

REPORT



City of Santa Fe

Reclaimed Wastewater Resource Plan

April, 2013





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The City would like to express their deep appreciation to the members of the Working Group for their engagement, ideas, and perspective.

Acknowledgments

The authors would like to thank the insightful input provided to this process by the public who attended the December 1, 2011 and January 24th, 2012 public meetings, the reclaimed wastewater users who convened on January 7th, 2013, the participants of the weighted comparison exercise, and the reviewers of the report: Brian Snyder, Caryn Grosse, Dale Lyons, Marcos Martinez, and Alex Puglisi.

Cover Photo

Marty Sanchez Links de Santa Fe golf course relies entirely on reclaimed wastewater for turf irrigation.



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List of Abbreviations and Acronyms

af = acre-feet (equivalent to 325,851 gallons)
af/mo = acre-feet per month
af/yr = acre-feet per year
BMP = best management practice
City = City of Santa Fe
County = Santa Fe County
EPA = U.S. Environmental Protection Agency
gpcd = gallons per capita per day
LRWSP = City of Santa Fe's Long Range Water Supply Plan (2008)
mg = million gallons
mg/d = million gallons per day
mg/mo = million gallons per month
mg/yr = million gallons per year
NMED = New Mexico Environment Department
OSE = New Mexico Office of the State Engineer
RW = reclaimed wastewater
RWRP = Reclaimed Wastewater Resource Plan
SFWA = Santa Fe Watershed Association
SJC = San Juan-Chama Project
SWQB = Surface Water Quality Bureau
TEMP = City of Santa Fe Treated Effluent Management Plan (1998)
WWMD = City of Santa Fe Wastewater Management Division
WTP = water treatment plant
WWTP = wastewater treatment plant



Executive Summary

Reclaimed wastewater (RW) is a vital and valuable water resource that helps the City of Santa Fe meet its current water supply needs; it can also play a critical role in meeting future potable water supply demand. Since the adoption of the previous RW plan, the Treated Effluent Management Plan (TEMP) in 1998, the quantity of available RW has been reduced by 29% because of the City's comprehensive indoor water conservation programs while RW use has more than doubled (Figure 3). This Reclaimed Wastewater Resource Plan (RWRP), developed with the assistance of the "Working Group" members identified on the cover page, prioritizes current RW uses and identifies strategies and implementing actions to optimize current and future use of the resource. This analysis concluded that RW availability is currently limited during the peak summer irrigation months and that the shortfall will increase in the future with new RW uses anticipated by the City. The methodology used for prioritizing RW uses herein can be applied in the future to new circumstances; thus, this plan serves not only as a blueprint for RW use today, but also serves as a roadmap for the future.

This RWRP considers the City's current and projected RW needs through the 2020s. RW availability is projected 40 years in to the future through 2052. Based on the City's average RW production of 1,887 million gallons/yr (5,790 af/yr) over the past five years, this RWRP assumes that 1,825 mg/yr (5,600 af/yr) and 152 mg/mo (467 af/mo) of RW is available (Section 4) at a steady daily and monthly rate for the 40-year planning period. The difference (62 mg/y; 190 af/yr) between the RW produced and the amount allocated in this Plan is reserved to accommodate for changes in use, metering uncertainty, and/or changes in future conditions.

The RW use options considered in this analysis include current uses: direct sale for dust control and other construction purposes; irrigation of municipal recreational fields at the Municipal Recreational Complex (MRC) and the infield at Santa Fe Downs; irrigation of the Marty Sanchez Links de Santa Fe and the Santa Fe Country Club golf courses; dust control at the regional landfill; watering livestock on the Caja del Rio; irrigation of the education-scape at the New Mexico Game and Fish facility; and for Santa Fe River flows downstream of the City's wastewater treatment plant to support the river/riparian ecosystem and local agriculture (Section 5). The analysis also includes potential future uses: irrigation of the turf at the Santa Fe Equestrian Center (also a previous use); irrigation of the Southwest Area Node Park; irrigation of turf at schools, the library and other open space along the Southwest Sector effluent pipeline; offsetting the surface water depletions in the La Cienega area caused by the City's pumping of the Buckman well field; piping RW upstream to the Santa Fe River; and future potable water supply (Section 5).

For this analysis, an annual, monthly and maximum peak daily RW budget for all of the current and potential future RW uses was determined, either based on past usage, contracts, requests, or estimates (Section 6). The demand for monthly and daily RW is great. The combined monthly demand for all the options, except RW for potable water supply, is 213 mg/d (Table 2), 40% more than the RW available; the combined daily demand of all the options (except RW for potable water) supply is 6.9 mg/d (Table 2), 38% more than the available amount. Hence, RW demand is greater than available supply under



current average conditions, which will only worsen under drier hotter drought and projected climate change-impacted conditions.

The RW options were ranked according to criteria and methodology (Section 5) approved in May 2012, by the City's governing body. Using the ranking methodology and then prioritizing uses that are non-discretionary (long-term contracts and permit requirements), the RW options were prioritized; the first three options retain equal ranking, because no distinction is made within these uses required by permits versus long-term contracts):

1. Buckman Well Field Permit Compliance- 33 mg/yr; 100 af/yr
1. US Forest Service Livestock Water – 2.3 mg/yr; 7 af/yr
1. Santa Fe Country Club Golf Course- 130 mg/yr; 400 af/yr
4. Municipal Recreation Complex – 54 mg/yr; 165 af/yr (65 mg/yr requested)
5. On-demand Sales for Dust Control, Construction– 31 mg/yr; 95 af/yr (65 mg/yr in 2007)
6. Dust Control at Regional Landfill – 6 mg/yr; 17 af/yr (12 mg/yr requested)
7. Marty Sanchez Links de Santa Fe Golf Course– 168mg/yr; 517 af/yr (196 mg/yr requested)
8. Recreational Infield at Santa Fe Downs – 43.5 mg/yr; 134 af/yr
9. Future Potable Water Supply – approximately 717 mg/yr; 2,200 af/yr
10. Southwest Area Node Park - 19 mg/yr; 57 af/yr
11. New Mexico Game and Fish Educational Landscape – 1 mg/yr; 4 af/yr
12. Southwest Area Irrigated Parks and Open Space – 48 mg/yr; 149 af/yr
13. Downstream Santa Fe River – 600 mg/yr; 1,843 af/yr
14. Upstream Santa Fe River – 177 mg/yr; 543 af/yr
15. Santa Fe Equestrian Center – 41 mg/yr; 127 af/yr
16. Urban Food Production (originated from 2nd public meeting; no RW budget developed)

These options and their monthly RW budgets were then compared to the available RW (Section 7) to see how much of the RW needs could be met. The assessment was performed in three different time frames - 'current', 'near-future', and '2020s', including only those projects relevant to the different timeframes (Section 7). For example, since potable use of RW will likely take a decade to implement, the use is shown to first come 'online' in the 2020s analysis.

This analysis showed that all but two of the 'current' RW options can be met with the available RW at this time (Figure 12 and 13); the exception is that there are insufficient flows to fully meet the Downstream Santa Fe River 3 mg/d, target flows in June and the Santa Fe Equestrian Center RW request in May, June and July. In the near future (approximately 2018), the shortfall in RW will be even greater: using the Plan's criteria and ranking method, the Downstream Santa Fe River, the Santa Fe Equestrian Center, and the Upstream Santa Fe River option do not have adequate supply during the summer months (Figure 14). By the 2020s, when the infrastructure and permits to use RW for potable supply may be ready, no RW is available for the SF Equestrian Center or the Upstream Santa Fe River, and there continues to be insufficient RW to meet the 3 mg/d target flows for Downstream Santa Fe River in June (Figure 15). By the 2020s, using the RW that is not



needed during the irrigation season, the Plan estimates that approximately 717 mg/yr (2,200 af/yr) of RW will be available for potable supply.

The determination of the RW shortfall is based upon current uses, anticipated uses, and assumptions regarding necessary or desirable flows in the Santa Fe River below the wastewater treatment plant, about which there is considerable uncertainty. Downstream river system flow dynamics are continually changing because of drought, increasing riparian vegetation, ongoing groundwater use, shifting wetlands, beaver activity and river management activities. Additionally, the objectives to be satisfied by the river flows are not well defined and Santa Fe River water rights have not been adjudicated.

RW is a valued resource and the cost to produce it is not insignificant. This plan reiterates the recommendation of the 2003 Wastewater Reuse Advisory Task Force that all RW users, municipal, non-municipal, and commercial facilities alike, should pay for their RW use (Section 8.2), thus treating all users equitably and increasing the incentive to use the resource more efficiently. This may result in RW costs shifting from those who supply it (via the City's sanitary sewer system) to those who benefit from it (e.g. sport recreationalists, golfers, and irrigators). The shift would recognize RW as a municipal asset and may help pay for wastewater treatment and/or implementing actions identified in this plan. Although not addressed in this document, it is likely that increased RW treatment associated significant capital improvements will be needed in the future. Currently 98 percent of Santa Fe RW is assigned to users without any monetary compensation. Only 2 percent of the current RW uses generate revenue.

Above-ground use of the RW is currently regulated by the New Mexico Environment Department (NMED) through surface and groundwater discharge permits. The City's wastewater treatment plant produces Class 1B wastewater, as defined by the "NMED Ground Water Quality Bureau Guidance: Above Ground Use of Reclaimed Domestic Wastewater", which can be used for irrigating turf provided that public physical exposure to RW is avoided through access controls, application methods, and setback distances. While the RW-use recommendations set forth in this Plan are designed to be protective of public health and the environment, the water quality standards and requirements may change in the future, at which time treatment processes may need to be added or enhanced and/or land application methods altered. Although the current regulations provide safeguards, inappropriate use of RW and/or sporadic reductions in treatment performance may result in human exposure to bacteriological pollution where RW is applied.

