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Section 15 - Conclusions and Policy Recommendations

Conclusions from each of the planning areas regarding the recommended water and wastewater infrastructure improvements are reiterated in this section, including a summary of the estimated costs. Relevant policies from the Regional Water Management Plan are presented, together with a discussion of proposed policy issues for future consideration. It is anticipated that any Regional Water Management Plan (RWMP) policy revisions will be undertaken as part of the current RWMP update.

15.1 INFRASTRUCTURE REQUIREMENTS

Following is a summary of the recommended water and wastewater infrastructure improvements. Flood control and stormwater improvements are summarized in Section 14.

15.1.1 Spring Mountain TMSA

The water supply for Spring Mountain can potentially be derived from several sources, including on site resources and imported resources. Additional study of the long term reliability and yield of the on site spring resources and the Dry Valley and Black Canyon resources is needed to assess their reliability and municipal water supply yield. Use of reclaimed water and/or imported water, in addition to the on site resources, will likely be required to help meet projected water demands. An estimated 1,115-1,674 AF of new residential irrigation demand could potentially be served by reclaimed water.

A pond type water reclamation facility is proposed to be constructed for the Eastern planning area, sized for the projected capacity of up to 2.0 MGD. The capacity of this water reclamation facility will be limited to the extent that sufficient infiltration areas can be developed, primarily in the meadow and open space areas, to dispose of the effluent during the non-irrigation season. A second tertiary reclamation facility is proposed to be constructed in the Central planning area. This plant would serve the growth in both the Central and Western planning areas, and would also serve as a “polishing plant” for excess effluent generated from the Eastern planning area. Reclaimed water would be used to the extent practical in the Central and Western planning areas, and disposed of within areas suitable for infiltration. Excess effluent may be discharged into the Dry Creek drainage.

15.1.2 Sage TMSA

The water supply for Sage can potentially be derived from several on site sources. The long term reliability and yield of the surface and groundwater resources are currently under investigation by the project proponent. For purposes of this analysis, it has been assumed that these water rights can be developed and reliably support 764 to 1,460 AF of municipal demand. The use of

reclaimed water, in addition to the on site water resources, will likely provide sufficient resources to meet the projected demands.

Current facility planning has not identified a suitable area for wastewater treatment, storage and disposal facilities that could be located within the project site. The treatment facility is proposed to be located on property administered by BLM southeast of the Sage development. Wastewater would be treated and disposed of in areas with limited public access, such as the development open spaces. Reclaimed water that is not used for irrigation of open spaces is proposed to be disposed of on irrigated fields during the irrigation season and stored during the non-irrigation season. Irrigated fields and a seasonal storage reservoir, which uses levies to contain the effluent, are proposed to be located next to the wastewater treatment facility.

15.1.3 Cold Springs, Stead and Lemmon Valley TMSA

Regional water supply, water reclamation and wastewater disposal should be a coordinated effort for the Cold Springs, Stead and Lemmon Valley TMSA because of their common water supply and effluent disposal constraints.

Insufficient water resources exist to serve the projected 2030 demands in Stead and Lemmon Valley, when potential demands for Cold Springs are taken into consideration. The projected increase in demand is approximately 18,580 AF, compared to the potentially available water resources of 11,909 AF. The demand for potable water supplies for these areas will significantly exceed the available supplies, including water from the Fish Springs and Intermountain projects.

The 2030 total projected wastewater treatment plant capacity for the Stead and Lemmon Valley TMSA is approximately 7.2 MGD, including potential septic tank conversion flows. The 2030 total projected water reclamation facility capacity for Cold Springs is approximately 4.5 MGD.

Expanded use of reclaimed water, such as front and back yard residential landscape watering, should be implemented where reasonable to extend available water supplies and help fulfill the development potential within the Reno and County TMSA. In Stead, Lemmon Valley and Cold Springs, an estimated 6,803 AF of new residential irrigation demand could potentially be served by reclaimed water.

15.1.4 Truckee Meadows TMSA

The estimated need for additional water resources for the Reno and Washoe County portion of the TMSA is approximately 13,760 AFA. This compares favorably with the potentially available water resources of 22,363 AF. However, additional demands will also be placed on these available water resources from other planning areas including Sparks, Spanish Springs and the South Truckee Meadows.

