

City of Fresno
Metropolitan Water Resources Management Plan
Phase 3 Implementation Plan

Final
January 2011

WEST YOST

ASSOCIATES
Consulting Engineers



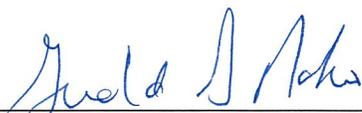
CITY OF FRESNO METROPOLITAN WATER RESOURCES MANAGEMENT PLAN UPDATE

PHASE 3 IMPLEMENTATION PLAN

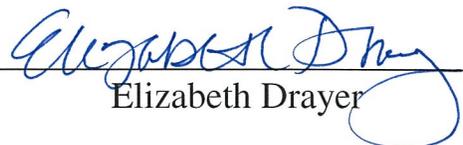
Prepared for

City of Fresno

January 2011



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This Phase 3 Report is the third and final technical report for the City of Fresno's Metropolitan Water Resources Management Plan Update (Metro Plan Update). The Metro Plan Update represents a significant work effort and an important milestone by the City's Water Division and consultant team. The completed Metro Plan Update will facilitate future water resources management, operations decisions, and capital improvement project planning.

West Yost Associates wishes to express our appreciation to the following City staff members who made significant contributions to the development of this Metro Plan Update Phase 3 Report:

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EXECUTIVE SUMMARY

INTRODUCTION

This Phase 3 Report presents the implementation plan for the City of Fresno's recommended water supply plan, which was developed and documented in Phase 2 of the Fresno Metropolitan Water Resources Management Plan Update (Metro Plan Update). The implementation plan described in this report includes the following components:

- Recommended Priorities,
- Recommended Operational Strategies,
- Refinement and Allocation of Costs,
- Evaluation of Potential Funding Sources, and
- Recommended Institutional Plan.

This Phase 3 Report is the final technical report to be prepared by West Yost Associates (West Yost) for this Metro Plan Update. Phase 4 of the Metro Plan Update will involve the preparation of an Environmental Impact Report (EIR) for the City's recommended water supply plan.

OVERVIEW OF RECOMMENDED WATER SUPPLY PLAN

The City's recommended water supply plan was described in the Phase 2 Report. The overall objective of the City's recommended water supply plan is to provide sustainable and reliable water supplies to meet the demands of existing and future customers through buildout of the City's General Plan in 2025. As described in the Phase 2 Report, the infrastructure plan contained in this Metro Plan Update is designed to provide the City with a solid framework of backbone water system transmission and distribution infrastructure throughout the City's service area. It is understood that the locations of the City's proposed activity centers and intensity corridors may be revised and change over time as new development plans are developed, and that additional improvements to specific facilities serving specific new developments may be required to meet localized water system operations criteria and City design standards. However, the recommended backbone infrastructure is sufficiently flexible to accommodate potential changes and therefore will not need to change.

Implementation of the City's recommended water supply plan will result in a significant shift in the use of available water resources and an increase in diversity in the City's water supply mix, which will enhance the City's overall water supply reliability and sustainability. The major components of the City's recommended water supply plan are summarized in Table ES-1.

Table ES-1. Major Components of City’s Recommended Water Supply Plan

Plan Component	Description
Additional water conservation	<ul style="list-style-type: none"> • 10 percent for residential customers as a result of the on-going water metering program. • Additional 5 percent by 2010. • Additional 5 percent (total 10 percent) by 2020.
Reduced groundwater pumpage and increased intentional recharge	<ul style="list-style-type: none"> • Reduced groundwater pumpage and increased intentional recharge to balance the City’s groundwater operations by 2025 and take advantage of available surface water supplies to help replenish groundwater storage and restore groundwater levels. • Consideration of an Aquifer Storage and Recovery (ASR) well system in addition to or as an alternate to new groundwater recharge basins.
Increased surface water treatment capacity and transmission capacity	<ul style="list-style-type: none"> • Completion of operational improvements at the existing Northeast Surface Water Treatment Facility (SWTF) to provide 30 mgd of treatment capacity. • Construction of a new 80 mgd (total design capacity) Southeast SWTF by 2015. • Expansion of the existing Northeast SWTF by 30 mgd to 60 mgd (total design capacity) by 2020. • Potential construction of a new Southwest SWTF in the southwestern part of the City in the future to provide added flexibility for serving future demands in that portion of the City. • Construction of regional transmission pipelines and transmission grid mains (TGMs) to convey and transport the treated surface water throughout the City’s service area. • Construction of new potable water storage facilities.
Introduction of recycled water supply for landscape irrigation and other non-potable uses	<ul style="list-style-type: none"> • Use of the North Fresno Wastewater Reclamation Facility (WRF) to irrigate Copper River Ranch Golf Course (initially 750 af/yr, increasing to 1,000 af/yr by 2015). • Use of up to 25,000 af/yr of recycled water for landscape irrigation and other non-potable uses in new development areas and existing parts of the City by 2025 for direct potable water demand offset (highly treated recycled water to be produced at new satellite plants, stand-alone plants and/or expanded Regional Wastewater Reclamation Facility (RWRf)).
Pursue new water supply opportunities	<ul style="list-style-type: none"> • Evaluate and, if appropriate, pursue new water supply opportunities when they arise to increase the diversity and reliability of the City’s water supply portfolio.

RECOMMENDED PRIORITIES

As described in the Phase 2 Report and in Chapter 2 of this Phase 3 Report, much of the required infrastructure for the City’s recommended water supply plan will need to be constructed before 2025 to facilitate the delivery of the City’s increased surface water treatment capacity, maximize the use of available surface water supplies, and balance groundwater operations by 2025. Figure ES-1 highlights the extensive planning, design and construction activities which will be required in the next 10 to 15 years. As shown, planning, acquisition of property, design, construction, and other activities must begin immediately to ensure that the required infrastructure components are in place and operational to meet the anticipated increased demands associated with buildout of the City’s 2025 General Plan, and to assure that the City’s objective of balancing groundwater operations by 2025 can be met by reducing groundwater pumpage to stop groundwater level declines and begin to restore groundwater levels to historical levels.

Table ES-2 summarizes the items that should be the City’s highest priorities over the next few years.

Table ES-2. Recommended Water Supply Plan Priorities

- | |
|--|
| <ul style="list-style-type: none"> • Complete the residential water metering program by March 2013 and implement a tiered water rate structure as soon as possible to further encourage water conservation; • Increase water conservation efforts, including expansion of existing programs and introduction of new programs, particularly those related to reducing outdoor water uses; • Begin design and construction of the new Southeast SWTF so that it can be operational by 2015; • Construct Priority 1 and 2 major regional transmission mains and TGMs to maximize the conveyance and use of treated surface water supplies from the existing Northeast SWTF and new Southeast SWTF throughout the City’s service area; • Construct new groundwater wells, including wellhead treatment if necessary, to meet peak demands throughout the City’s service area; • Maximize intentional groundwater recharge operations at existing recharge facilities, particularly Leaky Acres; • Acquire new properties for new groundwater recharge facilities within the City’s SOI; • Conduct an ASR well feasibility study; and • Complete the Recycled Water Master Plan, and associated EIR, to establish a detailed plan for providing 25,000 af/yr of recycled water supplies to offset potable water demands by 2025. |
|--|

RECOMMENDED WATER SYSTEM OPERATIONAL STRATEGIES

Just as important as constructing the required facilities for the recommended water supply plan will be the strategy used to operate them. Operational strategies must be developed, adopted, and implemented to meet the goals and objectives of the City’s recommended water supply plan. In particular, operational strategies must be developed to maximize the use of treated surface water from the City’s SWTFs in conjunction with the City’s groundwater supplies, and use of the City’s existing and proposed groundwater recharge facilities to ensure balanced and sustainable City groundwater operations by 2025 and beyond.

Table ES-3 summarizes the recommended operational strategy for the use of treated surface water supplies in conjunction with the City’s groundwater supplies.

Table ES-3. Operational Strategy for Conjunctive Use of Treated Surface Water Supplies and Groundwater Supplies

- Use treated surface water as the “base” supply to meet system demands;
- Maximize the use of available surface water treatment capacity by operating SWTFs at a consistent maximum rate throughout the year;
- Supplement treated surface water supplies with groundwater supplies to meet summertime demands and peak demands throughout the year;
- During winter months, when demands are low, use treated surface water to meet all system water demands (groundwater wells should only be used to meet peak demands and maintain system pressures as needed);
- Once both SWTFs are operational, if possible, stagger the annual scheduled maintenance of the SWTFs and their respective supply canals so that only one SWTF needs to be out of service at any given time. Note that once the new 60-inch-diameter Friant-Kern raw water pipeline to the Northeast SWTF, currently being designed, is completed, no down-time for maintenance of the Enterprise Canal will be required. Down-time for maintenance of the Friant-Kern Canal may be required and has been considered through an assumed 11-month operational period for the SWTFs; and
- Coordinate down-time of SWTFs with FID and USBR to coordinate with their canal maintenance activities.

These strategies should be adopted and implemented now and should become an on-going and permanent strategy for the City’s conjunctive use of treated surface water and groundwater supplies.

Table ES-4 outlines the recommended operational strategy for the groundwater recharge basins.

Table ES-4. Operational Strategy for Existing and New Groundwater Recharge Basins

- Groundwater recharge activities at existing recharge facilities should be maximized to the extent possible.
 - This will require a renewed focus and commitment to providing the required financial and staff resources to operate and maintain the existing facilities, particularly Leaky Acres, to increase intentional recharge at these facilities and, if possible, restore them to their historical maximum recharge capabilities.
- It is recommended that the City increase its current intentional recharge capacity of 54,600 af/yr through acquisition and construction of new recharge sites and facilities and increase recharge efficiency at existing recharge sites. There is about 20,500 af/yr of available surface water supplies during a normal hydrologic year that could be intentionally recharged to help replenish groundwater storage and restore groundwater levels. If new recharge sites are acquired, a single purchase of approximately 425 acres of land would be required to be able to recharge this annual quantity, or the City could opt to acquire the additional required lands incrementally.
 - The property sites for the proposed new recharge facilities should be acquired as soon as possible.
 - Once acquired, these facilities should be constructed and operated to intentionally recharge sufficient quantities of water to supplement the City’s other recharge efforts, and balance the City’s groundwater pumpage and restore groundwater levels.
 - Once operational, the City must commit to providing the required financial and staff resources to appropriately operate and maintain the facilities to retain their maximum recharge capabilities.
- The City may wish to consider the development of an Aquifer Storage and Recovery (ASR) Well System in addition or as an alternative to new groundwater recharge basins; a feasibility study should be conducted to identify any potential issues and regulatory requirements associated with implementation of such a system.
- The use of available surface water supplies should be maximized by using all available surface water that is not directly treated at the City’s Northeast SWTF (or the City’s planned Southeast SWTF) for intentional groundwater recharge.
 - This should occur in all years, regardless of hydrologic conditions, and is particularly important in wet years, when abundant surface water supplies should be available.
 - No available surface water supplies should remain unused under any circumstances.

These strategies should be adopted and implemented now and should become an on-going and permanent strategy for the City’s intentional groundwater recharge program.

REFINED COSTS AND RECOMMENDED COST ALLOCATION

The refined cost estimates for the recommended infrastructure improvements, along with a recommended cost allocation to existing rate payers and new growth, are described in Chapter 3 of this Phase 3 Report.

Table ES-5 summarizes the estimated capital costs for the City’s future water supply plan. A detailed discussion of the assumptions used to develop these estimated capital costs is provided in Chapter 9 of the Phase 2 Report. It should be noted that costs for recycled water facilities will be developed as part of the on-going Recycled Water Master Plan which is being developed through the City’s Wastewater Management Division.

Table ES-5. Estimate of Probable Capital Cost of Required Infrastructure to Support Future Water Supply Plan^(a)

Item Description	Estimated Cost to 2025, million dollars ^(b)
Surface Water Treatment ^(c)	\$396.6
Regional Water System Transmission	174.1
TGM System	151.8
Potable Water Storage ^(d)	50.3
Groundwater Production	51.0
Groundwater Treatment ^(e)	104.7
Recycled Water Treatment, Storage Facilities and Transmission Mains	-- ^(f)
Groundwater Recharge Facilities	127.5
Total Estimated Project Cost	\$1,056

- (a) Costs do not include Renewal and Replacement (R&R) costs for the City’s existing infrastructure.
- (b) Based on a May 2010 ENR 20 Cities Construction Cost Index of 8762. All costs include construction contingency, engineering, construction management, and program implementation costs, estimated to be 50 percent, as documented in the Phase 1 Report.
- (c) Includes new Southeast SWTF and Northeast SWTF expansion. Does not include future Southwest SWTF.
- (d) Includes new Tanks “T2”, “T3”, ”T4”, “T5” and “T6”.
- (e) Includes treatment for a number of existing and future City wells. Assumes GAC treatment for TCP removal for 40 of the City’s existing wells; however, this is a preliminary estimate that has a significant level of uncertainty because of the limited data that is currently available from operating TCP treatment facilities. Assumes GAC and ion exchange treatment for future wells for other potential contaminants of concern.
- (f) To be determined in the Recycled Water Master Plan.

The future water supply plan will provide benefits to both existing rate payers and new growth within the City. Existing rate payers will benefit from increased water supply diversity, increased water supply reliability, improved water quality, and improved groundwater basin conditions. New growth will benefit from the availability and reliability of water supplies to meet their water demands. Based on this philosophy, existing rate payers and new growth will need to share the costs of the required new infrastructure.

There are many alternative methods for allocating the costs of required infrastructure to existing rate payers and new growth. Allocation methods can be based on proportional share according to the ratio of existing to future water demands, location within the City’s service area, pressure zones within the City’s service area, and other factors. The most commonly used allocation method is based on a proportionate share according to the ratio of existing demands to future demands. This methodology provides for existing users and new growth to pay their fair share of the costs for required infrastructure improvements.

Table ES-6 provides a summary of the cost allocation methodology for each category of required infrastructure improvements.

Table ES-6. Cost Allocation Methodology for Required Infrastructure Improvements

Infrastructure Type	Cost Allocation Strategy
Surface Water Treatment Facilities	<ul style="list-style-type: none"> • New Southeast SWTF and Northeast SWTF Expansion: Proportionate share based on ratio between existing (2010) average day water demands and future (2025) average day water demands; equates to 70 percent for existing customers and 30 percent for future customers.
Water System Transmission Mains	<ul style="list-style-type: none"> • Proportionate share based on ratio between existing (2010) average day water demands and future (2025) average day water demands; equates to 70 percent for existing customers and 30 percent for future customers.
TGM System	<ul style="list-style-type: none"> • Proportionately shared based on estimated benefit of each pipeline segment. Resulting cost allocation for total cost is approximately 47 percent for existing customers and 53 percent for future customers.
Potable Water Storage Facilities	<ul style="list-style-type: none"> • New Southeast Tank “T2” allocated to existing customers • New Southeast Tank “T3” allocated to future customers • New Downtown Tank “T4” allocated 2/3 to existing customers and 1/3 to future customers • Future Tank “T5” allocated to future customers • Future Tank “T6” allocated to future customers
Groundwater Production Facilities	<ul style="list-style-type: none"> • All wells required up to 2010 allocated to existing customers. • All wells required after 2010 allocated to future customers.
Groundwater Treatment Facilities	<ul style="list-style-type: none"> • Treatment for existing wells (as of 2010) allocated to existing customers. • Treatment for future wells (after 2010) allocated to future customers.
Groundwater Recharge Facilities	<ul style="list-style-type: none"> • Equal share of 50 percent for existing customers and 50 percent for future customers.
Recycled Water Treatment, Storage Facilities and Transmission Mains	<ul style="list-style-type: none"> • To be determined at the completion of the Recycled Water Master Plan.

Based on the allocation methodology described above, the cost allocation to existing rate payers and new growth is presented in Table ES-7.

Table ES-7. Recommended Cost Allocation to Existing Rate Payers and Future New Growth

Item Description	Total Cost to Existing Rate Payers		Total Cost to Future New Growth		Total Cost, million dollars
	million dollars ^(a)	% of Total Costs	Future to 2025, million dollars	% of Total Costs	
Surface Water Treatment ^(b)					
New Southeast SWTF	211.9	70%	90.8	30%	302.7
Northeast SWTF Expansion	65.7	70%	28.2	30%	93.9
Regional Water System Transmission	121.9	70%	52.2	30%	174.1
TGM System	71.3	47%	80.5	53%	151.8
Potable Water Storage Facilities ^(c)	10.7	21%	39.5	79%	50.3
Groundwater Production	22.0	43%	29.0	57%	51.0
Groundwater Treatment	59.9 ^(d)	57%	44.8	43%	104.7
Recycled Water Treatment, Storage Facilities and Transmission Mains	-- ^(e)	--	-- ^(e)	--	-- ^(e)
Recharge Facilities	63.75	50%	63.75	50%	127.5
Total Estimated Project Cost	\$627	59%	\$429	41%	\$1,056

- (a) Based on a May 2010 ENR 20 Cities Construction Cost Index of 8762. All costs include construction contingency, engineering, construction management, and program implementation costs, estimated to be 50%, as documented in the Phase 1 Report.
- (b) Includes new Southeast SWTF and Northeast SWTF expansion. Does not include future Southwest SWTF.
- (c) Includes new Tanks "T2", "T3", "T4", "T5" and "T6".
- (d) Assumes GAC treatment for TCP removal for 40 of the City's existing wells; however, this is a preliminary estimate that has a significant level of uncertainty because of the limited data that is currently available from operating TCP treatment facilities.
- (e) To be determined by Recycled Water Master Plan.

Required infrastructure costs allocated to existing rate payers are expected to be paid through water rates.

Required infrastructure costs allocated to new growth will be paid through Urban Growth Management (UGM) fees based on the City's established UGM areas. It should be noted that there is currently no defined UGM area or associated UGM fee for the central part of the City; a UGM area and associated fee may need to be developed for this area to adequately allocate costs to new development (i.e., infill and redevelopment projects) in the central part of the City. Also, existing UGM fees do not include the costs associated with the infrastructure improvements described in this Metro Plan Update, and will need to be updated to adequately account for the costs of the future water supply plan allocated to new growth. A connection/UGM fee study will need to be prepared to establish the required UGM fees.

POTENTIAL FUNDING OPTIONS

As described in Chapter 4 of this Phase 3 Report, there are several potential funding options and opportunities to help finance the required infrastructure improvements included in the City's recommended water supply plan. The City should consider the following next steps in securing funding for the required infrastructure improvements necessary to implement the recommended water supply plan:

- Perform a comprehensive water rate study to evaluate the impact of the required infrastructure improvements on water rates;
- Perform a comprehensive UGM/connection fee study to evaluate the impact of the required infrastructure improvements on UGM fees; and
- Evaluate the potential for cost-sharing opportunities with other local agencies to assess if the potential cost savings outweigh the potential loss of overall control of operations and maintenance of facilities.

With regards to potentially available grants and loans, because many of the funding opportunities require infrastructure projects to be designed and ready to start construction immediately, the City is probably not currently eligible to receive such funds. However, the City should actively monitor and track potential funding opportunities and begin to research eligibility and pre-application and application requirements so that, once the EIR for the required infrastructure improvements (i.e., Phase 4 of this Metro Plan Update) and design documents are completed, the City can prepare and submit required pre-applications and applications to get on the various funding program priority lists to be "in line" for potential future funding opportunities.

RECOMMENDED INSTITUTIONAL PLAN

Chapter 5 of this Phase 3 Report describes the recommended institutional plan for the City's future water supply plan. Key elements of the recommended institutional plan are summarized in Table ES-8.

Table ES-8. Key Elements of Recommended Institutional Plan

<p>Recommended Lead Agency for Key Elements of Metro Plan Update</p> <ul style="list-style-type: none"> • City Water Division: <ul style="list-style-type: none"> — Potable water system — Groundwater recharge in dedicated recharge basins — Recycled water distribution and sales — Securing water supply — Water policy oversight • City Wastewater Division: <ul style="list-style-type: none"> — Recycled water treatment • FMFCD: <ul style="list-style-type: none"> — Groundwater recharge in storm water basins
<p>New Policies</p> <ul style="list-style-type: none"> • Balance the City’s groundwater operations by 2025 • New development must mitigate groundwater impacts and offset potable water demands to minimize potential impacts • Redevelopment must mitigate water system impacts resulting from higher intensity land uses to improve undersized and aging infrastructure • Recycled water: <ul style="list-style-type: none"> — Recycled water treatment should be performed by the Wastewater Division — Recycled water distribution and sales should be performed by the Water Division — Purple pipe should be installed in all new developments
<p>Planning</p> <ul style="list-style-type: none"> • Metropolitan Water Resources Management Plan: <ul style="list-style-type: none"> — Should be updated at 10-year intervals • Urban Water Management Plan: <ul style="list-style-type: none"> — Next update should begin in 2010 to be compliant with DWR’s required schedule (2010 UWMP is due to DWR by July 1, 2011) — Should be updated at 5-year intervals • Water System Master Plan: <ul style="list-style-type: none"> — Currently being developed — Should be updated at 5-year intervals • Recycled Water Master Plan: <ul style="list-style-type: none"> — Currently being developed — Should be updated at 5-year intervals • Groundwater Management Plan: <ul style="list-style-type: none"> — Next update should include the following: <ul style="list-style-type: none"> ➢ Strengthening of the water quality management portions of the plan to cover the full range of contaminants and natural constituents of concern and address well protection zones ➢ Provisions of the City’s Nitrate Management Plan ➢ New City policies — Should be updated at 10-year intervals — Annual monitoring reports should be prepared
<p>New Staff Required</p> <ul style="list-style-type: none"> • Water Resources Manager focused on planning, obtaining and maintaining sustainable water supplies • Recycled Water Distribution and Sales Manager to oversee implementation of the recycled water distribution and sales program and provide an interface with the Wastewater Division • Environmental Compliance Manager focused on groundwater management with specific emphasis on recharge operations and groundwater quality management • Program Management Team focused on implementation of the recommended water supply plan

NEXT STEPS

Figure ES-1 showed the implementation priorities for the recommended water supply plan. As shown, the priorities include numerous planning, budgeting, property acquisition, design and construction, and operations activities. The timing and priority of these activities are intended to enable the implementation of the recommended water supply plan to meet the City's water supply goals and objectives.

