

Asset Management

Three Case Studies in New Mexico

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Prepared by



NEW MEXICO
ENVIRONMENTAL
FINANCE CENTER

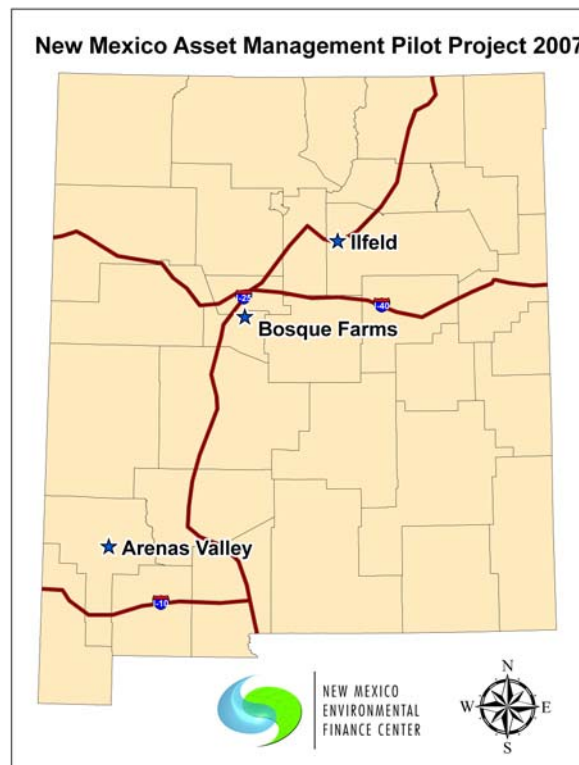
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INTRODUCTION

In 2006, the New Mexico Water Infrastructure Investment Team (WIIT) tasked the New Mexico Environmental Finance Center (NMEFC), the New Mexico Rural Water Association (NMRWA) and the Rural Community Assistance Corporation (RCAC), with conducting a pilot study for three New Mexico communities. The purpose of the pilot study was to develop a process that could be used to assist New Mexico's drinking water and wastewater systems in implementing new administrative and management procedures to adapt to the regulatory, water quality and quantity challenges of the future. The three activities selected for the pilot study were asset management, water audits, and financial planning. The goal was to move these systems to long-term sustainability.

The NMEFC was tasked with developing an asset management manual for water and wastewater systems, with a focus on the needs of smaller systems. In addition the NMEFC was tasked with piloting the approach for three communities. The three systems that were selected were Arenas Valley Water Development Association, Bosque Farms Water Supply System, and Ilfeld Mutual Domestic Water Consumers Association. The three water systems were selected based on their relative size, number of connections, and location throughout the state. Map 1 is a vicinity map showing the location of the three systems that were the focus of the case studies.

Map 1 – Vicinity Map



CASE STUDY: ARENAS VALLEY

The Arenas Valley Water Development Association (AVWDA) was created in 1976 to provide water services to the residents of Arenas Valley, New Mexico. The community is located in southwestern, New Mexico very close to the town of Silver City.

Background Regarding The Water System

The water system buys treated water from Silver City. It does not do any additional treatment to the water. The system is relatively new, built in the 1980s, and currently serves approximately 430 service connections. The system contains approximately 20 miles of PVC pipe with 25 fire hydrants and 100 valves.

Initial Starting Point

One of the first steps in the process was to determine the starting point in terms of data, information, and existing knowledge. The NMEFC met with staff and board members of the AVWDA to make this assessment. During the initial meetings, the NMEFC determined that AVWDA had the following resources:

- As-built map mounted on wall of office with push pins indicating some asset locations
- Fire hydrant and meter numbering system
- Electronic billing records
- Operator and board member's extensive knowledge
- Record of main waterline breaks
- Record of operator's daily activities

In addition, the AVWDA board members informed us that they were looking into funding to replace significant portions of the water distribution system. The reason cited was that the pipe in the system was old and degrading.

Asset Management Checklist

As part of the asset management manual, the NMEFC developed a checklist that could be used to determine which portions of the asset management plan were completed and what method was used to complete that portion. The resulting checklist for the AVWDA system is presented in Table 1. Additional information regarding the methodology used to complete the asset management plan is also presented in the table.

Table 1: Asset Management Checklist for Arenas Valley

| Component of Asset Management | Specific Item | Completed Y or N | Method of Completion | Comments |
|--------------------------------------|----------------------|-------------------------|-----------------------------|-----------------|
| Asset | List of Assets | Y | Access Database | |

| Component of Asset Management | Specific Item | Completed Y or N | Method of Completion | Comments |
|--------------------------------------|-------------------------------------|---|--|--|
| Inventory | Map of Assets | Y | GIS Map | |
| | Asset Condition Assessment | Y | Access Database | Ranked 0-5 |
| | Remaining Useful Life of the Assets | Y | Access Database | Estimates |
| | Asset Value (Optional) | N | | |
| Level of Service | Level of Service Agreement | Y | Microsoft Word Document | |
| Critical Assets | Criticality Analysis | Y | Access Database | |
| Life Cycle Costing | Operation and Maintenance Program | N In the process | | Association will draft a program based on the examples provided and the operator's log |
| | Repair Replacement Schedule | Y | Valves inspected every 6 months, Fire hydrants inspected monthly | |
| | Capital Improvement Plan (CIP) | N Plans are to complete it next year | | Considering looping the system waterlines, working with engineers, completed PER. Discussing meter replacement and pipe replacement along Hwy. 180 |
| Long-Term Funding | 5 Year Financial Plan | | Completed by RCAC | |

| Component of Asset Management | Specific Item | Completed Y or N | Method of Completion | Comments |
|--------------------------------------|--|-------------------------|-----------------------------|-----------------|
| Strategy | Funding Strategy for Repair and Replacement Schedule | | Completed by RCAC | |
| | Funding Strategy for CIP | | Completed by RCAC | |

Asset Inventory:

The asset inventory was created from the information collected from As-Built engineering drawings, visual observations of the system, input from the operator and board member president, and published information on asset life expectancy.

