

# Northern Nevada Water Planning Commission

## STAFF REPORT

**DATE:** April 28, 2022  
**TO:** Chairman and Members, Northern Nevada Water Planning Commission  
**FROM:** Kim Rigdon, Water Resources Program Manager  
**SUBJECT:** Report and discussion on the draft update to Chapter 10 “Issues and Action Plan” for the 2021-2040 Comprehensive Regional Water Management Plan (“RWMP”).

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### SUMMARY

The draft update of Chapter 10 “Issues and Action Plan” (the last chapter of the RWMP) summarizes regional water management issues discussed in previous chapters, outlines alternatives considered, and/or actions taken since the 2016 RWMP update and proposes actions and recommendations for future work during the 5-year planning horizon.

Chapter 10 has been significantly modified and reformatted. Historical information, prior to 2016, was omitted if not pertinent to current issues and proposed actions moving forward.

Sections 10.1 through 10.8 discuss the Truckee Meadows Water Authority (TMWA) Water Resource Plan updates, water and wastewater facilities, effluent management, and subsequent water balance discussions where applicable for each geographic planning area.

Section 10.9 “Creation of New Water Systems” did not change.

Section 10.10 “Groundwater Resource Development and Impact to Domestic Wells” was modified primarily to omit outdated information and other minor edits.

Section 10.11 “Water Conservation” was modified to omit outdated information and other minor edits.

Section 10.12 “Integrated Use of Water Rights” was rewritten to reflect current and broad planning water rights issues and competing priorities. Water imbalances in the planning area are not due to resource availability, rather issues are related to resources management and resulting impacts, including benefit allocations and costs. Additional work related to regional cooperative management strategies are outlined.

Section 10.13 “Septic Systems and Water Quality” was significantly pared down and reflects historical studies are memorialized in previous RWMP editions.

10.14 “Truckee Meadows NPDES Storm Water Discharge Permit” had minimal changes which provide support for funding applications to the Nevada Division of Environmental Protection (NDEP) for 319(h) grants for storm water and watershed projects.

10.15 “Water resources and Land Use Planning” updates were minor and included continued coordination with the Truckee Meadow Regional Planning Agency (TMRPA) to integrate water resource management with land use planning. Coordination for the TMRPA Natural Resources Plan and Public Infrastructure Investment Plan initiatives, population forecast data alignment, source water and watershed protection and regional flood facility inventory and modeling activities were included.

10.16 “Local Government Drainage Programs” include minor updates and actions to evaluate a portion of the Steamboat Irrigation Ditch through urbanized areas, and assess potential flood control outlet improvements on the Steamboat Ditch.

10.17 “Regional Flood Plain Management and Flood Control” include minor updates and continued support for TRFMA efforts to develop funding for the Flood Project.

10.18 “Water Quality Protection and Remediation” includes updates from NDEP on a new municipal well field comprised of six wells to the north of the Sparks Solvent/Fuel Site tank farm that may result in changes to local hydrodynamics when put into operation. NDEP will coordinate closely with the Central Truckee Meadows Remediation District and TMWA on further investigations in the area. In addition, NDEP is currently evaluating options to discontinue groundwater monitoring associated with the PCE Plume in Lemmon Valley due to decreasing and stable plume concentration trends.

10.19 “Source Water and Watershed Protection” discusses the completion of the regional source water and watershed planning effort, acceptance of the 2020 Integrated Source Water and 319(h) Watershed Protection Plan for Public Water Systems and the Truckee River in the Truckee Meadows (SWWP). The SWWP was accepted by the WRWC in October 2020 and approved by both NDEP and EPA in October 2021.

A draft updated chapter is attached for the NNWPC’s review and comment.

KR:jp

Attachment: RWMP Draft Chapter 10 “Issues and Action Plan”

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## Chapter 10 Issues and Action Plan

### Purpose and Scope

The following sections are summaries of regional water management issues introduced and discussed in preceding chapters. The summaries briefly discuss work that has been performed in response to the issues, identify alternatives if developed, and present work activities in response to ongoing and newly identified issues. Proposed Action Items are recommendations for future work intended to guide the focus and activities of the Western Regional Water Commission (“WRWC”) and the Northern Nevada Water Planning Commission (“NNWPC”) for the next five years.

### Introduction

Regional water planning considers changing conditions and uncertainty that may occur due to fluctuations in the economy, funding sources for major infrastructure, population growth trends, the legal and regulatory environment, and climate projections. Recommendations for future work, and the priority of those recommendations, recognize unforeseen conditions that may require re-working and refining priorities in the future.

The following summaries present Specific Issues and Linkages, Alternatives Evaluated to Address the Issues, and Proposed Action items for planning topics and are organized, as appropriate, by geographic area. Key discussion points are identified and briefly discussed. Work that has been performed in the past five years in response to the issues is also summarized and follow up activities are proposed.

The NNWPC acknowledges that new information may result in the need to add or change the emphasis of Proposed Action Items, or eliminate them altogether, as may be appropriate from time to time.

### 10.1 Truckee Meadows Water Authority, 2020-2040 Water Resource Plan

#### Specific Issues and Linkages

The Truckee Meadows Water Authority (“TMWA”) adopted its 2020-2040 Water Resource Plan (“2040 WRP”) in October 2020. Key events that have occurred or been completed over the past five years include:

- Since the implementation of the Truckee River Operating Agreement (TROA) in 2015, TMWA has been successfully operating under TROA to store credit water to improve total upstream drought storage for the Truckee Meadows.
- Construction of the Mt. Rose Water Treatment Plant in the south Truckee Meadows was completed to increase the sustainability of the groundwater aquifer that provides water to customers in that area. The plant came online in March 2022.

- TMWA purchased the West Reno Water Company system in Verdi in 2019.
- TMWA’s 20-year water demand projection estimates that water demand will increase 14% from approximately 83,000 acre-feet (“af”) in 2020 to 96,000 af in 2040. Over the last 20 years TMWA’s per capita water use has decreased by approximately 30%. Annual water demand can vary slightly from year to year, driven primarily by seasonal weather patterns, such as hot, dry summers or cool, wet springs. Due to variability in weather patterns, the future water demand may be approximately 3% higher on an annual basis than projected, resulting in an estimated demand of nearly 99,000 af in 2040. The 2040 projected water demand is well within the 119,000-acre feet annually (“afa”) under TROA operations.

Linkages: Water rights balance with TROA implementation and wastewater effluent reuse.

### Alternatives Evaluated to Address the Issues

The adopted 2040 WRP presents Recommended Actions. These Recommended Actions are not reiterated within this Plan; however, several of the significant recommendations are summarized below. (Note: for further detail on these recommendations, see Chapter 7 of the 2040 WRP).

Future Water Demand -- Climate Change Impacts: Continue to consider new findings from climate change research for the greater Truckee Meadows region and continue working with the University of Nevada, Reno (“UNR”), Desert Research Institute (“DRI”), and other researchers to evaluate the effects of climate change on TMWA’s sources of supply and regional hydrology.

Conjunctive Use of Water Resources: Continue to rely on TMWA’s pool of resources to meet current demand, acquire additional water rights to meet future demand, and recognize that TROA provides additional drought-year reserves. Continue to monitor TMWA’s ability to meet current and future demand by modeling the 1987–1994 drought period and include factors such as increased future demand, conservation improvement, hydrologic cycles, climate change, and additional water resources. Analyze management strategies under TROA to ensure that the community is receiving the maximum benefits from the agreement.

Source Water Contamination: Continue to work with the Nevada Department of Environmental Protection (“NDEP”) to implement the Integrated Source Water Protection Plan for Washoe County to preserve and enhance available water supplies and address known and potential threats to water quality. Continue to work with the Central Truckee Meadows Remediation District (“CTMRD”) to address perchloroethylene (“PCE”) contamination. Work to find solutions in other areas with water quality issues, such as nitrate contamination in Spanish Springs Valley.

