a Rio Grande terrace at Santa Clara Pueblo during spring runoff in 2009.

Figure 17 Exotic species (Salt cedar and Russian olive) on a Rio Grande terrace at Santa Clara Pueblo during spring runoff in 2009.

2.4 History of the investigation

In 1991 and 1992, USACE conducted an initial reconnaissance study to evaluate the Federal interest in pursuing a FRM study in the Española Valley of northern New Mexico. This action was the direct result of years of interest in the water resource problems and opportunities of the area expressed by local government entities, private interest groups and citizens. In February 1993, the City of Española entered into a cost-sharing agreement with USACE to conduct a feasibility study as a direct result of the positive recommendations contained within the reconnaissance report. Although an economically feasible FRM plan was later identified, the study was terminated in September 1996 with the completion of a draft feasibility report.

After the termination of the feasibility phase in 1996, there was significant interest among the public, tribes, and agencies in resuming the evaluation of potential projects in the Española Valley. There was significant interest in evaluating a valley wide, multi-purpose, river restoration, recreation, and FRM project. As a result, a 905(b) analysis was initiated in July 2004 to re-scope the 1996 feasibility study. The analysis was completed in December 2004, and reconfirmed the Federal interest in continuing into a new feasibility phase.

On December 21, 2005, the Pueblos of Santa Clara, San Ildefonso, and Ohkay Owingeh signed a Feasibility Cost Sharing Agreement with USACE which marked the beginning of the feasibility study, known as the Española Valley, Rio Grande and Tributaries, New Mexico, Detailed Feasibility Study. Each Pueblo agreed to share equally in the sponsorship of the project and formed individual Project Delivery Teams (PDTs) consisting of technical experts, legal counsel, and project managers (PMs).

The three Tribal sponsors support the USACE in meeting the study purpose to identify and evaluate the feasibility of multiple alternatives that will provide ecosystem restoration, possible FRM measures, and recreational enhancements.

2.5 Planning process and report organization

ER 1105-2-100, Planning Guidance Notebook dated 22 April 2000, as amended, provides the planning process used by the PDT in this feasibility study. The process identifies and responds to problems and opportunities associated with the study objectives and specific Federal, state, and local concerns. USACE planning involves a systematic approach to making determinations during the feasibility study so that the interested public and decision-makers are fully aware of the basic assumptions employed. The data and information analyzed, the areas of risk and uncertainty, the reasons and rationales used, and the significant implications of each alternative plan are exposed through this process. The planning process culminates in the selection of a recommended plan. These steps are further described in Chapter 6, Plan Formulation and Evaluation.

The final product of this feasibility study is a feasibility report and Environmental Assessment (EA) that will serve as the basis for obtaining Congressional authorization of the plan components determined to be feasible and cost-effective.

The requirements identified in this report may change as project features are further refined during the Pre-construction engineering and design (PED) phase of the project. The project features, including actual lands required and estates to be acquired in those lands may change after approval of the feasibility report. As project features are further refined in subsequent implementation efforts, USACE will review the site determinations for the various project features set out in the report in accordance with established policies. This review may result in changes in design or land requirements for specific project features, while maintaining the overall benefit levels presented in the recommended plan. If there are substantive changes in the recommended plan and/or the requirements of this project based on more detailed analysis, then the SPA will prepare necessary documentation.

2.6 Environmental Operating Principles

Environmental Operating Principles are applicable to all USACE decision-making and programs. These principles, as presented below, foster unity of purpose on environmental issues, reflect a

new tone and direction for dialogue on environmental matters, and ensure that conservation, environmental preservation, and restoration are considered in all Corps activities.

1. Strive to achieve environmental sustainability. An environment maintained in a healthy, diverse and sustainable condition is necessary to support life.
2. Recognize the interdependence of life and the physical environment. Proactively consider environmental consequences of Corps programs and act accordingly in all appropriate circumstances.
3. Seek balance and synergy among human development activities and natural systems by designing economic and environmental solutions that support and reinforce one another.
4. Continue to accept corporate responsibility and accountability under the law for activities and decisions under our control that impact human health and welfare and the continued viability of natural systems.
5. Seek ways and means to assess and mitigate cumulative impacts to the environment while bringing systems approaches to the full life cycle of our processes and work.
6. Build and share an integrated scientific, economic, and social knowledge base that supports a greater understanding of the environment and of impacts of our work.
7. Respect the views of individuals and groups interested in Corps activities, listen to them actively, and learn from their perspective in the search to find innovative win-win solutions to the Nation's problems that also protect and enhance the environment.

Federal, State, and local environmental quality goals and policies are considered in evaluating the long-term effect that the alternatives may have on significant environmental resources. Significant environmental resources are defined by the Water Resources Council as those components of the ecological, cultural, and aesthetic environments which, if affected by the alternatives, could have a material bearing on the decision-making process. Avoidance of adverse impacts, followed by minimization and then mitigation of unavoidable, significant adverse impacts, is the formulation direction that is called for within NEPA.

For additional information and details on how SPA incorporated the USACE Environmental Operating Principles into the feasibility study process, please see Chapter 3 of the main report and Appendix C – Environmental Resources.

3 - Prior Studies, Reports, and Existing Water Projects

Prior to the beginning of this feasibility study, many efforts had been conducted to identify, quantify, and seek funding to implement solutions to help alleviate flooding and improve environmental quality in the Rio Grande ecosystem. This chapter discusses these studies and reports that have been prepared on issues relating to the Rio Grande Basin and the current study area, and identifies existing projects and structures located within the area.

3.1 Prior studies and reports

The Rio Grande has been extensively utilized by Native Americans for irrigation since prehistoric times. These include the three sponsor tribes in this study: Ohkay Owingeh, Santa Clara, and San Ildefonso pueblos. In the 1800s, settlers reestablished many historical irrigation canals. The Rio Grande has presented many opportunities and challenges, and has been studied extensively.

Various agencies and engineering consulting firms have conducted or published many studies and reports on the Rio Grande since the 1950s. The topics of the reports and studies include water resources, FRM, recreation, urban development, and environmental assessment. A sample of the prior studies and reports related to this study is presented by topic below and in effect provide a history of water resources studies in the area. The findings in these reports and the chronology of change within the Rio Grande corridor are important and essential in describing the changes over time and in outlining the importance of this project.

3.1.1 Water resources studies or reports

In 1995, SPA conducted a sedimentation analysis to evaluate the Rio Grande flood-event bed response to a proposed levee system on the west bank of the Rio Grande at Española, NM (unpublished USACE FRM study). A second objective was to evaluate the flood-event behavior of the Rio Grande streambed at the mouth of the Santa Cruz River. To perform the analysis, one-dimensional numerical sedimentation model was applied. The model was used to reproduce historical flow and sedimentation patterns for the Rio Grande through Española and, after satisfactory reproduction of the existing flow-sediment regime was accomplished, to determine the impact of the proposed levee system on the bed of the Rio Grande.

Dan Scurlock, United States Department of Agriculture, produced a technical report in 1998 (*An Environmental History of the Middle Rio Grande Basin*) on the environmental history that included this stretch of the Rio Grande. In that report, he looked at the history of humans and what effects they have had on the landscape to include water resources.

The main goal of a Bureau of Reclamation (BOR) study finalized in 2005 (*San Ildefonso Pueblo River Maintenance Priority Site, Geomorphic Trends Assessment, Final Report*) was to determine what factors were causing the Rio Grande to migrate towards a fishing pond on San Ildefonso Pueblo. The study evaluated the relevant geomorphic parameters, described the river's existing condition, and tried to project future conditions in that reach of the Rio Grande.

In 2008, the U.S. Geological Survey (USGS), in cooperation with the New Mexico Department of Transportation, finalized and published their analyses of the magnitude and frequency of peak discharge and maximum observed peak discharges in New Mexico (*Analysis of the Magnitude and Frequency of Peak Discharge and Maximum Observed Peak Discharge in New Mexico and Surrounding Areas*). These analyses are necessary for the design of highway projects such as bridges and culverts as well as for flood hazard mapping. The USGS updated estimates of peak-discharge magnitude for gaging stations and updated regional equations for estimation of peak discharge and frequency at ungaged sites.

3.1.2 USACE flood risk management studies or reports

The following is a list of the reports prepared by USACE that contribute information to the current study.

- 1948. *Survey Report on Rio Grande and Tributaries, New Mexico.*
- 1958. *Rio Grande and Tributaries, New Mexico, Review Survey for Flood Control, Main Stem Rio Grande above Elephant Butte Dam.*
- 1966. *Design Memorandum No. 1 – Hydrology, Española Valley Unit, Rio Grande Floodway, Rio Grande Basin, New Mexico.*
- 1992. *Reconnaissance Report, Española Valley, Rio Grande and Tributaries, Remainder New Mexico.*
- 1995. Inter*im Feasibility Report, Española Valley, Rio Grande and Tributaries, Remainder New Mexico.*
- 2011. *Technical Assistance Report for Santa Clara Pueblo, Las Conchas Fire Response, Santa Clara Canyon Debris Retention Facilities.*

3.1.3 Environmental Studies or Reports

On September 23, 2002, U.S. District Court Judge James Parker ordered Reclamation and the U.S. Fish and Wildlife Service (Service) to reinitiate formal Endangered Species Act (ESA) consultations to plan for various water operation contingencies that may have arisen during the fall of 2002 and throughout 2003. Reclamation and USACE released their Final Biological Assessment on Middle Rio Grande Water and River Maintenance Operations on February 19, 2003. The final BA covered a 10-year period from March 1, 2003 to February 28, 2013. This document focuses on impacts to the Rio Grande silvery minnow (RGSM), the Southwestern Willow flycatcher (flycatcher), the Bald Eagle (now delisted), and the Interior Lease Tern. Both

USACE and Reclamation plan to reinitiate consultation with the Service at the end of 2009 to address issues related RPA elements in the 2003 Biological Opinion.

The BOR and the USACE released their Final Biological Assessment (BA) on Middle Rio Grande Water and River Maintenance Operations on February 19, 2003. On September 23, 2002, U.S. District Court Judge James Parker issued an order in which the BOR and the U.S. Fish and Wildlife Service (Service) were ordered to reinitiate formal Endangered Species Act (ESA) consultations to plan for various water operation contingencies that may have arisen during the Fall of 2002 and throughout 2003. The final BO (USFWS 2003) covered a 10-year period from March 1, 2003, to February 28, 2013, instead of 2003 and out-year water operations. This document focused on impacts to the RGSM, the Flycatcher, the Bald Eagle (now delisted), and the Interior Lease Tern.

To improve the status and contribute to the recovery of the RGSM and the flycatcher, Reclamation has since instituted in a Supplemental Water Program (Program). In May of 2006, Reclamation released a supplement to the 2001 *Rio Grande Supplemental Water Programmatic Environmental Assessment* and *Finding of No Significant Impact*. The document updated the program elements, existing conditions information and the program's environmental consequences section. The document describes future water leasing activities by Reclamation for the benefit of the RGSM and the Flycatcher.

In April 2007, a joint effort between the USACE, the BOR, and the New Mexico Interstate Stream Commission was finalized and produced the *Final Environmental Impact Statement (FEIS) – Upper Rio Grande Basin Water Operations Review*. The programmatic EIS evaluated various alternatives and considered the effects of adopting an integrated plan for water operations in the Upper Rio Grande basin. The basin includes the Rio Grande from its headwaters in Colorado through New Mexico to immediately above Fort Quitman, Texas. The development of the EIS was the result of a Memorandum of agreement (MOA), signed in 2000, defining the scope, purpose, and need for the project, the rules and responsibilities of each Joint lead agency (JLA) entering into the agreement, and the organizational structure for participation and oversight.

3.2 Existing and ongoing water projects

3.2.1 San Juan – Chama Project

Studies of the possibility of diverting San Juan River Basin waters into the Rio Chama, a tributary of the Rio Grande, began immediately following WWI, but surveys of the features involved began in 1933 with the Bunger Survey. This survey was resumed in 1936, as a part of the Rio Grande Joint Investigations, in order to determine the need for the project.

The investigations established the basis for recognizing, in the Rio Grande Compact, the possibility of a trans-mountain diversion to bring water from the San Juan River, a tributary to the Colorado River, into the Rio Grande Basin. The Colorado River Basin report, issued by the BOR in 1946, established the quantity of water that was considered for the trans-mountain diversion during the negotiation of the Upper Colorado River Basin Compact.

In 1950, in the interest of coordination, the Secretary of the Interior appointed the San Juan River Technical Committee. A summary report was prepared in May 1950, and the committee presented progress reports in 1951 and 1952.

Field work on the San Juan-Chama Project (SJC) (Figure 18) was resumed at the beginning of 1951, and interim reports were prepared by the BOR through 1955, when a feasibility study was prepared. This study was supplemented in 1957 and was followed by authorization of the project. Volume I of the definite plan report, covering the diversion and regulation elements of this project, was approved on August 10, 1964.

The SJC was authorized by Congress in 1962 through PL 87-483), which amended the Colorado River Storage Act of 1956 (PL 84-485) to allow diversion of Colorado River basin water into the Rio Grande Basin of New Mexico. The original planning projections were for an ultimate diversion of 235,000 acre-feet per year, with an initial phase development for an average annual diversion of up to 110,000 acre-feet. Only the initial phase was authorized and subsequently constructed by the BOR.

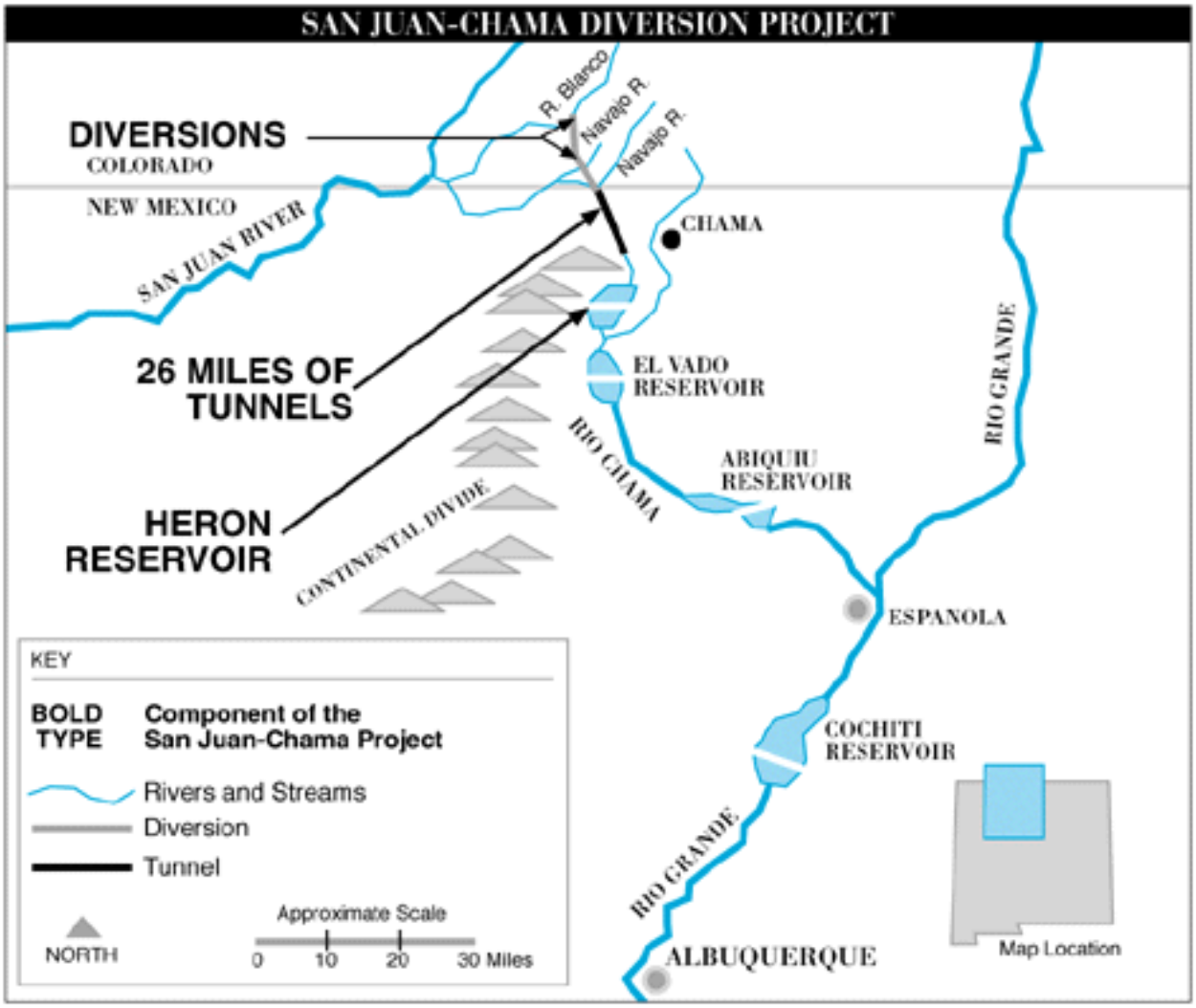


Figure 18 Map of San Juan – Chama Diversion Project.

The SJC consists of a system of diversion structures and tunnels for trans-mountain movement of water from the San Juan River Basin to the Rio Grande Basin. Authorized as a participating project of the Colorado River Storage Project, the SJC provides an average annual diversion of about 110,000 acre-feet of water from the upper tributaries of the San Juan River. Primary purposes of the SJC are to furnish a water supply to the Middle Rio Grande valley for municipal, domestic, and industrial uses. The project is also authorized to provide supplemental irrigation water and recreation and fish and wildlife benefits.

Table 1 Water amount provided (acre feet) by the San Juan - Chama Project.

Municipal, domestic, and industrial supplies	Acre-feet provided
City of Albuquerque	48,200
Jicarilla Apache Nation	6,500
City and County of Santa Fe	5,605
County of Los Alamos	1,200
City of Española	1,000
Town of Belen	500
Village of Los Lunas	400
Village of Taos	400
Town of Bernalillo	400
Town of Red River	60
Twining Water & Sanitation District	15
Irrigation supplies	
Middle Rio Grande Conservancy District	20,900
Pojoaque Valley Irrigation District	1,030
Last Updated: May 17, 2011	

The project takes water from the Navajo, Little Navajo, and Blanco Rivers, which are upper tributaries of the San Juan River, for use in the Rio Grande basin. These imported waters flow down Azotea and Willow Creeks 11.78 river miles to Heron Reservoir.

3.2.1.1 Heron Dam and Reservoir

The regulating and storage reservoir is formed by Heron Dam on Willow Creek just above the point where Willow Creek enters the Rio Chama (Figure 18). The dam is an earth-fill structure 269 feet high which forms a reservoir with a capacity of 401,320 acre feet and a surface area of 5,950 acres. The spillway has a capacity of 660 cfs, and the outlet works has a capacity of 4,160 cfs. Storage from Heron Dam provides water for municipal, domestic, industrial, recreation, and fish and wildlife purposes and also provides supplemental water for irrigation.