One of the priority items is the preparation of the Metro Plan Update EIR. Phase 4 of this Metro Plan Update will consist of the preparation of an EIR for the City's recommended water supply plan in compliance with the California Environmental Quality Act (CEQA). The EIR, to be prepared by Environmental Science Associates (ESA), will include review of all of the projects required to implement the City's future water supply plan, with evaluation of the near-term projects at a "project" level and evaluation of longer-term projects at a "programmatic" level.

A "project" level EIR analyzes the site-specific environmental impacts of required infrastructure improvements which are well-defined and for which specific locations and alignments have been determined, and describes the changes in the environment that would result from their planning, construction, and operation, and describes site-specific mitigation measures.

A "programmatic" level EIR does not analyze site-specific impacts of potential facility locations or alignments, as specific locations and alignments may not yet be known for these facilities. However, a "programmatic" EIR does describe mitigation strategies that are appropriate to the types of impacts anticipated as a result of construction of these required infrastructure improvements. These strategies provide the basis to structure more site-specific mitigation measures when more detailed data on the projects and their associated impacts is available in the future.

Consistent with the recommended implementation priorities described in Chapter 2 of the Phase 3 Report, Table ES-9 shows the recommended projects to be included in the EIR to be prepared in Phase 4 of this Metro Plan Update.

Table ES-9. Projects to be Included in the Metro Plan Update EIR

<p><u>“Project” Level:</u> Recommended water supply plan projects to be evaluated at a “project” level in the EIR will generally include projects to be completed by about 2015^(a)</p>	<ul style="list-style-type: none"> • All proposed regional transmission mains and transmission grid mains (TGMs) • New clearwell (5 MG) at the Northeast SWTF along with other planned improvements at Northeast SWTF (not including expansion to 60 mgd) • Southeast SWTF (80 mgd total design capacity), including relocated Water Division Corporation Yard and Water Division Administrative Offices, along with associated regional transmission mains and TGMs (i.e., entire southern loop), new clearwell (6 MG) and diversion facility from Mill Ditch
<p><u>“Programmatic” Level:</u> Future water supply plan projects to be evaluated at a “programmatic” level in the EIR will generally include longer-term projects to be completed after 2015</p>	<ul style="list-style-type: none"> • Northeast SWTF expansion to 60 mgd (total design capacity) • Potential new Southwest SWTF in the southwest portion of the City in the future (possibly a plant with a treatment capacity of 10 to 20 mgd) • New storage Tank “T5” to be located in the eastern part of the City • New storage Tank “T6” to be located in the western part of the City • New Groundwater Recharge Areas located within the City’s SOI (precise locations to be determined) • Potential Aquifer Storage and Recovery well system in addition, or as an alternative, to new groundwater recharge basins • Recycled water facilities

^(a) It is assumed that storage tanks “T2”, “T3” and “T4” have already undergone environmental review and do not need to be reevaluated on the Metro Plan Update EIR.

It should be noted that the projects to be evaluated at a “programmatic” level may require additional environmental analysis in the future (e.g., the preparation of a project-level EIR) when more specific information is available regarding their specific locations and alignments.

A “project” level EIR for the recycled water treatment, transmission and distribution facilities will be included in a separate EIR to be prepared following the completion of the Recycled Water Master Plan.

Figure ES-1. Recommended Water Supply Plan Implementation Priorities: FY 2009/10 through 2024/25

	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	
Metering & Water Conservation Programs	Increase Water Conservation Efforts (Expand Existing Programs and Implement New Programs) (5% conservation by 2010) (additional 5% conservation by 2020)												Continue and Maintain Water Conservation Efforts				
	Rebates (Xeriscape Landscape, Hot Water Recirculation, Programmable Irrigation Controller, Weather-Based Irrigation Controller) CII Water Conservation Programs Join CUWCC		Retrofit Upon Resale Ordinance Prioritized Leak Detection Program Water System Audit Billing with Commodity Rates (develop Tiered Water Rates once all customers are metered)														
	Residential Metering Program (105,000 meters total = 3,280 meters per month for 32 months) (July 2010 through February 2013) (must be completed by March 1, 2013)																
	Develop/ Implement Metered Water Rate (to be in place by 2010)				Develop/ Implement Tiered Water Rate to Encourage Water Conservation												
Planning Activities	Prepare Metro Plan Update EIR	Complete/Adopt Metro Plan Update	ASR Feasibility Study														
	Update UWMP							Update UWMP			Update UWMP						
	Prepare Recycled Water Master Plan		Prepare Recycled Water EIR														
Financial Planning & Budgeting Activities	Evaluate Cost Sharing Opportunities																
	Conduct Water Rate Study and Connection/UGM Fee Study		Conduct 218 Process														
	Prepare Pre-Applications and Applications for Applicable Grants and Loans																
	Update 5-Year Budget Plans and Issue Revenue Bonds as Needed																
	FY 2011/12 to 2014/15				FY 2016/17 to 2019/20				FY 2021/22 to 2025/26								
Property Acquisition	Acquire Property for Southeast SWTF	Acquire New Properties for New Recharge Basins (2010 through 2025) (about 14 acres per year)															
Design & Construction	Priority 1 Pipelines (34,500 lf)																
	Design	Construct															
	Priority 2 Pipelines (139,300 lf)																
	Design		Construct														
	Priority 3 Pipelines (93,700 lf)																
	Design				Construct												
	Design & Construct TGMs (502,700 lf total = 33,500 lf per year)																
	Complete Operational Improvements at Northeast SWTF		Southeast SWTF				Northeast SWTF Expansion										
			Design		Construct		Design		Construct								
	Design & Construct Groundwater Wells and Treatment as needed to meet peak demands																
												Design & Construct Recycled Water Facilities (to be identified in Recycled Water Master Plan) to Offset 25,000 af/yr of potable water demand by 2025					
Operations						Expand Use of North Fresno WRF to 1,000 af/yr											
	Maximize Use of Available Surface Water Supplies for Direct Use and Treatment at Existing Northeast SWTF and New Southeast SWTF and Intentional Groundwater Recharge																
	Maximize Intentional Groundwater Recharge Operations at Existing Facilities (particularly Leaky Acres)																

CHAPTER 1. INTRODUCTION

INTRODUCTION

This Phase 3 Report presents the implementation plan for the City of Fresno’s recommended water supply plan, which was developed and documented in Phase 2 of the Fresno Metropolitan Water Resources Management Plan Update (Metro Plan Update). The implementation plan described in this report includes the following components:

- Recommended Facility Prioritization,
- Recommended Water System Operational Strategies,
- Refinement and Allocation of Costs,
- Evaluation of Potential Funding Sources, and
- Recommended Institutional Plan.

This Phase 3 Report is the final technical report to be prepared by West Yost Associates (West Yost) for this Metro Plan Update. As described below, Phase 4 of the Metro Plan Update will involve the preparation of an Environmental Impact Report (EIR) for the City’s recommended water supply plan by Environmental Science Associates (ESA).

METRO PLAN UPDATE OVERVIEW

The purpose of the Metro Plan Update is to update and refine the 1996 Fresno Metropolitan Water Resources Management Plan (1996 Metro Plan), taking into consideration available new data and conditions and accommodating physical and institutional changes which have occurred since the 1996 Metro Plan was prepared. The completed Metro Plan Update will facilitate future water resources management and policy decisions and improvement planning and will assist in satisfying eligibility requirements for Federal and State funding.

The Metro Plan Update is being performed in four phases:

- Phase 1: Baseline System Characterization
- Phase 2: Development of a Future Water Supply Plan
- Phase 3: Development of an Implementation Plan
- Phase 4: Preparation of an Environmental Impact Report

Phase 1: Baseline System Characterization

Phase 1 provided a baseline characterization of the City of Fresno (City) water system and its ability to meet current and projected future water demands. This characterization was documented in the Final Phase 1 Report dated December 2007. During Phase 1 of this Metro Plan Update, it was assumed that the City would continue to operate at “status quo” (i.e., meeting future demands using only the existing Northeast Surface Water Treatment Facility (SWTF) and

local groundwater), assuming no modifications to its existing water system, which would allow more use of available surface water supplies. As discussed in the Phase 1 Report, with observed annual declines in groundwater levels, each year the City continues to operate in this mode would result in additional groundwater level declines in the basin and depletion of groundwater storage. This would possibly affect groundwater quality, and further impact available groundwater resources, including the ability to pump groundwater, as groundwater levels would fall below existing pump bowl settings in many of the City's existing wells.

Phase 2: Development of Future Water Supply Plan

Phase 2 of the Metro Plan Update involved the development of a recommended future water supply plan to address the groundwater basin issues identified in Phase 1, diversify the City's water supply portfolio and enhance overall water supply reliability and sustainability. The recommended water supply plan incorporates conjunctive use of available water supplies to make maximum use of available surface water supplies, and use of the groundwater basin in a sustainable manner which minimizes or eliminates groundwater overdraft and groundwater quality degradation. Key elements of the recommended water supply plan include the following:

- Increased surface water treatment capacity (e.g., a new SWTF and an expanded Northeast SWTF);
- Reduced groundwater pumpage and increased intentional groundwater recharge with a goal of balancing the City's groundwater operations (e.g., pumpage equal to recharge) by 2025, and taking advantage of available surface water supplies in wet years for recharge to help replenish groundwater storage and restore groundwater levels;
- Implementation of new and expanded water conservation measures to further reduce existing and projected water demands with a goal of reducing the City's overall per capita water use to 243 gpcd by 2020;
- Incorporation of recycled water supplies into the City's water supply portfolio to meet landscape irrigation and other non-potable water demands to offset and reduce potable water demands; and
- Pursuing new water supply opportunities to increase the diversity and reliability of the City's water supply portfolio.

The City's recommended water supply plan was documented in the Phase 2 Report.

The Phase 2 Report also addressed revised planning assumptions that have occurred within the City since the completion of the Phase 1 Report. These revisions included a refocusing of the Metro Plan Update to the area within the City's Sphere of Influence (SOI), as defined in the City's adopted 2025 General Plan, deleting the 2060 Growth Fringe discussed in the Phase 1 Report, and evaluating how potential future growth within the SOI, beyond buildout of the 2025 General Plan, could be served using the City's available water supplies.

Phase 3: Development of an Implementation Plan

Phase 3 of the Metro Plan Update, as documented in this report, describes the recommended implementation plan for the City’s recommended water supply plan and includes the following:

- Recommended facility prioritization and operational strategy,
- Refinement and allocation of estimated costs between existing rate payers and new growth,
- Identification of potential funding sources, and
- Development of an institutional plan.

Phase 4: Preparation of an Environmental Impact Report

Phase 4 of the Metro Plan Update will consist of the preparation of an EIR for the recommended plan. In the EIR, required near-term facility improvements and actions will be evaluated at a “project” level, and required long-term improvements and actions will be evaluated at a “programmatic” level.

CONTENTS AND ORGANIZATION OF THIS PHASE 3 REPORT

This Metro Plan Update Phase 3 Report (Phase 3 Report) details the findings of the work prepared by the project team during Phase 3 of the Metro Plan Update and is organized as follows:

- Chapter 1: Introduction
- Chapter 2: Recommended Facility Prioritization and Operational Strategies
- Chapter 3: Allocation of Future Water Supply Plan Facility Costs
- Chapter 4: Potential Funding Sources
- Chapter 5: Institutional Plan

CHAPTER 2. RECOMMENDED FACILITY PRIORITIZATION AND OPERATIONAL STRATEGIES

The recommended water supply plan developed and described in detail in the Metro Plan Update Phase 2 Report includes a number of new facilities that will require a detailed implementation plan for their design and construction, and a comprehensive strategy for their operation. This chapter provides a brief overview of the recommended water supply plan and associated recommended facility prioritization and recommended operational strategies.

OVERVIEW OF RECOMMENDED WATER SUPPLY PLAN

The City's recommended water supply plan was described in the Phase 2 Report. The overall objective of the City's recommended water supply plan is to provide sustainable and reliable water supplies to meet the demands of existing and future customers through buildout of the General Plan in 2025.

Implementation of the City's recommended water supply plan will result in a significant shift in the use of available water resources and an increase in diversity in the City's water supply mix, which will enhance the City's overall water supply reliability and sustainability. The major components of the City's recommended water supply plan are summarized as follows:

- Completion of the on-going residential water metering program by no later than March 2013
- Additional water conservation
 - Additional 5 percent by 2010
 - Additional 5 percent (total 10 percent) by 2020
- Groundwater use at essentially the same quantities as is currently pumped, but with increased intentional recharge at existing and new recharge facilities, and/or an Aquifer Storage and Recovery (ASR) well system to balance the City's groundwater operations by 2025, replenish groundwater storage and help to restore groundwater levels
- Increased surface water treatment capacity
 - Completion of operational improvements at the existing SWTF to provide 30 mgd of treatment capacity
 - Construction of a new 80 mgd (total design capacity) Southeast SWTF by 2015
 - Expansion of the existing Northeast SWTF by 30 mgd to 60 mgd (total design capacity) by 2020
 - Possible construction of a new Southwest SWTF in the future (perhaps a SWTF with a treatment capacity of 10 to 20 mgd)
 - Construction of regional transmission pipelines and transmission grid mains (TGMs) to convey and transport the treated surface water throughout the City's service area

- Construction of new potable water storage facilities
- Introduction of recycled water supply for landscape irrigation and other non-potable uses
 - Use of the North Fresno Wastewater Reclamation Facility (WRF) to irrigate Copper River Ranch Golf Course (initially 750 af/yr, increasing to 1,000 af/yr by 2015)
 - Use of up to 25,000 af/yr of recycled water for landscape irrigation and other non-potable uses in new development areas and existing parts of the City by 2025 (highly treated recycled water to be produced at new satellite plants, stand-alone plants and/or expanded Regional Wastewater Reclamation Facility (RWRf))
- Pursue new water supply opportunities when they arise to increase the diversity and reliability of the City's water supply portfolio

Figure 2-1 shows the basic components of the City's recommended water supply plan in relation to the City's projected future demands, by year, through the year 2025.

RECOMMENDED IMPLEMENTATION PRIORITIES

As described in the Phase 2 Report, much of the required infrastructure for the City's recommended water supply plan will need to be constructed before 2025 to facilitate the delivery of the City's increased surface water treatment capacity, maximize the use of available surface water supplies, and balance groundwater operations by 2025. Figure 2-2 highlights the extensive planning, design and construction activities which will be required in the next 10 to 15 years.

As shown on Figure 2-2, planning, acquisition of property and other activities must begin immediately to ensure that the required infrastructure components are in place and operational to meet the anticipated increased demands associated with buildout of the City's 2025 General Plan. The items that should be the City's highest priorities over the next few years include the following:

- Complete the residential water metering program by March 2013; implement a tiered water rate schedule as soon as possible to further encourage water conservation;
- Increase water conservation efforts, including expansion of existing programs and introduction of new programs, particularly those related to outdoor water use;
- Begin design and construction of the new Southeast SWTF facility so that it can be operational by 2015;
- Construct major regional transmission mains and TGMs to maximize the conveyance and use of treated surface water supplies from the existing Northeast SWTF and new Southeast SWTF throughout the City's service area;
- Construct new groundwater wells, including wellhead treatment if necessary, to meet peak demands throughout the City's service area;
- Maximize intentional groundwater recharge operations at existing recharge facilities, particularly Leaky Acres;

- Acquire new properties for new groundwater recharge facilities within the City's SOI;
- Conduct an ASR well feasibility study; and
- Complete the Recycled Water Master Plan to establish a detailed plan for providing 25,000 af/yr of recycled water supplies to offset potable water demands by 2025.

Each of these items is described in more detail below.

Residential Water Metering and Water Conservation

With the overall need to reduce per capita water use in the City, and the passage of SB X7-7 in October 2009, water conservation programs and activities, including the on-going residential meter retrofit program, must remain a high priority for the City. In addition to the anticipated water conservation resulting from the metering program, the City's recommended water supply plan includes a water conservation element with 5 percent water conservation by 2010, and an additional 5 percent water conservation by 2020. Furthermore, the City has established a goal to reduce overall per capita water use in the City to 243 gallons per capita per day (gpcd) by 2020. To achieve these goals, the City will need to increase its water conservation efforts by expanding existing and introducing new water conservation programs, and ensuring that the residential water meter retrofit program is completed on schedule.

Proposed water conservation measures are described in detail in Chapter 4 of the Phase 2 Report and include the following:

- Rebate programs for water conserving devices and systems;
- Commercial, Industrial, and Institutional water conservation programs;
- Joining the California Urban Water Conservation Council (CUWCC) and participating in informational and training workshops and jointly-funded water conservation programs;
- Retrofit Upon Resale Ordinance;
- Turf Replacement Rebates ("Cash for Grass");
- Landscape Water Audit and Budget Program;
- Prioritized Leak Detection Program;
- Complete Water System Audit; and
- Billing with Commodity Rates (and eventually Tiered Rates).

As discussed in the Phase 2 Report, the biggest opportunities for water conservation are related to the reduction of outdoor water uses, particularly landscape and turf irrigation, by all customers. Several potential measures related to outdoor water use reduction are discussed in Chapter 4 of the Phase 2 Report and include the following:

- Xeriscape Landscape Rebate for New Homes;
- Programmable Irrigation Controller Rebate;

- Weather-Based Irrigation Controller Rebate;
- Turf Replacement Rebate (“Cash for Grass”); and
- Landscape Water Audit and Budget Program.

All of the conservation measures described in the Phase 2 Report, particularly those related to reduction of outdoor water uses, should be implemented as soon as possible. It is anticipated that the implementation of these new water conservation measures, along with the continuation of the City’s existing water conservation programs, will be further enhanced with the completion of the residential metering program, eventual implementation of tiered water rates and customers’ increased awareness of the need to conserve water.

These additional water conservation efforts may require additional financial resources and additional staff resources. Potential grants and loans to assist with implementation of water conservation measures are discussed in Chapter 4 of this Phase 3 Report. Additional staffing recommendations are discussed in Chapter 5 of this Phase 3 Report.

Surface Water Treatment Facilities

To diversify the City’s water supplies, balance the City’s groundwater operations by 2025, and maximize the use of available surface water supplies, expansion of the City’s surface water treatment capabilities is a high priority. This is particularly true in the southeastern part of the City, where groundwater quality issues are a concern and significant new development is anticipated (e.g., the Southeast Growth Area). The development of a new SWTF by 2015 is critical to the success of the City’s recommended water supply plan. Also, expansion of the City’s existing Northeast SWTF by 2020 is critical to the City’s ability to balance its groundwater operations by the year 2025.

The City’s recommended water supply plan calls for the construction of a new 80-mgd design capacity SWTF in the southeastern part of the City by 2015. The City has already purchased the property for the new Southeast SWTF. However, to ensure that the new Southeast SWTF is operational by 2015, design of the facility must be initiated now to allow adequate time for facility construction and start-up activities. It should be noted that the City is also planning to relocate its Water Division corporation yard and administrative offices to the Southeast SWTF site. This would help to consolidate the Water Divisions’ everyday operations and communications. These additional facilities will be incorporated into the Southeast SWTF site design.

Following completion of the new Southeast SWTF, the City must focus its attention on the design and construction of the expansion to the existing Northeast SWTF, so that the expanded facility can be operational by 2020.

The City may also wish to consider the future construction of a SWTF in the southwestern part of the City with a treatment capacity of 10 to 20 mgd to provide added flexibility for serving future demands in that part of the City. A general location for a future Southwest SWTF is shown on Figure 2-3 near South Marks Avenue and West California Avenue. The exact location for a future Southwest SWTF will be determined in the future.

Refined cost estimates for the SWTFs, along with allocation of those costs to existing rate payers and new growth, are discussed in Chapter 3 of this Phase 3 Report.

Major Regional Transmission Mains and Transmission Grid Mains (TGMs)

As indicated on Figure 2-2, the design and construction of major regional transmission mains will need to proceed in tandem with the completion of the new Southeast SWTF and the expanded Northeast SWTF, so that treated water supplies can be transmitted throughout the City's service area when the SWTFs are completed. Figure 2-3 shows the proposed alignments of the major regional transmission mains from each of the SWTFs, as well as TGMs throughout the City's service area. The recommended priority for design and construction of these major transmission pipelines is shown below and on Figure 2-4.

- Priority 1 (to be designed and constructed by 2011)
 - Regional transmission mains (36-inch-diameter and 30-inch-diameter pipelines) in Chestnut Avenue
 - Southerly crossing beneath Highway 99 and railroad, ultimately providing a supply source from PS 172 to the Downtown area via G Street, and part of the regional system serving the Downtown storage tank (Tank "T4")
- Priority 2 (to be designed and constructed by 2014)
 - Regional transmission main in McKinley Avenue and Walnut Avenue
 - Regional transmission main from Southeast SWTF east in Olive Avenue, South in Temperance Avenue, west in North Avenue, then northwest along frontage roads to connect to the Downtown storage tank (Tank "T4") located near H Street and Santa Clara (southern loop)
- Priority 3 (to be designed and constructed by 2020)
 - Regional transmission main from Northeast SWTF to McKinley Avenue and Walnut Avenue
 - Northerly crossing beneath Highway 99 and railroad along McKinley Avenue

As shown on Figure 2-4, the Priority 1 regional transmission mains will expand transmission capacities from the existing Northeast SWTF and help move water from the Northeast SWTF into the City's southern service area, and eventually provide a connection to the future Southeast SWTF. The Priority 2 regional transmission mains will move water from the new Southeast SWTF west and south to serve the City's southwestern service area. The Priority 3 regional transmission mains will move water from the expanded Northeast SWTF into the northwestern and central parts of the City, and provide a second crossing beneath Highway 99 and the railroad to serve the western part of the City.