Groundwater Management: Continue to: (1) use TMWA’s wells to meet demand while maintaining the sustainability of the aquifers and (2) maintain or improve water levels through passive and active groundwater recharge.

Aquifer Storage and Recovery (ASR): Continue and expand the injection of treated surface water into groundwater aquifers to: (1) augment groundwater supplies which provide additional drought and peak-demand capacity; (2) reduce water quality concerns in specific areas; and (3) maintain and improve groundwater levels. Increase ASR with the goal of recharging 9,000 afa in the future.

Water Rights Availability: Continue to accept the dedication of Truckee River water rights in the growth-prone Truckee Meadows, Spanish Springs, and west Pleasant Valley. Recognize Fish Springs Ranch is available to meet future demand in the North Valleys. Continue to acquire water rights to meet future water demand and maintain an inventory of water rights for future growth, pursuant to Rule 7.

Coordination with OneWater Nevada: Remain actively engaged in a leadership role of OneWater Nevada in evaluating the feasibility of using advanced purified water to enhance water resource sustainability, drought resiliency, and efficient use of the local water resources in the region.

Water Conservation: Continue to implement, and revise as needed, TMWA’s Drought Contingency Plan to promote smart and efficient use of the community’s water resources in compliance with all federal and state regulations.

Future Water Resources: Continue to investigate and evaluate potential future water supply projects consistent with and in addition to TROA to further increase the region’s water security.

### **Proposed Action Items**

10.1.A Drought Standard – The NNWPC recommends the use of the Eight-Year Drought Cycle, from 1987 to 1994 for consistency with TROA and TMWA planning, and review as necessary during the next update of this Plan.

10.1.B Water Supply Development – Continue to investigate sustainable water supply projects that are socially, economically, and environmentally feasible and that can be implemented to ensure water supplies are available, as future demands require.

10.1.C Integrate 2040 WRP into the 2021 Regional Water Plan.

## 10.2 Central Truckee Meadows

### Specific Issues and Linkages

TMWRF provides centralized wastewater treatment for most of the community, including development in the central Truckee Meadows and portions of adjoining basins. To meet National Pollutant Discharge Elimination System (“NPDES”) permit requirements for discharge to the Truckee River, TMWRF must achieve balance between treatment process improvements, reclaimed water needs and water rights requirements, Truckee River water quality, and various other inter-related, regional water management objectives.

TMWRF has a permitted capacity of 44 MGD with a maximum allowable Truckee River discharge of 40 MGD. The facility is currently treating approximately 29 MGD. Additional facilities will be required to adequately treat flows up to the permitted 44 MGD. A facility plan was completed in 2020 that delineated the needs of the facility. Some notable components of the plan are:

- Additional nitrogen treatment will be necessary when the discharge to the Truckee River reaches 35 MGD.
- Treatment for total dissolved solids will be necessary when the Truckee River discharge reaches approximately 36 MGD and includes a membrane system and a brine management system.
- The dewatering facility is currently (2022) at capacity. An evaluation to identify necessary improvements is underway. Once completed, the dewatering facility will continue to serve both TMWRF and RSWRF up to their permitted capacities.
- The facility will require additional electrical power from NV Energy, with a second power station for new facilities.
- Additional aeration capacity will be needed at approximately 34 MGD. TMWRF is testing aerobic granular sludge processes to determine its suitability for the facility. This process may be preferred over the traditional aeration train currently in use due to the smaller footprint and lower energy demand.

TMWRF operates a recycled water system to divert effluent from the Truckee River to irrigation of crops, turf grasses and other beneficial uses. This has the effect of lowering the nutrient loading to the Truckee River. However, because most surface water utilized by the water utility has a return flow requirement, the water diverted to the recycled water system must either be derived from groundwater or covered by surface water rights dedicated to in-stream flow to keep the river whole.

Currently, TMWRF diverts approximately 4500 af of water to the recycled water system. A pipeline to the Tahoe-Reno Industrial Center (TRI Center) is currently under construction and expected to begin delivery of recycled water in early 2023. TRI-Center will take up to 4000 af of recycled water annually for use as process water, cooling water or other approved uses.

Following are the key issues concerning TMWRF. Chapters 4 and 7 include more extensive discussions of these issues. Chapter 5 also includes further information on watershed management programs aimed at protecting water quality.

- Constraints on discharge to the Truckee River due to NPDES discharge permit requirements related to nutrient and total dissolved solids (“TDS”) water quality standards and total maximum daily loads (“TMDLs”) for the Truckee River.
- Truckee River water rights dedications to meet return flow requirements may be needed for the possible future expansion of reclaimed water use, such as irrigation, year-round industrial use of reclaimed water possibly outside the TMSA, groundwater recharge and/or indirect potable reuse. Water rights dedications are also necessary to maintain Truckee River in-stream flows and improve water quality, and for many other purposes. Section 10.12 addresses the integrated use of water rights.

### Alternatives Evaluated to Address the Issues

#### *TMDL Compliance*

Total Nitrogen discharge to the Truckee River remains the most limiting discharge requirement for TMWRF, and compliance with TDS TMDL is challenging for the facility. The UNR conducted research on removing the dissolved organic nitrogen (DON) fraction from the treatment plant effluent in 2019. This study tested various treatment process for DON removal and identified coagulation and precipitation utilizing Alum as the most suitable. Additional nitrogen treatment will be needed when the Truckee River discharge reaches 34 MGD, and the need for additional TDS treatment will be reached at 35 MGD. If a membrane system is constructed for TDS removal, the nitrogen specific treatment will not be constructed because the membrane will remove adequate amounts of DON to allow for TMDL compliance. Compliance with the Total Phosphorus TMDL is not expected to be an issue for the permitted plant capacity.

#### *Near-Term Effluent Management Strategy Development*

The near-term effluent management issues focus on reducing the nitrogen load to the Truckee River through maximizing the use of TMWRF reclaimed water. Various locations away from the river are being identified for reclaimed water use in allowable quantities, and during appropriate times of the year. This strategy requires maintaining a balance with Truckee River flows consistent with State water law and TROA. TMWRF staff are working cooperatively with regional partners to identify suitable recycled water projects which support compliance with the three TMDLs. Currently, an evaluation of an agricultural site in Palomino Valley (see Section 10.6) is underway to determine the suitability of switching to recycled water irrigation.



The 2020 TMWRF Facility Plan serves as a framework for necessary capital improvements to the facility for it to remain functional and in compliance into the future. Other planning documents, prepared earlier, may also serve to inform regional wastewater management decisions. Those include: the *City of Reno and Washoe County TMSA/FSA Water, Wastewater and Flood Management Facility Plan* (ECO:LOGIC, 2007a), the *City of Sparks Conceptual Facility Master Plan* (Stantec, 2008), and the *2019 Truckee Meadows Regional Plan*, prepared and updated by the Truckee Meadows Regional Planning Agency.

### **Proposed Action Items**

10.2.A Continue development of near-term regional strategies to manage effluent, and reduce nitrogen and TDS loading to the Truckee River, which may include additional treatment, expanded distribution of recycled water within or outside the TMSA, and expanded uses such as aquifer recharge and indirect potable reuse.

10.2.B Pursue connection of additional recycled water users to the existing systems in Sparks, Reno and Washoe County consistent with regional water quality and water rights considerations and continue investigating the feasibility of expanded uses of reclaimed water, such as the Palomino Valley and Warm Springs area.

10.2.C Continue evaluating the merits of regional integrated solutions among TMWRF, RSWRF and STMWRF for wastewater treatment and effluent reuse and disposal.

### **10.3 South Truckee Meadows**

#### **Water and Wastewater**

TMWA is the public water purveyor for the South Truckee Meadows service area. Numerous facilities are used to produce water for TMWA customers. Most recently the construction of the Mt. Rose Water Treatment Plant (MRTP) was completed and will treat whites Creek water to supplement groundwater supplies on the Mt. Rose Fan and will produce up to 4 MGD when creek flows are available. Additionally, the MRTP allows for active recharge into the aquifer to improve water resource sustainability in the area and allow for groundwater level recovery.