To guide current and future decision-making regarding RW, this RWRP identifies the following strategies (Section 8), grouped into water supply, economic, water quality, operational/management, stewardship, and green themes. Section 8 also lists proposed implementing actions associated with each strategy.

Water Supply: ➤ Use RW as a non-potable water supply.
➤ Use RW to meet Buckman Wells permit offset requirements.
➤ Use RW to supplement the City's future potable water needs.
➤ Measure RW production and use.

Economic: ➤ Value RW as a municipal asset.



- Use RW to generate revenue.
- Seek financial assistance to implement recommendations of this plan.

Water Quality: ➤ Produce high quality RW.
➤ Minimize the public health risk in land application of RW.

Operational: ➤ Optimize existing RW delivery capacity.
➤ Develop necessary and equitable contracts, resolutions, and ordinances.
➤ Determine shortage sharing and emergency guidelines.
➤ Build Resiliency into RW allocations.

Stewardship: ➤ Provide adequate flows to the Santa Fe River.
➤ Collaborate and coordinate with downstream agricultural communities and other stakeholders.

Green: ➤ Use RW efficiently.
➤ Optimize energy consumption and production in RW transmission and use.
➤ Build resiliency and adaptation to climate change into RW planning and management.



"By the Numbers" Summary Reclaimed Wastewater Fact Sheet
(Courtesy of Brian Drypolcher, City of Santa Fe)

1. City's Reclaimed Wastewater (RW) available
 - 1,825 million gallons per year (mg/yr)
 - 5,600 acre feet per year
 - 152 million gallons per month (mg/mo)
 - 467 acre feet per month

 - or, approximately 5 million gallons per day

2. For all options identified (pre-ranking), **average RW demand exceeds production**
 - annual demand: 2,072 mg/yr (6,358 af/yr)
 - annual available: 1,825 mg/yr (5,600 af/yr)
 - maximum monthly demand: 213 mg/mo (654 af/m)
 - maximum monthly available: 152 mg/mo (467 mg/mo)
 - daily demand is 6.9 mg/d, or 38% more than the daily amount available

3. Trend: Reduction in RW **production**
 - 1997: 2,300 million gallons (7,140 acre feet)
 - 2011: 1,780 million gallons (5,600 acre feet)

4. Trend: Increase in RW **use**
 - 1997: 247 million gallons (750 acre feet)
 - 2011: 505 million gallons (1,535 acre feet)

5. Trend: Reduction **per capita water consumption**
 - 1997: 170 gallons per capita per day
 - Current: 106 gallons per capita per day

6. "**RW Return Factor**" – city potable water delivered, water consumed, wastewater reclaimed
 - **62%** of potable water produced for customers ends up at wastewater treatment plant
 - 38% is "consumed"

7. Percentage of RW released to the SF River, **seasonal variation**
 - 99% in January
 - 50% in June

8. Potential RW available for **future potable water supply** (long term, 2020 scenario, water not allocated to other uses identified in the plan)
 - 717 million gallons per year
 - 2,200 acre feet per year
 - annual value, \$2.15 million

9. Percent of RW **currently sold** (revenue generation) = 2%



1 Introduction

In the arid Southwest, generally, and in Santa Fe specifically, the use of all available water resources, including reclaimed wastewater (RW) is critical and necessary; it is, in fact, an inherent principle of sound integrated water resource management. For decades the City’s wastewater treatment plant (WWTP) has served as a producer and bulk supplier of RW. RW is currently used for irrigation of turf at golf courses and recreational playing fields, watering of educational landscaping, construction and dust control, and livestock water (Figure 1). RW also makes up the majority of the flows in the Santa Fe River downstream of the WWTP (Figure 1). The light blue numbered circles in Figure 2 show the locations where RW is currently used. Two percent of the City’s RW is sold and offsets the cost of wastewater treatment.

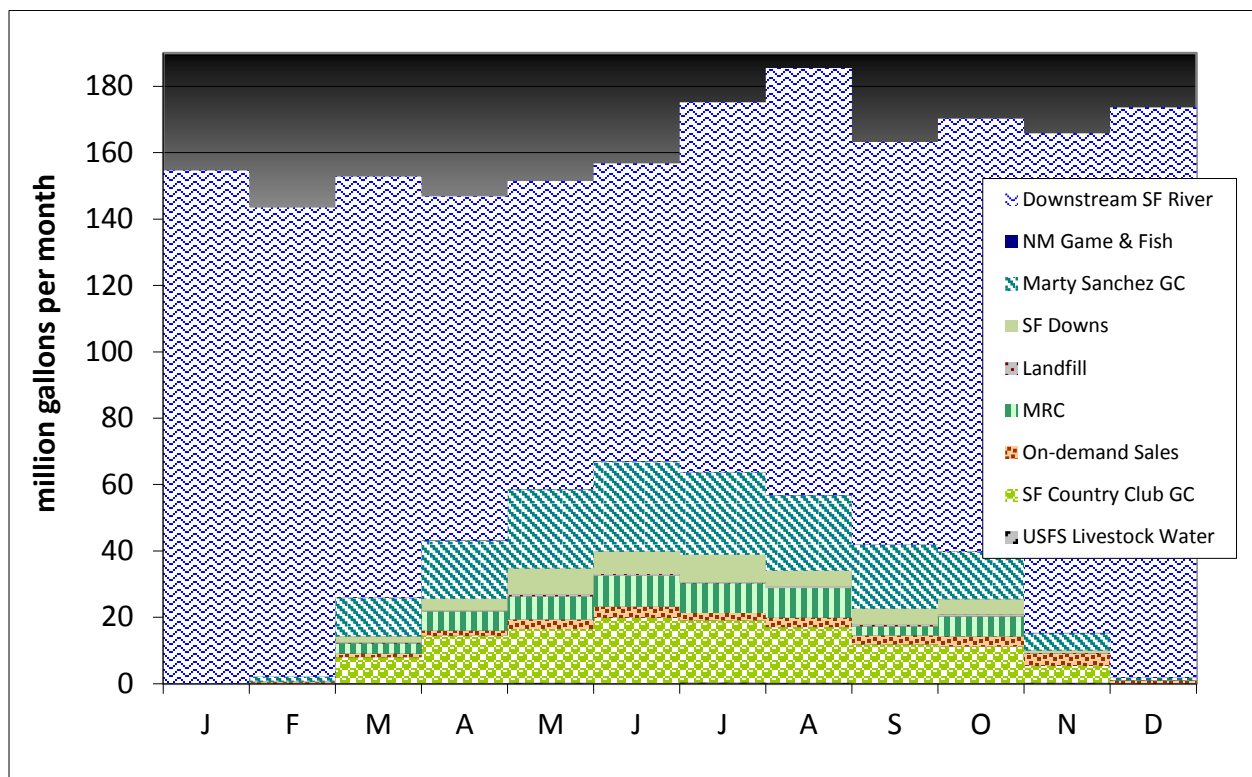


Figure 1. Monthly use of reclaimed wastewater, 2012

The RWRP determines the current RW volume available for non-potable reuse, estimates future RW availability, identifies current and potential future options for RW use, develops and applies a methodology and criteria to rank the options, determines a roadmap on how to use RW today and in the foreseeable future, recognizes the economic value of RW, incorporates RW quality considerations in present and future planning, and delineates RW use strategies and implementations.

The Plan is the collaborative product of the “Working Group”, an assembly of dedicated, diverse, community stakeholders, who have met monthly for the past year to understand, evaluate and recommend actions with respect to the City’s RW. The RW options consi-



