WATER SYSTEM NEEDS AND COST STRUCTURE REPORT

BOARD OF PUBLIC UTILITIES MEETING 19 OCTOBER 2016

BPU AGENDA ITEM # 8418-16

INTRODUCTION

Water sales for the Los Alamos County (LAC) Department of Public Utilities (DPU) have decreased over the last few years. The reasons for this are believed to be threefold: 1) Increased rainfall during the irrigation season the last two years – after a period of prolonged dry weather; 2) A concerted effort on the part of LANL to decrease their potable water use by switching over to reclaimed water the last few years; 3) A conservation mindset may be starting to take hold within the Los Alamos County communities.

The decreased water sales have caused a decrease in the revenue stream for the water system enterprise. The water system is a standalone enterprise of the Department of Public Utilities within the government of Los Alamos County. The water system is comprised of three groups: Water Distribution (DW), Water Production (WP) and Non-Potable Water (NP). The WP group produces and treats potable water and sells that water to two customers, LANL and the DW group, at a wholesale water rate. The DW group purchases their share of that water and distributes it to customers throughout the County at a retail water rate that varies depending on the class of customer (residential, commercial, etc.). The NP group takes reclaimed effluent from the two DPU wastewater treatment plants (WWTPs) as well as collects non-potable untreated water from two other sources (LA Canyon Reservoir & Ski Hill Runoff Collector). The NP group distributes this NP water to sites throughout the County for irrigation of large turf areas.

Within the unified Water Enterprise Fund the DW group and the WP group are budgeted separately. The DW group has a line item for wholesale water purchase and the WP group receives revenue from the DW group for these sales to the DW group. The NP group is embedded inside the WP group with NP expenses and revenues informally listed separately within the WP accounting system. The NP system is relatively small with a minimum number of customers.

This report is intended to analyze and or report on the following specific items:

- The change in water sales and use and how that affects water rates and the financial health of the water enterprise groups
- The water systems condition and how that condition affects the need for infrastructure investment through a Capital Improvement Program (CIP)
- The history and future of infrastructure investment in the water systems
- An analysis of various CIP funding and water rate scenarios; including a comparison of annual cash balance funds based on initial recommendations developed from the DPU Financial Policy statement.

EXECUTIVE SUMMARY

Water sales volumes (and revenue) for the water systems have fallen in the last few years: 10 % for the Water Distribution (DW) system and 12 % for the Water Production (WP) system since FY 2015.

Recommended estimates for future sales volumes are 775,000 kgal for the DW system and 1,150,000 kgal for the WP system. Figure 3 shows the recommended varying sales volume for the NP system.

Weather, LANL conservation and possibly an improving County conservation ethic are the probable causes for these decreases. Some general correlation between precipitation and water sales is noted but Automated Metering Infrastructure is necessary before any more detailed correlation between precipitation and water use can be determined.

$31 million dollars in CIP infrastructure projects have been completed on the Water Production and Water Distribution systems between FY 2003 and FY 2016: $750,000 per year for the DW system and $1,500,000 per year for the WP system. All for system condition improvement and repair & replacement. $4,800,000 in CIP infrastructure projects have been completed on the Non Potable system between FY 2012 and FY 2016. Virtually all of this $957,000 per year CIP expenditure has been for system expansion.

The historic CIP Program for both systems compares very well with AWWA national standards for water utility system repair and replacement expenditures: essentially at the AWWA Top Quartile national standard – Figure 4.

After system condition "catch up", the recommended CIP Program for both systems will compare well with the AWWA national standard Median value.

Within the 20-year report period, the recommended CIP programs for both the DW and WP systems "catch up" to a system condition whereby future CIP projects are true R&R (repair & replacement) projects and not critical replacement of failing infrastructure within the 20-year report period.

The end of year cash balance for both the DW and WP systems are allowed to converge toward matching the recommended cash balance values stipulated in the DPU Financial Policy for cash balances without drastic year over year rate changes.

Scenario Two for the DW system is the recommended approach. The DW rates should remain at or below those of our closest neighbors while the accelerated CIP program will help alleviate the concerns raised by citizens regarding the overall condition of portions of the DW system.

The Scenario Three approach is recommended for the WP system. The WP rates remain reasonable with consistent relatively modest annual changes, after the 10% FY 2018 increase, while meeting the goals of the CIP Program and the Financial Policy recommendations for cash balance.

The recommended approach for NP system rates is Scenario Two; where NP rates match WP rates each year except one. All O&M expenses become covered and over half of Capital R&R expenses are covered by FY 2036.

Final refinements to the spreadsheets for both the DW and WP & NP systems developed for this report are expected. Review comments and improved cash balance requirements, as well as annual sales volume updates, will be collected and solidified and then incorporated into an improved system expense and revenue forecast model.

WATER SALES AND USE

A quick spreadsheet analysis was done that shows relevant data for the years FY2007 through FY2015, inclusive. For both the DW and WP systems there was never a year when actual sales volume met or exceeded budgeted sales volume. Some quick analysis using the straight average sales figures for both systems over this 9 year period was determined to be the best estimate to use for revenue estimates for the future. Keeping this database updated annually will allow for real time refinements to the sales volume, and hence revenue, estimates made annually as a part of the budget process.

The recommended Water Distribution volume figure has been assumed to be the 9-year average of actual total sales from the Quarterly Reports data set. For DW this is 775,000 kgals per year. This is a decrease from the FY2016 "Forecast" volume of 850,000 kgals and from the FY 2014 & FY 2015 "Forecast" volume of 865,500 kgals. Lost water due to breaks, flushing, testing and similar type of activities is non-revenue water and so is not included in this "Forecast" volume. However it will be produced and pumped into the system and has been accounted for in the estimated expenses portions of the analysis.

The recommended Water Production volume figure, also based on the 9-year average sales volume, is assumed to be 1% greater than the 9-year average of WP sales volume. This recommended volume, equivalent to that produced or pumped into the system, is 1,150,000 kgals. This is a decrease from the FY2016 "Forecast" volume of 1,250,000 kgals and from the FY 2014 & FY 2015 "Forecast" volume of 1,302,000 kgals. Lost water due to breaks, flushing, testing and similar type of activities is non-revenue water and so is not included in this "Forecast" volume. However it will be produced and pumped into the system and has been accounted for in the estimated expenses portions of the analysis.

These recommended sales volume estimates decrease the projected sales volume (and hence revenue) by 10% for the DW system and by 12% for the WP system. The use of these 9-year averages, updated annually, should create a more accurate and reliable set of estimates for forecasting sales volumes, revenue streams, cash balances and CIP funds that would be available.

Figure 1 "Budgeted versus Actual Water Sales with Precipitation & Temperature Variables" is an attempt to find any correlation between precipitation and temperature and the sales volumes of the DPU's water systems. Weather data was taken from the LANL Weather Machine website. Average annual temperature was used and the data set is not refined enough to discern any correlation between temperature and water use. Precipitation data sets for annual total, 1st Quarter (July-Sept) total and 4th Quarter (Apr-June) total were compared to annual water use. Trend lines show a distinct but generic correlation between precipitation and water use. A closer look at FY 2012 – FY 2015, when precipitation fluctuated significantly, shows that overall water use did not track directly with year over year precipitation – either annual average or during the quarters when irrigation is greatest. It appears as though water use within the County does track fairly well with precipitation during the irrigation season. LANL water use does not track well with precipitation and it is thought that changing water use patterns discussed later is why weather has not been tracking well with LANL water use in the last few years.

Figure 2 "Percentage Precipitation Variance versus Percentage Water Sales Variance – FY 2007 thru FY 2015" attempts to refine the correlation. The variance tracked is the year over year difference in "Total Actual Sales – (Actual vs 7-year Average)", "Total Water Sales – (Actual vs Budget)" and "Precipitation – (Actual vs 7-year Average)" values of interest. Again the trend lines show a general relationship but the relationship does not track closely. In the future, after the Automated Metering Infrastructure (AMI) project is up and running, it will be possible to track precipitation with water sales on a daily, weekly or monthly frequency that should allow for an improved and more realistic comparison of these values.

Another reason for decreasing water sales appears to be the aggressive switchover from potable water use to reclaimed effluent at the LANL computing centers for equipment cooling. It is understood that the switch from potable to reclaimed water accelerated around the County's FY 2013. A significant drop in water sales to LANL is shown in Figure One between FY 2013 and FY 2015 regardless of precipitation.

Hard data is not available at this time to estimate any direct water sales impact due to the DPU's conservation education efforts. However, anecdotally the majority of water using fixture remodel projects within the County have a good chance of replacing high flow fixtures with low flow fixtures and this trend should continue for the foreseeable future as the County's housing stock continues to age and as new homeowners initiate remodel projects.

NP System water sales were first tracked in detail in the September 2013 NP Water System Master Plan. The volumes estimated for the three different NP sub-systems (Townsite, White Rock & Ski Hill) are listed in Figure 3 "NP Water Use Projections / 6 October 2016 / BPU Water System Report". These estimates of volume and expected year of use, derived from the NP Master Plan, have been revised based on current CIP planning and internal analyses of maximum water availability due to current NP system pumping and storage limitations. It is assumed that these limitations will be overcome when projects outlined in the NP Master Plan are completed.

The estimates are used in the NP portion of the WP system "Forecast" spreadsheets found later in this report. The water sales estimates for the WP and DW systems are assumed to hold constant at the current 9-year average, as discussed above, throughout the length of the forecast through FY 2036.

PREVIOUS EXPENDITURES

$31 million dollars in CIP infrastructure projects have been completed on the Water Production and Water Distribution systems between FY 2003 and FY 2016. All of these projects have been to replace older portions of the system whose condition was determined to be critical using the 2007 Water Systems Condition Assessment Study recommendations, recent current condition problems and historic knowledge. Both water systems (WP & NP combined and DW) have a separate Asset Management Team (AMT) that meets quarterly to discuss the physical and financial health of their respective systems. Each AMT has members from the GWS, Engineering and Finance divisions of the DPU.

The annual average CIP expenditure on infrastructure improvement for the WP system has been $1,500,000 per year and for the DW system has been $750,000 per year.

Regarding the NP system, $4,800,000 has been invested in upgrades to the NP system between FY 2012 and FY 2016. The majority of these CIP projects, averaging $957,000 per year, have been for system expansion to meet the County's and DPU's sustainability goals of decreased potable water use through increase use of reclaimed effluent (and untreated non-potable water) and to meet the DPU sustainability goal of decreased per capita consumption of potable water. Whenever possible, of course, these system expansion projects have striven to also upgrade existing infrastructure.

Figures 5 thru 8 and show Townsite area water system maps and Figures 9 thru 12 show White Rock area water system maps. Figures 5 & 9 show colorized locations of CIP projects completed by the Department of Public Utilities (DPU) within the scope of the DPU's annual 10-year CIP Program started in the early 2000's. Figures 6 & 10 show waterlines colorized by pipeline age. Figures 7 & 11 show waterlines colorized by size. Figures 8 & 12 show waterlines colorized by waterline material. All respective to the Townsite & White Rock areas.

Figures 5 & 9 display the level of effort that has gone into the CIP program for the DW and WP systems by DPU since FY 2000. Please note that some of these shown colorized projects are developer driven and installed projects, Quemazon north and south for example, but the majority of the shown projects are the result of the DPU CIP Program. A significant level of effort went toward the repair and upgrade of the water system after the Cerro Grande fire. The remainder of the DPU CIP program effort has been in replacing aging infrastructure in deteriorated condition, emphasizing the Townsite's Western Area and North Community, as described in the 2007 Condition Assessment Report. The DPU CIP Program expenditures in future years funded in the spreadsheets of this report continue to follow the recommendations of the 2007 Condition Assessment Report by emphasizing the Aspen School Area, Denver Steel High School Area and Eastern Area for significant waterline replacement projects. These future projects have been confirmed as high priority projects based on the experience and knowledge of the Asset Management Teams through quarterly condition assessment meetings. Figures 5 thru 12, showing updated water system information, can be compared to the 2007 maps from the 2007 Condition Assessment Report located in an appendix to this report.

Significant progress has been made in carrying out the recommendations of the 2007 Report. Much of it shown on the maps of this report. However, many of the DPU CIP projects that have been completed since the early 2000's are not shown on these maps. These projects are site specific to individual features of the water systems. Water tanks have been repainted after having the old lead based paint safely removed. PRV (Pressure Reducing Station) sites have been upgraded with new valves and new corrosion resistant fasteners. Well sites and booster stations have been upgraded with new modern electronic controls and SCADA equipment. One-third of the Water Production system now functions fully automatic through the SCADA system. With the adoption of water rates sufficient to continue CIP Program funding, the history of significant progress can continue for the next 10 to 15 years until the condition of both the DW and WP systems reaches an overall good condition rating; with no known aged or inferior infrastructure.

At the back of this report are shown Attachments # 1 through # 9, taken from the "Water Systems Condition Assessment 2007" study (author unknown). These figures show relevant details of the WP and DW systems circa 2007 and, while recent infrastructure projects have modified the systems, they are still good references to view the overall system variables such as age, pipe diameter and pipe material.

Also at the far back of this report are shown Figures 2-1 thru 2-4 and Figures 8-1 & 8-6, taken from the "Non Potable Water System Master Plan" dated September 2013 by Forsgren & Associates. These figures give a good representation of the NP system and visually show the planned expansion recommended in the Master Plan document.

AWWA NATIONAL STANDARD CIP COMPARISON

Figure 4 is titled "System Renewal & Replacement AWWA National Standard Percentages". The national standard percentage data is taken from the AWWA (American Water Works Association) "Benchmarking – Performance Indicators for Water and Wastewater – 2013 Survey Data and Analyses Report"; which is the latest version of this benchmarking manual published by AWWA. This data has been combined with the Present Worth Value of both the WP and DW systems to provide a comparison between possible DPU annual CIP recommendations against a range of annual Repair & Replacement expenditures for other water (and wastewater) utilities across the country. Comparison of our historic and recommended levels of CIP for infrastructure improvements appears favorable between the DPU systems and the AWWA national standards.

For the DW system – the historic $750,000 per year CIP is equivalent to the top quartile for water distribution systems across the country ($770,266). For the WP system – the historic $1,500,000 per year CIP falls slightly above the mid-point between the top quartile and the median value for water production systems across the country.

Various annual levels of CIP spending are recommended in the three spreadsheet analyses included in this report. Depending on the final selected alternative – whether that is one of the recommended alternatives within this report or a modified version – it is anticipated that the level of annual CIP funding for both the WP and the DW systems will provide for an adequate program of infrastructure improvements that fits within the fiscal means of the DPU customer base and that will compare favorably to AWWA national standards.

ALTERNATIVE SCENARIOS FOR THE CIP PROGRAM AND WATER RATES

Three scenarios spanning the next 20 years regarding various approaches to implement necessary CIP expenditures, and how these various approaches affect water rates are included in this report. The expense and revenue models used for these various scenarios have been adopted from the typical "Forecast" spreadsheets used during the annual budget cycle but differ from that annual forecast in a few important ways.

- The length of time is expanded from 10 years to 20 years. This was done to enable capture of the length of time it is anticipated for the CIP programs to "catch up" to what is felt to be an overall good condition for each system; after which all CIP projects will be typical R&R projects and not critical replacement of older failing system components.
- A "Recommended Cash Balance" item is included. This recommended cash balance value is estimated based on the recent recommendations in the DPU Financial Policy for cash balances. Initial estimates for the various cash balance categories are used in these recommended values. Any variation between the calculated "Cash Balance" of the model and the "Recommended Cash Balance" was used to adjust the water rates in an attempt to match these two values.
- Calculated future water rates are included for quick review and comparison between alternative model runs.
- Modifications from the typical annual "Forecast" spreadsheet or outstanding important aspects being recommended are highlighted in various colors. (Example: DW "Water Meters" expense shows an elevated level for FY 2016 thru FY 2020 to account for planned in-house meter replacements. Note: The in-house meter replacement program has provided an unexpected benefit in that many old meter setters, shut off valves or meter cans are being found defective and in need of repair or replacement. The in-house pursuit of meter replacements is enabling DPU to improve all meter infrastructure and not simply meter replacement.)
- Portions of the NP system have been highlighted or added to the WP spreadsheet in order to improve the accounting for that system as an independent sub-system within the WP system.
- After the long overdue NP rate adjustment in FY 2018, rate adjustments for the NP system match rate adjustments for the WP system in Alternative Two. This keeps the difference between the two rates approximately the same throughout the 20 year program – with the NP rate being roughly $1.00 to $1.50 less per kgal than the wholesale potable rate. The NP rates in Alternative Three are adjusted higher than the WP system rates. This allows the NP system revenue to grow until full coverage of both O&M and Capital R&R expenses is met. The difference between the NP and WP rates in Alternative Three decreases from $1.00 to $0.55 by FY 2036.

- After the FY 2018 budget year – the O&M expenses forecast values are increased 1.5% each year for inflation (except in special highlighted cases).
- After the FY 2018 budget year – the "Debt Service" item in the WP spreadsheet increases 10% each year to accommodate assumed annual debt service of Water Trust Board funded NP system CIP projects.
- The "Recommended Cash Balance" value, for both the DW and the WP systems, are calculated assuming that the Contingency Reserve (equal to the replacement cost of the single largest potential failed piece of equipment) will not occur the same year for both the DW and WP systems. The estimated Contingency Reserve value for the Water Enterprise Fund was split 50/50 between the two water system funds. Some years show a higher or lower value than the "Recommended Cash Balance" for either the DW or WP systems however, taken together the total cash balance for the Water Enterprise Fund (DW + WP) remains sufficient to cover expected expenses each year for either or both systems.

Figure 13 "Forecast Summary of Cash Balances for DW & WP Expenses – Revenues – Rates Models" shows the calculated "Cash Balance" versus the "Recommended Cash Balance" (based on the Financial Policy) for each individual system (DW & WP) plus the total cash balance for the Water Enterprise Fund (DW + WP) for each alternative scenario. The WP system has a current cash balance that exceeds the "Recommended Cash Balance" policy while the current DW system cash balance falls significantly short. The combination of these two system's cash balances currently exceed the "Recommended Cash Balance" goal.

The WP CIP Program projects a $3,000,000 expense every 4 to 6 years. It is difficult to keep rates steady when the CIP Program projected spending is not relatively constant. Each alternative scenario shows years when the combined cash balance seems excessive and years when it does not meet our goal. The goal in developing the models used for this report was to develop a DW and WP system CIP Program and rate structure that did not fluctuate too much from year to year and that also either met the Financial Policy goals for the "Recommended Cash Balance" for each system or did not stray too far, in either direction, from the Financial Policy goal.

Alternative One – "Baseline" Scenario

The Alternative One scenario is considered a "Baseline" forecast. Very preliminary previous discussions have considered 10% rate increases in FY 2017 & FY 2018 with inflationary 1.5% increases each year thereafter. The DW CIP recommendations hold to the historic $750,000 per year estimate until FY2030 when the overall system condition is assumed "caught up" after which the CIP recommendation decreases to $500,000 per year. The WP CIP recommendations hold consistent to historic values at $1,500,000 per year until the system condition is "caught up" in FY 2030 after which the WP CIP decreases to $750,000 per year.

Full coverage of O&M expenses for the NP system is expected to occur in FY 2024. As rates and NP water sales increase beyond this year, it is expected that NP system Capital R&R costs begin to be covered a little more each year. At the end of this study period (FY 2036) the recommended NP rates and estimated water sales anticipate the full coverage of O&M expenses and 30% coverage of R&R expenses with the NP rate $1.29 less than the wholesale potable rate ($4.56 - $3.27).

The effect on the systems health, as indicated by the estimated cash balance each year, is obvious. The "Baseline" scenario provides excessive cash balances for the DW system and inadequate cash balances for the WP system. Refer to Figures 14 and 15.

Alternative Two – "Accelerated DW CIP & Conservative WP CIP" Scenario

The Alternative Two scenario recommends a slightly more aggressive or accelerated CIP program for the DW system by increasing the annual value to $1,000,000 per year but reaching the condition "caught up" point three years sooner (FY 2027 instead of FY 2030). The DW rates are increased 10% in FY 2018 and an additional 5% in FY 2019. This scenario also includes an 8.5% rate decrease in FY 2027 (similar to the FY 2017 10% decrease in the gas rate) which is the year the DW CIP program would be "caught up". Before and after these significant rate adjustments the DW rates increase at a relatively modest and consistent 0.0% to 1.5% for inflation and to adjust for fluctuations in the cash balances. The WP CIP recommendations are the same as in the "Baseline" scenario in that they hold consistent to historic values at $1,500,000 per year until the system condition is "caught up" in FY 2030 after which the WP CIP decreases to $750,000 per year. For the anticipated major WP CIP well replacement project years this scenario does not modify the annual $1,500,000 CIP value. Therefore, those years with a planned well replacement project have a significant impact on the year end cash balance. The water rates for the WP system increase another 10% in FY 2018; the same as all three alternative scenarios. This scenario also includes an 8.0% rate decrease in FY 2031 (similar to the FY 2017 10% decrease in the gas rate) which is the year after the WP CIP program would be "caught up". Before these significant rate adjustments the WP rates increase at steady 2.5%. After the FY 2031 rate decrease the WP rates rise by a consistent 1.0% to 1.5% for inflation and to adjust for fluctuations in the cash balances. NP rates are held the same as WP rates, except no NP rate decrease in FY 2031.

Full coverage of O&M expenses for the NP system is expected to occur in FY 2024. As NP rates and water sales increase beyond this year, it is expected that NP system Capital R&R costs are covered a little more each year. At the end of this study period (FY 2036) the recommended NP rates and estimated water sales anticipate a 52% coverage of R&R expenses with the NP rate $0.97 less than the wholesale potable rate ($4.61 - $3.64).

The cash balances in FY 2018 thru FY 2026 for the DW system are low. This should not be a significant problem because the cash balances in the WP system for those years are higher than recommended and the combination of these two cash balance values within the Water Enterprise Fund should be adequate to cover any emergency for either of the WP or DW systems. Cash balances for the WP system at the far out years FY 2030 thru FY 2036 fluctuate significantly due to the recurring well replacement CIP projects. Again, it is assumed that the combined DW and WP system cash balances should be able to cover any emergency situation within either of the systems. Refer to Figures 16 and 17.