STMWRF provides wastewater service primarily for the Double Diamond and Damonte Ranch areas of Reno, and unincorporated Washoe County including the Virginia Foothills and the Mt. Rose fan. STMWRF relies exclusively on effluent reuse for disposal of the treated wastewater.

#### Specific Issues and Linkages

The STMWRF Facility Plan (ECO:LOGIC, 2002a) provides a comprehensive water supply plan for build-out of the planning area, which encompasses an area stretching from just north of Double Diamond Ranch south to Pleasant Valley, east to the Virginia Foothills and west to Galena Forest.

The major goals of the Facility Plan were to:

- Utilize the creek resources to their highest and best beneficial uses, and balance beneficial municipal and industrial (“M&I”) uses with in-stream flow requirements for recharge, wildlife, riparian habitat, aesthetics, and quality of life; and
- Promote conjunctive use, maintain sustainable groundwater levels, and expand reclaimed water service to maximize the efficient use of water resources and facilities.

As development continues, a corresponding increase in wastewater and need for reuse customers must occur to ensure a balance of inflow, storage, and reclaimed water distribution.

STMWRF is currently permitted for 4.1 MGD (30-day average influent flow). STMWRF average annual daily flow (AADF) is 3.6 MGD. STMWRF’s NPDES discharge permit is being renewed as part the 2040 Expansion Project. The 2040 projected 30-Day average flow rate and the peak daily flows are 6.13 MGD and 9.42 MGD respectively.

During the irrigation season, STMWRF distributes approximately 2,800 afa (2.5 MGD) of reclaimed water to summertime reuse customers (golf courses, parks, homeowner’s associations, etc.). Reuse ratepayers offset costs for pumping and system maintenance. Over the next five years, additional reuse customers must be added to accommodate growth and resulting reclaimed water disposal needs. Long term effluent reuse options need to be developed for year-round sustainability.

In addition, the Double Diamond and Damonte Ranch areas of Reno have engineered storm and surface water drainage. Storm sewers drain to retention basins; however, much of the STMWRF wastewater collection system is below the valley floor groundwater table. This translates into appreciable inflow and infiltration (I&I) into the STMWRF sewer system. In addition to the increasing influent volume, certain areas of the local groundwater have poor water quality (primarily elevated boron and arsenic levels). Over the past five years, WCCSD conducted numerous WQ surveys, identified pockets in the collection system with excessive I&I related to poor WQ and have sealed/lined many of the troublesome locations within the collection system piping. Sealing collection piping is costly but can be the most effective way to improve treated effluent WQ.

#### Alternatives Evaluated to Address Issues

TMWA has implemented an over \$30 million conjunctive-use plan for the Mt. Rose/Galena Fan area, consisting of multiple projects which provide the ability to deliver treated surface water from Whites Creek and the Truckee River to the area. TMWA has reduced groundwater pumping by 30-40%, and regional groundwater levels have started to recover since 2015. In the past five years:

- TMWA completed the construction of the 4 MGD Mt. Rose Water Treatment Plant.

- TMWA constructed ASR facilities for the Arrowcreek 2, Tessa West, and STMGID 11 wells.
- Pump station and pipeline improvements were made to allow maximum day delivery of Truckee River water to the former STMGID West service area.
- Washoe County completed the lining of Huffaker Reservoir to conserve reclaimed water for irrigation.

A 20-year facility plan for STMWRF was completed in 2016 by Carollo Engineers and updated by Jacobs in 2020. WCCSD maintains a detailed capital improvement plan identifying sanitary sewer interceptor and wastewater treatment improvements needed for repair and replacement, upgrades due to meet permit compliance, and additional capacity for anticipated growth.

In 2020 SB Engineering completed a 2050 Water Reclamation Distribution Facility Plan which identified numerous sites for potential near and long-term reclaimed water use. WCCSD continues to explore the potential of these sites as future reuse customers.

The Regional Effluent Management Team (REMT), discussed briefly in Chapter 4, continues to develop regional strategies to address near-term and longer-range effluent management strategies in the Planning Area.

WCCSD continues to plan for the expansion of the STMWRF reclaim system and identify customers or effluent users to simplify the seasonal management of the Huffaker reservoir. Longer-term solutions include redundancy in disposal options. The most critical issue is identifying and building new effluent management capacity.

### **Proposed Action Items**

10.3.A Support TMWA's efforts to expand conjunctive use in the South Truckee Meadows service area.

10.3.B Continue to support STMWRF, TMWRF and TMWA efforts to evaluate regional effluent management alternatives, such as an intertie between reclaimed water distribution systems, to promote expanded and resilient reclaimed water operations, and potentially more efficient return flow water rights management.

10.3.C Support STMWRF improvement and expansion efforts to increase treatment capacity, meet NPDES permit requirements, expand the reclaimed water infrastructure, and prioritize projects that remove reliance on Truckee River water.

10.3.E Continue to support STMWRF reclaim water projects that meet existing water quality goals that are "fit for purpose."

10.3.D Continue to maintain active MOUs, agreements, and administrative communication related to regional wastewater management.

10.3.F Evaluate the need for redundancy in the STMWRF treatment and reuse system. Consider examining the customer rates associated with reuse water service.

#### **10.4 Stead/Lemmon Valley**

##### Water and Wastewater

Municipal water supplies are fully developed (local groundwater, imported Truckee River water, and imported Fish Springs Ranch groundwater) and TMWA has installed the infrastructure necessary to distribute these water supplies throughout the valley. TMWA has also developed plans for water facilities to supply Fish Springs water to Cold Springs Valley to the west.

There are two wastewater facilities in Lemmon Valley, RSWRF and LVWRF. RSWRF is in Stead and is owned and operated by the City of Reno. The plant effluent either discharges by gravity to Swan Creek, which drains to the Swan Lake wetlands, is reclaimed and pumped to several sites within the community for turf irrigation or is used for industrial purposes (such as on-site truck fill station).

Washoe County owns and operates the LVWRF. It is a secondary treatment plant that has a permitted capacity of 0.3 MGD, with disposal by onsite evaporation ponds. The facility does not have an effluent reuse program.

##### Specific Issues and Linkages

Lemmon Valley consists of two closed hydrographic basins. The West Lemmon Valley basin drains to the Silver Lake Playa and the East Lemmon Valley Basin drains to the Swan Lake playa. Both Lemmon Valley West and East are closed hydrographic basins influenced by the cumulative impacts of water importation, stormwater runoff, and for Swan Lake wastewater disposal.

In addition, the Swan Lake Playa is a wetland habitat that relies on effluent flows from RSWRF to maintain habitat critical to birds and aquatic species. However, discharge to Swan Lake must be limited to manage the flood risk to nearby housing communities. Reclaimed water is discharged to Swan Lake Playa or diverted to an upstream storage tank for irrigation reuse.

Reno is continuing to pursue only modest expansions to the existing seasonal reuse at RSWRF. These include expanded Mayor's Park recycled water, service to the Washoe County School District at O'Brien Middle School, and The Lakes Apartment Complex.

Other efforts currently underway (or completed) are the American Flat Advanced Purified Water Facility at American Flat 2, a flow shave project that allows the city to "shave" raw influent to TMWRF (up to 0.5 MGD) which then results in less discharge to Swan Lake (as an interim measure), and the City built a pump station at Swan Lake and transition line to American Flat, which pumped water from the lake to the American Flat Farm from

June 2019 through Mar 2021. The City is also looking to secure a large 3rd party recycled water customer that could provide independent storage.

Reno is presently expanding RSWRF treatment capacity to 4 MGD. Construction is anticipated to be completed by the end of 2022. The new capacity of the plant will only become available as additional effluent management projects come online to manage effluent beyond 2.0 MGD in tandem with the increased treatment capacity.