3.2.1.2 Nambe Falls Dam

Construction of Nambe Falls Dam was awarded on June 13, 1974, and completed June 28, 1976. Operation and maintenance of Nambe Falls Dam and Reservoir is performed by the Pojoaque Valley Irrigation District, but Reclamation maintains oversight responsibilities.

The dam is a concrete and earthen embankment structure 150 feet high, which forms a reservoir with a capacity of 2,023 acre-feet.

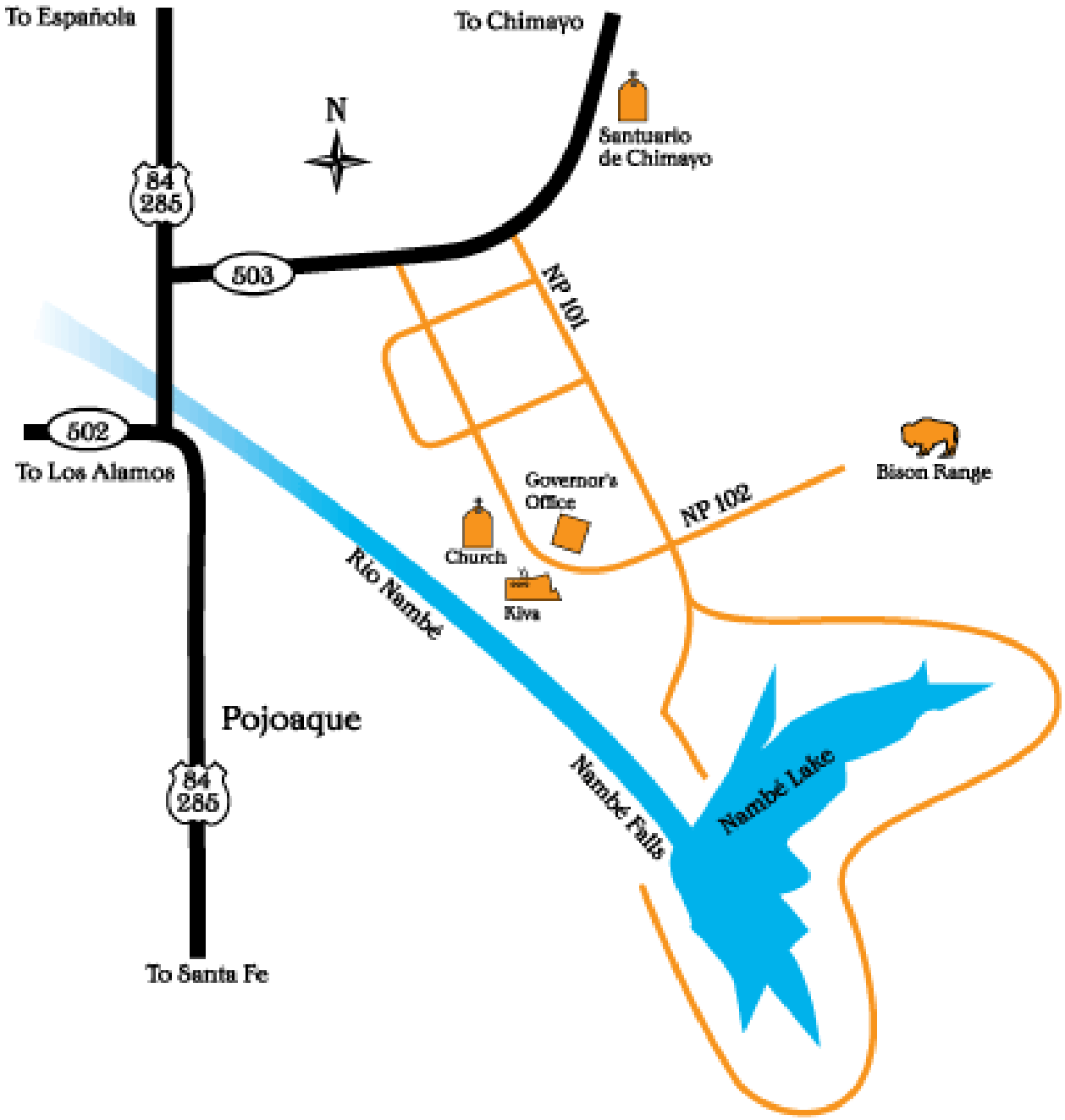


Figure 19 Map to Nambe Falls Lake and Dam from the study area.

3.2.2 The Bureau of Reclamation's Middle Rio Grande project

The BOR's Middle Rio Grande Project (Middle Rio Grande Project) facilities were authorized by the following:

- Flood Control Act of June 30, 1948 (PL 858, 80th Cong., 2nd session).
- Flood Control Act of May 17, 1950 (PL 516, 81st Cong., 2nd session).

In addition authorizing dam and levee construction, the Flood Control Act of 1948 directed that studies be made to determine feasible ways and means of reducing non-beneficial consumptive use of water by phreatic vegetation in the floodplains of the Rio Grande and its principal tributaries above Caballo Reservoir.

The Middle Rio Grande Project consists of El Vado Dam, and irrigation and drainage facilities in the Middle Rio Grande valley. The project includes river channel maintenance and irrigation water conveyance channels.

The Middle Rio Grande Project was authorized by Congress to improve and stabilize the economy of the Middle Rio Grande valley by rehabilitation of the Middle Rio Grande Conservancy District facilities and by controlling sedimentation and flooding in the Rio Grande. The BOR and USACE jointly planned the comprehensive development of the project. The BOR undertook the rehabilitation of El Vado Dam, rehabilitation of project irrigation and drainage works, and channel maintenance. The USACE was assigned the construction of flood control reservoirs and levees.

3.2.2.1 El Vado Dam and Reservoir

The purpose of El Vado Dam and Reservoir is to store natural water for irrigation, recreation, incidental flood control, and sedimentation management, including prior and paramount Native American water rights for the six Middle Rio Grande Pueblos (Cochiti, Santo Domingo, San Felipe, Santa Ana, Sandia and Isleta). The dam is owned by the Middle Rio Grande Conservancy District (MRGCD) but has been operated by the BOR since 1956 (Figure 18).

Construction of the earthen dam was completed in 1935. The dam itself is 154 feet tall and 1,362 feet long. The reservoir holds approximately 195,440 acre-feet of water at a spillway crest elevation of 6,902 feet above sea level.

The outlet works for El Vado Dam, located 6 miles downstream of Heron Dam, were enlarged in 1965-1966 so that SJC releases from Heron Reservoir could be passed unimpeded through El Vado Reservoir. The capacity of the outlet works is 6,600 cfs.

El Vado Power plant, with a capacity of 8,000 kW, is operated by the County of Los Alamos under FERC license number 5226.

4 - Existing Conditions

In conducting this feasibility study, a wide range of technical issues were analyzed with the goal of developing an accurate description of historic, existing, and future without-project conditions in the study area.

Existing conditions are defined as those conditions that exist within the study area at the time of the study. The term baseline is sometimes used to refer to the existing conditions at the time of a measurement, observation, or calculation and may be used occasionally throughout the report. Without a good understanding of the existing condition, one cannot understand what constitutes an improvement from a degraded condition.

Available information was initially collected about existing studies and projects that could assist in the preparation of the inventory of historic and existing conditions and the forecasting of future without-project conditions for the study area. The information presented under without-project conditions is considered in order to formulate alternative measures that address the watershed problems and opportunities discussed in Chapter 6, Plan Formulation. Major technical areas of focus for the study include hydrologic and hydraulic studies, environmental studies related to biological resources, cultural resource and recreation studies, and economic analysis.

The future without-project condition is defined as that condition expected to exist in the absence of any action taken by the Federal government, as a result of this study, and will be the description of the “No Action Alternative”. The future without-project condition forecast provides a description of anticipated actions external to the project and the anticipated consequences of these actions. The future without-project condition, which is the same as the “No Action” alternative, is a projection of how these conditions are expected to change over time and forms the basis against which alternative plans are developed, evaluated, and compared.

4.1 Historic conditions

Prior to dam construction in the early 1900s, the Rio Grande riparian vegetation was dominated by cottonwood, willow, New Mexico olive, and various species of shrub and wetlands (Scurlock, 1998). This suite of vegetation is considered to be representative of the natural “climax community” of species that would be found in an undisturbed riparian corridor along the Rio Grande. New Mexico olive occurred along the outer bank of the river, at the extreme edge of the natural riparian vegetation. Cottonwood and willow trees grew along the margins of the river exhibiting the highest percent of annual recruitment in the secondary channel. Grazing, drought, and sporadic above-normal precipitation further reduced vegetative cover, increasing erosion, runoff, and sediment loading of the Rio Grande from about 1850 to 1930 (Scurlock 1998). Intense flooding, floodplain aggradation, and bank line scouring reduced mature stands of riparian vegetation and temporarily increased the area of wetlands. The dynamics of the rapidly

changing Rio Grande landscape left some channel areas barren, while others had vegetation in strips along constantly moving bars. A stable channel supported development of extensive areas of cottonwood gallery forest in the 1940's, which is now reaching senescence.

Dams and diversions on the Rio Grande have caused significant ecological impacts to natural wildlife habitat and riparian communities along the Rio Grande. Water management has reduced Rio Grande summer flows for meeting irrigation demand. This base flow is supplemented by summer or fall rainfall-related events. The decreasing groundwater table beneath the river has reduced soil moisture in the adjacent riparian areas, significantly reducing nutrient cycling, microbial and biochemical processes (Spink et al 1998), which directly contributed to the rapid decline and loss of the native cottonwoods, willows, and riparian ecosystem of the Rio Grande Basin. Channel incision caused by local sand and gravel extraction operations have created 'drought' conditions on the adjacent floodplain (Sparks and Spink 1998), with patches of native riparian vegetation interspersed among larger areas of salt cedar and weedy upland vegetation.

4.2 Hydrology

4.2.1 Existing Hydrology

Table 2 Summary of peak discharges for the Rio Grande and its tributaries.

		Estimated Peak Discharge per ACE (cfs) at confluence							
	Drainage Area (sq. mi.)	50%	20%	10%	4%	2%	1%	0.5%	0.2%
Rio Grande*	11,360	6,525	10,450	13,100	15,700	19,050	21,600	24,200	27,650
Rio Chama	3,159	2,550	3,225	3,700	4,375	5,250	6,000	6,975	8400
Arroyo Guachupangue	4.9	2,50	820	1,240	1,830	2,300	2,800	3,300	3900
Santa Clara Creek	50	200	840	1,580	2,700	3,600	5,200	9,300	15900
Santa Cruz River	183	550	1,920	3,200	4,800	6,100	8,000	10,500	16000
Rio Pojoaque	195	250	4,300	8,070	12,500	16,900	22,200	28,200	37800

*At Otowi Bridge

4.2.2 Future Without-Project Hydrology

Although the stream gage record is considered extensive on this section of the Rio Grande, 100 years is not enough time to accurately estimate the full suite of potential peak flows for the without-out project condition. Although weather stability is always assumed in a river gage

assessment, over the gaging period of record, this watershed has experienced a wet cycle, two droughts and a long period of negative correlation between winter and summer precipitation.

4.3 Fluvial Geomorphology

4.3.1 Existing Fluvial Geomorphology

The combined effects of reduced peak flows, channelization and spoil banks, channel incision and the extensive presence of bank-reinforcing non-native vegetation (primarily Russian olive and tamarisk) have resulted in a much narrower active channel and floodplain, and a much wider and more densely vegetated bosque than existed in 1935 (historic aerial photography). Since the 1940s, reduced peak flows, channel incision, spoil levees and active filling of former river channels have effectively disconnected the floodplain from the channel, and channel processes, and much of the increase in bosque width is due to colonization of now-inactive portions of the floodplain that existed in 1935.

4.3.2 Future Without-Project Fluvial Geomorphology

The mobile boundary sediment-transport models were executed over a 26-year simulation period to estimate the amount of aggradation or degradation and associated changes in channel geometry. The simulation period extended from WY1980 to WY2005.

Results from the 26-year simulations are generally consistent with the results from the simulations for the individual flood hydrographs and show little change from the existing conditions for geomorphology.

4.4 Hydraulics

4.4.1 Existing and Future Without-Project Hydraulics

Future without project analysis was done only for the Arroyo Guachupangue and the Rio Pojoaque.

Rio Grande – Existing Conditions

Table 3 Acres inundated within each sub-reach of the Rio Grande for each of the following ACE.

Sub-reach	**Acres inundated by ACE**							
	50%	**20%**	**10%**	**4%**	**2%**	**1%**	**0.5%**	**0.2%**
1	108.1	289.5	704.7	790.3	861.0	894.2	918.3	949.3
2	37.4	135.6	356.5	411.4	476.3	508.4	530.6	550.6
3	84.6	108.3	196.3	284.9	412.0	523.7	605.2	687.2
4	91.4	137.7	163.6	330.7	713.2	811.7	838.7	897.1
5	91.4	306.8	363.6	386.0	400.2	410.3	419.6	431.5
6	268.1	830.3	1148.0	1330.0	1439.0	1523.0	1556.0	1591.0
7	156.2	267.0	312.8	328.7	343.1	351.6	358.9	368.3
8	211.6	511.7	570.3	635.5	673.9	684.7	693.3	707.8
9	23.0	30.5	33.1	34.4	36.2	37.4	38.5	39.5
Total	**1071.8**	**2617.4**	**3848.9**	**4531.9**	**5354.9**	**5745**	**5959.1**	**6222.3**

Rio Chama – Existing Conditions

Table 4 Acres inundated within each sub-reach of the Rio Chama for each of the following ACE.

Sub-reach	Acres inundated by ACE							
	50%	**20%**	**10%**	**4%**	**2%**	**1%**	**0.5%**	**0.2%**
1	14.3	26.6	78.8	86.6	94.6	98.0	100.4	102.6
2	29.6	37.1	45.5	61.2	79.7	95.2	113.5	128.9
3	32.0	44.1	57.1	66.3	77.7	83.4	86.6	92.5
4	37.8	64.1	92.9	127.8	193.1	234.7	257.0	283.2
5	9.8	15.8	21.1	23.9	50.2	58.8	66.2	75.3
Total	**123.5**	**187.7**	**295.4**	**365.8**	**495.3**	**570.1**	**623.7**	**682.5**

Santa Cruz River – Existing Conditions

Table 5 Acres inundated within each sub-reach of the Santa Cruz River for each of the following ACE.

Sub-reach	Acres inundated by ACE							
	50%	**20%**	**10%**	**4%**	**2%**	**1%**	**0.5%**	**0.2%**
1	3.7	33.4	35.3	36.3	37.9	38.3	39.7	41.5
2	16.2	27.4	37.6	52.1	64.3	81.8	111.4	140.1
3	14.6	22.7	24.9	42.2	51.2	75.7	110	135.7
4	5.3	13.1	19.4	40.5	48.5	121.4	140.7	155.4
Total	**39.8**	**96.6**	**117.2**	**171.1**	**201.9**	**317.2**	**401.8**	**472.7**

Arroyo Guachupangue – Existing and future without-project Conditions

Table 6 Acres inundated within each sub-reach of the Arroyo Guachupangue for each of the following ACE (future without-project conditions).

Sub-reach	Acres inundated by ACE with percentage change from existing conditions							
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	200-yr	500-yr
1	0.7 -4.4%	0.8 -27.4%	2.0 -39.2%	3.6 -22.1%	4.7 -8.1%	5.2 -3.0%	5.4 -2.2%	5.7 -1.1%
2	3.2 6.0%	3.7 2.5%	3.8 2.5%	3.9 2.3%	4.0 2.8%	4.1 3.1%	4.2 3.5%	4.6 11.5%
3	1.1 -54.9%	3.2 -18.4%	4.0 -21.4%	5.3 -19.4%	7.1 -20.2%	8.7 -24.1%	11.3 -9.0%	12.5 -5.5%
4	1.3 -35.9%	2.2 -4.5%	2.4 -4.2%	2.6 -13.0%	18.0 -6.4%	23.4 -5.3%	25.6 -5.8%	28.3 -3.8%
5	1.0 -31.0%	1.7 -13.5%	2.2 -12.7%	2.7 -9.8%	145.1 -2.6%	151.1 -2.0%	154.9 -1.1%	156.8 -1.1%
6	3.3 21.2%	4.5 22.8%	5.3 30.3%	7.0 30.0%	7.6 24.0%	8.1 7.3%	10.7 31.7%	11.0 5.6%
Totals	**10.6** **-14.2%**	**16.1** **-2.9%**	**19.7** **-6.9%**	**25.2** **-4.8%**	**186.5** **-3.0%**	**200.6** **-3.2%**	**212.0** **-0.8%**	**218.9** **-1.2%**

Rio Pojoaque – Existing and future without-project conditions

Table 7 Acres inundated within each sub-reach of the Rio Pojoaque for each of the following ACE (future without-project conditions).

Sub-reach	Acres inundated by ACE with percent change from existing conditions							
	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	200-yr	500-yr
1	6.1 -21.1%	34.7 -4.4%	47.2 -0.7%	53.2 0.5%	56.9 1.0%	60.5 0.9%	63.5 1.1%	66.4 0.9%
2	25.6 14.4%	72.5 12.5%	97.3 22.1%	120.8 8.4%	126.5 3.0%	130.6 1.7%	134.2 1.2%	138.1 -0.4%
3	22.3 -6.6%	50.3 -9.8%	78.8 0.7%	95.0 2.2%	104.4 0.6%	113.5 0.8%	120.3 0.7%	128.3 -0.5%
4	16.3 -2.5%	29.4 -1.0%	85.3 -1.6%	165.5 0.1%	176.5 0.8%	187.9 0.1%	195.3 1.2%	202.5 1.3%
5	14.1 2.5%	58.2 -7.2%	185.2 -1.1%	329.7 3.1%	348.0 3.8%	361.6 4.4%	384.1 5.0%	397.9 4.9%
Totals	**84.3** **-0.1%**	**245.1** **-1.5%**	**493.8** **3.0%**	**764.2** **2.9%**	**812.3** **2.4%**	**854.1** **2.3%**	**897.3** **2.7%**	**933.2** **2.3%**

4.5 Sediment Transport

4.5.1 Existing Conditions

Existing and future without project analysis was done only for the Arroyo Guachupangue and the Rio Pojoaque. The model geometry and basic structure were taken from the hydraulic model that was developed for the floodplain delineation mapping of the arroyo. In-channel bed-material information was developed from bed-material samples collected during the October 2007 field surveys.