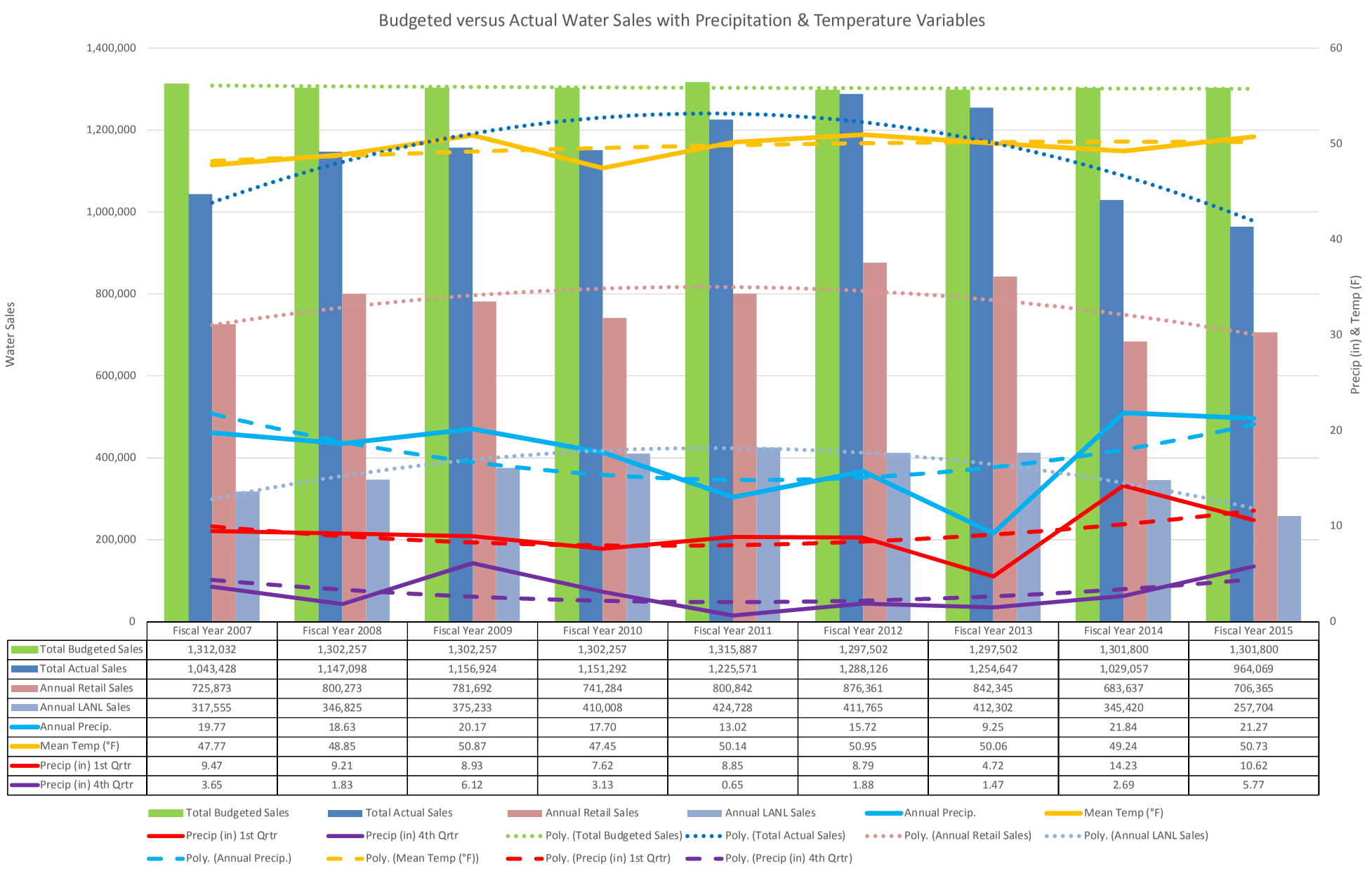
Alternative Three – "Mellower DW Rate & Adjusted WP CIP" Scenario

The Alternative Three scenario recommends the same historic DW system CIP program of $750,000 per year as the "Baseline" scenario. The DW system condition is "caught up" in FY 2030 after which the CIP recommendation decreases to $500,000 per year. The DW rate adjustments are less drastic up front than those recommended in Scenarios One and Two. After the FY 2017 rate increase of 10%, the DW rate is increased only 5.5% in FY 2018. After this relatively modest increase, the DW rates are increased a consistent 2.5% to 1.5% per year for inflation and cash balance coverage until the DW cash balance approaches the recommended cash balance value in FY 2027. In FY 2031, the year after the system condition is "caught up", the DW rate is decreased by 10.0% (again similar to the FY 2017 gas rate decrease) and then continues a 0.0% to 1.0% annual inflationary increase until the end of the study period in FY 2036. The WP CIP recommendations for this scenario are adjusted to decrease the annual CIP value significantly in years with a well replacement CIP project. The other years the annual CIP is increased from the historic $1,500,000 to $1,615,000 per year. These adjustments

attempt to moderate the influence of the well replacement projects on the cash balance. The down side to this approach is that the “catch up” year is extended until FY 2033. The WP rates are recommended to rise by 10% in both FY 2017 & FY 2018 – the same for all three alternative scenarios. After that the WP rates then increase 1.5% then 2.0% then 2.5% then 3.5% in three year steps until FY 2030 after which they then increase 2.5% for two years. In FY 2033, the year of system condition “catch up”, the WP rate decreases by 5.0%. After that the rate increases 1.5% for inflation the last three years. This fluctuating rate for the WP system attempts to cover all O&M expenses as well as keep the WP cash balance as close to the “Recommended Cash Balance” value as possible without falling significantly below that recommended value for any year.

NP rates are not held constant with WP rates in the Alternative Three scenario. After the major rate increase of FY 2018 (the same in all three scenarios), NP rates increase a consistent 3.15% throughout the remaining 18 years of the report period. Full coverage of O&M expenses for the NP system is expected to occur in FY 2023. NP system Capital R&R costs begin to be covered a little more each year until, at the end of this study period (FY 2036), the recommended NP rates and estimated water sales anticipate the full coverage of O&M expenses and 100% of R&R expenses with the NP rate $0.44 less than the wholesale potable rate ($4.81 - $4.37).

The cash balances in years FY 2018 thru FY 2026 for the DW system are low, but similar to the Alternative Two scenario, this should not be a significant problem because the cash balances in the WP system for those same years are higher than required and the combination of these two cash balance values within the Water Enterprise Fund should be adequate to cover any anticipated emergency for either of the WP or DW systems. The cash balance for both the DW and WP systems fluctuate toward the end of the study period but appear to remain within acceptable limits for variation around the combined cash balance “Recommended Cash Balance” goal. Refer to Figures 18 and 19.



	Fiscal Year 2007	Fiscal Year 2008	Fiscal Year 2009	Fiscal Year 2010	Fiscal Year 2011	Fiscal Year 2012	Fiscal Year 2013	Fiscal Year 2014	Fiscal Year 2015
Total Budgeted Sales	1,312,032	1,302,257	1,302,257	1,302,257	1,315,887	1,297,502	1,297,502	1,301,800	1,301,800
Total Actual Sales	1,043,428	1,147,098	1,156,924	1,151,292	1,225,571	1,288,126	1,254,647	1,029,057	964,069
Annual Retail Sales	725,873	800,273	781,692	741,284	800,842	876,361	842,345	683,637	706,365
Annual LANL Sales	317,555	346,825	375,233	410,008	424,728	411,765	412,302	345,420	257,704
Annual Precip.	19.77	18.63	20.17	17.70	13.02	15.72	9.25	21.84	21.27
Mean Temp (°F)	47.77	48.85	50.87	47.45	50.14	50.95	50.06	49.24	50.73
Precip (in) 1st Qrtr	9.47	9.21	8.93	7.62	8.85	8.79	4.72	14.23	10.62
Precip (in) 4th Qrtr	3.65	1.83	6.12	3.13	0.65	1.88	1.47	2.69	5.77

Figure 1

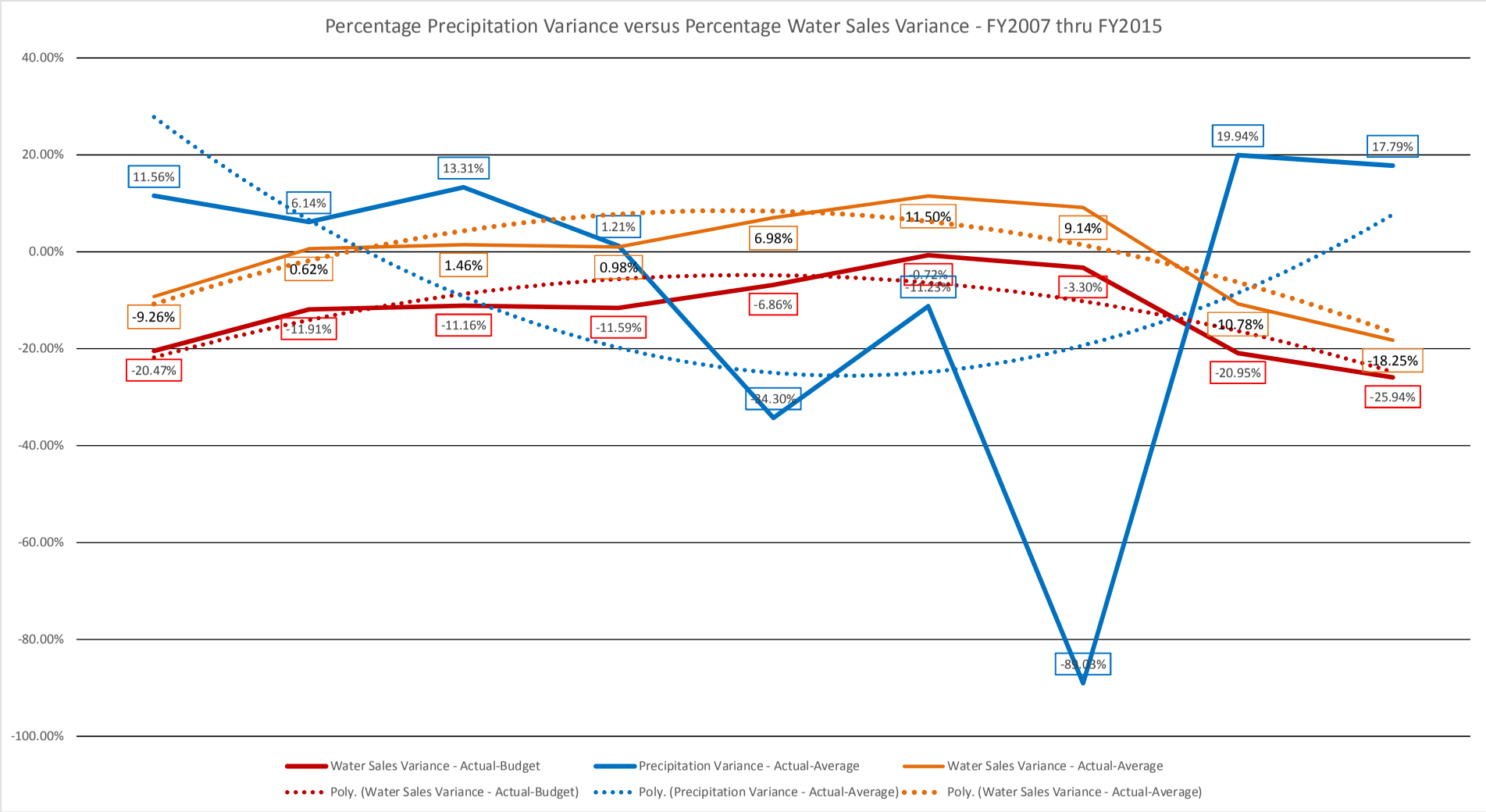

Percentage Precipitation Variance versus Percentage Water Sales Variance - FY2007 thru FY2015
40.00%
20.00%
0.00%
-20.00%
-40.00%
-60.00%
-80.00%
-100.00%
11.56%
6.14%
13.31%
1.21%
-24.30%
-11.23%
-85.03%
19.94%
17.79%
-9.26%
0.62%
1.46%
0.98%
6.98%
11.50%
9.14%
-18.25%
-20.47%
-11.91%
-11.16%
-11.59%
-6.86%
-8.72%
-3.30%
-10.78%
-20.95%
-25.94%
Water Sales Variance - Actual-Budget
Precipitation Variance - Actual-Average
Water Sales Variance - Actual-Average
Poly. (Water Sales Variance - Actual-Budget)
Poly. (Precipitation Variance - Actual-Average)
Poly. (Water Sales Variance - Actual-Average)

Figure 2

NP Water Use Projections / 6 October 2016 / BPU Water System Report					
Fiscal Year	Townsite	White Rock	Ski Hill	TOTAL (gallons)	TOTAL (kgals)
2016	63,100,000	18,900,000	2,500,000	84,500,000	84,500
2017	65,000,000	18,900,000	2,500,000	86,400,000	86,400
2018	65,000,000	18,900,000	2,500,000	86,400,000	86,400
2019	69,000,000	18,900,000	2,500,000	90,400,000	90,400
2020	69,000,000	18,900,000	2,500,000	90,400,000	90,400
2021	69,000,000	23,000,000	2,500,000	94,500,000	94,500
2022	69,000,000	23,000,000	2,500,000	94,500,000	94,500
2023	69,000,000	37,100,000	2,500,000	108,600,000	108,600
2024	96,900,000	37,100,000	2,500,000	136,500,000	136,500
2025	96,900,000	37,100,000	2,500,000	136,500,000	136,500
2026	96,900,000	37,100,000	2,500,000	136,500,000	136,500
2027	96,900,000	37,100,000	2,500,000	136,500,000	136,500
2028	96,900,000	37,100,000	2,500,000	136,500,000	136,500
2029	96,900,000	37,100,000	2,500,000	136,500,000	136,500
2030	96,900,000	37,100,000	2,500,000	136,500,000	136,500
2031	96,900,000	37,100,000	2,500,000	136,500,000	136,500
2032	96,900,000	37,100,000	2,500,000	136,500,000	136,500
2033	96,900,000	37,100,000	2,500,000	136,500,000	136,500
2034	96,900,000	37,100,000	2,500,000	136,500,000	136,500
2035	96,900,000	37,100,000	2,500,000	136,500,000	136,500
2036	96,900,000	37,100,000	2,500,000	136,500,000	136,500

Figure 3

N:\GWS DIVISION DEPUTY'S FILES\UTILITY BOARD\October 2016 Water Systems Report to BPU\NP Water Use Projections_BPU Rpt_10-06-2016.xlsx

System Renewal & Replacement AWWA National Standard Percentages							
	System Repair & Replacement Percentage				Annual Repair & Replacement National Standard (PWV) X (System R&R %)		
Asset Class	Bottom Quartile	Median	Top Quartile	Present Worth Value of the GWS Group System	Bottom Quartile	Median	Top Quartile
Water Supply	0.8%	1.5%	3.7%				
Water Treatment Facilities	0.7%	1.9%	5.0%				
Water Pump Station	0.6%	2.6%	5.5%				
Water Transmission and Distribution	1.0%	2.4%	4.5%				
Wastewater Collection	1.3%	2.5%	5.2%				
Wastewater Pump Stations	0.7%	2.1%	5.9%				
Wastewater Treatment	1.1%	2.2%	4.4%				
Water Production	0.775%	2.1%	4.675%	$39,939,696	$309,533	$838,734	$1,867,181
Water Distribution	1.0%	2.4%	4.5%	$17,117,013	$171,170	$410,808	$770,266
Wastewater Collection	1.0%	2.3%	5.55%	$19,989,785	$199,898	$459,765	$1,109,433
Wastewater Treatment	1.10%	2.20%	4.40%	$13,326,524	$146,592	$293,184	$586,367
NOTE: AWWA Benchmarking Value 2013 used in this analysis.							
NOTE: "System Renewal & Replacement (%)" = (Total Expenditures for R&R of an asset group) / (Total Present Worth depreciated value for that asset group)							
NOTE: AWWA values for the Water Production group are the average of "Water Supply" + "Water Treatment Facilities" + "Water Pump Station" + "Water Transmission and Distribution".							
NOTE: AWWA values for the Wastewater Collection are the average of "Wastewater Collection" + "Wastewater Pump Stations".							
NOTE: Present Worth Value of each asset group is the FY2012 thru FY 2015 average of: (Land + Utility Plant In Service + Machinery & Equipment) - (Accumulated Depreciation).							
NOTE: Annual R&R National Standard is the comparable value used against the annual R&R CIP (annuity) proposed in the analyses.							

Figure 4

Los Alamos County Townsite Area Water Map

Date: 10/10/2016

N
W E
S

0 425 850 1,700 Feet

LEGEND

CIP WATERLINES
INSTALLATION YEAR

- 2000
- 2001
- 2002
- 2003
- 2004
- 2005
- 2006
- 2007
- 2008
- 2009
- 2010
- 2011
- 2012
- 2013
- 2014
- 2015
- 2016
- WATERLINES 1999 and EARLIER
- EXISTING WATER TANKS
- PARKS
- OPEN SPACE