Reno is also concurrently developing additional RSWRF effluent management capacity. New treatment capacity coupled with additional effluent management strategies will increase RSWRF's permitted capacity to serve expected residential and commercial growth in the Reno-Stead/Lemmon Valley area.

In 2020 the City of Reno and WCCSD completed a joint wastewater and effluent management facility plan for the Reno-Stead and Lemmon Valley sanitary sewer service areas. Decommissioning LVWRF and solely utilizing RSWRF to treat all sanitary sewer flows in the future is the preferred alternative and will be implemented by 2025.

Sustainable reuse or disposal of reclaimed water is needed to serve the long-term development potential of the area and mitigate impacts to Swan Lake during wet years.

#### Alternatives Evaluated to Address the Issues

- The City of Reno implemented the American Flat Farm irrigation project using water from Swan Lake to reduce flooding.
- RSWRF is currently being expanded from 2.0 MGD to 4.0 MGD capacity. Construction is slated for completion by the end of 2022. The new capacity of the plant will only become available as additional effluent management projects come online to manage effluent beyond 2.0 MGD in tandem with the increased treatment capacity.
- TMWA, the City of Reno and Washoe County are working with technical support from the Nevada Water Innovation Institute and completed a multi-year \$10 million successful pilot testing of treatment and recharge of Category A+ Reclaimed Water, summarized in the RSWRF Advanced Purified Water Demonstration Study.
- A Basis of Design Report was completed for the RSWRF American Flat Aquifer Storage and Recovery Project. The report identifies the preferred alternative, which is the construction of an Advanced Purified Water Facility adjacent to the RSWRF, with a pump station and transmission line which will deliver Advanced Purified Water to the American Flat site, where it will receive a polishing treatment step, prior to injection into the aquifer. The project will allow for 1-2 MGD of advanced purified water production and is currently estimated to cost approx. \$115 million. The water will later be extracted from the aquifer for many potential uses.
- TMWA and Reno entered into an inter-local agreement to proceed with the 30% design of the 2 MGD American Flat Advanced Water Purification Project.

## Proposed Action Items

10.4.A RSWRF is currently being expanded from 2.0 MGD AAF to 4.0 MGD AAF capacity. Construction is slated for completion by the end of 2022. The new capacity of the plant will only become available as additional effluent management projects come online to manage effluent beyond 2.0 MGD in tandem with the increased treatment capacity.

10.4.B Support Washoe County in the development of a long-term flood mitigation strategy for Swan Lake.

10.4.C Subject to necessary approvals and funding, support the design and construction of the \$115 million 2 MGD American Flat Advanced Water Purification Project

10.4.D Support the development of a plan and a timeline for decommissioning the LVWRF and redirecting wastewater flows to the RSWRF while maintaining and improving Lemmon Valley Pond habitat benefits and regional effluent management capacity.

10.4.E Continue to support the REMT efforts to evaluate regional integrated solutions between RSWRF and CSWRF for wastewater treatment and effluent reuse and disposal, including funding considerations.

## 10.5 Cold Springs

### Water and Wastewater

TMWA will meet the demand for potable water supplies in Cold Springs using a combination of local groundwater resources, augmented with imported water supplies, such as the Fish Springs water importation project. TMWA has developed plans for water facilities to supply Fish Springs water to Cold Springs Valley.

WCCSD owns and operates CSWRF a secondary treatment facility which currently disposes of all wastewater using RIBs. The facility currently serves 2,523 homes, and the annual average daily influent flow is 0.385 MGD. CSWRF's current permitted capacity is 0.70 MGD.

### Specific Issues and Linkages

Importation of a new water supply into the Cold Springs hydrographic basin for new development would result in the generation of additional effluent and storm water run-off volume in this closed basin

Proposed development in Cold Springs will increase the amount of wastewater and the volume of water that is recharged at the RIBs. In addition to assessing the water quantity (water balance), a water quality analysis will evaluate the potential for nutrient loading and/or mitigation in the vadose zone or underlying aquifers.

Because the Cold Springs basin is a closed hydrographic basin, the cumulative impacts of water importation, wastewater generation, disposal and reuse, and stormwater runoff resulting from future development will require a special water balance analysis.

The primary goal of the water balance model is to quantify the major components of the water budget in the basin, determine the baseline or current state of the water balance, and assess how future proposed development may change the water budget. Essentially, the model looks at all the hydrologic inputs and myriad changes resulting from development such as a new water supply being imported, secondary recharge from turf irrigation, wastewater generation, CSWRF rapid infiltration basin (RIB) capacity, new impervious coverage from development, stormwater detention basins, reduction of evapotranspiration areas with new development, and the flood impact to playas (Whites Lake).

The water balance model will inform water allocation decisions, wastewater effluent disposal and reuse scenarios, and flood mitigation strategies. The REMT is currently evaluating multiple facility specific versus regional planning alternatives for wastewater management and effluent reuse in the Cold Springs hydrographic basin, including developing a reclaimed water system versus wastewater flow shaving to RSWRF, surface discharge to Long Valley Creek, and possible participation in Red Rock Reservoir. The Cold Springs Water Balance Analysis should accommodate whatever effluent management solution alternative that may be selected.

Nitrate contamination of groundwater has been observed in areas with high densities of septic tanks. Continued installation of septic tanks in this hydrographic basin should be monitored closely.

#### Alternatives Evaluated to Address the Issues

- New development in Cold Springs is designed to minimize water consumption to extend the available water resources as far as possible.
- The NNWPC continues to prioritize and support the development of a Cold Springs Water Balance Analysis.

#### **Proposed Action Items**

10.5.A Support the Cold Springs Valley Water Balance Analysis to determine the cumulative impacts of water importation, wastewater disposal and stormwater runoff resulting from future development.

10.5.B Support the CSWRF Rapid Infiltration Basin Analysis to determine the current infiltration capacity of the RIBs, the facility's ability to dispose of the proposed additional effluent and the response of the hydrogeologic system with additional recharge, an

analysis of ground water quality impacts, and assessment for the potential to extract groundwater at the RIB facility for effluent reuse.

10.5.C Continue to support the REMT efforts to evaluate regional integrated solutions between RSWRF and CSWRF for wastewater treatment and effluent reuse and disposal, including funding considerations.

## **10.6 Spanish Springs**

### **Water and Wastewater**

Spanish Springs Valley includes water service areas within the jurisdictions of Sparks and Washoe County. Demands are served by TMWA from a combination of Truckee River water, Truckee Meadows groundwater and Spanish Springs groundwater pumped from TMWA wells managed as part of TMWA's overall water resource management plan. TMWA began aquifer storage and recovery operations in Spanish Springs in 2008.

Sparks provides wastewater service to its customers in Spanish Springs and conveys flows to TMWRF. WCCSD provides wastewater service in un-incorporated areas of Spanish Springs where wastewater flows are conveyed to Sparks' collection system for treatment at TMWRF. Spanish Springs was historically developed with high density septic systems.

### Specific Issues and Linkages

Use of groundwater resources in Spanish Springs has resulted in a situation where water rights and cumulative groundwater pumping by all entities exceeded the perennial yield of groundwater resources. TMWA has instituted a policy of limited new groundwater rights dedications for will-serve commitments until a regional water management solution (water quantity and quality) is implemented.

WCCSD has identified areas of water quality degradation resulting from septic system effluent occurring predominantly in areas with high-density development. Affected areas also have shallow depths to ground water, permeable soil conditions, and proximity to sensitive receptors, such as water supply wells. In Spanish Springs Valley, fifteen years of groundwater quality monitoring have shown increasing levels of nitrate contamination in municipal wells.

Nitrate contamination of groundwater is due to septic tank density and natural nitrate mobilization due to turf irrigation secondary recharge. Several Desert Springs wells (west side) are off-line or limited due to high levels of nitrate.

