2010-2030

WATER SYSTEM FACILITY PLAN

UPDATE

JULY 2010

TRUCKEE MEADOWS WATER AUTHORITY

Section I

EXECUTIVE SUMMARY

PURPOSE & OBJECTIVES:

The objectives of the 2010-2030 Water Facility Plan (2030 WFP) are:

1. Determine if modifications to the current water facility plan are necessary to meet the revised demand forecasts in the 2010-2030 Water Resource Plan (2030 WRP).
2. Identify revised in-service dates and update cost estimates for recommended facilities in order to update TMWA's funding plan and developer facility charges.

INTRODUCTION:

The 2005-2025 Water Facility Plan (2025 WFP) was approved by the TMWA Board in December 2004 at a time when the rate of new development was nearing its peak. The housing "bubble" began to deflate in early 2006 and by late 2008 the subsequent fallout from the subprime mortgage financial crisis had produced a virtual halt to new development activity. The resulting economic slowdown and to a lesser extent the effects of price elasticity resulting from conversion to an essentially fully metered system have significantly altered the future demand projections presented in the 2025 WRP. Actual maximum day demands (MDD) compared to the projections presented in the 2025 WRP are summarized below:

2005-2010 Actual MDD vs. 2025 WRP Projections

Year	2025 WRP MDD (MGD)	Actual MDD (MGD)	Percent Difference
2005	153.1	148.3	(3.1)
2006	154.2	140.8	(8.7)
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2008	156.6	133.2	(14.9)
2009	158.1	128.8	(18.5)
2010	159.6	123.2	(22.8)

The 2025 WFP culminated a comprehensive engineering analysis that thoroughly examined both the state of the existing system and provided a blueprint for future expansion to meet the needs of growth. Thus, having previously established the facilities required to meet a MDD of almost 190 MGD, it is not necessary to "reinvent the wheel"; therefore, the current WFP will focus on verifying or modifying recommended capacities and facility sizing, re-

establishing priorities and determining the revised timing of recommended improvements.

FUTURE DEMANDS & FACILITY COST SUMMARY:

Based on revised 2030 WRP projections, the maximum day demand (MDD) on TMWA's supply and distribution facilities is anticipated to increase from about 137 million gallons per day (MGD) in 2010 to about 172 MGD in 2030, or a 25 percent increase over the 20 year period. However, this represents a significant reduction in the growth rate and corresponding peak day demands presented in the 2025 WRP. A comparison of the MDDs presented in the 2025 WRP and the current projections is presented as follows:

2010-2030 MDD Projections

Year	2025 WRP MDD (MGD)	2030 WRP MDD (MGD)	Percent Difference
2010	159.6	136.8	(14.3)
2015	171.0	146.9	(14.1)
2020	180.5	157.2	(12.9)
2025	189.5	166.8	(12.0)
2030	n/a	171.9	n/a

The revised demand projections shown above represent an annual growth rate of around 1.5 percent. If the new growth projections are carried out into future years, it would show that a peak day demand of 180 MGD is not anticipated until about 2044, or 24 years later than expected just five years ago. Although growth is expected to slow significantly, the areas of growth are not anticipated to change. Over 50 percent of the anticipated growth in water demand is expected to occur in four geographic areas as summarized below:

2010-2030 High Growth Areas (1)

Service Area	Increase in Retail MDD (MGD)	Increase in Wholesale MDD (MGD)	Total Increase In MDD (MGD)
Northwest - Verdi	5.9	0.0	5.9
Spanish Springs	1.3	2.4	3.7
So. Truckee Meadows	0.9	5.5	6.4
North Virginia - Stead	2.7	0.3	3.0
Totals	**10.8**	**8.2**	**19.0**

(1) See Figure 1, Service Territory Map, on Page 4

The estimated cost of water system facilities that will be required to meet the demands of future growth and/or replace or rehabilitate aging infrastructure are summarized below under the categories of Supply, Storage and Distribution.