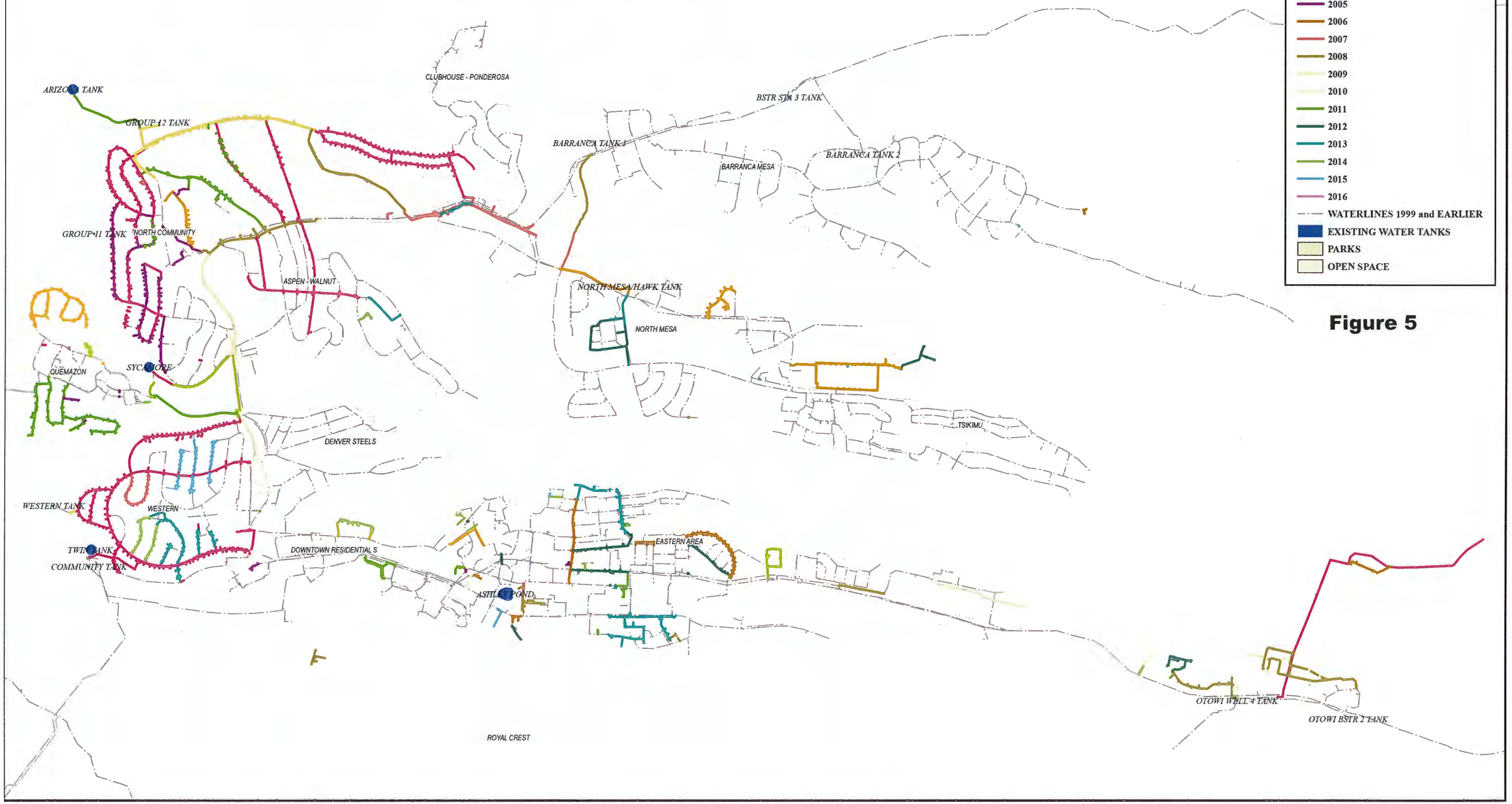


Figure 5

Los Alamos County
Townsite Area Water Map

Date: 10/10/2016

N
W E
S

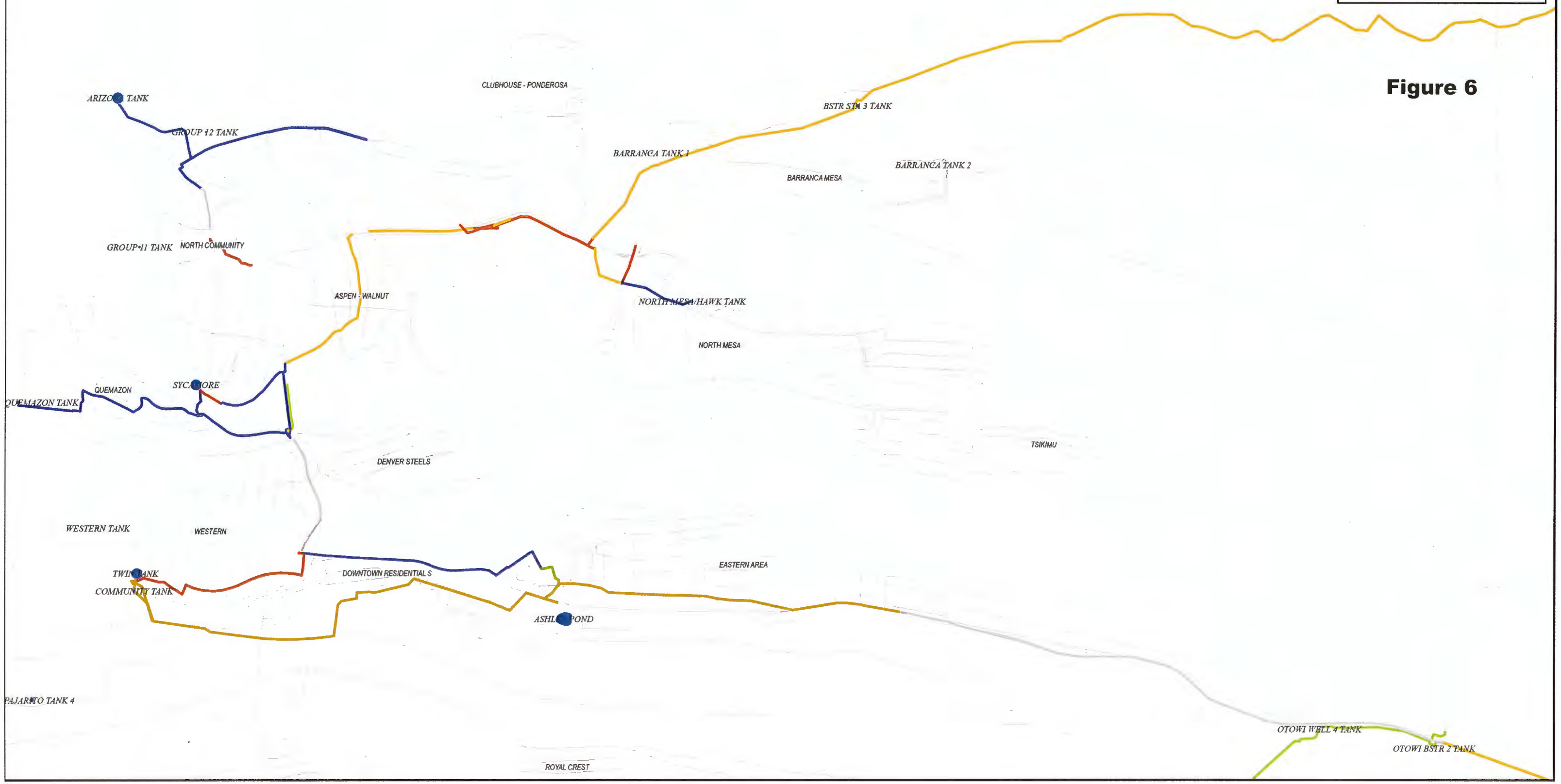
0 425 850 1,700 Feet

LEGEND

TRANSMISSION WATERLINES BY AGE

- 0 - 1950
- 1951 - 1966
- 1967 - 1991
- 1992 - 2003
- 2004 - 2007
- STREETS
- EXISTING WATER TANKS
- PARKS
- OPEN SPACE

Figure 6



Los Alamos County Townsite Area Water Map

Date: 10/10/2016

N
W E
S

0 425 850 1,700 Feet

LEGEND

WATERLINES BY SIZE

- 2
- 3
- 4
- 6
- 8
- 10
- 12
- 14
- 16
- 18

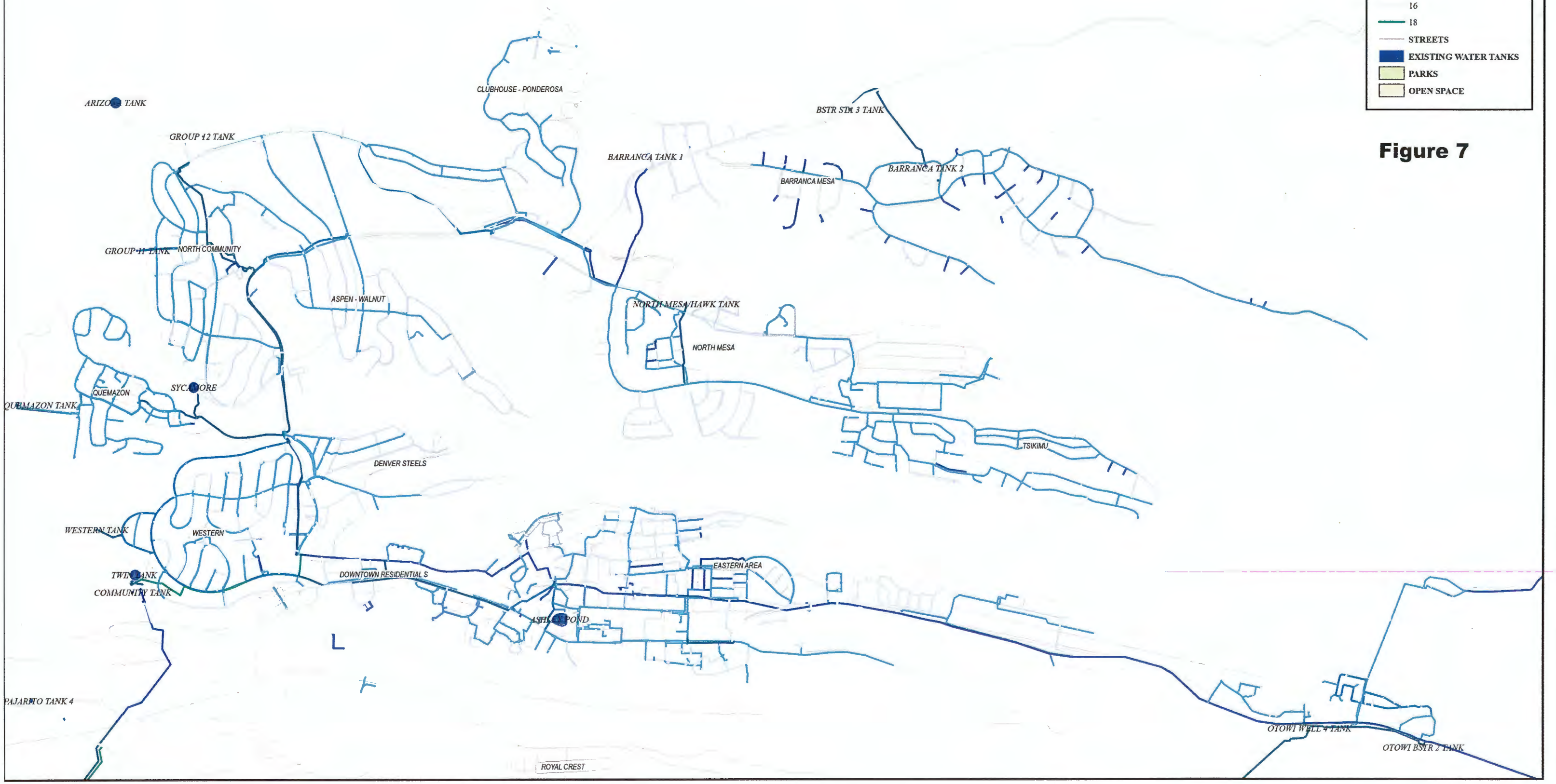
STREETS

EXISTING WATER TANKS

PARKS

OPEN SPACE

Figure 7



Los Alamos County
Townsite Area Water Map

Date: 10/10/2016

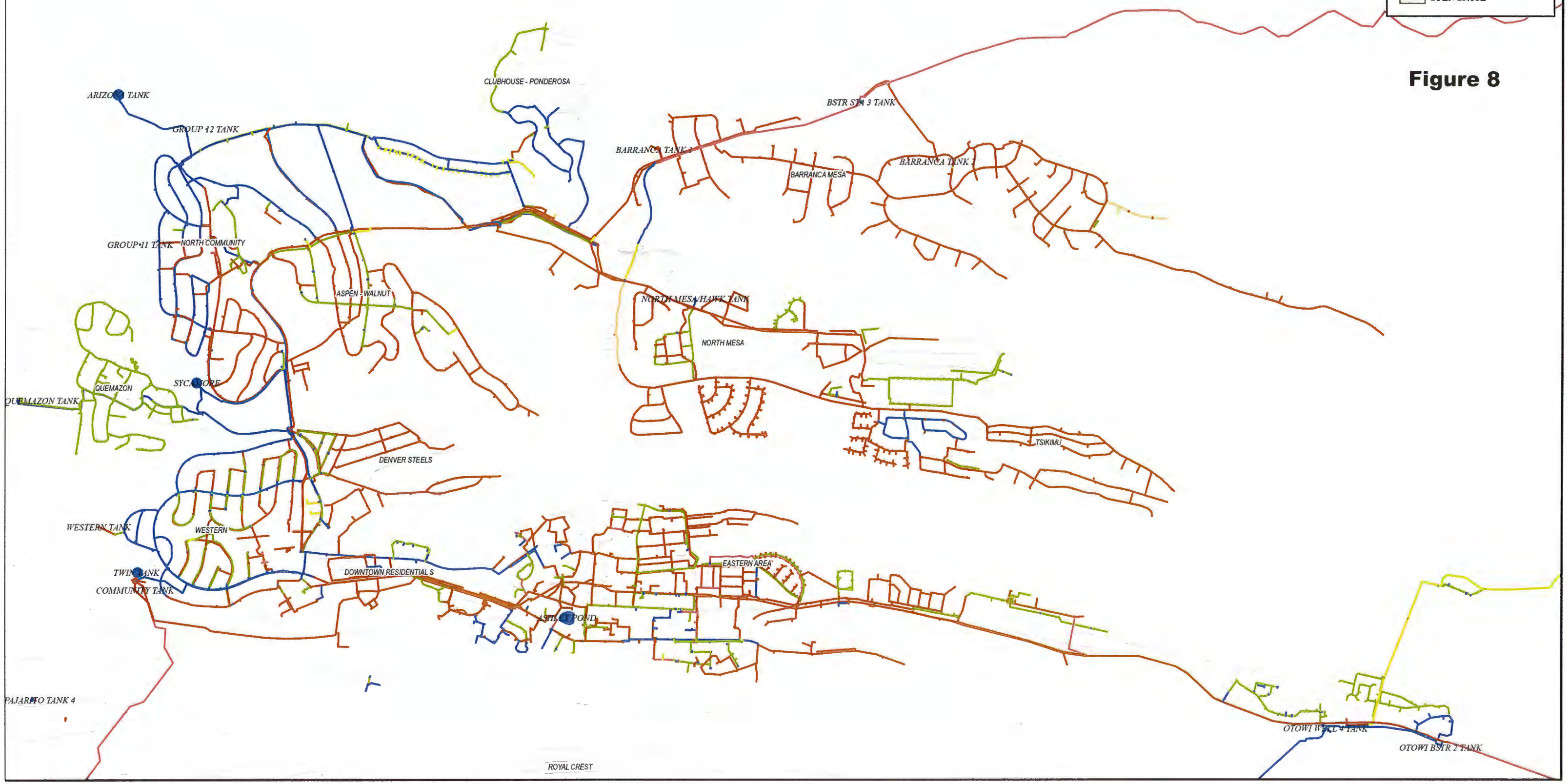
N
W E
S

0 425 850 1,700 Feet

LEGEND

MATERIAL
- CAST IRON
- DUCTILE IRON
- PVC
- POLYETHLENE
- STEEL
- TRANSITE
- EXISTING WATER TANKS
- STREETS
- PARKS
- OPEN SPACE

Figure 8



Los Alamos County
White Rock Area Water Map
Date: 10/11/2016
N
W
E
S
0 362.5 725 1,450
Feet
LEGEND
CIP WATERLINES
INSTALLATION YEAR
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
WATERLINES 1999 and EARLIER
STREETS
PARKS
OPEN SPACE
WHITE ROCK
LA VISTA
LA SENDA
PAJARITO ACRES

Figure 9

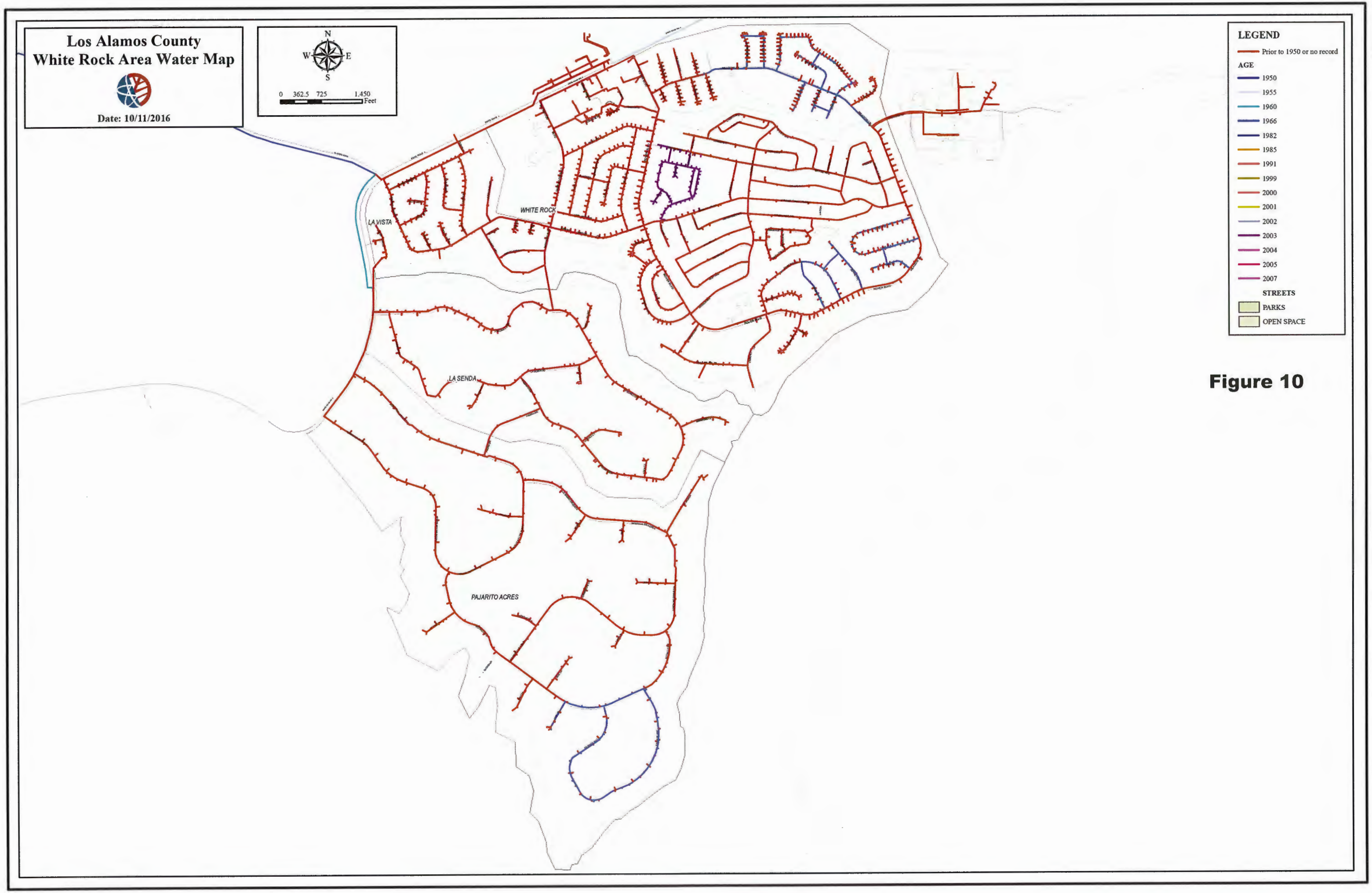

Los Alamos County
White Rock Area Water Map
Date: 10/11/2016
N
W
E
S
0 362.5 725 1,450
Feet
LEGEND
Prior to 1950 or no record
AGE
1950
1955
1960
1966
1982
1985
1991
1999
2000
2001
2002
2003
2004
2005
2007
STREETS
PARKS
OPEN SPACE
WHITE ROCK
LA VISTA
LA SENDA
PAJARITO ACRES

Figure 10

Los Alamos County
White Rock Area Water Map
Date: 10/11/2016
N
W
E
S
0 362.5 725 1,450
Feet
LEGEND
WATERLINES
BY SIZE
2
3
4
6
8
10
12
14
16
18
STREETS
PARKS
OPEN SPACE
LA VISTA
WHITE ROCK
LA SENDA
PAJARITO ACRES

Figure 11

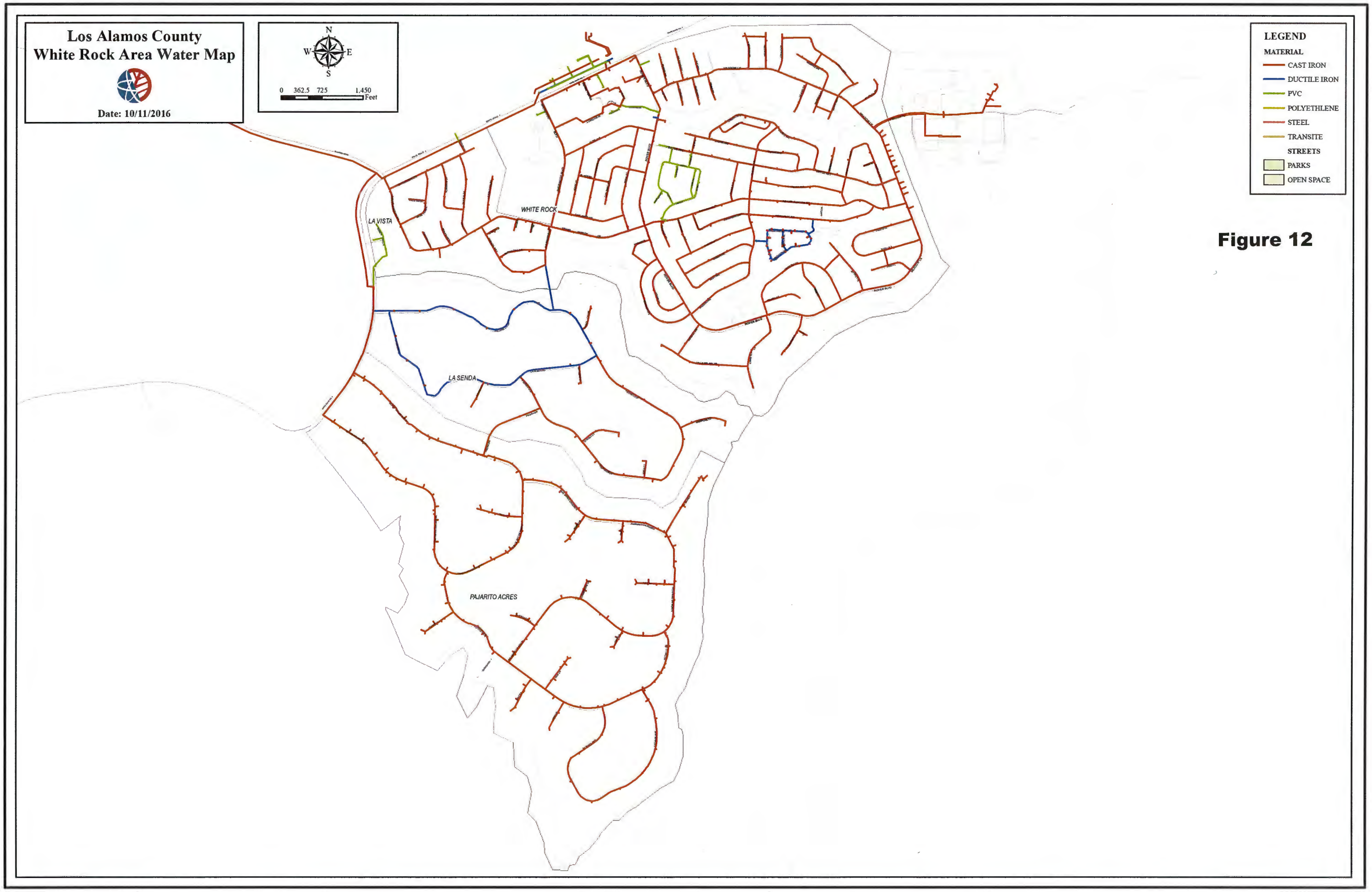

Los Alamos County
White Rock Area Water Map
Date: 10/11/2016
N
W
E
S
0 362.5 725 1,450
Feet
LEGEND
MATERIAL
CAST IRON
DUCTILE IRON
PVC
POLYETHLENE
STEEL
TRANSITE
STREETS
PARKS
OPEN SPACE
WHITE ROCK
LA VISTA
LA SENDA
PAJARITO ACRES

Figure 12

FORECAST SUMMARY OF CASH BALANCES FOR DW & WP EXPENSES - REVENUES - RATES MODELS

		ACTUAL	BUDGET	BUDGET	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST
		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
Alt One	WP	10,362,736	8,155,213	8,327,763	8,475,360	8,812,750	9,276,267	6,304,380	6,263,999	6,464,681	3,301,384	3,094,021	2,893,116	2,698,767	2,511,071	(669,870)	(93,956)	488,916	1,078,851	1,675,953	2,280,332	(107,904)
Alt One	WP	5,673,786	4,118,566	4,167,422	4,229,927	4,320,683	7,386,037	4,466,230	4,549,351	7,640,860	4,729,259	4,767,798	4,806,915	4,846,619	7,886,918	4,177,822	4,219,339	4,261,480	4,304,252	4,347,666	7,391,731	4,436,456
Alt One	DW	615,779	839,058	1,496,752	1,421,548	1,364,716	1,676,531	2,002,024	2,341,399	2,694,865	3,062,633	3,444,917	3,841,935	4,253,909	4,681,062	5,123,623	5,831,822	6,555,894	7,296,077	8,052,613	8,825,747	9,615,728
Alt One	DW	1,513,167	1,529,483	2,290,932	2,302,046	2,138,327	2,152,402	2,166,688	2,181,188	2,195,906	2,210,844	2,226,007	2,241,397	2,257,018	2,272,873	2,038,966	2,055,301	2,071,880	2,088,709	2,105,789	2,123,126	2,140,723
Alt One	WP+DW	10,978,515	8,994,271	9,824,515	9,896,908	10,177,466	10,952,798	8,306,404	8,605,398	9,159,546	6,364,017	6,538,937	6,735,051	6,952,675	7,192,134	4,453,753	5,737,866	7,044,810	8,374,928	9,728,566	11,106,079	9,507,823
Alt One	WP+DW	7,186,953	5,648,049	6,458,354	6,531,973	6,459,010	9,538,439	6,632,918	6,730,539	9,836,766	6,940,104	6,993,805	7,048,312	7,103,637	10,159,792	6,216,789	6,274,640	6,333,360	6,392,960	6,453,455	9,514,857	6,577,180
		3,791,562	3,346,223	3,366,161	3,364,935	3,718,456	1,414,360	1,673,487	1,874,859	(677,219)	(576,087)	(454,868)	(313,262)	(150,962)	(2,967,658)	(1,763,036)	(536,774)	711,450	1,981,967	3,275,111	1,591,222	2,930,644
Alt Two	WP	10,362,736	8,155,213	8,327,763	8,515,504	8,934,790	9,523,608	6,722,133	6,901,914	7,375,945	7,540,457	4,717,440	4,959,557	5,269,109	5,648,462	3,100,054	3,805,081	4,519,003	5,216,745	5,923,272	6,612,875	4,311,141
Alt Two	WP	5,673,786	4,118,566	4,167,422	4,229,927	4,320,683	7,386,037	4,466,230	4,549,351	7,640,860	4,729,259	4,767,798	4,806,915	4,846,619	7,886,918	4,177,822	4,219,339	4,261,480	4,304,252	4,347,666	7,391,731	4,436,456
Alt Two	DW	615,779	1,085,005	784,390	546,590	374,780	621,202	880,321	1,152,326	1,437,412	1,735,774	2,047,611	2,373,126	2,712,523	3,066,012	3,433,803	3,374,581	3,319,721	3,269,289	3,223,350	3,181,971	3,116,502
Alt Two	DW	1,513,167	2,279,483	2,290,932	2,302,046	2,138,327	2,152,402	2,166,688	2,181,188	2,195,906	2,210,844	2,226,007	2,241,397	2,257,018	2,272,873	2,038,966	2,055,301	2,071,880	2,088,709	2,105,789	2,123,126	2,140,723
Alt Two	WP+DW	10,978,515	9,240,218	9,112,153	9,062,094	9,309,570	10,144,810	7,602,454	8,054,241	8,813,357	9,276,231	6,765,051	7,332,683	7,981,632	8,714,474	6,533,856	7,179,662	7,838,724	8,486,034	9,146,622	9,794,846	7,427,643
Alt Two	WP+DW	7,186,953	6,398,049	6,458,354	6,531,973	6,459,010	9,538,439	6,632,918	6,730,539	9,836,766	6,940,104	6,993,805	7,048,312	7,103,637	10,159,792	6,216,789	6,274,640	6,333,360	6,392,960	6,453,455	9,514,857	6,577,180
		3,791,562	2,842,169	2,653,799	2,530,121	2,850,560	606,372	969,536	1,323,701	(1,023,409)	2,336,127	(228,754)	284,371	877,995	(1,445,318)	317,068	905,022	1,505,364	2,093,073	2,693,167	279,990	850,464
Alt Three	WP	10,362,736	8,142,563	8,186,198	8,208,400	8,424,086	8,770,297	6,571,265	6,468,017	6,641,356	6,503,205	4,240,589	4,176,211	4,225,219	4,392,894	2,549,723	2,918,398	3,366,653	3,479,648	4,479,598	5,502,115	3,547,829
Alt Three	WP	5,419,604	3,924,544	3,942,498	3,971,011	4,024,376	6,183,599	4,083,548	4,116,901	4,153,665	6,316,845	4,210,447	4,239,479	4,268,946	6,433,855	4,329,213	4,360,026	4,391,302	3,558,046	3,590,267	6,622,971	3,656,166
Alt Three	DW	615,779	1,085,005	784,390	546,590	374,780	621,202	880,321	1,152,326	1,437,412	1,735,774	2,047,611	2,373,126	2,712,523	3,066,012	3,433,803	3,374,581	3,238,542	3,024,533	2,785,503	2,520,808	2,229,789
Alt Three	DW	1,513,167	2,279,483	2,290,932	2,302,046	2,138,327	2,152,402	2,166,688	2,181,188	2,195,906	2,210,844	2,226,007	2,241,397	2,257,018	2,272,873	2,038,966	2,055,301	2,071,880	2,088,709	2,105,789	2,123,126	2,140,723
Alt Three	WP+DW	10,978,515	9,227,568	8,970,588	8,754,989	8,798,866	9,391,500	7,451,586	7,620,344	8,078,768	8,238,979	6,288,201	6,549,337	6,937,742	7,458,906	5,983,526	6,292,979	6,605,195	6,504,181	7,265,101	8,022,923	5,777,617
Alt Three	WP+DW	6,932,771	6,204,027	6,233,430	6,273,057	6,162,702	8,336,001	6,250,236	6,298,089	6,349,570	8,527,689	6,436,454	6,480,876	6,525,964	8,706,729	6,368,180	6,415,327	6,463,182	5,646,755	5,696,056	8,746,097	5,796,889
		4,045,744	3,023,540	2,737,157	2,481,933	2,636,164	1,055,499	1,201,350	1,322,255	1,729,197	(288,710)	(148,254)	68,461	411,778	(1,247,822)	(384,653)	(122,348)	142,013	857,426	1,569,045	(723,174)	(19,271)