Reclaimed Wastewater Use Options, 2012

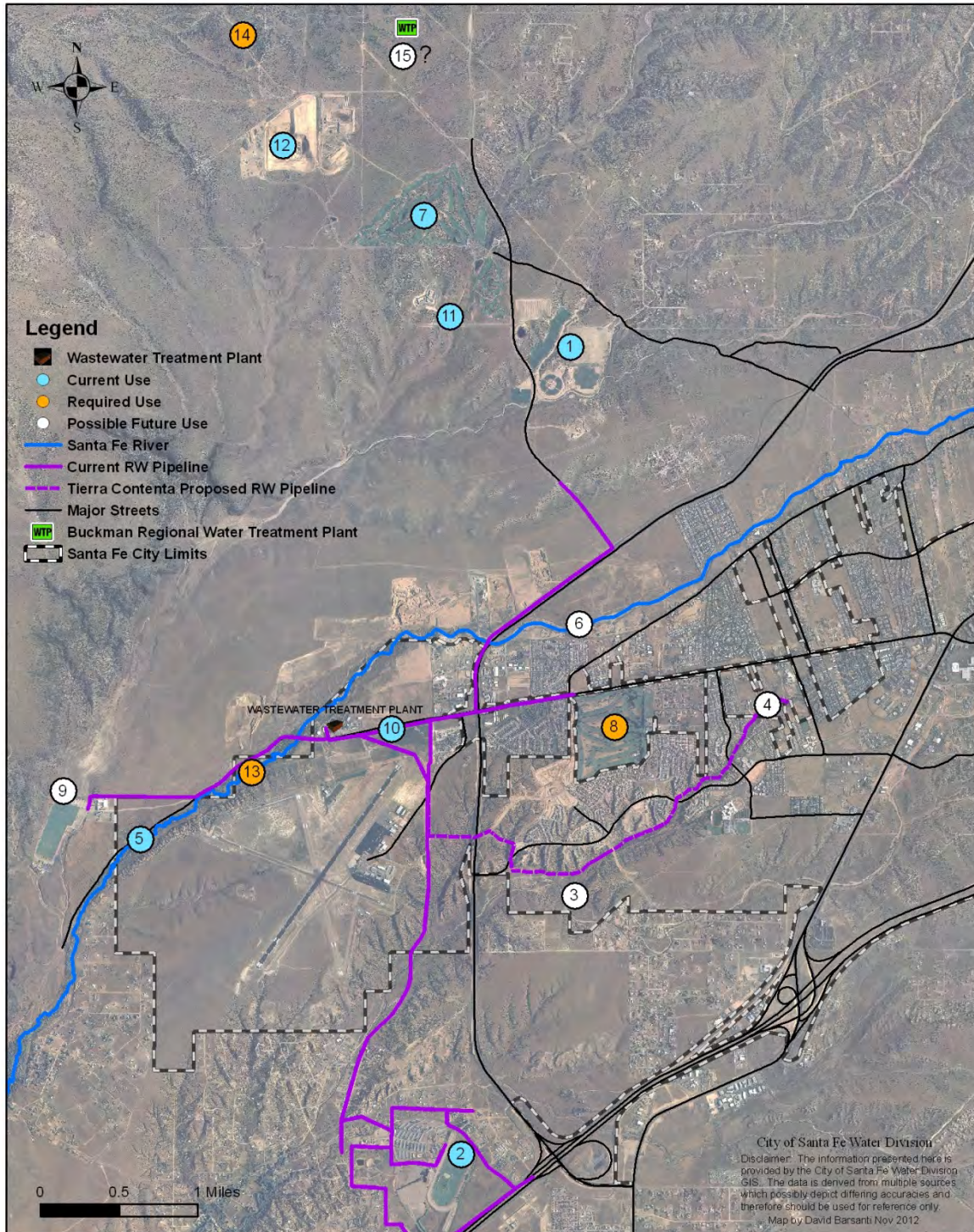


Figure 2: Location of reclaimed wastewater uses. Blue circles indicate current uses, orange circles required uses and white circles potential future uses.



dered herein were discussed and evaluated by Working Group members. The strategies presented herein evolved from the group's technical discussions. Organizations represented include: Santa Fe County, the City's Wastewater Division, the City's Park and Open Space Division (river and golf course staff), the City's Water Division staff, the Wastewater Reuse Advisory Task Force (WRATF), the La Bajada irrigation community, Santa Fe Watershed Association, Jemez y Sangre Regional Water Council, Espanola Basin Regional Issues Forum, The Club at Las Campanas, and Las Campanas Water and Sewer Cooperative (LC W&S Coop).

The Plan also reflects the ideas and input from elected officials, stakeholder and community member input. Appendix C identifies numerous committee and public meeting discussions on the draft plan; Appendix C and H include the comments and requests received from the interested public and stakeholders over the course of plan development.

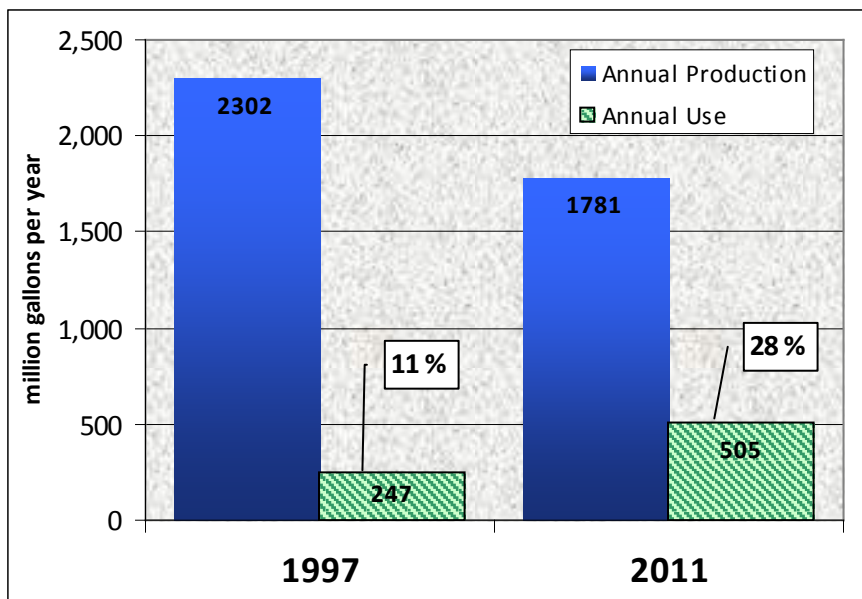


Figure 3. Comparison of reclaimed wastewater production and use, 1997 and 2011

One important driver for the reevaluation of this Plan is the increase in RW use, especially during the summer months with a corresponding decrease in RW production. In 1997 a total of 2,300 million gallons (7,140 af) was treated at the WWTP and of that volume only 247 million gallons (750 af), or less than 11 percent, was delivered for use (Figure 3). In contrast, in 2011, a total of 1,781 million gallons (5,600 af) of wastewater was treated and 505 million gallons (1,535 af),

or roughly 28 percent, was reused for non-potable uses (Figure 3; Appendix A). The vast majority (73%) of RW was discharged to the Santa Fe River, where it supports the riparian ecosystem and, seasonally, agriculture in the La Cienegilla, El Cañon, and La Bajada areas. It is notable that Santa Fe's indoor conservation efforts such as installing low flow toilets and water efficient appliances, or harvesting grey water has reduced the amount of available RW. Much less RW is available since the per capita water consumption dropped from 170 gpcd in 1997 to today's rate of approximately 106 gpcd.

1.1 Previous Studies and Related Efforts

The City has assessed RW needs and potential uses multiple times in the past decades. Recognizing the important role that RW plays in meeting water demands, the City hired Scanlon and Associates to analyze RW use in 1981 and 1984. Both studies, as well as the



Wastewater Reuse Study for Santa Fe, New Mexico and the Effluent Irrigation and Return Flow Credit Study determined that the unit cost to use RW for irrigation of parks and cemeteries in town was higher than simply continuing to use potable water (CDM, 1998).

In 1997 the City's contracted with Camp Dresser & McKee (CDM) and Lee Wilson and Associates to reconsider and prioritize the City treated effluent uses, resulting in the City's Treated Effluent Management Plan (TEMP). The TEMP, approved in May of 1998, coincided with the infrastructure improvements at the WWTP that included tertiary filtration and UV disinfection.

In 2003, the City negotiated a settlement with Las Campanas, which had, as a provision of the settlement, an obligation to provide up to 450 af/yr of RW. Also in 2003, the City Council convened a Task Force to review and advise on RW agreements and make recommendations to the Public Utilities Committee and the City Council. The Wastewater Reuse Advisory Task Force (WRATF) reexamined the RW contracts and recommended shorter contract terms, establishing RW budgets, and more clearly defined RW obligations. A number of the Task Force recommendations have been since addressed while others have not been implemented. The recommendations of the WRATF report that have not yet been implemented are incorporated into this Plan, where appropriate.

City Resolution 2006-64 (Appendix E) directed staff to "analyze the potential for effluent lines to provide water to City parks ..." and "to prepare a report for the Governing Body regarding plans for effluent lines." This effort took a step in addressing that requirement, by identifying that under the allocation priorities within this Plan sufficient RW is available only for a pipeline carrying RW for the Tierra Contenta and the Southwest Area Node (SWAN) Park. Plans for additional "purple" pipeline could be prepared if the RW currently distributed to other uses is redirected.

Efforts to pipe RW to the planned Southwest Area Node (Swan) Park are underway. The SWAN park master plan relies entirely on RW for its irrigation needs. A RW purple pipeline has been designed to approximately the same capacity as the "purple" (northern) pipeline that currently provides water to the Marty Sanchez Links de Santa Fe golf course, the Municipal Recreation Complex, New Mexico Game and Fish, and the regional landfill. Wastewater Management Division is finalizing the design specifications and expects to construct the line in 2013.

1.2 Terminology and Units

A note about terminology: previous efforts used the term **treated effluent** to describe the water produced by the City's WWTP. In recognition of the value of the water produced, the wastewater industry favors the term 'reclaimed wastewater'. The term 'reclaimed wastewater' better describes a product that begins as a waste product, and through extensive primary, secondary and tertiary treatment and disinfection, results in a product that can be reused for more purposes. Thus, the term 'reclaimed wastewater' has been used throughout this document.

Both million gallons and acre-feet are units commonly used in Western water and wastewater management. Where possible throughout this report, the RW usage is provided in both units. When, however, both units could not be represented (e.g. in



graphs), the unit most commonly used in water and wastewater production, million gallons, has been employed.

2 Management, Production, and Regulations

RW is recycled wastewater that has been treated to meet specific water quality criteria, in part, with the intent of being reused for a wider range of purposes. In Santa Fe, RW is produced from the collection and treatment of indoor water use (e.g. wastewater or sewage) from homes, businesses, and industry that is then treated at the City's WWTP located off Airport Road (Figure 2) and adjacent to the Santa Fe River. The wastewater is treated by a combination of pre-treatment, primary sedimentation, secondary biological treatment, and tertiary multi-media filtration before being disinfected with ultraviolet (UV) disinfection. For the past five years, 62% of the potable water delivered to Santa Fe residences and businesses is collected as wastewater; the other 38% is consumed, most commonly by outdoor irrigation. Currently about 5 million gallons per day (mg/d) of wastewater is treated at the City's WWTP.