### Alternatives Evaluated to Address the Issues

Coordination of stakeholders within the basin is key to the success of a long-term groundwater management strategy. Alternatives considered and actions over the past five years include:



- In 2018, TMWA completed a novel biological pilot water treatment study for removal of nitrate and arsenic from groundwater. The pilot study was successful, and expensive. Costs would primarily be borne by existing customers.
- TMWA is implementing an expanded ASR program on the east side of Spanish Springs Valley. Water levels have recovered on the west side due to limited pumping. ASR is not currently feasible on the west side of the valley due to nitrate concerns. Additional hydrogeologic and water quality investigations and modeling are needed prior to recharge on the west side.
- OneWater Nevada initiated the *Palomino Farms Sustainability Water Resource Feasibility Study* as a part of a regional effort to optimize and expand available water resources. The study is focused on determining the viability of ASR in the Palomino Farms and Warm Springs area and utilizing recycled water for agricultural irrigation to reduce the demand on groundwater pumping.

### **Proposed Action Items**

10.6.A Continue implementing phased conversion of areas with high densities of septic tanks to community sewer system as funding is made available.

10.6.B Continue to support TMWA's efforts to expand ASR in Spanish Springs Valley; support hydrogeologic and water quality investigations, and additional modeling on the west side.

10.6.C Support TMWA in the evaluation of options and timing for nitrate treatment of Desert Springs (west side) wells.

10.6.D Continue to support effluent reuse at Palomino Farms, if feasible and cost effective, since this alternative may provide additional sewer capacity solutions for TMWRF.

## **10.7 Tracy Segment (Lower Truckee River)**

### **Water and Wastewater**

Industrially zoned lands in both Washoe and Storey County are concentrated in the Mustang, Patrick/Tracy, and USA Parkway areas. In Washoe County, TMWA operates the East Truckee Canyon water system which serves a commercial/industrial area near Mustang along Interstate 80. TMWA also operates the Stampmill water system approximately 1.5 miles west of Wadsworth which serves a small 45-unit residential development. The Reno Technology Park Water Company operates two large wells and currently serves one large industrial customer (Apple data center) east of Reno near Tracy.

### **Specific Issues and Linkages**

In Storey County, the TRI Center encompasses a developable 30,000-acre industrial complex with pre-approved industrial and manufacturing uses. Water service is provided by the TRI General Improvement District (TRIGID). Once built out, TRI Center expects to have 10,000 afa of non-potable demand and approximately 2,300 afa or more of potable demand. The Cities of Reno and Sparks have agreed to deliver up to 4,000 afa of TMWRF's reclaimed water to the TRIGID for resale to customers in TRI Center. TMWA oversees the management of water rights and water resources under the Return Flow Management Agreement to ensure that return flow obligations are satisfied.

Linkages: Water rights, reclaimed water usage, return flow and TMWRF's near-term effluent management strategy development.

### Alternatives Evaluated to Address the Issues

Water resources and facility planning for industrial development along the lower Truckee River will require continued evaluation of complex water rights, facility, and reclaimed water availability issues.

### **Proposed Action Items**

10.7.1.A Continue to support TRIGID to complete construction of the reclaimed water infrastructure to deliver water from TMWRF to TRIGID.

10.7.1.B Support joint water resource and facility planning with TRIGID and potentially Storey County may provide more efficient water resource utilization, reduce overall costs and infrastructure requirements.

10.7.1.C Coordination with TRI Center and Storey County regarding future potential demands for the entire Tracy Segment hydrographic basin.

## **10.8 Truckee Canyon (Verdi)**

### Specific Issues and Linkages

TMWA purchased the West Reno Water Company in Verdi in 2019 due the expansion to service new residential and commercial development in that area. Prior to TMWA acquiring West Reno Water Company, the Verdi area relied solely on groundwater. With the increased development in the region, there were concerns about the reliability and sustainability of the existing smaller water system and potential impacts to domestic wells. The acquisition of the system has allowed integration with TMWA's system.

### **Alternatives Evaluated to Address the Issues**

TMWA has developed a long-range water facility plan for providing service to the Verdi area. The facility plan contemplates assimilation of several small private water systems with the addition of a series of pump stations, pipelines, and tanks as presented in Table 10-1. Soon, water supply to the Verdi area will follow TMWA's conjunctive use operating

strategy, with baseload demands supplied from TMWA’s existing surface water treatment plants, and summertime peaking capacity provided by the Boomtown wells.

**Table 10-1 Verdi Backbone Water Facility Requirements**

	<b>Dia. (inches)</b>	<b>Length (feet)</b>	<b>Total Cost</b>
Previous Expenditures			\$5,413,000
Anselmo Pump Station & Main			\$2,960,000
24" W. 4 <sup>th</sup> St. Main	24	6300	3,780,000
16" Mogul Parallel Mains	16	6100	\$2,440,000
	20	500	\$250,000
Verdi #1 Pump Station			\$2,200,000
Verdi #1 PS Discharge Mains	18	7640	\$3,438,000
US 40 Tanks & Feeder Main	20	2100	3,614,000
Lower Verdi Tank & Feeder Main	18	4400	\$3,780,000
			<b>\$27,875,000</b>

Facility cost estimates do not include interest carrying charges that have yet to be determined.

## Proposed Action Items

10.8.A. Coordinate with public and private water purveyors and developers regarding water resources, existing commitments, and future potential demands for the Truckee Canyon hydrographic basin.

## 10.9 Creation of New Water Systems

After consolidation of Washoe County’s water utility into TMWA, Washoe County revised Article 422, which now allows for the creation of new, privately owned water utilities within unincorporated Washoe County. Policy 1.2.h addresses Washoe County’s revised development code, requiring a development/property owner to comply with TMWA or other applicable regulatory requirements and standards for infrastructure and to ensure adequate water supply. In addition, there are approximately 750 public water systems in Washoe County, many of which are single-well systems typically serving developments such as a small number of commercial buildings or a mobile home park. Most of these systems exist within municipal boundaries and are not subject to Article 422. From time to time, TMWA has discussions with owners of these kinds of systems about possible expansion, acquisition, or service from TMWA.

### Alternatives Evaluated to Address the Issues

Prior to acquisition or providing service, TMWA typically requires systems to be improved to its standards, in part to avoid placing the cost of acquisition or service on existing

customers. New systems, or those proposing to expand, would likely be regulated by the Nevada Public Utilities Commission, which would allow TMWA to participate in proceedings. When new systems or expansions are proposed, regional consistency throughout TMWA's possible future service area (i.e., hydrographic basins where TMWA has facilities) would ensure standardized facilities in case of eventual requests for service or acquisition.

In TMWA's 2040 WRP, a Recommended Action is to encourage local jurisdictions to analyze all conforming regional master plans to determine what growth pressures may be placed on existing small water systems and identify which water utilities could be integrated into TMWA in the future, especially in growth-prone areas. When small water systems approach TMWA, TMWA should perform its due diligence to assess the resource benefits, financial impacts, and technical challenges of each system prior to considering acquisition. When applicable, other options besides acquisition may be more appropriate to assist small water systems by other means (e.g., providing a wholesale meter to a small system).

### **10.10 Groundwater Resource Development and Impact to Domestic Wells**

#### Specific Issues and Linkages

- Multiple domestic wells failed within the planning area (South Truckee Meadows) because of declining water levels on the Mt. Rose Fan.
- Several factors can affect domestic wells including drought conditions and the natural variability of annual aquifer recharge, domestic well density, hydrogeologic conditions such as fractured rock aquifers having poor yields, inadequate aquifer penetration at initial construction, age, and condition of the domestic well, and municipal groundwater pumping.
- Converting properties with domestic wells to municipal water supply is costly.
- Uncertainty and disagreement commonly exist regarding responsibility for resolving water supply issues in areas where municipal production wells co-exist with domestic wells.
- State water law recognizes the importance of domestic wells as appurtenances to private homes and creates a "protectable interest" to protect their water supply from unreasonable adverse effects caused by municipal, quasi-municipal or industrial uses which cannot be reasonably mitigated (Nevada Revised Statutes ["NRS"] 533.024.2(b)).
- State water law allows the State Engineer to prohibit the drilling of domestic wells in areas where water can be furnished by an entity such as a water district or a municipality presently engaged in furnishing water to the inhabitants thereof (NRS 434.120.3(d)).