Figure 13

Los Alamos County Utilities Department
Financial Forecast
Water Distribution

		ACTUAL	BUDGET	BUDGET	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST
Expense Forecast		2016	2,017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
	1.50%																					
Supervision, Misc Direct Admin		221,273	182,979	187,328	190,138	192,990	195,885	198,823	201,805	204,833	207,905	211,024	214,189	217,402	220,663	223,973	227,332	230,742	234,203	237,717	241,282	244,902
Hydrants		71,088	58,860	59,924	60,823	61,735	62,661	63,601	64,555	65,523	66,506	67,504	68,517	69,544	70,587	71,646	72,721	73,812	74,919	76,043	77,183	78,341
Water Distribution		369,040	403,107	409,154	415,291	421,520	427,843	434,261	440,775	447,386	454,097	460,909	467,822	474,839	481,962	489,191	496,529	503,977	511,537	519,210	526,998	534,903
Water Meters		655,736	691,719	699,002	700,000	700,000	350,000	355,250	360,579	365,987	371,477	377,049	382,705	388,446	394,272	400,186	406,189	412,282	418,466	424,743	431,115	437,581
Interdepartmental Charges		225,566	251,649	251,649	255,424	259,255	263,144	267,091	271,097	275,164	279,291	283,481	287,733	292,049	296,430	300,876	305,389	309,970	314,620	319,339	324,129	328,991
Administrative Division Allocation		520,812	538,020	551,910	560,189	568,591	577,120	585,777	594,564	603,482	612,535	621,723	631,048	640,514	650,122	659,874	669,772	679,818	690,016	700,366	710,871	721,534
Cost of Water		2,528,096	2,705,409	2,705,409	2,745,990	2,787,180	2,828,987	2,871,422	2,914,494	2,958,211	3,002,584	3,047,623	3,093,337	3,139,737	3,186,833	3,234,636	3,283,155	3,332,403	3,382,389	3,433,125	3,484,621	3,536,891
Capital Annuity				-	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	500,000	500,000	500,000	500,000	500,000	500,000
Capital		443,092	0	-																		
Total Operation Expenses		4,591,611	4,831,743	4,864,375	4,927,854	4,991,272	4,705,641	4,776,225	4,847,869	4,920,587	4,994,396	5,069,312	5,145,351	5,222,532	5,300,870	5,380,383	5,461,088	5,543,005	5,626,150	5,710,542	5,796,200	5,883,143
Total Capital Expenditures		443,092	0	0	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	500,000	500,000	500,000	500,000	500,000	500,000
Total Expenditures		5,034,703	4,831,743	4,864,375	5,677,854	5,741,272	5,455,641	5,526,225	5,597,869	5,670,587	5,744,396	5,819,312	5,895,351	5,972,532	6,050,870	6,130,383	5,961,088	6,043,005	6,126,150	6,210,542	6,296,200	6,383,143
Revenue Forecast																						
kgal Sales		850,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000
Revenue per kgal		$ 5.43	6	$ 6.57	$ 6.67	$ 6.77	$ 6.87	$ 6.97	$ 7.08	$ 7.18	$ 7.29	$ 7.40	$ 7.51	$ 7.63	$ 7.74	$ 7.86	$ 7.97	$ 8.09	$ 8.21	$ 8.34	$ 8.46	$ 8.59
Rate Increase Percentage			**10.00%**	**10.00%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**
Total Sales Revenue		4,615,500	4,629,075	5,091,983	5,168,362	5,245,888	5,324,576	5,404,445	5,485,511	5,567,794	5,651,311	5,736,081	5,822,122	5,909,454	5,998,095	6,088,067	6,179,388	6,272,079	6,366,160	6,461,652	6,558,577	6,656,956
Interest on Utility Reserves		520,525	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
Revenue on Recoverable Work		271,869	275,947	280,086	284,288	288,552	292,880	297,274	301,733	306,259	310,852	315,515	320,248	325,052	329,927	334,876	339,900	344,998	350,173	355,426	360,757	366,168
Bond Issue Proceeds																						
Total Cash Inflow from Operations		5,407,894	5,055,022	5,522,069	5,602,650	5,684,440	5,767,456	5,851,718	5,937,244	6,024,053	6,112,163	6,201,596	6,292,370	6,384,505	6,478,023	6,572,943	6,669,287	6,767,077	6,866,333	6,967,078	7,069,334	7,173,124
Net Cash Flow		373,191	223,279	657,694	(75,204)	(56,832)	311,815	325,493	339,375	353,466	367,768	382,284	397,018	411,974	427,153	442,561	708,199	724,072	740,183	756,536	773,134	789,981
Cumulative Net Cash Flow		373,191	596,471	1,254,164	1,178,960	1,122,128	1,433,944	1,759,437	2,098,812	2,452,277	2,820,045	3,202,329	3,599,348	4,011,321	4,438,475	4,881,035	5,589,234	6,313,306	7,053,490	7,810,025	8,583,159	9,373,140
Cash Balance		615,779	839,058	1,496,752	1,421,548	1,364,716	1,676,531	2,002,024	2,341,399	2,694,865	3,062,633	3,444,917	3,841,935	4,253,909	4,681,062	5,123,623	5,831,822	6,555,894	7,296,077	8,052,613	8,825,747	9,615,728
Recommended Cash Balance		1,513,167	1,529,483	2,290,932	2,302,046	2,138,327	2,152,402	2,166,688	2,181,188	2,195,906	2,210,844	2,226,007	2,241,397	2,257,018	2,272,873	2,038,966	2,055,301	2,071,880	2,088,709	2,105,789	2,123,126	2,140,723
Alter. One Retail (DW) Water Rates / kgal																						
Residential Tier 1 - < 9,000 gals		$4.19	5	$5.07	$5.15	$5.22	$5.30	$5.38	$5.46	$5.54	$5.63	$5.71	$5.80	$5.88	$5.97	$6.06	$6.15	$6.24	$6.34	$6.43	$6.53	$6.63
Residential Tier 2 - 9 to 15,000 gals		$4.45	5	$5.38	$5.47	$5.55	$5.63	$5.71	$5.80	$5.89	$5.98	$6.07	$6.16	$6.25	$6.34	$6.44	$6.53	$6.63	$6.73	$6.83	$6.94	$7.04
Residential Tier 3 - > 15,000 gals		$5.32	6	$6.44	$6.53	$6.63	$6.73	$6.83	$6.93	$7.04	$7.14	$7.25	$7.36	$7.47	$7.58	$7.70	$7.81	$7.93	$8.05	$8.17	$8.29	$8.42
Multi-Family Tier 1 - < 9,000 gals		$4.19	5	$5.07	$5.15	$5.22	$5.30	$5.38	$5.46	$5.54	$5.63	$5.71	$5.80	$5.88	$5.97	$6.06	$6.15	$6.24	$6.34	$6.43	$6.53	$6.63
Multi-Family Tier 2 - 9 to 15,000 gals		$4.40	5	$5.32	$5.40	$5.48	$5.57	$5.65	$5.74	$5.82	$5.91	$6.00	$6.09	$6.18	$6.27	$6.37	$6.46	$6.56	$6.66	$6.76	$6.86	$6.96
Multi-Family Tier 3 - > 15,000 gals		$4.50	5	$5.45	$5.53	$5.61	$5.69	$5.78	$5.87	$5.95	$6.04	$6.13	$6.23	$6.32	$6.41	$6.51	$6.61	$6.71	$6.81	$6.91	$7.01	$7.12
Commercial All Tiers		$4.61	5	$5.58	$5.66	$5.75	$5.83	$5.92	$6.01	$6.10	$6.19	$6.28	$6.38	$6.47	$6.57	$6.67	$6.77	$6.87	$6.97	$7.08	$7.18	$7.29
County & Schools All Tiers		$4.61	5	$5.58	$5.66	$5.75	$5.83	$5.92	$6.01	$6.10	$6.19	$6.28	$6.38	$6.47	$6.57	$6.67	$6.77	$6.87	$6.97	$7.08	$7.18	$7.29
Customer Charge per Meter Size																						
= or < 1.25"		$7.93	9	$9.60	$9.74	$9.89	$10.03	$10.18	$10.34	$10.49	$10.65	$10.81	$10.97	$11.14	$11.30	$11.47	$11.64	$11.82	$12.00	$12.18	$12.36	$12.54
1.5"		$25.12	28	$30.40	$30.85	$31.31	$31.78	$32.26	$32.74	$33.24	$33.73	$34.24	$34.75	$35.27	$35.80	$36.34	$36.89	$37.44	$38.00	$38.57	$39.15	$39.74
2"		$37.50	41	$45.38	$46.06	$46.75	$47.45	$48.16	$48.88	$49.61	$50.36	$51.11	$51.88	$52.66	$53.45	$54.25	$55.06	$55.89	$56.73	$57.58	$58.44	$59.32
2.5" to 3"		$74.00	81	$89.54	$90.88	$92.25	$93.63	$95.03	$96.46	$97.91	$99.38	$100.87	$102.38	$103.91	$105.47	$107.06	$108.66	$110.29	$111.95	$113.62	$115.33	$117.06
4"		$126.00	139	$152.46	$154.75	$157.07	$159.42	$161.82	$164.24	$166.71	$169.21	$171.75	$174.32	$176.94	$179.59	$182.28	$185.02	$187.79	$190.61	$193.47	$196.37	$199.32
6"		$266.00	293	$321.86	$326.69	$331.59	$336.56	$341.61	$346.73	$351.94	$357.21	$362.57	$368.01	$373.53	$379.13	$384.82	$390.59	$396.45	$402.40	$408.44	$414.56	$420.78
8"		$439.50	483	$531.80	$539.77	$547.87	$556.09	$564.43	$572.89	$581.49	$590.21	$599.06	$608.05	$617.17	$626.43	$635.82	$645.36	$655.04	$664.87	$674.84	$684.96	$695.24

Figure 14

Los Alamos County Utilities Department
Financial Forecast
Water Production

		ACTUAL	BUDGET	BUDGET	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST
Expense Forecast		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
	1.50%																					
Supervision and Operations		957,506	975,822	990,459	1,005,316	1,020,396	1,035,702	1,051,237	1,067,006	1,083,011	1,099,256	1,115,745	1,132,481	1,149,468	1,166,711	1,184,211	1,201,974	1,220,004	1,238,304	1,256,879	1,275,732	1,294,868
Pumping Power		522,501	800,000	812,000	824,180	836,543	849,091	861,827	874,755	887,876	901,194	914,712	928,433	942,359	956,495	970,842	985,405	1,000,186	1,015,188	1,030,416	1,045,873	1,061,561
Wells		83,059	137,508	139,571	141,664	143,789	145,946	148,135	150,357	152,613	154,902	157,225	159,584	161,977	164,407	166,873	169,376	171,917	174,496	177,113	179,770	182,466
Booster Pump Stations		121,154	125,236	127,115	129,021	130,957	132,921	134,915	136,938	138,993	141,077	143,194	145,341	147,522	149,734	151,980	154,260	156,574	158,923	161,307	163,726	166,182
Treatment		42,144	105,199	106,777	108,379	110,004	111,654	113,329	115,029	116,755	118,506	120,283	122,088	123,919	125,778	127,665	129,579	131,523	133,496	135,498	137,531	139,594
Storage Tanks		20,317	19,600	19,894	20,192	20,495	20,803	21,115	21,431	21,753	22,079	22,410	22,747	23,088	23,434	23,786	24,142	24,505	24,872	25,245	25,624	26,008
Transmission Lines		54,999	65,509	66,492	67,489	68,501	69,529	70,572	71,630	72,705	73,795	74,902	76,026	77,166	78,324	79,499	80,691	81,901	83,130	84,377	85,643	86,927
Non Potable System		176,711	642,187	372,422	300,000	300,000	315,000	315,000	319,725	324,521	329,389	334,330	339,344	344,435	349,601	354,845	360,168	365,570	371,054	376,620	382,269	388,003
Interdepartmental Charges		227,774	263,893	267,851	271,869	275,947	280,086	284,288	288,552	292,880	297,274	301,733	306,259	310,852	315,515	320,248	325,052	329,927	334,876	339,900	344,998	350,173
Administrative Division Allocation		521,533	505,254	512,833	520,525	528,333	536,258	544,302	552,467	560,754	569,165	577,702	586,368	595,163	604,091	613,152	622,350	631,685	641,160	650,777	660,539	670,447
State Water Tax		34,855	45,000	45,675	46,360	47,056	47,761	48,478	49,205	49,943	50,692	51,453	52,224	53,008	53,803	54,610	55,429	56,260	57,104	57,961	58,830	59,713
	10.0%																					
Debt Service		222,382	254,182	309,021	339,924	373,916	411,308	452,438	497,682	547,450	602,195	662,415	672,351	682,436	692,673	703,063	713,609	724,313	735,178	746,205	757,399	768,760
Capital Annuity - NP R&R & CIP			127,000	129,000	160,000	165,000	187,000	187,000	195,000	201,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000
Capital Annuity - WP CIP & R&R			-	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	750,000	750,000	750,000	750,000	750,000	750,000
Capital - WP CIP		1,937,194	3,000,000					3,000,000			3,000,000					3,000,000						3,000,000
Capital Paid with Debt/Grants		550,000	483,300	712,500	618,750	825,000	975,000	562,500	487,500	693,750	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000
Capital Paid with Reserves																						
Total Operation Expenses		2,984,935	3,939,390	3,770,110	3,774,920	3,855,937	3,956,059	4,045,636	4,144,778	4,249,253	4,359,525	4,476,104	4,543,246	4,611,394	4,680,565	4,750,774	4,822,035	4,894,366	4,967,781	5,042,298	5,117,933	5,194,702
Total Capital Expenditures		1,937,194	3,000,000	1,500,000	1,500,000	1,500,000	1,500,000	4,500,000	1,500,000	1,500,000	4,500,000	1,500,000	1,500,000	1,500,000	1,500,000	4,500,000	750,000	750,000	750,000	750,000	750,000	3,750,000
Total Cash Outflow		4,922,129	6,939,390	5,270,110	5,274,920	5,355,937	5,456,059	8,545,636	5,644,778	5,749,253	8,859,525	5,976,104	6,043,246	6,111,394	6,180,565	9,250,774	5,572,035	5,644,366	5,717,781	5,792,298	5,867,933	8,944,702
Revenue Forecast																						
Production in thousand gallons (NP)		84,500	86,400	86,400	90,400	90,400	94,500	94,500	108,600	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500
Revenue per thousand gallons (NP)		$ 1.15	$ 1.15	$ 2.50	$ 2.54	$ 2.58	$ 2.61	$ 2.65	$ 2.69	$ 2.73	$ 2.77	$ 2.82	$ 2.86	$ 2.90	$ 2.94	$ 2.99	$ 3.03	$ 3.08	$ 3.13	$ 3.17	$ 3.22	$ 3.27
Rate Increase Percentage				**117.00%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**
Total Sales Revenue (NP)		$ 97,175	$ 99,360	$ 216,000	$ 229,390	$ 232,831	$ 247,042	$ 250,747	$ 292,483	$ 373,138	$ 378,735	$ 384,416	$ 390,182	$ 396,035	$ 401,975	$ 408,005	$ 414,125	$ 420,337	$ 426,642	$ 433,041	$ 439,537	$ 446,130
Production in thousand gallons		1,250,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000
Revenue per thousand gallons		$ 2.89	$ 3.17	$ 3.49	$ 3.54	$ 3.60	$ 3.65	$ 3.71	$ 3.76	$ 3.82	$ 3.87	$ 3.93	$ 3.99	$ 4.05	$ 4.11	$ 4.17	$ 4.24	$ 4.30	$ 4.36	$ 4.43	$ 4.50	$ 4.56
Rate Increase Percentage			**10.00%**	**10.00%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**
Total Sales Revenue		3,606,504	3,649,525	4,014,478	4,074,695	4,135,815	4,197,852	4,260,820	4,324,732	4,389,603	4,455,447	4,522,279	4,590,113	4,658,965	4,728,850	4,799,782	4,871,779	4,944,856	5,019,029	5,094,314	5,170,729	5,248,290
Interest on Inter-Utility Loans		182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106
Interest on Utility Reserves		200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Other Revenue		90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000
Bond Federal Subsidy		27,576	27,576	27,576	27,576	27,576	27,576	27,576	27,576	21,338	14,940	14,940	14,940	14,940	14,940	14,940	14,940	14,940	14,940	14,940	14,940	14,940
Federal or State Grant/Loan		550,000	483,300	712,500	618,750	825,000	975,000	562,500	487,500	693,750	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000
Inter-Utility Loan																						
Total Cash Inflow		4,753,361	4,731,867	5,442,660	5,422,517	5,693,328	5,919,576	5,573,749	5,604,397	5,949,935	5,696,228	5,768,740	5,842,341	5,917,045	5,992,870	6,069,833	6,147,949	6,227,238	6,307,716	6,389,401	6,472,311	6,556,465
Net Cash Flow		(168,768)	(2,207,523)	172,550	147,597	337,391	463,517	(2,971,887)	(40,381)	200,682	(3,163,297)	(207,364)	(200,905)	(194,349)	(187,695)	(3,180,941)	575,914	582,872	589,934	597,103	604,379	(2,388,236)
Cumulative Net Cash Flow		(168,768)	(2,376,291)	(2,203,741)	(2,056,144)	(1,718,754)	(1,255,237)	(4,227,124)	(4,267,505)	(4,066,823)	(7,230,120)	(7,437,483)	(7,638,388)	(7,832,737)	(8,020,433)	(11,201,374)	(10,625,460)	(10,042,588)	(9,452,653)	(8,855,551)	(8,251,172)	(10,639,408)
Cash Balance		10,362,736	8,155,213	8,327,763	8,475,360	8,812,750	9,276,267	6,304,380	6,263,999	6,464,681	3,301,384	3,094,021	2,893,116	2,698,767	2,511,071	(669,870)	(93,956)	488,916	1,078,851	1,675,953	2,280,332	(107,904)
Recommended Cash Balance		5,673,786	4,118,566	4,167,422	4,229,927	4,320,683	7,386,037	4,466,230	4,549,351	7,640,860	4,729,259	4,767,798	4,806,915	4,846,619	7,886,918	4,177,822	4,219,339	4,261,480	4,304,252	4,347,666	7,391,731	4,436,456
Alter. One Wholesale (WP) Water Rates / kgal		$2.89	$3.17	$3.49	$3.54	$3.60	$3.65	$3.71	$3.76	$3.82	$3.87	$3.93	$3.99	$4.05	$4.11	$4.17	$4.24	$4.30	$4.36	$4.43	$4.50	$4.56
Alter. One Non-Potable (NP) Water Rates / kgal		$1.15	$1.15	$2.50	$2.54	$2.58	$2.61	$2.65	$2.69	$2.73	$2.77	$2.82	$2.86	$2.90	$2.94	$2.99	$3.03	$3.08	$3.13	$3.17	$3.22	$3.27