2010-2040 Facility Costs & Allocations

Facility Category	Total Estimated Costs	Costs Allocated to Existing Customers	Costs Allocated to New Growth
Supply	$107.1M	$ 48.3M	$ 58.8M
Storage	$ 33.5M	$ 19.3M	$ 14.2M
Distribution	$239.4M	$179.4M	$ 60.0M
Totals	**$380.0M**	**$247.0M**	**$133.0M**

The costs shown above include projected spending on rehabilitation of existing infrastructure. Since the inception of TMWA in 2001, over $160 million has been reinvested in the water system. As shown above, a significant investment for rehabilitation and replacement of existing facilities will continue to be required over the next 30 years. Significant facility replacement costs incurred in the last few years include a complete replacement of both the North Virginia and a portion of the Stead supply systems. Anticipated expenditures on rehabilitation in the next 30 years include $22M for pump stations and pressure regulating stations and $144M on main replacements. The bulk of the Supply category costs charged to existing customers is due to anticipated rehabilitation expenditures for existing wells and surface water treatment plants.

A majority of the costs for new storage and distribution facilities for growth are associated with completion of the Sparks Feeder Mains and other Spanish Springs improvements and for construction of a backbone pumping-transmission-storage system for the Verdi area. In the South Truckee Meadows (STM) area, it is likely that additional facilities and improvements will be required to expand the delivery of surface water sources to implement a conjunctive use approach and delay construction of a treatment plant for STM creek rights. The largest Supply cost components charged to growth is for the future Sparks Groundwater Treatment Plant and for the Phase 4 expansion of the Chalk Bluff treatment plant facility.

The primary areas of growth will occur at the periphery of the TMWA service area. The water service area is shown in Figure 1, below.

(insert Figure 1 – Service Area Map)

FACILITY REQUIREMENTS:

A brief discussion of the recommended major Supply, Distribution, Pumping and Storage facility improvements with required project in-service dates and estimated costs are presented below. The tables and discussions below include facilities recommended in the original 2025 WFP to provide perspective and demonstrate the progress that has been made:

Major Supply Improvements

Project	Required Completion	Estimated Cost
A. Highland Canal Improvements	**complete**	**n/a**
B. Glendale Pumping Improvements	**complete**	**n/a**
C. Glendale Diversion	**2011**	**$7,000,000**
D. New Production Wells		
Stead-Silver Lake Wells	**complete**	**n/a**
Hawkings Court Well	**complete**	**n/a**
School District Well	**2022**	**$1,000,000**
Longley #2 Well	**2023**	**$1,000,000**
E. Sparks GWTP Phase 1	**2024**	**$25,000,000**
Sparks GWTP Phase 2	**2030**	**$10,000,000**
F. Chalk Bluff Phase 4 Expansion	**2037**	**$20,500,000**

A. Highland Canal Improvements

The Highland Canal is the preferred primary raw water conveyance system for Chalk Bluff due to the cost of pumping from the Orr Ditch diversion, the increase in water quality afforded by the upstream diversion and the higher reliability of gravity flow to the plant. In 2005, Shaw Engineering completed a comprehensive engineering analysis and master plan for the canal system. As a result of the earthquake damage to Flume #14 in April 2008, construction of two major components of the master plan, the Mogul Bypass and Railroad RCB projects, were accelerated. Completion of those projects along with replacement of Flumes 1 and 18 and the addition of a parallel siphon at Chalk Canyon, increased the capacity of the canal system to approximately 95 MGD. This is enough capacity to meet 100 percent of the

current treatment capacity of the Chalk Bluff plant (90 MGD) plus an additional 5 MGD to meet the needs of irrigation customers downstream of Chalk Bluff. Construction of these projects essentially completes the long-term goals of the Highland Canal Master Plan to provide a secure, protected conveyance system capable of diverting as much of the Chalk Bluff supply by gravity flow as possible. By not having to pump from the Orr Ditch diversion, TMWA will save approximately $360,000 per year in electricity costs (not accounting for inflation or future rate increases). In addition, the Mogul Bypass will eliminate future liability from potential ditch failures around the Mogul area. A portion of the costs to improve the Highland Canal (related to increased capacity) will be reimbursed through collection of Supply-Treatment Facility Charges.