Arroyo Guachupangue

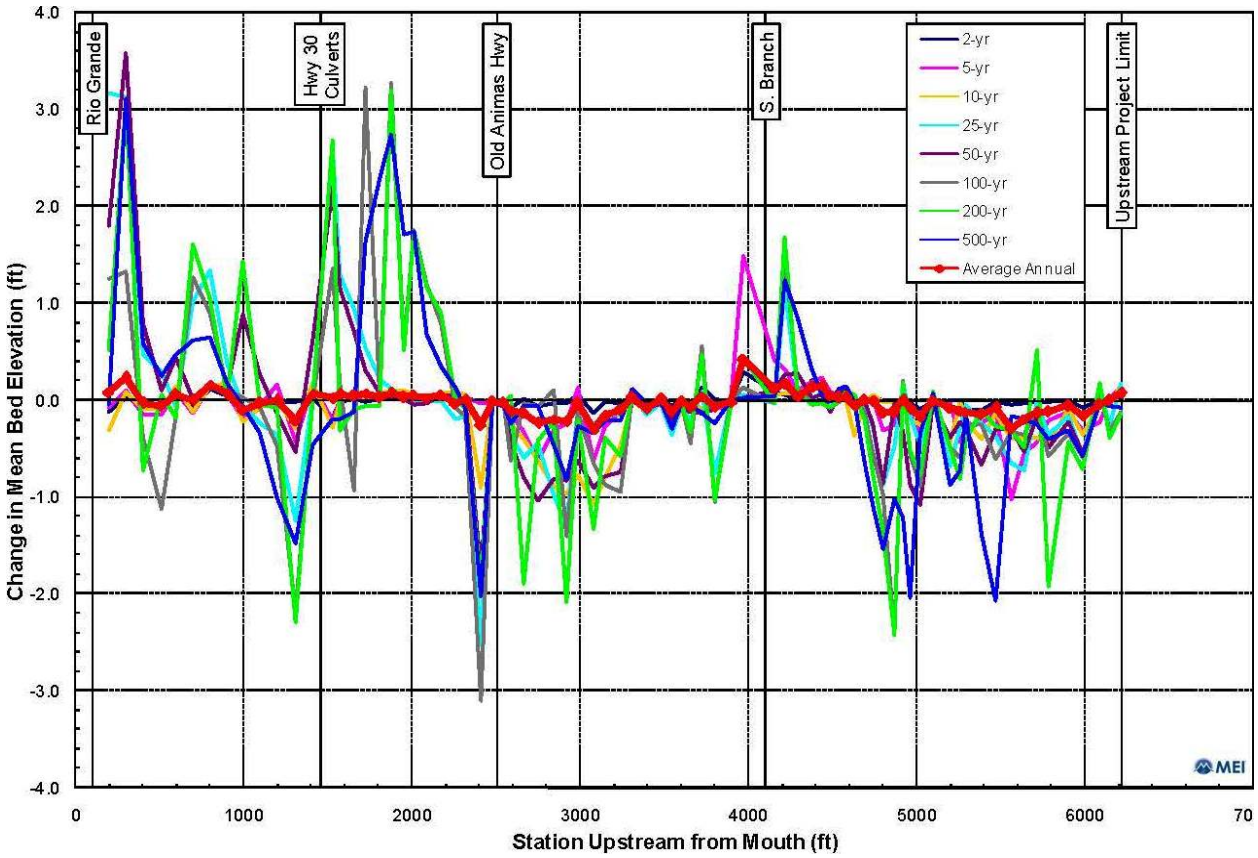


Figure 20 Modeled change in bed elevation in Arroyo Guachupangue.

Rio Pojoaque

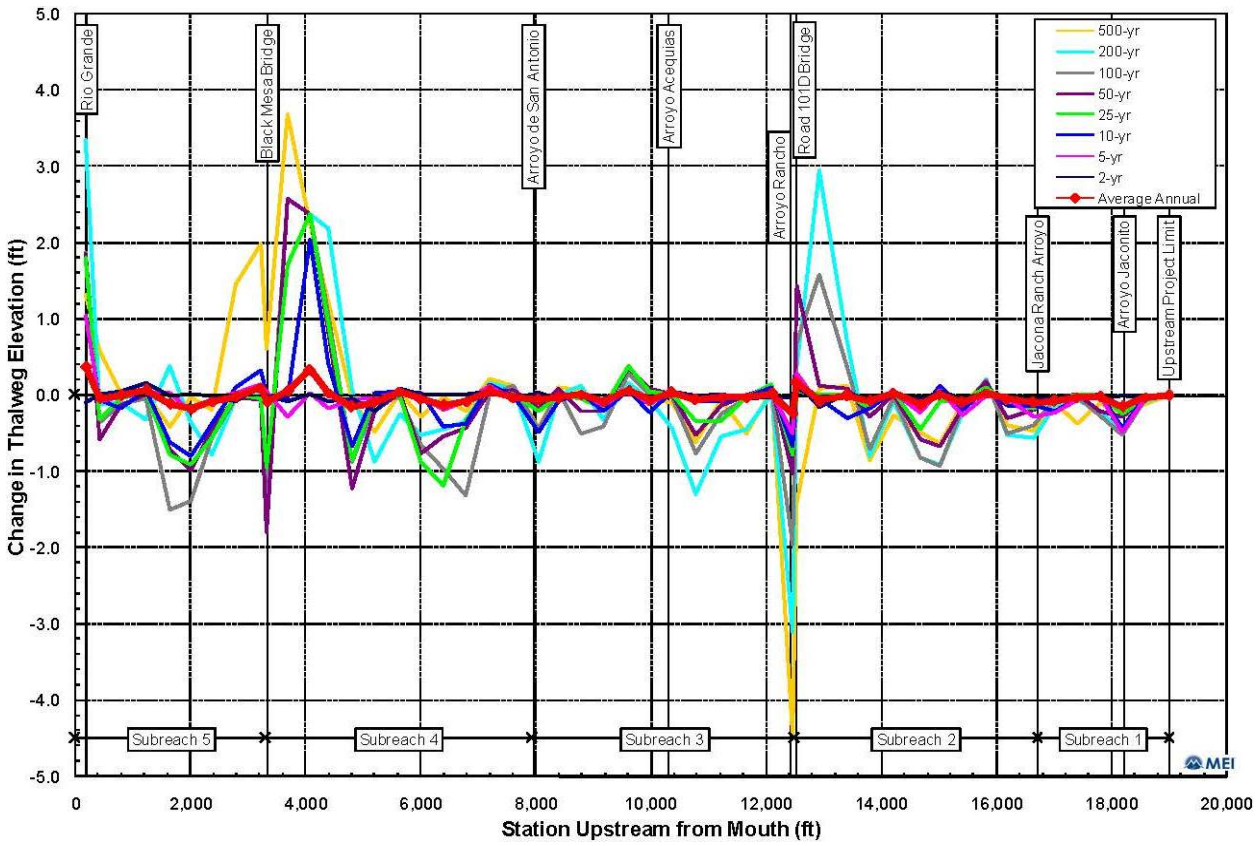


Figure 21 Modeled change in bed elevation in the Rio Pojoaque.

4.5.2 Future Without-Project Conditions

The mobile boundary sediment-transport models for each of the tributaries were executed over a 26-year simulation period to estimate the amount of aggradation or degradation and associated changes in channel geometry. The simulation period extended from WY1980 to WY2005. Results from the above model runs were used to delineate the flood boundaries for each of the modeled floods, and the delineations compared to the existing conditions flood boundaries to determine the potential effects of aggradation and degradation on the extent of flooding. Results from the 26-year simulations are generally consistent with the results from the simulations for the individual flood hydrographs.

Arroyo Guachupangue

At the end of the simulation for the Arroyo Guachupangue, the predicted change in mean bed elevation is generally less than 1 foot. About 3 feet of aggradation occurs upstream from the South Branch due to deposition that occurs in the excavated area in the right overbank upstream from the confluence. Up to 1.4 feet of aggradation also occurs further upstream due to localized backwater caused by constrictions in the bounding terraces. The remainder of the reach is

moderately degradational, with the most incision occurring downstream from the culverts. In the South Branch of Arroyo Guachupangue, moderate aggradation (generally less than 1 foot) is indicated throughout the majority of the reach, except in the excavated left overbank area upstream from the confluence with the main stem, where about 2 feet of aggradation occurs.

Rio Pojoaque

The most significant amount of change in the Rio Pojoaque occurs in the approximately 1,000-foot long backwater zone upstream from the Road 101D Bridge, where up to 3.2 feet of aggradation is indicated at the end of the simulation. The sediment-trapping effects of the bridge result in degradation downstream from the bridge. Degradation depths of up to 0.8 feet are indicated in the relatively narrow reach upstream from the confluence with Jacona Ranch Arroyo. Very little change is indicated in the remainder of the study reach, with average annual changes of less than 0.05 feet.

4.6 Economics

**NOTE: In 2011, the Santa Clara Creek Watershed was severely impacted due to the Las Conchas Fire. As a result the Santa Clara Pueblo experienced significant flooding from the Santa Clara Creek. A separate study (Santa Clara Creek 205 of the Continuing Authorities Program) will address the economic damages associated with the Santa Clara Creek and therefore damages associated with Santa Clara Creek are not included in this analysis.

Additional economic existing, future without-project and future with-project can be found in the main report and Appendix B.

5 - Expected Future Without-Project Conditions

The future without-project condition is defined as that condition expected to exist in the absence of any action taken (by the Federal government) to solve the stated problems. This condition is vitally important to the evaluation and comparison of alternative plans and the identification of impacts (both beneficial and adverse) attributable to proposed Federal actions. The future without-project condition forecast provides a description of anticipated actions external to the project and the anticipated consequences of these actions.

5.1 Hydrology

Future hydrology was reviewed for predictable physical changes within the watershed that would affect flood frequency, *i.e.* urbanization and land use. The Española Valley has been an agriculture-based community since before the Spanish arrival in the 1500s. The future land use surrounding the city and within each Pueblo is expected to remain similar to current conditions; as such, the hydrologic conditions are expected to remain constant.

In support of sediment transport modeling, a continuous hydrograph for the Rio Grande and each tributary was created (located in Appendix A). These hydrographs reflect the flows from the last 26-years of record, 1980-2005. This period recorded high and low volume floods but did not record any high peak floods. The last flood of record was 1942. Since that time, no large flood events have occurred due to climate variations; storms used to be larger precipitation events. In more recent times precipitation events are more moderate in size (Molnar and Ramirez, 2006).

5.2 Hydraulic conditions

Expected future without-project hydraulic conditions are: continued channel bed degradation upstream of the old gravel mining operation upstream of the City of Española as the existing headcut migrates upstream; continued disconnection between the river channel and its floodplains during the smaller flood events which are vital for ecosystem health; and, precipitation events above the 4% chance continue to flow into urban areas located within the floodplains.

General sediment transport trends found that generally little to no change in channel bed elevation was expected except in the immediate vicinity of bridge/culvert crossings and tributary confluences. However, two locations along the Rio Grande had notable trends: the Rio Grande upstream from the Ohkay Owingeh Pueblo’s southern boundary and upstream and downstream from the Rio Pojoaque confluence.

Figure 22 Rio Grande downstream from Rio Pojoaque, April 2005.

In the southern end of Ohkay Owingeh Pueblo, the future sediment trends indicate two important results: 1) the old mining scar will continue to fill over the next 26 years, and 2) significant degradation will occur upstream from the mining scar, as the 'head-cut' migrates upstream slowly. The affects on the floodplain delineation is a slight improvement of river-floodplain connection in the old mining area, but a slight decrease in connection in the upstream area where degradation is predicted.

Unlike upstream, where the river channel is adjusting after mining, the Rio Grande in this section is predicted to aggrade at a relatively slow rate, approximately 2 feet over the next 26 years. Here, a large number of tributaries, the Rio Pojoaque being the largest tributary, are delivering large quantities of sediment to the Rio Grande's channel. This aggradation is simply a slightly excessive supply of sediment. Although the channel bed is now aggrading, this section of the Rio Grande is slightly incised at present such that the 50% chance event does not access the floodplain. This aggradation is expected to increase flooding during the 50% chance event.

5.3 Floodplains

In general, the analysis showed only minor differences in the floodplains between current/existing conditions and future conditions. The most significant differences throughout the study reach occurred during the smaller, high frequency floods (less than the 4% chance event). These changes are typically due to localized aggradation or degradation that cause or eliminate localized flow breakouts/overbank flooding.

The predicted degradation in the Arroyo Guachupangue results in an overall decrease in flood area under future conditions, with the largest decrease indicated at the 50% chance event due to an increase in channel capacity.

In the Rio Pojoaque, the flood area increases at flows greater than the 10% chance event due to the predicted aggradation in the vicinity of the bridges and the associated effect on the hydraulic conditions through the bridge openings.

5.4 Environmental resources

5.4.1 Determination of future conditions

From Appendix C, reference the report *Application Of The Combined Habitat Assessment Protocols (Chap) To Estimate Habitat Unit Values For The Española Valley, Rio Grande And Tributaries, New Mexico Study*, Sections 4.1, 4.2, 4.3, 4.4, and Chapters 5 and 6.

5.4.2 Soils

Soil characteristics, rates of erosion, and sediment deposition patterns would remain mostly unchanged from the existing condition in the absence of plan implementation. Initiatives by the Pueblos, especially maintenance of areas already thinned, will cause some vehicle use in the bosque and potentially affect soils. This use is most likely on an occasional basis and would not cause major changes to the soil makeup.

5.4.3 Vegetation

For the purposes of this section, a 50-year life period is considered for determining the future without-project conditions. The following sections describe the anticipated future conditions of specific resources.

The future bosque is likely to have a very different character than the current bosque. Without some restoration implementation, and with continued isolation of riparian vegetation in the study area from fluvial geomorphic processes, the bosque and riparian ecosystems will continue to decline. The size and density of non-native vegetation patches are likely to increase as they out-compete the native cottonwoods, willows, and other native understory and mid-canopy plants. Complete dominance of the plant communities by non-native plant species such as Siberian elm, Russian olive, salt cedar, and tree of heaven will continue to lower habitat values. Devastating fires are likely to increase in number and magnitude.

Current vegetation management techniques such as understory clearing and planting of native species may temporarily reset patches of bosque to more natural structural states, but gradual replacement by non-native species could continue to occur unless the function of the bosque ecosystem and structure of the dynamic mosaic is restored. Eventual conversion of the bosque to a non-native-plant-dominated ecosystem uninfluenced by hydrologic processes, with fire as the

new main disturbance mechanism, would diminish habitat suitability and quality for many native animal species.

5.4.4 Special status species

From Appendix C, reference the Draft Biological Assessment *Draft Biological Assessment For The Española Valley Rio Grande And Tributaries, New Mexico Study.*

There are three Federally listed species identified by the U.S. Fish and Wildlife Service (Consultation code 02ENNM00-2014-SLI-0436, 12 Jan 2015) that either occur in the action area and/or have proposed critical habitat in the action area. The species are the Southwestern Willow flycatcher (*Empidonax traillii extimus*) (flycatcher), the Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*) (cuckoo), and the New Mexico meadow jumping mouse (*Zapus hudsonius luteus*) (mouse). The other species of interest identified by the U.S. Fish and Wildlife Service (Consultation code 02ENNM00-2014-SLI-0436, 12 Jan 2015) do not meet the criteria for further analysis because there is no critical habitat in the action area, the lack of suitable habitat for the species or primary constituent elements (PCEs), or the species is unlikely to occur in the action area.

5.4.5 Air quality

If activities of the proposed action were not to occur, some effects to air quality by other projects and maintenance in the area could still occur. Pueblo and BIA activities to maintain areas thinned for fire prevention are likely to continue. Intermittent use of machinery, mostly in the wintertime, could have minor and temporary effects on air quality.

5.4.6 Noise

As stated above, maintenance activities by Pueblo and BIA staff are still likely to occur if the proposed project did not occur. Noise due to use of heavy equipment in the bosque to maintain thinned areas could occur during the winter. This would have a temporary increase in noise effect.

5.4.7 Aesthetics

Without the project, it can be expected that the study area will continue to deteriorate aesthetically according to both conventional scenic vista and proposed vibrant ecology standards. Increased cottonwood mortality and increased non-native plant populations will limit visibility and mobility and likely lead to an increase in the number of dumping activities and damaging fires. Without the project, points for viewing the bosque and its natural features and environs will become increasingly limited. Some efforts by Pueblo and BIA staff and other initiatives may assist in improving aesthetics, but not to the level and amount that would be otherwise be possible.

5.4.8 Land use

Increased Tribal growth within the bosque areas will be an unlikely occurrence. The individual sponsors have created Real Estate and Zoning departments within their governments that determine the locations of future development.

5.5 Environmental engineering

5.5.1 Water quality

Water quality in the study area would continue to be affected by input from storm water sewer outfalls including solid waste, fecal coliform, nutrients, and organic compounds. Other aspects and characteristics of water quality would remain unchanged from the existing condition without implementation of the proposed project.

5.5.2 Interpretive and recreational resources

Without the project, the educational and recreational activities currently enjoyed by the Tribal members of the respective Pueblos and visitors would remain roughly as they are with some minor improvements and maintenance of the existing system as it is. However, as the bosque in the study area becomes increasingly hazardous and unsafe due to increased densities of non-native and dead and down vegetation, the quality and time for these activities would be increasingly diminished. The bosque might have to be closed during the fire season because of the fire hazard, and the experience would be further degraded. The lack of a clearly defined interpretive trail system within the bosque could lead to the proliferation of trails and off-trail uses, which will further disturb the bosque and accelerate its decline. Again, some improvements by Pueblo and/or BIA efforts or other initiatives may improve this situation, but not to the level that the proposed project entails.

5.6 Socioeconomics

Demographic projections for the year 2060 have been estimated according to the Census Bureau 2000 Census data in coordination with projected percentages from 2060 total population data (A Report on Historical and Future Population Dynamics in New Mexico Water Planning Regions, 2008). Study area percentage projections were based off of comparisons to the state of New Mexico data (Census 2000).

The following table shows that future projections of total population are expected to steadily increase from a state wide, county wide, and side area. Projected demographics were calculated using Census 2000 percentiles as this data is not publicly available.

Table 8 Population statistics for the State of New Mexico through 2060.