Figure 15

Los Alamos County Utilities Department
Financial Forecast
Water Distribution

		ACTUAL	BUDGET	BUDGET	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST
Expense Forecast		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
	1.50%																					
Supervision, Misc Direct Admin		221,273	182,979	187,328	190,138	192,990	195,885	198,823	201,805	204,833	207,905	211,024	214,189	217,402	220,663	223,973	227,332	230,742	234,203	237,717	241,282	244,902
Hydrants		71,088	58,860	59,924	60,823	61,735	62,661	63,601	64,555	65,523	66,506	67,504	68,517	69,544	70,587	71,646	72,721	73,812	74,919	76,043	77,183	78,341
Water Distribution		369,040	403,107	409,154	415,291	421,520	427,843	434,261	440,775	447,386	454,097	460,909	467,822	474,839	481,962	489,191	496,529	503,977	511,537	519,210	526,998	534,903
Water Meters		655,736	691,719	699,002	700,000	700,000	350,000	355,250	360,579	365,987	371,477	377,049	382,705	388,446	394,272	400,186	406,189	412,282	418,466	424,743	431,115	437,581
Interdepartmental Charges		225,566	251,649	251,649	255,424	259,255	263,144	267,091	271,097	275,164	279,291	283,481	287,733	292,049	296,430	300,876	305,389	309,970	314,620	319,339	324,129	328,991
Administrative Division Allocation		520,812	538,020	551,910	560,189	568,591	577,120	585,777	594,564	603,482	612,535	621,723	631,048	640,514	650,122	659,874	669,772	679,818	690,016	700,366	710,871	721,534
Cost of Water		2,528,096	2,459,463	2,705,409	2,745,990	2,787,180	2,828,987	2,871,422	2,914,494	2,958,211	3,002,584	3,047,623	3,093,337	3,139,737	3,186,833	3,234,636	3,283,155	3,332,403	3,382,389	3,433,125	3,484,621	3,536,891
Capital Annuity				1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Capital		443,092	-	-																		
Total Operation Expenses		4,591,611	4,585,797	4,864,375	4,927,854	4,991,272	4,705,641	4,776,225	4,847,869	4,920,587	4,994,396	5,069,312	5,145,351	5,222,532	5,300,870	5,380,383	5,461,088	5,543,005	5,626,150	5,710,542	5,796,200	5,883,143
Total Capital Expenditures		443,092	0	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000	500,000
Total Expenditures		5,034,703	4,585,797	5,864,375	5,927,854	5,991,272	5,705,641	5,776,225	5,847,869	5,920,587	5,994,396	6,069,312	6,145,351	5,722,532	5,800,870	5,880,383	5,961,088	6,043,005	6,126,150	6,210,542	6,296,200	6,383,143
Revenue Forecast																						
kgal Sales		850,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000
Revenue per kgal		$ 5.43	$ 5.97	$ 6.57	$ 6.90	$ 7.00	$ 7.11	$ 7.21	$ 7.32	$ 7.43	$ 7.54	$ 7.66	$ 7.01	$ 7.01	$ 7.01	$ 7.01	$ 7.08	$ 7.18	$ 7.29	$ 7.40	$ 7.51	$ 7.62
Rate Increase Percentage			**10.00%**	**10.00%**	**5.00%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**-8.50%**	**0.00%**	**0.00%**	**0.00%**	**1.00%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**
Total Sales Revenue		4,615,500	4,629,075	5,091,983	5,346,582	5,426,780	5,508,182	5,590,805	5,674,667	5,759,787	5,846,184	5,933,876	5,429,497	5,429,497	5,429,497	5,429,497	5,483,792	5,566,049	5,649,540	5,734,283	5,820,297	5,907,601
Interest on Utility Reserves		520,525	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
Revenue on Recoverable Work		271,869	275,947	280,086	284,288	288,552	292,880	297,274	301,733	306,259	310,852	315,515	320,248	325,052	329,927	334,876	339,900	344,998	350,173	355,426	360,757	366,168
Bond Issue Proceeds																						
Total Cash Inflow from Operations		5,407,894	5,055,022	5,522,069	5,780,869	5,865,332	5,951,062	6,038,078	6,126,399	6,216,045	6,307,036	6,399,392	5,899,745	5,904,549	5,909,424	5,914,373	5,973,691	6,061,047	6,149,713	6,239,708	6,331,054	6,423,770
Net Cash Flow		373,191	469,226	(342,306)	(146,985)	(125,939)	245,422	261,853	278,531	295,459	312,640	330,080	(245,606)	182,017	108,555	33,991	12,603	18,042	23,563	29,166	34,854	40,627
Cumulative Net Cash Flow		373,191	842,417	500,111	353,126	227,187	472,608	734,461	1,012,992	1,308,450	1,621,091	1,951,171	1,705,564	1,887,582	1,996,136	2,030,127	2,042,730	2,060,773	2,084,335	2,113,502	2,148,355	2,188,982
Cash Balance		615,779	1,085,005	742,698	595,714	469,774	715,196	977,049	1,255,579	1,551,038	1,863,678	2,193,758	1,948,152	2,130,169	2,238,724	2,272,715	2,285,318	2,303,360	2,326,923	2,356,089	2,390,943	2,431,569
Recommended Cash Balance		1,513,167	2,529,483	2,540,932	2,552,046	2,388,327	2,402,402	2,416,688	2,431,188	2,445,906	2,460,844	2,476,007	1,991,397	2,007,018	2,022,873	2,038,966	2,055,301	2,071,880	2,088,709	2,105,789	2,123,126	2,140,723
Alter. One Retail (DW) Water Rates / kgal																						
Residential Tier 1 - < 9,000 gals		$4.19	$4.61	$5.07	$5.32	$5.40	$5.48	$5.57	$5.65	$5.73	$5.82	$5.91	$5.41	$5.41	$5.41	$5.41	$5.46	$5.54	$5.63	$5.71	$5.80	$5.88
Residential Tier 2 - 9 to 15,000 gals		$4.45	$4.90	$5.38	$5.65	$5.74	$5.82	$5.91	$6.00	$6.09	$6.18	$6.27	$5.74	$5.74	$5.74	$5.74	$5.80	$5.89	$5.97	$6.06	$6.15	$6.25
Residential Tier 3 - > 15,000 gals		$5.32	$5.85	$6.44	$6.76	$6.86	$6.96	$7.07	$7.17	$7.28	$7.39	$7.50	$6.86	$6.86	$6.86	$6.86	$6.93	$7.04	$7.14	$7.25	$7.36	$7.47
Multi-Family Tier 1 - < 9,000 gals		$4.19	$4.61	$5.07	$5.32	$5.40	$5.48	$5.57	$5.65	$5.73	$5.82	$5.91	$5.41	$5.41	$5.41	$5.41	$5.46	$5.54	$5.63	$5.71	$5.80	$5.88
Multi-Family Tier 2 - 9 to 15,000 gals		$4.40	$4.84	$5.32	$5.59	$5.67	$5.76	$5.85	$5.93	$6.02	$6.11	$6.20	$5.68	$5.68	$5.68	$5.68	$5.73	$5.82	$5.91	$6.00	$6.09	$6.18
Multi-Family Tier 3 - > 15,000 gals		$4.50	$4.95	$5.45	$5.72	$5.80	$5.89	$5.98	$6.07	$6.16	$6.25	$6.35	$5.81	$5.81	$5.81	$5.81	$5.86	$5.95	$6.04	$6.13	$6.22	$6.32
Commercial All Tiers		$4.61	$5.07	$5.58	$5.86	$5.94	$6.03	$6.12	$6.22	$6.31	$6.40	$6.50	$5.95	$5.95	$5.95	$5.95	$6.01	$6.10	$6.19	$6.28	$6.38	$6.47
County & Schools All Tiers		$4.61	$5.07	$5.58	$5.86	$5.94	$6.03	$6.12	$6.22	$6.31	$6.40	$6.50	$5.95	$5.95	$5.95	$5.95	$6.01	$6.10	$6.19	$6.28	$6.38	$6.47
Customer Charge per Meter Size																						
= or < 1.25"		$7.93	$8.72	$9.60	$10.08	$10.23	$10.38	$10.54	$10.69	$10.85	$11.02	$11.18	$10.23	$10.23	$10.23	$10.23	$10.33	$10.49	$10.65	$10.81	$10.97	$11.13
1.5"		$25.12	$27.63	$30.40	$31.91	$32.39	$32.88	$33.37	$33.87	$34.38	$34.90	$35.42	$32.41	$32.41	$32.41	$32.41	$32.73	$33.23	$33.72	$34.23	$34.74	$35.26
2"		$37.50	$41.25	$45.38	$47.64	$48.36	$49.08	$49.82	$50.57	$51.33	$52.10	$52.88	$48.38	$48.38	$48.38	$48.38	$48.87	$49.60	$50.34	$51.10	$51.87	$52.64
2.5" to 3"		$74.00	$81.40	$89.54	$94.02	$95.43	$96.86	$98.31	$99.79	$101.28	$102.80	$104.34	$95.48	$95.48	$95.48	$95.48	$96.43	$97.88	$99.34	$100.83	$102.35	$103.88
4"		$126.00	$138.60	$152.46	$160.08	$162.48	$164.92	$167.40	$169.91	$172.45	$175.04	$177.67	$162.57	$162.57	$162.57	$162.57	$164.19	$166.65	$169.15	$171.69	$174.27	$176.88
6"		$266.00	$292.60	$321.86	$337.95	$343.02	$348.17	$353.39	$358.69	$364.07	$369.53	$375.08	$343.19	$343.19	$343.19	$343.19	$346.63	$351.83	$357.10	$362.46	$367.90	$373.41
8"		$439.50	$483.45	$531.80	$558.38	$566.76	$575.26	$583.89	$592.65	$601.54	$610.56	$619.72	$567.04	$567.04	$567.04	$567.04	$572.71	$581.31	$590.02	$598.88	$607.86	$616.98

Figure 16

Los Alamos County Utilities Department
Financial Forecast
Water Production

		ACTUAL	BUDGET	BUDGET	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST
Expense Forecast		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
	1.50%																					
Supervision and Operations		957,506	975,822	990,459	1,005,316	1,020,396	1,035,702	1,051,237	1,067,006	1,083,011	1,099,256	1,115,745	1,132,481	1,149,468	1,166,711	1,184,211	1,201,974	1,220,004	1,238,304	1,256,879	1,275,732	1,294,868
Pumping Power		522,501	800,000	812,000	824,180	836,543	849,091	861,827	874,755	887,876	901,194	914,712	928,433	942,359	956,495	970,842	985,405	1,000,186	1,015,188	1,030,416	1,045,873	1,061,561
Wells		83,059	137,508	139,571	141,664	143,789	145,946	148,135	150,357	152,613	154,902	157,225	159,584	161,977	164,407	166,873	169,376	171,917	174,496	177,113	179,770	182,466
Booster Pump Stations		121,154	125,236	127,115	129,021	130,957	132,921	134,915	136,938	138,993	141,077	143,194	145,341	147,522	149,734	151,980	154,260	156,574	158,923	161,307	163,726	166,182
Treatment		42,144	105,199	106,777	108,379	110,004	111,654	113,329	115,029	116,755	118,506	120,283	122,088	123,919	125,778	127,665	129,579	131,523	133,496	135,498	137,531	139,594
Storage Tanks		20,317	19,600	19,894	20,192	20,495	20,803	21,115	21,431	21,753	22,079	22,410	22,747	23,088	23,434	23,786	24,142	24,505	24,872	25,245	25,624	26,008
Transmission Lines		54,999	65,509	66,492	67,489	68,501	69,529	70,572	71,630	72,705	73,795	74,902	76,026	77,166	78,324	79,499	80,691	81,901	83,130	84,377	85,643	86,927
Non Potable System		176,711	642,187	372,422	300,000	300,000	315,000	315,000	319,725	324,521	329,389	334,330	339,344	344,435	349,601	354,845	360,168	365,570	371,054	376,620	382,269	388,003
Interdepartmental Charges		227,774	263,893	267,851	271,869	275,947	280,086	284,288	288,552	292,880	297,274	301,733	306,259	310,852	315,515	320,248	325,052	329,927	334,876	339,900	344,998	350,173
Administrative Division Allocation		521,533	505,254	512,833	520,525	528,333	536,258	544,302	552,467	560,754	569,165	577,702	586,368	595,163	604,091	613,152	622,350	631,685	641,160	650,777	660,539	670,447
State Water Tax		34,855	45,000	45,675	46,360	47,056	47,761	48,478	49,205	49,943	50,692	51,453	52,224	53,008	53,803	54,610	55,429	56,260	57,104	57,961	58,830	59,713
	10.0%																					
Debt Service		222,382	254,182	309,021	339,924	373,916	411,308	452,438	497,682	547,450	602,195	662,415	672,351	682,436	692,673	703,063	713,609	724,313	735,178	746,205	757,399	768,760
Capital Annuity - NP R&R			127,000	129,000	160,000	165,000	187,000	187,000	195,000	201,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000
Capital Annuity - WP CIP & R&R			-	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	1,500,000	750,000	750,000	750,000	750,000	750,000	750,000
Capital - WP CIP		1,937,194	3,000,000					3,000,000				3,000,000				3,000,000						3,000,000
Capital Paid with Debt/Grants		550,000	483,300	712,500	618,750	825,000	975,000	562,500	487,500	693,750	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000
Capital Paid with Reserves																						
Total Operation Expenses		2,984,935	3,939,390	3,770,110	3,774,920	3,855,937	3,956,059	4,045,636	4,144,778	4,249,253	4,359,525	4,476,104	4,543,246	4,611,394	4,680,565	4,750,774	4,822,035	4,894,366	4,967,781	5,042,298	5,117,933	5,194,702
Total Capital Expenditures		1,937,194	3,000,000	1,500,000	1,500,000	1,500,000	1,500,000	4,500,000	1,500,000	1,500,000	1,500,000	4,500,000	1,500,000	1,500,000	1,500,000	4,500,000	750,000	750,000	750,000	750,000	750,000	3,750,000
Total Cash Outflow		4,922,129	6,939,390	5,270,110	5,274,920	5,355,937	5,456,059	8,545,636	5,644,778	5,749,253	5,859,525	8,976,104	6,043,246	6,111,394	6,180,565	9,250,774	5,572,035	5,644,366	5,717,781	5,792,298	5,867,933	8,944,702
Revenue Forecast																						
Production in thousand gallons (NP)		84,500	86,400	86,400	90,400	90,400	94,500	94,500	108,600	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500
Revenue per thousand gallons (NP)		$ 1.15	$ 1.15	$ 2.50	$ 2.56	$ 2.63	$ 2.69	$ 2.76	$ 2.83	$ 2.90	$ 2.97	$ 3.05	$ 3.12	$ 3.20	$ 3.28	$ 3.36	$ 3.41	$ 3.46	$ 3.50	$ 3.55	$ 3.59	$ 3.64
Rate Increase Percentage				117.00%	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**1.50%**	**1.50%**	**1.00%**	**1.50%**	**1.00%**	**1.50%**
Total Sales Revenue (NP)		$ 97,175	$ 99,360	$ 216,000	$ 231,650	$ 237,441	$ 254,415	$ 260,776	$ 307,177	$ 395,745	$ 405,639	$ 415,780	$ 426,174	$ 436,829	$ 447,750	$ 458,943	$ 465,827	$ 472,815	$ 477,543	$ 484,706	$ 489,553	$ 496,897
Production in thousand gallons		1,250,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000
Revenue per thousand gallons		$ 2.89	$ 3.17	$ 3.49	$ 3.58	$ 3.67	$ 3.76	$ 3.85	$ 3.95	$ 4.05	$ 4.15	$ 4.25	$ 4.36	$ 4.47	$ 4.58	$ 4.69	$ 4.32	$ 4.38	$ 4.43	$ 4.49	$ 4.54	$ 4.61
Rate Increase Percentage			**10.00%**	**10.00%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**2.50%**	**-8.00%**	**1.50%**	**1.00%**	**1.50%**	**1.00%**	**1.50%**
Total Sales Revenue		3,606,504	3,649,525	4,014,478	4,114,839	4,217,710	4,323,153	4,431,232	4,542,013	4,655,563	4,771,952	4,891,251	5,013,532	5,138,871	5,267,342	5,399,026	4,967,104	5,041,610	5,092,027	5,168,407	5,220,091	5,298,392
Interest on Inter-Utility Loans		182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106
Interest on Utility Reserves		200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Other Revenue		90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000
Bond Federal Subsidy		27,576	27,576	27,576	27,576	27,576	27,576	27,576	27,576	21,338	14,940	14,940	14,940	14,940	14,940	14,940	14,940	14,940	14,940	14,940	14,940	14,940
Federal or State Grant/Loan		550,000	483,300	712,500	618,750	825,000	975,000	562,500	487,500	693,750	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000
Inter-Utility Loan																						
Total Cash Inflow		4,753,361	4,731,867	5,442,660	5,464,921	5,779,834	6,052,251	5,754,190	5,836,372	6,238,502	6,039,637	6,169,077	6,301,752	6,437,745	6,577,138	6,720,015	6,294,977	6,376,471	6,431,615	6,515,159	6,571,690	6,657,334
Net Cash Flow		(168,768)	(2,207,523)	172,550	190,002	423,896	596,192	(2,791,446)	191,594	489,250	180,112	(2,807,028)	258,507	326,351	396,572	(2,530,759)	722,942	732,105	713,834	722,861	703,757	(2,287,367)
Cumulative Net Cash Flow		(168,768)	(2,376,291)	(2,203,741)	(2,013,740)	(1,589,843)	(993,652)	(3,785,098)	(3,593,504)	(3,104,254)	(2,924,142)	(5,731,169)	(5,472,663)	(5,146,312)	(4,749,740)	(7,280,499)	(6,557,557)	(5,825,452)	(5,111,618)	(4,388,758)	(3,685,000)	(5,972,368)
Cash Balance		10,362,736	8,155,213	8,327,763	8,517,764	8,941,661	9,537,852	6,746,406	6,938,000	7,427,250	7,607,362	4,800,335	5,058,841	5,385,192	5,781,764	3,251,005	3,973,947	4,706,052	5,419,886	6,142,746	6,846,504	4,559,136
Recommended Cash Balance		5,673,786	4,118,566	4,167,422	4,229,927	4,320,683	7,386,037	4,466,230	4,549,351	7,640,860	4,729,259	4,767,798	4,806,915	4,846,619	7,886,918	4,177,822	4,219,339	4,261,480	4,304,252	4,347,666	7,391,731	4,436,456
Alter. One Wholesale (WP) Water Rates / kgal		$2.89	$3.17	$3.49	$3.58	$3.67	$3.76	$3.85	$3.95	$4.05	$4.15	$4.25	$4.36	$4.47	$4.58	$4.69	$4.32	$4.38	$4.43	$4.49	$4.54	$4.61
Alter. One Non-Potable (NP) Water Rates / kgal		$1.15	$1.15	$2.50	$2.56	$2.63	$2.69	$2.76	$2.83	$2.90	$2.97	$3.05	$3.12	$3.20	$3.28	$3.36	$3.41	$3.46	$3.50	$3.55	$3.59	$3.64

Figure 17

Los Alamos County Utilities Department
Financial Forecast
Water Distribution

		ACTUAL	BUDGET	BUDGET	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST
Expense Forecast		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
	1.50%																					
Supervision, Misc Direct Admin		221,273	182,979	187,328	190,138	192,990	195,885	198,823	201,805	204,833	207,905	211,024	214,189	217,402	220,663	223,973	227,332	230,742	234,203	237,717	241,282	244,902
Hydrants		71,088	58,860	59,924	60,823	61,735	62,661	63,601	64,555	65,523	66,506	67,504	68,517	69,544	70,587	71,646	72,721	73,812	74,919	76,043	77,183	78,341
Water Distribution		369,040	403,107	409,154	415,291	421,520	427,843	434,261	440,775	447,386	454,097	460,909	467,822	474,839	481,962	489,191	496,529	503,977	511,537	519,210	526,998	534,903
Water Meters		655,736	691,719	699,002	700,000	700,000	350,000	355,250	360,579	365,987	371,477	377,049	382,705	388,446	394,272	400,186	406,189	412,282	418,466	424,743	431,115	437,581
Interdepartmental Charges		225,566	251,649	251,649	255,424	259,255	263,144	267,091	271,097	275,164	279,291	283,481	287,733	292,049	296,430	300,876	305,389	309,970	314,620	319,339	324,129	328,991
Administrative Division Allocation		520,812	538,020	551,910	560,189	568,591	577,120	585,777	594,564	603,482	612,535	621,723	631,048	640,514	650,122	659,874	669,772	679,818	690,016	700,366	710,871	721,534
Cost of Water		2,528,096	2,459,463	2,705,409	2,745,990	2,787,180	2,828,987	2,871,422	2,914,494	2,958,211	3,002,584	3,047,623	3,093,337	3,139,737	3,186,833	3,234,636	3,283,155	3,332,403	3,382,389	3,433,125	3,484,621	3,536,891
Capital Annuity				750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	500,000	500,000	500,000	500,000	500,000	500,000
Capital		443,092	-	-																		
Total Operation Expenses		4,591,611	4,585,797	4,864,375	4,927,854	4,991,272	4,705,641	4,776,225	4,847,869	4,920,587	4,994,396	5,069,312	5,145,351	5,222,532	5,300,870	5,380,383	5,461,088	5,543,005	5,626,150	5,710,542	5,796,200	5,883,143
Total Capital Expenditures		443,092	0	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	750,000	500,000	500,000	500,000	500,000	500,000	500,000
Total Expenditures		5,034,703	4,585,797	5,614,375	5,677,854	5,741,272	5,455,641	5,526,225	5,597,869	5,670,587	5,744,396	5,819,312	5,895,351	5,972,532	6,050,870	6,130,383	5,961,088	6,043,005	6,126,150	6,210,542	6,296,200	6,383,143
Revenue Forecast																						
kgal Sales		850,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000	775,000
Revenue per kgal		$ 5.43	$ 5.97	$ 6.30	$ 6.46	$ 6.62	$ 6.79	$ 6.89	$ 6.99	$ 7.10	$ 7.20	$ 7.31	$ 7.42	$ 7.53	$ 7.64	$ 7.76	$ 6.98	$ 6.98	$ 6.98	$ 7.05	$ 7.12	$ 7.19
Rate Increase Percentage			**10.00%**	**5.50%**	**2.50%**	**2.50%**	**2.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**1.50%**	**-10.00%**	**0.00%**	**0.00%**	**1.00%**	**1.00%**	**1.00%**
Total Sales Revenue		4,615,500	4,629,075	4,883,674	5,005,766	5,130,910	5,259,183	5,338,071	5,418,142	5,499,414	5,581,905	5,665,634	5,750,618	5,836,877	5,924,431	6,013,297	5,411,967	5,411,967	5,411,967	5,466,087	5,520,748	5,575,955
Interest on Utility Reserves		520,525	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000	150,000
Revenue on Recoverable Work		271,869	275,947	280,086	284,288	288,552	292,880	297,274	301,733	306,259	310,852	315,515	320,248	325,052	329,927	334,876	339,900	344,998	350,173	355,426	360,757	366,168
Bond Issue Proceeds																						
Total Cash Inflow from Operations		5,407,894	5,055,022	5,313,761	5,440,054	5,569,462	5,702,063	5,785,344	5,869,874	5,955,672	6,042,757	6,131,149	6,220,866	6,311,929	6,404,358	6,498,173	5,901,867	5,906,965	5,912,140	5,971,513	6,031,505	6,092,124
Net Cash Flow		373,191	469,226	(300,615)	(237,800)	(171,810)	246,422	259,119	272,005	285,086	298,362	311,837	325,515	339,398	353,488	367,791	(59,221)	(136,039)	(214,009)	(239,029)	(264,695)	(291,019)
Cumulative Net Cash Flow		373,191	842,417	541,802	304,002	132,192	378,615	637,733	909,739	1,194,824	1,493,186	1,805,024	2,130,538	2,469,936	2,823,424	3,191,215	3,131,994	2,995,954	2,781,945	2,542,916	2,278,220	1,987,201
Cash Balance		615,779	1,085,005	784,390	546,590	374,780	621,202	880,321	1,152,326	1,437,412	1,735,774	2,047,611	2,373,126	2,712,523	3,066,012	3,433,803	3,374,581	3,238,542	3,024,533	2,785,503	2,520,808	2,229,789
Recommended Cash Balance		1,513,167	2,279,483	2,290,932	2,302,046	2,138,327	2,152,402	2,166,688	2,181,188	2,195,906	2,210,844	2,226,007	2,241,397	2,257,018	2,272,873	2,038,966	2,055,301	2,071,880	2,088,709	2,105,789	2,123,126	2,140,723
Alter. One Retail (DW) Water Rates / kgal																						
Residential Tier 1 - < 9,000 gals		$4.19	$4.61	$4.86	$4.98	$5.11	$5.24	$5.31	$5.39	$5.48	$5.56	$5.64	$5.73	$5.81	$5.90	$5.99	$5.39	$5.39	$5.39	$5.44	$5.50	$5.55
Residential Tier 2 - 9 to 15,000 gals		$4.45	$4.90	$5.16	$5.29	$5.43	$5.56	$5.64	$5.73	$5.82	$5.90	$5.99	$6.08	$6.17	$6.26	$6.36	$5.72	$5.72	$5.72	$5.78	$5.84	$5.90
Residential Tier 3 - > 15,000 gals		$5.32	$5.85	$6.17	$6.33	$6.49	$6.65	$6.75	$6.85	$6.95	$7.06	$7.16	$7.27	$7.38	$7.49	$7.60	$6.84	$6.84	$6.84	$6.91	$6.98	$7.05
Multi-Family Tier 1 - < 9,000 gals		$4.19	$4.61	$4.86	$4.98	$5.11	$5.24	$5.31	$5.39	$5.48	$5.56	$5.64	$5.73	$5.81	$5.90	$5.99	$5.39	$5.39	$5.39	$5.44	$5.50	$5.55
Multi-Family Tier 2 - 9 to 15,000 gals		$4.40	$4.84	$5.11	$5.23	$5.36	$5.50	$5.58	$5.67	$5.75	$5.84	$5.92	$6.01	$6.10	$6.19	$6.29	$5.66	$5.66	$5.66	$5.72	$5.77	$5.83
Multi-Family Tier 3 - > 15,000 gals		$4.50	$4.95	$5.22	$5.35	$5.49	$5.62	$5.71	$5.79	$5.88	$5.97	$6.06	$6.15	$6.24	$6.34	$6.43	$5.79	$5.79	$5.79	$5.85	$5.90	$5.96
Commercial All Tiers		$4.61	$5.07	$5.35	$5.48	$5.62	$5.76	$5.85	$5.94	$6.02	$6.11	$6.21	$6.30	$6.39	$6.49	$6.59	$5.93	$5.93	$5.93	$5.99	$6.05	$6.11
County & Schools All Tiers		$4.61	$5.07	$5.35	$5.48	$5.62	$5.76	$5.85	$5.94	$6.02	$6.11	$6.21	$6.30	$6.39	$6.49	$6.59	$5.93	$5.93	$5.93	$5.99	$6.05	$6.11
Customer Charge per Meter Size																						
= or < 1.25"		$7.93	$8.72	$9.20	$9.43	$9.67	$9.91	$10.06	$10.21	$10.36	$10.52	$10.68	$10.84	$11.00	$11.16	$11.33	$10.20	$10.20	$10.20	$10.30	$10.40	$10.51
1.5"		$25.12	$27.63	$29.15	$29.88	$30.63	$31.39	$31.86	$32.34	$32.83	$33.32	$33.82	$34.33	$34.84	$35.36	$35.89	$32.31	$32.31	$32.31	$32.63	$32.95	$33.28
2"		$37.50	$41.25	$43.52	$44.61	$45.72	$46.86	$47.57	$48.28	$49.01	$49.74	$50.49	$51.24	$52.01	$52.79	$53.58	$48.23	$48.23	$48.23	$48.71	$49.20	$49.69
2.5" to 3"		$74.00	$81.40	$85.88	$88.02	$90.22	$92.48	$93.87	$95.28	$96.70	$98.16	$99.63	$101.12	$102.64	$104.18	$105.74	$95.17	$95.17	$95.17	$96.12	$97.08	$98.05
4"		$126.00	$138.60	$146.22	$149.88	$153.63	$157.47	$159.83	$162.23	$164.66	$167.13	$169.64	$172.18	$174.76	$177.38	$180.05	$162.04	$162.04	$162.04	$163.66	$165.30	$166.95
6"		$266.00	$292.60	$308.69	$316.41	$324.32	$332.43	$337.42	$342.48	$347.61	$352.83	$358.12	$363.49	$368.94	$374.48	$380.10	$342.09	$342.09	$342.09	$345.51	$348.96	$352.45
8"		$439.50	$483.45	$510.04	$522.79	$535.86	$549.26	$557.50	$565.86	$574.35	$582.96	$591.71	$600.58	$609.59	$618.73	$628.01	$565.21	$565.21	$565.21	$570.87	$576.57	$582.34