B. Glendale Pumping Improvements

This project was completed in 2009. The net treatment capacity of the Glendale plant is 34.5 MGD, but the capacity of the existing rock and rubble raw water diversion limits net production to about 25 MGD. When the new arsenic standard went into effect in 2006, TMWA began delivering high arsenic groundwater to the Glendale site from the Mill, Corbett and Greg wells. This insured PCE remediation goals would continue to be met and also preserved normal (pre-arsenic rule) groundwater production capacity. Arsenic concentrations in these wells are such that they can be blended with finished water from the plant and thus add to (not displace) surface water treatment capacity. Blending of groundwater at the finish water pump station wet well during a non-drought year will require a finish water pumping rate from the Glendale plant of 41 MGD. Expansion of the finish water pumping capacity provides increased operational flexibility by taking full advantage of the available plant treatment capacity, maximizing surface water production in a non-drought year, and reduces dependence on Chalk Bluff. The facility incorporates both high-head and low-head pumping into the Highland and Sparks Regulated gravity zones, respectively, to minimize energy costs. The anticipated reduction in energy use should be equivalent to one 700 horsepower pumping unit. It should be noted that maximum utilization of this facility is not possible until Phase 4B of the Sparks Feeder Main is complete (2011). The costs to construct the pumping improvements are reimbursed through collection of Supply-Treatment Facility Charges.

C. Glendale Diversion

An appropriate mix of ground water and surface water supplies are necessary to meet demands in both a drought and a non-drought year. As the population grows, it becomes even more important to delay or extend the use of drought reserves from upstream reservoirs (referred to as Privately Owned Stored Water, or POSW) in the event of an extended drought situation. Once upstream POSW is released, it is critical to capture that water at either the

Chalk Bluff Treatment Plant or at the Glendale Treatment Plant. The minimum river flow expected to be available for diversion at Glendale during the critical drought year is 25 cubic feet per second (cfs), which consists of the minimum 20 cfs bypass flow beyond the Orr Ditch diversion structure plus an assumed 5 cfs of combined contributions from City storm drains and natural river inflows between Chalk Bluff and Glendale. This results in a minimum drought year surface water supply to Glendale of about 16.2 MGD. The Glendale Diversion project is necessary in part to allow capture of that important POSW under drought (low flow) conditions. This drought year surface water supply to Glendale, in conjunction with existing high arsenic ground water supplies will insure that the plant can continue to produce a finished water flow near its rated capacity. During a non-drought year, the Glendale Diversion will provide reliable delivery of up to 38 MGD of river water to the Glendale plant to maximize surface water production and take full advantage of the 34.5 MGD of available net treatment capacity. In addition, the new diversion will improve reliability, reduce the environmental impact of diversion maintenance, enhance fisheries habitat, improve recreational opportunities, and provide some flood benefits. This project alone does not create significant additional non-drought year capacity without increasing the finished water pumping and distribution system capacity from the plant. This project has been approved for low-interest financing through the SDWRF program and is currently under construction in FY 2011. The costs to construct the Glendale Diversion are reimbursed through collection of Supply-Treatment Facility Charges.

D. New Production Wells

The conjunctive use of ground and surface water supplies provides many benefits to the TMWA system. An adequate groundwater supply is necessary to maintain water service during periods of drought or other periods when surface supplies are temporarily curtailed. In an emergency situation where surface supplies are unavailable and mandatory conservation is imposed, groundwater could satisfy the essential indoor water needs of the community for an extended period. Strategically located production wells can reduce distribution system facility requirements by placing supply sources closer to areas of large demand that may be located a great distance away from surface water production facilities (e.g. a Spanish Springs well). The primary use of TMWA's groundwater supply is to meet seasonal peak use demands that exceed surface water treatment capacity. In order to defer costly treatment plant improvements as long as possible and provide adequate drought period supply, it is necessary to develop about 77 MGD of net groundwater capacity. Current groundwater capacity is about 63 MGD including the arsenic wells that are piped to Glendale. Based on test pumping results, the total increase in groundwater capacity from the future well projects will be about 3.2 MGD. Since completion of the wells is anticipated to be more cost effective, they have been scheduled for completion prior to

the Sparks GWTP facility. These facility costs are reimbursed through collection of Supply-Treatment Facility Charges.