It should be noted that along with the recommended regional transmission mains described above, the TGMs which branch off the regional transmission mains to serve local neighborhoods must also be constructed to deliver treated surface water supplies to individual customers.

Refined cost estimates for the regional transmission mains and TGMs, along with allocation of those costs to existing rate payers and new growth, are discussed in Chapter 3 of this Phase 3 Report.

Groundwater Production and Wellhead Treatment Facilities

Even with the expansion of the City's surface water treatment capabilities, groundwater will continue to be an important component of the City's water supply portfolio. In the wintertime, when water demands are relatively low, the City will be able to rely almost entirely on treated surface water supplies to meet demands. However, in the summer months, when demands are high, the City will need its groundwater supply to help meet peak demands. As described in Chapter 9 of the Phase 2 Report, a number of new wells are required to help meet existing peak hour demands, and some of these new wells may require wellhead treatment systems. As new development occurs and water demands increase in the future, additional new wells will be required, and some of these wells may also require wellhead treatment systems.

Refined cost estimates for the groundwater production and treatment facilities, along with allocation of those costs to existing rate payers and new growth, are discussed in Chapter 3 of this Phase 3 Report.

Groundwater Recharge Facilities

As described below under *Recommended Water System Operational Strategies*, intentional groundwater recharge activities at existing recharge facilities, particularly Leaky Acres, should be maximized to the extent possible. Also, properties should be acquired for the construction and operation of new recharge facilities. An additional 340 acres of recharge area (a total area of about 425 acres with setbacks and internal roadways) is recommended within the City's SOI to maximize the use of available surface water supplies and to help restore groundwater levels. The new recharge facilities should be designed and constructed in phases to incrementally increase the City's groundwater recharge capacity (about 30 acres per year of property should be acquired and constructed as new recharge basins).

The City may also wish to consider the construction of an ASR well system as an alternative or in addition to new groundwater recharge basins. An ASR well feasibility study should be conducted to identify the potential issues and regulatory requirements associated with obtaining approval from the RWQCB and DPH to implement such a system.

Recycled Water Facilities

The City's recommended water supply plan includes the use of 25,000 af/yr of tertiary-treated recycled water for landscape irrigation and other non-potable uses to offset potable water demands by the year 2025. The City's Wastewater Division is preparing a Recycled Water Master Plan to evaluate the future use of recycled water within the City and identify the required infrastructure to treat, transmit, distribute, and store the recycled water supplies. It is envisioned that the Recycled Water Master Plan will also address phasing of recycled water facilities, as appropriate, and associated costs. Upon completion of the Recycled Water Master Plan, an Environmental Impact Report (EIR) will be required to evaluate the potential impacts of the recommended recycled water facilities.

RECOMMENDED WATER SYSTEM OPERATIONAL STRATEGIES

Just as important as constructing the required facilities for the recommended water supply plan will be the strategy used to operate them. Operational strategies must be developed, adopted, and implemented to meet the goals and objectives of the City's recommended water supply plan. In particular, operational strategies must be developed to maximize the use of treated surface water from the City's SWTFs in conjunction with the City's groundwater supplies, and use of the City's existing and new groundwater recharge facilities, to ensure balanced City groundwater operations by 2025.

Operational Strategy for Use of Treated Surface Water in Conjunction with Groundwater

Prior to 2004, the City relied exclusively on its groundwater supplies to meet demands, which provided for a relatively simple operational strategy of turning on wells as needed to meet demands and maintain system pressures. However, with the introduction of treated surface water supplies to City customers from the Northeast SWTF in late 2004, the City has decreased its reliance on groundwater supplies somewhat. In 2009, the City used 138,254 af of groundwater (88 percent of total supply) and 19,563 af of treated surface water (12 percent of total supply) to meet system demands. The City's monthly use of water supplies in 2009 is shown on Figure 2-5.

Figure 2-6 shows the City's monthly SWTF production since 2005 as compared to the monthly treatment capacity. As shown, although the City is almost maximizing the use of the existing treatment capacity (27.5 mgd) in the summer months (July through October), the City is not utilizing the full capacity of the existing treatment facility from January through June. In 2009, the City produced a total of 19,563 af of treated surface water; however, this total was only about 69 percent of the total annual treatment capacity available through the Northeast SWTF (28,300 af) (based on a daily production capacity of 27.5 mgd operating 11 months of the year). This means that over 8,000 af of additional surface water could have potentially been treated at the Northeast SWTF, thus reducing groundwater pumpage by an equal amount, and still meeting system demands in 2009. In the future, with the proposed construction of a new Southeast SWTF and an expanded Northeast SWTF, and new regional transmission mains to convey treated water supplies throughout the City's service area, an operational strategy is required to maximize the use of treated surface water supplies to meet system demands throughout the City's service area.

Figure 2-7 shows the projected monthly water production requirements for the year 2020 and demonstrates the recommended operational strategy for the SWTFs. In 2020, the City will have a total surface water treatment design capacity of 140 mgd (80 mgd at the Southeast SWTF and 60 mgd at the Northeast SWTF). To maximize the use of available surface water supplies, the City's SWTFs should be used to their maximum extent. This means that the City should operate its SWTFs at a consistent maximum rate throughout the year, using the treated surface water supplies as the "base" supply to meet system demands. The surface water production amounts shown on Figure 2-7 correspond to SWTF production rates ranging from about 98 mgd (in February) to about 127 mgd (April through October). As shown, at these production rates, typically no groundwater production will be required in January and February, and very little groundwater production is required in November. Therefore, during these months, wells should only be used as needed to meet peak demands and maintain system pressures. In December, it is

assumed that the SWTFs will be out of service for maintenance of the facilities and/or the supply canals, and that all demands will be met using groundwater.¹

The City is currently planning a new 60-inch-diameter Friant-Kern raw water pipeline to the Northeast SWTF; once this pipeline is completed, no down-time for maintenance of the Enterprise Canal will be required at the Northeast SWTF; however, down-time may still be required for maintenance of the Friant-Kern Canal. As an alternative, once the two SWTFs are operational, it may be possible to stagger the scheduled maintenance of the SWTFs so that only one of the SWTFs needs to be out of service at any given time. Down-times for the SWTFs will need to be coordinated with FID and USBR in coordination with their canal maintenance activities.

The following summarizes the recommended operational strategy for the SWTFs:

- Use treated surface water as the “base” supply to meet system demands;
- Maximize the use of available surface water treatment capacity by operating SWTFs at a consistent maximum rate throughout the year;
- Use groundwater supplies to supplement treated surface water supplies to meet summertime demands and peak demands throughout the year;
- During winter months, when demands are low, use treated surface water to meet all system water demands (groundwater wells should only be used to meet peak demands and maintain system pressures as needed); and
- Once both SWTFs are operational, if possible, stagger the annual scheduled maintenance of the SWTFs and their respective supply canals so that only one SWTF needs to be out of service at any given time.
 - Note that once the new 60-inch-diameter Friant-Kern raw water pipeline to the Northeast SWTF, which is currently being designed, is completed, no down-time for maintenance of the Enterprise Canal will be required at the Northeast SWTF.
 - Down-time for maintenance of the Friant-Kern Canal may be required and has been considered through an assumed 11-month operational period for the SWTFs.
- Coordinate SWTF down-times with FID and USBR in coordination with their canal maintenance activities.

These strategies should be adopted and implemented now and should become an on-going and permanent strategy for the City’s conjunctive use of treated surface water and groundwater supplies.

¹ Actual shut-down month to be scheduled in coordination with FID and USBR in coordination with canal maintenance schedules. Proposed Friant-Kern Pipeline will eliminate the need for shutdown of the Northeast SWTF due to canal maintenance. However, routine annual maintenance of the Northeast SWTF may require shutdown of the SWTF.

Operational Strategy for Groundwater Recharge Basins

Over the years, the City has undertaken a significant groundwater recharge program through the use of numerous groundwater recharge basins owned by various agencies and located throughout the City's service area. Figure 2-8 shows the City's historical intentional groundwater recharge by year since 1985. As shown, up to 61,970 af/yr has been intentionally recharged at these facilities. The most significant facilities for intentional recharge are the City's Leaky Acres facility and the Fresno Metropolitan Flood Control District (FMFCD) basins. However, in 2008 only 5,136 af was recharged at Leaky Acres. This is significantly lower than the historical recharge at the facility, which was as high as 30,373 af in 1992, and is representative of a steady decline in recharge operations at the facility in recent years. In 2009, recharge at Leaky Acres increased somewhat (to 9,517 af), but this was still well below historical recharge at the facility.

As discussed in the Phase 2 Report, intentional groundwater recharge is a critical component of the City's recommended water supply plan. Intentional groundwater recharge at existing and new recharge facilities must be increased to balance the City's groundwater operations and to take maximum advantage of all available surface water supplies. It is recommended that the City increase its current intentional recharge of 54,600 af/yr by about 20,500 af/yr by 2025 to take advantage of available surface water supplies and to help restore and sustain groundwater levels. As described in Chapter 5 of the Phase 2 Report, this additional recharge capacity will require an additional 340 acres of recharge area (about 425 acres total including setbacks and internal roadways) (or the acquisition of about 30 acres per year from 2010 through 2025).

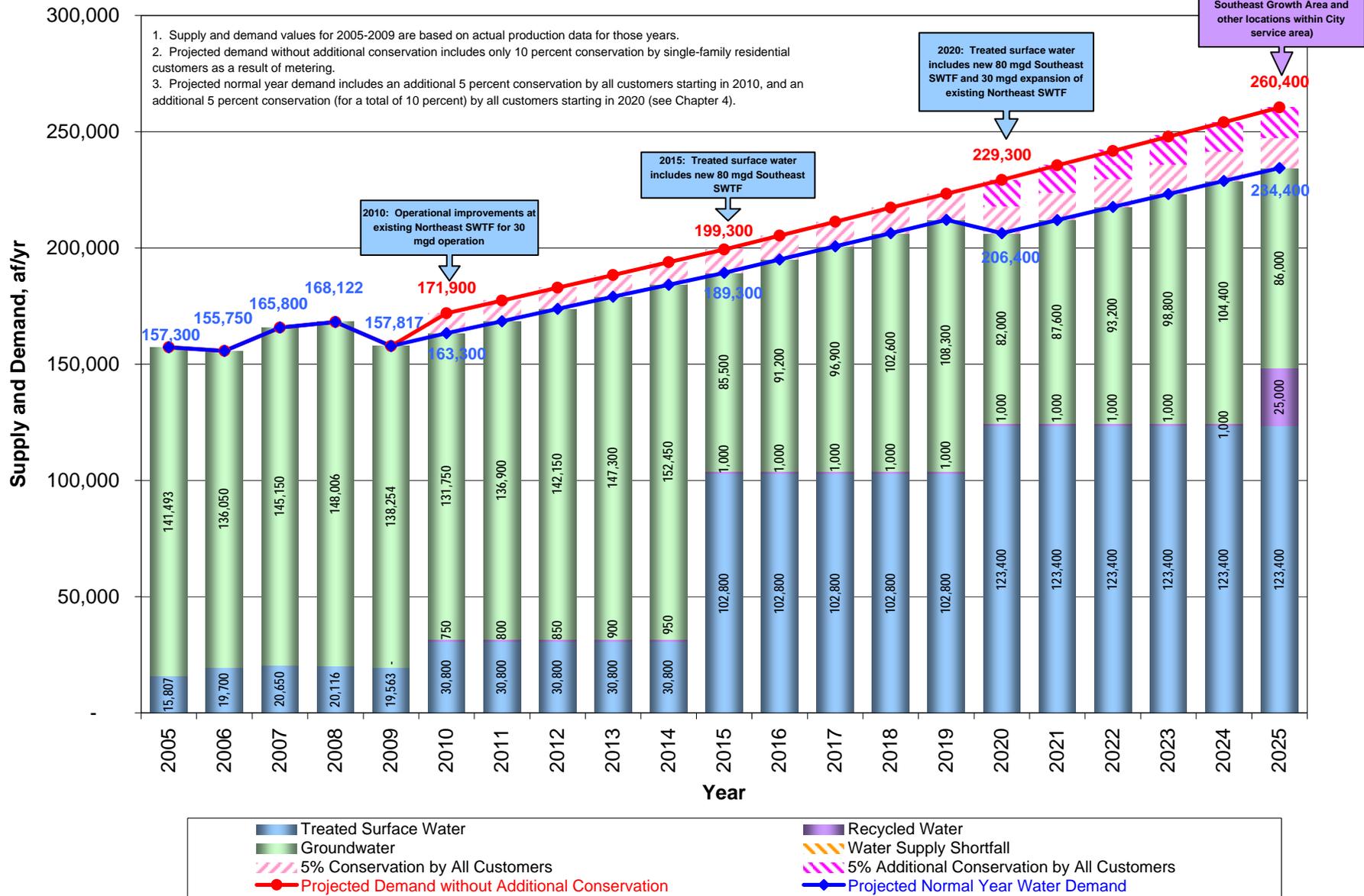
The following outlines the recommended operational strategy for the intentional groundwater recharge basins:

- Groundwater recharge activities at existing recharge facilities should be maximized to the extent possible.
 - This will require a renewed focus and commitment to providing the required financial and staff resources to operate and maintain the existing facilities, particularly Leaky Acres, to increase recharge at these facilities and, if possible, restore them to their historical maximum recharge capabilities.
- It is recommended that the City increase its current intentional recharge of 54,600 af/yr by about 20,500 af/yr by 2025 to take advantage of available surface water supplies and to help restore and sustain groundwater levels.
 - The property sites for the proposed new recharge facilities should be acquired as soon as possible, and may be most efficiently acquired on an incremental basis (about 30 acres per year from 2010 to 2025).
 - Once acquired, these facilities should be constructed and operated to intentionally recharge sufficient quantities of water to supplement the City's other recharge efforts, and balance the City's groundwater pumpage.
 - Once operational, the City must commit to providing the required financial and staff resources to appropriately operate and maintain the facilities to retain their maximum recharge capabilities.

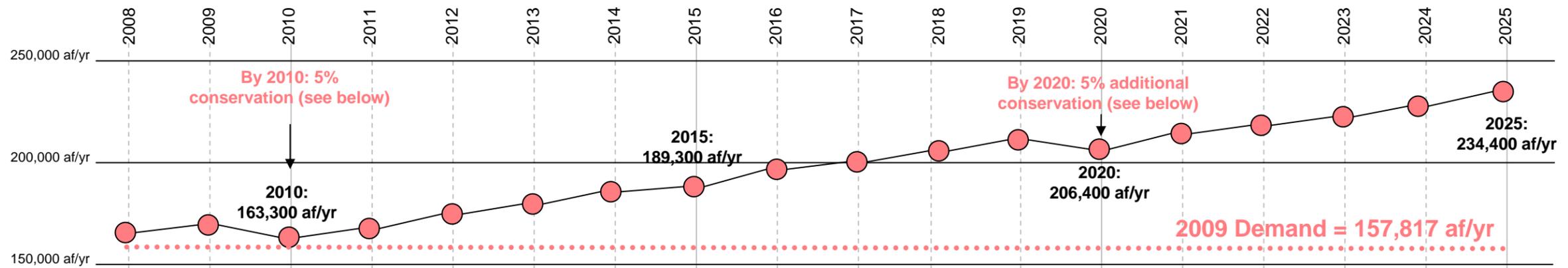
- The City may also wish to consider the development of an Aquifer Storage and Recovery (ASR) Well System in addition to or as an alternative to new groundwater recharge basins. An ASR feasibility study should be conducted to identify the potential issues and regulatory requirements associated with obtaining approval and implementing such a system.
- The use of available surface water supplies should be maximized by using all available surface water that is not directly treated at the City's Northeast SWTF (or the City's planned Southeast SWTF) for intentional groundwater recharge.
 - This should occur in all years, regardless of hydrologic conditions, and is particularly important in wet years, when abundant surface water supplies will be available.
 - No available surface water supplies should remain unused under any circumstances.

These strategies should be adopted and implemented now, and should become an on-going and permanent strategy for the City's intentional groundwater recharge program.

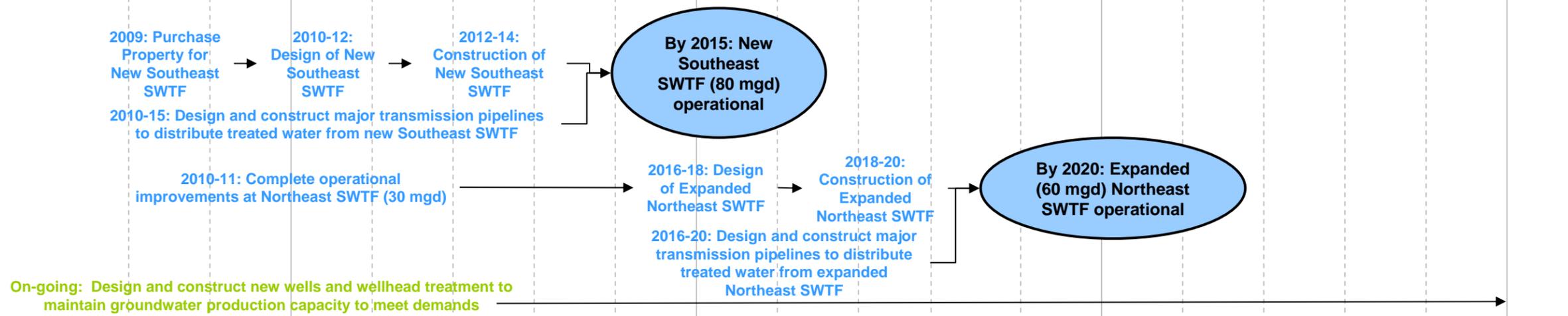
Figure 2-1. Projected Normal Year Annual Water Supply and Demand through 2025



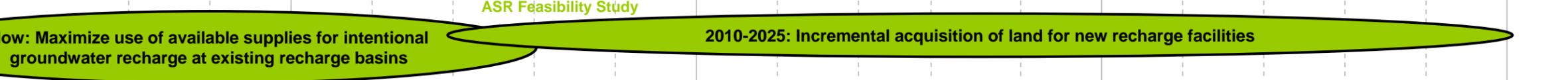
Projected Potable Water Demand



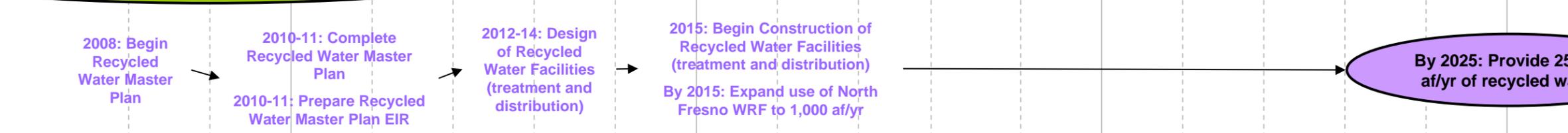
Treated Surface Water



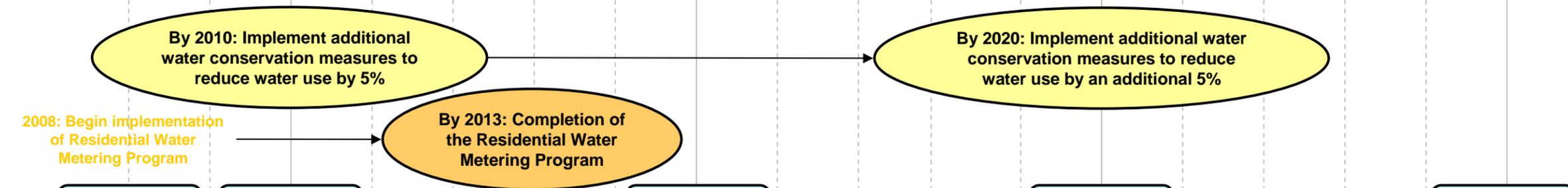
Groundwater Pumpage and Recharge



Recycled Water



Water Conservation



Planning Activities

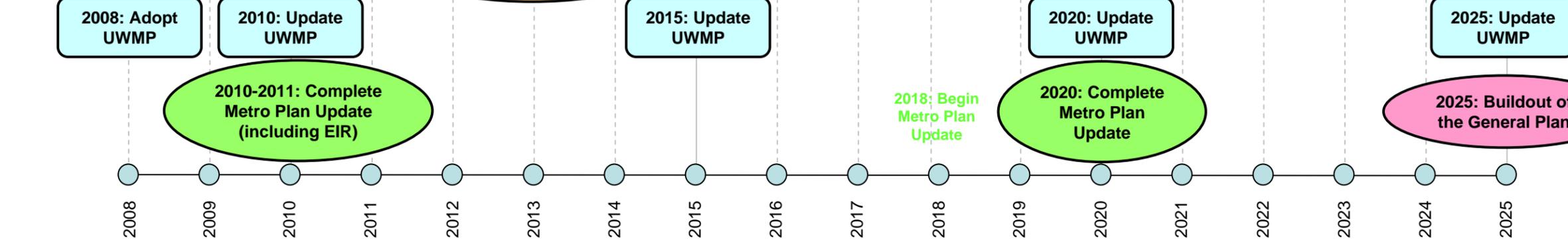
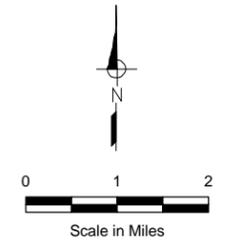