Figure 18

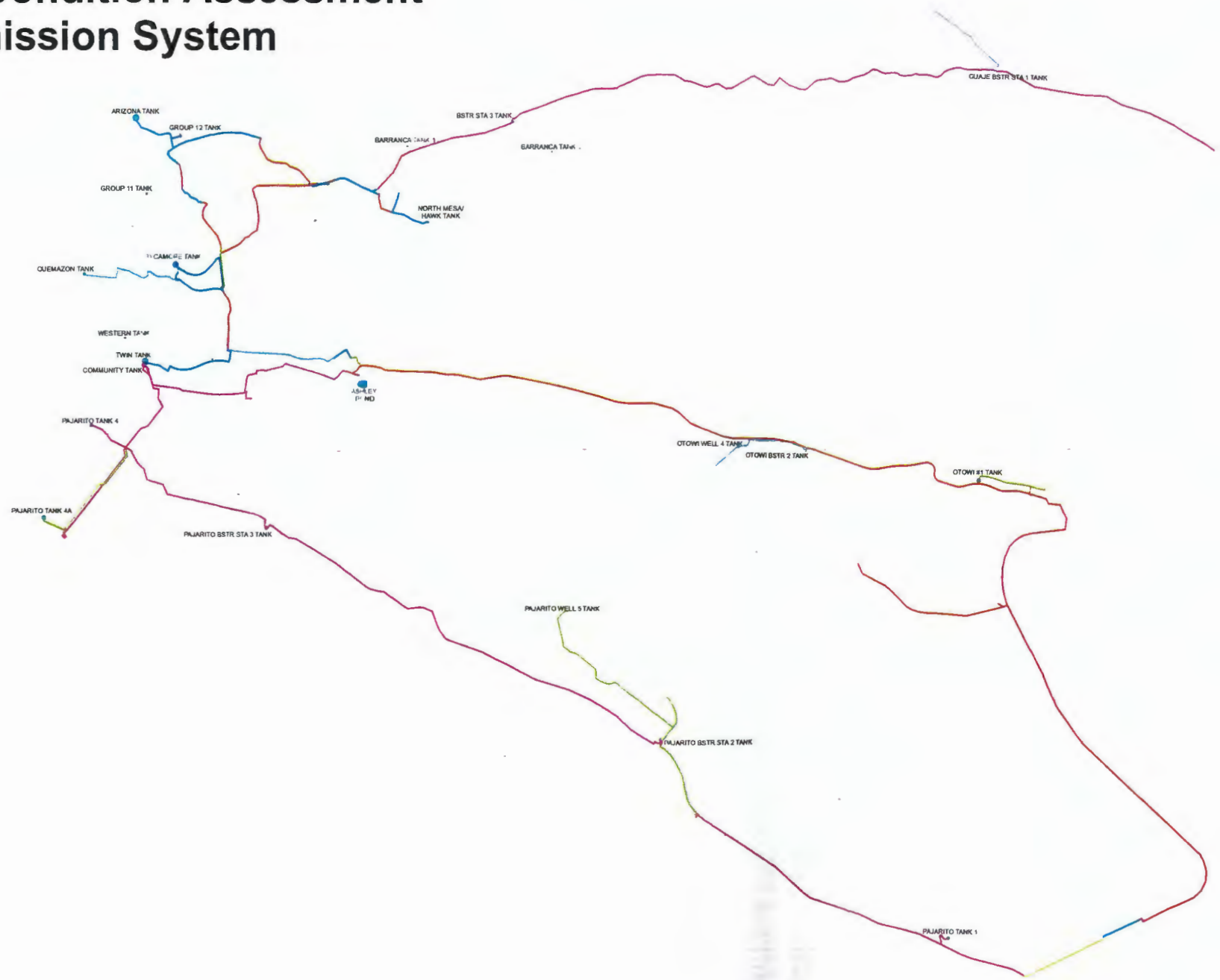
Los Alamos County Utilities Department
Financial Forecast
Water Production

		ACTUAL	BUDGET	BUDGET	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST	FORECAST
Expense Forecast		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036
	1.50%																					
Supervision and Operations		957,506	975,822	990,459	1,005,316	1,020,396	1,035,702	1,051,237	1,067,006	1,083,011	1,099,256	1,115,745	1,132,481	1,149,468	1,166,711	1,184,211	1,201,974	1,220,004	1,238,304	1,256,879	1,275,732	1,294,868
Pumping Power		522,501	800,000	812,000	824,180	836,543	849,091	861,827	874,755	887,876	901,194	914,712	928,433	942,359	956,495	970,842	985,405	1,000,186	1,015,188	1,030,416	1,045,873	1,061,561
Wells		83,059	137,508	139,571	141,664	143,789	145,946	148,135	150,357	152,613	154,902	157,225	159,584	161,977	164,407	166,873	169,376	171,917	174,496	177,113	179,770	182,466
Booster Pump Stations		121,154	125,236	127,115	129,021	130,957	132,921	134,915	136,938	138,993	141,077	143,194	145,341	147,522	149,734	151,980	154,260	156,574	158,923	161,307	163,726	166,182
Treatment		42,144	105,199	106,777	108,379	110,004	111,654	113,329	115,029	116,755	118,506	120,283	122,088	123,919	125,778	127,665	129,579	131,523	133,496	135,498	137,531	139,594
Storage Tanks		20,317	19,600	19,894	20,192	20,495	20,803	21,115	21,431	21,753	22,079	22,410	22,747	23,088	23,434	23,786	24,142	24,505	24,872	25,245	25,624	26,008
Transmission Lines		54,999	65,509	66,492	67,489	68,501	69,529	70,572	71,630	72,705	73,795	74,902	76,026	77,166	78,324	79,499	80,691	81,901	83,130	84,377	85,643	86,927
Non Potable System		176,711	642,187	372,422	300,000	300,000	315,000	315,000	319,725	324,521	329,389	334,330	339,344	344,435	349,601	354,845	360,168	365,570	371,054	376,620	382,269	388,003
Interdepartmental Charges		227,774	263,893	267,851	271,869	275,947	280,086	284,288	288,552	292,880	297,274	301,733	306,259	310,852	315,515	320,248	325,052	329,927	334,876	339,900	344,998	350,173
Administrative Division Allocation		521,533	505,254	512,833	520,525	528,333	536,258	544,302	552,467	560,754	569,165	577,702	586,368	595,163	604,091	613,152	622,350	631,685	641,160	650,777	660,539	670,447
State Water Tax		34,855	45,000	45,675	46,360	47,056	47,761	48,478	49,205	49,943	50,692	51,453	52,224	53,008	53,803	54,610	55,429	56,260	57,104	57,961	58,830	59,713
	10.0%																					
Debt Service		222,382	254,182	309,021	339,924	373,916	411,308	452,438	497,682	547,450	602,195	662,415	672,351	682,436	692,673	703,063	713,609	724,313	735,178	746,205	757,399	768,760
Capital Annuity - NP R&R			127,000	129,000	160,000	165,000	187,000	187,000	195,000	201,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000	210,000
Capital Annuity - WP CIP & R&R			-	1,615,000	1,615,000	1,615,000	1,615,000	750,000	1,615,000	1,615,000	1,615,000	750,000	1,615,000	1,615,000	1,615,000	750,000	1,615,000	1,615,000	1,615,000	750,000	750,000	750,000
Capital - WP CIP		1,937,194	3,000,000					3,000,000				3,000,000				3,000,000						3,000,000
Capital Paid with Debt/Grants		550,000	483,300	712,500	618,750	825,000	975,000	562,500	487,500	693,750	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000
Capital Paid with Reserves																						
Total Operation Expenses		2,984,935	3,939,390	3,770,110	3,774,920	3,855,937	3,956,059	4,045,636	4,144,778	4,249,253	4,359,525	4,476,104	4,543,246	4,611,394	4,680,565	4,750,774	4,822,035	4,894,366	4,967,781	5,042,298	5,117,933	5,194,702
Total Capital Expenditures		1,937,194	3,000,000	1,615,000	1,615,000	1,615,000	1,615,000	3,750,000	1,615,000	1,615,000	1,615,000	3,750,000	1,615,000	1,615,000	1,615,000	3,750,000	1,615,000	1,615,000	1,615,000	750,000	750,000	3,750,000
Total Cash Outflow		4,922,129	6,939,390	5,385,110	5,389,920	5,470,937	5,571,059	7,795,636	5,759,778	5,864,253	5,974,525	8,226,104	6,158,246	6,226,394	6,295,565	8,500,774	6,437,035	6,509,366	6,582,781	5,792,298	5,867,933	8,944,702
Revenue Forecast																						
Production in thousand gallons (NP)		84,500	86,400	86,400	90,400	90,400	94,500	94,500	108,600	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500	136,500
Revenue per thousand gallons (NP)		$ 1.15	$ 1.15	$ 2.50	$ 2.58	$ 2.66	$ 2.74	$ 2.83	$ 2.92	$ 3.01	$ 3.11	$ 3.20	$ 3.30	$ 3.41	$ 3.52	$ 3.63	$ 3.74	$ 3.86	$ 3.98	$ 4.11	$ 4.24	$ 4.37
Rate Increase Percentage				117.00%	**3.15%**	**3.15%**	**3.15%**	**3.15%**	**3.15%**	**3.15%**	**3.15%**	**3.15%**	**3.15%**	**3.15%**	**3.15%**	**3.15%**	**3.15%**	**3.15%**	**3.15%**	**3.15%**	**3.15%**	**3.15%**
Total Sales Revenue (NP)		$ 97,175	$ 99,360	$ 216,000	$ 233,119	$ 240,462	$ 259,286	$ 267,454	$ 317,041	$ 411,044	$ 423,992	$ 437,347	$ 451,124	$ 465,334	$ 479,992	$ 495,112	$ 510,708	$ 526,795	$ 543,389	$ 560,506	$ 578,162	$ 596,374
Production in thousand gallons		1,250,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000	1,150,000
Revenue per thousand gallons		$ 2.88	$ 3.16	$ 3.48	$ 3.53	$ 3.58	$ 3.64	$ 3.71	$ 3.78	$ 3.86	$ 3.96	$ 4.06	$ 4.16	$ 4.30	$ 4.45	$ 4.61	$ 4.72	$ 4.84	$ 4.60	$ 4.67	$ 4.74	$ 4.81
Rate Increase Percentage			**10.00%**	**10.00%**	**1.50%**	**1.50%**	**1.50%**	**2.00%**	**2.00%**	**2.00%**	**2.50%**	**2.50%**	**2.50%**	**3.50%**	**3.50%**	**3.50%**	**2.50%**	**2.50%**	**-5.00%**	**1.50%**	**1.50%**	**1.50%**
Total Sales Revenue		3,606,504	3,636,875	4,000,563	4,060,571	4,121,480	4,183,302	4,266,968	4,352,307	4,439,353	4,550,337	4,664,095	4,780,698	4,948,022	5,121,203	5,300,445	5,432,956	5,568,780	5,290,341	5,369,696	5,450,242	5,531,995
Interest on Inter-Utility Loans		182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106	182,106
Interest on Utility Reserves		200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000
Other Revenue		90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000	90,000
Bond Federal Subsidy		27,576	27,576	27,576	27,576	27,576	27,576	27,576	27,576	21,338	14,940	14,940	14,940	14,940	14,940	14,940	14,940	14,940	14,940	14,940	14,940	14,940
Federal or State Grant/Loan		550,000	483,300	712,500	618,750	825,000	975,000	562,500	487,500	693,750	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000	375,000
Inter-Utility Loan																						
Total Cash Inflow		4,753,361	4,719,217	5,428,745	5,412,122	5,686,624	5,917,270	5,596,604	5,656,530	6,037,591	5,836,374	5,963,488	6,093,867	6,275,402	6,463,241	6,657,603	6,805,710	6,957,621	6,695,776	6,792,248	6,890,449	6,990,415
Net Cash Flow		(168,768)	(2,220,173)	43,635	22,202	215,687	346,211	(2,199,033)	(103,247)	173,338	(138,150)	(2,262,616)	(64,378)	49,008	167,676	(1,843,171)	368,675	448,255	112,995	999,950	1,022,517	(1,954,286)
Cumulative Net Cash Flow		(168,768)	(2,388,941)	(2,345,306)	(2,323,104)	(2,107,418)	(1,761,207)	(3,960,239)	(4,063,487)	(3,890,148)	(4,028,299)	(6,290,915)	(6,355,293)	(6,306,285)	(6,138,610)	(7,981,781)	(7,613,106)	(7,164,851)	(7,051,856)	(6,051,906)	(5,029,389)	(6,983,675)
Cash Balance		10,362,736	8,142,563	8,186,198	8,208,400	8,424,086	8,770,297	6,571,265	6,468,017	6,641,356	6,503,205	4,240,589	4,176,211	4,225,219	4,392,894	2,549,723	2,918,398	3,366,653	3,479,648	4,479,598	5,502,115	3,547,829
Recommended Cash Balance		5,419,604	3,924,544	3,942,498	3,971,011	4,024,376	6,183,599	4,083,548	4,116,901	4,153,665	6,316,845	4,210,447	4,239,479	4,268,946	6,433,855	4,329,213	4,360,026	4,391,302	3,558,046	3,590,267	6,622,971	3,656,166
Alter. One Wholesale (WP) Water Rates / kgal		$2.89	$3.16	$3.48	$3.53	$3.58	$3.64	$3.71	$3.78	$3.86	$3.96	$4.06	$4.16	$4.30	$4.45	$4.61	$4.72	$4.84	$4.60	$4.67	$4.74	$4.81
Alter. One Non-Potable (NP) Water Rates / kgal		$1.15	$1.15	$2.50	$2.58	$2.66	$2.74	$2.83	$2.92	$3.01	$3.11	$3.20	$3.30	$3.41	$3.52	$3.63	$3.74	$3.86	$3.98	$4.11	$4.24	$4.37

Figure 19

Los Alamos County Utilities
Water System Condition Assessment
Transmission System

LAC Water Utilities Transmission System:
231,620 feet; ~44 miles



N
W E
S

0 1 2 Miles

1:30,000
1 inch equals 2,500 feet

Transmission System Statistics

Age	Length (feet)
1950-1959	72,980
1960-1969	88,655
1970-1979	3,205
1980-1989	24,710
1990-1999	15,570
2000-2010	26,500
Transmission System Total	**231,620**

Legend

TRANSMISSION LINES - AGE

PIPE AGE

- 1950 - 1959
- 1960 - 1969
- 1970 - 1979
- 1980 - 1989
- 1990 - 1999
- 2000 - 2010

ATTACHMENT #1

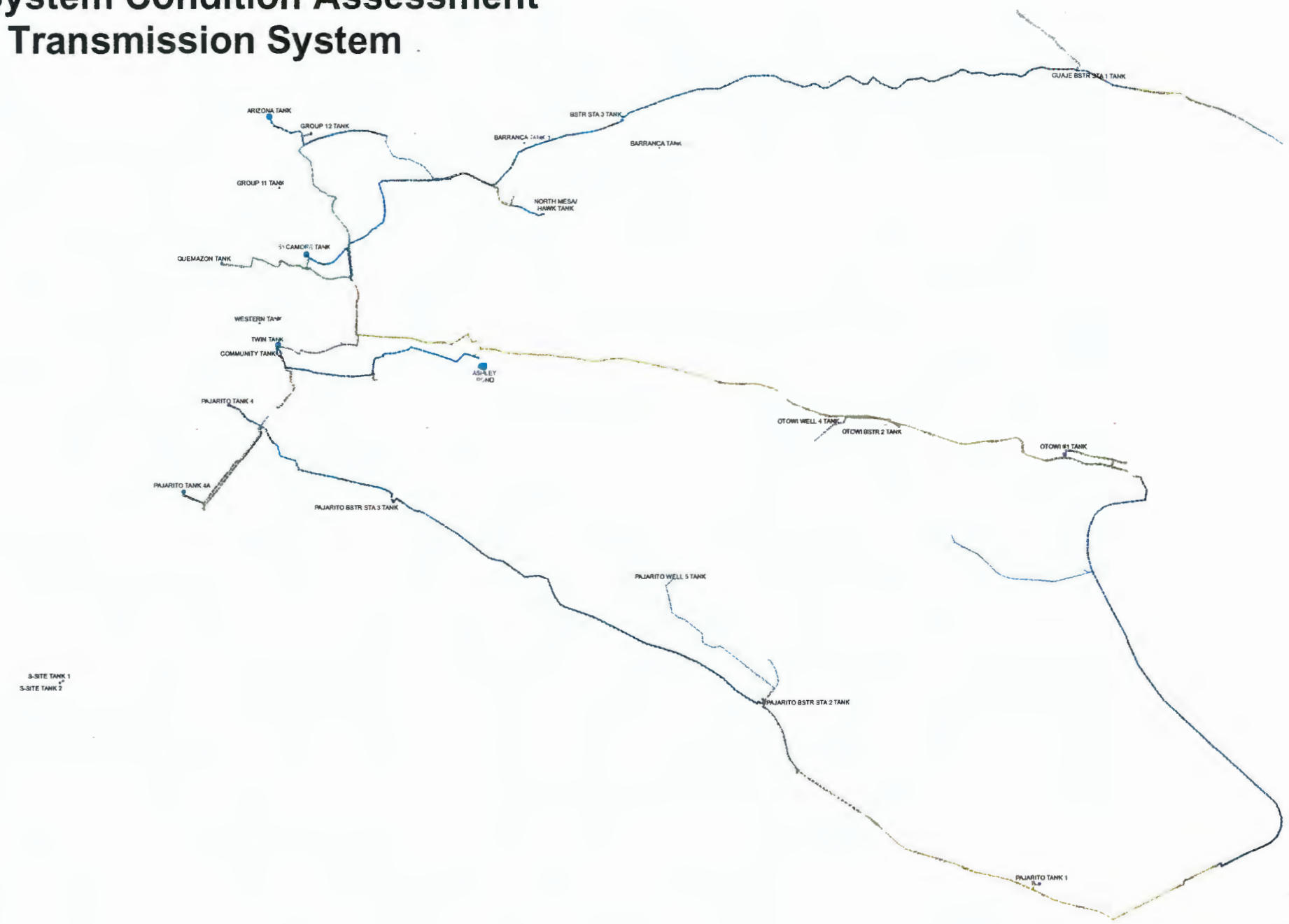
Los Alamos County Utilities
Water System Condition Assessment
Transmission System

LAC Water Utilities Transmission System:
231,620 feet; ~44 miles

N
W E
S

0 1 2 Miles

1:30,000
1 inch equals 2,500 feet



Transmission System Statistics

Size	Length (feet)
8"	65
10"	21,310
12"	33,870
14"	66,600
16"	100,310
18"	9,465
Transmission System Total	**231,620**