Linkages: Conjunctive use of surface water and groundwater resources.

### Alternatives Evaluated to Address the Issues

- TMWA provides opportunities for domestic well owners to deepen their existing wells or connect to the existing municipal water system in the Mt Rose Fan Domestic Well Mitigation Program area.
- As part of a sustainability strategy, TMWA has implemented passive recharge and conjunctive use which has resulted in stabilizing/increasing water levels across the Mt. Rose Fan over the previous seven years.
- TMWA will continue to expand and refine its conjunctive use and sustainability strategies in South Truckee Meadows which will include utilizing surface water from Whites Creek through the Mt. Rose Water Treatment Plant.

### **Proposed Action Items**

10.10.A. Support TMWA's groundwater sustainability strategies on the Mt. Rose Fan to continue to mitigate future groundwater level declines and potential impacts to domestic wells.

### **10.11 Water Conservation**

#### Specific Issues and Linkages

Chapter 8 describes the benefits of water conservation and characterizes the development of water conservation efforts over time since the 1997 adoption of the initial RWMP. Important events affecting water conservation that have taken place since that time include:

- Full metering;
- Revisions to NRS 540.141;
- Consolidation;
- TROA implementation; and
- Governors Drought Forum.

A summary of conservation issues in Chapter 8 includes the following:

- Under existing regulatory and legal constraints, water that is not diverted from the Truckee River as a result of conservation is left in the river, stored upstream in reservoirs for use during droughts or for fish and wildlife purposes, or used to recharge groundwater. This conserved water is not available to supply additional growth.
- Table 8-1 in Chapter 8 outlines a suite of base case, ongoing, future and drought conservation measures to be implemented following plan adoption. The *Regional Water Plan* supports the pursuit of conservation measures beneficial to the planning area. In addition to monitoring water conservation progress, the *Regional*

*Water Plan* will continue to evaluate whether existing conservation programs are effective and practicable.

### Alternatives Evaluated to Address the Issues

Chapter 8 includes an extensive listing of conservation measures that may be implemented for additional water savings. TMWA continues to implement the Water Conservation Plan and many ongoing conservation measures (listed below) are prioritized annually by the NNWPC:

- Evapotranspiration (“ET”) weather station and irrigation controller studies.
- TMWA continues to implement a multi-faceted public awareness and education program, including water use review, landscape efficiency and three-day per week assigned day watering.
- Various public education and professional development programs continue to be implemented, such as the Qualified Water Efficient Landscape (QWEL) program and Washoe ET Website.
- Expansion of the reclaimed water system to offset demands on potable water supplies.
- Continued work with the local governmental entities and water purveyors on updating their landscape codes and encouraging them to incorporate water efficiency design features for commercial and residential landscapes.
- Continued long-term regional precipitation gauge monitoring and data analysis.

## **10.12 Integrated Use of Water Rights**

### Specific Issues and Linkages

There are demands for water rights that must be considered from a broad planning perspective so that the limited availability will go the farthest in satisfying the water resource needs of the region. Some of the primary uses for Truckee River and tributary water rights (Orr Ditch Decree rights, “Water Rights”) in the planning area are listed below:

- Water Rights for existing hydroelectric production, agricultural and industrial uses.
- Water rights to TMWA for M&I supplies.
- Water rights for maintenance of in-stream flows in the lower Truckee River as required by the Negotiated Settlement (PL 101-618, 1990) and TROA.
- Water rights for water quality enhancement in the lower Truckee River as required by the Water Quality Settlement Agreement (“WQSA”), 1996.
- Water rights for TMWRF and STMWRF reclaimed water return flow requirements to satisfy downstream water rights.

- Tributary creek water rights in the South Truckee Meadows for return flow requirements and surface water M&I supplies.

To independently satisfy these uses of water, plus others, it requires full utilization of the water rights that the river and its tributaries provide. The many uses for water rights and resources from the Truckee River and other sources need to be coordinated to the maximum extent possible. Developing cooperative management strategies such as the TRIGID Return Flow Management Agreement is an example of efficient resource management that can satisfy multiple purposes.

As presented in Chapter 7, the region has potentially available water resources to meet the projected demand increases; however, there are water imbalances in some of the planning areas that will need to be addressed over the long term. These imbalances are not water resource availability issues. Rather, the issues are how to efficiently manage the use of the resources and the resulting impacts, and how to allocate the benefits and costs.

Recycling treated effluent for reuse is a water management practice that provides multiple benefits to the region, including offsetting potable water irrigation demands, nutrient and TDS discharge compliance for TMWRF, and drought and water quality benefits to the Truckee River. As noted above, reclaimed water use requires instream flow water rights to satisfy return flow requirements to the Truckee River.

Policy 2.1.a, Effluent Reuse - Efficient Use of Water Resources and Water Rights, is intended to provide guidance to purveyors when developing long range plans for effluent management.

#### Alternatives Evaluated to Address the Issues

- A Riverware model subroutine was developed to evaluate return flow water rights strategies under various hydrologic conditions.
- A 10-year leasing agreement was entered into between the City of Reno, TMWA and Vidler Water Company to allow temporary use of Fish Springs groundwater resources in Stead, offsetting 3,000 AF of Truckee River resources, which will remain in the river for environmental/instream flow and return flow purposes.
- The Regional Effluent Management Team is working toward regionally based solutions to several near-term effluent management issues, incorporating efficient use of water rights into alternatives being evaluated.

#### **Proposed Action Items**

The NNWPC, TMWA, Washoe County, Reno and Sparks have undertaken efforts to respond to numerous recommendations for the integrated use of water rights. Cooperative management strategies should be developed among local governments,

effluent providers and water purveyors that maximize the benefits derived from the available water resources. Additional work that needs to be completed includes:

10.12.A Compare the regional water demand and available Water Rights to future needs, in conformance with conditions imposed by TROA and related agreements.

10.12.B Continue the Water Rights conversion program; maximize the benefits of Water Rights placed to beneficial use and update the water right status and demand projections regularly.

10.12.C Continue the analysis and development of both structural and non-structural measures to improve Truckee River water quality, enable increased TMWRF discharges to the Truckee River, and ensure the future sustainability of the river.

10.12.D Evaluate groundwater, surface water and reclaimed water resources conjunctively, and determine the feasibility of regional water management programs, including but not limited to expanded recharge projects, use of A+ water, expanded use of Fish Springs Ranch water supplies, and efficient use of tributary water rights for M&I water supply and other beneficial uses.

10.12.E Continue to develop cooperative management strategies and operating agreements among local governments, reclaimed water providers and water purveyors that maximize the benefits of available water resources to the Truckee Meadows community.

10.12.F Monitor existing and future water demand and planning area growth projections and develop plans to resolve any major discrepancies in consideration of available water resources and geographic constraints.

### **10.13 Septic Systems and Water Quality**

WCCSD has identified areas of water quality degradation from septic system effluent, occurring predominantly in areas with high-density development. These areas also have shallow depths to ground water, permeable soil conditions, and proximity to sensitive receptors, such as water supply wells, creeks, rivers, and lakes. These conditions are present in Spanish Springs Valley, Golden Valley, Washoe Valley and Lemmon Valley. In Spanish Springs Valley, fifteen years of historical groundwater quality monitoring showed increasing levels of nitrate contamination in municipal wells.

#### Alternatives Evaluated to Address the Issues

Several historical studies memorialized in past RWMP editions point to the importance of septic system density, parcel size, distance to sensitive receptors and present management options for mitigation of nitrate contamination. Conversion of septic systems to a municipal sewer system continues to be the most dependable, albeit expensive, measure to mitigate nitrate contamination due to high densities of septic



systems. Other solutions include artificial groundwater recharge using fresh water injected into the aquifer, such as is being done in Golden Valley, which has also proven beneficial in improving water quality with respect to nitrate.