Figure 2-2. Detailed Water Supply Plan: 2008 to 2025

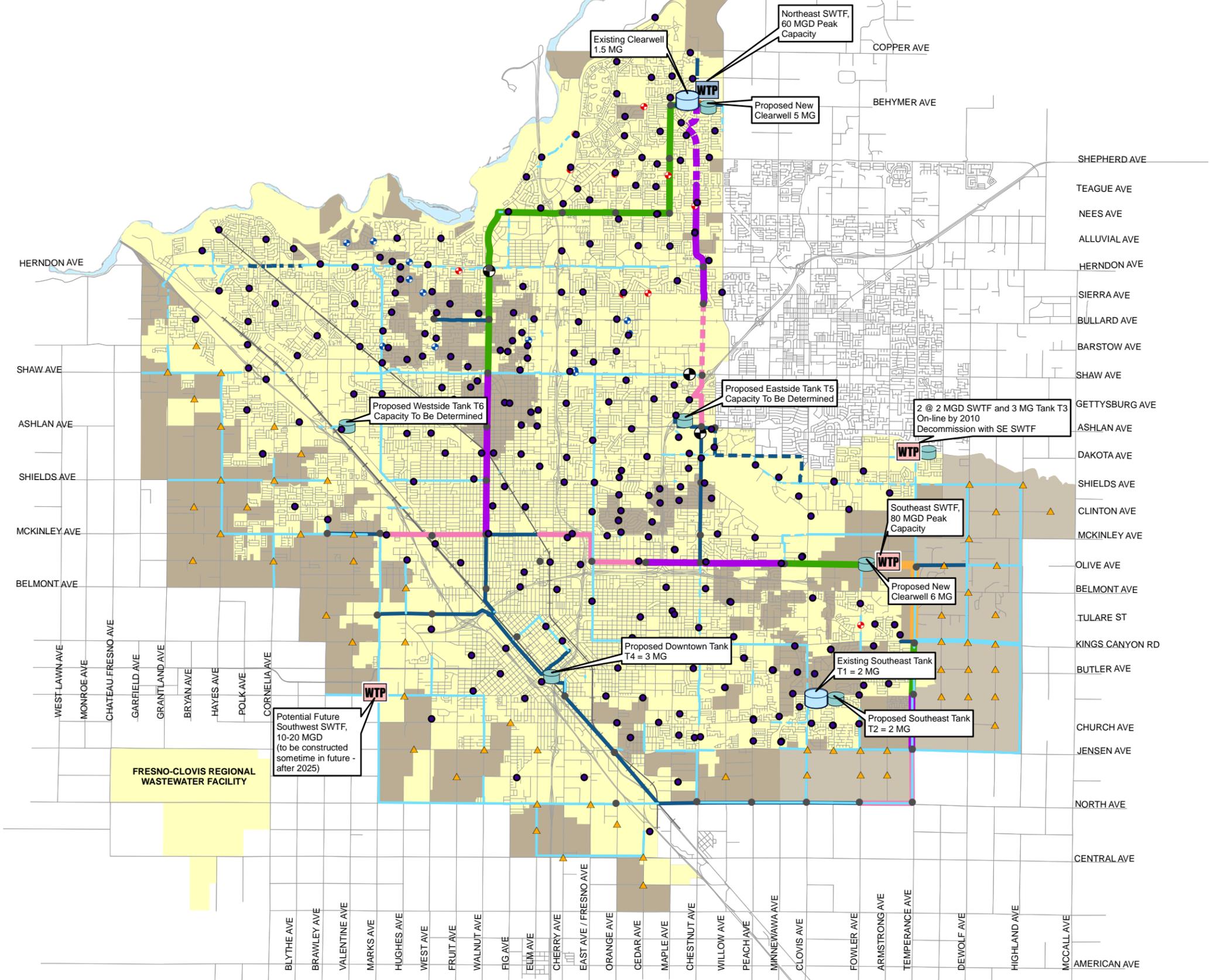
FIGURE 2-3
City of Fresno
Metro Plan Update
Phase 3 Report
2025 PROPOSED POTABLE
REGIONAL AND TGM
WATER INFRASTRUCTURE



Notes
 1. Dashed line indicates an existing pipeline.

LEGEND

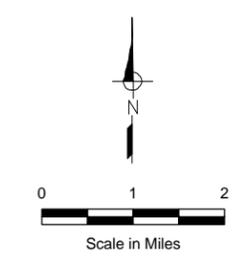
- Existing Water Treatment Plant
- Proposed Tank Site
- Future Water Treatment Plant
- Future Pressure Reducing Valve
- TGM Tie-in Location
- Pressure Sustaining Valve
- Fluoride District PRV
- Existing Well
- Future Well 2010-2025
- 16-inch Diameter
- 24-inch Diameter
- 30-inch Diameter
- 36-inch Diameter
- 42-inch Diameter
- 48-inch Diameter
- Existing City Limit
- Fresno Sphere of Influence
- Southeast Growth Area



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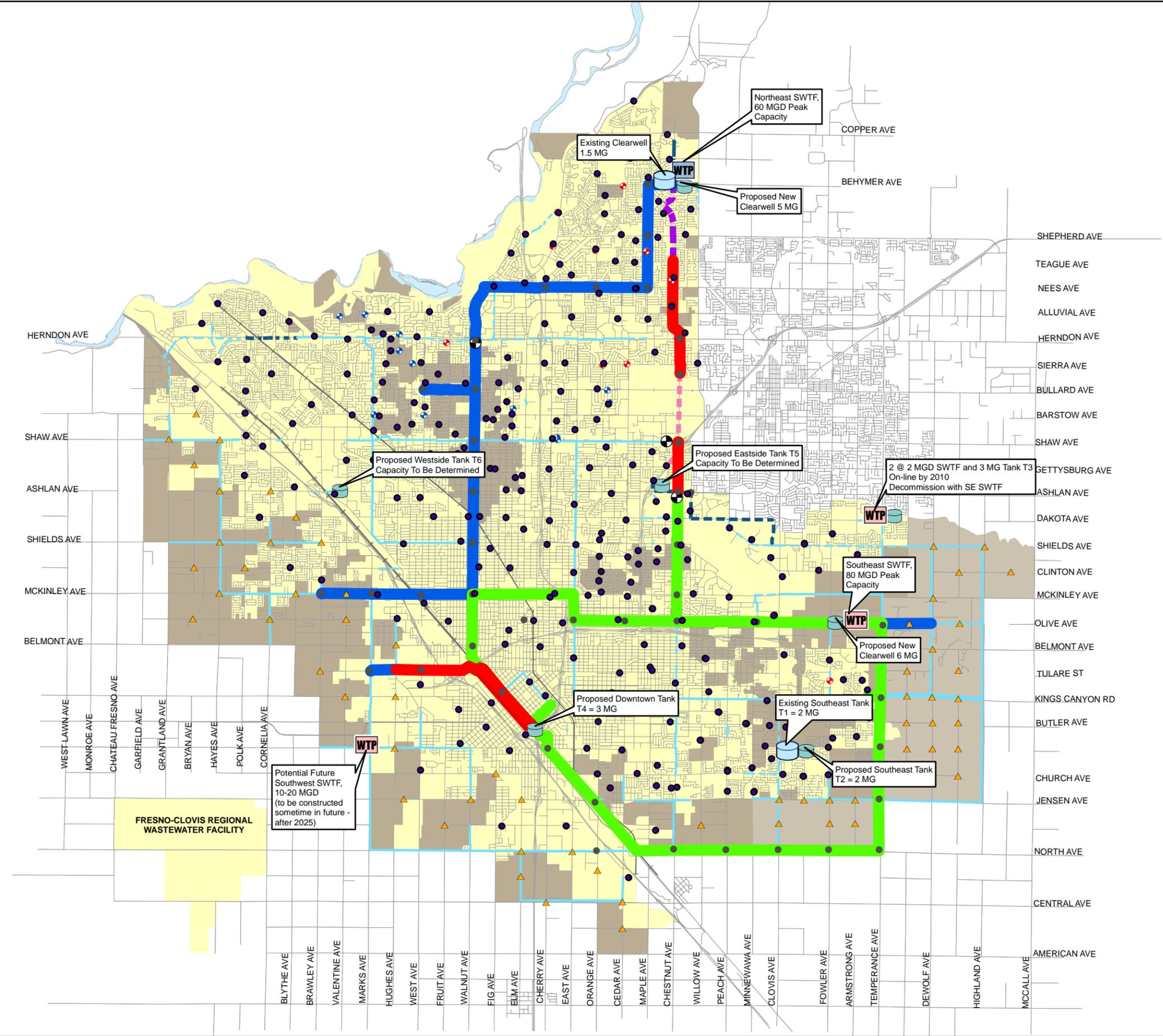
FIGURE 2-4
City of Fresno
Metro Plan Update
Phase 3 Report
2025 PROPOSED POTABLE
REGIONAL AND TGM
WATER INFRASTRUCTURE
PRIORITIES



Notes
 1. Dashed line indicates an existing pipeline.

LEGEND

- █ Priority1: Design & Construct 2010-12
- █ Priority2: Design & Construct 2012-15
- █ Priority3: Design & Construct 2015-20
- Existing Water Treatment Plant
- Proposed Tank Site
- Future Water Treatment Plant
- Future Pressure Reducing Valve
- TGM Tie-in Location
- Pressure Sustaining Valve
- Fluoride District PRV
- Existing Well
- Future Well 2010-2015
- 16-inch Diameter
- 24-inch Diameter
- 30-inch Diameter
- 36-inch Diameter
- 42-inch Diameter
- 48-inch Diameter
- Existing City Limit
- Fresno Sphere of Influence
- Southeast Growth Area



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Figure 2-5. City of Fresno 2009 Water Production

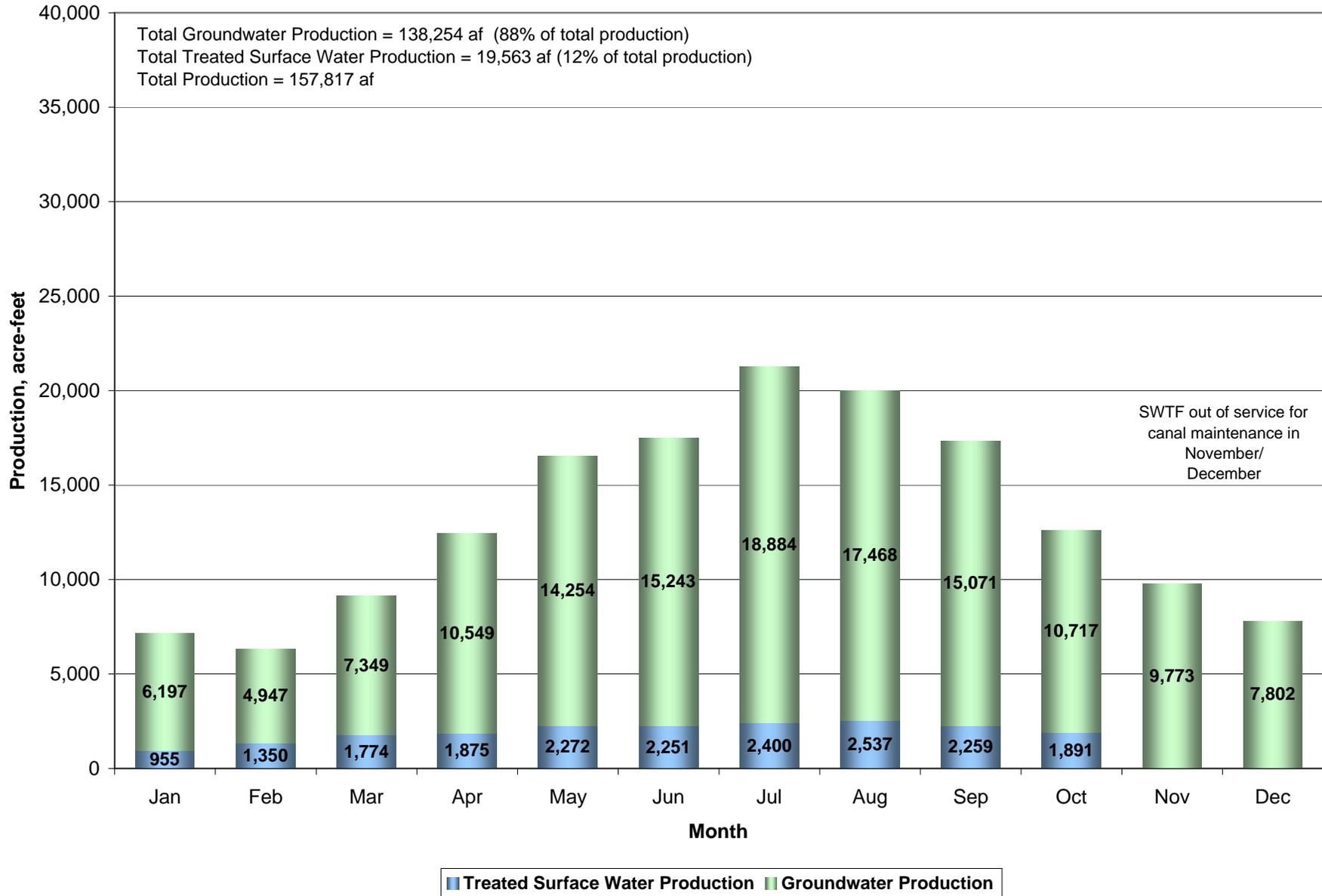


Figure 2-6. City of Fresno Northeast SWTF Production Rates vs. Capacity (2005 to 2009)

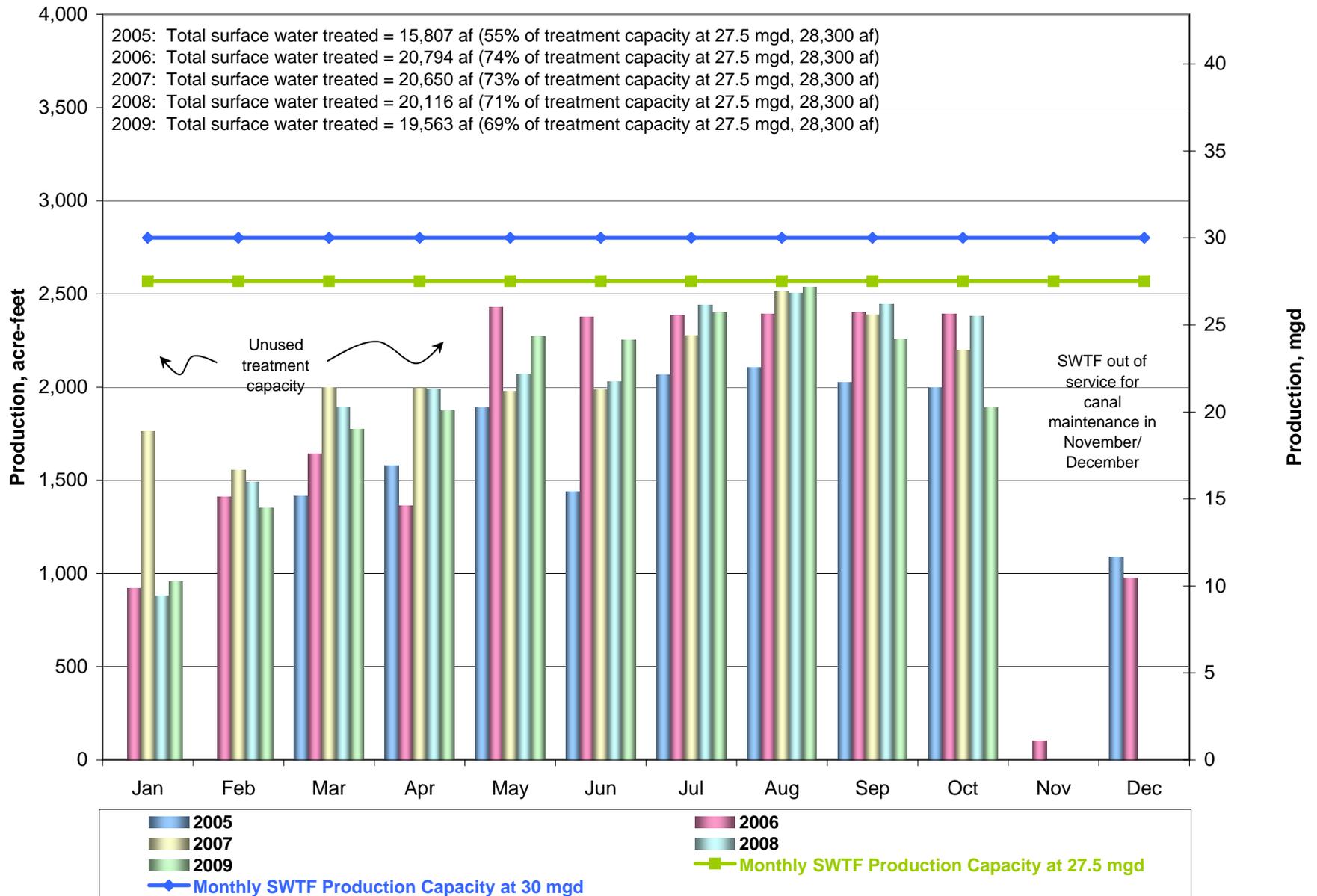


Figure 2-7. City of Fresno Projected 2020 Water Production

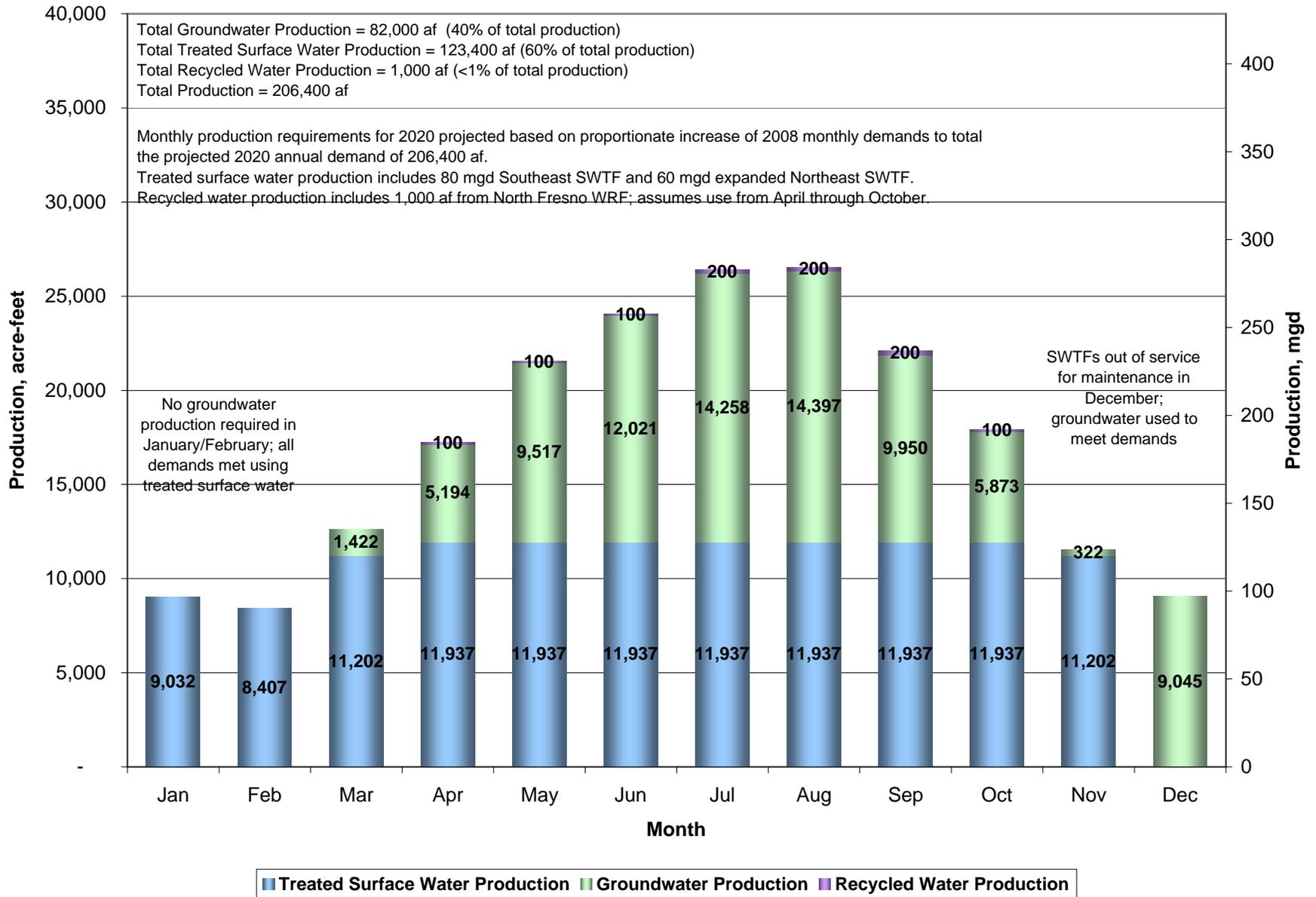
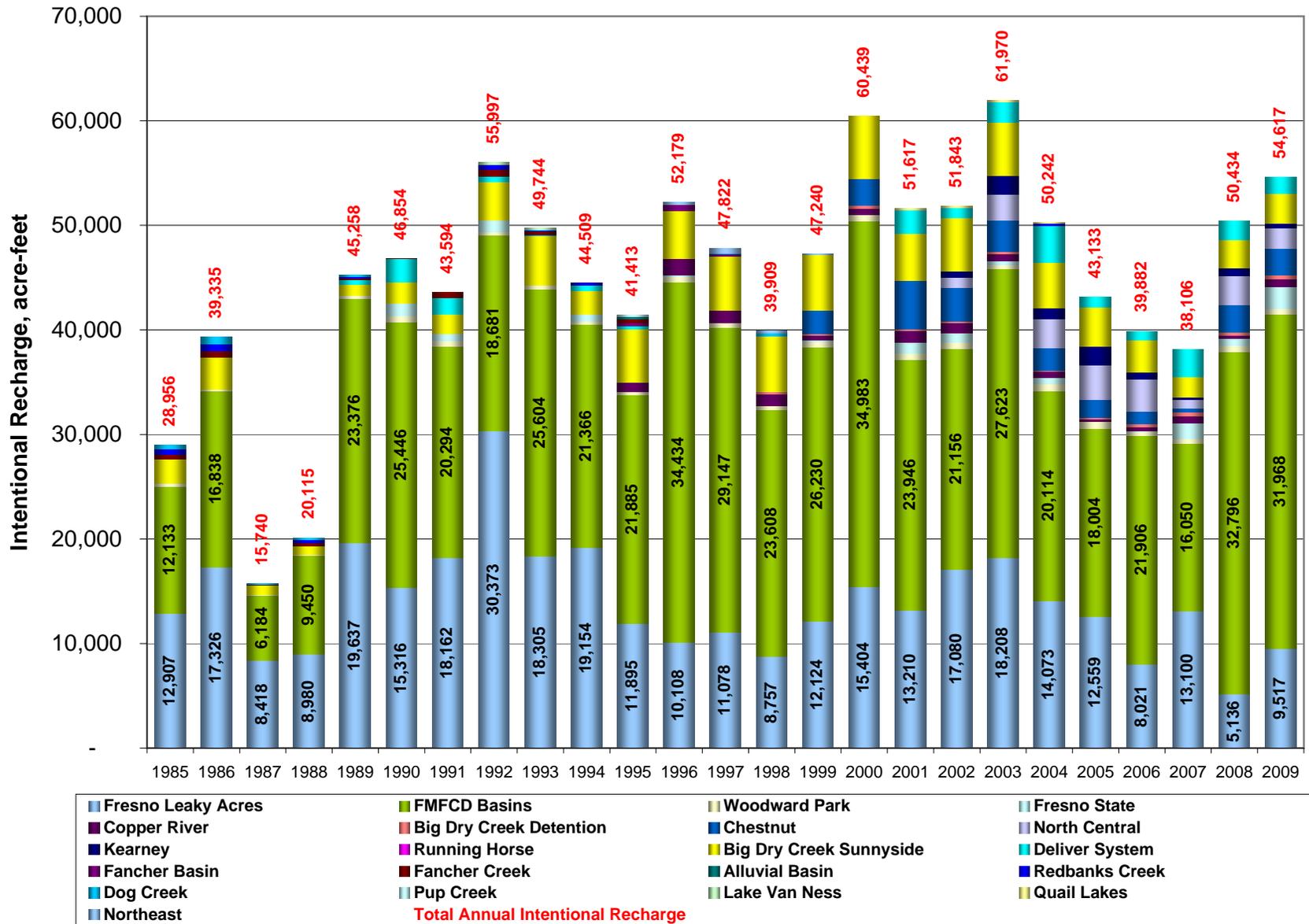


Figure 2-8. Historical Intentional Groundwater Recharge (1985 to 2009)



CHAPTER 3. ALLOCATION OF FUTURE WATER SUPPLY PLAN FACILITY COSTS

As described in the Metro Plan Update Phase 2 Report, the required infrastructure for the City’s future water supply plan will be costly and will impact both existing rate payers and new growth. This chapter describes the refined cost estimates for the future water supply plan based on the infrastructure prioritization and phasing described in Chapter 2, and develops a required annual cash flow to finance the required improvements. Allocation of costs to existing rate payers and new growth is also discussed.