TMWA's 2025 Water Facility Plan is a comprehensive document, therefore, no further detailed planning was necessary within TMWA's retail service territory, other than for Verdi and the Sunny Hills areas.

The projected 2030 wastewater flow for the Truckee Meadows Water Reclamation Facility is 41.3 MGD, not including flow from the City of Sparks, Sun Valley, or Spanish Springs. Reuse and discharge of reclaimed water from the various water reclamation facilities in the region is constrained by a number of factors. A thorough planning and facilities study of regionally integrated reclaimed water systems and management strategies is required to develop a plan to meet the disposal capacity requirements for the projected 2030 wastewater flows. Regionally integrated reclaimed water systems and management strategies may realize economic and financially prudent alternatives that cannot be realized with separate, independent systems.

15.1.5 Bedell Flat FSA

The Bedell Flat FSA includes approximately 70,200 acres in several hydrographic basins including Bedell Flat, Red Rock, Dry Valley, Cold Springs, Warm Springs, and Long Valley. Bedell Flat consists mostly of federal lands. The land would not be developable until 2028 per the FSA development projections. Areas that are limited or constrained for future development include areas with slopes greater than thirty percent and drainageways. Using the land use data, the total projected water demand for Bedell Flat is 21,355 AFA, based on 52,518 dwelling units. The wastewater treatment capacity projection for this planning area is 10.1 MGD.

15.2 INFRASTRUCTURE COSTS

Based on the water and wastewater infrastructure cost estimates developed in this Facility Plan, a summary of the projected costs for each planning area is presented in Table 15.1. The total 2030 water and wastewater facility estimated cost for the five Reno Planning areas is approximately \$1.2 billion.

Table 15.1 - Reno TMSA Water and Wastewater Facility Costs (a)

Planning Area	Water (\$M)	Wastewater (\$M)	Total (\$M)
Spring Mountain (b)	\$64.4	\$157.8	\$222.2
Sage	\$19.6	\$63.7	\$83.3
Cold Springs (c)	\$98.1	\$102.7	\$200.8
Stead / Lemmon Valley (d)	\$163.5	\$171.1	\$334.6
Truckee Meadows (e)	\$141.7	\$219.0	\$360.7
Total	\$487.3	\$714.3	\$1,201.6

- (a) Total costs include a portion of facility costs attributable to Washoe County as shown in the respective Sections of the Facility Plan.
- (b) Imported water and on-site water supply and treatment costs are unknown at this time
- (c) Water supply costs are unknown at this time. Cold Springs will likely receive an undetermined allocation of capacity from the \$100M Fish Springs project, and the \$22M Intermountain project. \$40M water supply costs is allocated to Cold Springs.
- (d) Water supply facility costs are based upon \$100M for Fish Springs, \$22M for Intermountain and \$8.168M for North Virginia capacity, less \$40M allocated to Cold Springs
- (e) Wastewater costs do not address long term reuse and disposal requirements

15.3 POLICY ISSUES FOR CONSIDERATION

Based on results of the analyses performed for the various TMSA planning areas, several recurring themes were identified. The following discussion presents several recommended policy issues and/or clarifications to existing City Code for Regional Water Planning Commission consideration. It is anticipated that proposed Regional Water Management Plan policy revisions will be undertaken as part of the current RWMP update. Suggested revisions to the RWMP Policies and Criteria will be provided as part of the Washoe County update to the TMSA/FSA Water, Wastewater and Flood Control Facility Plan, scheduled for completion in September 2007.

TAZ Data – The land use basis for this Facility Plan is the Regional Transportation Commission Traffic Analysis Zone (TAZ) data provided by the City of Reno and Washoe County. Supplemental information has been incorporated from the City’s Master Plan and Washoe County’s planned land uses. TAZ data is not ideal for water and wastewater infrastructure planning. The TAZ boundaries do not take into account jurisdictional boundaries between Reno, Sparks, and Washoe County, nor do they account for different water purveyors, wastewater treatment areas, and hydrographic basin boundaries. For this data to be most useful for water and wastewater facility planning in the future, the RWPC and service providers must provide input on the format and content of the Regional Transportation Commission’s TAZ projections.