E. Sparks Groundwater Treatment Plant

To maintain water service during drought conditions and to maximize the yield of TMWA's water resources under all conditions, it will be necessary to develop a groundwater production capacity of around 77 MGD. This estimate is based on the provisions of the conjunctive use agreement which allows TMWA to pump approximately 22,000 AF in a drought year. Maximizing the yield of this drought supply results in a peak month extraction of 7,330 AF, or 77 MGD. Although the Glendale plant has adequate treatment capacity (37.5 MGD gross) to allow adding more arsenic groundwater to the treatment train during a drought year (the Pezzi, Poplar #1, Terminal, Mill, Corbett and Greg wells are already piped to Glendale), a separate groundwater treatment facility is recommended because: (a) an additional facility results in an increase in overall system reliability; (b) facility costs (raw water pipelines) are reduced by locating the treatment facility closer to potential sources; and (c) because additional non-drought capacity is created (additional groundwater sent to Glendale would only displace surface water in a "normal" year). Additional considerations supporting this recommendation are: Sparks would benefit from the addition of another reliable supplemental source of supply; additional groundwater sources with good water quality have been extremely hard to locate and develop; and new supply capacity must be developed anyway. The 2025 WFP recommended an in-service date of 2013 based on previous demand projections and giving priority to drought supply projects. Current demand projections push the in-service date for Phase 1 of this project out to 2023-2024. The costs for this facility will be reimbursed through collection of Supply-Treatment Facility Charges.

F. Chalk Bluff Treatment Plant Expansion

The proposed Glendale and groundwater improvements should provide adequate drought supply, meet resource optimization goals and provide new capacity to meet the anticipated needs of new development for the next 25 years. Beyond that point in time, additional sources of capacity will be needed. The additional capacity will most likely be provided by constructing Chalk Bluff Phase 4, unless additional groundwater rights are developed and adequate capacity and water quality can be produced. Once drought supplies are secured and resource optimization goals are met, the most cost effective alternative for creating additional capacity is through expansion of the Chalk Bluff plant. It is noted that the 2025 WFP recommended that Phase 4 be completed by 2018 as compared to the current recommend in-service date of 2037. These costs are reimbursed through collection of Supply-Treatment Facility Charges.

Major Distribution Improvements

Major distribution facility improvements are presented below by region.

Projects	Required Completion	Estimated Cost
A. Sparks-Spanish Springs		
NE Sparks Feeder Main Ph. 3	complete	n/a
NE Sparks Feeder Main Ph. 4	2011	$4,485,600
SE Sparks Feeder Main Ph. 1	2027	$3,642,400
NE Sparks Feeder Main Ph. 5	2030	$ 601,600
SE Sparks Feeder Main Ph. 2	2031	$ 757,200
Pyramid PS Suction Main	2031	$ 655,000
NE Sparks Feeder Main Ph. 6	2032	$5,648,800
Pyramid Hwy Parallel Main	2033	$2,730,000
NE Sparks Feeder Main Ph. 7	2034	$1,960,000
NE Sparks Feeder Main Ph. 8	2035	$3,089,000
B. North Valleys		
Silver Lake Main Improvements	complete	n/a
Stead-North Virginia Trans. Main	complete	n/a
Hoge Main	complete	n/a
Raleigh Heights Trans. Main	complete	n/a
Raleigh-Stead Trans. Main	2016	$4,950,000
Stead Golf Course 14" Main Repl.	2021	$2,200,000
C. Northwest-Verdi		
Mogul, US 40 & Boomtown Mains	2022-26	$17,582,000
D. South Truckee Meadows		
STM Capacity Improvements Ph. 1	2024-25	$1,512,000
STM Capacity Improvements Ph. 2	2035	$3,575,000
E. Major Main Replacements		
Plumb Lane 24" Main Replacement	2017-20	$11,234,000
Washington, 6^{th}, 5^{th}, 9^{th}, et. al.	2036-39	$ 9,900,000