ESTIMATED COSTS FOR THE FUTURE WATER SUPPLY PLAN

Estimated capital and operation and maintenance costs were developed as part of the Metro Plan Update Phase 2 Report and are summarized herein.

Capital Costs

Capital costs from the Metro Plan Update Phase 2 Report are summarized in Table 3-1.

Table 3-1. Estimate of Probable Cost of Required Infrastructure to Support Future Water Supply Plan^(a)

Item Description	Cost of Facilities to be in service by 2025, million dollars ^(b)
Surface Water Treatment ^(c)	396.6
Regional Transmission Mains	174.1
TGM System	151.8
Potable Water Storage Facilities ^(d)	50.3
Groundwater Production	51.0
Groundwater Treatment ^(e)	104.7
Recycled Water Treatment, Storage, and Transmission and TGM System	-- ^(f)
Recharge Facilities	127.5
Total Estimated Project Cost	\$1,056

- ^(a) Costs do not include Renewal and Replacement (R&R) costs for the City’s existing infrastructure.
- ^(b) Based on a May 2010 ENR 20 Cities Construction Cost Index of 8762. All costs include construction contingency of 20 percent, and engineering, construction management, and program implementation costs of 10 percent of the estimated construction cost each, for a total estimate of 50 percent, as documented in the Phase 1 Report. All costs are presented in present dollars and are not escalated.
- ^(c) Includes new Southeast SWTF and expanded Northeast SWTF. Does not include new Southwest SWTF.
- ^(d) Includes Tanks “T2”, “T3”, “T4”, “T5” and “T6”. New clearwells at the SWTFs are included in the Surface Water Treatment costs.
- ^(e) Includes treatment for a number of existing and future City wells. Assumes GAC treatment for TCP removal for 40 of the City’s existing wells; however, this is a preliminary estimate that has a significant level of uncertainty because of the limited data that is currently available from operating TCP treatment facilities. Assumes GAC and ion exchange treatment for future wells for other potential contaminants of concern.
- ^(f) To be determined by Recycled Water Master Plan.

Because the projects that will be developed to deliver 25,000 acre-feet of recycled water to offset potable water use have not yet been developed, those costs have not been included in this Phase 3 Report. The projects and estimated cost for recycled water facilities will be developed in the Recycled Water Master Plan that is currently being developed through the City’s Wastewater Management Division.

Operations and Maintenance Costs

Operation and maintenance costs from the Metro Plan Update Phase 2 Report are summarized in Table 3-2.

Table 3-2. Estimate of Probable Cost of Operation and Maintenance of Required Infrastructure to Support Future Water Supply Plan, Year 2025

Item Description	Estimated Annual O&M Cost, million dollars ^(a)
Surface Water Treatment ^(b)	25.7
Groundwater Production	2.9
Groundwater Treatment	11.7
Recycled Water Treatment and Storage	-- ^(c)
Recharge Facilities	0.5
Total Estimated Annual O&M Cost	\$40.8

^(a) Based on May 2010 dollars.

^(b) Includes new Southeast SWTF and Northeast SWTF expansion. Does not include new Southwest SWTF as it will likely be constructed after 2025.

^(c) To be determined by Recycled Water Master Plan.

As with the estimated capital costs presented in Table 3-1, the estimated O&M costs of the recycled water treatment, storage, and delivery facilities will be developed as part of the Recycled Water Master Plan and are not included in this Phase 3 Report.

COST ALLOCATION TO EXISTING RATE PAYERS AND NEW GROWTH

The purpose of this section is to describe the proposed cost allocation methodology to determine the proportion of the estimated cost to be allocated to existing (as of 2010) customers and future customers.

Allocation Methodology

The future water supply plan will provide benefits to both existing rate payers and new growth within the City. Existing rate payers will benefit from increased water supply diversity, increased water supply reliability, improved water quality, and improved groundwater basin conditions. New growth will benefit from the availability and reliability of water supplies to meet their water demands. Based on this philosophy, existing rate payers and new growth will need to share the costs of the required new infrastructure.

There are a few standard methods for allocating the costs of required infrastructure to existing rate payers and new growth. Allocation methods can be based on proportional share according to the ratio of existing to future water demands, location within the City's service area, pressure zones within the City's service area, as well as other factors. The most commonly used allocation method is based on a proportionate share according to the ratio of existing demands to future demands. This methodology provides for existing users and new growth to pay their fair share of the costs for required infrastructure improvements.

Based on projected water demands at buildout of the City's 2025 General Plan, the existing (2010) water demand is estimated to be 163,300 af/yr and the buildout (2025) water demand is estimated to be 234,400 af/yr. This means that 70 percent (163,300 divided by 234,400) of the total water demand at buildout of the 2025 General Plan is attributed to existing (2010) users and the remaining 30 percent of water demand is attributed to new growth.

This allocation method has been used to allocate the costs for the surface water treatment facilities (SWTFs) and the regional water system transmission mains. To estimate the appropriate cost allocation for the transmission grid mains (TGMs), West Yost estimated the percent benefit to existing and future customer for each pipeline segment. This process is shown graphically on Figure 3-1.

Allocation of new groundwater production wells and groundwater treatment is more straightforward, as it is based strictly on the number of replacement new wells required to serve existing customers versus those additional new wells required to serve new growth.

As a result of decreased groundwater pumpage along with on-going recharge at the existing recharge facilities, the groundwater basin is expected to be balanced by 2025 without the need for additional groundwater recharge beyond current quantities. However, additional recharge capacity is recommended to maximize the use of available surface water supplies and to help restore and sustain groundwater levels. These additional recharge basins will provide benefit to both existing users and new growth, and therefore costs for these new facilities should be shared.

Table 3-3 provides a summary of the cost allocation methodology for each category of required infrastructure improvements.

Table 3-3. Cost Allocation Methodology for Required Infrastructure Improvements

Infrastructure Type	Cost Allocation Strategy
Surface Water Treatment Facilities	<ul style="list-style-type: none"> Proportionate share based on ratio between existing (2010) average day water demands and future (2025) average day water demands; equates to 70 percent for existing customers and 30 percent for future customers
Regional Transmission Mains	<ul style="list-style-type: none"> Proportionate share based on ratio between existing (2010) average day water demands and future (2025) average day water demands; equates to 70 percent for existing customers and 30 percent for future customers
TGM System	<ul style="list-style-type: none"> Proportionately shared based on estimated benefit of each pipeline segment (see Figure 3-1). Resulting cost allocation for total cost is approximately 47 percent for existing customers and 53 percent for future customers
Potable Water Storage Facilities	<ul style="list-style-type: none"> New Southeast Tank “T2” allocated to existing customers New Southeast Tank “T3” allocated to future customers New Downtown Tank “T4” allocated 2/3 to existing customers and 1/3 to future customers Future Tank “T5” allocated to future customers Future Tank “T6” allocated to future customers
Groundwater Production Facilities	<ul style="list-style-type: none"> All wells required up to 2010 allocated to existing customers All wells required after 2010 allocated to future customers
Groundwater Treatment Facilities	<ul style="list-style-type: none"> Treatment for existing wells (as of 2010) allocated to existing customers Treatment for future wells (after 2010) allocated to future customers
Groundwater Recharge Facilities	<ul style="list-style-type: none"> Equal share of 50 percent for existing customers and 50 percent for future customers
Recycled Water Treatment and Storage Facilities and Recycled Water Transmission Mains	<ul style="list-style-type: none"> To be determined at the completion of the Recycled Water Master Plan

The estimated cost to existing and future rate payers is described below.

Allocation to Existing Rate Payers

Based on the allocation methodology described above, the cost allocation to existing rate payers is presented in Table 3-4.

Table 3-4. Estimated Costs Allocated to Existing Rate Payers

Item Description	Total Cost to Existing Rate Payers, million dollars ^(a)
Surface Water Treatment ^(b)	277.6
Regional Transmission Mains	121.9
TGM System	71.3
Potable Water Storage Facilities ^(c)	10.7
Groundwater Production	22.0
Groundwater Treatment ^(d)	59.9
Recycled Water Treatment, Storage and Transmission and TGM System	-- ^(e)
Recharge Facilities ^(f)	63.8
Total Estimated Project Cost Allocated to Existing Rate Payers	\$627

- (a) Based on a May 2010 ENR 20 Cities Construction Cost Index of 8762. All costs include construction contingency of 20 percent, and engineering, construction management, and program implementation costs of 10 percent of the estimated construction cost each, for a total estimate of 50 percent, as documented in the Phase 1 Report. All costs are presented in present dollars and are not escalated.
- (b) Includes existing rate payers proportionate share of costs for new Southeast SWTF and Northeast SWTF expansion.
- (c) Includes new Southeast Tank “T2” and 2/3 of Downtown Tank “T4”.
- (d) Assumes GAC treatment for TCP removal for 40 of the City’s existing wells; however, this is a preliminary estimate that has a significant level of uncertainty because of the limited data that is currently available from operating TCP treatment facilities.
- (e) To be determined by Recycled Water Master Plan.
- (f) Includes existing rate payers equal share of costs for new recharge facilities.

Required infrastructure costs allocated to existing rate payers are expected to be paid through water rates.

Allocation to New Growth

Based on the allocation methodology described above, the cost allocation to new customers (new growth) is presented in Table 3-5.

Table 3-5. Estimated Costs Allocated to New Growth^(a)

Item Description	Total Cost to New Growth to 2025, million dollars
Surface Water Treatment ^(b)	119.0
Regional Transmission Mains	52.2
TGM System	80.5
Potable Water Storage Facilities ^(c)	39.5
Groundwater Production	29.0
Groundwater Treatment	44.8
Recycled Water Treatment, Storage and Transmission and TGM System	-- ^(d)
Recharge Facilities ^(e)	63.8
Total Estimated Project Cost Allocated to New Growth	\$429

- (a) Based on a May 2010 ENR 20 Cities Construction Cost Index of 8762. All costs include construction contingency of 20 percent, and engineering, construction management, and program implementation costs of 10 percent of the estimated construction cost each, for a total estimate of 50 percent, as documented in the Phase 1 Report. All costs are presented in present dollars and are not escalated.
- (b) Includes new growth proportionate share of costs for new Southeast SWTF and Northeast SWTF expansion. Does not include cost for future Southwest SWTF.
- (c) Includes Southeast Tank “T3”, 1/3 of Downtown Tank “T4” and Future Tanks “T5” and “T6”.
- (d) To be determined by Recycled Water Master Plan.
- (e) Includes new growth equal share of costs for new recharge facilities.

The anticipated cost allocation by project component is shown on Figure 3-2.

Required infrastructure costs allocated to new growth will be paid through Urban Growth Management (UGM) fees based on the City’s established UGM areas. It should be noted that there is currently no defined UGM area or associated UGM fee for the central portion of the City; a UGM area and associated fee may need to be developed for this area to adequately allocate costs to new development (i.e., infill and redevelopment projects) in the central portion of the City. Also, existing UGM fees do not include the costs associated with the major infrastructure improvements described in this Metro Plan Update, and will need to be updated to adequately account for the costs of the future water supply plan allocated to new growth. A connection/UGM fee study will also need to be prepared to establish the required UGM fees (in addition to the previously mentioned water rate study).

REQUIRED CASH FLOW

The estimated timeline for the recommended capital projects is summarized in Table 3-6. The projects have been separated into the time period in which they would be required, as discussed in Chapter 2 of this report. The Priority 1 regional transmission mains are intended to improve the conveyance of water from the existing 30 mgd design capacity Northeast SWTF to the distribution system and to convey water from the upgraded Well 172 into the Downtown Central Area. The Priority 2 regional transmission mains coincide with the construction of the proposed 80 mgd design capacity Southeast SWTF and are intended to convey water from the Southeast SWTF to the TGMS to the distribution system. The Priority 3 regional transmission mains coincide with the upgrades to the Northeast SWTF to a design capacity of 60 mgd and are intended to convey water from the Northeast SWTF to the western and southern portions of the City’s service areas. The locations and alignments of these priority regional transmission mains were shown in Chapter 2 on Figure 2-4.

Table 3-6. Major Water Supply Project Component Design and Construction Periods^(a)

Time Period	Project Components
2009-2012	<ul style="list-style-type: none"> • Priority 1 Regional Transmission Mains • Local Transmission Grid Mains • New Southeast Tank “T3” • New Downtown Tank “T4” • Groundwater Wells and Treatment • Starting in 2010: Incremental Purchase of Land for New Recharge Facilities (about 14 acres per year)
2012-2015	<ul style="list-style-type: none"> • Priority 2 Regional Transmission Mains • Local Transmission Grid Mains • New Southeast Tank “T2” • New Southeast SWTF • Groundwater Wells and Treatment • Incremental Purchase of Land for New Recharge Facilities (about 14 acres per year)
2015-2020	<ul style="list-style-type: none"> • Priority 3 Regional Transmission Mains • Local Transmission Grid Mains • Northeast SWTF Expansion • Groundwater Wells and Treatment • Incremental Purchase of Land for New Recharge Facilities (about 14 acres per year)
2020-2025	<ul style="list-style-type: none"> • Local Transmission Grid Mains • Future Tanks “T5” and “T6” • Groundwater Wells and Treatment • Incremental Purchase of Land for New Recharge Facilities (about 14 acres per year)

^(a) Potential future Southwest SWTF would likely be constructed after 2025.

Throughout all the various time periods, the City will also need to construct additional groundwater production and treatment capacity (both to replace aging wells at the end of their useful service life, and to construct new wells to serve new customers).

It is recommended that the additional groundwater recharge areas be acquired and constructed incrementally, about 30 acres per year from 2010 through 2025. Alternatives to new groundwater recharge basins may include development of Aquifer Storage and Recovery (ASR) wells whereby water can be injected into the de-watered areas of the groundwater aquifer to directly replenish the aquifer, instead of requiring infiltration from surface basins. Although permitting of ASR wells has been difficult in the past, an ASR well requires substantially less land area and should be considered. New wells should be constructed with both injection and extraction capabilities.

The anticipated cash flow in one-year increments to 2025 is presented by funding allocation on Figure 3-3 and by project component on Figure 3-4. The detailed recommended project-by-project component design and construction schedule is shown in Table 3-7.

Table 3-7. Required Cash Flow by Project

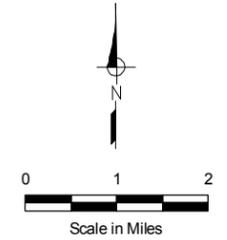
Activity	Required Cash Flow, million dollars																Total
	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/08	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	
Priority 1 Regional Transmission Mains																	
Design	\$ 2.0																\$ 2.0
Construction		\$ 9.0	\$ 9.0														\$ 17.9
Total	\$ 2.0	\$ 9.0	\$ 9.0														\$ 19.9
<i>Cost Allocation:</i>																	
Existing Customers	\$ 1.4	\$ 6.3	\$ 6.3														\$ 13.9
Future Customers	\$ 0.6	\$ 2.7	\$ 2.7														\$ 6.0
Priority 2 Regional Transmission Mains																	
Design		\$ 4.3	\$ 2.2	\$ 2.2													\$ 8.7
Construction			\$ 19.5	\$ 19.5	\$ 19.5	\$ 19.5											\$ 78.0
Total		\$ 4.3	\$ 21.7	\$ 21.7	\$ 19.5	\$ 19.5											\$ 86.6
<i>Cost Allocation:</i>																	
Existing Customers		\$ 3.0	\$ 15.2	\$ 15.2	\$ 13.6	\$ 13.6											\$ 60.6
Future Customers		\$ 1.3	\$ 6.5	\$ 6.5	\$ 5.8	\$ 5.8											\$ 26.0
Priority 3 Regional Transmission Mains																	
Design								\$ 3.4	\$ 3.4								\$ 6.8
Construction										\$ 30.4	\$ 30.4						\$ 60.8
Total								\$ 3.4	\$ 3.4	\$ 30.4	\$ 30.4						\$ 67.6
<i>Cost Allocation:</i>																	
Existing Customers								\$ 2.4	\$ 2.4	\$ 21.3	\$ 21.3						\$ 47.3
Future Customers								\$ 1.0	\$ 1.0	\$ 9.1	\$ 9.1						\$ 20.3
New Southeast Surface Water Treatment Facility (SWTF)																	
Design		\$ 10.1	\$ 10.1	\$ 10.1													\$ 30.3
Construction					\$ 136.2	\$ 136.2											\$ 272.4
Total		\$ 10.1	\$ 10.1	\$ 10.1	\$ 136.2	\$ 136.2											\$ 302.7
<i>Cost Allocation:</i>																	
Existing Customers		\$ 7.1	\$ 7.1	\$ 7.1	\$ 95.4	\$ 95.4											\$ 211.9
Future Customers		\$ 3.0	\$ 3.0	\$ 3.0	\$ 40.9	\$ 40.9											\$ 90.8
Northeast Surface Water Treatment Facility (SWTF) Expansion																	
Design								\$ 4.7	\$ 4.7								\$ 9.4
Construction										\$ 42.3	\$ 42.3						\$ 84.5
Total								\$ 4.7	\$ 4.7	\$ 42.3	\$ 42.3						\$ 93.9
<i>Cost Allocation:</i>																	
Existing Customers								\$ 3.3	\$ 3.3	\$ 29.6	\$ 29.6						\$ 65.7
Future Customers								\$ 1.4	\$ 1.4	\$ 12.7	\$ 12.7						\$ 28.2
Potable Water Storage Facilities (Tanks "T2", "T3", "T4", "T5" and "T6")																	
Design & Construction			\$ 31.5	\$ 3.8									\$ 7.5	\$ 7.5			\$ 50.3
Total			\$ 31.5	\$ 3.8									\$ 7.5	\$ 7.5			\$ 50.3
<i>Cost Allocation:</i>																	
Existing Customers			\$ 7.0	\$ 3.8													\$ 10.7
Future Customers			\$ 24.5	\$ -									\$ 7.5	\$ 7.5			\$ 39.5
Transmission Grid Mains (TGMs)																	
Design & Construction		\$ 1.1	\$ 10.8	\$ 10.8	\$ 10.8	\$ 10.8	\$ 10.8	\$ 10.8	\$ 10.8	\$ 10.8	\$ 10.8	\$ 10.6	\$ 10.6	\$ 10.6	\$ 10.6	\$ 10.6	\$ 151.8
Total		\$ 1.1	\$ 10.8	\$ 10.8	\$ 10.8	\$ 10.8	\$ 10.8	\$ 10.8	\$ 10.8	\$ 10.8	\$ 10.8	\$ 10.6	\$ 151.8				
<i>Cost Allocation:</i>																	
Existing Customers		\$ 0.5	\$ 5.1	\$ 5.1	\$ 5.1	\$ 5.1	\$ 5.1	\$ 5.1	\$ 5.1	\$ 5.1	\$ 5.1	\$ 5.0	\$ 5.0	\$ 5.0	\$ 5.0	\$ 5.0	\$ 71.3
Future Customers		\$ 0.6	\$ 5.7	\$ 5.7	\$ 5.7	\$ 5.7	\$ 5.7	\$ 5.7	\$ 5.7	\$ 5.7	\$ 5.7	\$ 5.6	\$ 5.6	\$ 5.6	\$ 5.6	\$ 5.6	\$ 80.4
Groundwater Wells and Treatment																	
Design & Construct	\$ 1.1	\$ 11.2	\$ 11.2	\$ 11.2	\$ 11.2	\$ 11.2	\$ 11.3	\$ 12.5	\$ 12.5	\$ 12.5	\$ 12.5	\$ 7.5	\$ 7.5	\$ 7.5	\$ 7.5	\$ 7.5	\$ 155.7
Total	\$ 1.1	\$ 11.2	\$ 11.2	\$ 11.2	\$ 11.2	\$ 11.2	\$ 11.3	\$ 12.5	\$ 12.5	\$ 12.5	\$ 12.5	\$ 7.5	\$ 155.7				
<i>Cost Allocation:</i>																	
Existing Customers	\$ 0.7	\$ 6.8	\$ 6.8	\$ 6.8	\$ 6.8	\$ 6.8	\$ 7.0	\$ 8.2	\$ 8.2	\$ 8.2	\$ 8.2	\$ 1.5	\$ 1.5	\$ 1.5	\$ 1.5	\$ 1.5	\$ 81.9
Future Customers	\$ 0.4	\$ 4.3	\$ 4.3	\$ 4.3	\$ 4.3	\$ 4.3	\$ 4.3	\$ 4.3	\$ 4.3	\$ 4.3	\$ 4.3	\$ 6.0	\$ 6.0	\$ 6.0	\$ 6.0	\$ 6.0	\$ 73.8
Recharge Facilities																	
Purchase & Construct		\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 127.5
Total		\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 8.5	\$ 127.5
<i>Cost Allocation:</i>																	
Existing Customers		\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 63.7
Future Customers		\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 4.2	\$ 63.7
Total Cost By Year	\$ 3.1	\$ 44.1	\$ 102.7	\$ 66.0	\$ 186.2	\$ 186.2	\$ 30.6	\$ 39.9	\$ 39.9	\$ 104.5	\$ 104.5	\$ 26.6	\$ 34.1	\$ 26.6	\$ 34.1	\$ 26.6	\$ 1,056
<i>Cost Allocation:</i>																	
Existing Customers	\$ 2.1	\$ 27.9	\$ 51.7	\$ 42.1	\$ 125.2	\$ 125.2	\$ 16.3	\$ 23.2	\$ 23.2	\$ 68.4	\$ 68.4	\$ 10.7	\$ 10.7	\$ 10.7	\$ 10.7	\$ 10.7	\$ 627
Future Customers	\$ 1.0	\$ 16.2	\$ 51.0	\$ 23.9	\$ 61.1	\$ 61.1	\$ 14.3	\$ 16.8	\$ 16.8	\$ 36.1	\$ 36.1	\$ 15.9	\$ 23.4	\$ 15.9	\$ 23.4	\$ 15.9	\$ 429