2.1 Management of Reclaimed Wastewater

The City of Santa Fe Wastewater Management Division (WWMD) is responsible for the production and management of the RW. As the bulk provider of RW, the WWMD responsibilities include: providing a finished RW product that is in compliance with state water quality regulations; coordinating the use of RW among users; assembling meter information; billing RW users, where appropriate; maintaining the WWTP effluent discharge flow meter to the Santa Fe River; monitoring and reporting per the City's discharge permit, in some cases including the land application by other entities; developing RW contracts; and informing City's management and decision makers on the matters related to RW use. The WWMD is not responsible for maintaining distribution systems and pumping stations, reading or calibrating RW meters, operation and maintenance (O&M), and costs associated with O&M and RW delivery.

During the irrigation season, WWMD staff determines a schedule whereby different users can withdraw RW from the post-treatment outfall channel via one of the six distribution lines that exit the WWTP facility: 1) SF Country Club golf course (GC), 2) SF Downs, 3) the pipeline to the on-demand stand pipe on the east end of the property, 4) the "northern" purple pipeline (MRC, Marty Sanchez GC, Landfill, etc.), 5) Las Campanas via a 2 MG storage tank (not currently in use), and 6) SF Equestrian Center (not currently in use).

Most of the diversion pumping equipment and the meters are housed in the small buildings on either side of the canal (Figure 4). The RW flows discharged to the Santa Fe River are measured via an ultrasonic level recorder that continuously records flow at the effluent Parshall flume. In many ways WWMD staff act as the "mayordomo" of RW, determining when to allow the various users access to the RW based on the daily production rate fluctuations. The WWMD does not currently have a protocol or a list of priorities by which the RW users receive RW under shortage scenarios during critical summer months.



Figure 4. Reclaimed wastewater outfall channel and pump houses of users

In addition to the metering diversion from the outfall channel, the RW is sub-metered by various entities. The SF Country Club meters the flow of RW from one storage pond to the other and the amount of RW that is land applied with their irrigation system. SF Downs meters the water that is used for landscape irrigation that is beyond the quantity needed for infield turf grass irrigation. The water exiting the MRC pond is metered as it is applied to the MRC recreational fields. RW is metered as it is distributed among the storage ponds at the Marty Sanchez GC. Both the NM Game & Fish and the Landfill meter their diversions

where it is pumped from the Marty Sanchez GC ponds. The U.S. Forest Service (USFS) meters the RW taken from the 0.5 mg pond at the landfill for the USFS livestock watering pipeline. The entire RW distribution infrastructure, beginning with the diversions from the outfall channel, including meters, pumps pipelines are operated, maintained, and paid for by the RW users.

2.2 Santa Fe's Reclaimed Wastewater Water Quality

The City's WWTP produces and discharges RW and sewage sludge in compliance with its U.S. Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) permit and NMED Groundwater Bureau discharge permit. The City's NPDES permit No. NM0022292 can be found through the NMED's website at <http://www.nmenv.state.nm.us/swqb/Permits/>). Table 1 identifies the water quality limits and monitoring requirements for wastewater discharged to the Santa Fe River per the City's NPDES permit. Since some of water produced by the WWTP is pumped offsite and land applied, the WWMD is also required to report the quantity and quality of the water discharged to non-Santa Fe River locations, like the SF Country Club, the Marty Sanchez GC, the MRC, SF Downs, NM Game and Fish, and the Landfill. As discussed below, RW users have a separate set of water quality standards that must be adhered to prior to reuse.

In a national report to Congress (National Water Quality Inventory, 1996), the EPA reported that nitrogen (N) and phosphorus (P) concentrations are among the leading causes of water quality impairment in the U.S., and 40% of rivers/streams and 51% of lakes/reservoirs in the U.S. have designated use impairments. With recognition of the pervasiveness and severity of nutrient-related problems, the NMED has identified the need to accurately monitor and assess nutrient impairment and develop effective TMDLs for impaired waters in the State. The Santa Fe River below the WWTP is one of those impaired



waters and is scheduled for the development of Total Maximum Daily Loads in the near future. NMED’s use of numeric translators, or threshold values, to accurately assess waters of the state in light of the State’s current narrative standard for nutrients could result in future stringent NPDES permit effluent limits in discharges from the City’s WWTP. These limits could require significant expenditures of money to upgrade the Santa Fe WWTP or possibly limit future surface water discharges from the facility to avoid the costs of nutrient treatment and avoid the non-compliance that could result if the permit limits are implemented before funding and/or the implementation of Best Available Treatment Technologies is feasible. As a result, these future permit limits and continuance of surface water discharges should become a consideration in the current and future revision to this plan.

Table 1. Water quality limits and monitoring requirements from City of Santa Fe NPDES permit NM0022292.

EFFLUENT CHARACTERISTICS		DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
		Standard Units			
POLLUTANT	STORET CODE	MINIMUM	MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH	00400	6.6	9.0	Daily	Grab

EFFLUENT CHARACTERISTICS		DISCHARGE LIMITATIONS						MONITORING REQUIREMENTS	
		lbs/day, unless noted			mg/l, unless noted (*1)				
POLLUTANT	STORET CODE	30-DAY AVG	DAILY MAX	7-DAY AVG	30-DAY AVG	DAILY MAX	7-DAY AVG	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow	50050	Report MGD	Report MGD	Report MGD	***	***	***	Continuous	Totalizing Meter
Carbonaceous Biochemical Oxygen Demand, 5-day	80082	709 (*2)	N/A	Report	10	N/A	15	3 Days/Week	24-Hour Composite
Total Suspended Solids	00530	2127 (*2)	N/A	Report	30	N/A	45	3 Days/Week	24-Hour Composite
E. Coli Bacteria	51040	N/A	N/A	N/A	548 (*3)	2507 (*3)	N/A	3 Days/Week	Grab
Ammonia Nitrogen (Total as N)	00620	141.8 (*2)	Report	N/A	2	Report	N/A	Daily	24-Hour Composite
Nitrate-Nitrite (as N)	00630	212.7 (*2)	Report	N/A	3	Report	N/A	Daily	24-Hour Composite
Dissolved Oxygen	00300	Report	N/A	N/A	Minimum 5 mg/l (24-Hr. Average)			Daily	Grab
Total Residual Chlorine	50060	N/A	N/A	N/A	N/A	11 ug/l (*4)	N/A	Daily	Instantaneous Grab

WHOLE EFFLUENT LETHALITY (22414) (7-Day NOEC) (*5)	30-DAY AVG MINIMUM	7-DAY MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Ceriodaphnia dubia	100%	100%	Once/Quarter	24-Hr Composite
Pimephales promelas	Report	Report	Once/Quarter	24-Hr Composite

2.3 Reclaimed Wastewater Use Regulations

There are currently no federal regulations specific to RW use. State regulations for RW are not uniform across the country. The EPA has published suggested guidelines for RW use that are based in part on a review and evaluation of existing state regulations and guidelines, but not on risk assessments.

In New Mexico, as well as most states, RW regulations or guidelines are based on impact of treated water on the receiving environment, not rigorous risk assessment methodology. In New Mexico, treated effluent discharges to ground water are regulated by the NM Ground Water Protection Regulations and the Water Quality Standards for the Protection of Ground Water. All “persons” applying treated effluent to the ground, are subject to the



State regulations and required, at a minimum, to submit a Notice of Intent to Discharge (NOI) to the New Mexico Environment Department for review and evaluation. Any discharge of reclaimed wastewater of significant volume and/or duration will most likely be issued a Ground Water Discharge Permit (DP) to ensure that the application of this water does not result in the impairment of applicable ground water quality standards. The effluent limits contained in the WWTP's NPDES Permit are adequately protective of New Mexico's ground water standards and will usually result in effluent quality that can meet the requirements of most discharge permits.

State guidelines for RW have also been developed by the NMED for reuse of treated domestic wastewater and are summarized in the "NMED Ground Water Quality Bureau Guidance: Above Ground Use of Reclaimed Domestic Wastewater (2007)". The guidance document identifies four classes of RW (Class 1A, Class 1B, Class 2 and Class 3) based on the RW quality, the likelihood of public exposure to pathogens, and the potential impacts to groundwater quality. Since some of the Class-1B RW produced by the WWTP is diverted offsite (e.g. the SF Country Club, the Marty Sanchez GC, the MRC, SF Downs, NM Game and Fish, and the Landfill) and used "above ground", the City and other irrigators must comply with the requirements outlined in the state guidelines and the resulting groundwater discharge permit. Appendix B identifies the approved uses and the access restrictions associated with Class 1B RW. In recent years there have been isolated incidences when the effluent quality from the City's WWTP is not of sufficient quality to meet the state's discharge standards for RW. The WWMD notifies the RW users when RW does not temporarily meet the Class 1B water quality standards and therefore temporarily denies delivery of RW.

Municipal wastewater contains a wide range of biological and chemical compounds, some of which can be harmful to public health and ecosystems if not properly treated. Use of RW, therefore may pose an inherent risk due to changes in influent wastewater quality, equipment malfunctions, or operator error. This is particularly true relative to bacteriological exposure from pathogens in the wastewater. The EPA may eventually develop federal standards that are more protective of public health and more reliable as a result of improved technology, which may require more sophisticated and costly treatment in the future.