A. Sparks Distribution Improvements

Due to the lack of good quality groundwater sources of sufficient volume in northeast Sparks, it is necessary to convey surface water production from the Glendale treatment plant over a very long distance to the Spanish Springs area (see Figure 1). Several alternatives with potential to offset or reduce the size and scope of required distribution facilities in Sparks were evaluated,

including a groundwater treatment plant (GWTP) and a low-head pumping facility south of Spanish Springs Valley. Analyses show that there is very little that can be done to reduce main sizes to Spanish Springs. This is due to the need to install a very large pipe just to offset the cumulative pressure loss that results from the significant length of the main. Pipeline pressure loss is a function of pipe diameter, flow and length. For a fixed pipeline distance and required flow, the pipe diameter becomes the only variable. The minimum diameter required to produce acceptable peak day and peak hour distribution system pressures results in a relatively low velocity in the pipe – so low in fact, that increased pipe diameters no longer yield significant gains in residual distribution pressures. Thus, the most attractive option is to construct the minimum diameter pipeline and to seasonally boost pressures with a strategically located low-head pumping station. The proposed Disc Drive pump station may only be operated for 3-4 months per year, but its contribution during the peak use period reduces Sparks Feeder main costs by about $3 million. These costs are reimbursed through collection of Area Feeder Main Fees.

B. North Valleys Distribution Improvements

With the annexation of the Sky Vista development in Stead in the mid-1990's, it was projected that the Stead main would need to be replaced with a higher capacity pipeline around 2001. The integration of the Silver Lake system in the late 1990's provided sufficient additional peak day supply to delay the Stead main replacement project, but did not indefinitely defer the need for a higher capacity pipeline nor the need to replace the aging existing pipeline. The existing Stead main is now approximately 60-years old and is approaching the end of its useful life. Phase 1 of the replacement project was completed in 2008. Phase 2 of the replacement project involves replacement of the Stead pipeline between Golden Valley Road and the Stead Tanks. To avoid duplication of facilities and unnecessary capital expenditures, planning for Phase 2 will need to consider the infrastructure and operational requirements to integrate the Fish Springs groundwater importation project into the North Valleys distribution system. Because of the commitment to serve existing customers in the North Virginia and Stead areas, TMWA is responsible for a portion of the costs to replace Stead-North Virginia systems. The remainder of the costs are reimbursed through collection of Area Feeder Main Fees.

C. Northwest-Verdi Distribution Improvements

The Northwest-Verdi projects listed above include future facilities west of Mae Anne/Mesa Park that will be part of a backbone pumped storage system to supply water to the lower areas of Verdi, including Boomtown. Additional facilities required to expand the system to serve proposed residential development in the northern and southern foothills will be built and dedicated

by the developers of the properties. In the last several years, capacity improvements for Verdi have been made by cost effectively oversizing off-site facilities for the Somersett development. These system costs will be reimbursed through collection of an Area Feeder Main Fee.

D. South Truckee Meadows Improvements

Assuming that the use of surface water will be expanded in the STM as a means to implement conjunctive use and to delay construction of costly treatment plant improvements, these facilities will incrementally increase the capacity to deliver TMWA water to the Double Diamond system. Phase 1 improvements will increase capacity to 7400 GPM and Phase 2 improvements will increase capacity to about 11,600 GPM. These facility costs will be reimbursed through collection of Area Feeder Main Fees or paid directly by growth in the STM.

E. Major Main Replacements

These replacements are for major distribution mains that originally supplied water to the system from treatment facilities at Hunter Creek and Highland. The treatment facilities were converted to treated water storage facilities in the 1990's and thus these older large mains still provide a vital function of moving peak hour water supplies into and throughout the distribution system. The replacements have been scheduled to occur when the pipelines have reached a life of about 70 years old. These costs will be recovered through customer water rates.

Storage Improvements

Major storage facility improvements are presented below.