Notes:

- Does not include Renewal & Replacement (R&R) costs for the City's existing water system facilities.
- Does not include future Southwest SWTF.

FIGURE 3-1
City of Fresno
Metro Plan Update
Phase 3 Report
2025 PROPOSED
TGM COST ALLOCATION

	Existing	Future	Total
Pipeline Length	236,138	270,085	506,223
Percent Allocation	47%	53%	100%



Notes
 1.

LEGEND

- 2010 Undeveloped Land Use**
- No Water Use
 - Open Space
 - South East Growth Area
 - Vacant
- Existing Demands**
- 0% Existing Demands
 - 10% Existing Demands
 - 20% Existing Demands
 - 80% Existing Demands
 - 90% Existing Demands
 - 100% Existing Demands

N:\Shared\Brenda Estrada\439- Fresno Water Metr Plan\GIS\Figures\3.02\20702-Fig_3-1_20090630.mxd 6/30/2009

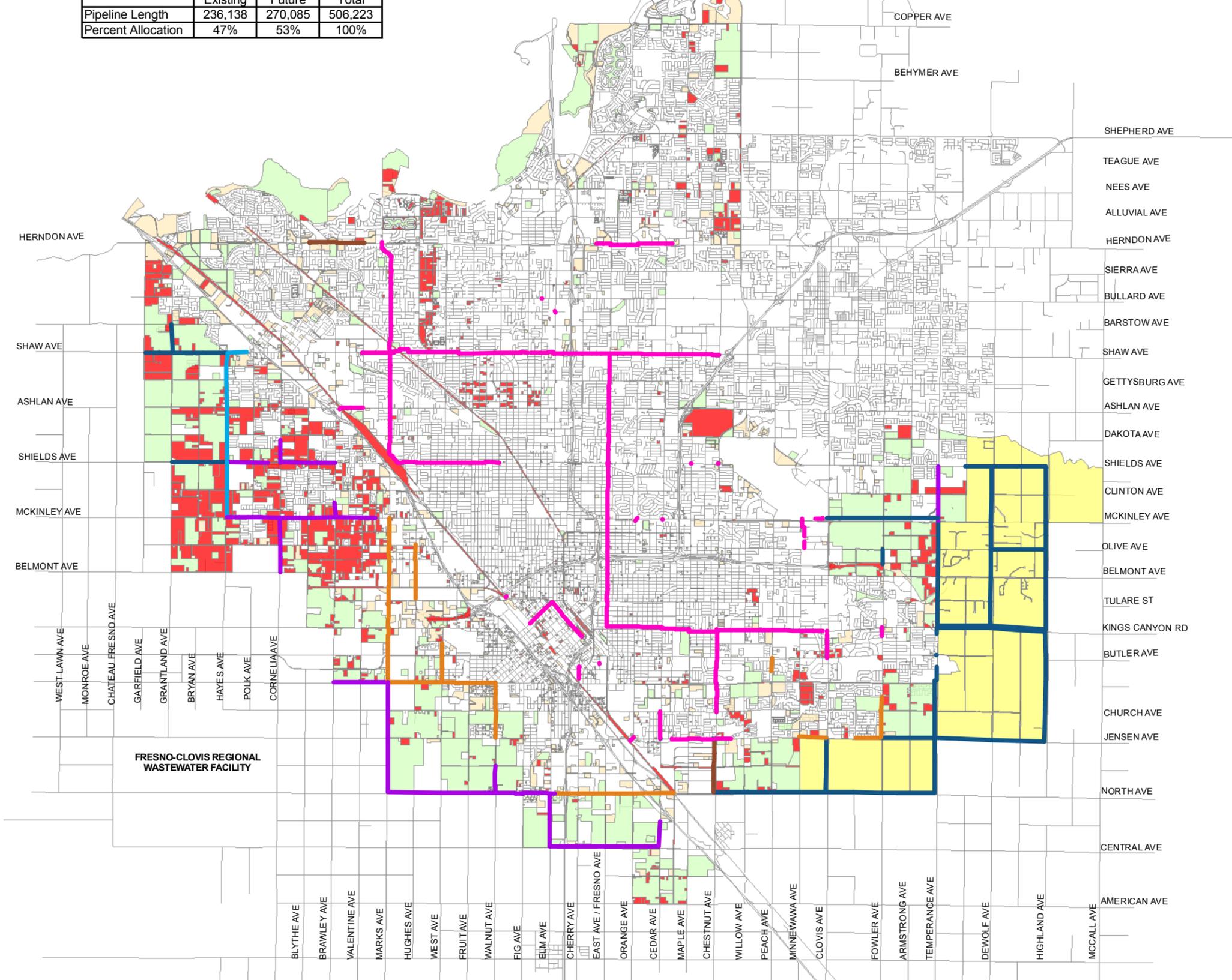


Figure 3-2. Estimated Capital Cost Allocation by Project Type

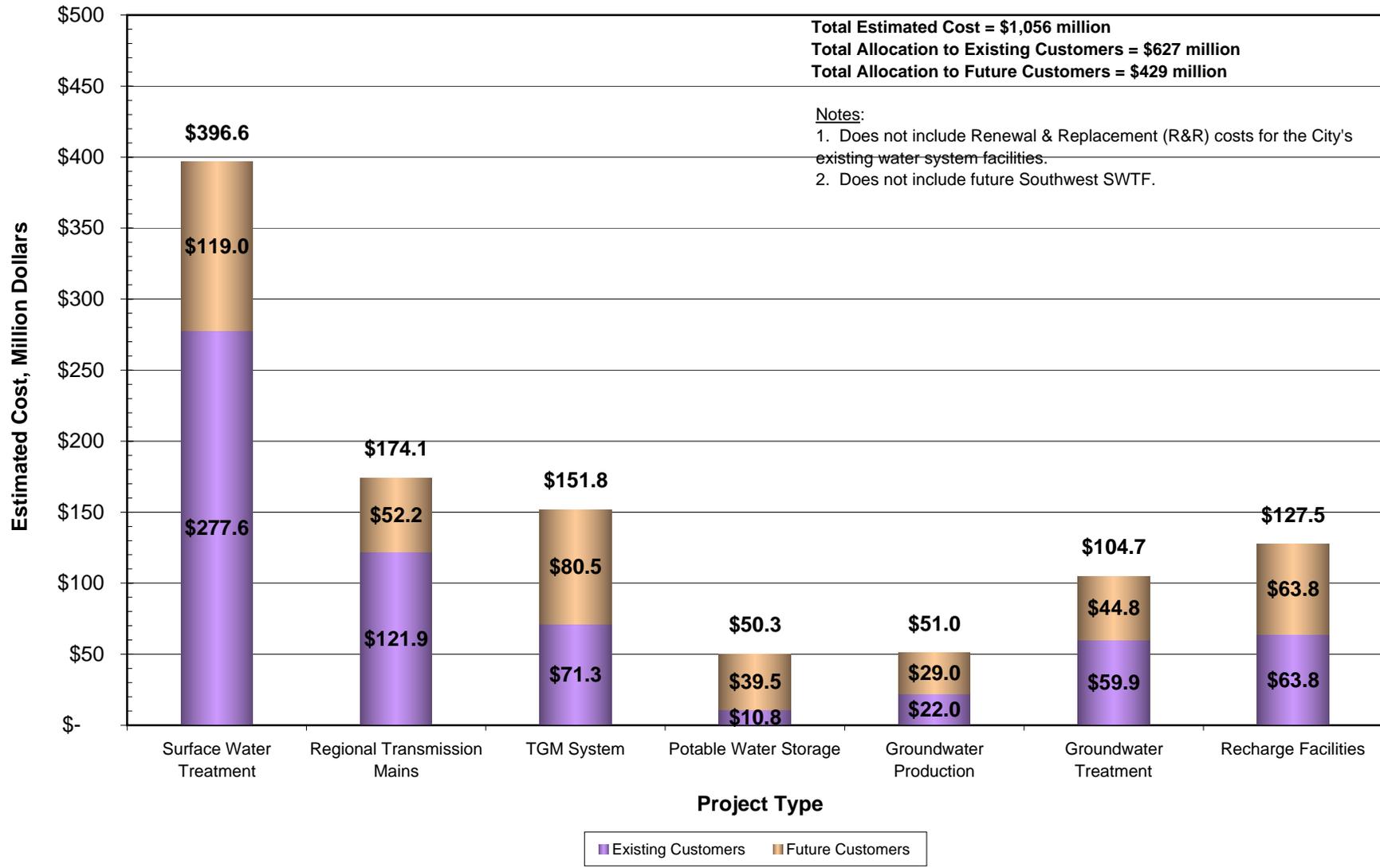


Figure 3-3. Anticipated Cash Flow by Time Period

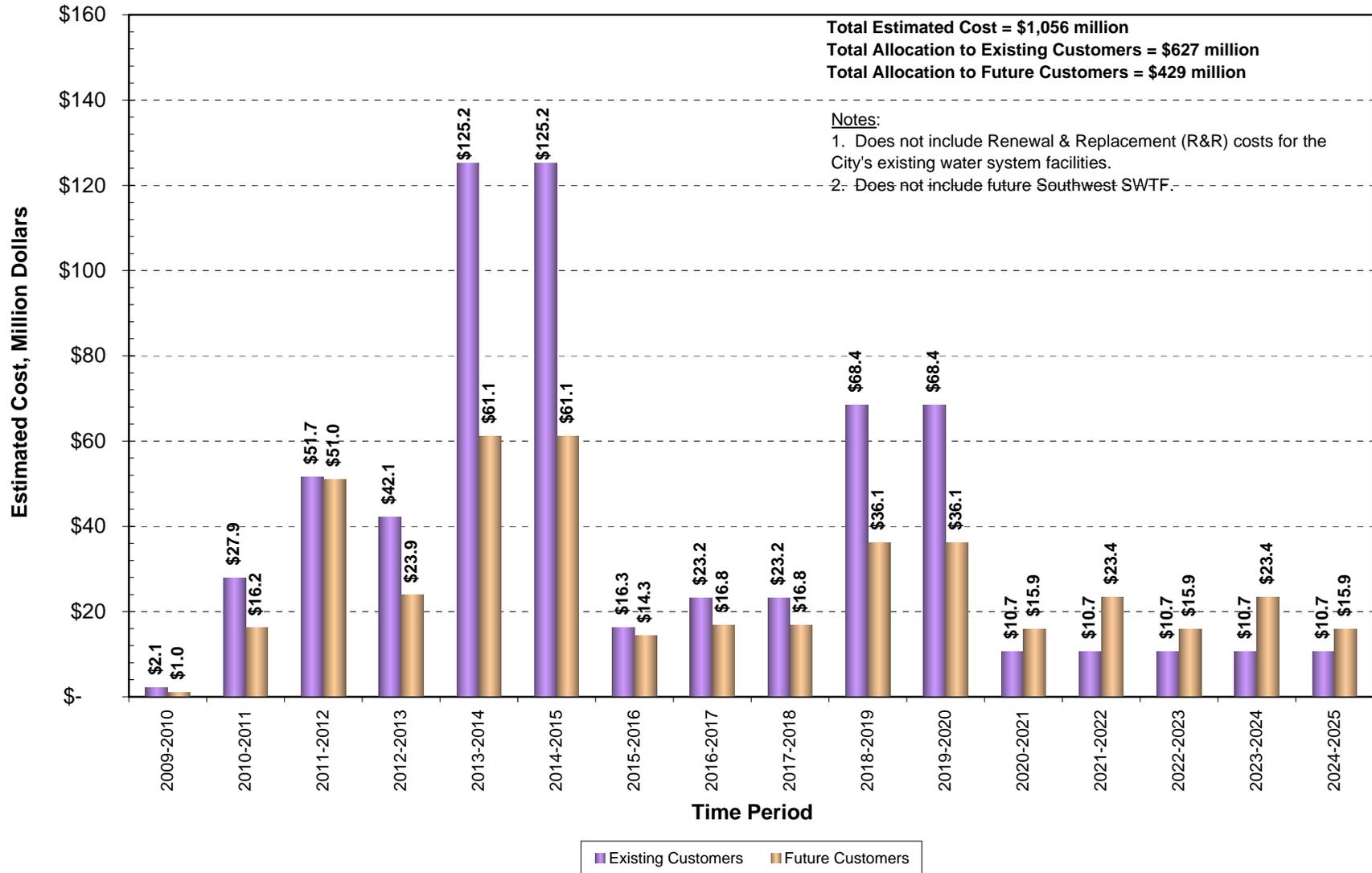
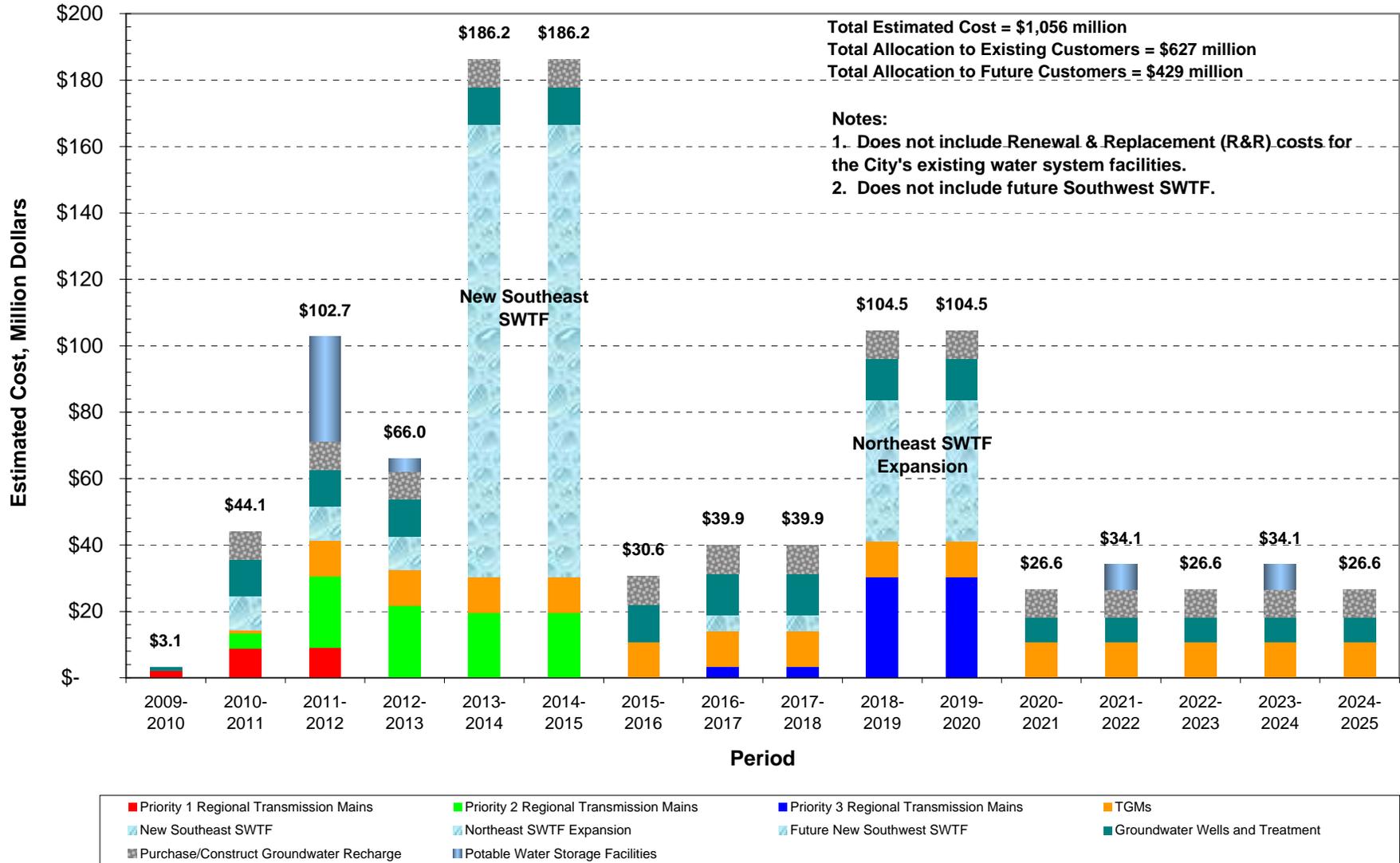


Figure 3-4. Anticipated Cash Flow by Component



CHAPTER 4. POTENTIAL FUNDING SOURCES

As described in Chapter 3 of this Phase 3 Report, the estimated costs to implement the City's recommended water supply plan are significant, and will be shared by existing rate payers and new development. This chapter presents potential funding sources, including potential financing options, potential cost-sharing opportunities to reduce the City's share of facility costs, and potential grant and low-interest loan opportunities which may be available to help finance the required improvements associated with the City's recommended water supply plan.

POTENTIAL FINANCING OPTIONS

There are many potential options to finance infrastructure improvements. Some of the more common options include the following:

- Pay-As-You-Go,
- Revenue Bonds,
- General Obligation (GO) Bonds,
- Special Assessments, and
- Certificates of Participation.

As summarized in Table 4-1, each of these financing options has specific advantages and disadvantages. The suitability of a particular financing method for a particular project depends on a number of factors including the type of project to be financed, the amount of capital required, the timing of the need for capital (e.g., all capital required up-front or spread out over a period of time), the benefits of the project (e.g., City-wide benefits versus benefits to only certain parts of the City), and potential impacts on the City's bonding capacity and credit rating.

Revenue bonds are the most common form of bonded indebtedness, and have been historically used by the City to finance major water and wastewater infrastructure improvements. Such revenue bonds are secured by revenue from water/wastewater rates and connection fees (e.g., UGM fees). In the past, the City has issued revenue bonds based on five-year budget plans to finance required infrastructure improvements.

In December 2009, the City Council authorized the issuance of up to \$185 million of water system revenue bonds to fund the City's residential water metering program and other various capital improvements (Resolution No. 2009-254). The next water system revenue bond issuance is expected in 2012/13, or possibly sooner, and is anticipated to cover the costs of the design and construction of the Southeast SWTF and major transmission and distribution pipelines. The amount of that revenue bond is yet to be determined.

The development of a financing plan for the City's recommended water supply plan is beyond the scope of this Metro Plan Update. However, as it has in the past, it is anticipated that the City will continue to issue revenue bonds to fund the remaining infrastructure required for the future water supply plan. Future water rate studies and UGM fee studies will be required to assess the impacts of these revenue bonds on future water rates and UGM fees.