Effluent Reuse - Potentially available water resources have been identified to serve the projected 2030 demands. A combination of imported and on site water resources will generally be needed to satisfy the projected build out demands. Expanded use of reclaimed water, such as front and/or back yard residential landscape watering, should be evaluated on a regional level and implemented where reasonable to extend available water supplies and help fulfill the development potential of the TMSA.

Effluent Reuse – Discharge of reclaimed water from the various water reclamation facilities in the region is constrained by a number of factors. Regionally integrated reclaimed water systems and management strategies may realize economic and financially prudent alternatives that cannot be realized with separate, independent systems.

Effluent Reuse – Water purveyors and wastewater service providers should work in a coordinated manner to investigate, test, permit and implement a treated effluent aquifer storage and recovery (ASR) program within the region. Together with permitting and implementation of a treated effluent ASR program, the water purveyors and wastewater service providers should also undertake a longer term program to evaluate the merits of indirect potable reuse as a supplemental water supply / water management alternative that is protective of public health and the environment. Treated effluent ASR and indirect potable reuse programs must be closely coordinated with NDEP since current regulations in Nevada do not allow this practice. Neighboring arid states, including California and Arizona, are implementing similar water management programs.

Water Conservation - Current landscaping practices account for approximately half of the total water demand for a typical residential unit. Water demands could be reduced by implementing water conserving landscaping practices and/or xeriscaping. However, water conserving landscape practices should be balanced with the need for disposal of reclaimed water.

Conformance Reviews – The facility recommendations presented herein are intended to provide the foundation for subsequent detailed planning and design. These future planning efforts will further refine and define the exact facility requirements presented in this Plan. When considering whether or not a refinement of the recommended facilities conforms with the TMSA Facility Plan and ultimately the Regional Water Management Plan and Truckee Meadows Regional Plan, the basic question to be answered is, “Does the design intent of the proposed facility (capacity, service function, construction phasing of major improvements, general location, design criteria, significant impact to other water related issues, etc.) substantially conform with the Regional Water Management Plan and the design intent of the applicable water, wastewater and flood control facility plans presented in this Plan?”

The Regional Water Management Plan includes Policy 4.1.a: Facility Plans and Infrastructure Studies, for determining whether a proposed revision to the TMSA Facility Plan is of such a kind or size that affects the working of the Regional Water Plan, and is in conformance with the Regional Water Plan. The Regional Water Planning Commission will ultimately determine whether a proposed revision to the TMSA Facility Plan requires a review for conformance with the Regional Water Plan, pursuant to Policy 4.1.a. If the RWPC determines that a particular project or facility plan is in substantial conformance with this Plan, then no further review by the Regional Planning Commission or Regional Governing Board should be required.

Floodplain Storage within the Truckee River Watershed - The Truckee River Flood Project includes a locally preferred plan alternative that includes a significant detention/storage facility proposed for the Huffaker Narrows area in South Truckee Meadows. In addition, storage volume is also preserved within the critical flood pool (Zone1) by ordinance on a volume per volume (1 to 1) basis. Floodplain storage is not currently addressed outside of the Critical Zone 1 boundary; however, it may be necessary to do so for the benefit of the Truckee River Flood Project. Completion of a hydrologic study of the entire Truckee Meadows is recommended prior to development of a higher standard for floodplain storage.

Floodplain Storage outside of the Truckee River Watershed - Watersheds outside the Truckee River Watershed fall into two categories; areas that drain to terminal desert lakes, and those that drain into other watersheds such as the Long Valley Creek. Floodplain storage within the Truckee River watershed is critical to the proper function of the Truckee River Flood Project. However, floodplain storage is also important for groundwater recharge, riparian habitat and geomorphological processes. Floodplain storage is currently not being regulated outside of the Critical Zone 1 in the Truckee Meadows. It is recommended to establish a policy that encourages preservation of natural floodplain storage with all new development.

Watershed Protection - Watershed protection is mandatory for the preservation of water supply, water quality, the environment and recreation. The Regional Water Planning Commission has produced guidance documents aimed at protection of water quality in stormwater, but to date they are not required by ordinance. It is recommended that the following documents be adopted by ordinance: Low Impact Development Manual and the Structural Controls Design Manual. Currently the State of Nevada administers the National Pollutant Discharge Elimination System (NPDES) permit program for construction sites and a companion document, Construction Site Best Management Practices is available for guidance. It is recommended that these documents also be adopted by ordinance.