### **Proposed Action Items**

10.13.A Continue to provide guidance to owners of septic systems and domestic wells on how to manage/mitigate domestic well water with elevated levels of nitrate.

10.13.B Continue to collaborate with local programs such as Washoe County's financial assistance program for the conversion of individual septic systems to centralized wastewater collection.

10.14.5 Coordinate with funding agencies regularly for opportunities that may arise for septic management programs, septic to sewer conversion projects, related water quality investigations, watershed and source water protection initiatives, etc.

### **10.14 Truckee Meadows NPDES Storm Water Discharge Permit**

#### Specific Issues and Linkages

The most recent Municipal Storm Water Discharge Permit was issued to Reno, Sparks and Washoe County (the "co-permittees") on May 26, 2010. The co-permittees are required to update the Storm Water Management Program for the five-year permit term within 18 months of the issue date, most recently November of 2011. Updates warrant an evaluation of the program element needs, activities and schedule from the issue date to permit reissuance. The existing permit term has been extended pending the issuance of a new permit.

The Storm Water Permit Coordinating Committee ("SWPCC") anticipates that, based on talks with the NDEP and review of national regulatory trends, a Waste Load Allocation will be assigned to storm water in the future. It is not yet known how or when a storm water Waste Load Allocation will be implemented, or what constituents will be covered.

#### Alternatives Evaluated to Address the Issues

In 2004, the SWPCC Interlocal Agreement was amended to provide for the SWPCC to advise Reno and Sparks City Councils and the Washoe County Board of Commissioners concerning the storm water permit and watershed management relative to water quality impacts to the watershed.

The SWPCC continues to request annual funding from the Regional Water Management Fund for the storm water program administration, to complete the required program updates and for specific projects.

### **Proposed Action Items**

10.14.A Continue SWPCC communication with NDEP to address changes/updates to the Truckee Meadows Stormwater Quality Management Program.

10.14.B Continue to support the update and implementation of the Truckee Meadows Storm Water Quality Management Program.

10.14.C Support applications to NDEP for 319(h) grants to help fund watershed and source water projects which complement the efforts of the SWPCC.

## **10.15 Water Resources and Land Use Planning**

### Specific Issues and Linkages

The Truckee Meadows Regional Plan requires master plans, facility plans, and similar planning documents of local governments and affected entities to utilize the Consensus Forecast for determining future regional population. The Consensus Forecast provides an estimate of 20-year population growth in Washoe County and is calculated every two years (even-numbered years). Each forecast is compared to the population that can be supported by the sustainable water resources identified in this Regional Water Management Plan. Continuing efforts to integrate water resource management with land use planning have identified the following regional-scale issues:

- The availability and cost of water resources to supply the demands of existing and future development.
- The capacity to reuse or dispose of treated wastewater effluent generated by future development.
- The importance of flood plain management in reducing the risk of future flooding within the community.
- The importance of maintaining natural recharge to sustain groundwater resources.
- The potential of the region to use “green infrastructure” and Low Impact Development techniques to enhance regional aesthetics and quality of life while preserving or enhancing natural resources.
- The long-term costs of infrastructure operations and maintenance relative to projected development patterns.
- The importance of source water protection and watershed management planning.

In addition to these regional scale issues, some land use plans for outlying rural areas have identified imbalances between groundwater resources, appropriations and potential domestic well demands, such as the Warm Springs Valley Area Plan (Washoe County, 2010a).

Further, the 2019 update to the Truckee Meadows Regional Plan includes a policy that "TMRPA will facilitate a cooperative approach to developing a plan that addresses

natural resources regionally, by working in conjunction with regional partners and the wider region. As a part of this natural resources plan, a map will be created identifying various natural resource areas that should be protected." This will include the use and protection of water resources.

### Alternatives Evaluated to Address the Issues

The following are some events pertinent to water resource management and regional land use planning coordination that have occurred in the past five years:

- Washoe County Consensus Forecast 2016-2036 adopted by RPC, including 2036 forecasted population of 548,159. (September 2016).
- Washoe County Consensus Forecast 2018-2038 adopted by RPC, including 2038 forecasted population of 558,746. (September 2018)
- Washoe County Consensus Forecast 2020-2040 adopted by RPC, including 2040 forecasted population of 569,385. (September 2020).
- TMWA 2020-2040 Water Resources Plan adopted (October 2020).
- 2020 Integrated Source Water and 319(h) Watershed Protection Plan for Public Water Systems and the Truckee River in the Truckee Meadows accepted (October 2020).
- TMRPA Natural Resources Plan (under development)

### **Proposed Action Items**

10.15.A Continue working with TMRPA staff to strengthen appropriate linkages between the *Regional Plan* and the *Regional Water Plan*, including coordination and support for the TMRPA Natural Resources Plan and Public Infrastructure Investment Plan initiatives.

10.15.B Continue to coordinate population projection and water demand data alignment, to both inform the land use model and improve predictions of where growth may occur for facilities planning.

10.15.C Review areas within the TMSA boundary for gaps in facility planning and develop a plan to respond to changes in land use and the TMSA that affect current facility plans.

10.15.D Continue to coordinate with TMRPA's and other entities on the development of TMRPA's Land Use Model (LUM), a GIS parcel-based tool, that can be used to estimate potential water demands and wastewater flows based on approved land uses.

10.15.E Continue to coordinate with local land use planning agencies to address rural groundwater basin imbalances.

10.15.F Continue to coordinate with TMRPA and other entities to align source water and watershed protection plan elements and goals with the Natural Resource Plan.

10.15.G Continue to coordinate with TMRPA and other entities to inventory regional flood facilities and flood modeling approaches for the region.

## **10.16 Local Government Drainage Programs**

### Specific Issues and Linkages

Economy fluctuations and a corresponding decrease in local government general fund revenues has constrained capital expenditures budgets for new storm water facilities and associated operations and maintenance at local governments without dedicated storm water funding mechanisms.

Some local governments are exploring the potential creation of utility districts with the goal of shifting from general or sewer funds to a district-based funding for storm water related functions. For example, the City of Reno is working towards the creation of a dedicated Stormwater Utility / Stormwater Enterprise Fund.

### Alternatives Evaluated to Address the Issues

The City of Reno, together with Washoe County are exploring alternatives for managing ditches used to convey storm water, including annual maintenance agreements with ditch companies, ditch acquisitions, and construction of storm drain infrastructure to exclude storm water from ditches.

Several irrigation ditches serve as storm water drainage conveyances. In the early 2000s, Reno and Washoe County entered into agreements with some ditch companies for contributions toward annual maintenance costs. Significant storm events in 1997, 2005 and 2017 generated flows that exceeded ditch capacities in some locations, leading to localized flooding.

Washoe County is working to evaluate a portion of the Steamboat Irrigation Ditch through the urbanized areas between Hunter Creek and Evans Creek and the assessment of potential flood control outlet improvements on the Steamboat Ditch. The City of Reno is conducting phased master planning efforts to identify problem areas and ensure capacity of downstream conveyance structures.

### **Proposed Action Items**

10.7. Continue storm drain master planning and watershed assessment to identify problem areas and solutions.

10.7.B Support discussions with local government public works departments on the status of the Truckee Meadows Regional Drainage Design Manual and possible need for developing and update.

## 10.17 Regional Flood Plain Management and Flood Control

### Specific Issues and Linkages

Chapter 6 Flood Management and Storm Water Drainage, identifies several issues and linkages concerning the Truckee River Flood Project, including:

**Flood Plain Storage and Critical Flood Pools:** Flood plain storage is a critical component of flood protection. Many properties that were built in compliance with Federal Emergency Management Agency standards for the National Flood Insurance Program may be at risk because of loss of flood plain storage. Reno, Sparks, Washoe County, and Flood Project staff members involved in flood plain storage volume mitigation seek to ensure that the Flood Project remains feasible and future flood impacts are minimized.