		Race				< Poverty Level			Total Population		
Projection Year	Total Population	White	Hispanic & Latino	American Indian	Other	0-17 Years	18-64 Years	65 and Older	0-17 Years	18-64 Years	65 and Older
2000 Census % of Totals		0.447	0.42	0.089	0.043	0.146	0.008	0.0377	0.146	0.008	0.0515
2000	1,819,046	813,114	763,999	161,895	78,219	265,581	14,552	68,578	265,581	14,552	93681
2035	3,018,289	1,349,175	1,267,681	268,628	129,786	440,670	24,146	113,789	440,670	24,146	155442
2060	3,710,875	1,658,761	1,558,568	330,268	159,568	541,788	29,687	139,900	541,788	29,687	191110
Change	1,891,829	845,648	794,568	168,373	81,349	276,207	15,135	71,322	276,207	15,135	97429
Rio Arriba County 2000 - 2060											
		Race				< Poverty Level			Total Population		
Projection Year	Total Population	White	Hispanic & Latino	American Indian	Other	0-17 Years	18-64 Years	65 and Older	0-17 Years	18-64 Years	65 and Older
2000 Census % of Totals		0.016	0.73	0.12	0.135	0.157	0.014	0.0443	0.096	0.006	0.0412
2000	44,072	705	32,173	5,289	5,950	6,919	617	1,952	4,231	264	1815.8
2035	47,170	755	34,434	5,660	6,368	7,406	660	2,090	4,528	283	1943.4
2060	49,235	788	35,942	5,908	6,647	7,730	689	2,181	4,727	295	2028.5
Change	5,163	83	3,769	620	697	811	72	229	496	31	212.72

Santa Fe County 2000 - 2060											
		Race				< Poverty Level			Total Population		
Projection Year	Total Population	White	Hispanic & Latino	American Indian	Other	0-17 Years	18-64 Years	65 and Older	0-17 Years	18-64 Years	65 and Older
2000 Census % of Totals		0.455	0.49	0.026	0.029	0.096	0.006	0.0248	0.096	0.006	0.0466
2000	151,510	68,937	74,240	3,939	4,394	14,545	909	3,757	14,545	909	7060.4
2035	176,612	80,358	86,540	4,592	5,122	16,955	1,060	4,380	16,955	1,060	8230.1
2060	181,262	82,474	88,818	4,713	5,257	17,401	1,088	4,495	17,401	1,088	8446.8
Change	29,752	13,537	14,578	774	863	2,856	179	738	2,856	179	1386.4

Study Area 2000 - 2060											
		Race				< Poverty Level			Total Population		
Projection Year	Total Population	White	Hispanic & Latino	American Indian	Other	0-17 Years	18-64 Years	65 and Older	0-17 Years	18-64 Years	65 and Older
2000 Census % of Totals		0.098	0.709	0.175	0.016	0.072	0.108	0.027	0.072	0.108	0.133
2000	16,237	1,591	11,512	2,841	260	1,169	1,754	438	1,169	1,754	2159.5
2035	26,972	2,643	19,123	4,720	432	1,942	2,913	728	1,942	2,913	3587.2
2060	33,137	3,247	23,494	5,799	530	2,386	3,579	895	2,386	3,579	4407.2
Change	16,900	1,656	11,982	2,957	270	1,217	1,825	456	1,217	1,825	2247.7

6 - Plan Formulation and Evaluation

This chapter presents the current results of the plan formulation process used in the development of alternatives to address the planning objectives within the Española Valley, Rio Grande and Tributaries, New Mexico Detailed Feasibility Study area. This chapter describes the analysis used to arrive at the final set of alternatives as well as the decision-making process that leads to the selection of a recommended plan. Alternative plan development includes identification of all reasonable solutions to address the identified problems and an initial screening to eliminate inefficient and ineffective solutions. These solutions include operational changes or project features or "measures" that form the building blocks of an alternative plan.

6.1 Summary of historic and existing conditions

As can be seen by the existing conditions presented in Chapter 4 and Chapter 5, the problems associated with this reach of the Rio Grande are considerable. Dams constructed on the upper Rio Chama have limited flows in the lower Rio Grande. Historically, the Rio Grande and its tributaries supported large riparian areas of the arid southwestern United States with highly productive cottonwood, willow, and wetland habitats. These areas were rich in habitat diversity, supporting a wide variety of wildlife species. As the Rio Grande Valley became developed, riparian habitat was degraded significantly. The upstream water projects affected year-round water flows and converted the Rio Grande into a mostly channelized, aggraded, or degraded riverbed with limited, discontinuous, and degraded habitat. In addition, the overall area is experiencing growth and most areas adjacent to the river have been or are being developed. Human safety issues are increasing within the floodplains concurrently with increased flood risk. However, many opportunities to address problems through environmental restoration measures do exist. Since incidental recreation opportunities in the study are limited and since recreation is compatible and desired in conjunction with ecosystem restoration, they will be evaluated during plan formulation.

6.2 Planning process

This section presents the rationale used in the development of this plan. The USACE six-step planning process specified in ER 1105-2-100 (Planning Guidance Notebook) is used to develop, evaluate, and compare the array of candidate plans that are considered. The plan formulation process includes the following steps:

1. **Identifying Problems and Opportunities:** The specific problems and opportunities to be addressed in the study are identified, and the causes of the problems are discussed and documented. Planning goals are set, objectives are established, and constraints are identified. This has been accomplished for the current study stage.
2. **Inventorying and Forecasting Resources:** Existing and future without-project conditions are identified, analyzed, and forecast for a 50-Year Period of Analysis. The existing condition resources, problems, and opportunities critical to plan formulation,

impact assessment, and evaluation are characterized and documented. This has been accomplished for the current study stage. A forecast of conditions that will exist for a 50-year period of analysis without a Federal project was used as the baseline.

3. **Formulating Alternative Plans:** Alternative plans are formulated that address the planning objectives. An initial set of alternatives are developed and evaluated at a preliminary level of detail, and are subsequently screened into a more final array of alternatives. A public involvement program was used to obtain public input to the alternative identification and evaluation process. Each plan is evaluated for its costs, potential effects, and benefits, and is compared with the No Action Alternative for the 50-year period of analysis.

4. **Evaluating Alternative Plans:** Alternative project plans are evaluated for their potential to meet specified objectives and constraints, effectiveness, efficiency, completeness, and acceptability. The impacts of alternative plans are evaluated using the system of accounts framework (National Economic Development [NED], National Ecosystem Restoration [NER] or Environmental Quality [EQ], Regional Economic Development [RED], and Other Social Effects [OSE]) specified in USACE' *Principles and Guidelines* and ER 1105-2-100. This has taken place for the final array of alternatives and recommended plan during this phase of study.

5. **Comparing Alternative Plans:** Alternative plans are compared with one another and with the No Action Alternative. Results of analyses are presented (e.g., benefits and costs, potential environmental effects, trade-offs, risks and uncertainties) to prioritize and rank FRM alternatives. For the current study thus far, benefits and costs have been evaluated for the final array of alternatives, and a rationale is provided to justify selection of a recommended plan.

6. **Selecting the Recommended Plan:** A plan is selected for recommendation, and related responsibilities and cost allocations are identified for project approval and implementation.

These planning steps are part of an incremental and iterative planning process that is dynamic and involves feedback effects across the various steps that may sharpen the planning focus or change its emphasis as new information is generated.

6.2.1 The four accounts

1. **National Economic Development (NED):** This account displays changes in the economic value of the national output of goods and services

2. **National Ecosystem Restoration (NER) or Environmental Quality (EQ):** This account displays non-monetary effects on ecological, cultural and aesthetic resources including the positive and negative aspects of ecosystem restoration plans. Example: habitat units.

3. **Regional Economic Development:** This account displays changes in the distribution of regional economic activity (e.g. income and employment). Examples of RED effects could be, but are not necessarily limited to: employment, business income and local tax revenues.

4. **Other Social Effects (OSE):** This account displays non-monetary effects on social aspects such as community impacts, health and safety, displacement, energy conservation and others. Example: changes in population at risk.

6.3 Public concerns

Local experience with similar FRM, ecosystem restoration projects and public concerns are considered during all phases of plan formulation. The initial public meetings were held in the fall of 2007 at each of the Pueblos. Areas of concern included technical considerations based upon the specifics of the study, loss of riparian areas traditionally known as bosque, FRM, and opportunities for recreation. Additional public meetings are being scheduled to correspond with release of the future draft feasibility report.

The planning effort included extensive involvement by the Pueblos of Ohkay Owingeh, Santa Clara, and San Ildefonso. Numerous plan formulation workshops and meetings were planned for the feasibility phase. These workshops and meetings introduce the project to the public, give individuals and agencies an opportunity to identify issues for consideration in the feasibility report, and solicit input on the project.

The City of Española and the public have expressed an interest in addressing flooding problems from the Rio Grande, the Arroyo Guachupangue, the Santa Cruz River, and the many, smaller west-side tributaries to the Rio Grande. These watercourses have caused damages in the past from small, frequent events, and there is concern that larger, less frequent events, will result in significant damages. The non-Tribal, growth rate in the area, especially along the west side of Española, is believed to potentially exacerbate this problem. There is also a major concern regarding the continual degradation of the Rio Grande channel bed. This has resulted in additional erosional damage to adjacent improvements, a strong deterioration of the river's ecosystem, and the inability to divert flows from the river into the adjacent ditch system to supply the valley with its water requirements.

Ohkay Owingeh Pueblo has also expressed an interest in addressing FRM problems resulting from flows in the Rio Grande and its tributaries. These problems are affecting critical infrastructure within the floodplains, in particular the San Juan Elementary School. They have expressed an interest in floodplain restoration, bosque restoration, and habitat restoration, including the removal of non-native species and the planting of native species. They have also expressed an interest in the potential establishment of lakes and wetlands within the bosque area. Some of the bosque area is used in traditional / cultural practices.

Santa Clara Pueblo has expressed an interest in addressing FRM problems throughout the Pueblo. The central Pueblo area frequently suffers from flood problems. Also, the existing spoil banks along the Santa Clara Creek and the Santa Cruz River are inadequate, with frequent flood damages resulting from their poor condition. For many areas in the bosque, there is a need for a hazardous fuels reduction treatment plan that can be accomplished through ecosystem restoration measures. The Pueblo expressed an interest in restoring the bosque areas and potentially including recreational facilities, such as picnic areas, river walks, and biological exhibit areas. Some of the bosque area is used in traditional / cultural practices.

San Ildefonso Pueblo has expressed an interest in addressing FRM problems along the main stem of the Rio Grande and the Rio Pojoaque. They have also expressed an interest in restoring the Rio Grande's floodplains and its bosque, including the removal of non-native species and replanting with traditional native species. Some of the bosque area is used in traditional / cultural practices.

6.4 Problems and opportunities

Water resources projects are planned and implemented to solve problems, meet challenges, and seize opportunities. In the planning setting, a problem can be thought of as an undesirable condition, while an opportunity offers a chance for progress or improvement. The identification of problems and opportunities gives focus to the planning effort and aids in the development of planning objectives. Although problems and opportunities are considered in plan formulation, they should not be confused with planning objectives for which solutions will be formulated or plans recommended. Problems and opportunities can also be viewed as local and regional resource conditions that could be modified in response to expressed public concerns. This section identifies the problems and opportunities in the study area based on the assessment of existing and expected future without-project conditions.

6.4.1 Flood risk management

1. Floodplain mapping demonstrates the potential of flood risks to private property, public infrastructure and to human health and safety.

    a. Opportunities *exist to reduce flood risk to private property and public infrastructure within the study area.*

    b. *Opportunities exist to prevent flood risks to human health and safety within the study area.*

    c. *Opportunities exist to increase awareness of flood potential within the study area.*

    d. *Opportunities exist to provide a basis for future local planning regarding development within the floodplain within the study area.*

6.4.2 Ecosystem restoration

1. Channelization activities, gravel mining and non-engineered spoil banks, have modified the hydrology thereby changing the composition of native bosque plant species and associated wildlife habitats.

2. Surface/groundwater interactions and sedimentation dynamics that are important for sustaining and regenerating bosque vegetation have been negatively affected by changes in river hydrology.

    a. Opportunities *exist to reconnect the Rio Grande and tributaries to their floodplains within the study area.*

b. Opportunities *exist to restore sustainable ecosystem structure and function to valuable bosque habitat within the study area.*

c. Opportunities *exist to improve water quality in the Rio Grande and its tributaries by addressing turbidity, sediment deposition, and aggradation through ecosystem restoration measures within the study area.*

6.4.3 Protection of Tribal / cultural resources (OSE)

1. Tribal and cultural resources have become limited due to changes in habitat.

   a. *Opportunities exist to expand Tribal use of the river and bosque within the study area.*

6.5 Planning objectives and constraints

6.5.1 Federal planning objectives

The Federal objective of water and related land resources project planning is to contribute to the NED consistent with protecting the Nation's environment, pursuant to national environmental statutes and applicable executive orders, and following other Federal planning requirements. Water and related land resources project plans shall be formulated to alleviate problems and take advantage of opportunities in ways to contribute to this objective. Contributions to NED are increases in the net value of the national output of goods and services, expressed in monetary units.

Ecosystem restoration is also one of the primary missions of the USACE Civil Works Program. The USACE objective is to contribute to NER through increasing the net quality and/or quantity of desired ecosystem resources. NER measurements are based upon changes in ecological resource quality as a function of improvement in habitat quality or quantity and expressed quantitatively in physical units or indices (not monetary units).

One purpose of this feasibility study is to determine if ecosystem restoration with FRM and recreation in this reach of the Rio Grande are consistent with the Federal objectives stated above.

The Federal Objective for the relevant planning setting should be stated in terms of an expressed desire to alleviate problems and realize opportunities related to the output of goods and services or to increased economic efficiency. (P&G, Chapter I, Section II).

6.5.2 Specific planning objectives

Clear statements of specific planning objectives and constraints act as basic building blocks for developing alternative management measures and plans to alleviate stated problems and achieve opportunities. Through coordination with local and regional agencies, the public involvement process, site assessments, interpretation of prior studies and reports, and review of existing water projects, specific planning objectives were identified for this feasibility effort. The water and related land resource problems and opportunities identified in this study are stated as specific planning objectives to provide focus for the formulation of alternatives. The planning objectives

listed below reflect the problems and opportunities and represent desired positive changes along the Rio Grande and its tributaries within the study area:

- Reduce flood risk to private property and public infrastructure within the study area for the life of the project.
- Reduce flood risks to human health and safety within the study area for the life of the project.
- Reconnect the Rio Grande and its tributaries to their floodplains within the study area for the life of the project.
- Increase the amount and quality of valuable bosque habitat in the study area for the life of the project.
- Increase the diversity of riparian habitat types in the study area for the life of the project.
- Provide recreational opportunities to the public in the study area for the life of the project.

6.5.3 Planning constraints

Unlike planning objectives that represent desired positive changes, planning constraints represent restrictions that should not be violated. The planning constraints identified in the reconnaissance study and considered in this feasibility study are as follow:

Rio Grande Water Ownership, Allocations and Downstream Deliveries – Water laws in New Mexico and along the Rio Grande and its tributaries are many and complicated. Alternatives should focus on those plans which utilize the current amounts of surface water already available in the study area.

Under the Rio Grande Compact, New Mexico is required to deliver a certain amount of water to Texas each year, depending on how much water is in the Rio Grande. Failure to meet our delivery requirements could result in severe penalties. Compact delivery requirements are determined yearly, based on flows at designated gaging stations in Colorado and New Mexico.

Another water agreement with particular importance for the study area is the Upper Colorado River Basin Compact. New Mexico was apportioned 11.25% of the flows of the Upper Colorado because two Colorado tributaries—the San Juan and Animas Rivers—drain the northwestern portion of the state. Water is imported annually from the San Juan River into the Rio Grande Basin by the San Juan-Chama Project (Section 3.2.1) as part of New Mexico's entitlement under the Upper Colorado River Compact. This water must be fully consumed within the state, and cannot be used to meet Rio Grande Compact deliveries.

The Office of the State Engineer (OSE) of New Mexico manages the state's surface and ground water rights and has the authority to issue permits recognizing a user's right to water. Water rights can be inherited, and may be transferred (or sold) to another party who intends to put the water to beneficial use. Water rights transfers are subject to certain conditions. A transfer may change the point of diversion or purpose of use of the water, but any change must be "without

detriment to existing water rights" (non-impairment), "not contrary to the conservation of water" and "not detrimental to the public welfare of the state".

New Mexico's pueblos have several different types of water rights. Though most have yet to be quantified or adjudicated, their priority dates supersede the priority dates of all other water rights in the state. Tribal water rights may affect other rights and uses once they are quantified and declared by a court of law.

The Treaty of Guadalupe Hidalgo recognizes existing water rights on lands acquired from Mexico. The *Convention between the United States and Mexico, Equitable Distribution of the Waters of the Rio Grande*, dated 1906, requires the United States to deliver 60,000 acre-feet of Rio Grande water to Mexico each year.

6.5.4 Non-Federal sponsor's planning consideration

San Ildefonso expressed their desire, at various times during the study that they wanted to limit the locations of management measures to their Tribal lands. These sponsors also expressed their desire to limit the locations of ecosystem restoration measures to same.

The reason for this request is that not all of the real estate properties within their Tribal boundaries are owned by the tribes. Parts of City of Española, NM are located within the Tribal boundaries of Ohkay Owingeh and Santa Clara. All three tribes have non-Tribal private citizens with both residential and commercial private property within their Tribal boundaries. The tribes expressed their unwillingness to perform the real estate actions necessary in order to locate either levees or ecosystem restoration measures on non-Tribal property.

The exceptions to this are Ohkay Owingeh, which wanted to limit the development of FRM alternatives to the San Juan Elementary School, and Santa Clara, which wanted to limit the development of non-structural FRM alternatives to critical infrastructure.

During the course of this study, after ecosystem restoration management measures had been identified, San Ildefonso Pueblo's Tribal Council determined to remove ecosystem restoration from their part of the study due to existing economic constraints. USACE and San Ildefonso continued to formulate FRM alternatives.

If the only hydraulically viable floodwall or levee alignment were to go through a Traditional Cultural Property (TCP), then the sponsor would eliminate that measure from further consideration.