3 Assumptions

Multiple assumptions are embedded in this plan. The assumptions often constrain the parameters of the analysis, so that an apples-to-apples comparison can be made, as much as possible. Below is a list of assumptions made for these analyses:

- The RW budgets for the options are based on how they operate and function currently. Requested RW budgets are noted and the implications for increasing the budgets above current use are incorporated in Section 7. The full extent of the contractual right, while identified (Appendix E), is not the basis for the analysis, nor are possible future changes in demand (although this Plan does recognize the need to address projected climate change impacts).
- This plan, by design, does not allocate all of the RW available. The difference between the amount produced (1,940 mg in 2012; Appendix A) and the amount allocated (1,825 mg/yr) is intended to hedge against some of the variability in the amount of RW produce, the uncertainty of impact from future conservation efforts, and the possible inaccuracy of measuring and metering.
- The planning horizon spans 40 years.
- The City's WWMD will continue to deliver bulk RW to customers at the WWTP effluent outfall. The WWMD is not responsible for constructing or maintaining the storage, pumping, or pipeline infrastructure and the operation and maintenance costs associated with the movement and delivery of RW from the WWTP to the RW use location.
- Some of the RW availability and timing constraints could be remedied by storing the excess RW from the winter months and using it in the summer months. The magnitude of the storage needed is likely tens to hundreds of millions of gallons and is an option that may be considered in the future.
- In the future, the RW pipelines may be used for both 'raw' Rio Grande water and RW, thus enabling RW users to receive delivery from either or both sources.
- In the future, the methodology within this Plan may be used to rank RW uses that were not contemplated by this effort.
- WWMD is responsible to produce RW of sufficient quality to meet existing federal and state regulations. This plan does not address potential future changes to RW quality standards.
- RW users who land apply RW have the responsibility to use RW in accordance with the state guidelines as documented in the NMED Above Ground Use of Reclaimed Domestic Wastewater and appropriate NMED Ground Water Discharge Permit.
- The City owns the RW produced by the WWTP and may decide on how use or discharge the RW (based on the *City of Roswell* case). The City recognizes that the adjudication of the Santa Fe River basin may affect the relative rights of the appropriators on the Santa Fe River. Representatives of the NM Office of the State



Engineer (OSE) state that, unless priorities change, adjudication of this basin is still decades away. City of Santa Fe founding documents support the notion that a portion of the City's Santa Fe River water rights have a 1609 priority date, placing the City's rights among the oldest in the watershed (City Attorney Office, communication).

- Projected climate change impacts suggest that more RW will be needed to irrigate the same acreage because of projected hotter and possibly drier weather conditions. By mid-century stream flow throughout the Rio Grande basin, including the Santa Fe River, may be reduced by 10-25% (Climate Change and the Santa Fe Basin, 2013).
- The Club at Las Campanas, Inc. (CLCI; the golf course owners) will no longer purchase the City's RW. CLCI forfeited the right to the RW by not renewing the renewal term under the 2003 Settlement Agreement. Under the agreement, the City has the option to purchase the 2 million gallon storage tank at the WWTP from LC W&S Coop. The effluent pipeline and ancillary infrastructure that extends from the WWTP to the Las Campanas wastewater facility remains the property of LC W&S Coop.
- The impacts of annexation have only been considered in this plan to the degree that the projected population increases include the potential future wastewater customers within the presumptive City limits.



4 Reclaimed Wastewater Availability

4.1 Past Availability

As discussed in the introduction, significantly more RW was available in the 1990s than in the past decade (Figure 5). During the same time period, the RW use increased until 2006, and has since decreased. In 1995, the Santa Fe Country Club, Santa Fe Horse Park (now

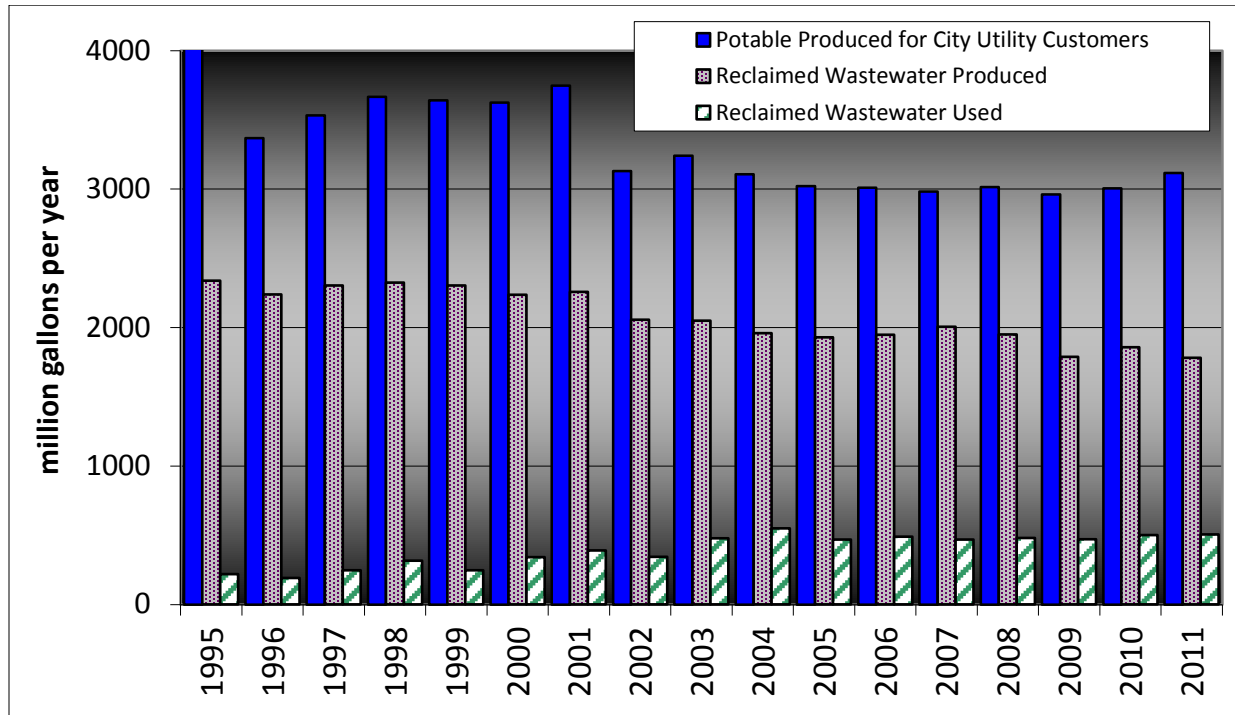


Figure 5. Potable water production, reclaimed wastewater production, and reclaimed wastewater use, 1995-2011

the Santa Fe Equestrian Center) and the Santa Fe Downs used RW for turf irrigation during the growing season. By 1996 RW was delivered to the Marty Sanchez Golf Course via the northern purple pipeline and use by the Municipal Recreational Complex followed within a year. In 2002, The US Forest Service and the Caja del Rio Landfill were added as RW users. Las Campanas golf course began taking delivery of RW in 2004. By 2007, the Santa Fe Horse Park stopped using RW, and CLCI followed by 2012.

4.2 Current Availability

The amount of RW produced at the WWTP varies from year to year. Annual production from 2007-2012 ranged from 1,780 mg/yr (5,464 af/yr) in 2011 to 2,005 mg/yr (6,154 af/yr) in 2007, with an average of 1,887 mg/yr (5,790 af/yr; Appendix A). Average daily production from 2007-2012 ranged from 4.9 mg/d (15.1 af/d) to 5.4 mg/d (16.8 af/d), with an average of 5.2 mg/d (15.8 af/d). Although potable water production varies seasonally, with the summer daily production twice the winter production, RW production is generally insensitive to seasonal usage fluctuations. The monthly production averaged at 157 mg/mo (482 af/mo), with an inter-monthly variance up to 8%. The variance is partly



explained by the variation in the number of days per month. The data on which these summaries are based are included in Appendix A.

The percentage of RW produced is, on average, 62.4% of the potable water supplied by the City to its customers (Appendix D); this is known as the RW return factor. The RW return factor does not include the potable water produced for the City's wholesale customers, like Santa Fe County, whose customers usually do not contribute to the wastewater returned to the WWTP via the sanitary sewer system, e.g. Las Campanas. Of the RW produced, generally between 20 and 25% (416 mg or 1,278 af in 2012) is routed to current RW users with the remaining 70-80% released to the Santa Fe River downstream of the WWTP. The percentage of RW released to the river in 2012 varied from 57% in July to 99% in January and December (Appendix A). The distance that the flow reaches also varies seasonally. In the winter time, the river flows are continuous until the plains below La Bajada village; in dry summers, the flows are reduced to a trickle downstream in the La Cienegilla area. In 2011 RW use accounted for 12% of the City's water demand.

4.3 Future Availability

Projecting the quantity of RW available into the future requires estimating a population growth rate, the percentage of potable water that is returned as RW and the gallon per capita per day (gpcd) use rate for the population. Potable demand is estimated by multiplying the gpcd by the population (adjusted for the year), which is then decreased by the RW return factor:

$$\text{Available RW per year} = \text{City customer population} \times \text{gpcd} \times \% \text{ of RW return factor}$$

The annual population growth rates used herein (Appendix D) are the same as those used in the Long Range Water Supply Plan (LRWSP, 2008) and from 0.68-1.37%. Future population is derived by multiplying the annual growth rates times the municipal population from the 2010 City census data (plus the addition of Santa Feans that live outside the City municipal boundary but are served by City water). The growth rates estimated in 2003 are likely higher than the estimates would be if a study were carried out today; however, they serve as a reasonable and conservative estimate.

For the future projection, the RW rate of return on potable water produced for City customers is assumed to be 62%, based on the actual RW return factor discussed above.

Figure 6 shows future potable water demand calculated using four different assumptions. In two of these calculations, constant gpcd of 105 (teal, small dashed line, Figure 6) and 110 (yellow, irregularly dashed line, Figure 6) result in both a growing amount of potable water demand and RW production. The 105 gpcd reflects the City's average water use over the past few years. The 110 gpcd value was assumed in the City's LRWSP. The other two scenarios assume that while the City's population continues to grow, water conservation efforts keep pace, so that the amount of water produced today will satisfy all the water needs of the 2057 population. This means that today's 105 gpcd would drop to 68 gpcd (teal solid line with the 'x' marking, also the blue line, Figure 3) and the 110 gpcd would drop to 71 gpcd (yellow solid line, Figure 3).