**Federal and Local Funding for the Project:** The Flood Project may be the largest public works project ever undertaken in northern Nevada. TRFMA is moving forward with the Flood Project locally and is funded by a 1/8-cent sales tax.

**Local Programs:** Local Drainage programs have some similar and complimentary responsibilities, e.g., flood plain management, adjoining facilities, and the need to form utility districts, or other types of funding districts, to generate revenue for local flood control and drainage services. The Truckee River Flood project focus is on flood reduction measures along the Truckee River and select major tributaries. Local governments respond to flooding and nuisance drainage issues area- wide within the public right of way.

**Upstream Dam Operations:** Releases from Lake Tahoe at the Tahoe City Dam and other reservoirs according to *TROA* will influence flood flows in the Truckee Meadows.

### **Alternatives Evaluated to Address the Issues**

Reno and Washoe County have adopted ordinances amending development codes to address flood plain storage.

Studies for funding, financing and rate alternatives are underway by TRFMA.

### **Proposed Action Items**

10.17.A Support TRFMA's efforts to develop funding for the flood project and incorporate cost, financing, and rate information when available into the Regional Water Plan.

## 10.18 Water Quality Protection and Remediation

Sparks Solvent/Fuel Site ("SS/FS"): The SS/FS is also described in Section 2.2.5. A new municipal well field comprised of six wells with a sustainable capacity of approximately 8,300 gpm or more to the north of the tank farm is likely to result in significant changes in local hydrodynamics when it is put into operation. Changes may include an increased risk to groundwater utilized for municipal water supply from contaminants at SS/FS. The

NDEP is overseeing and directing the ongoing groundwater monitoring and remediation of contaminated groundwater at this site. Remediation at this site is being implemented by the responsible parties associated with the SS/FS.

The groundwater remediation strategy has been to hydraulically contain the hydrocarbon and solvents plumes with extraction wells downgradient from the site and treat the contaminated groundwater on site. The NDEP is aware that the monitoring and remediation strategy currently employed at the site may need to be reevaluated if the new well field is installed.

These corrective actions are successfully controlling contaminant migration and cleaning up the impacted groundwater from the site. NDEP will be working with the Central Truckee Meadows Remediation District and Truckee Meadows Water Authority to understand if there are other sources of solvents in the area that could be contributing to groundwater contamination.

PCE in Lemmon Valley: Groundwater near the Reno-Stead Airport in the West Lemmon Valley hydrographic basin is also affected by solvent contamination. A PCE plume, identified there in 1994, is associated with military activities at the Stead Air Force Base during the 1940s and 1950s. Corrective actions are successfully controlling contaminant migration and cleaning up the impacted groundwater. NDEP is currently evaluating options to discontinue groundwater monitoring associated with this PCE plume, due to the decreasing and stable plume concentration trends identified over the last several groundwater monitoring events.

## **10.19 Source Water and Watershed Protection**

### Specific Issues and Linkages

Water purveyors in the Planning Area are responsible to provide quality drinking water to the communities served which meets drinking water standards established by the USEPA under the Safe Drinking Water Act. Communities and public water systems have been encouraged to develop and implement Community Source Water Protection Plans (“CSWPP”) to protect zones of groundwater movement toward municipal supply wells and surface water sources (rivers and tributaries, lakes, etc.). The zones delineated in the CSWPP are called source water protection areas (SWPAs). The CSWPP develops and implement strategies to protect the SWPAs from exposure to pollution sources.

### Alternatives Evaluated to Address the Issues

The NDEP Bureau of Safe Drinking Water administers the Integrated Source Water Protection Program (“ISWPP”), and the NDEP Bureau of Water Quality Planning administers the Clean Water Act Section 319(h) Nonpoint Source Management Program which are both voluntary programs that help communities develop and implement CSWPPs and watershed protection plans that protect public drinking water supplies and reduce non-point source pollution. The programs also provide grant assistance to public

water systems and communities throughout the State for implementation. The two bureaus coordinate ISWPP and Nonpoint Source protection and planning efforts. In January 2017, the WRWC approved a letter to the NDEP requesting participation in the ISWPP.

Regional partners worked collaboratively to develop the 2020 Integrated Source Water and 319(h) Watershed Protection Plan for Public Water Systems and the Truckee River in the Truckee Meadows (Source Water and Watershed Plan, SWWP) and the 2020 Watershed Management and Protection Plan for tributaries to the Truckee River (Tributary Plan). The plans were accepted by the WRWC in October 2020 and approved by both NDEP and EPA in October 2021.

### **Proposed Action Items**

10.19.A Incorporate any new water purveyors located within the planning area into the SWWP and update information and data into the plan as needed.

10.19.B Continue to support SWWP plan implementation.

10.19.C Continue to collaborate with TMRPA and coordinate the SWWP with the development of the Regional Natural Resources Plan.

10.19.D Continue to support funding procurement from the State of Nevada's ISWPP and 319(h) Non-Point Source Grant Program for projects identified in the SWWP.

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*Developing-will be updated*

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## List of Abbreviations and Acronyms (Developing)

<b>2016-2035 WRP</b>	TMWA's 2016-2035 Water Resource Plan
<b>2030 WRP</b>	TMWA's 2030 Water Resource Plan
<b>ACOE</b>	Army Corps of Engineers
<b>af</b>	Acre-Feet
<b>af/yr</b>	Acre Feet Per Year
<b>afa</b>	Acre Feet Annually
<b>ASR</b>	Aquifer Storage and Recovery
<b>CSWPP</b>	Community Source Water Protection Plan
<b>CSWRF</b>	Cold Springs Water Reclamation Facility
<b>CTMRD</b>	Central Truckee Meadows Remediation District
<b>DRI</b>	Desert Research Institute
<b>ET</b>	Evapotranspiration
<b>GIS</b>	Geographic Information System
<b>gpm</b>	Gallons Per Minutes
<b>ISWPP</b>	Integrated Source Water Protection Program
<b>M&amp;I</b>	Municipal and Industrial
<b>MGD</b>	Million Gallons Per Day
<b>NDEP</b>	Nevada Division of Environmental Protection
<b>NNWPC</b>	Northern Nevada Water Planning Commission
<b>NPDES</b>	National Pollutant Discharge Elimination System
<b>NRS</b>	Nevada Revised Statutes
<b>NVI</b>	North Valleys Initiative
<b>PCE</b>	Perchloroethylene
<b>PLPT</b>	Pyramid Lake Paiute Tribe
<b>RIB</b>	Rapid Infiltration Basin
<b>RO</b>	Reverse Osmosis
<b>RSWRF</b>	Reno-Stead Water Reclamation Facility
<b>RWPC</b>	Regional Water Planning Commission
<b>SS/FS</b>	Sparks Solvent/Fuel Site
<b>STMGID</b>	South Truckee Meadows General Improvement District
<b>STMWRF</b>	South Truckee Meadows Water Reclamation Facility
<b>SWPCC</b>	Storm Water Permit Coordinating Committee
<b>SWWP</b>	Source Water and Watershed Plan
<b>TDS</b>	Total Dissolved Solids
<b>TMDLs</b>	Total Maximum Daily Loads
<b>TMRPA</b>	Truckee Meadows Regional Planning Agency
<b>TMWA</b>	Truckee Meadows Water Authority
<b>TMWRF</b>	Truckee Meadows Water Reclamation Facility
<b>TRA</b>	Truckee Resource Area
<b>TRI Center</b>	Tahoe Reno Industrial Center
<b>TROA</b>	Truckee River Operating Agreement
<b>UNR</b>	University of Nevada, Reno
<b>WCCSD</b>	Washoe County Community Services Department

**WCDWR** Washoe County Department of Water Resources

**WQSA** Water Quality Settlement Agreement

**WRWC** Western Regional Water Commission