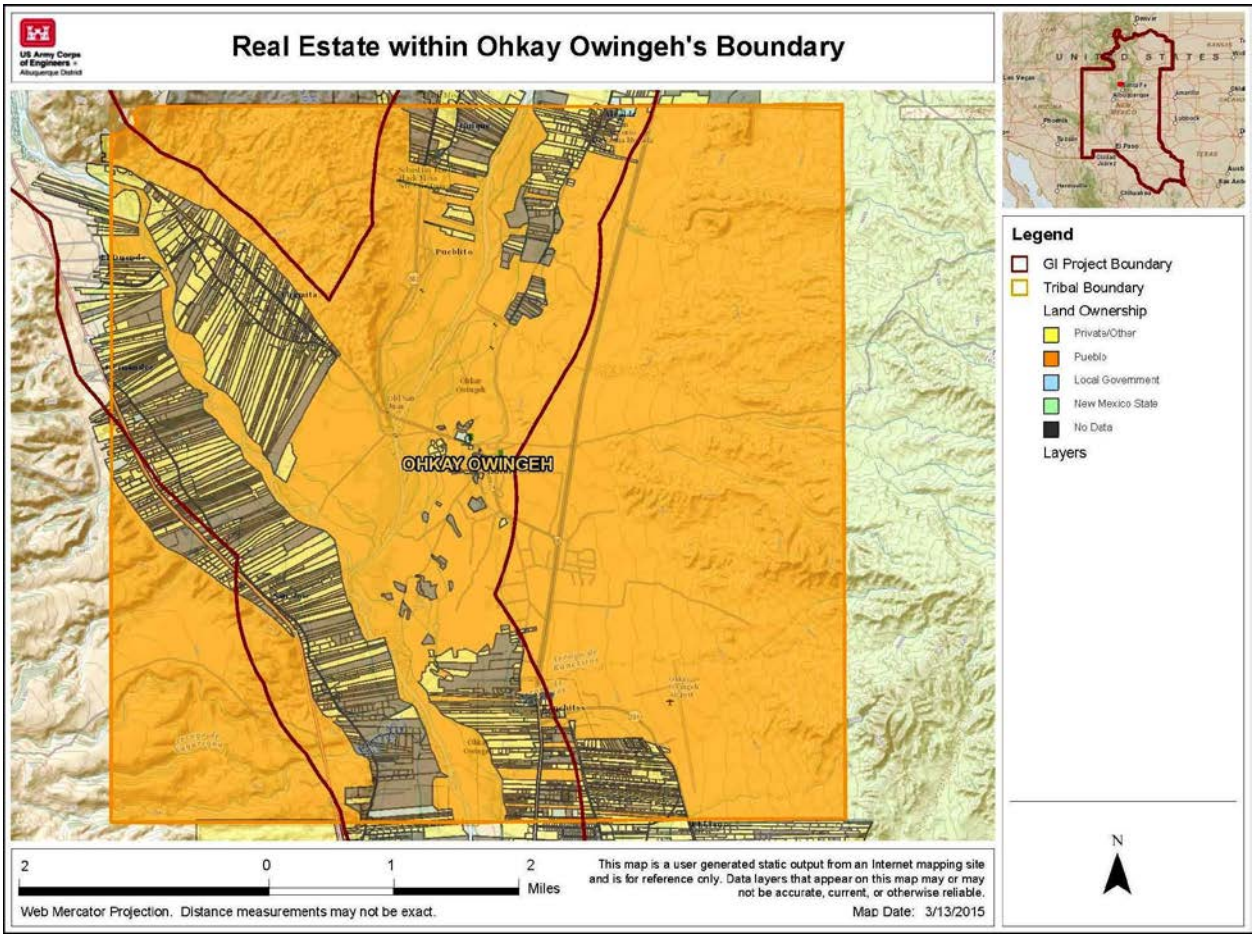


Figure 23 Land ownership within the Ohkay Owingeh Pueblo's Tribal boundaries.

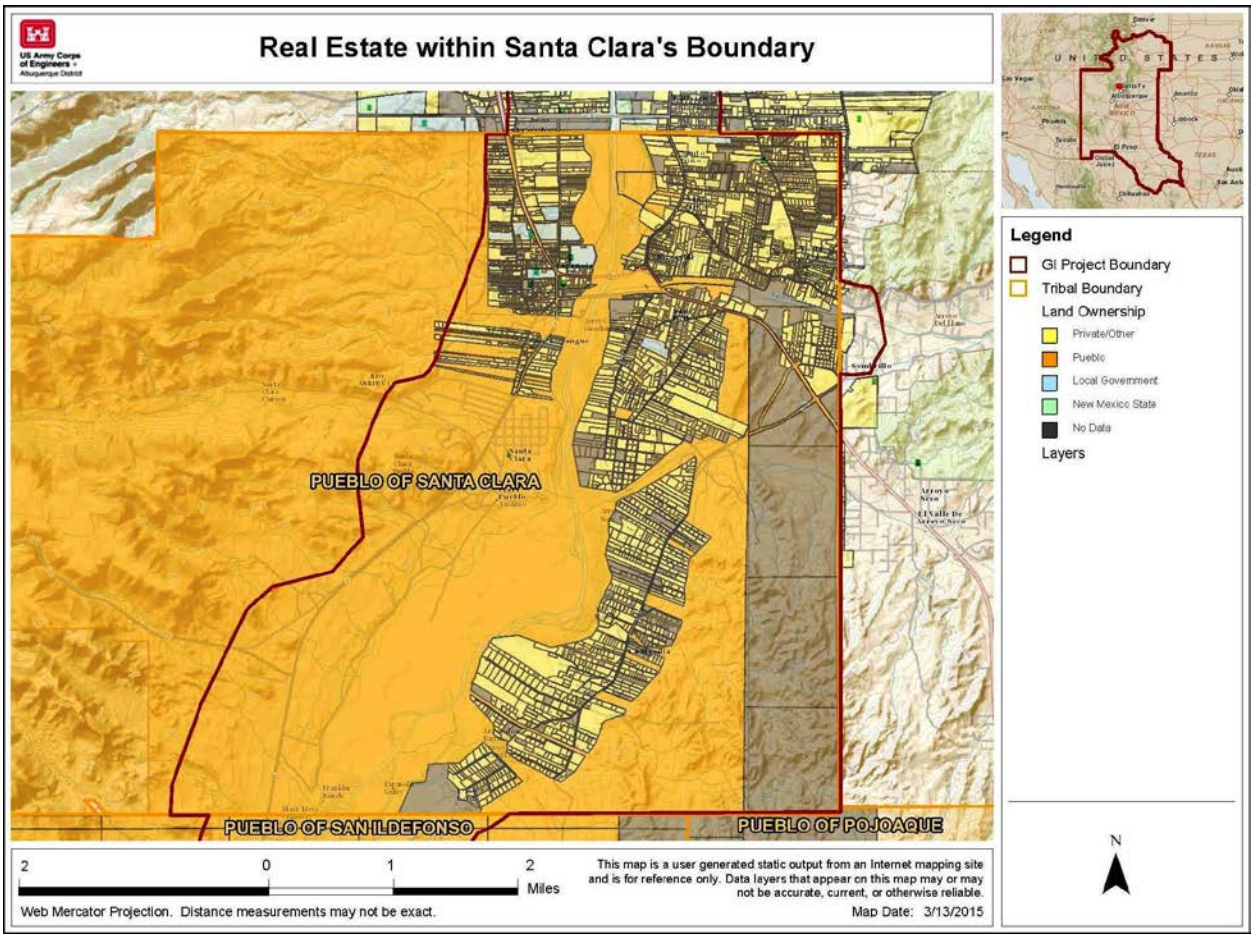


Figure 24 Land ownership within Santa Clara Pueblo's Tribal boundaries.

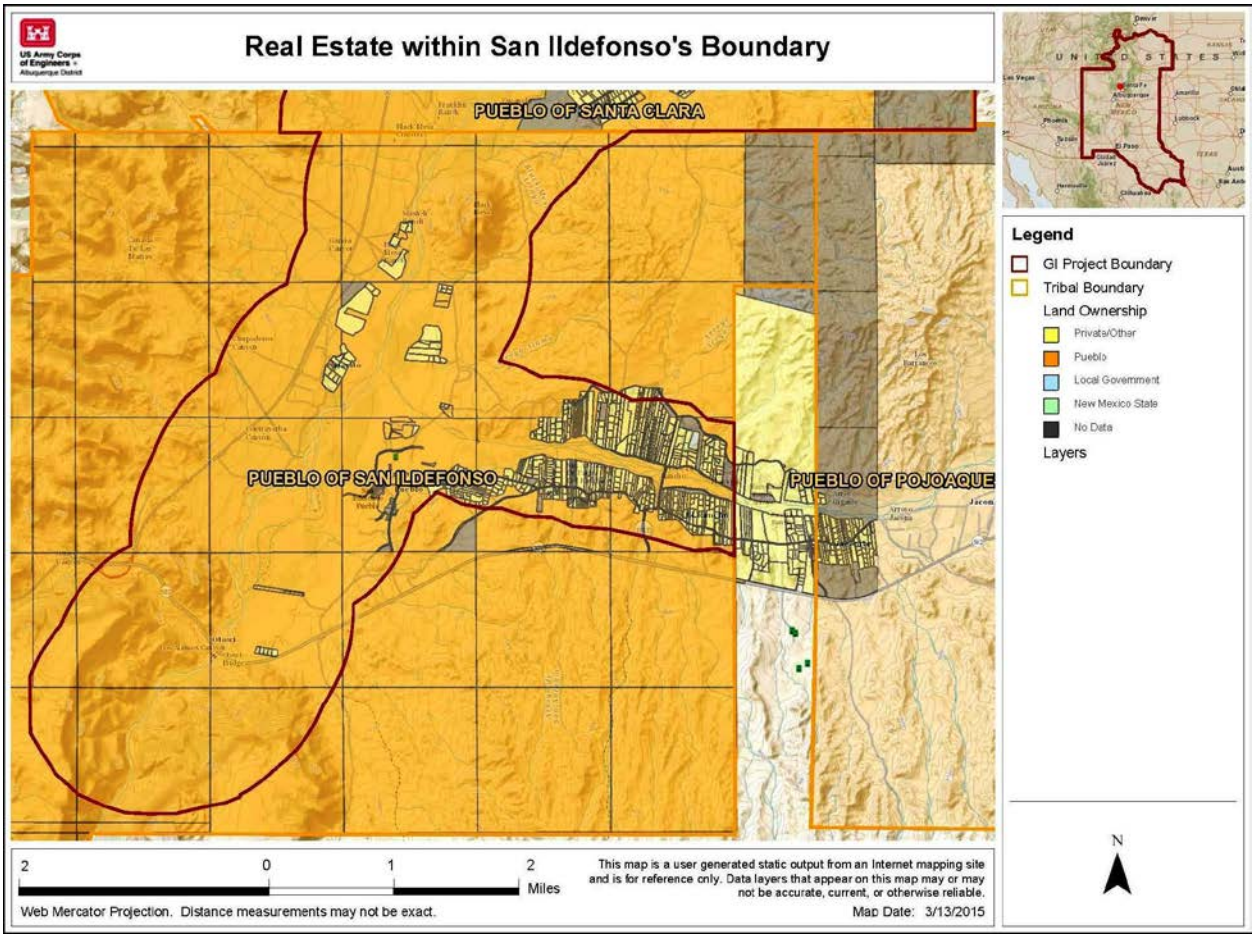


Figure 25 Land ownership within San Ildefonso Pueblo's Tribal boundaries.

6.6 Development of alternative plans

Alternatives were formulated in consideration of current Federal, state, and local planning and environmental guidance, laws, and policy concerning ecosystem restoration, FRM, recreation, water quality, and related purposes.

- Comply with the National Environmental Policy Act (NEPA) and other environmental laws and regulations;
- Restore a diversity of riparian and associated floodplain fringe habitats to a more natural state;
- Maintain or enhance existing conveyance of peak discharges without increasing flood risk upstream or downstream of the study area;
- Address specific flooding problems within the floodplain;
- Produce NER benefits while positively contributing to the NED Account, Regional Economic Development (RED) Account, and the Other Social Effects (OSE) Account;

- Provide decision-makers with information that can be utilized to help determine the balance between construction costs, real estate costs, and social issues and concerns;
- Provide a framework for responding to future urban development in the floodplain consistent with Executive Order 11988;
- Match existing and proposed improvements, where possible, to take advantage of local improvements and to be consistent with the future master planning efforts of the local community.

Preliminary alternatives required further analysis to determine whether they addressed the specified problems and opportunities, and planning objectives and constraints. Through modeling, best professional judgment, and calculations alternatives were compared against each other in order to arrive at the Tentatively Selected Plan (TSP). Following the completion of the integrated feasibility report / EA, public feedback, and project authorization by Congress, if such action occurs, additional detailed design analysis and preparation of the TSP's plans and specifications will take place.

6.6.1 Plan selection

(a) The alternative plan with the greatest net economic benefit consistent with protecting the Nation's environment (the NED plan) is to be selected unless the Secretary of a department or head of an independent agency grants an exception when there is some overriding reasons for selecting another plan, based on other Federal, State, local and international concerns. (P&G, Chapter I, Section X)

Together, the federal objective and plan selection criterion for civil works projects, including FRM, indicate that, at the individual project level, planners should formulate, evaluate, and select plans to recommend for federal involvement that provide the greatest net economic benefits to the nation as a whole, subject to an environmental protection constraint. This direction is based on the presumption that federal civil works investments should be considered only for project plans that maximize net economic benefits—measured in terms of a single index of monetary value—realized by the nation as a whole.

6.6.2 Alternative development and evaluation process

The feasibility study process involves successive iterations of alternative solutions to the defined problems. These solutions are based upon the study objectives and constraints and address problems and opportunities that have been previously defined. As part of Federal guidelines for water resources projects, there are general feasibility criteria that must be met. According to USACE Engineering Regulation (ER) 1105-2-100 for planning, a project in a feasibility report must be analyzed with regard to the following four criteria:

- **Completeness –** Does the plan include all necessary parts and actions to produce the desired results?

- **Effectiveness –** Does the alternative substantially meet the objectives? How does it measure up against constraints?
- **Efficiency –** Does the plan maximize net NER and/or NED benefits?
- **Acceptability –** Is the plan acceptable and compatible with laws and policies?

In the initial phase of the study, the team developed measures to satisfy the four feasibility criteria.

6.6.3 Preliminary management measures

The PDT and Sponsors conducted a preliminary screening of management measures to evaluate the applicability of each measure for each reach, and the potential for each measure to contribute to the planning objectives consistent with planning constraints.

All management measures are considered to have an approximate 50-year life of project singly, or in combination with other management measures.

6.6.3.1 Flood risk management

6.6.3.1.1 Non-structural

A. Emergency preparedness plans

Having an evacuation plan in place before a flood occurs can help avoid confusion, prevent property damage, and decrease the risks to human health and safety. A thorough evacuation plan should include:

- Conditions that will activate the plan;
- Chain of command;
- Emergency functions and who will perform them;
- Specific evacuation procedures, including routes and exits;
- Procedures for accounting for personnel, customers and visitors;
- Equipment for personnel; and,
- Review of the plan with personnel.

Individuals whose homes or businesses are located in areas that are susceptible to flooding, as well as those planning to visit such areas, should monitor local weather and news sources.

The New Mexico Department of Homeland Security and Emergency Management has a website (http://www.nmdhsem.org/Preparedness.aspx) that contains information about the Emergency Management Accreditation Program (EMAP). “EMAP is a voluntary review process for state and local emergency management programs. Accreditation is a means of demonstration, through self-assessment, documentation and peer review, that a program meets national standards for

emergency management programs." The site also contains information by which communities may apply for Federal grants to assist in the preparation of Emergency Preparedness Plans.

Each of the non-Federal sponsors have been encouraged to prepare flood response plans for their populations, to include Tribal government buildings, community centers, education facilities and housing areas. Flood response plans should include identifying critical equipment, records and supplies prior to the onset of a flood in order to aid the recovery of operations. Non-Federal sponsors should develop specific flood fighting and evacuation plans to enhance the likelihood of success. Implementing these emergency operations is usually the responsibility of management, the homeowner, agency heads, elected officials or other persons with the authority to implement such plans.

B. Flood forecast and warning

Important elements in the Nation's program to reduce flood damages include flood warnings and river forecasts. Timely warnings and forecasts save lives and aid disaster preparedness, which decreases property damage by an estimated $1 billion annually. Although the issuance of flood forecasts is now accepted as common and routine, their preparation is no minor feat. This technical achievement is made possible by the joint efforts of several Federal, State, and local agencies and many dedicated people across the Nation.

The two most fundamental items of hydrologic information about a river are stage, which is water depth above some arbitrary datum, commonly measured in feet, and flow or discharge, which is the total volume of water that flows past a point on the river for some period of time, usually measured in cubic feet per second or gallons per minute. These two key factors are measured at a location on the river called a stream-gaging station.

By using automated equipment in the gaging station, river stage can be continuously monitored and reported to an accuracy of 1/8 of an inch. In this way, USGS and NWS hydrologists know the river stage at remote sites and how fast the water is rising or falling. By using an up-to-date stage/discharge rating and a river-stage reading, an accurate estimate of the river discharge can be produced. An important characteristic of a stage/discharge rating is that the process also works in reverse; given a discharge estimate, the corresponding river stage can be determined. This functionality enables the NWS to transform an obscure river parameter, its discharge, into an easily visualized and well-understood measure of public risk, the flood stage.

River-flood forecasts are prepared by 13 National Weather Service (NWS) river-forecast centers and disseminated by NWS offices to the public. During periods of flooding, the NWS river-forecast centers issue forecasts for the height of the flood crest, the date and time when the river is expected to overflow its banks and the date and time when the flow in the river is expected to recede to within its banks. These forecasts are updated as new information is acquired.

Each of the non-Federal sponsors, as part of their Emergency Preparedness Planning, should institute a process by which a person is appointed to regularly check USGS gaging station data and NWS advisories / warnings for areas upstream and warn their communities of the possibility of flood events.

SPA has prepared an Emergency Action Plan (EAP) for the Abiquiu Dam and Reservoir upstream of the project area on the Rio Chama. This action plan includes a process by which

each of the non-Federal sponsors will be contacted in the event of an emergency. This EAP is updated yearly.

C. Wet floodproofing

Per FEMA's *Technical Bulletin 7-93*, wet floodproofing can be defined as "Permanent or contingent measures applied to a structure and / or its contents that prevent or provide resistance to damage from flooding by allowing flood water to enter the structure." Generally, this includes properly anchoring the structure, using flood resistant materials below the Base Flood Elevation (BFE), protection of mechanical and utility equipment, and use of openings or breakaway walls.

Flooding of a structure's interior is intended to counteract hydrostatic pressure on the walls, surfaces, and supports of the structure by equalizing interior and exterior water levels during a flood. Inundation also reduces the danger of buoyancy from hydrostatic uplift. These measures may require alternation of a structure's design and construction, use of flood-resistant materials, adjustment of building operation and maintenance procedures, and the relocation and treatment of equipment and contents.

An important consideration is that the structure be adequately anchored to its foundation. Uplift forces are often great enough to separate an improperly anchored structure from its foundation. Any existing mechanical and / or electrical systems would need to be relocated so as to prevent flood waters and any sediment from entering. Heating and ventilation systems would also need to be relocated if currently placed below the project flood elevation.

Wet floodproofing, in most cases, will require some human intervention when a flood is imminent and so it is extremely important that there be adequate time to execute such actions. This measure also requires some degree of periodic maintenance and inspection to ensure that all components will operate properly under flood conditions. These necessary inspections and maintenance activities must be described in an Inspection and Maintenance plan.