The inventory was compiled and documented into two types of files, an Access database and a set of custom maps. The Access database listed assets by type and included: a list of assets, the asset condition assessment, the estimated remaining useful life of the assets, and the criticality analysis.

The maps of the assets were created using Geographical Information System (GIS) software called ArcGIS™ to visually display all the assets documented in the inventory. The GIS software was used to easily show different assets on one map for the entire system. The data used for the map was compiled from the as-built drawings, operator input, and physical inspection of the system.

Level of Service Agreement:

The Level of Service Agreement was completed by the AVWDA, and defines what the customers can expect from the AVDWA. The document was created using Microsoft Word and includes the following components:

- Introduction
- Purpose
- Financial Performance
- Operating Cost/Invoicing
- Responsiveness
- Reliability
- Regulatory Requirements
- Quantity
- Customer Satisfaction

An example of the map, excerpt from the database and a page from the level of service agreement are presented in the Appendix at the end of this document.

Immediate Benefits of Asset Management

Before the project began, AVWDA was looking into replacing significant portions of the water distribution system under the belief that the current system was old and degrading. Through the asset management process, the NMEFC was able to discuss issues of operation and maintenance expenses versus capital expenses. For example, when pipes are repaired those expenses are considered operation and maintenance expenses. When pipes are installed to replace existing infrastructure, those expenses are considered to be capital expenses. One of the basic premises of asset management is to look at the entire life cycle cost of the asset, including the capital and operational expenses, and try to manage the assets in such a way that over the life of the asset you spend the least amount of money. This approach requires a balance between not spending too much on either capital or operation and maintenance expenses.

In the case of the AVWDA, they knew the cost of a repair as well as the overall number of repairs for a given year, and were tracked in a notebook. To determine if the replacement of infrastructure was necessary or the most efficient course of action, the following information was considered:

- The pipe in the system is PVC and is generally 25 years old or less. PVC pipe is expected to last a minimum of 50 years and may last longer
- Replacing pipe will only eliminate breaks due to degradation of the pipe. Replacement will not address breaks related to service lines (unless service lines are also replaced) nor will it address breaks due to hit lines caused by construction contractors.
- The number of breaks that occurred in the system over time were largely due to service lines or construction problems.
- Some breaks were clustered on one particular section of pipe, which may indicate a problem due to placement and not related to materials. Discussions with the operator and board members indicated that a construction related issue may be to blame for this cluster of breaks.
- The remainder of mainline breaks were spread out across the distribution system indicating that there was no overall indication of degradation within the system.
- Although the cost of repairs have increased, they were still relatively low, and.
- Initial construction costs to replace a portion of the system were estimated to be several million dollars. This costs would have to be funded by loans. In order to repay the loans the system would have to increase user charges.

To assist the AVWDA, the breaks that the system had documents were plotted on the asset inventory map. In looking at the map, the board members and operator could see that the system was not in bad shape. As mentioned above, the map showed that one section of pipe may needed to be replaced in order to address the original construction issues.

One other concept that the NMEFC brought up in regards to the need for pipe replacement was customer service. In asset management, it is important for the owners, operators, and managers of the system to understand that they are in the business of customer service. The managers and operators need to keep this focus as they examine various options for the system. For example, if

funds were to be expended to replace the distribution lines, the customer service level would not change. In fact, there would be disruptions to customer service as the lines were installed and customers would be inconvenienced as the roads were dug up to put in pipe trenches. In addition, customers would most likely have to pay an increased user rate to cover the cost of replacing the pipe prematurely. Conversely, there may be other capital projects that the system could pursue that would benefit customer service. The managers and operator were asked to consider other alternatives to replacing the distribution lines and came up with several ideas that would improve customer service, decrease disruption, and keep overall costs down.

By understanding their assets fully and thinking in terms of customer service allowed AVWDA to reevaluate their proposed infrastructure replacement project and save considerable expense. By using the information generated from this asset management project, AVWDA decided that the money for replacement would be better spent to loop the existing water lines and add additional appurtenances to the system, such as fire hydrants and valves.

When asked for their opinion on being part of the case study, the AVWDA stated, “It’s been great. It was a very helpful process and we can now use the PER to plan replacement and loop lines. The discussions on criticality helped to change our point of view.”

CASE STUDY: BOSQUE FARMS

The Village of Bosque Farms is located in Valencia County approximately 18 miles south of Albuquerque along Highway 47. This system is a municipal type system.

Background Regarding The Water System

The Village of Bosque Farms has a population of approximately 3,000 with 1,200 service connections. The system is served by two ground water wells and is disinfected by gas chlorination. There are two ground storage tanks that hold approximately 1.5 million gallons. The distribution system is relatively new, built in the 1990’s; it contains approximately 34 miles of PVC pipe, 300 fire hydrants, and 250 valves.

Initial Starting Point

One of the first steps in the process is to determine the starting point in terms of data, information, and existing knowledge. The NMEFC met with staff and board members of Bosque Farms to make this assessment. During the initial meetings, the NMEFC determined Bosque Farms had the following resources:

- As-built maps by construction phases.
- Fire hydrant numbering system.
- Electronic billing records, and.
- Operator and billing clerk’s extensive knowledge.

Bosque Farms water system is considered a small municipal system, but is the largest of the three systems selected for the pilot study. The water system has experienced a large amount of

growth in recent years due to the conversion of farmland into residential subdivisions. At the beginning of the project, Bosque Farms was concerned with how to continue to improve the operations and management of the system as the community continues to grow.