Legend

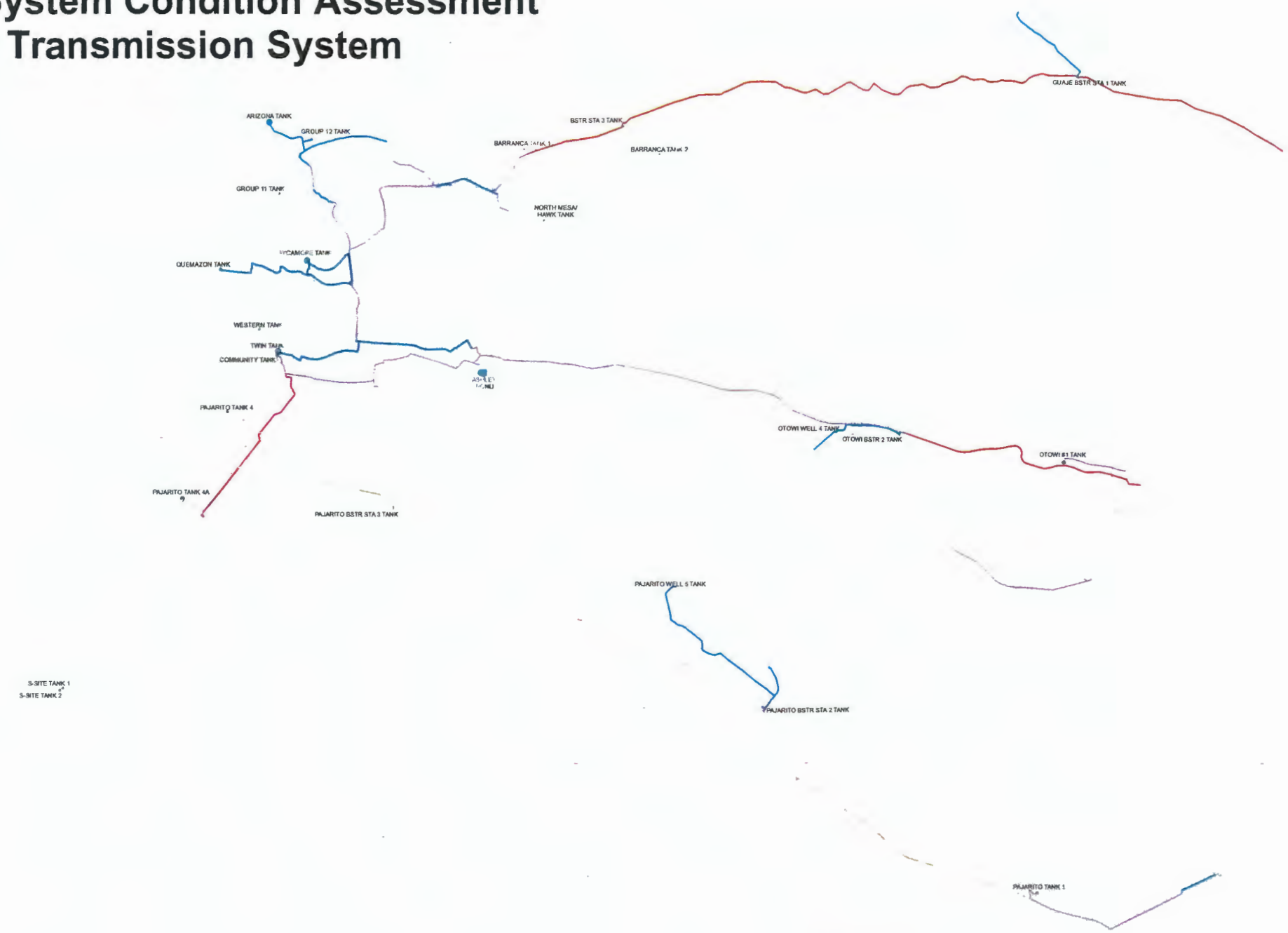
PIPE SIZE

- 6"
- 8"
- 10"
- 12"
- 14"
- 16"
- 18"

ATTACHMENT #2

Los Alamos County Utilities
Water System Condition Assessment
Transmission System

LAC Water Utilities Transmission System:
231,620 feet; ~44 miles



N
W E
S

0 1 2 Miles

1:30,000
1 inch equals 2,500 feet

Transmission System Statistics

Material	Length (feet)
CAST IRON	66,016
CONCRETE	62,540
DUCTILE IRON	48,377
STEEL	48,050
POLYETHYLENE	6,637
Transmission System Total	**231,620**

Legend

PIPE MATERIAL

- CAST IRON
- CONCRETE CYLINDER
- DUCTILE IRON
- STEEL
- POLYETHYLENE

ATTACHMENT #3

Los Alamos County Utilities
Townsite Water Distribution System
Pipe Age

Townsite Water Line Statistics

Age	Length (feet)
1950-59	167,790
1960-69	76,760
1970-79	35,390
1980-89	27,640
1990-99	31,640
2000-present	88,330
Townsite Water Main Total	**427,550**

ATTACHMENT #4

Los Alamos County Utilities
Townsite Water Distribution System
Pipe Sizes

Townsite Water Line Statistics

Size	Length (feet)
2"	9,405
3"	4,605
4"	12,625
6"	164,585
8"	215,640
10"	12,855
12"	7,835
14"	0
Townsite Water Main Total	**427,550**

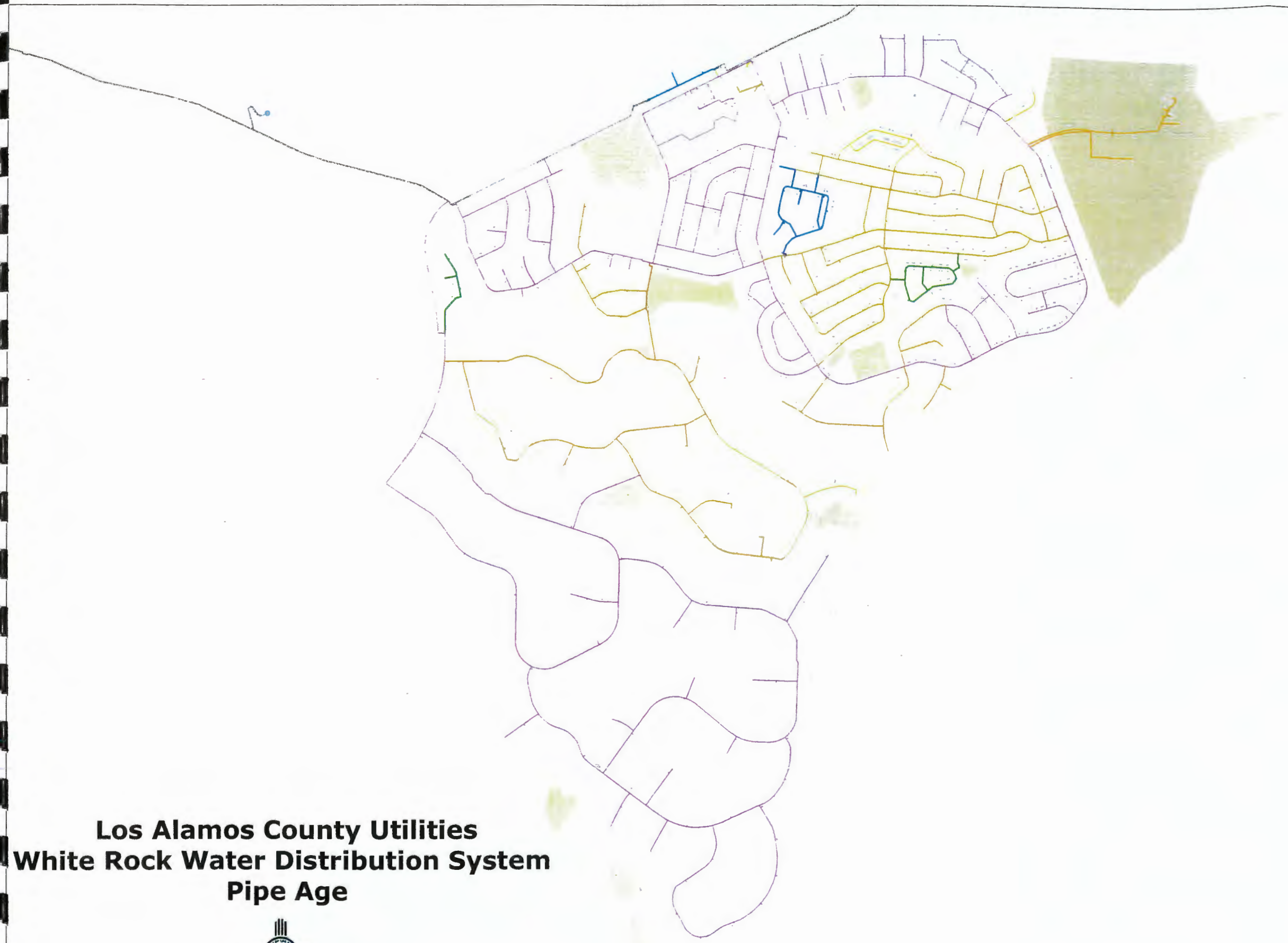
ATTACHMENT #5

Los Alamos County Utilities
Townsite Water Distribution System
Pipe Materials

Townsite Water Line Statistics

Material	Length (feet)
CI	288,705
DI	67,520
PVC	57,450
ST	4,800
PE	6,235
TRANSITE	2,840
Townsite Water Main Total	**427,550**

ATTACHMENT #6



N
W E
S

0 1,250 2,500 Feet

1:9,000
1 inch equals 750 feet

Legend

TRANSMISSION LINE

WATERLINES - AGE

AGE

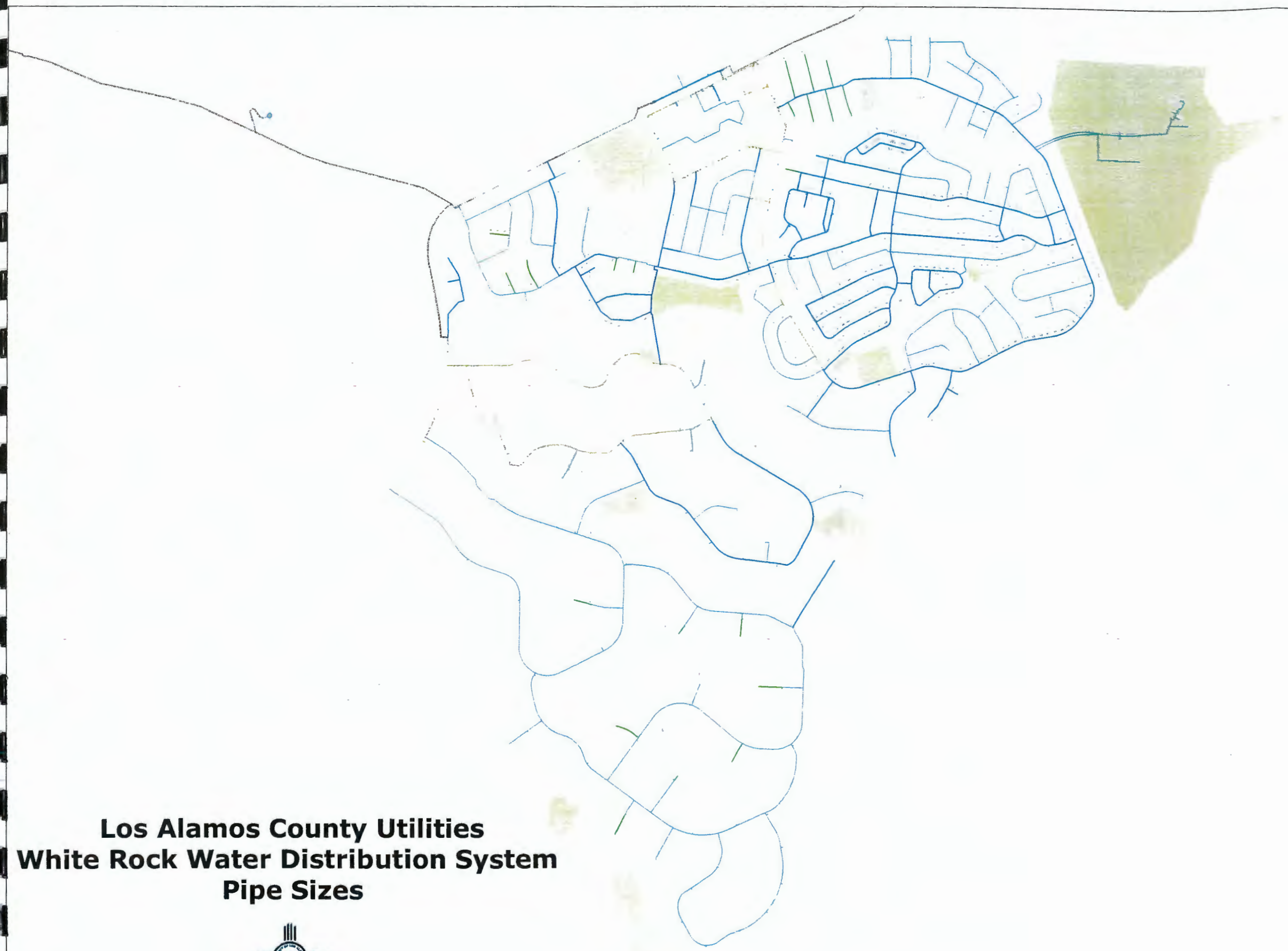
- 1950 - 1959
- 1960 - 1969
- 1970 - 1979
- 1980 - 1989
- 1990 - 1999
- 2000 - 2009

White Rock Water Line Statistics

Material	Length (feet)
1950-59	0
1960-69	112,080
1970-79	73,805
1980-89	4,800
1990-99	0
2000-Present	6,215
White Rock Water Main Total	**196,900**

Los Alamos County Utilities
White Rock Water Distribution System
Pipe Age

ATTACHMENT #7



N
W E
S

Feet
0 1,250 2,500

1:9,000
1 inch equals 750 feet

Legend

TRANSMISSION LINE

WATERLINES - SIZE

SIZE

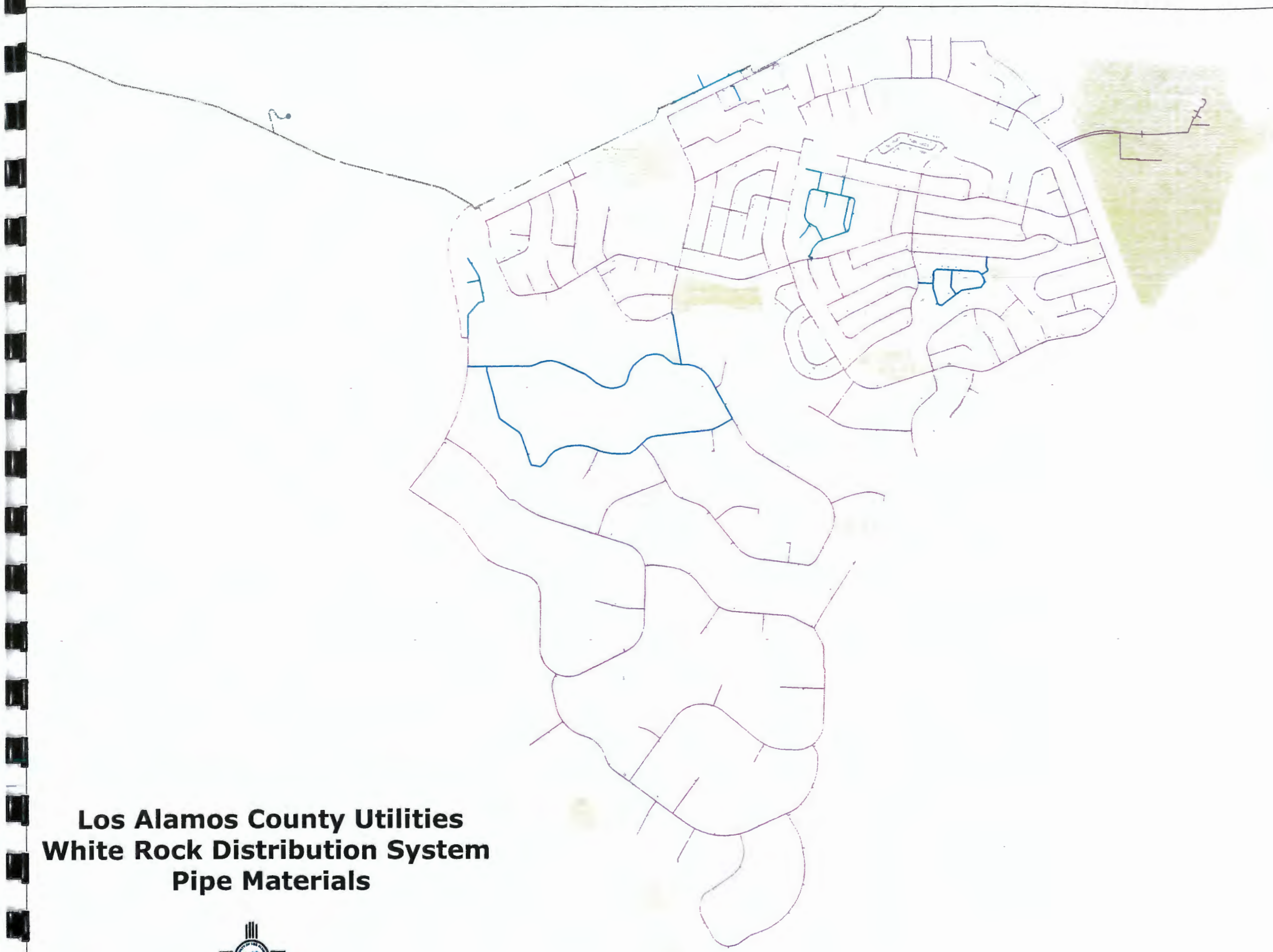
- 2"
- 3"
- 4"
- 6"
- 8"
- 10"
- 12"
- 14"

White Rock Water Line Statistics

Size	Length (feet)
2"	1,870
4"	6,995
6"	94,860
8"	68,060
10"	22,770
12"	125
14"	2,220
White Rock Water Main Total	**196,900**

Los Alamos County Utilities
White Rock Water Distribution System
Pipe Sizes

ATTACHMENT #8



N
W E
S

Feet
0 1,250 2,500

1:9,000
1 inch equals 750 feet

Legend

WATERLINES - MATERIAL

MATERIAL

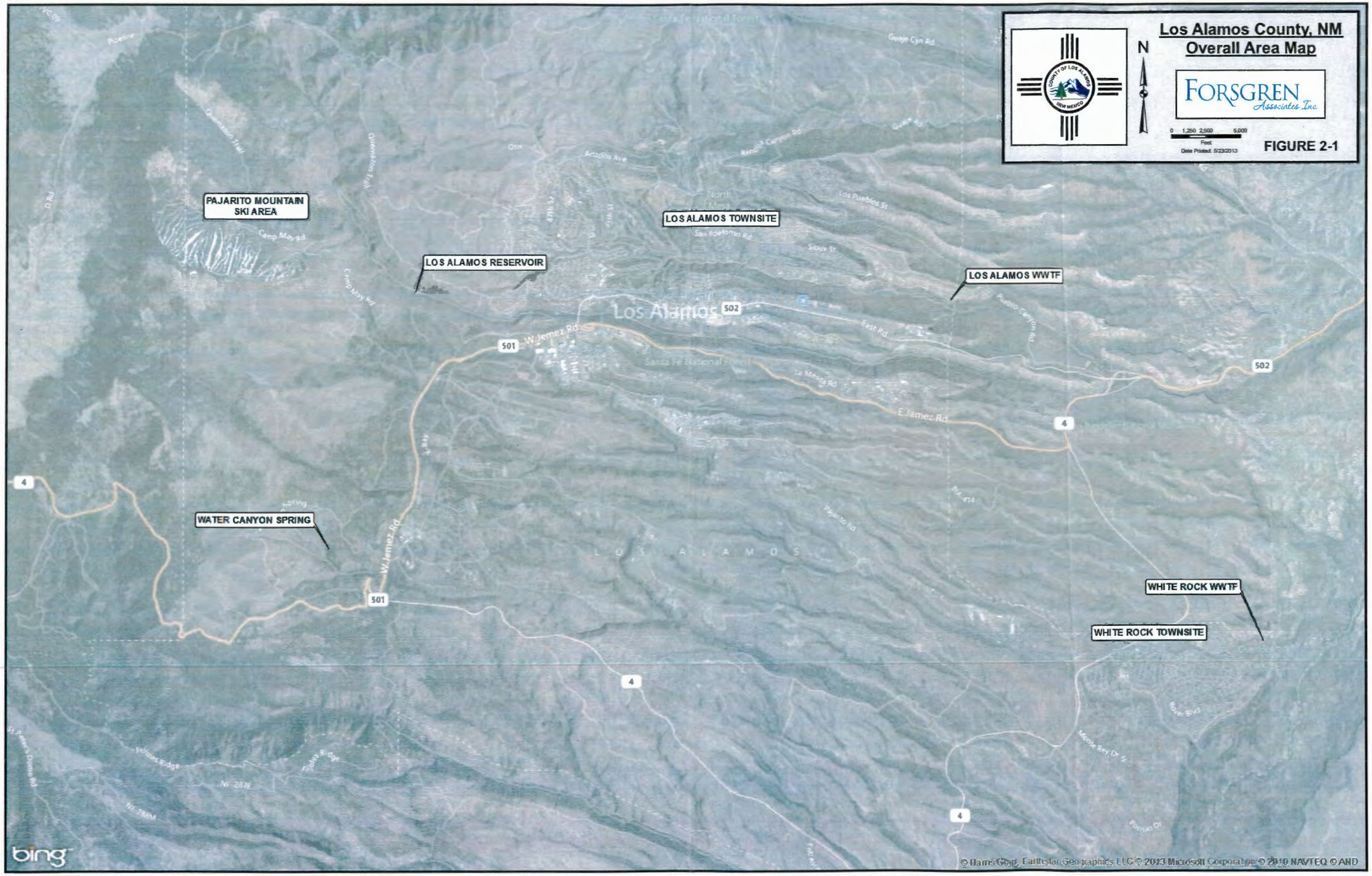
- CAST IRON
- DUCTILE IRON
- PVC
- POLYETHYLENE
- STEEL
- TRANSITE
- TRANSMISSION LINE