In order for structures to eligible for the application of wet floodproofing measures, the structure must have the following qualities:

- Be of good or excellent construction;
- Be constructed of the appropriate materials (not recommended for frame construction);
- Be located in an area where flow velocities will be less than 3 cfs / second;
- Be located in an area where flood flows contain no significant ice or debris;
- Be located in an area where flood flows rise slowly;
- Be located in an area where the flash flood occurrence is greater than one hour; and,
- The owner must be willing to implement.

NOTE: Application of wet floodproofing as a flood protection technique under the National Flood Insurance Program (NFIP) is limited to enclosures below elevated residential and non-residential structures such as: crawlspaces, basements, and underground garages.

D. Dry floodproofing

Per FEMA's *Selecting Appropriate Mitigation Measures for Floodprone Structures*, a dry floodproofed structure is made watertight below the level that needs flood protection to prevent floodwaters from entering. Making the structure watertight requires sealing the walls with waterproof coatings, impermeable membranes, or a supplemental layer of masonry or concrete.

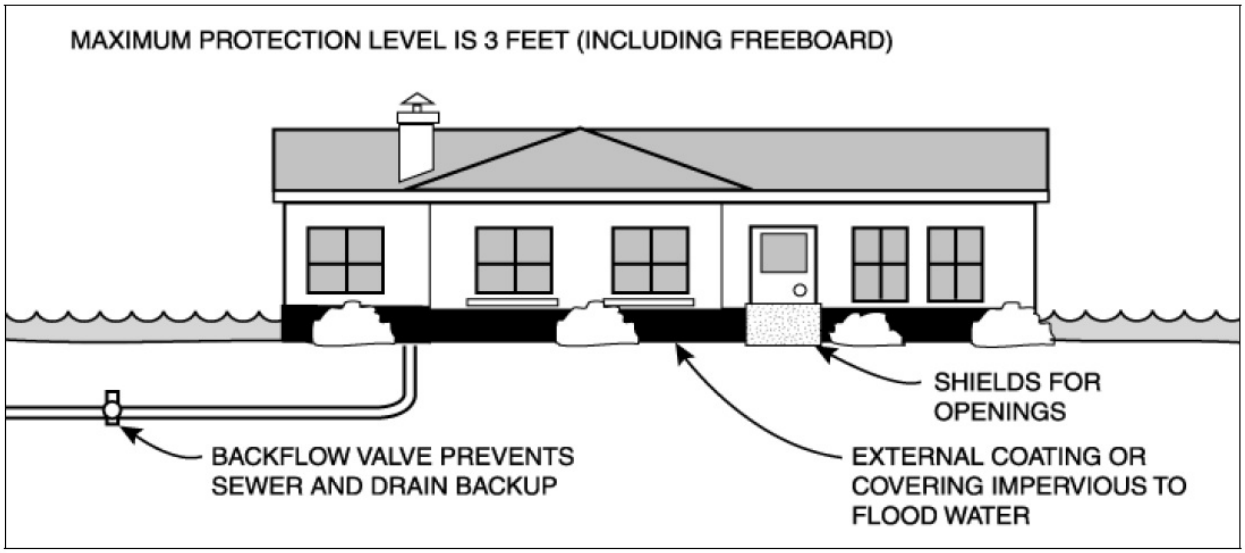


Figure 26 Typical dry floodproofed structure.

This type of floodproofing includes the follow:

- Using waterproof membranes or other sealants to prevent water from entering the structure through the walls;
- Installing watertight shields over windows and doors; and,
- Installing measures to prevent sewer backup.

Waterproof membranes, such as heavy plastic sheeting, can be installed relatively quickly; however, it does require human intervention. The membrane is unsightly and cannot remain in place indefinitely. Further, the plastic will deteriorate with continued exposure to the sun. Also, openings in the walls need to be closed, either with temporary closures or permanently sealed.

The five main approaches to protect a structure against sewer backup are flood drain plugs, floor drain standpipes, overhead sewers, backup valves, and grinder pumps.

There are technical considerations that must be taken into account in order to accurately determine whether dry floodproofing will be successful. Generally, masonry and masonry veneer walls can usually withstand the water pressures of floods less than 3 feet in depth. Masonry and Masonry veneers are also resistant to moisture damage and can be made watertight with sealants. In flood depths greater than 3 feet, these types of walls require reinforcement.

Dry floodproofing is not recommended when:

- Structure's construction quality is less than good or excellent;
- Structures are located in areas where flood waters may be greater than 3 feet in depth;

- Structures are located in areas where flood waters may stand for days;
- Structure walls are constructed of adobe;
- Structure's foundational soils are very permeable; or,
- The owner is unwilling to implement.

NOTE: Dry floodproofing may not be used to bring a substantially damaged or substantially improved residential structure in compliance with the community's floodplain management ordinance or law.

E. Raising Structures in Place

When a structure is properly elevated, the living or commercial area will be above all but the most severe floods (such as the 500-year flood). Several elevation techniques are available. In general, they involve (1) lifting the structure and building a new, or extending the existing, foundation below it or (2) leaving the structure in place and either building an elevated floor within the house or adding a new upper story.

During the elevation process, most frame, masonry veneer, and masonry structures are separated from their foundations, raised on hydraulic jacks, and held by temporary supports while a new or extended foundation is constructed below. The living area is raised and only the foundation remains exposed to flooding. This technique works well for structures originally built on basement, crawlspace, and open foundations. When structures are lifted with this technique, the new or extended foundation can consist of continuous walls or separate piers, posts, columns, or pilings. Masonry structures are more difficult to lift, primarily because of their design, construction, and weight, but lifting these homes is possible. In fact, numerous contractors throughout the United States regularly perform this work.

A variation of this technique is used for frame, masonry veneer, and masonry structures on slab-on-grade foundations. In these structures, the slab forms both the floor of the structure and either all or a major part of the foundation. Elevating these structures is easier if the structure is left attached to the slab and both are lifted together. After the structure and slab are lifted, a new foundation is constructed below the slab.

For masonry structures on slab-on-grade foundations, some homeowners find it easier to use one of two alternative elevation techniques, in which the structure is left on its original foundation. One technique is to remove the roof, extend the walls of the structure upward, replace the roof, and then build a new elevated living area inside. The second is to abandon the existing lower enclosed area (the level with the slab floor) and move the living space to an existing or newly constructed upper floor. The abandoned lower enclosed area is then used only for parking, storage, and access to the structure.

Raising structures in place is not recommended when:

- Structure's construction quality is less than low cost (i.e. mobile homes and portable buildings), good or excellent;

- Structures are located in areas where flood velocities may be greater than 3 feet /second (foundation walls) or 5 feet / second (posts or fill);
- Structures are located in areas where flood depths may be greater than 6 feet (piers);
- Structure walls are constructed of adobe;
- Structure's foundational soils are very permeable; or,
- The owner is unwilling to implement.

F. Acquisition and / or Relocation of Structures

One method of reducing future damage from floods is for the community to acquire a property and relocate an existing floodprone structure to a new site outside the floodplain. If space and ground elevations allow, a structure may be moved to another location on the same piece of property.

In general, single-story, wood frame structures over a crawlspace or basement foundation are easiest to relocate. Multi-story and solid masonry structures are the most difficult to relocate because their greater size and weight requires additional lifting equipment and makes them more difficult to stabilize during the move. Slab-on-grade foundations complicate the relocation process because they make the installation of lifting equipment more difficult. Due to cracking or peeling, brick and stone veneer may need to be removed prior to moving and replaced after the structure is attached to the new foundation. In some cases, it may be more economical to cut the structure into sections.

Per FEMA's *Scope of Work for Relocation of Floodprone Structures 2005*, the relocation process is complex, expensive, and requires extensive pre-move planning. However, it may be a cheaper alternative than acquiring and demolishing a floodprone structure. The process involves lifting the house off its foundation, placing it on a heavy-duty flatbed trailer, hauling it to the new site, and lowering it onto a new, conventional foundation.

Construction Type	Existing Foundation	Measure	Retrofit	Relative Cost
Frame, Masonry Veneer, or Masonry	Crawlspace or Basement	Wet Floodproofing	Wet floodproof crawlspace to a height of 4 feet above lowest adjacent grade or wet floodproof unfinished basement to a height of 8 feet above basement floor	Lowest
Masonry Veneer or Masonry	Slab-on-Grade or Crawlspace	Dry Floodproofing	Dry floodproof to a maximum height of 3 feet above lowest adjacent grade	
Frame, Masonry Veneer, or Masonry	Basement, Crawlspace, or Open Foundation	Barrier Systems	Levee constructed to 6 feet above grade or floodwall constructed to 4 feet above grade	
Frame, Masonry Veneer, or Masonry	Basement, Crawlspace, or Open Foundation	Elevation	Elevate on continuous foundation walls or open foundation	
Frame, Masonry Veneer, or Masonry	Basement, Crawlspace, or Open Foundation	Relocation	Elevate on continuous foundation walls or open foundation	
Frame, Masonry Veneer, or Masonry	Slab-on-Grade	Elevation	Elevate on continuous foundation walls or open foundation	
Frame, Masonry Veneer, or Masonry	Slab-on-Grade	Relocation	Elevate on continuous foundation walls or open foundation	Highest
Frame, Masonry Veneer, or Masonry	Slab-on-Grade, Crawlspace, Base-ment, or Open Foundation	Demolition	Demolish existing building and buy or build a home elsewhere	Varies

Figure 27 Relative Costs of Various Retrofit Measures.

6.6.3.1.2 Structural

In 1993, USACE prepared a report titled *Assessment of Structural Flood-Control Measures on Alluvial Fans*. This document defines structural FRM measures as debris barriers or basins, detention basins, channels, diversions or bypasses, floodwalls, dikes and levees. For the purposes of this study, levees and dikes are considered to be the same kind of structure. This study looked at floodwalls, levees and a special type of levee called a ring levee.

A. Floodwalls

Floodwalls are vertical walls, usually made with reinforced concrete, oriented parallel to a water way to prevent overflows from entering into developed areas. A floodwall is generally used when additional right-of way is not available for a levee, a levee is too expensive or if the foundation conditions will not permit an increase in the levee section. Economic justification of floodwall-levee enlargement cannot usually be attained except in urban areas.

The style of floodwall looked at in this study is an inverted T-floodwall. A T-floodwall is a reinforced concrete wall whose members act as wide cantilever beams in resisting hydrostatic pressures acting against the wall. A typical wall of this type is shown below. The inverted T floodwall is used to make floodwall levee enlargements when walls higher than 2.13 m (7 ft) are required. For the inverted T floodwall, the wall should have overall dimensions to satisfy the stability criteria and seepage control as presented in EM 1110-2-2502.

For this study, floodwalls would not be suitable for large scale applications. Instead, the PDT looked at the use of floodwalls around critical infrastructure such as schools and other government buildings, doctor’s offices, hospitals, law enforcement centers, fire stations, and a single historical structure (Chimayo Trading Post).

In such a system where additional right-of-way is not available and therefore floodwalls are necessary, a closure structure must be made between sections of floodwalls to allow entrance and egress to and from the protected structure(s). The closures are usually embedded into the floodwall. An example of such a closure is tainter gates. For this reason, human intervention is required for the proper functioning of this measure.

In such a system where only limited right-of-way is available, ramps built between sections of floodwalls to allow entrance and egress to and from the protected structures may be viable. In essence, a road may be built that goes over an earthen section between floodwall sections. This alternative removes the necessity of human intervention in flooding situations.

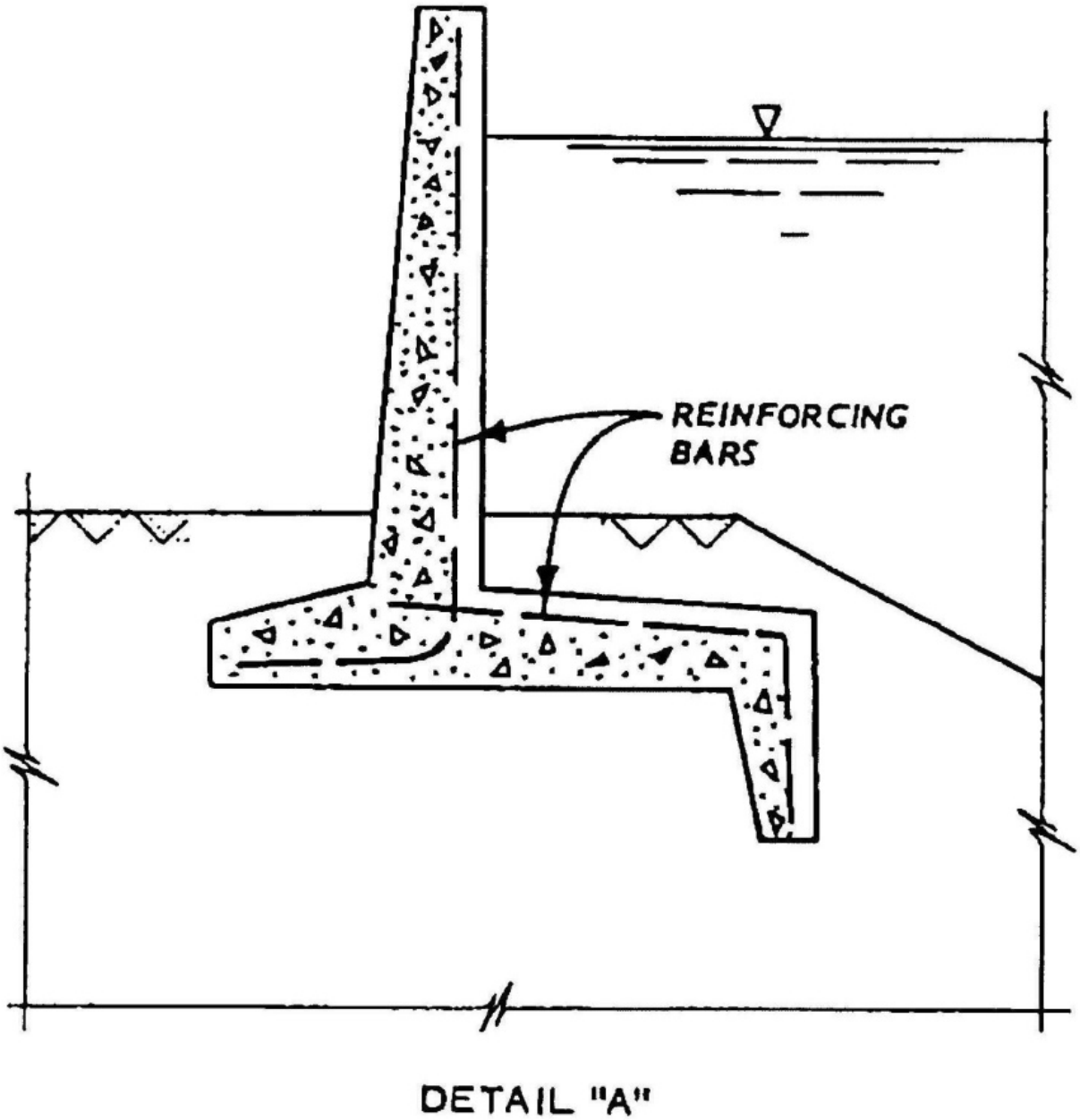


Figure 28 Inverted T-type floodwall

B. Single levees

The levees looked at in this study were earthen fill.

Per EM 1110-2-1913 Design and Construction of Levees dated April 2000, the term levee as used herein is defined as an embankment whose primary purpose is to furnish flood protection from high water and which is therefore subject to water loading for periods of only a few days or weeks a year. Embankments that are subject to water loading for prolonged periods (longer than normal flood protection requirements), or are on a permanent bases, should be designed in accordance with earth dam criteria rather than the levee criteria.

Even though levees are similar to small earth dams they differ from earth dams in the following important respects: (a) a levee embankment may become saturated for only a short period of time beyond the limit of capillary saturation, (b) levee alignment is dictated primarily by flood protection requirements, which often results in construction on poor foundations, and (c) borrow is generally obtained from shallow pits or from channels excavated adjacent to the levee, which produce fill material that is often heterogeneous and far from ideal. Selection of the levee section is often based on the properties of the poorest material that must be used. For this study, it was assumed that new materials for the construction of levees would be purchased off-site and transported on-site.

6.6.3.1.2.1 Major and minimum levee design requirements

- Conduct geological study based on a thorough review of available data including analysis of aerial photographs. Initiate preliminary subsurface explorations.
- Analyze preliminary exploration data and from this analysis establish preliminary soil profiles, borrow locations, and embankment sections.
- Initiate final exploration to provide:
- Additional information on soil profiles.
- Undisturbed strengths of foundation materials.
- More detailed information on borrow areas and other required excavations.
- Using the information obtained in Step 3:
- Determine both embankment and foundation soil parameters and refine preliminary sections where needed, noting all possible problem areas.
- Compute rough quantities of suitable material and refine borrow area locations.
- Divide the entire levee into reaches of similar foundation conditions, embankment height, and fill material and assign a typical trial section to each reach.
- Analyze each trial section as needed for:
- Under-seepage and through seepage.
- Slope stability.
- Settlement.
- Trafficability of the levee surface.
- Design special treatment to preclude any problems as determined from Step 6. Determine surfacing requirements for the levee based on its expected future use.
- Based on the results of Step 7, establish final sections for each reach.
- Compute final quantities needed; determine final borrow area locations.

- Design embankment slope protection.

The method of construction must also be considered. In the past levees have been built by methods of compaction varying from none to carefully controlled compaction. The local economic situation also affects the selection of a levee section. Traditionally, in areas of high property values, high land use, and good foundation conditions, levees have been built with relatively steep slopes using controlled compaction, while in areas of lower property values, poor foundations, or high rainfall during the construction season, non-compacted or semi-compacted levees with flatter slopes are more typical. The study area's foundation is alluvial. Levees built in this area would require flatter slopes.

Prior to levee construction, subsurface exploration is required for the final design. The main purpose for subsurface exploration is to better define the geology of the area, the soil types present and to develop general ideas of soil strengths and permeabilities. This is usually done with borings. The spacing of borings and test pits is based on examination of maps, photos and geological conditions determined early in the study or known from prior experience in the area, and by the nature of the project. Initial spacing of borings usually varies from 60 to 300 m (nominally 200 to 1,000 ft) along the alignment, being closer spaced in expected problem areas and wider spaced in non-problem areas.

Depth of borings along the alignment should be at least equal to the height of proposed levee at its highest point but not less than 3 m (nominally 10 ft). Boring depths should always be deep enough to provide data for stability analyses of the levee and foundation. This is especially important when the levee is located near the riverbank where borings must provide data for stability analyses involving both levee foundation and riverbank.