Asset Management Checklist

As part of the asset management manual, the NMEFC developed a checklist that could be used to determine which portions of the asset management plan were completed and what method was used to complete that portion. The resulting checklist for the Bosque Farms system is presented in Table 2. Additional information regarding the methodology used to complete the asset management plan is also presented in the table.

Table 2: Asset Management Checklist for Bosque Farms

| Component of Asset Management | Specific Item | Completed Y or N | Method of Completion | Comments |
|--------------------------------------|-------------------------------------|-------------------------|---|-----------------|
| Asset Inventory | List of Assets | Y | Access Database | |
| | Map of Assets | Y | GIS Map | |
| | Asset Condition Assessment | Y | Access Database | Ranked 0-5 |
| | Remaining Useful Life of the Assets | Y | Access Database | Estimates |
| | Asset Value (Optional) | N | | |
| Level of Service | Level of Service Agreement | Y | Microsoft Word Document | |
| Critical Assets | Criticality Analysis | Y | Access Database | |
| Life Cycle Costing | Operation and Maintenance Program | Y | Water System P.M. Schedule – completed 3 times per week. Written schedule in pump house for lubrication | |
| | Repair Replacement Schedule | Y | Inspect fire hydrants annually, replace gaskets | |
| | Capital Improvement Plan (CIP) | Y | 5 year ICIP | |

| Component of Asset Management | Specific Item | Completed Y or N | Method of Completion | Comments |
|--------------------------------------|--|-------------------------|---|-----------------|
| Long-Term Funding Strategy | 5 Year Financial Plan | | To be completed by RCAC | |
| | Funding Strategy for Repair and Replacement Schedule | | To be completed by RCAC Budget reserves, line item | |
| | Funding Strategy for CIP | | To be completed by RCAC Budget reserves, line item | |

Asset Inventory:

The asset inventory was created from the information gathered from As-Built engineering drawings, the operator and billing clerk’s input, viewing the system, and published information on asset life expectancy.

The inventory was documented in two types of files, an access database and a set of maps. The Access database lists assets by type and includes: a list of assets, the asset condition assessment, the estimated remaining useful life of the assets, and the criticality analysis.

The maps of the assets were created using Geographical Information System (GIS) software called ArcGIS™ to show all the assets documented in the inventory. The GIS software can easily show different assets on one map. The data used in the maps were compiled from the as-built drawings, the operator input, and by viewing the system.

Level of Service Agreement:

The Level of Service Agreement was completed by the system and defined what the customers can expect from Bosque Farms utility. This document was created in Microsoft Word and includes the following components:

- Financial Performance
- Water Pressure
- Drought/Water Conservation
- Peak Day
- Planned Interruptions
- Unplanned Interruptions
- Responsiveness
- Water for Fire Fighting
- Water Quality
- Water Use

An example of the map, excerpt from the database and a page from the level of service agreement are presented in the Appendix at the end of this document.

Immediate Benefits of Asset Management

Bosque Farms saw value in having a map and inventory of the assets in the system. Bosque Farms rethought criticality from a customer service perspective as opposed to an operator perspective. This change in thinking shifted priorities regarding what assets need to be replaced or rehabilitated. Bosque Farms also found use in mapping its fire hydrants in the system, not only for maintenance purposes, but also to assist the Fire Department in locating the nearest hydrant.

When asked for an opinion on being part of the case study, the operator stated, “It’s been very helpful. It’s opened our eyes to things that are taken for granted or overlooked. The inventory will be very useful to the Village overall. It will help with presenting information to funding agencies. The processes was useful to the Village and most importantly to our customers.”

CASE STUDY: ILFELD

In 1992, the Ifeld Mutual Domestic Water Consumers’ Association (MDWCA) was created in San Miguel County. This system is located approximately 40 miles northeast of Santa Fe along Interstate 25.

Background Regarding The Water System

The Ifeld MDWCA is a relatively small system with approximately 100 service connections. The system is served by two ground water wells and one ground storage tank that holds approximately 25,000 gallons. The system does have a disinfected system. The distribution system is relatively new, built in 1980s; it contains approximately 4 miles of ductile iron pipe, 17 fire hydrants, and 35 valves.

Initial Starting Point

One of the first steps in the process is to determine the starting point in terms of data, information, and existing knowledge. The NMEFC met with staff and board members of the Ifeld MDWCA to make this assessment. During the initial meetings, the NMEFC determined Ifeld had the following resources:

- Proposed construction drawings.
- Electronic billing records, and.
- Operator and board member’s knowledge.

At the beginning of the project, Ifeld MDWCA was concerned that they did not have sufficient written documented information on the existing system.

Asset Management Checklist

As part of the asset management manual, the NMEFC developed a checklist that could be used to determine which portions of the asset management plan were completed and what the method of completion was. This checklist was completed for the Ilfeld MDWCA system. The results are presented in Table 3. Additional information regarding the methodology used to complete the asset management plan is presented in the table below.