Table 4-1. Common Infrastructure Financing Methods^(a)

Financing Method	Description	Comments
Pay-As-You-Go	This method involves financing the required improvements through accumulated reserves and current charges and paying for the required infrastructure as costs are incurred (i.e., Pay-As-You-Go). This method is suitable for minor and/or on-going infrastructure improvements which have low up-front costs and do not require a large amount of reserves to be accumulated. Large projects, with high up-front costs, are less suited for pay-as-you-go financing.	May require near-term rate increases higher than required for debt financing in order to accumulate sufficient reserves Generally viewed as a fiscally responsible alternative as future interest payments are reduced or eliminated
Revenue Bonds	“Revenue bond” is a broad term used to describe bonds on which the debt service is payable mainly from revenue generated through the operation of the project being financed, or from other non-property tax sources. They may be issued by state and local governments, or by an authority, commission, special district, or other unit created by a legislative body for the purposes of issuing bonds for facility construction. Revenue bonds account for the majority of municipal bonds used to finance water, sewer, and solid waste infrastructure in the United States. Revenue bonds are usually tax-exempt.	Public hearing and a majority vote of the City Council is required for issuance Bond interest rates may be higher for revenue bonds compared to general obligation bonds. Revenue bonds do not count against debt ceilings, but the national rating agencies take them into account in financial capability analyses.
General Obligation (GO) Bonds	General Obligation (GO) bonds are backed with the guarantee that the issuing governments will use its taxing power to repay them. GO bonds are regarded as safer than bonds backed by a single revenue source, and generally command lower interest rates and lower reserve fund requirements. There are two primary types of GO bonds: unlimited ad valorem tax debt and limited ad valorem tax debt. Ad valorem taxes are based on the assessed value of property. Unlimited ad valorem tax debt occurs when the government pledges its full faith and credit with no limitations on possible property tax rates. Limited ad valorem tax debt occurs when the government pledges its full faith and credit, but with a cap or restriction on possible property tax rates. Occasionally, a GO bond may be backed by a specific revenue source. GO bonds are suitable for financing projects that require large amounts of capital up-front.	A two-thirds approval of voters is required for issuance.
Special Assessment Bonds	Special assessment bonds are issued by local governments and/or special authorities and are secured by special taxes, charges, or fees. These bonds are sold to finance specific public infrastructure improvements that directly benefit the property owners in limited, identifiable areas. Special assessments are levied on property measurement systems related to the benefits received. The system for collecting assessments is usually tied to the collection of ad valorem property taxes, which are taxes based on the assessed value of property.	Special Assessment bonds are better suited for types of projects, such as flood control, where benefits can be related to a parcel of land.
Certificates of Participation (COPs)	Certificates of Participation (COPs) are financial instruments used to finance capital projects. COPs are backed by the leasing of real property and physical assets, such as water plants or equipment. The assets are held by a trustee, and the certificate issuer pays yearly lease payments to the certificate holders until the debt is repaid. If the certificate issuer defaults on the lease payments, the trustee is responsible for selling the physical assets and using the proceeds to reimburse the certificate holders. COPs can only be issued to finance capital projects where a real asset exists that is suitable as collateral, and only in jurisdictions where local authorities are allowed to negotiate long-term leases. COPs are similar to mortgage bonds and asset-backed bonds, but are not legally classified as such, so state and local governments can issue them without voter approval and without affecting their overall bonding capacity.	Public hearings and a majority vote of the City Council is required for issuance. COPs do not count against debt capacity limits.

^(a) References:

1. U.S. Environmental Protection Agency, Tools for Financing Water Infrastructure, March 2007.
2. California Department of Water Resources, California Water Plan Update 2005, Financing Strategies and Guidelines for Funding Water Resource Projects, by David Kracman, The Flatwater Group.

POTENTIAL COST-SHARING OPPORTUNITIES

There may be some opportunities to develop cost-sharing agreements with various agencies to jointly fund certain types of projects. Projects which may be suitable for cost-sharing may include new groundwater recharge facilities and possibly recycled water facilities. The primary advantage of such agreements would be to reduce costs to the City for required facilities through economies of scale and benefits to other agencies. However, a potential disadvantage of such agreements involves the loss of overall control of facility maintenance and operations and the need to develop detailed cooperative agreements to ensure that the needs of both parties are met.

Potential cost-sharing opportunities may exist with FMFCD with respect to the development of new groundwater recharge basins, which could possibly provide both flood control benefits to FMFCD and groundwater recharge benefits to the City. However, as stated above, detailed cooperative agreements would need to be developed for the operation of the new recharge basins to ensure that the recharge capabilities of the new basins are developed and maintained to meet the City's long-term groundwater recharge needs.

Potential cost-sharing opportunities may also exist with respect to future recycled water treatment and transmission/distribution facilities, perhaps with the City of Clovis. If the City of Clovis (or some other neighboring agency) were interested, it may be possible to upsize the proposed recycled water facilities to meet both the needs of the City of Fresno and the City of Clovis (or some other neighboring agency) such that both agencies benefit from economies of scale.

Potential cost-sharing opportunities may also exist with FID, or some other downstream agricultural water system, with regard to an exchange of recycled water for surface water or marketing of recycled water.

The City may wish to evaluate potential cost-sharing opportunities further to assess if the potential cost savings outweigh the potential loss of overall control of facility operations and maintenance.

POTENTIAL GRANT AND LOAN OPPORTUNITIES

The following describes potential grant and loan opportunities which may be available to the City to assist with financing of required infrastructure improvements. It should be noted that although potential grant and loan opportunities exist, such funding programs are very competitive and the chance of obtaining funding is limited. Also, in many cases, the project for which funding is being sought must have all environmental reviews and required permits completed and be "shovel-ready", meaning that construction must be started, and sometimes completed, within a short period of time after receiving the funding. Nonetheless, potential grant and loan opportunities should be actively pursued by the City when applicable. The development of projects or programs that demonstrate and provide regional benefit to multiple agencies will have a higher probability of generating attention and securing funding.

Potential grant and loan programs available from the Federal government, State of California, and other sources are described below.

A summary of potential grant and loan programs is provided in Table 4-2.

Table 4-2. Summary of Potential Grant and Loan Programs

Grant/Loan Name	Funding Type	Administered By	Description	Funding Sources and Availability	Application Schedule	Additional Information
FEDERAL FUNDING PROGRAMS						
American Recovery and Reinvestment Act of 2009	Low interest loans with some forgiveness of principal (grants)	USEPA State (CDPH and SWRCB)	Will provide funds to State Revolving Funds for infrastructure improvements as follows: Safe Drinking Water State Revolving Fund: \$2 billion nationally (\$160 million to California) Clean Water State Revolving Fund : \$4 billion nationally (\$281 million for California) Limited to projects that are "ready to proceed"	Federal Economic Stimulus Package		www.recovery.gov
WaterSMART	Grant	USBR	Grants for projects which address challenges facing water supply in the 21 st century, including population growth, climate change, rising energy demands, environmental needs and aging infrastructure	Federal funding		www.usbr.gov/WaterSMART
STATE FUNDING PROGRAMS						
Safe Drinking Water State Revolving Fund	Loan	CDPH	Provides public water systems in California the opportunity to utilize subsidized funding to correct infrastructure problems, to assess and protect source water, and to improve technical, managerial and financial capability Must have meters to get SRF money	Prop 84 Prop 50 Prop 13 Safe Drinking Water Bonds	The most recent pre-application period closed in September 2009	www.cdph.ca.gov/services/funding/Pages/SRF.aspx
Clean Water State Revolving Fund Program	Loan	SWRCB	Provides low-interest loan funding for construction of publicly-owned wastewater treatment facilities, local sewers, sewer interceptors, water recycling facilities, non-point source pollution control projects Must have meters to get SRF money	Funded by Federal and State Funds and Revenue Bonds Available funding: \$200-300 million annually	Continuous application process; currently accepting applications	www.swrcb.ca.gov/water_issues/programs/grants_loans/srf/
Infrastructure State Revolving Fund (ISRF) Program	Loan	I-Bank	Provides low-cost financing to public agencies for a wide variety of infrastructure projects	Initial General Fund Appropriations, ISRF Program Bonds Financing from \$250,000 to \$10 million per fiscal year; \$20 million per jurisdiction per fiscal year	Continuous application process; typical process takes 6 months to more than a year	www.ibank.ca.gov
Water Recycling Funding Program	Loans and Grants	SWRCB	Provides funding to promote the beneficial use of treated municipal wastewater to augment fresh water supplies in California by providing technical and financial assistance to agencies and other stakeholders in support of water recycling projects and research	Bonds Prop 13 Prop 50 State Revolving Fund	Currently accepting applications	www.swrcb.ca.gov/water_issues/programs/grants_loans/water_recycling/index.shtml
New Local Water Supply Feasibility Study	Loan	DWR	Loans to assess the feasibility of implementing an eligible local water supply project	Prop 82 Up to \$500,000 per eligible study Total Program Funds: \$2 million	Continuous	www.grantsloans.water.ca.gov
New Local Water Supply Construction	Loan	DWR	Loans for projects such as canals, dams, reservoirs, storage tanks, groundwater extraction facilities, recycled water or other construction or improvements	Prop 82 Up to \$5 million per eligible project Total Program Funds: \$20 million	Continuous	www.grantsloans.water.ca.gov
Local Groundwater Assistance	Grant	DWR	Grants for groundwater data collection, modeling, monitoring and management studies; monitoring programs and installation of equipment; basin management; development of information systems; and other groundwater related work	Prop 84 Up to \$250,000 per eligible applicant \$4.7 million available in FY 2009/10	Next application solicitation: Funding is pending bond authorization	www.grantsloans.water.ca.gov
Urban Water Use Efficiency Grant Program	Grant	DWR	Grants and loans to implement cost-effective water use efficiency measures and support projects such as: research and development; feasibility studies and pilot/demonstration projects; training, educational, or public information programs; and technical assistance	Prop 50		www.grantsloans.water.ca.gov
Integrated Regional Water Management	Grant	DWR	Grant for three or more local agencies for water management activities	Prop 50 Prop 84 Prop 1E	Funding on hold due to funding process issues and poor bond market conditions	www.grantsloans.water.ca.gov
OTHER FUNDING PROGRAMS						
Smart Rebates Program	Grant	CUWCC	Offers funding for conservation product and appliance rebates	Prop 50		www.cuwcc.org
CALIFORNIA WATER BOND PROPOSITION						
Safe, Clean and Reliable Drinking Water Supply Act of 2010	Grants and Loans	To Be Determined	Funding for drought relief projects, disadvantaged communities, small community wastewater treatment improvements and safe drinking water revolving fund; integrated regional water management projects; projects that support Delta sustainability options; water storage projects; ecosystem and watershed protection and restoration projects; groundwater protection and cleanup; and water recycling and advanced treatment technology projects			Proposed ballot measure was pulled from the November 2010 ballot prior to the election. A similar measure may be introduced in the future.

Federal Funding Programs

American Recovery and Reinvestment Act of 2009

On February 17, 2009, President Barack Obama signed the American Recovery and Reinvestment Act (ARRA) of 2009. It contained a total of \$6 billion nationwide for drinking water projects (\$2 billion) and clean water projects (\$4 billion). For California, it included \$160 million for drinking water projects and \$281 million for clean water projects.

These funds are being distributed via the State Revolving Fund (SRF) process (see additional discussion below under *State Funding Programs*). In California, the funds for drinking water projects are being administered by the California Department of Public Health (CDPH) and the funds for clean water projects are being administered by the State Water Resources Control Board (SWRCB).

A key requirement for the use of these funds is that projects must be “shovel-ready” (e.g., environmental reviews must be complete and all permits obtained) and must be under construction within twelve months or funds will be taken back and redistributed to other states.

The City has applied for a number of ARRA grants and, as of March 31, 2010, has been awarded over \$51.3 million in ARRA grants for various projects throughout the City. Water-related projects which have received ARRA funding have included the Herndon Water Project (ARRA award of \$619,978) which is providing for facilities to connect the Herndon Water System to the City’s water system, and an Energy Efficiency and Conservation Block Grant (ARRA award \$4,603,600) to develop and implement a new division in the City’s Planning and Development Department called Sustainable Fresno Division which is tasked with deploying programs that achieve large-scale energy and water conservation in the City.

Additional information on the American Recovery and Reinvestment Act of 2009 can be found at www.recovery.gov and on the City’s ARRA webpage at:

www.fresno.gov/government/mayorsoffice/recovery

WaterSMART Program

The WaterSMART (Sustain and Manage America’s Resources for Tomorrow) Program is intended to address the most significant challenges facing our water supplies in the 21st century, including population growth, climate change, rising energy demands, environmental needs and aging infrastructure.

As of spring 2010, the Bureau of Reclamation announced the availability of several WaterSMART Funding Opportunity Announcements: System Optimization Review Grants; Advanced Water Treatment Pilot and Demonstration Project Grants; Research Grants to Develop Climate Analysis Tools; and a Water and Energy Efficiency Grant.

- The System Optimization Review Funding Opportunity seeks proposals for projects that assess the potential for water management improvements in a river basin, system, or district and identifies specific improvements to increase efficiency, including a plan of action for implementing the recommendations.

- The Pilot and Demonstration Projects for Advanced Water Treatment Funding Opportunity is new this fiscal year and seeks proposals for projects that address the technical, economic, and environmental viability of treating and using brackish groundwater, seawater, impaired waters, or otherwise creating new water supplies within a specific locale.
- The Research Grants to Develop Climate Analysis Tools Funding Opportunity is also new this fiscal year and seeks proposals for research projects that will lead to enhanced management of western water resources in a changing climate. This Funding Opportunity is open to universities and non-profit research institutions as well as organizations with water or power delivery authority.
- The Water and Energy Efficiency Grant Funding Opportunity is intended for projects that conserve and use water more efficiently, increase the use of renewable energy in the management or delivery of water, protect endangered and threatened species, facilitate water markets, or carry out other activities to address climate-related impacts on water or prevent any water-related crisis or conflict.

These and other new WaterSMART funding opportunities can be located by visiting the WaterSMART website at:

<http://www.usbr.gov/WaterSMART/>

or

<http://www.grants.gov>

All projects will be selected for funding through a competitive process and will be evaluated using established criteria listed in each Funding Opportunity Announcement.

State of California Funding Programs

Over the years, a number of State propositions have been passed by California voters which provide funding for projects related to water supply, water quality, water conservation, flood management, and regional water management. These include:

- Proposition 82: Water Conservation Bond Law of 1988;
- Proposition 204: Safe, Clean, Reliable Water Supply Act of 1996;
- Proposition 13: Safe Drinking Water, Clean Water, Watershed Protection, and Flood Protection Act of 2000;
- Proposition 50: Water Security, Clean Drinking Water, Coastal and Beach Protection Act of 2000;
- Proposition 84: Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006; and
- Proposition 1E: Disaster Preparedness and Flood Protection Bond Act of 2006.

It should be noted that urban water retailers wishing to receive state grants and/or loans must be in compliance with AB 1420 (requiring implementation of Demand Management Measures as outlined in the Urban Water Management Planning Act) and AB 2572 (requiring meters on all service connections). Also, it should be noted that effective in 2016, urban water retailers who do not meet the water conservation requirements established by SB X7-7 (requiring a reduction in per capita water use; “20 x 2020”) will not be eligible for state water grants or loans.

State Revolving Funds

Safe Drinking Water State Revolving Fund

The Safe Drinking Water State Revolving Fund (SDWSRF) provides funding to correct public water system deficiencies based upon a prioritized funding approach that addresses the systems' problems that pose public health risks, systems with needs for funding to comply with requirements of the Safe Drinking Water Act, and systems most in need on a per household affordability basis.

The SDWSRF program goals reflect both federal and state legislative intent to provide funding to correct public water system deficiencies based upon a prioritized funding system. The funding system utilizes a comprehensive multi-year Project Priority List, whereby certain projects receive higher funding priority than other eligible public water system projects. Higher priority projects include:

- Public water system projects addressing public health risk problems;
- Public water system projects needed to comply with the SDWA; and
- Projects assisting public water systems most in need on a per household affordability basis.

The SDWSRF provides approximately 7,800 public water systems in California the opportunity to utilize subsidized funding to correct infrastructure problems, to assess and protect source water, and to improve technical, managerial and financial capability. The SDWSRF is administered by the CDPH and is funded by Federal grants, State Propositions 13, 50, 84 and a series of Safe Drinking Water Bond Law ballot initiatives passed in the late 1970s through the 1980s. The most recent pre-application period closed in September 2009.

Additional information on the SDWSRF can be found on the CDPH webpage at:

<http://www.cdph.ca.gov/services/funding/Pages/SRF.aspx>

Clean Water State Revolving Fund

The Federal Water Pollution Control Act (Clean Water Act or CWA), as amended in 1987, provides for establishment of a Clean Water State Revolving Fund (CWSRF) program. The purpose of the CWSRF program is to implement the CWA and various State laws by providing financial assistance for the construction of facilities or implementation of measures necessary to address water quality problems and to prevent pollution of the waters of the State.

The CWSRF Loan Program provides low-interest loan funding for construction of publicly-owned wastewater treatment facilities, local sewers, sewer interceptors, water recycling facilities, as well as expanded use projects such as implementation of non-point source projects or programs, development and implementation of estuary Comprehensive Conservation and Management Plans, and storm water treatment. The loans are typically a 20-year term with an interest rate equal to one-half the most recent State General Obligation Bond Rate (typically 2.5 to 3.5 percent).

The CWSRF is administered by the SWRCB and is funded by federal grants, State funds, and Revenue Bonds. Approximately \$200 to 300 million is available each year. The CWSRF has a continuous application process and is currently accepting applications.

Additional information on the CWSRF can be found on the SWRCB's CWSRF webpage at:

http://www.swrcb.ca.gov/water_issues/programs/grants_loans/SRF/

Infrastructure State Revolving Fund (ISRF) Program

The ISRF Program is a source of low-cost, long-term infrastructure financing available to local government entities from the California Infrastructure and Economic Development Bank (I-Bank). Funds are available to finance a variety of public infrastructure projects important to California's communities. Eligible applicants include cities, counties, special districts, assessment districts, joint powers authorities and redevelopment agencies located in the State. Financing is available for amounts from \$250,000 to \$10 million per applicant per fiscal year, or up to \$20 million per jurisdiction per fiscal year. Up to 30-year financing is available at a subsidized interest rate. Funding is provided by General Fund Appropriations, ISRF Program Bonds, program loan repayments, interest earning and I-Bank fees. The I-Bank has a continuous application process which involves a preliminary application and loan application process. The typical process takes 6 months to more than a year to complete.

Additional information on the program can be found on the I-Bank webpage at:

<http://www.ibank.ca.gov>

State Specialized Funding Programs

The State also administers several specialized funding programs. Unless otherwise noted, detailed information on these programs is provided on the California Department of Water Resources (DWR) grants and loans website at www.grantsloans.water.ca.gov. The programs which are considered applicable to the City's needs for the future water supply plan are described below.

Water Recycling Funding Program

The mission of the Water Recycling Funding Program (WRFP) is to promote the beneficial use of treated municipal wastewater (water recycling) to augment fresh water supplies in California. This is accomplished by providing technical and financial assistance to agencies and other stakeholders in support of water recycling projects and research. The WRFP is administered by

the SWRCB. The WRFPP is currently accepting applications for construction loans and grants and planning grants.

Additional information on the WRFPP can be found on SWRCB's WRFPP webpage at:

http://www.swrcb.ca.gov/water_issues/programs/grants_loans/water_recycling/index.shtml

New Local Water Supply Program

Studies assessing the feasibility of implementing an eligible local water supply project may be eligible for a loan up to \$500,000 per eligible study from DWR. The feasibility study loan program has up to a five-year repayment term and the interest rate is set at the State's rate on the most recent State General Obligation bond sale.

Construction of projects such as canals, dams, reservoirs, storage tanks, well field development, facilities for storage or distribution of recycled water for reuse or desalination facilities may be eligible for a loan up to \$5 million per eligible project from DWR. The construction loan program has up to a 20-year repayment term and the interest rate is set at the State's rate on the most recent State General Obligation bond sale.

Funding for the New Local Water Supply Program is provided by Proposition 82 and applications are accepted and evaluated on a continuous basis. Eligible projects are funded on a first-come, first-served basis to the limits of available funds.

Local Groundwater Assistance Program

Projects such as groundwater data collection, modeling, monitoring and management studies, monitoring programs and installation of equipment, basin management, development of information systems, and other groundwater-related work may be eligible for a grant up to \$250,000 per eligible applicant from DWR. Funding is provided by Proposition 84.

Urban Water Use Efficiency Grant Program

DWR administers a Water Use Efficiency Grant Program to provide financial assistance in the form of grants and loans to implement cost-effective water use efficiency measures and support projects such as: research and development; feasibility studies and pilot/demonstration projects; training, educational, or public information programs; and technical assistance. The program is funded by Proposition 50.

Integrated Regional Water Management

The California Department of Water Resources is administering a grant program for Integrated Regional Water Management. The grant program is available to a group of three or more local agencies and is intended to promote and practice integrated regional water management to ensure sustainable water uses, reliable water supplies, better water quality, environmental stewardship, efficient urban development, protection of agriculture and a strong economy. Funding is provided by Proposition 50 and Proposition 84.

Proposed 2010 California Water Bond Proposition

A California Water Bond Proposition was proposed to be on the November 2010 ballot in California. The measure was known as the “Safe, Clean and Reliable Drinking Water Supply Act of 2010.” The proposed water bond proposition, if approved by voters, could have allowed the state government to borrow \$11.1 billion to overhaul the state’s water system. Specific spending proposals included in the measure are:

- \$455 million for drought relief projects, disadvantaged communities, small community wastewater treatment improvements and safe drinking water revolving fund;
- \$1.4 billion for integrated regional water management projects;
- \$2.25 billion for projects that support Delta sustainability options;
- \$3 billion for water storage projects;
- \$1.7 billion for ecosystem and watershed protection and restoration projects;
- \$1 billion for groundwater protection and cleanup; and
- \$1.25 billion for water recycling and advanced treatment technology projects.