Projects	Required Completion	Estimated Cost
A. Gravity Zones		
Hunter Creek Gravity Storage	**complete**	
Highland Gravity Storage	**2022-23**	**$10,000,000**
B. Pumped Storage Zones		
1.25 MG Beaumont Tank	**complete**	
1.50 MG Ridgeview Tank	**complete**	
4.00 MG Pyramid Tank	**complete**	
1.50 MG Vista #2 Tank	**complete**	
1.25 MG D'Andrea Tank	**complete**	**d-d-b-d (1)**
4.00 MG Raleigh Heights #3 Tank	**complete**	
0.90 MG Vista #3 Tank	**complete**	**d-d-b-d**
0.90 MG The Ridges Tank	**complete**	**d-d-b-d**
2.00 MG Peavine Tank Repl.	**2016**	**$2,400,000**
1.25 MG Sun Valley #2 Tank	**2018**	**$1,670,000**
1.50 MG Lower Verdi Tank	**2023**	**$3,401,000**
1.50 MG Caughlin #2 Tank	**2025**	**$1,500,000**
1.50 MG Boomtown #2 Tank	**2026**	**$3,283,000**

(1) d-d-b-d = developer-design-build-dedicate.

A. Gravity Zone Storage Improvements

With the addition of storage noted above (including potential future developer design-build-dedicate storage facilities not shown above), total operating storage volume should just be adequate to meet Nevada Administrative Code (NAC) total capacity requirements through 2030. Considering only minimum storage requirements indicates an overall system wide surplus of about 12 MG for the major gravity zones in 2030; however, about 9 MG of the 2030 "surplus" will consist of reliability improvements at the two reservoir sites. It should be emphasized that "surplus" is a relative term since the NAC standards represent minimum requirements. From a system hydraulic standpoint, surplus storage in the Hunter Creek zone can flow by gravity to the Highland zone, which in turn can pass flow "downstream" to the Sparks regulated zone. Therefore, a surplus at Hunter Creek is appropriate since the zone's elevation provides the hydraulic flexibility to supply all other gravity zones in an emergency

situation. As noted in the table above, over 19 MG of treated water storage (gravity zones plus tank zones) capacity has been added to the system in the last five years; however, only 4 MG of storage capacity was added to the gravity zones and is available to the system as a whole. The increased maintenance requirements of the liners and floating covers at the two major treated water storage reservoirs constructed at Hunter Creek and Highland has revealed a need for redundant storage facilities within these zones. Because of the ultimate need for additional operating storage and redundancy concerns, it is recommended that additional gravity storage be constructed within the Highland zone as was completed for the Hunter Creek zone.

B. Tank Zone Storage Improvements

Over 15 MG of tank storage were added to the system in the last five years. These tanks were constructed in specific pressure zones in the foothills above the gravity zones. Three of the tanks were developer-design-build-dedicate (d-d-b-d) projects which TMWA was able to cost effectively oversize to provide storage capacity for existing customers. Additional storage will be required in the future to eliminate existing storage deficiencies (Sun Valley #2, Caughlin #2), but great strides were made in the last five years to provide storage where none existed (Ridgeview, Pyramid, D'Andrea, Vista #3). The additional storage proposed for Stead in the 2025 WFP will be incorporated into the Peavine Tank replacement project. The storage added at Raleigh Heights is available to both the North Virginia and Stead systems since gravity flow from Raleigh to Stead is possible. The Vista #3 tank will cover existing customers in the Wingfield Hills pump zone when a physical link is provided by new development. The proposed Caughlin #2 tank is important because it will make up an emergency storage deficit for an extensive area in the southwest. Detailed discussions regarding storage can be found in the Storage section of this report. Several potential developer design-build-dedicate projects are not included in the table above since they will not be a financial consideration for TMWA. Storage costs indicated above will be recovered through Storage Facility Charges.

Pumping System Improvements

Pumping System Projects	Required Completion	Estimated Cost
Pyramid-Point View	**complete**	**n/a**
Hunter Creek-Ross	**complete**	**n/a**
Glendale High-Lift	**complete**	**n/a**
Vista #2 & #3 Capacity Increase	**complete**	**n/a**
North Virginia-Stead	**complete**	**n/a**
Truckee River Highlands #1 & #2	**2020-21**	**$2,200,000**
US 40 Capacity Increase	**2022**	**$ 250,000**
Longley Pump Station Capacity Increase	**2025**	**$ 400,000**
Disc Drive Low Head	**2030**	**$1,800,000**
Spanish Springs #2 Capacity Increase	**2032**	**$ 400,000**

The pumping projects noted above were/are driven by various factors including increased reliability for existing customers. Pump stations required for growth only (Verdi, Copper Canyon, The Pines, etc.) in specific pressure zones are not necessarily shown in the table above.