Table 3: Asset Management Checklist for Ilfeld

| Component of Asset Management | Specific Item | Completed Y or N | Method of Completion | Comments |
|--------------------------------------|--|-------------------------|---|-----------------|
| Asset Inventory | List of Assets | Y | Access Database | |
| | Map of Assets | Y | GIS Map | |
| | Asset Condition Assessment | Y | Access Database | Ranked 0-5 |
| | Remaining Useful Life of the Assets | Y | Access Database | Estimates |
| | Asset Value (Optional) | N | | |
| Level of Service | Level of Service Agreement | Y | Microsoft Word Document | |
| Critical Assets | Criticality Analysis | Y | Access Database | |
| Life Cycle Costing | Operation and Maintenance Program | N | Examples provided to system, next step of the plan when more information is available | |
| | Repair Replacement Schedule | N | Examples provided to system, next step of the plan when more information is available | |
| | Capital Improvement Plan (CIP) | N | | |
| Long-Term Funding Strategy | 5 Year Financial Plan | | To be completed by RCAC | |
| | Funding Strategy for Repair and Replacement Schedule | | To be completed by RCAC Budget reserves, line item | |

| Component of Asset Management | Specific Item | Completed Y or N | Method of Completion | Comments |
|--------------------------------------|--------------------------|-------------------------|--|-----------------|
| | Funding Strategy for CIP | | To be completed by RCAC Budget reserves, line item | |

Asset Inventory:

The asset inventory was created from the information gathered from proposed construction drawings, as-built engineering drawings, the operator’s input, viewing the system, and published information on asset life expectancy.

The inventory was documented in two types of files, an access database and a set of maps. The Access database lists assets by type and includes: a list of assets, the asset condition assessment, the estimated remaining useful life of the assets, and the criticality analysis.

The maps of the assets were created using Geographical Information System (GIS) software called ArcGIS™ to show all the assets documented in the inventory. The GIS software can easily show different assets on one map. The data used in the maps were compiled from the proposed construction drawings, as-built record drawings, the operator’s input, and by viewing the system.

Level of Service Agreement:

The Level of Service Agreement was completed by the Association and defines what the customers can expect from the Association. The document was created using Microsoft Word and includes the following components:

- Introduction
- Purpose
- Operating Cost/Invoicing
- Responsiveness
- Reliability
- Regulatory Requirements
- Quantity
- Quality
- Customer Satisfaction

Immediate Benefits of Asset Management

Ifield found value in mapping the system because the water line locations were not in commonly expected locations in all cases. Having a single map of the system allowed them to easily locate existing water lines and plan for new lines in the future. In addition, consolidating the information regarding the system into one map, a database and a level of service agreement allowed for easy access for board members who were volunteers and did not have the time to search through historical records.

OVERALL LESSONS LEARNED

- Asset Management is a useful management tool for small communities.
- Small communities can begin the Asset Management project regardless of how much information they have on hand – “start with what you know and grow as you go.”
- The more information a community has when beginning the process, the more immediate benefits will be seen. However, even for communities that have limited information, beginning the process proved valuable, and.
- Asset Management maps are a valuable tool for most small communities. However, most small communities do not have a single map that is easily accessible and contains all of the assets of the system.

The three communities found value in Asset Management:

- Arenas Valley – break type map, assessing critical assets
- Bosque Farms – mapping, inventory
- Ilfeld – mapping