Floodplain Management - The nature of floodplain planning involves alleviating the impact of flooding on people and communities to ensure protection of life and property. Projects proposed for the urban areas of Washoe County are designed to accomplish this goal. Natural drainage/conveyance areas are undeveloped and pose no threat to life and property, but can as development occurs. This Facility Plan encourages the preservation of natural drainageways. These drainageways have several important functions: conveyance of flood flows, conveyance of watershed sediment loading, groundwater recharge, environmental and wildlife habitat, and aesthetic quality.

It is important to note that flood control facility plans in undeveloped areas are conceptual. If development occurs responsibly, the floodplain function will be preserved and there will be no impact to property upstream or downstream of the proposed development. Each development should provide for source control of stormwater, both in quantity and quality. Generally, if it is necessary to plan and construct a regional facility, it will be an inferior solution to source control methods. However, sometimes regional facilities make sense and should be considered. It is recommended that for these times, or if more than one developer wants to construct a regional facility, there should be a mechanism established to accomplish this goal.

Flood Volume - Section 18.12.1703.g of the City of Reno code covers standards for closed lakes. This section states that no rise in water surface will be allowed. However, depending on the interpretation and usual methods accepted by the City to demonstrate compliance with this section, an increase in volume from a development may or may not be tolerated. The code would be much stronger if the requirement were stated that no property within a closed basin may discharge an increase in flow or volume of stormwater runoff when compared to the predevelopment condition. Under this requirement there would be no need to consider the possibility that future development would increase the lake level as each individual development would be required to provide “on site” retention, or participate in a regional facility to protect the existing water surface level.

Sediment Transport - Section 18.12.1703.b covers standards for alluvial fans. This section limits sediment flow through a subdivision that creates a health and/or safety hazard. This requirement could be strengthened to limit sediment flow on an alluvial fan within a development as well as downstream to predevelopment conditions. This would force development within alluvial fans to control sediment by controlling both maximum flow discharged downstream from a development as well as hold the volume of discharge to the

predevelopment condition. If just the flow rate is held to predevelopment conditions, the additional volume generated in the development would still generate an increase in sediment flows.

One of the most significant deterrents to enforcement of the existing code as well as any further code restrictions is the methodology used to demonstrate compliance. The methodology should be developed, approved and shared among the area professionals prior to modifying the code.

Natural Floodplain Storage - Section 18.12.1801 provides for retaining natural floodplain storage. The concept is good but there are loopholes that effect enforcement with this issue. If a stream has been altered in the past, then the storage appears to be human caused rather than natural, and this section would then not apply. Acceptable language would include in the definition of natural floodplain storage, human caused open areas, including ranches and farms. The issue of no net loss in floodplain storage is currently enforced in the Truckee Meadows area identified as Critical Flood Zone 1; however, under the referenced code section it may be applied to more streams.

Section 18.12.1802 references a map entitled Potential Wetlands, Stream Environments and Regionally Significant Hydrologic Resources Map depicting the locations of corridors that would qualify under this article, but it is not kept current. Most of the information is available as GIS data. It is recommended that this map be converted to a GIS overlay and included with other sensitive resources and then be made available to the public.

Enclosure of a Major Drainageway - Section 18.12.1904.e allows for the exception of enclosing a major drainageway. This situation is sometimes unavoidable to allow for maximization of the personal use of private property. One of the typical problems incurred when enclosing a major drainageway is that open channels tend to have more conveyance capability than an enclosed facility. This usually comes in the form of channel freeboard. Moreover open channels can convey debris more effectively provided that road crossings are designed properly. It is recommended that language be included in the code for enclosing major drainageways to ensure that the design storm event for all such enclosures be a significant storm event, such as the 100-year storm event, and to include freeboard and when appropriate debris conveyance capabilities.

No Adverse Impact to Natural Major Drainageways - Chapter II, Section 1.4 of the Public Works Design Manual provides for no adverse impact to natural drainageways. The issue of no adverse impact could also be discussed in light of stormwater volume. It could be argued under this statute that any increase to discharge from the property or increase in volume of runoff could potentially have a negative impact to a downstream channel. In light of the above discussion, clarification should be provided for this section to either include stormwater volume, or exclude it.