The Truckee River Highlands pump system will meet demands in the lower Northgate area without having to pump into the higher Northgate #1 & #2 tank zones and will also strategically free up pumping capacity at US 40 for potential increased demands in Somersett and Verdi. The cost of this system is currently being collected through a feeder main fee for Area 3.

The Disc Drive Low Head facility reduces Sparks Feeder Main capital costs and will only need to be operated during peak use months. The cost of this facility will be recovered through Area 4 feeder main fees.

The pumping capacity of the Spanish Springs #2 pump station will need to be expanded to meet the future needs of the Spanish Springs valley. Any increase in capacity would be paid for by growth through the Area 4 fee.

The pumping capacity of the Longley pump station will need to be expanded to meet the future needs of the South Truckee Meadows. Any increase in capacity would be paid for by growth directly or through the Area 1 fee.

Section II

INTRODUCTION

BACKGROUND:

The 2025 WFP was approved by the TMWA Board in December 2004 at a time when the rate of new development was nearing its peak. The housing "bubble" began to deflate in early 2006 and by late 2008 the fallout from the subprime mortgage financial crisis had produced a virtual halt to new development activity. The resulting economic slowdown and to a lesser extent the effects of price elasticity resulting from conversion to an essentially fully metered system have produced future demand projections which are significantly less than those presented in the 2025 WRP. Comparisons of actual max day demands to the projections presented in the 2025 WRP are summarized below:

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Based on revised 2030 WRP projections, the max day demand on TMWA's supply and distribution facilities is anticipated to increase from about 137 million gallons per day (MGD) in 2010 to about 172 MGD in 2030, which is a 25 percent increase over the 20 year period. This represents a significant reduction in the growth rate and corresponding max day demands that were presented in the 2025 WRP. A comparison of the 2025 WRP max day demands with the current projections is presented as follows:

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The 2025 WFP culminated a comprehensive engineering analysis that thoroughly examined both the state of the existing system and provided a blueprint for future expansion to meet the needs of growth. Thus, having previously established the facilities required to meet a MDD of almost 190 MGD, it is not necessary to "reinvent the wheel"; therefore, the current WFP will focus on verifying or modifying recommended capacities and facility sizing, re-establishing priorities and determining the revised timing of recommended improvements.

Therefore, the objectives of the 2030 WFP are:

1. Determine if modifications to the 2025 WFP are necessary to meet the revised demand forecasts in the 2030 WRP.
2. Identify revised in-service dates and update cost estimates for recommended facilities in order to update TMWA's funding plan and developer facility charges.

THE PREVIOUS PLANNING PERIOD IN REVIEW:

The most recent comprehensive master plan prior to the 2025 WFP dated back to 1994. For this reason, the 2025 WFP specifically provided an in-depth look at the state of the existing system and identified deficiencies (from an NAC 445A perspective) that should be corrected. Projects completed in the last five years that specifically address regulatory, reliability or service level issues for existing customers included the following:

1. Zolezzi to LaGuardia Main Tie (2005).
2. Meridian Pressure Regulating Station (2005).
3. Ridgeview Terrace Pressure Regulating Station (2005).
4. Coleman Pump Station Regulated Bypass (2005).
5. 1.25 MG Beaumont Tank (2005).
6. Vintage Hills Main Tie (2006).
7. Queens Way Main Looping (2006).
8. LaFond-Suda Way Main Ties (2006).
9. Outlook Drive Fire Flow Improvements (2006).
10. Eva Adams Pressure Regulating Station (2006).
11. Dant Blvd Check Valve Relocation (2006).
12. Hunter Creek-Ross Pump Station Replacement (2006).
13. Canyon Drive Main Tie (2006).
14. 1.5 MG Vista #2 Tank (2006).
15. 1.5 MG Ridgeview Tank (2007).
16. 1.25 MG D'Andrea Tank (2007).
17. Point View Pump Station Replacement (2008).
18. 4.0 MG Pyramid Tank (2009).