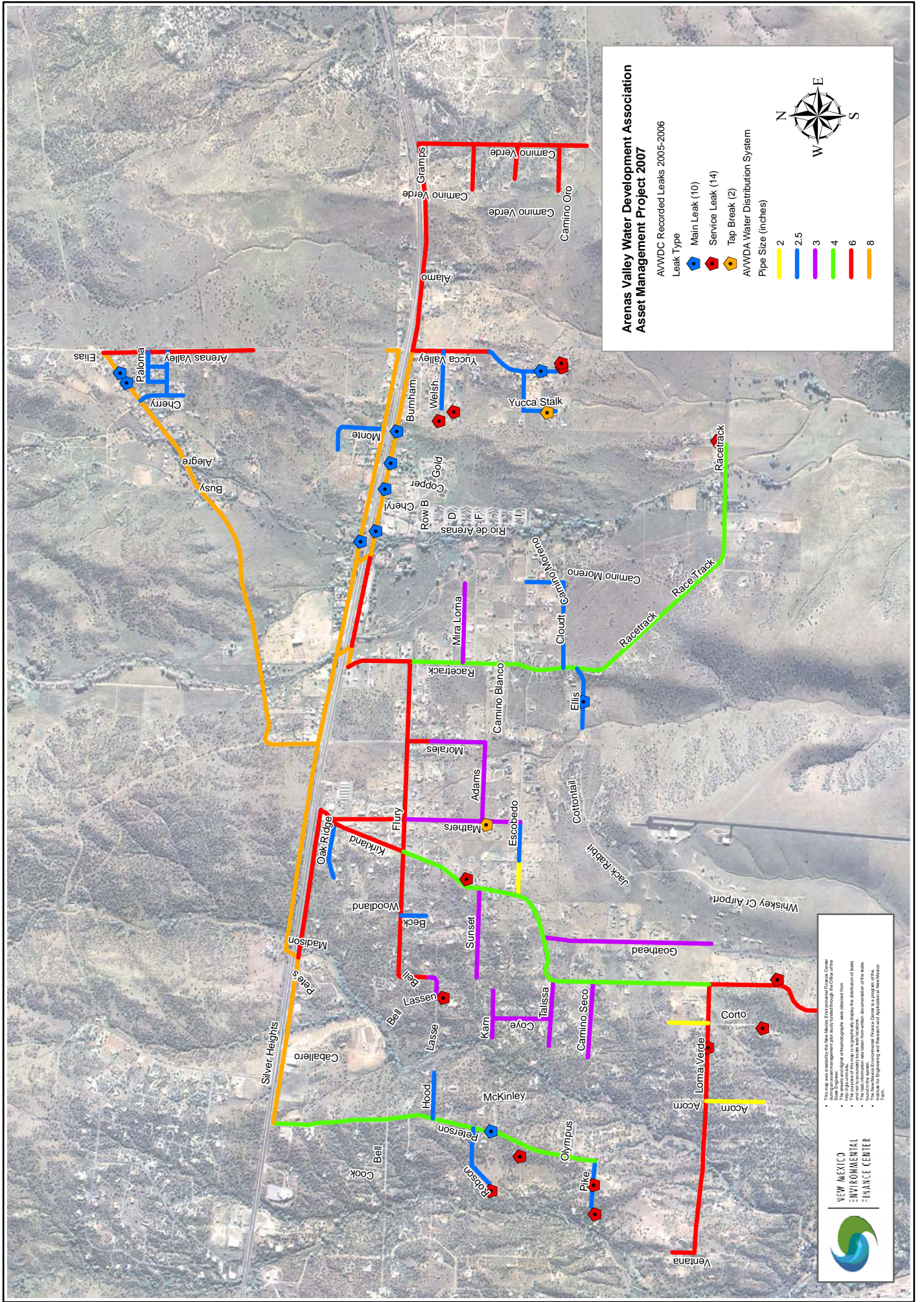
Appendixes

ARENAS VALLEY WATER DEVELOPMENT ASSOCIATION

- ASSET MANAGEMENT PLAN

Examples

- Base Map
- Database Excerpt
- Level of Service Agreement



Arenas Valley Water Development Association Asset Management Project 2007

AWWDC Recorded Leaks 2005-2006


Leak Type

- Main Leak (10)
- Service Leak (14)
- Tap Break (2)

AWWDA Water Distribution System

Pipe Size (inches)

- 2
- 2.5
- 3
- 4
- 6
- 8



This map was developed by New Mexico Environmental Finance Center (NMEFC) in partnership with the Arenas Valley Water Development Association (AVWDA). The map is a technical drawing and should not be used for legal purposes. The map is a technical drawing and should not be used for legal purposes. The map is a technical drawing and should not be used for legal purposes.

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Arenas Valley Asset Management System

Asset: Fire Hydrants

| <i>Street Name</i> | <i>Fire Hydrant ID</i> | <i>Date Installed</i> | <i>Condition</i> | <i>Estimated Year of Replacement</i> |
|--------------------------|------------------------|-----------------------|------------------|--------------------------------------|
| <i>180 HWY Northside</i> | | | | |
| | 180N2 | 1987 | 2 - Fair | 2037 |
| | 180N1 | 1987 | 2 - Fair | 2037 |
| <i>180 HWY Southside</i> | | | | |
| | 180S4 | 1987 | 2 - Fair | 2037 |
| | 180S3 | 1987 | 2 - Fair | 2037 |
| | 180S2 | 1987 | 2 - Fair | 2037 |
| | 180S1 | 1987 | 2 - Fair | 2037 |
| <i>Arenas Valley Rd</i> | | | | |
| | AVR2 | 1987 | 2 - Fair | 2037 |
| | AVR1 | 1987 | 2 - Fair | 2037 |
| <i>Camino Oro</i> | | | | |
| | CO1 | 1998 | 3 - Good | 2048 |
| <i>Camino Rd N</i> | | | | |
| | CRN1 | 1998 | 3 - Good | 2048 |
| <i>Camino Rd S</i> | | | | |
| | CRS1 | 1998 | 3 - Good | 2048 |
| <i>Camino Verde</i> | | | | |
| | CV2 | 1998 | 3 - Good | 2048 |
| | CV1 | 1998 | 3 - Good | 2048 |
| <i>Flurry Ln</i> | | | | |
| | FLU2 | 1987 | 2 - Fair | 2037 |
| | FLU1 | 1987 | 2 - Fair | 2037 |
| <i>Gramps</i> | | | | |
| | G1 | 1998 | 2 - Fair | 2048 |
| <i>Kirkland Road</i> | | | | |
| | KIR3 | 1998 | 2 - Fair | 2048 |
| | KIR2 | 1987 | 2 - Fair | 2037 |
| | KIR1 | 1987 | 3 - Good | 2037 |

Arenas Valley Water Development Association

Level of Service Agreement with Association Members

Introduction

In 1976 the Arenas Valley Water Development Association (AVWDA) was created to provide water services to the residents of Arenas Valley, New Mexico. The AVWDA consists of a water distribution system that receives its treated water from the Town of Silver City's Water Supply System (WSS). The source of drinking water for the system is ground water and is primarily for residential use.

Purpose

As part of AVWDA's efforts to continue providing outstanding service to its members, the AVWDA board has elected to implement a level of service agreement. This agreement outlines the criteria or indicators that will help the system determine how best to manage its assets to provide a high level of service at a reasonable cost.

Level of Service Agreement

Financial Performance

- The basic charge for all meter connections is \$25.00 + tax per month. This fee will be reviewed and compared to inflation and cost of materials annually.
- A new service connection includes a fee for new meter installation of \$2100.00 for residential and \$2500.00 for commercial.
- For disconnected water service there is a \$50.00 reconnection fee plus the amount due on the unpaid water bill(s).
- New connection or reconnection will be completed within 2 weeks of payment for the service connection.

Operating Cost/Invoicing

- Annual water rate adjustments imposed by the Town of Silver City WSS will be passed on to AVWDA members.
- Water rate adjustments beyond those imposed by the Silver City WSS will be considered on annual basis to insure system maintenance and/or improvements are properly budgeted.
- Current water rates will be made available at the AVWDA office.
- Past due notices will be mailed to the customer 6 days before invoices are due, to allow sufficient time for payment.