In the past borrow areas were selected largely on the basis of material types and quantities and haul distances. Today, borrow areas receive much more attention and must be carefully planned and designed, because of considerations such as environmental aspects, increasing land values, and greater recognition of the effects of borrow areas with respect to under-seepage, uplift pressures, overall levee stability, and erosion. For this study, it was assumed that new materials would come from borrow areas on lands belonging to the non-Federal sponsors in an effort to keep down construction costs. If this was not possible materials would be purchased from commercial sources.

For this study, the typical levee section consists of an earth embankment with a 10 foot wide crest and 1 vertical to 3 horizontal side slopes for levees greater than 3 feet in height and 2:3 for levees less than 3 feet in height. Aggregate base course (4 inches thick) is placed on the dam crest. Erosion protection (18 inch thick rock with 4 inch thick bedding material and filter fabric) is placed on the river-side embankment at levee location that may be susceptible to erosion (from adjacent rivers/arroyos). Erosion protection typically extends from the levee toe to two-thirds total levee height; and is keyed into existing grade. Varying top of levee elevations were considered at each study location.

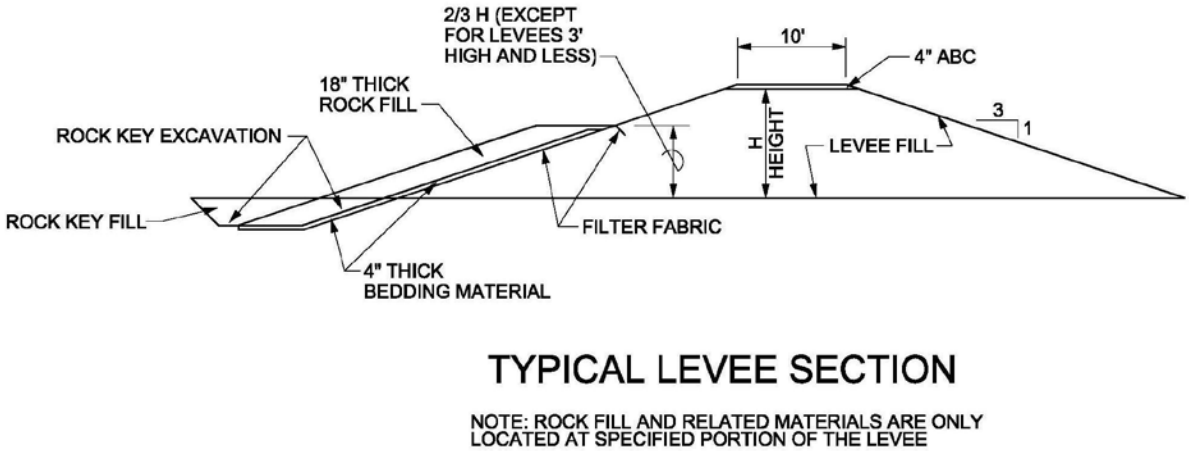


Figure 29 Typical levee cross section.

C. Ring levees

This type of levee completely or partially encircles, or "rings" an area subject to inundation from flood flows from one or more directions. For this study, partial ring levees would have been built around a single structure or group of structures and then tied into high ground. The typical levee section shown above would also apply to the ring levees.

6.6.3.2 Ecosystem Restoration

Table 9 Types of ecosystem measures considered by the habitat team.

Ecosystem Measure	Function
Boulder Weirs	Manage channel incision by controlling the bed elevation to improve or maintain current flood plain connectivity
Grade Restoration Facilities (GRFs)	Manage channel incision by controlling the bed elevation to improve or maintain current flood plain connectivity
Deformable Riffles	Manage channel incision by controlling the bed elevation to improve or maintain current flood plain connectivity
Rock Sills	Manage channel incision by controlling the bed elevation to improve or maintain current flood plain connectivity
Riprap Grade Control	Manage channel incision by controlling the bed elevation to improve or maintain current flood plain connectivity
Low Head Stone Weirs	Manage channel incision by controlling the bed elevation to improve or maintain current flood plain connectivity
Terrace Lowering	Increase floodplain connectivity by excavation of islands, bars, or terraces to create lower floodplain surfaces
High-Flow Channels	Increase floodplain connectivity by excavation of channels across terraces or abandoned river channels.
Willow Swale / Wetlands / Ponds	Increase native riparian vegetation by excavation to ground water and replanting with native species
Bank Line Embayment	Increase floodplain connectivity by excavation of features adjacent to the river channel
Bendway Weirs	Increase slack water habitat and protect bank line features
Boulder Groupings	Increase complex aquatic habitat with variable depth and velocity
Bioengineering, Large Woody Debris and Root wads	Increase complex aquatic habitat with variable depth and velocity
Change Sediment Supply	Manage channel incision by adding sediment into the river

Invasive Species Control	Increase native riparian vegetation and reduce invasive plant species using multiple control techniques
Riparian Vegetation Re-Establishment	Increase native riparian vegetation by replanting with native plant species following excavation or invasive plant species control
Vegetation Management For Dynamic Bank Formation	Increase native riparian vegetation and floodplain connectivity for sediment retention

For addition information on ecosystem restoration measures, please see Appendix C – Environmental Resources.

6.6.4 Preliminary management measures eliminated from further study

6.6.4.1 Flood risk management

6.6.4.1.1 Non-structural

A. Emergency Preparedness - The non-Federal sponsor should collaborate with city of Española, NM, non-Tribal persons with property within Tribal boundaries, their county emergency managers and the New Mexico Department of Homeland Security and Emergency Management to create a seamless Flood Response Plan.

B. Flood Forecast and Warning - The high residual damages suggest that a flood warning system is ineffective and incomplete on its own. Further, relative to the structural alternative presented it's impossible for a flood warning system to provide greater net benefits.

C. However, the Albuquerque District Operations Division and the Dam Safety Coordinator have a yearly Emergency Action Plan with emergency contact information (24-hour phone numbers and / or email addresses) for each of the Tribal sponsors in case of high flows or emergency releases through the dam.

D. Wet Floodproofing - Of the structures identified by the non-Federal sponsors as being critical to the community and economically assessed, only 5 were considered to have good construction quality. Of those five, none had either a crawl space or basement.

E. Dry Floodproofing – Of the structures identified by the non-Federal sponsors as being critical to the community and economically assessed, only 5 were considered to have good construction quality. Of those five, three structures are part of the San Juan Elementary School complex and meet all of the requirements for dry floodproofing except the requirement of impermeable soils. The other two structures lie within Santa Clara Pueblo boundaries and are the Española City Plaza and a day care center. After discussions, the day care was removed from further consideration as not being critical to the community. The City Plaza is the property of the City of Española and the final report generated from this study will be supplied to the City's government.

F. Elevation of structures - Of the structures identified by the non-Federal sponsors as being critical to the community and economically assessed, only 5 were of frame construction and were considered to have good construction quality. Of those five, three structures are part of the San Juan Elementary School complex (1. cafeteria / gym / library, 2. Administration / classrooms, and 3. Classrooms. The configuration of these buildings

would require extensive structural modifications to maintain the building's structural integrity during elevation. The other two structures lie within Santa Clara Pueblo boundaries and are the Española City Plaza and a day care center. After discussions, the day care was removed from further consideration as not being critical to the community. The City Plaza is the property of the City of Española and the final report generated from this study will be supplied to the City's government.

G. Acquisition - This technique requires the purchase of the flood prone property and structure; demolition of the structure; relocation assistance; and applicable compensation required under Federal and State law. This alternative typically requires voluntary relocation by the property owners and/or eminent domain rights exercised by the non-Federal sponsor. As stated previously with relocations, acquiring properties in a floodplain has limited utility. Repurposing land for a public good like a park is also infeasible, as it would represent an incomplete solution to the flood problem.

H. Relocation of Existing Structures - Per FEMA's Scope of Work for Relocation of Floodprone Structures 2005, the relocation process is complex, expensive, and requires extensive pre-move planning. However, it may be a cheaper alternative than acquiring and demolishing a floodprone structure. The process involves lifting the house off its foundation, placing it on a heavy-duty flatbed trailer, hauling it to the new site, and lowering it onto a new, conventional foundation.

6.6.4.1.2 Structural

All structural FRM measures were carried forward for additional analysis.

6.6.4.2 Ecosystem restoration

Table 10 Preliminary management measures eliminated from further study.

Ecosystem Measure	Function
Boulder Weirs	Manage channel incision by controlling the bed elevation to improve or maintain current flood plain connectivity
Deformable Riffles	Manage channel incision by controlling the bed elevation to improve or maintain current flood plain connectivity
Rock Sills	Manage channel incision by controlling the bed elevation to improve or maintain current flood plain connectivity
Riprap Grade Control	Manage channel incision by controlling the bed elevation to improve or maintain current flood plain connectivity
Low Head Stone Weirs	Manage channel incision by controlling the bed elevation to improve or maintain current flood plain connectivity
Bank Line Embayment	Increase floodplain connectivity by excavation of features adjacent to river channel
Bendway Weirs	Increase slack water habitat and protect bank line features
Boulder Groupings	Increase complex aquatic habitat with variable depth and velocity
Bioengineering, Large Woody Debris and Root wads	Increase complex aquatic habitat with variable depth and velocity
Change Sediment Supply	Manage channel incision by adding sediment into the river
Vegetation Management For Dynamic Bank Formation	Increase native riparian vegetation and floodplain connectivity for sediment retention

For addition information on ecosystem restoration measures eliminated from further study, please see Appendix C – Environmental Resources.

6.6.5 *Description of Preliminary Alternatives

6.6.5.1 Flood risk management

6.6.5.1.1 Ohkay Owingeh - Floodwall or ring levees around the San Juan Elementary School

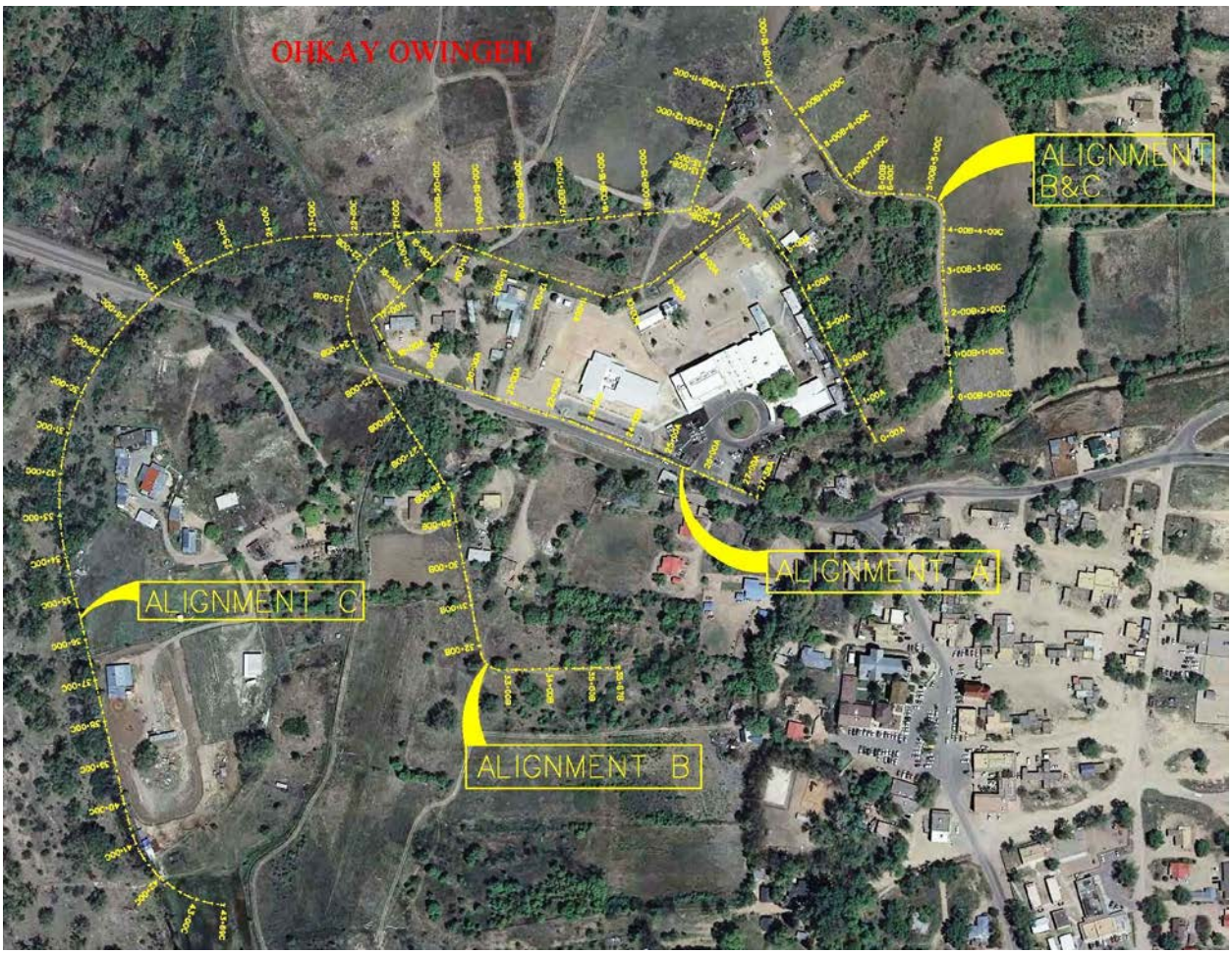
For this study, it was assumed that new materials for the construction of levees would be purchased off-site and transported to the-site. Floodwall and levee heights were evaluated at the Base Flood Elevation – 1’, Base, and Base + 1’. All floodwall and ring levee alignments tie into high ground at either end (Figure 31).

Alignment A (floodwall or ring levee) begins to the west of the San Juan Elementary School compound and runs generally counter clock-wise for approximately 2,738 feet. The south – southwest side of the school complex would require a flood wall, rather than a ring levee, due to the width limitations between NM Highway 74 and the parking lots. Because the PDT believed that both a floodwall or ring levee would not be economically justified based only upon the

school's structures, the alignment also included approximately three private homes and three outbuildings just to the west of the school.

Alignment B (ring levee) begins to the west of the San Juan Elementary School compound and runs generally counter clock-wise for approximately 3,567 feet. Because the PDT believed that neither a floodwall nor ring levee would be economically justified based only upon the school's structures, this alignment also included three private homes and three outbuildings just to the west of the school and two more homes to the south west.

Alignment C (ring levee) begins to the west of the San Juan Elementary School compound and runs generally counter clock-wise for approximately 4,369 feet. Because the PDT believed that neither a floodwall nor ring levee would be economically justified based only upon the school's structures, this alignment also included three private homes and three outbuildings just to the west of the school and two more homes to the south west. This alignment would also protect



approximately an additional six homes and 12 out buildings.

Figure 30 Floodwall and ring levee alignments around the San Juan Elementary School.

6.6.5.1.2 Santa Clara levees

For this study, it was assumed that all new materials for the construction of levees would be purchased off-site and transported to the-site. Levee heights evaluated were Base Flood Elevation and Base + 1'. All alignments tie into high ground at either end.

Levee Alignment A begins at its tie-in to the south edge of Fairview Lane (NM Highway 584) west of the bridge over the Rio Grande. The levee extends south along the west bank of the Rio Grande approximately 7,280 feet to its tie-in just to the west of the El Paseo de Oñate (US Highway 285) bridge.

Levee Alignment B begins at its tie-in to high ground northeast of the Santa Claran Hotel and Casino parking lot. The approximately 4,311 feet levee extends west towards the Rio Grande and then south on the east bank of the Rio Grande along, or on top of, an existing dirt access road on top of a slight ridge line above the Rio Grande floodway. The levee would be built intermittently to fill in between areas where the topography is already at the Base and Base + 1' elevations.

Levee Alignment C begins at its tie-in to high ground northwest of the junction of US Highway 285 and Stanley A. Griego Bridge Road and runs west along the north bank of the Santa Cruz River. This approximately 1,794, foot levee makes a northern dog-leg and ties into the high ground of the El Paseo de Oñate (US Highway 285).

Levee Alignment D begins at its tie-in to high ground on the southern edge of Corlett Road approximately 1,620 feet southwest of its junction with NM Highway 76. This levee measures approximately 3,403 feet west along the north bank of the Santa Cruz River towards its junction with the Rio Grande where it ties-in to high ground at South Riverside Drive (US Highway 285).

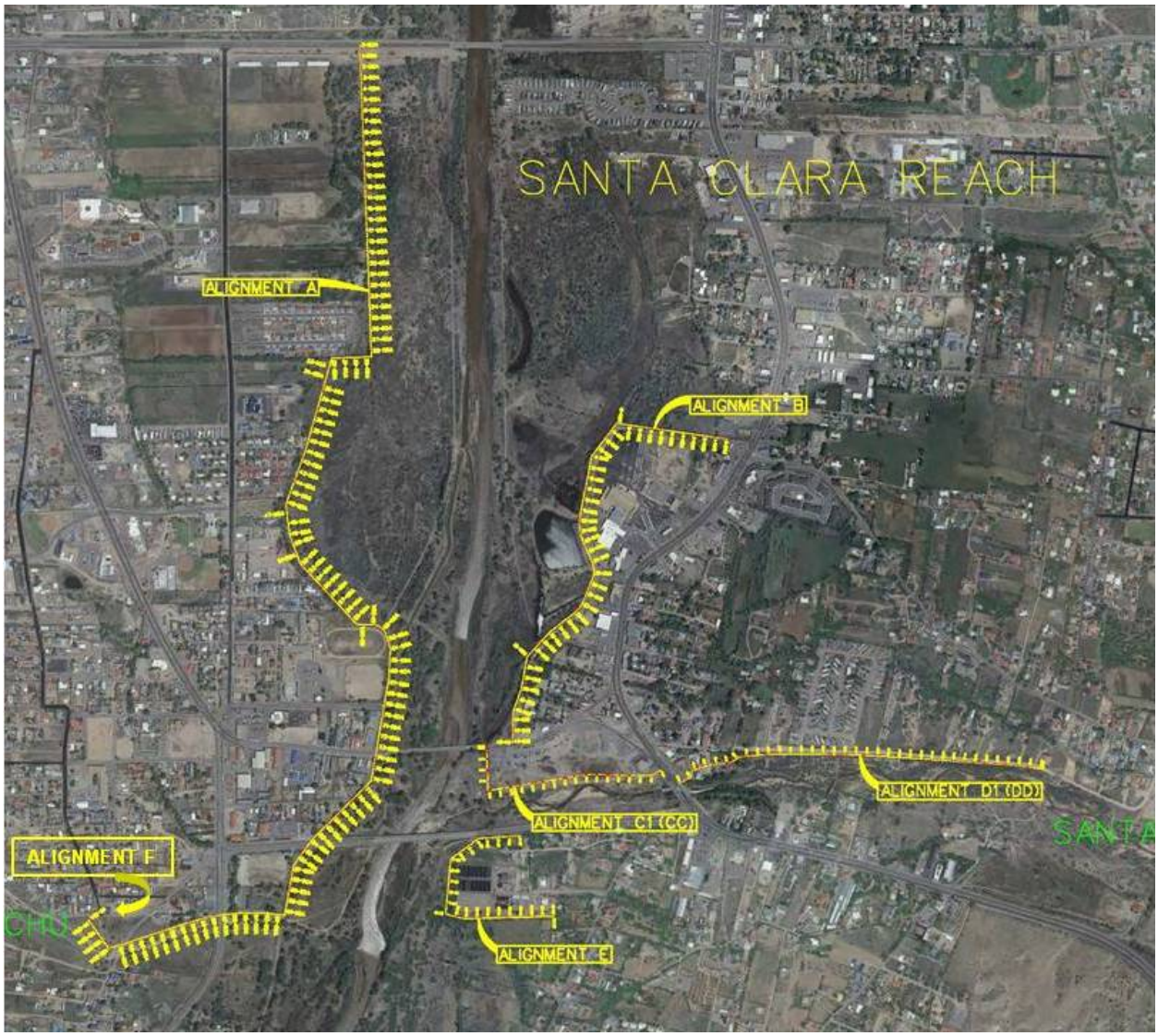


Figure 31 Santa Clara levee alignments along the Rio Grande, Santa Cruz River and Arroyo Guachupangue.