Any of the RW projections above are possible. The availability of RW in this plan is based on a realistic gpcd of 105 starting point with the ambitious water conservation targets to derive a conservative RW availability projection (blue solid line with 'x' markings). The ambitious water conservation targets are used because the LRWSP considers meeting all of the City's supply vs. demand 'gap' with increased conservation and the City's Water Conservation Committee's is evaluating target gpcd reductions of 1/2 to 1 gpcd per year. Therefore in this plan, the average annual RW production is 1,825 mg/yr (5,600 af/yr), the monthly average RW production is 152 mg/mo (467 af/mo), and daily RW production of 5.0 mg/d (15 af/day) and remain constant for the planning horizon. The calculations for all the methods are provided in Appendix D.

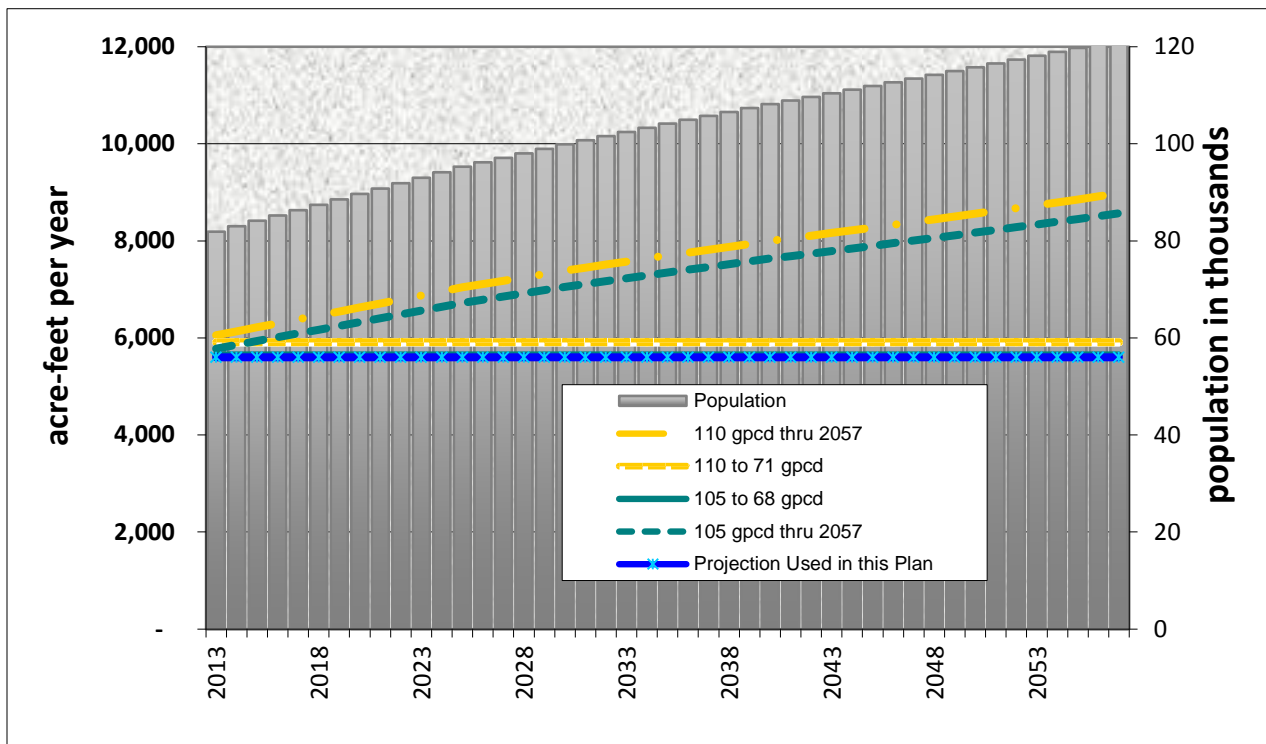


Figure 6. Projected reclaimed wastewater production, 2013-2057

4.4 Working with Uncertainty

Uncertainty is inherent in planning projections. Influencing factors, like population growth, water use, water right adjudications, future public policies, regulatory requirements and climate change impacts, may alter the roadmap laid out in this plan. However, because the chosen RW projections are conservative (by including ambitious conservation targets), it is unlikely that RW production will be less than the projected amount; a periodic review of the actual available RW versus that projected may reveal RW in excess of the amount allocated in this plan, and could therefore be assigned according to the methodology in this plan. Additionally, this plan has been designed to be flexible and adaptive, so that as changes arise in the future, the same methodology applied herein can be modified to evaluate changed RW availability, the need for different RW budgets, or new options that were not previously considered.



5 Reclaimed Wastewater Use Options

This section identifies the multiple RW use options that were considered within this Plan. The City has been using RW since at least the 1950s. Since 2007 (Figure 7; Appendix A), RW is purchased from the standpipe for dust control and other construction purposes; has irrigated the recreational fields at the Municipal Recreational Complex (MRC), the infield at the Downs, and the Santa Fe Equestrian Center; watered the golf course at Las Campanas (through 2011), the Marty Sanchez Links de Santa Fe and the Santa Fe Country Club; controlled dust at the regional landfill; provided water for livestock on the Caja del Rio; and flowed to the Santa Fe River downstream of the City’s WWTP.

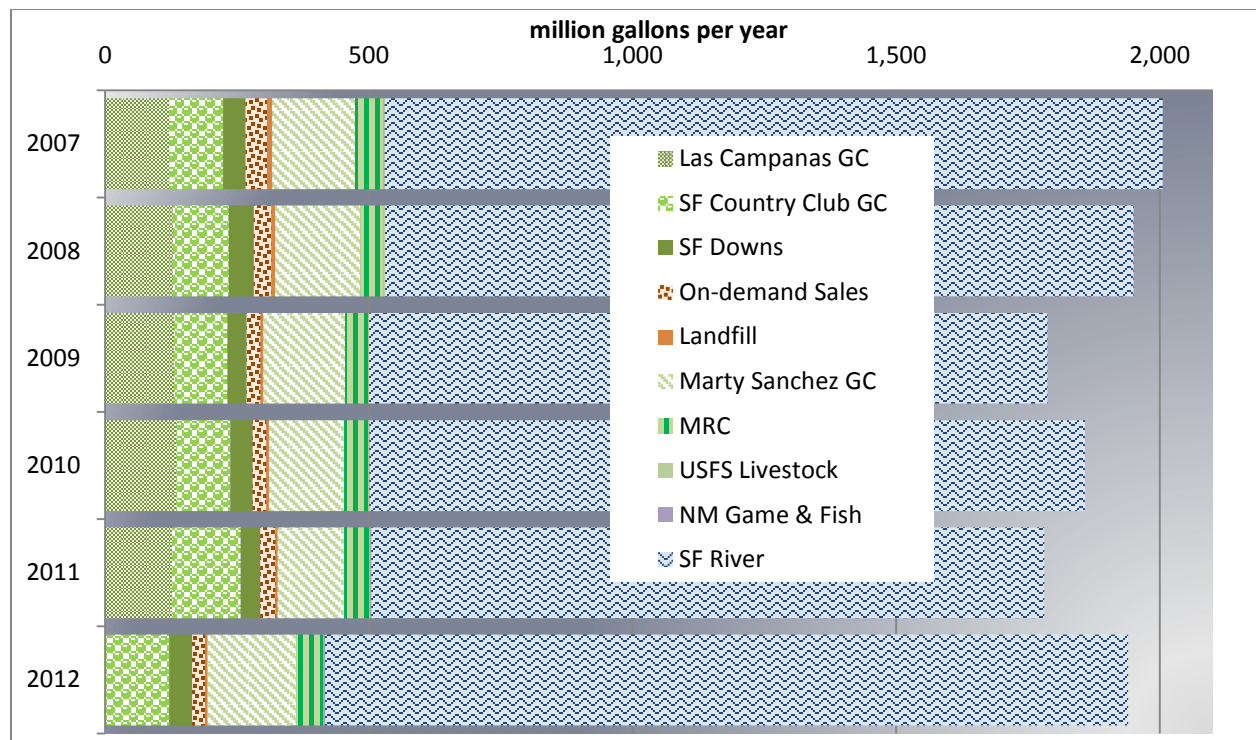


Figure 7. Annual reclaimed wastewater use, 2007-2012

5.1 Identifying Reclaimed Wastewater Options

All current RW uses are considered within this Plan, as well as some additional potential future uses. Initially, speculative options (e.g. endangered species obligations, water right obligations under an adjudication of the Santa Fe Basin) were also considered, as were three different ways in which RW could augment future potable water supplies. The City solicited input from the community on what additional options should be considered at the two public meetings and the website (Appendix C). The original twenty one options (Appendix E) were culled to the fifteen described below and analyzed herein. A sixteenth option, which emerged from the 2nd public meeting, and is included below, but was not included in the process early enough to be analyzed on par with the other options.