Responsiveness

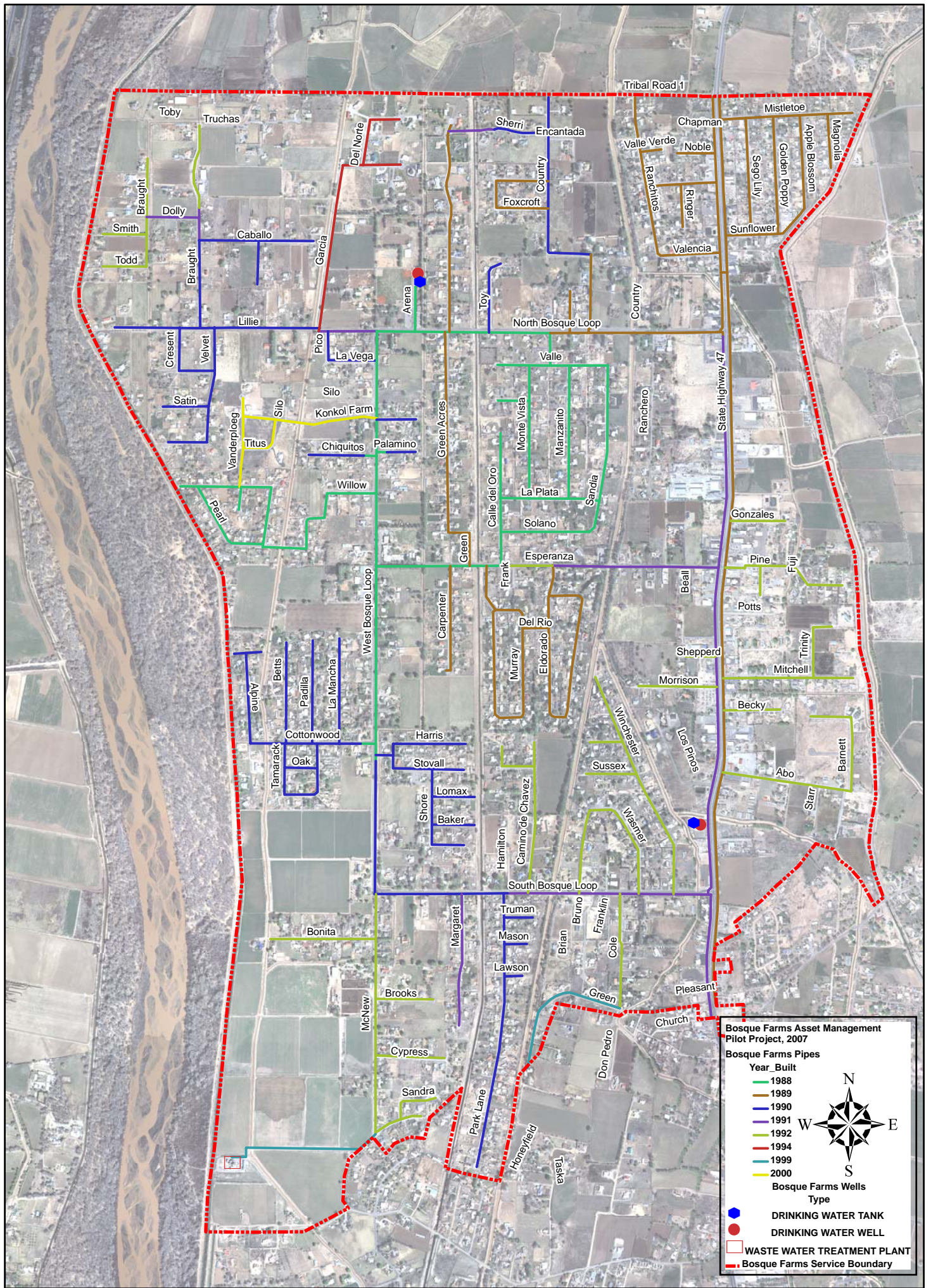
- Restoration of service within 4 hours after an unplanned interruption 90% of the time.

BOSQUE FARMS WATER UTILITY

- ASSET MANAGEMENT PLAN

Examples

- Base Map
- Database Excerpt
- Level of Service Agreement



Bosque Farms Asset Management Pilot Project, 2007

Bosque Farms Pipes

| Year Built | Color |
|------------|-------------|
| 1988 | Green |
| 1989 | Brown |
| 1990 | Blue |
| 1991 | Purple |
| 1992 | Light Green |
| 1994 | Red |
| 1999 | Teal |
| 2000 | Yellow |

Bosque Farms Wells

| Type | Symbol |
|-----------------------------|------------------------------|
| DRINKING WATER TANK | Blue hexagon |
| DRINKING WATER WELL | Red circle |
| WASTE WATER TREATMENT PLANT | White square with red border |

Bosque Farms Service Boundary

Red dashed line



Bosque Farms Asset Inventory

Asset: Pipe

| <i>Street Name</i> | <i>Diameter (inch)</i> | <i>Pipe Type</i> | <i>Length (feet)</i> | <i>Date Installed</i> | <i>Rankings Condition</i> | <i>Rankings Critical</i> | <i>Estimated Replacement Date</i> |
|--------------------------|------------------------|------------------|----------------------|-----------------------|---------------------------|--------------------------|-----------------------------------|
| | 0 | | | | 5 - Excellent | 1=Low x Low | |
| <i>Abbey Pl.</i> | 6 | PVC | 420 | April 1992 | 5 - Excellent | 1=Low x Low | 2042 |
| <i>Abo Ct.</i> | 6 | PVC | 600 | | 5 - Excellent | 1=Low x Low | |
| <i>Abo Rd.</i> | 8 | PVC | 1730 | April 1992 | 5 - Excellent | 1=Low x Low | 2042 |
| <i>Alpine Ct.</i> | 6 | PVC | 640 | | 5 - Excellent | 1=Low x Low | |
| <i>Alpine Ln.</i> | 6 | PVC | 1100 | March 1990 | 5 - Excellent | 1=Low x Low | 2040 |
| <i>Alpine Pl.</i> | 6 | PVC | 350 | March 1990 | 5 - Excellent | 1=Low x Low | 2040 |
| <i>Appaloosa Pl.</i> | 6 | PVC | 530 | April 1990 | 5 - Excellent | 1=Low x Low | 2040 |
| <i>Apple Blossom St.</i> | 6 | PVC | 1260 | November 1989 | 5 - Excellent | 1=Low x Low | 2039 |
| <i>Arena Rd.</i> | 14 | PVC | 750 | September 1988 | 5 - Excellent | 1=Low x Low | 2038 |

VILLAGE OF BOSQUE FARMS

LEVEL OF SERVICE AGREEMENT FOR WATER SUPPLY

Bosque Farms pumps groundwater from two separate 900 ft. deep wells out of the Rio Grande Basin and disinfects with chlorine gas prior to distribution.