Levee Alignment E begins at its tie-in to high ground on the south side of Stanley A Griego Bridge Road north of the Santa Clara Pueblo waste water treatment plant. The levee extends west along Stanley A. Griego Bridge road towards the Rio Grande, south and then back around to the east to high ground partially encircling the waste water treatment plant. The levee measures approximately 2,200 feet in length.

Levee Alignment F begins at its tie-in to high ground on the south side of Stanley A Griego Bridge Road just east of that roads junction with the Los Alamos Highway The levee runs south on the west bank of the Rio Grande to Levee Service Road (There's no levee.) and the west on the north bank of the Guachupangue Arroyo where it ties-in to high ground. The levee measures approximately 1,754 feet in length.

6.6.5.1.3 San Ildefonso levees along the Rio Pojoaque

For this study, it was assumed that all new materials for the construction of levees would be purchased off-site and transported to the-site. Levee heights evaluated were Base Flood Elevation and Base + 1'. All alignments tie into high ground at either end (Figures 32, 33 and 34).

Levee Alignment A ties-in to high ground on the south bank of the Rio Pojoaque at Decimal Degree (DD) 35.8956 by -106.1043 and runs west towards the Rio Grande along the north bank of an irrigation ditch until it meets the bridge approach at Tunyo Po Road and follows the road north until it meets the bridge over the Rio Pojoaque. The levee follows the side of Tunyo Po Road north because it was believed that the road embankment was not engineered well enough to act as a levee and therefore also needed flood protection. The levee measures approximately 3,143 feet in length.

Levee Alignment B begins at its tie-in to high ground at the junction of Evergreen Lane and Rancho del Alamo Road and runs west along the south bank of the Rio Pojoaque towards the Rio Grande. This levee measures approximately 6,470 feet and is located along the north side of Rancho del Alamo Road and then Gonzales Lane until it ties-in to high ground at approximately 35.8948 by -106.1029 (DD).

Levee Alignment C is along the south bank of the Rio Pojoaque and begins at its tie-in to high ground at approximately 35.8906 by -106.0759 (DD) on an unnamed dirt road. The levee runs from that point, north to Tribal Road CR-84A, west towards the Rio Grande along north side of Tribal Road CR-84A to Evergreen Lane and then approximately 400 feet south along the east of Evergreen Lane to high ground. The levee measures approximately 3,800 feet in length.

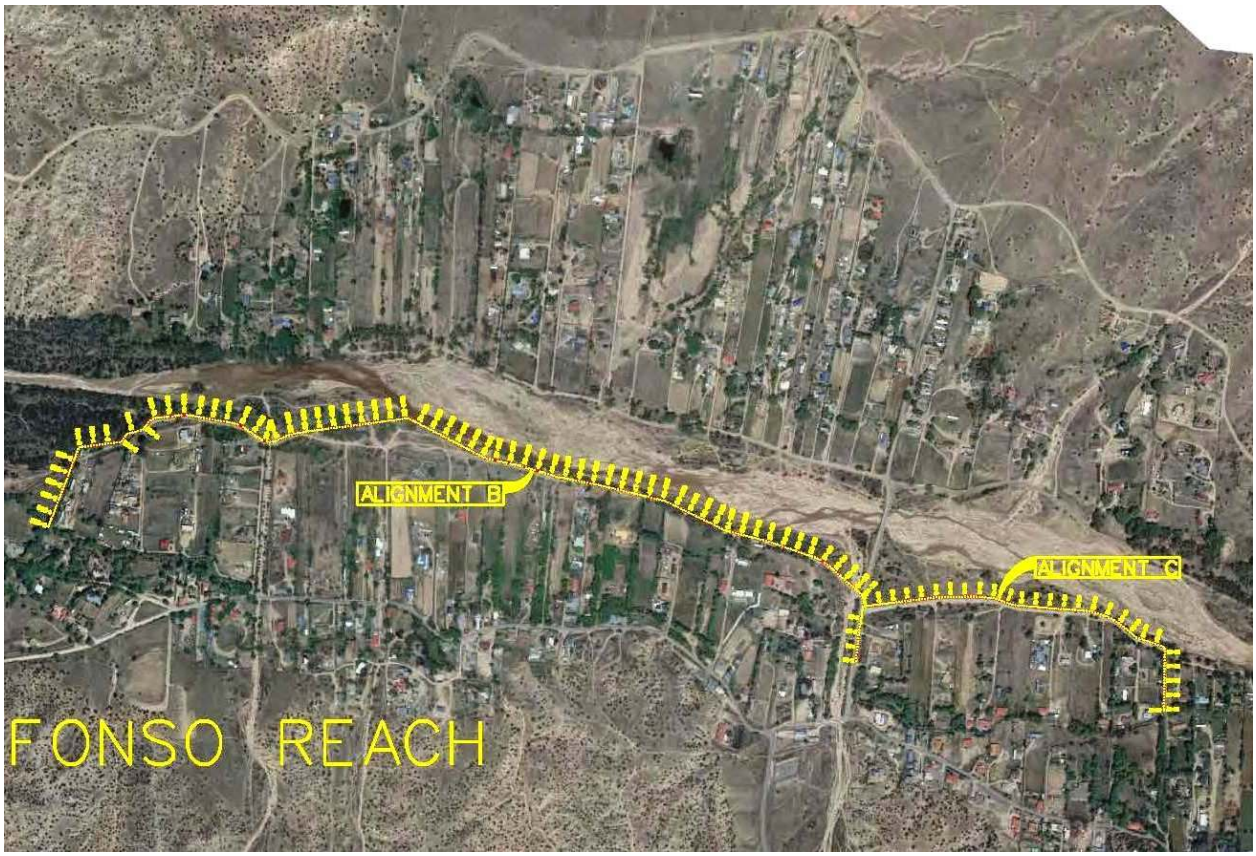


Figure 32 San Ildefonso levee alignments B and C along the Rio Pojoaque.

Levee Alignment D begins at its tie-in to high ground on the north side of San Ildefono's Tribal Offices on North Kiva Road and runs west towards the Rio Grande. The levee extends to the southwest corner of the old wastewater treatment plant and then back around to the southeast to high ground partially encircling the plant. The levee measures approximately 3,392 feet in length.

Levee Alignment E begins at the Tunyo Po Bridge over the Rio Pojoaque and runs west towards the Rio Grande, crossing San I Senior road, following the north verge of Poh-see-Buu Road and tying in to high ground. The levee measures approximately 1,838 feet in length.

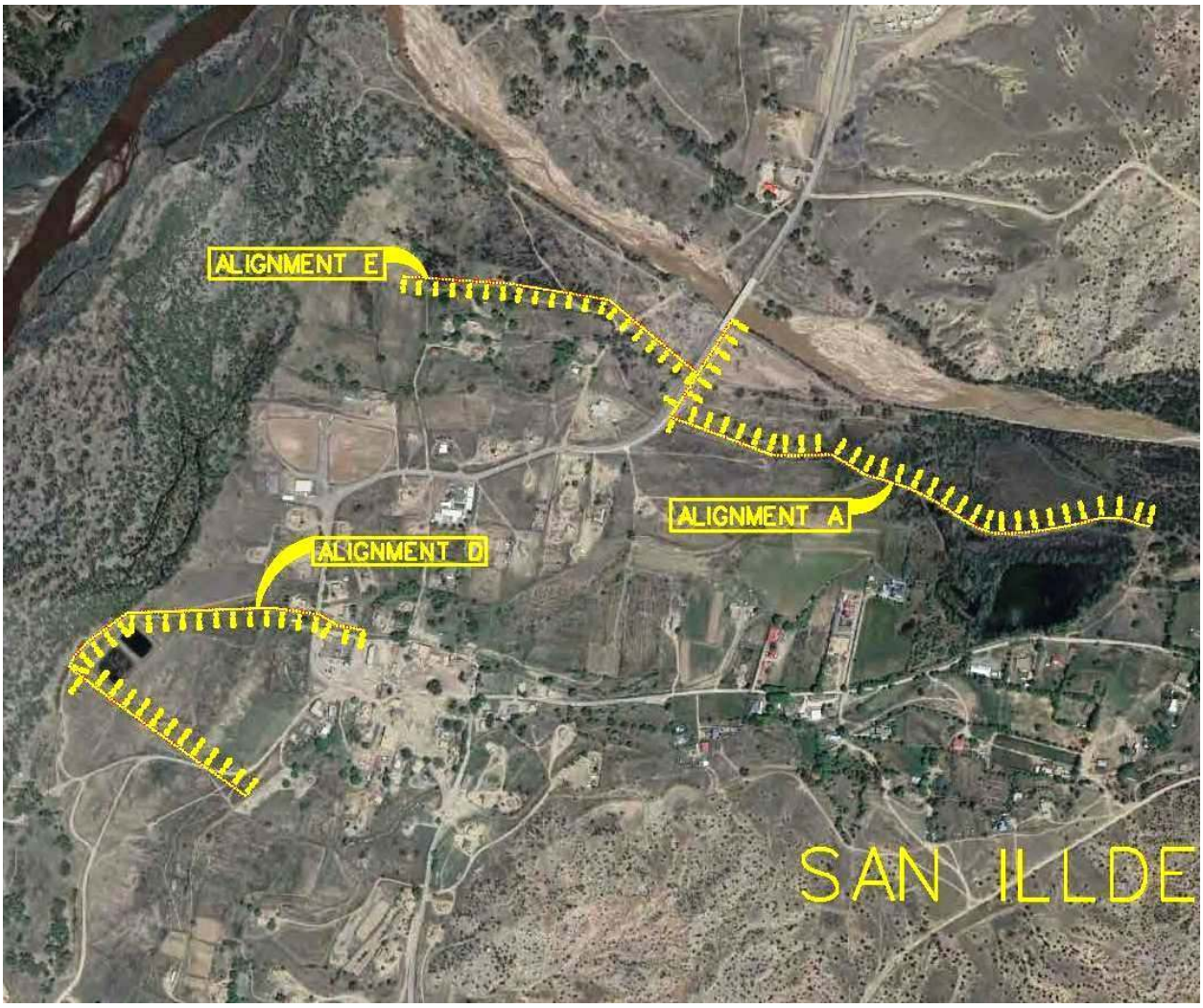


Figure 33 San Ildefonso levee alignments A, E and D along the Rio Pojoaque.

6.6.5.2 Ecosystem restoration

6.6.5.2.1 The No Action Alternative

Under the no action alternative, no ecosystem restoration alternative would be implemented. For comparison with other alternatives, the footprint for the complete suite of measures is evaluated for the future without project (Table 11). The trend illustrated by the no action alternative is declining habitat unit values for the location of proposed habitat measures.

Table 11 Habitat unit values without project for the footprint of all the proposed measures.

	Ohkay Owingeh	**Santa Clara**	**Total**
Measures (acres)	202.1	256.9	459.0
Year 0 (HUs)	3,995.2	4,332.0	8,327.2
Year 25 WOP (HUs)	2,259.8	2,836.0	5,095.7
Year 50 WOP (HUs)	1,670.7	2,181.7	3,852.5

6.6.5.2.2 Alternative A

Alternative A would construct all proposed ecosystem restoration measures. Comparison with the no action alternative (Table 11) shows that alternative A increases habitat units at years 25 and 50 (Table 12). The proposed measures would increase habitat unit values for each location.

Table 12 Estimated habitat units for all measures with project.

Alternative A (All measures)			
	Ohkay Owingeh	**Santa Clara**	**Total**
Measures (acres)	202.1	256.9	459.0
Year 0 (HUs)	3,995.2	4,332.0	8,327.2
Year 25 WP (HUs)	5,194.1	5,990.9	11,184.9
Year 50 WP (HUs)	5,496.5	6,285.8	11,782.3

6.6.6 *Evaluation and Screening of Preliminary Alternatives

6.6.6.1 Flood risk management

Floodwall, ring levee and levee heights were determined using the Base Flood Elevation (BFE) or approximately the elevation of the mean 1% chance exceedance event. Base – 1’ would be one foot less than the BFE and Base + 1’ would be one foot higher than the BFE.

Initially, the structural FRM management measures, described in this section, were individually evaluated by First Construction Costs vs. Economically Justifiable Construction Costs.

First Construction Costs are not annualized and do not include:

- Mitigation costs
- Real estate costs (LERDDS)
- Pre-Engineering and Design (PED) costs
- Interest during construction costs, or
- Operations, maintenance, repair, replacement, and rehabilitation (OMRR&R) costs

Each surveyed property is assigned to a category (e.g., commercial, residential, public, apartment, transportation facilities, utilities, and vehicles) with as many subcategories (e.g., contents) as necessary, and details of ground and first floor elevations are noted. Using GIS-based topographic maps and field investigations, the first flood elevation is determined for each structure in the flood prone area. Each property category is then tabulated in terms of the number of structures, average value per structure, and the total value per category, for each inundation depth for each location. That inventory is set into the Hydrologic Engineering Center’s Flood Damage Analysis (FDA) ver. 1.2.5 to compute expected annual and equivalent annual damages (EAD) for each category within the study area.

The justifiable construction figure was determined by multiplying the EAD of each alignment by the output of the (MS Excel) formula =PMT(x, y,-1), where x = current interest rate (3.375%)

and y = proposed project life (50 years). If that final result was less than the proposed first construction cost, the alignment was removed from consideration.

All individual measures whose justifiable construction costs were greater than total first construction costs, were further economically evaluated either as a complete, standalone FRM alternative or in combination with another measure for a complete, standalone alternative.

6.6.6.1.1 Ohkay Owingeh – Floodwalls or ring levees around the San Juan Elementary School

The PDT, using best professional judgment gained from prior FRM studies, did not believe that there were enough economic benefits to justify either a floodwall or a ring levee around the San Juan Elementary School. In order to show due diligence, not only the Base and Base + 1' heights were evaluated, but also the Base – 1' heights.

The economically justifiable construction dollar amount shown in the table above is not based solely upon the amount of damages that would be prevented for those structures inside of each floodwall or ring levee alignment, but for all damages caused by flooding on the east bank of the Rio Grande upstream of its confluence with the Rio Chama.

Therefore, no NED alternative was possible based upon only those structures that would have been nominally protected by either floodwalls or ring levees.

Table 13 First construction costs vs. economically justifiable construction (Ohkay Owingeh).

Description	First Construction Costs	Economically Justifiable Construction	NED? Yes / No	If No, Why?
Floodwalls				
Alignment A				
Base -1	$1,511,653	$1,791,774.65	No	Costs > Benefits
Base	$2,007,277	$1,791,774.65	No	Cost > Justifiable Construction
Base +1	$2,419,043	$1,791,774.65	No	Cost > Justifiable Construction
Earthen Ring Levees				
Alignment A				
Base -1	$399,480	$1,791,774.65	No	Costs > Benefits
Base	$618,018	$1,791,774.65	No	Costs > Benefits
Base +1	$857,959	$1,791,774.65	No	Costs > Benefits
Alignment B				
Base -1	$562,955	$1,791,774.65	No	Costs > Benefits
Base	$842,228	$1,791,774.65	No	Costs > Benefits
Base +1	$1,141,188	$1,791,774.65	No	Costs > Benefits
Alignment C				
Base -1	$875,708	$1,791,774.65	No	Costs > Benefits
Base	$1,237,141	$1,791,774.65	No	Costs > Benefits
Base +1	$1,763,187	$1,791,774.65	No	Costs > Benefits

6.6.6.1.2 Santa Clara levees

Table 14 First construction costs vs. economically justifiable construction (Santa Clara).

Description	First Construction Costs	Economically Justifiable Construction	NED? Yes / No	If No, Why?
Earthen Levees				
Alignment A				
Base	$3,162,244	$548,861.46	No	Cost > Justifiable Construction
Base +1	$4,100,001	$548,861.46	No	Cost > Justifiable Construction
Alignment B				
Base	$395,045	$588,266.90	No	Costs > Benefits
Base +1	$565,769	$588,266.90	No	Cost > Justifiable Construction
Alignment C				
Base	$821,351	$915,941.88	No	Costs > Benefits
Base +1	$935,699	$915,941.88	No	Costs > Benefits
Alignment D				
Base	$959,327	$2,375,584.98	No	Costs > Benefits
Base +1	$1,301,277	$2,375,584.98	No	Costs > Benefits
Alignment E				
Base	$193,098			Out per sponsor
Base +1	$272,482			Out per sponsor
Alignment F				
Base	$636,661	$1,989,270.95	No	Cost > Justifiable Construction
Base +1	$791,046	$1,989,270.95	YES	

6.6.6.1.3 San Ildefonso levees

Table 15 First construction costs vs. economically justifiable construction (San Ildefonso).

Description	First Construction Costs	Economically Justifiable Construction	NED? Yes / No	If No, Why?
Earthen Levees				
Alignment A				
Base	$2,227,789	$2,285,000.00	No	Cost > Justifiable Construction
Base +1	$2,648,586	$2,285,000.00	No	Cost > Justifiable Construction
Alignment B				
Base	$3,390,672		N/A	Out per sponsor
Base +1	$4,115,897		N/A	Out per sponsor
Alignment C				
Base	$1,502,110		N/A	Out per sponsor
Base +1	$1,794,192		N/A	Out per sponsor
Alignment D				
Base	$2,139,112		N/A	Out per sponsor
Base +1	$2,551,222		N/A	Out per sponsor
Alignment E				
Base	$1,569,893	$2,285,000.00	No	Cost > Justifiable Construction
Base +1	$1,893,357	$2,285,000.00	No	Cost > Justifiable Construction

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