5.2 Need to Analyze Peak Month and Annual Peak Reclaimed Wastewater Availability

Although the City’s WWTP produces a relatively steady stream of RW, the pattern of the RW users is highly seasonal (Figure 8). A robust analysis of supply vs. demand, therefore,

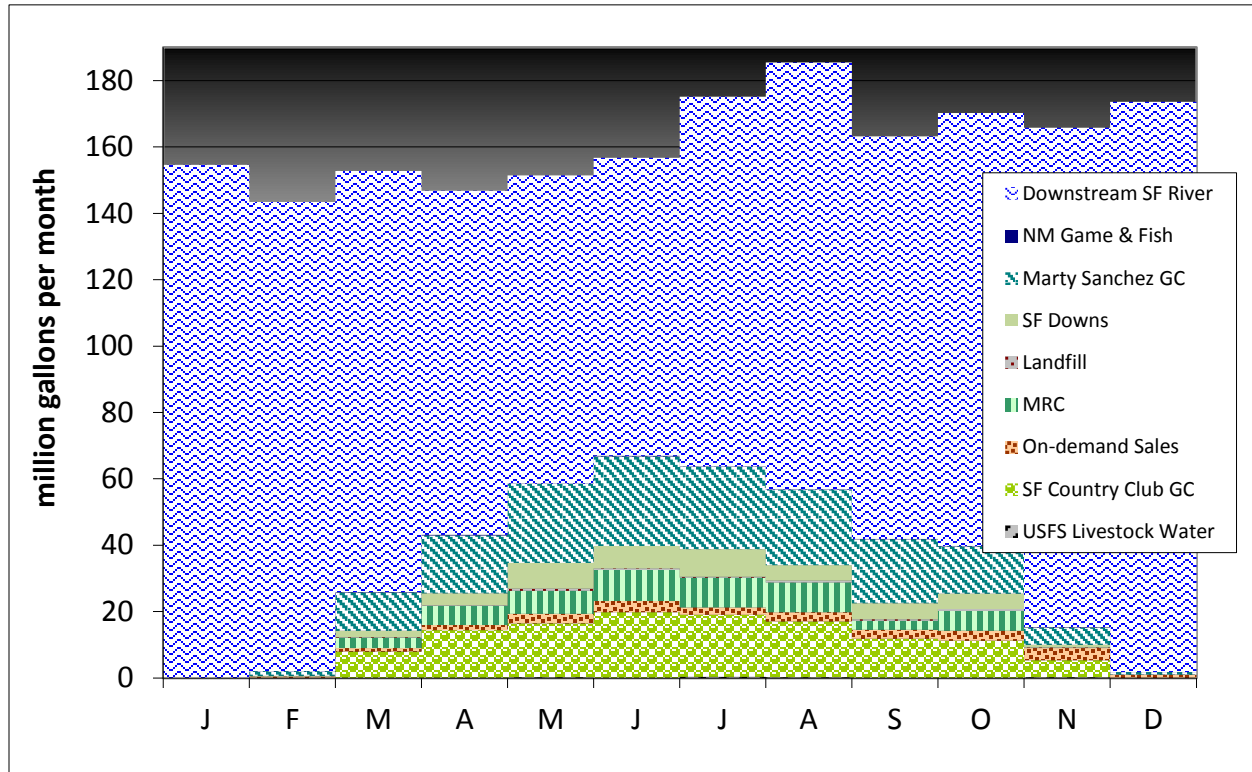



Figure 8. Monthly reclaimed wastewater use, 2012


must consider how RW can meet **annual**, **monthly**, and **daily** RW use needs. An analysis that only considered annual availability (e.g. Figure 7) might derive at a much higher estimate of available RW than when peak day and month uses are considered.


5.3 Identifying the Reclaimed Wastewater Budget for Each Option

In order to build a compatible RW use portfolio, in which a series of options is combined and evaluated against the RW availability, the RW options need to be clearly defined both descriptively and quantitatively with a RW budget with daily, monthly, and annual maximums (below). RW budgets from existing uses were derived from the highest RW used from 2007-2012 (Appendix A) unless recent contracts or information was more relevant. For future RW uses budgets originated from design parameters (e.g. SWAN park), requests (e.g. Santa Fe Equestrian Center), comparable use estimates (e.g. Southwest RW pipeline), or estimates from the Working Group (e.g. Santa Fe River). The RW budget for the Santa Fe River has a high degree of uncertainty because the system is not well measured and the objectives of flows are not well defined. The value of the RW associated with each option was also calculated using the 2013 RW rate of \$3.03/ 1000 gallons (Appendix E). The description notes those users that currently pay for RW.



1. MRC: RW is used at the Municipal Recreation Complex (MRC) to irrigate playing fields for baseball, soccer, football, rugby, and other recreational play. RW is piped from the WWTP via the “northern purple pipeline” to a storage pond just north of the MRC. From this pond, RW is metered, pumped and used on the MRC irrigated fields. A City resolution from 1995 permits up to 2 mg/d for use by Marty Sanchez Golf Course and the MRC via the “northern” RW distribution system. Since the installation of the pipeline, three additional users (US Game & Fish, Caja del Rio Landfill and USFS) are also supplied by the pipeline. City Parks Division pays its share of the electric costs to pump RW from the WWTP to the storage pond.
 
 - **RW budget:** Annual: 54 mg/yr (165 af/yr); Peak month: 11 mg/mo (34 af/mo); Daily maximum: 360,000 g/d. The annual value of the RW is \$163,000. **[Requested annual RW budget is 65 mg/yr (200 af/yr)]**

2. SF Downs: RW at the Downs of Santa Fe is used both for irrigating the race track infield (approximately 92%) and for irrigating trees and other landscaping. The infield is made available for recreational sport play like soccer and football. An agreement signed between the Pueblo of Pojoaque and the City defines that Pojoaque will pay \$2.59/1,000 gallons for any RW **not** used to irrigate the infield and generated approximately \$9,000 in revenue in 2011. The City pays Pojoaque \$1 for the use of the infield playing area.
 
 - **RW budget:** Annual: 43.5 mg/yr (133.5 af/yr); Peak month: 8.2 mg/mo (25 af/mo); Daily maximum: 400,000 g. The annual value of the RW that is traded to the Downs for use of the turf sports fields is approximately \$121,000.

3. SWAN Park: The design for the planned Southwest Activity Node (SWAN) Park identifies one large, natural-grass, irrigated recreational area: the Field Sports Area. The area is designed to accommodate organized sports groups like soccer, football, rugby, lacrosse and Ultimate Frisbee. RW will be used to establish some park landscaping during start-up (5-7 years), while other areas (orchards) will continue to receive RW irrigation for the long term. The Field Sports Area is planned to be constructed during Phase II (possibly finished 2016). The sole source of irrigation water for the park is via a proposed RW pipeline from the WWTP and a 200,000 gallon on-site RW storage tank. As currently designed, RW will be pumped into the RW pipeline using the same lift station that also pumps RW north toward the MRC and Marty Sanchez GC. For this analysis, the SWAN Park RW budget is assumed to be constant into the future, beginning in 2014, even though the park’s development is phased and the xeric landscaping may require less water in the long term once established. The working
 



assumption is that City Parks Division will pay for the pumping costs and annual O&M costs associated with the RW pipeline.

- **RW budget:** Annual: 19 mg/yr (57 af/yr); Peak month: 4 mg/mo (11 af/mo); Daily maximum: 120,000 g. The annual value of the RW is \$56,000.

4. SW Irrigated Parks: The 12-inch RW pipeline designed for SWAN Park has excess capacity than the water needs of the planned park. The



entire RW pipeline (identified as the Southwest Effluent pipeline in City capital improvement projects) has a similar capacity to the RW pipeline that supplies the “northern” uses (MRC, Marty Sanchez GC, etc.) and will share the RW lift station of the northern RW pipeline.

The pipeline’s planned route extends near public facilities (e.g. Capital High School, Southside Library, Cesar Chavez Elementary School, Ortiz Middle School) that could use RW for irrigation. However, since the exact RW uses along the “southwest RW pipeline” have not been determined, an overall RW budget for the pipeline, excluding SWAN was developed by allocating approximately the same RW budget as is currently used by the MRC. Because the pipeline shares the lift station with the “northern” pipeline, it is likely that additional RW storage on the system is needed. The combined budget of SWAN Park plus this option of 0.39 mg/d is less than one-sixth of the 2.0 mg/day pipeline capacity. The working assumption is that City Parks Division will pay for the pumping costs and annual O&M costs associated with the RW pipeline.

- **RW budget:** Annual: 48 mg/yr (149 af/yr); Peak month: 10 mg/mo (30 af/mo); Daily maximum: 330,000 g. The annual value of the RW is \$146,000.

5. Downstream SF River: The Santa Fe River downstream of the WWTP currently



receives over 70% of the RW produced and constitutes all but storm flows in the reach of the Santa Fe River between the WWTP and the springs that emerge at La Cienegilla. The RW flows through the Santa Fe’s Rural Protection Zone (RPZ, City property west of the Santa Fe Airport), then land owned by Santa Fe County, the Bureau of Land Management, and private land owners. The stream flow is used for irrigation by land owners in La Cienegilla, El Cañon Ranch, Tres Rios Ranch, and the village of La Bajada. The City Attorney’s office l opinion is that the City currently has no legal obligation to deliver RW

to water right holders downstream, because cities control the use of artificial waters under the City of Roswell court case and the New Mexico statute, NMSA 1978, § 72-5-17. A decade of restoration in the RPZ has created a thriving beaver population, lush riparian vegetation, and wetland areas. It is unknown how much water is needed to support the restored areas and the needs of the downstream agricultural needs.

The irrigators of approximately 100 acres of land downstream of the WWTP and the Santa Fe County Commissioners have requested that the City release “sufficient

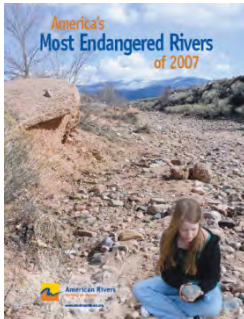


reclaimed water to the downstream users of La Cienegilla, La Cienega, the Village of La Bajada and the Pueblo of Cochiti for historic and agricultural traditions” (Board of County Commissioners of Santa Fe County 2011 and 2012 Resolutions (Appendix E). The State Legislature approved similarly worded memorials in 2011 and 2012 (Appendix E).