Financial Performance

- The water service rate is \$20.00 plus tax on the minimum usage of 7000 gallons per month. Additional water at \$2.00 per any part of 1000 gallons above the 7000 gallon minimum.
- New water service connection fee is \$1000.00 (for standard ¾" meter) and \$25.00 meter deposit.
- If water service is disconnected for non-payment, a \$50.00 reconnect fee and all arrears in charges must be paid before service will be restored.
- Bills are normally mailed on the 1st day of each month and are due within 20 days after the date of mailing.
- A charge of 10% of the monthly water billing shall be assessed to the unpaid, delinquent amount.

Pressure

Under normal conditions the water pressure in the system will maintain within the range of 30 – 90 psi.

Drought/Water Conservation

Bosque Farms currently has a water conservation plan that would be implemented in stages if necessary.

Peak Day

Bosque Farms current peak day capacity occurs between 5 a.m. – 8 a.m. and 5 p.m. – 8 p.m. everyday.

Planned Interruptions

For repair, installation and other maintenance work it is necessary occasionally to interrupt service. In such case residential and commercial customers may receive 24 hour written notice before the planned interruption. Planned interruptions will be scheduled during non-peak day capacity.

Unplanned Interruptions – for unplanned interruptions of water supply customers can expect the interruption to last no longer than 6 hours for main line repairs and 4 hours for service line repairs. It is the goal of the Bosque Farms Water Supply System that the number of customers affected by the unplanned interruptions will be minimized through the use of isolation valves throughout the system.

Responsiveness – The Bosque Farms Water Supply System will respond to unplanned interruptions to restore service within 2 hours 90% of the time. The Bosque Farms Water Supply System will respond to customer's complaints within 4 hours during normal business operating hours.

Water for Fire Fighting – The Bosque Farms Water Supply System will maintain at least the minimum flow rate in the water system as required for fire fighting purposes and proper use of fire hydrants. The Bosque Farms Water Supply System will also coordinate with the local fire department to ensure that fire hydrants are exercised and working properly on a routine basis.

Water Quality – the Bosque Farms Water Supply System will strive to provide potable water to each customer that meet current federal and state drinking water regulations. The Bosque Farms Water Supply System will work in conjunction with federal and state agencies responsible for overseeing drinking water standards to safeguard the health and safety of its customers.

Water Use – the Bosque Farms Water Supply System recommends that the treated potable water delivered to its customers be used only for indoor domestic uses. In addition, the use of untreated water should be used for outdoor uses such as washing vehicles and irrigation. Customers will be charged extra for water use over a minimum standard set by the Village of Bosque Farms. The Bosque Farms Water Supply System will strive to keep water loss from the system below 8%.