The proposed bond proposition was pulled off the November 2010 ballot prior to the election. A similar proposition may be introduced for a future ballot.

Other Potential Funding Programs

The California Urban Water Conservation Council (CUWCC) administers funding programs, such as the Smart Rebates Program, to assist CUWCC members in implementing water conservation programs. The Smart Rebates Program, which offers a wide-ranging list of measures for conservation product and appliance rebates, is made possible with funding assistance from the State pursuant to Proposition 50 and participating water utilities.

Additional information on the Smart Rebates Program is available on the CUWCC website at:

www.cuwcc.org.

Applicability to the City’s Future Water Supply Plan Projects

As described above, there are a number of potential funding opportunities which may be available to the City to assist with financing of required infrastructure for the recommended water supply plan. Table 4-3 lists the potential funding sources and cross-matches them with the types of projects included in the City’s future water supply plan. As shown, some types of projects (e.g., groundwater projects, recycled water projects, and water conservation programs) may have several potential funding opportunities.

Table 4-3. Potential Grant and Loan Programs Opportunity Matrix

Grant/Loan Name	Surface Water Treatment Facilities	Transmission and Distribution Pipelines	Groundwater Wells	Groundwater Treatment Facilities	Groundwater Recharge Facilities	Recycled Water Treatment and Transmission and Distribution Facilities	Water Conservation Programs
FEDERAL FUNDING PROGRAMS							
American Recovery and Reinvestment Act of 2009	Not currently applicable—currently planned Metro Plan and Water Supply Plan projects are not “shovel-ready”						
WaterSMART							✓
STATE FUNDING PROGRAMS							
Safe Drinking Water State Revolving Fund	✓	✓	✓	✓	✓		
Clean Water State Revolving Fund Program						✓	
Infrastructure State Revolving Fund (ISRF) Program	✓	✓	✓	✓	✓	✓	
Water Recycling Funding Program						✓	
New Local Water Supply Feasibility Study			✓	✓	✓	✓	
New Local Water Supply Construction			✓	✓	✓	✓	
Local Groundwater Assistance			✓	✓		✓	
Urban Water Use Efficiency Grant Program							✓
Integrated Regional Water Management					✓	✓	✓
OTHER FUNDING PROGRAMS							
Smart Rebates Program							✓
CALIFORNIA WATER BOND PROPOSITION							
Safe, Clean and Reliable Drinking Water Supply Act of 2010 (pulled from November 2010 ballot)	✓	✓	✓	✓	✓	✓	✓

FUNDING RECOMMENDATIONS

Future Water System Revenue Bonds

The City should update its five-year budget plan to incorporate the estimated costs for the upcoming required infrastructure improvements (see Chapter 3) and then issue future water system revenue bonds to cover those estimated infrastructure costs.

Additional Studies

The City should consider the following next steps in securing funding for the required infrastructure improvements necessary to implement the recommended water supply plan:

- Perform a comprehensive water rate study, including evaluation of a tiered water rate structure to encourage water conservation, to evaluate the impact of the required infrastructure improvements on water rates;
- Perform a comprehensive UGM/connection fee study to evaluate the impact on the required infrastructure improvements on UGM fees; and
- Evaluate the potential for cost-sharing opportunities with other local agencies to assess if the potential cost savings outweigh the potential loss of overall control of operations and maintenance of facilities.

Pursuit of Available Grants and Loans

With regards to potentially available grants and loans, because many of the funding opportunities require infrastructure projects to be designed and ready to start construction immediately, the City is probably not currently eligible to receive such funds. However, the City should actively monitor and track potential funding opportunities and begin to research eligibility and pre-application and application requirements so that, once the Environmental Impact Report for the required infrastructure improvements (i.e., Phase 4 of this Metro Plan Update) and design documents are completed, the City can prepare and submit required pre-applications and applications to get on the various funding program priority lists to be “in line” for potential future funding opportunities.

CHAPTER 5. INSTITUTIONAL PLAN

The purpose of this chapter is to summarize major non-capital improvement (CIP) and non-operation and maintenance (O&M) actions of the Metro Plan, including identification of who is responsible for these required actions.

INSTITUTIONAL PLAN ELEMENTS

Elements of the Institutional Plan include:

- Lead agency designation,
- Owner for key CIP/O&M elements,
- Required agreements,
- Key planning and policy changes,
- New key staff required, and
- Recommended timeline.

LEAD AGENCY DESIGNATION

Organizational Structure Options

In February 2006, the City of Fresno Department of Public Utilities (DPU) entered into an informal agreement with Navigant Consulting, Inc. (NCI) to perform a high-level review of DPU's organizational structure using three different alternatives:

1. Status quo (no change)
2. Special district
3. Privatization

The final report for this initial review concluded that a special district governance structure would most benefit the community, versus either the status quo or privatization alternatives. One of the findings was that the City could not collect a franchise fee from another public agency, such as a special district, in the manner in which it collects a franchise fee from private utilities such as PG&E and others. NCI also concluded that in order to privatize the utility operations, DPU assets would have to be sold to the private company, which would yield a potentially large windfall to the General Fund, but at the expense of ratepayers who would pay for the capitalization of the acquired assets through increased rates. The last major finding of this initial review was that a special district might provide an opportunity to reduce revenue requirements, thereby leading to a potential rate reduction.

Recommended Formation of a Special District

During budget hearings in June 2006, the Mayor recommended, and the City Council approved, the formation of a Utility Rate Commission to review the financial status of DPU, and recommend a five-year utility rate plan. Another task assigned to the Utility Rate Commission was to study and make recommendations regarding the potential formation of a special district.

On August 22, 2006, Council approved an agreement with NCI to begin strategy development and a financial analysis for the potential formation of a special district. The scope of services included the following:

- Determination of Stakeholder Objectives,
- LAFCO Orientation and Strategy Meetings,
- Financial Assessment,
- Asset Valuation,
- Work with the City of Fresno Utility Rate Commission, and
- Final Report and Presentation to Mayor and City Council.

NCI's final report was submitted along with the Utility Rate Commission's final report to Council on November 14, 2006 for review. Council provided direction to continue to target a June 2008 election to allow voters to consider the formation of a Municipal Water District (MWD). With significant utility rate increases looming in the near future, the NCI report concluded that rate increases were necessary, but they also concluded that the creation of an MWD by the voters in June 2008 would have a positive side benefit to ratepayers. Such a change in governance structure from one public agency to another would require the MWD to acquire all of the DPU debt, and then retire all of the debt through a restructuring of this debt. This, in turn, could reduce the required water, solid waste and wastewater rate increases scheduled for September 2008, which would have been a very positive benefit to the utility's ratepayers. The City, through policy decisions, could choose to refinance or restructure DPU debt and also potentially lessen the scheduled rate increases. Refinancing or restructuring DPU debt would incur a multi-million dollar net present value cost to the City, whereas the MWD's restructuring of DPU's debt would generate a net present value savings.

On February 6, 2007, Council directed staff to begin the final phase of the project, which was to prepare an MWD Plan for Service to be reviewed by LAFCo. A change in organization from DPU to MWD must comply with state law. The Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000 (Act), Government Code Sections 56000 et seq., and the Municipal Water District Law of 1911, Water Code Sections 71000 et seq., provide the guidelines for the transition to an MWD.

Recommended MWD Organizational Structure

NCI's Phase II report concluded and recommended that an MWD would be the most desirable special district organization. The MWD would have five elected Board members elected by divisions as established by the County Board of Supervisors based upon a recommendation from LAFCo. An MWD Board would adopt its own ordinances, resolutions, rules, regulations, and

operating procedures sometime after the effective operational date of the MWD. The workforce and management structure would resemble the current DPU structure, and also include the Utility Billing and Collection (UB&C) Division of the City's Finance Department, which serves DPU by collecting customer payments. The chief executive officer of the MWD would be a General Manager appointed by the Board and all employees would work for the General Manager, which is similar to the City's current structure. The community would receive the same services from DPU and UB&C, but in a more focused governance structure.

Advantages of a Special District

Advantages to replacing DPU with a MWD which were identified in the City staff report to Council dated November 6, 2007 include:

1. Lower utility rates. The potential for lower future utility rates due to both lower financing and operating costs would be afforded through the creation of a special district. NCI estimated potential financing savings of up to \$138 million over a 30-year period with a net present value savings of approximately \$2.0 million. It is also correct to state that the City could similarly restructure the existing DPU debt, change existing policies, and provide approximately \$5.00 in rate relief. Restructuring or refinancing existing DPU debt would present a net present value cost, which contradicts current policy. In addition to the restructuring or refinancing of existing DPU debt, City policy would have to be amended to preclude future inter-fund charges for street tree and median island maintenance from the Enterprise Funds, and a more business-like approach to incremental rate adjustment practices would need to be adhered to for the City to provide rate relief similar to the MWD.
2. Focused utility decision-making. A single-purpose, highly-focused governing structure with the ability to develop utility expertise, and accountable to an electorate, would provide improved utility oversight and decision making. The risk of future utility rate spikes would likely be greatly reduced with the managed approach of a special district. A special district would shift responsibility and authority for complex utility rate decisions away from the broad public policy arena of the City to a more focused environment where both utility staff and management and a special district board of directors can concentrate exclusively on utility issues such as rate-setting. Additionally, the special district board members can gain the required expertise in utility issues to provide the proper oversight that is needed. The Board's attention would be focused exclusively on utility issues and not the broader community needs required of City Council.
3. Representation of all utility customers by an elected board. Approximately 20,000 utility customers residing in County islands are currently unrepresented. Formation of a special district with a board that is elected by all utility customers within its service area would provide representation for all ratepayers.

4. Service flexibility and cost savings. Increased utility service flexibility and opportunities for cost savings that are desired by ratepayers. For example, the City cannot currently use its own excess electricity generated from the wastewater plant because of PG&E restrictions. However, a special district could sell excess electricity generated from its wastewater plant to the City at reduced rates, thus saving the City on its electricity costs while generating additional revenues and lower utility rates for the district's customers.
5. Frees up City resources. Frees up time and resources for the City's elected officials and administrators to focus on the City's core services (e.g., police, fire, parks, economic development, etc.). Additionally, district formation would ease the burden on City staff and management that currently lack adequate personnel resources and allows them to provide more focused and quality services to the City's taxpayers.
6. Better able to attract more professional, highly qualified employees. A special district may provide long-term opportunities for improved employee compensation and benefits. This would make the special district more competitive in the labor market with other utilities and better able to attract needed professional, highly-qualified employees.

On November 6, 2007, the City Council considered the staff recommendation to move forward with formation of a MWD. However, the Council chose not to move forward with the formation of a MWD.

OWNER FOR KEY CIP/O&M ELEMENTS

Responsibility for ownership and O&M of the various water management elements does not rest with a single agency. Table 5-1 lists key elements of the Metro Plan and identifies the recommended lead agency for each.

Table 5-1. Recommended Lead Agency for Key Elements of Metro Plan Update

Element	Lead Agency
Drinking water system: water treatment plants, transmission and distribution system, wells, wellhead treatment, and water conservation program	City of Fresno Water Division
Groundwater recharge in storm water basins	FMFCD
Groundwater recharge in dedicated recharge basins ^(a)	City of Fresno Water Division
Recycled water treatment: RWRP, SEGA, and Copper River facilities	City of Fresno Wastewater Management Division
Recycled water distribution & sales: RWRP, SEGA, and Copper River facilities ^(b)	City of Fresno Water Division
Securing water supply: planning, monitoring, funding, and implementation ^(c)	City of Fresno Water Division
Water policy oversight, including General Plan water section “ownership”	City of Fresno Water Division

(a) To improve the functionality of groundwater recharge at storm water basins, it may be necessary to re-negotiate the agreement between the City and FMFCD, focusing on improved maintenance, preservation of basins for recharge, and reduction or recapture of spills.

(b) A distinction is made between wastewater treatment, and distribution/sales of recycled water. Wastewater treatment should continue to be handled by the Wastewater Management Division, including compliance with waste discharge requirements. The cost of treatment should be considered a cost of wastewater service.

(c) Distribution and sales of recycled water should be assigned to the Water Division. This recommendation is made based on the following considerations:

- The Water Division is responsible for providing water to customers, including achieving targeted proportions of the recommended supply mix (conservation, groundwater, surface water, and recycled water). The Water Division invoices customers for water service, and must maintain the ability to set rates which incentivize conservation and recycled water usage to meet Metro Plan and Urban Water Management Plan objectives.
- Water usage monitoring and reporting under the Urban Water Management Plan would be consolidated under the Water Division.
- If the Wastewater Management Division were to handle distribution and sales, it would be billing the same customers as Water Division, and selling a competing product, potentially impacting Water Division revenues.
- Customer service for all water service would be consolidated, minimizing public confusion.
- Recycled water distribution infrastructure, customer connections, customer service, and O&M are nearly identical to potable water infrastructure. Maintenance of construction standards, construction oversight, and O&M of the recycled water system would be easily assimilated by Water Division staff and crews. In addition, because the same staff would oversee both systems, the potential for cross connections or inadvertent connections would be minimized.
- Under the recommended model, the Water Division would be a wholesale customer of the Wastewater Management Division. The wholesale purchase price and retail sales price for the recycled water would be set to balance City priorities.

REQUIRED AGREEMENTS

Implementation of the Metro Plan will require a number of new or modified agreements. These are discussed below.

Fresno/FID Agreements

The two agreements with FID covering water supply/conveyance and wastewater recycling should be consolidated into a single agreement. In the process of renegotiation, the parties should establish the City's uses and needs as they relate to FID's other operations. This has become necessary because the City now needs FID to provide full-year service in several of its major canals. In addition, the City's Watershed Sanitary Survey includes requirements for capital and O&M improvements to the canals supplying the City's water treatment plants which will prevent or minimize the potential for contaminants entering the canals upstream of the treatment plants. Both the raw water service and wastewater recycling exchange provisions should be strengthened in keeping with the importance of a strong and sustainable water supply to the City's continued prosperity. The parties should also consider clarifying general water management authorities and monitoring responsibilities in the agreement. It is reasonable to expect that the elevated service requirements and elevated priorities may result in higher costs to the City. The City and FID will need to discuss and negotiate these issues.

Fresno/FMFCD Recharge Agreement

The FMFCD recharge agreement should be revisited to strengthen provisions for maintenance, improve preservation of the recharge function in perpetuity, and include operational improvements to minimize spills. As with the FID agreement, it is reasonable to expect that the strengthened provisions may result in higher costs to the City of Fresno. These costs will need to be evaluated by the City. It may also require additional direct capital investments by the City to construct raw water supply systems and possibly improved stormwater handling improvements.

Fresno/Fresno County/Madera County Agreement

Sustainability of the Metro Plan is predicated on an equal split of water percolated from the bed of the San Joaquin River between Fresno and Madera Counties (see Phase 2 Report Chapter 5). Some form of joint policy statement or agreement would be useful in establishing equal division of this percolated water as a mutual goal. The agreement should include monitoring of groundwater elevations on both sides of the river to verify no disproportionate gradients, along with regional groundwater modeling to verify the even split.

Fresno/Clovis Recycled Water Agreement

A new agreement is required between the two cities to address exchange of recycled water. Initially, recycled water would be sold by Clovis to Fresno, but the agreement should cover exchanges in either direction.

KEY PLANNING AND POLICY CHANGES

The 1996 Metro Plan provided a number of water management recommendations to attain sustainability. Several of these recommendations were implemented, but many were not. In addition, the City's growth rates outstripped projections substantially. Fortunately, the groundwater aquifer beneath the City has provided a safety net, and the City has not been severely impacted. This, however, cannot continue without some action to reverse the decline in groundwater levels. Not only does the City face physical impacts due to continued mining of the groundwater, it faces fiscal impacts due to pumping from deeper levels, increased groundwater contaminants, potential ineligibility for state and federal funding, and potential state and federal actions to impose water supply and/or use restrictions.

Implementation of this Metro Plan will achieve water supply sustainability. In addition to a commitment to fund and implement the Metro Plan, the City should adopt four new policies to strengthen its commitment and focus:

1. **Policy: Balance the City's groundwater budget by 2025.** This Metro Plan has been structured to achieve this goal, and it should become a City policy.
2. **Policy: New development must mitigate groundwater impacts.** New development cannot continue to mine the groundwater resource. New development should be required to fund development of new usable and sustainable supplies.
3. **Policy: Redevelopment must mitigate water system impacts.** Redevelopment which intensifies water use must mitigate water system impacts. Redevelopment of blighted or underutilized urban areas is a positive trend. However, older areas of the City tend to be served by a network of undersized and aging water infrastructure which cannot support higher intensity uses without significant improvements. These water system improvements and the additional water supplies required to meet the new higher demands should be funded as an integral part of the redevelopment project.
4. **Policy: Water Recycling.** A policy should be adopted which assigns treatment of wastewater to the Wastewater Management Division, and distribution and sales of recycled water to the Water Division. The policy should assign the cost of treatment to the wastewater enterprise fund, to the extent required to meet its Waste Discharge Permit, and treatment beyond that required to facilitate reuse to the water enterprise fund. The policy should also include a purple pipe requirement for all new developments.

In addition to new policies, the City should commit to periodic updates of its key water management planning documents:

- **Metro Plan.** This plan focuses on long-range big-picture water supply planning, with the goal of sustainability. It should be updated at 10-year intervals.
- **Urban Water Management Plan (UWMP).** This State-mandated plan focuses primarily on water conservation. It should be updated at 5-year intervals, with annual monitoring reports submitted to the State and USBR. The 2010 UWMP is due to DWR by July 1, 2011.

- **Water System Master Plan (WSMP).** A new master plan is currently being developed to focus on the City's drinking water distribution system. The WSMP is an engineering report which tiers off the Metro Plan to refine the Water Division's capital improvement program. It should be updated at 5-year intervals.
- **Recycled Water Master Plan.** A recycled water master plan is currently being prepared to coordinate the recycled water needs of the Wastewater Management and Water Divisions. It should be updated at 5-year intervals.
- **Groundwater Management Plan (GWMP).** The City participated in a Fresno Area Regional Groundwater Management Plan authored by FID in 2006. The first update of the plan should include a strengthening of the water quality management portions of the plan, and should incorporate new City policies. The City recently completed a Nitrate Management Plan, and provisions should be included in the GWMP. However, a comprehensive groundwater quality management element is needed in the GWMP to cover the full range of contaminants and natural constituents of concern. Some plumes should be pumped and treated, and others should be confined by managing groundwater gradients. The plan update should also address well protection zones. The GWMP should be updated at 10 year intervals. In addition, annual monitoring reports should be prepared.
- **Kings Basin Integrated Regional Water Management Plan (IRWMP).** Update at 10 year intervals. The City participated in an IRWMP authored by KRCD in 2007.

Regular updates of these plans will provide guidance and direction for future capital improvement planning, annual budgeting, required state and federal reporting, resource management, and adaptive management. Three of the plans are also required by the State as a condition for State funding (UWMP, GWMP, and IRWMP).

NEW STAFF REQUIRED

The Metro Plan Update and associated Water Supply Plan and the UWMP have critical features that cannot be implemented by the current staffing levels of the Water Division. Several key additions listed below are required to the Water Division staffing. Depending on workload, additional support staff may also be required beyond the positions discussed below.

- **Water Resources Manager.** This new staff position would focus on planning, obtaining and maintaining sustainable water supplies. This person must elevate the City's engagement at the state, federal, and regional levels.
- **Recycled Water Distribution & Sales Manager.** This new position would oversee implementation of the recycled water distribution and sales program, including interfacing with the Wastewater Management Division to help them plan their wholesale supply facilities.
- **Environmental Compliance Manager.** This new position would focus on groundwater management, with specific emphasis on recharge operations and groundwater quality management.

- **Metro Plan Program Management Team.** Implementation of the Metro Plan capital improvement program will require a dedicated Program/Construction Management team of 10 to 15 full-time-equivalents on a sustained basis. The magnitude and urgency of the program, and the potential for substantial financial missteps, justifies the investment. Program Management can be most efficiently accomplished with a team of 3 to 4 new full-time dedicated City positions, plus consultants to handle the variability in the workload.

IMPLEMENTATION SCHEDULE

The recommended Institutional Plan actions should be completed according to the schedule presented in Table 5-2.

Table 5-2. Institutional Plan Schedule

Action	Begin	Complete	Notes
New and Revised Agreements			
Fresno/FID Agreement	2010	2012	To be led by new Water Resources Manager; needed for new Southeast SWTF
Fresno/FMFCFD Recharge Agreement	2011	2012	To be led by new Water Resources Manager with assistance of Environmental Compliance Manager.
Fresno/Fresno County/Madera County Agreement	2010	2011	In conjunction with Metro Plan adoption
Fresno/Clovis Recycled Water Agreement	2012	2012	To be led by new Water Resources Manager with assistance of Recycled Water Distribution & Sales Manager.
New Policies			
Adopt four new water management policies	2010	2010	In conjunction with Metro Plan adoption
1. Balanced groundwater budget			
2. Development mitigation of its groundwater impacts			
3. Redevelopment mitigation of water system impacts			
4. Water recycling			
Planning Activities			
Metro Plan Update	2018	2020	Update at 10-year intervals
Urban Water Management Plan Update	2010	2011	Update at 5-year intervals (due date for 2010 UWMP is July 1, 2011)
Water System Master Plan Update	2014	2015	Update at 5-year intervals
Recycled Water Master Plan Update	2014	2015	Update at 5-year intervals
Groundwater Management Plan Update	2014	2015	Update at 10-year intervals
Kings Basin Integrated Regional Water Management Plan Update	2013	2015	Update at 10-year intervals
New Staffing Requirements			
Water Resources Manager	2010	2010	Immediate hire needed
Recycled Water Distribution & Sales Manager	2012	2012	
Environmental Compliance Manager	2011	2011	
Program Manager	2010	2010	Hire internal Program Manager to implement Metro Plan CIP
Program Management Team	2014	2014	Select consultant in conjunction with Southeast SWTF