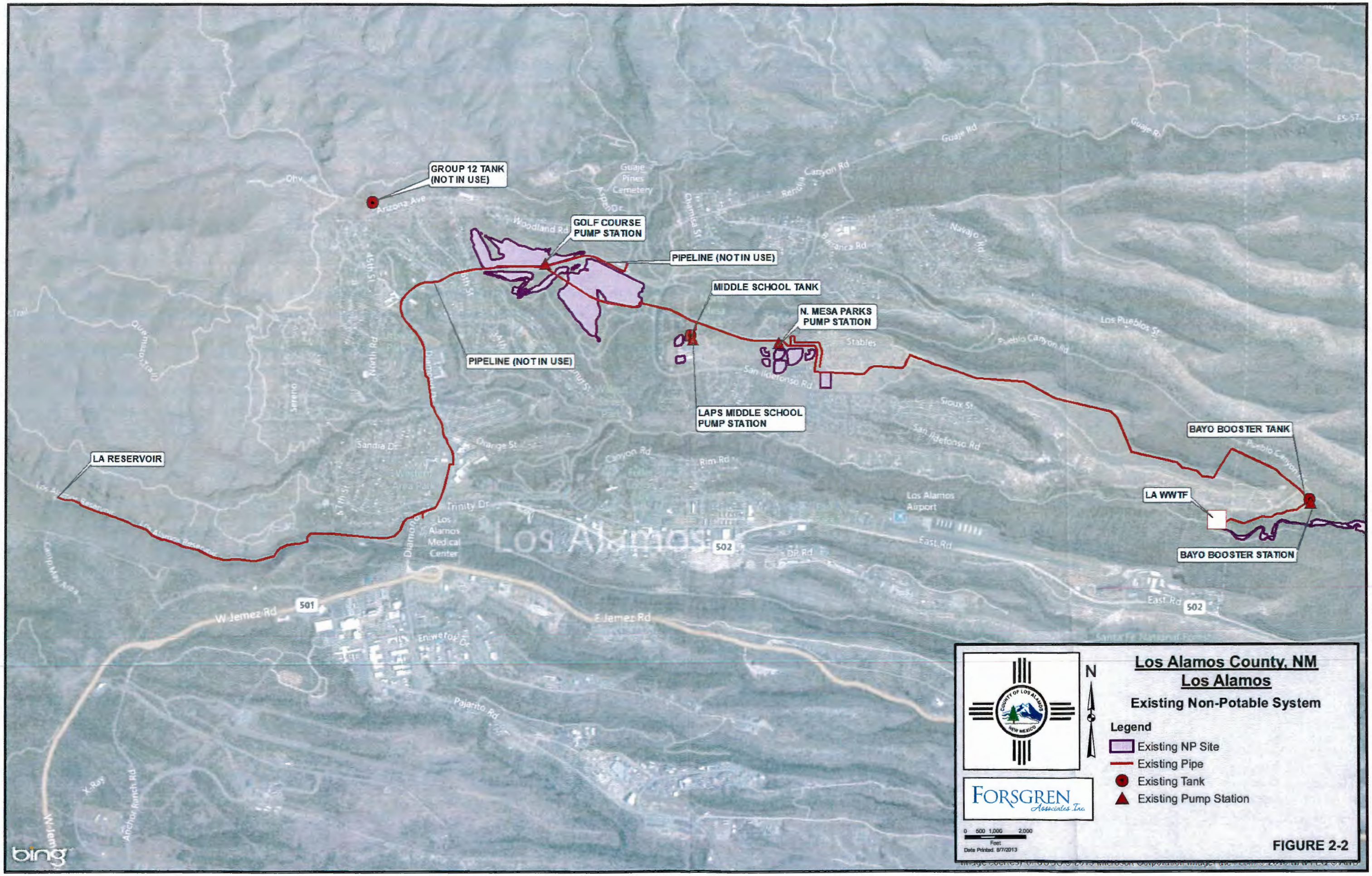
White Rock Water Line Statistics

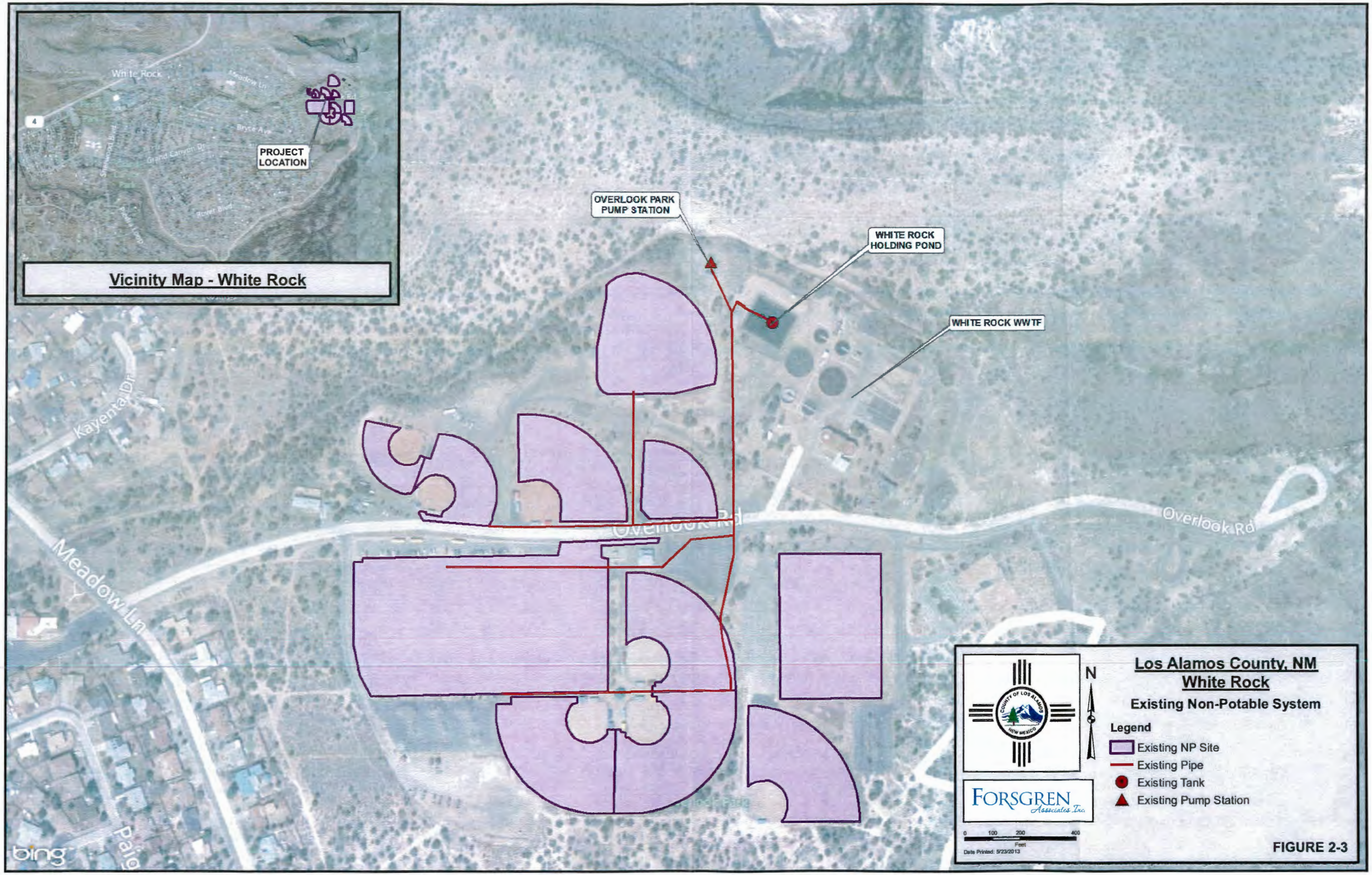
Material	Length (feet)
CI	175,020
DI	13,780
PVC	8,100
ST	0
PE	0
White Rock Water Main Total	**196,900**

Los Alamos County Utilities
White Rock Distribution System
Pipe Materials

ATTACHMENT #9


Los Alamos County, NM
Overall Area Map
FORSGREN Associates Inc.
N
0 1,250 2,500 5,000
Feet
Date Printed: 5/23/2013
FIGURE 2-1
PAJARITO MOUNTAIN SKI AREA
LOS ALAMOS RESERVOIR
LOS ALAMOS TOWNSITE
LOS ALAMOS WWTF
WATER CANYON SPRING
WHITE ROCK WWTF
WHITE ROCK TOWNSITE
Los Alamos
W Jemez Rd
E Jemez Rd
East Rd
Camp May Rd
Arizona Ave
Los Pueblos St
Sioux St
Guaje Cyn Rd
Pueblo Canyon Rd
Monte Rey Dr
Rover Blvd
Pueblo Dr
501
502
4
bing
© Harris Corp, Earthstar Geographics LLC © 2013 Microsoft Corporation © 2010 NAVTEQ © AND


GROUP 12 TANK
(NOT IN USE)
GOLF COURSE
PUMP STATION
PIPELINE (NOT IN USE)
MIDDLE SCHOOL TANK
N. MESA PARKS
PUMP STATION
PIPELINE (NOT IN USE)
LAPS MIDDLE SCHOOL
PUMP STATION
BAYO BOOSTER TANK
LA RESERVOIR
LA WWTF
BAYO BOOSTER STATION
Los Alamos
Los Alamos County, NM
Los Alamos
Existing Non-Potable System
Legend
Existing NP Site
Existing Pipe
Existing Tank
Existing Pump Station
N
FORSGREN
Associates Inc
0 500 1,000 2,000
Feet
Date Printed: 8/7/2013
FIGURE 2-2


Vicinity Map - White Rock
White Rock
Meadow Ln
Bryce Ave
Grand Canyon Dr
Roter Blvd
PROJECT LOCATION
OVERLOOK PARK PUMP STATION
WHITE ROCK HOLDING POND
WHITE ROCK WWTF
Kayenta Dr
Overlook Rd
Meadow Ln
Paig
bing
Los Alamos County, NM
White Rock
Existing Non-Potable System
N
Legend
Existing NP Site
Existing Pipe
Existing Tank
Existing Pump Station
FORSGREN Associates Inc.
0 100 200 400
Feet
Date Printed: 5/23/2013
FIGURE 2-3

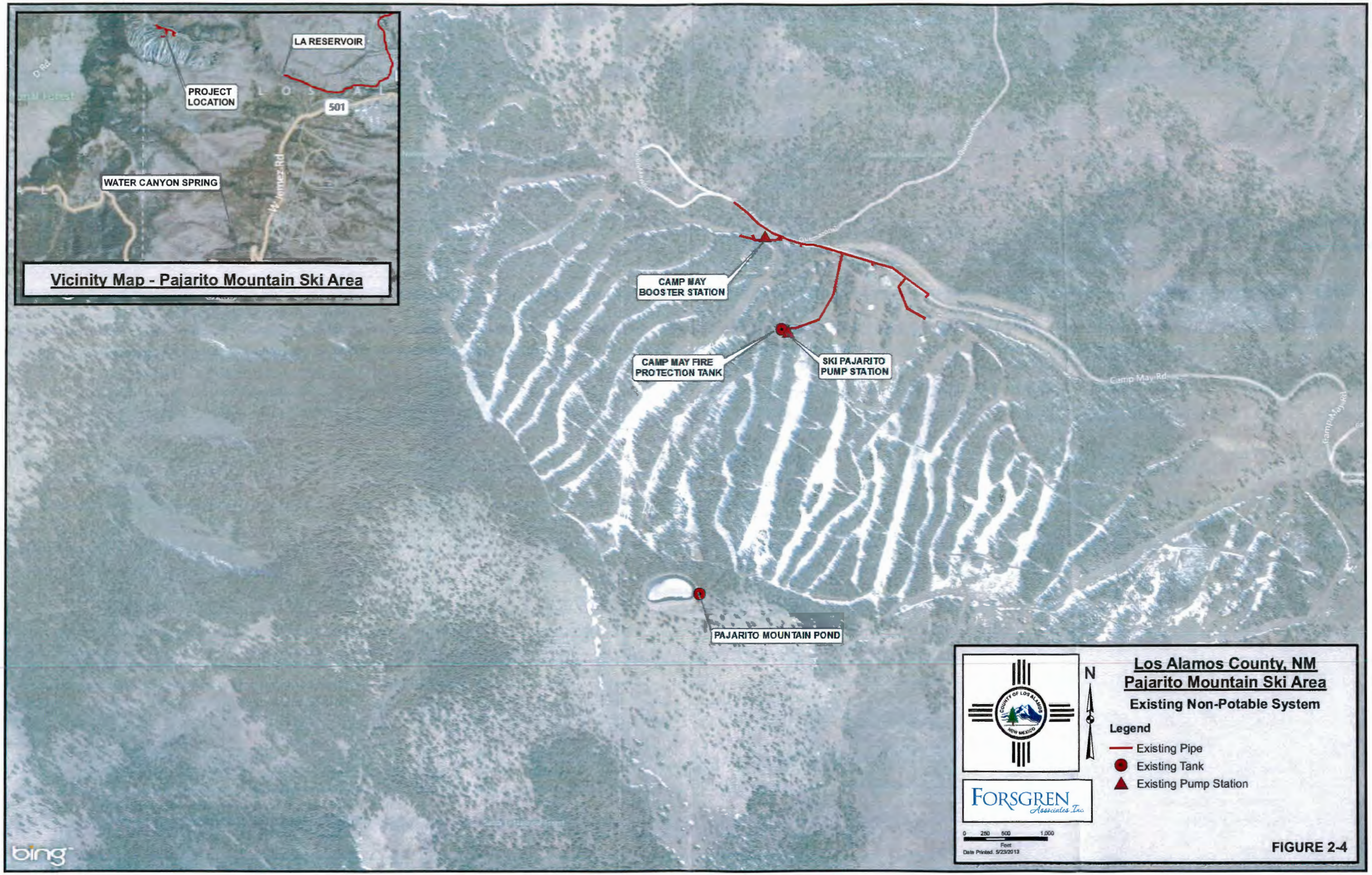
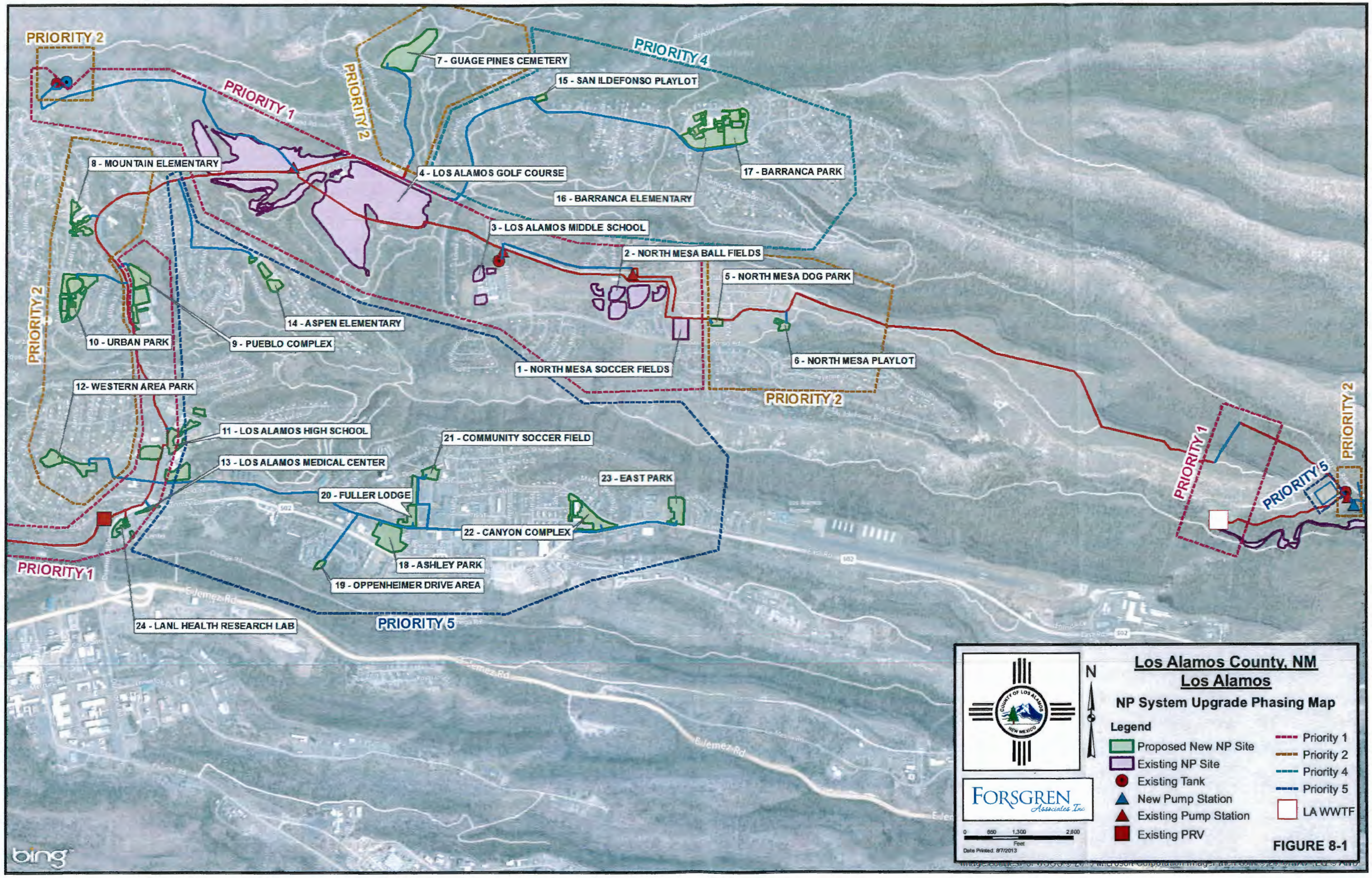

LA RESERVOIR
PROJECT LOCATION
501
WATER CANYON SPRING
W. Jemez Rd
Vicinity Map - Pajarito Mountain Ski Area
CAMP MAY BOOSTER STATION
CAMP MAY FIRE PROTECTION TANK
SKI PAJARITO PUMP STATION
Camp May Rd
PAJARITO MOUNTAIN POND
bing
N
Los Alamos County, NM
Pajarito Mountain Ski Area
Existing Non-Potable System
Legend
Existing Pipe
Existing Tank
Existing Pump Station
FORSGREN Associates Inc
0 250 500 1,000
Feet
Date Printed: 5/23/2013

FIGURE 2-4


PRIORITY 2
PRIORITY 1
PRIORITY 2
PRIORITY 4
7 - GUAGE PINES CEMETERY
15 - SAN ILDEFONSO PLAYLOT
8 - MOUNTAIN ELEMENTARY
4 - LOS ALAMOS GOLF COURSE
17 - BARRANCA PARK
16 - BARRANCA ELEMENTARY
3 - LOS ALAMOS MIDDLE SCHOOL
2 - NORTH MESA BALL FIELDS
5 - NORTH MESA DOG PARK
PRIORITY 2
14 - ASPEN ELEMENTARY
10 - URBAN PARK
9 - PUEBLO COMPLEX
6 - NORTH MESA PLAYLOT
1 - NORTH MESA SOCCER FIELDS
12- WESTERN AREA PARK
PRIORITY 2
11 - LOS ALAMOS HIGH SCHOOL
21 - COMMUNITY SOCCER FIELD
13 - LOS ALAMOS MEDICAL CENTER
23 - EAST PARK
20 - FULLER LODGE
22 - CANYON COMPLEX
PRIORITY 1
PRIORITY 5
PRIORITY 2
PRIORITY 1
18 - ASHLEY PARK
19 - OPPENHEIMER DRIVE AREA
24 - LANL HEALTH RESEARCH LAB
PRIORITY 5
bing
N
Los Alamos County, NM
Los Alamos
NP System Upgrade Phasing Map
Legend
Proposed New NP Site
Existing NP Site
Existing Tank
New Pump Station
Existing Pump Station
Existing PRV
Priority 1
Priority 2
Priority 4
Priority 5
LA WWTF
FORSGREN Associates Inc
0 650 1,300 2,600
Feet
Date Printed: 8/7/2013
FIGURE 8-1

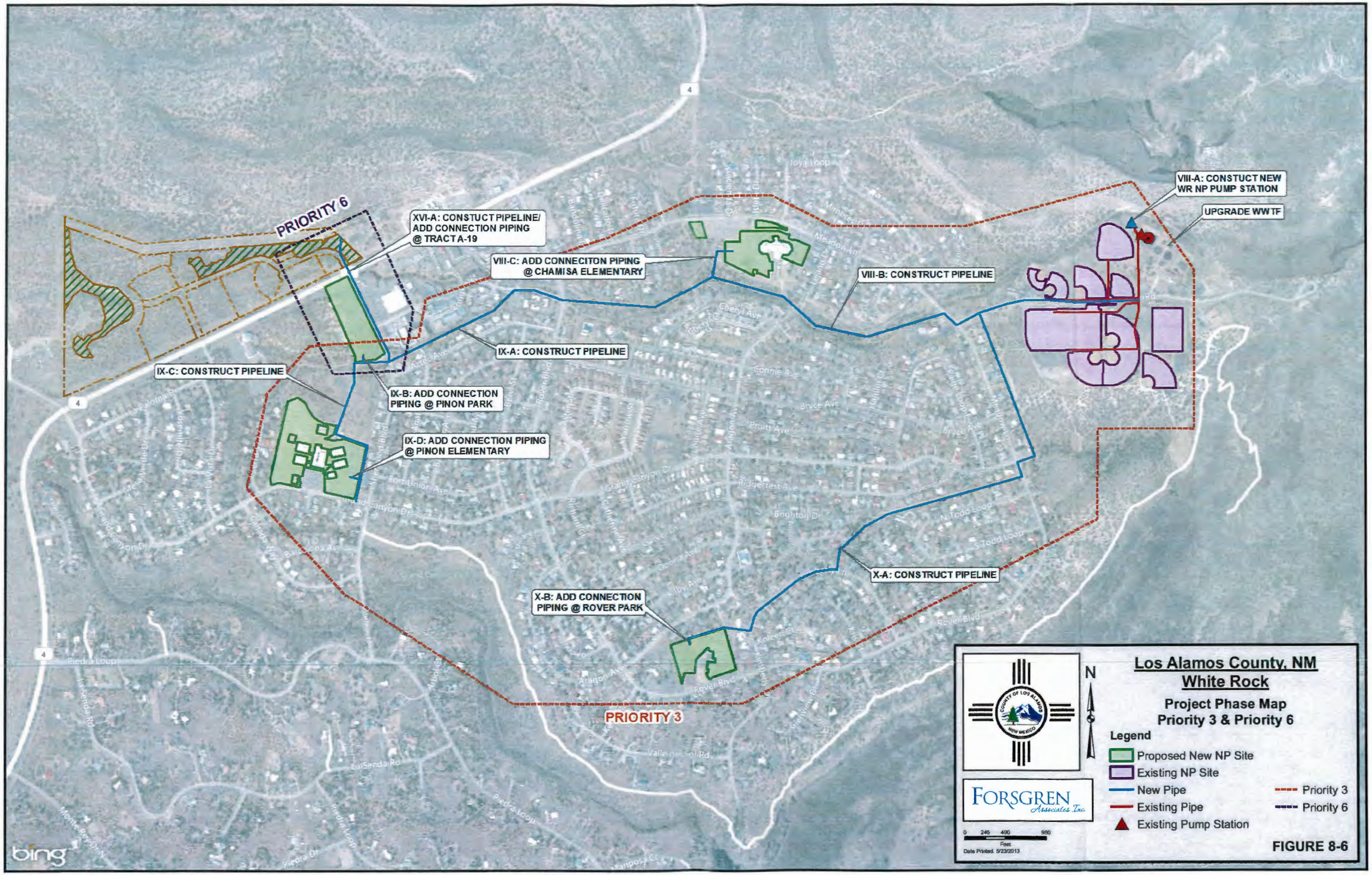

PRIORITY 6
XVI-A: CONSTUCT PIPELINE/ ADD CONNECTION PIPING @ TRACT A-19
VIII-C: ADD CONNECITON PIPING @ CHAMISA ELEMENTARY
VIII-B: CONSTRUCT PIPELINE
VIII-A: CONSTUCT NEW WR NP PUMP STATION
UPGRADE WWTF
IX-A: CONSTRUCT PIPELINE
IX-C: CONSTRUCT PIPELINE
IX-B: ADD CONNECTION PIPING @ PINON PARK
IX-D: ADD CONNECTION PIPING @ PINON ELEMENTARY
X-A: CONSTRUCT PIPELINE
X-B: ADD CONNECTION PIPING @ ROVER PARK
PRIORITY 3
Los Alamos County, NM
White Rock
Project Phase Map
Priority 3 & Priority 6
Legend
Proposed New NP Site
Existing NP Site
New Pipe
Existing Pipe
Existing Pump Station
Priority 3
Priority 6
N
FORSGREN Associates Inc
0 245 490 980
Feet
Date Printed: 5/23/2013
bing

FIGURE 8-6