ILFELD MUTUAL DOMESTIC WATER CONSUMERS' ASSOCIATION

- ASSET MANAGEMENT PLAN

Examples

- Base Map
- Database Excerpt
- Level of Service Agreement

**Irfield Mutual Domestic Water Consumer Association
Asset Management Pilot Project 2007**

Utility Assets

- Storage Tank
- Well

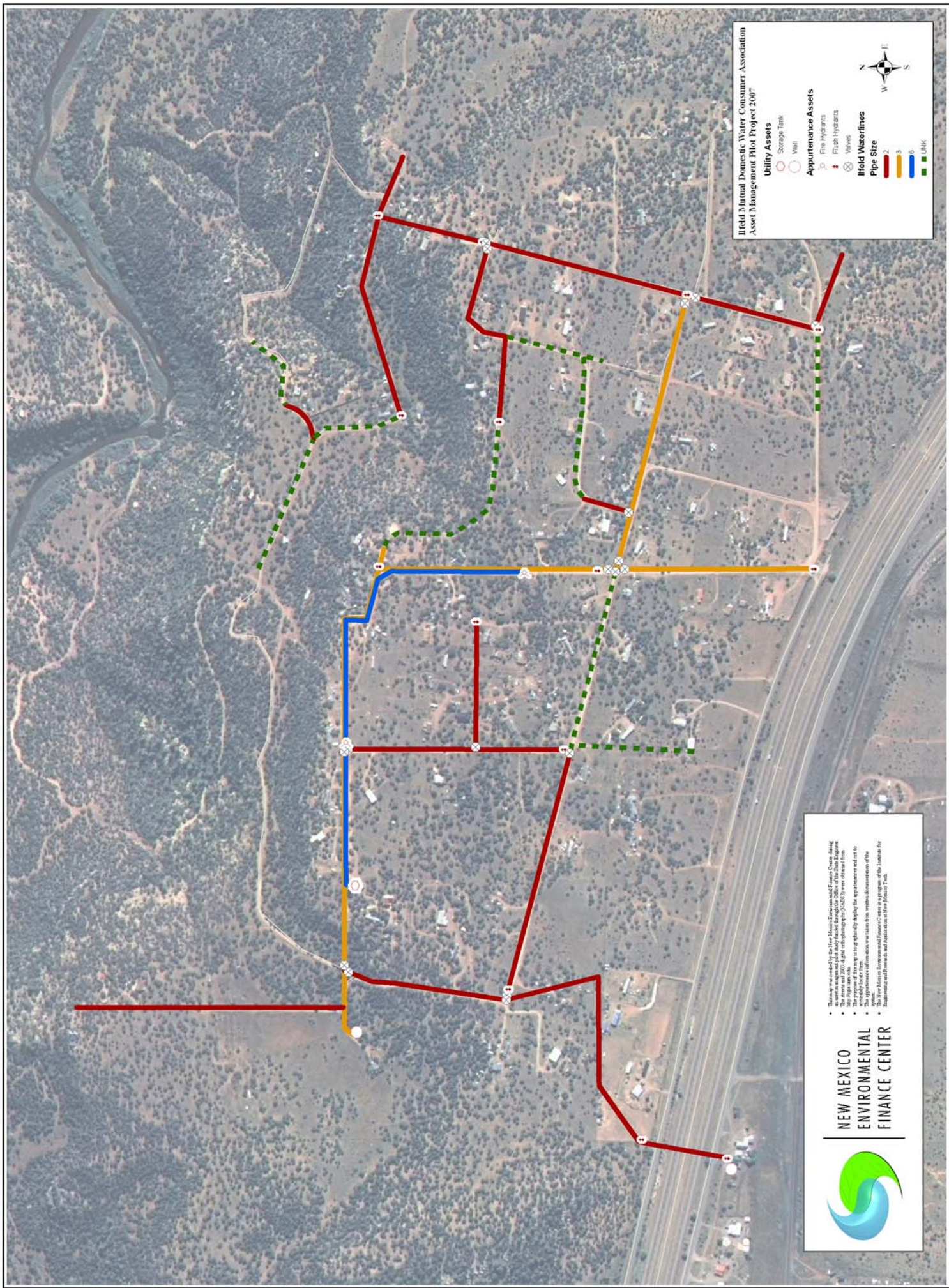
Appurtenance Assets

- ⊕ Fire Hydrants
- ⊕ Valves

Irfield Waterlines

Pipe Size

- 2" (Red)
- 3" (Yellow)
- 6" (Blue)
- UNK (Green)



- This map was created by the New Mexico Environmental Finance Center along with the New Mexico Department of Environment and Natural Resources.
- This map is for informational purposes only. It is not intended to be used for legal or regulatory purposes.
- The purpose of this map is to provide a visual representation of the water utility assets.
- The map is not intended to be used for engineering or design purposes.
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Ilfeld MDWCA Asset Inventory

Asset: Well #1

| <i>Item</i> | <i>Date Installed</i> | <i>Condition</i> | <i>Notes</i> | <i>Estimated Replacement Date</i> |
|-----------------------|-----------------------|-------------------|-------------------------------------|-----------------------------------|
| 2" Ball Valve | | Good | | |
| Pressure Gauge | | Good | | |
| 2" Master Meter | 1987 | Needs Replacement | | 2002 |
| Sampling Port | | Good | | |
| Tank Level Controller | 1987 | Needs Replacement | not compatible w/ Well # 2 controls | |
| Chlorine Tank | | Excellent | not used | |
| Metering pump | | Excellent | not used | |
| In tank mixer | | Excellent | not used | |
| Pump | | | | |
| Motor | | | | |
| Casing | 1957 | Fair | See PER | 2007 |

Ilfeld Mutual Domestic Water Consumer Association

Level of Service Agreement with Association Members

Introduction

The Ilfeld Mutual Domestic Water Consumer's Association (IMDWCA) was created to provide water services to the residents of Ilfeld, New Mexico. The IMDWCA consists of two wells, a ground storage tank, and a PVC pipe distribution system, and its source of drinking water is ground water for residential use.

Purpose

As part of IMDWCA's efforts to continue providing outstanding service to its members, the IMDWCA board has elected to implement a level of service agreement. This agreement outlines the criteria or indicators that will help the system determine how best to manage its assets to provide a certain level of service at a reasonable cost.

Level of Service Agreement

Operating Cost/Invoicing

- Current water rates will be made available at the IMDWCA meetings.
- The IMDWCA will strive to read meters between the 1st and the 5th of each month.
- The IMDWCA will strive to distribute invoices no later than the 7th of each month.
- In the case that the meter is inaccessible to the meter reader due to customers' fencing, animals, or other blockage, the customer shall be billed three times the base rate until such time the meter can be accessed. The IMDWCA shall make billing adjustments on the next successful meter reading.
- Shut off notices will be mailed to the delinquent customer 21 days before interruption of services, to allow sufficient time for payment.

Responsiveness

- Respond to service request with 24 hours and repair within 72 hours of notification 90% of the time.
- The IMDWCA will respond to customer complaints within 48 hours during business hours.

Reliability

- The average duration of an unplanned interruption is estimated to be 72 hours for water main line repairs and 72 hours for service line repairs.
- The IMDWCA will work to keep the system operational with service to all consumers a minimum of 99% of each month.

Regulatory Requirements

- The IMDWCA is responsible for monitoring water quality per state and federal requirements.
- The IMDWCA will distribute to its members the Consumer Confidence Report.

Quantity

- The IMDWCA will promote water conservation measures with members.

Quality

- The IMDWCA will strive to continue to provide water that meets all state and federal requirements without any chemical treatment.

Customer Satisfaction

- The IMDWCA will keep members informed on matters pertaining to the water system through its monthly board meetings and through periodic mailings.
- The IMDWCA will strive to meet the customer agreed upon level of service. Customers will be advised of all changes to the level of service before the change is implemented, except in the case of emergency, in which case the customers will be notified as soon as possible.