For this analysis, the Working Group assumed a minimum flow ranging from 0.5 mg/d in the winter season to three mg/d during the peak irrigation months. The 3 mg/d summer target flow value is based on a broad-brush understanding of stream flow conditions and downstream agricultural needs. This option assumes that within the annual water budget, the RW from the WWTP can be patterned to accommodate irrigation needs. The budget for this option may need to be revised in the future, after more stream flow data has been collected and analyzed. This option has no ongoing O&M or distribution costs.

- **RW budget:** Annual: 600 mg/yr (1,843 af/yr); Peak month: 93 mg/mo (285 af/mo); Daily maximum: 3,000,000 g. The annual value of the RW is \$1.82 million.

6. Upstream SF River: This option involves pumping water from the WWTP upstream to a currently unspecified point and delivering about 0.5 mg/d (0.75 cubic feet per second) of RW to the Santa Fe River daily. The pattern of release could be altered, but may be constrained during the summer months by other RW demands. The purpose of the option would be to create another “living” river reach along the Santa Fe River. The quantity of water would probably provide surface water flow for about 1-3 miles, depending upon weather and river channel conditions. The City would need to pay for the capital costs to install the pipeline and pumping equipment and be responsible for the continued pumping and O&M costs.



- **RW budget:** Annual: 177 mg/yr (543 af/yr); Peak month: 15 mg/mo (45 af/mo); Daily maximum: 500,000 g. The annual value of the RW is \$536,000.

7. Marty Sanchez GC: The Marty Sanchez Links de Santa Fe golf course currently uses exclusively RW to irrigate the golf course and other facility landscaping. RW is piped from the WWTP via the “northern purple pipeline” to a storage pond just north of the MRC. A City resolution from 1995 permits up to 2 mg/d for use by Marty Sanchez Golf Course and the MRC via the “northern” RW distribution system. From there, RW is pumped to a series of ponds around the golf course before being distributed by the irrigation system. City Parks Division pays its share of the electric costs to pump RW from the WWTP to the storage pond, and then to the golf course.





- **RW budget:** Annual: 168 mg/yr (517 af/yr); Peak month: 27 mg/mo (83 af/mo); Daily maximum: 900,000 g. The annual value of the RW is \$536,000. **[Requested annual RW budget is 196 mg/yr (600 af/yr)]**

8. SF Country Club GC: Under the existing contract, the Santa Fe Country Club has been irrigating its golf course with RW since the 1950s. RW is pumped during the day from the WWTP to two on-site storage ponds, and then applied to the golf course during the evening and early morning hours. The RW budget presented herein is based on actual use, not the existing, in-perpetuity contract, which allows the SF Country Club GC to use up to 700,000 gpd all year long (an equivalent of 256 mg/yr or 784 af/yr). SF Country Club GC maintains the conveyance pipeline and pays its share of the electric costs to pump RW from the WWTP to its storage ponds. In exchange for allowing the public to play on the golf course, the Club does not pay for the RW.



- **RW budget:** Annual: 130 mg/yr (400 af/yr); Peak month: 20 mg/mo (77 af/mo); Daily maximum: 700,000 g. The annual value of the RW is \$395,000.

9. SF Equestrian Center: The Santa Fe Equestrian Center used RW from the City to irrigate the equestrian polo fields through 2006; no RW contract currently exists between the parties. The irrigated fields are used for the center and also rented by local sports clubs. Currently the fields are irrigated with groundwater from RG-590 (e.g. Hagerman well) with water rights leased from Santa Fe County. The water budget herein originates from a 12/5/2011 letter from a SF Equestrian Center representative to the City stating interest in securing at least a 10-year agreement with the City for effluent. In the past, SF Equestrian Center maintained the conveyance pipeline and was responsible for the electric costs to convey RW from the WWTP to its facility.



- **RW [Requested] budget:** Annual: 41 mg/yr (127 af/yr); Peak month: 12 mg/mo (38 af/mo); Daily maximum: 400,000 g. A RW agreement with the SF Equestrian Center could generate \$125,000 annually.

10. On-demand Sales: The WWMD has a stand pipe to provide RW to customers for construction, dust control and other similar uses. The City's water conservation ordinances require the use of RW for all appropriate construction purposes. On-demand sales have declined in recent years. During fiscal year 2011/2012, the sales from the standpipe equaled approximately \$90,000. The RW budget for on-demand sales used in this analysis is 5% greater than actual use of the past three years, but is not as high as 2007 use.





- **RW budget:** Annual: 31 mg/yr (95af/yr); Peak month: 4 mg/mo (14 af/mo); Daily maximum: 140,000 g. The stand pipe sales will generate up to approximately \$94,000 annually. **[Amount sold in 2007: 40 mg/yr (123 af/yr)]**

11. NM Game & Fish: The New Mexico Department of Game and Fish has their headquarters on One Wildlife Way off Caja del Rio Road. The agency uses RW for a small pond and native vegetation that is all part of an on-site wildlife educational center. Water is pumped to NM Game & Fish from one of the storage ponds at Marty Sanchez GC. Relative to other uses, very little RW is used. The annual contract with NM Game & Fish allows the agency to use up to 1.6 mg/yr (4 af/yr).



- **RW budget:** Annual: 1.6 mg/yr (4 af/yr); Peak month: 0.23 mg/mo (0.55 af/mo); Daily maximum: 10,000 g. The City will collect about \$5,000 under this contract in 2013.

12. Landfill: Caja del Rio Landfill uses RW for dust control and rock crushing/screening during landfill operation. Use has varied between 2 to 9 mg/yr (7- 18 af/yr).



- **RW budget:** Annual: 6 mg/yr (17 af/yr); Peak month: 1.3 mg/yr (4 af/mo); Daily maximum: 40,000 g. RW use by the Landfill generates approximately \$17,000 per year. **[Requested annual RW budget is 12 mg/yr (37 af/yr)]**

13. BW Permit Compliance: The Buckman Well Field Permit Compliance option is a way for the City to fulfill to a New Mexico Office of the State Engineer (OSE) permit condition associated with pumping the City's Buckman wells (RG-20516 et al). The OSE annually calculates impacts from Buckman well groundwater pumping on the surface waters, including the springs in the La Cienega area using a groundwater model. The City is currently seeking recognition from the OSE that the release of water from the WWTP has mitigated the impacts over the past decades and that future offset calculations need to include RW released to the river. Other downstream discharges, like Option 5, could likely also to be counted toward permit compliance. The RW budget presented herein is preliminary. This budget assumes a constant pattern of release over the course of a year, although the OSE may ultimately require a different flow schedule.



- **RW budget:** Annual: 33 mg/yr (100 af/yr); Peak month: 3 mg/mo (8 af/mo); Daily: 90,000 g. The annual value of the RW use is \$99,000.



14. USFS Livestock Water: Historically, US Forest Service well RG-29725 supplied



livestock and wildlife water on the Caja del Rio. Among other difficulties, the drop in groundwater levels from Buckman well field pumping reduced the viability of the deep well, which currently only has a 17-foot water column. When water supply is interrupted, the livestock seek water from the Santa Fe River or the accessible portions of the Rio Grande. To increase water supply

reliability, the City has been providing RW as a replacement supply for livestock and wildlife on the mesa since 2006. By providing the water to the USFS, the City’s impacts on the well are offset and livestock intrusion into sensitive riparian areas can be reduced. The RW, pumped from the 500,000 gallon pond at the Landfill, reaches the stock tanks on the mesa through approximately 26 miles of small-diameter, above ground PVC lines. The budget herein is based on the expired RW agreement between USFS and the City. Actual use has reached 2.9 mg (9 af) in one year.

- **RW budget:** Annual: 2 mg/yr (6 af/yr); Peak month: 0.4 mg/mo (1 af/mo); Daily maximum: 15,000 g. The annual value of the RW is \$6,400.

15. Future Potable Supply: RW is a viable supplement to the City’s other potable water



supply sources. This could be accomplished in one of at least three ways: 1) returning the water via a pipeline to the Rio Grande and diverting an equal amount from the river at the Buckman Direct Diversion; 2) direct potable reuse (DPR) via the Buckman Regional Water Treatment Plant (WTP); or 3) by recharging the groundwater with RW and then extracting it in the future. “Direct potable reuse

(DPR) projects benefit public water supplies, agriculture, the environment, and energy conservation” (NWRI, 2012). This RWRP proposes a separate work effort to evaluate the merits of the three approaches or to pilot a project analyzing the need for RW pre-treatment before mixing it with the raw Rio Grande water at the Buckman WTP. Herein the quantity of water available for potable water supply is estimated by using the RW available during the non-irrigation season.

- **RW budget:** Annual: approximately 717 mg/yr (2,200 af/yr). No monthly or daily maximum is identified since this option uses what remains after other obligations are met. The annual value of the RW is \$2.17 million.

16. Urban Food Production: RW could be a valuable source of water to produce food in the areas served by the RW distribution system. Much of the landscaping at SWAN Park, for example, includes orchards. The production of local food to increase the region’s food security is emphasized in the Sustainable Santa Fe Plan. Because this option was added to the Plan from comments provided at the public meeting on January 24, 2013 after the analysis was complete, this option has not been given a RW budget, scored or ranked in the following sections.



The annual RW demand of all the options combined equals 2,072 mg/yr (6,358 af/yr), which is 14% more than the 1,825 mg/yr (5,600 af/yr) conservatively projected to be available (Figure 9).

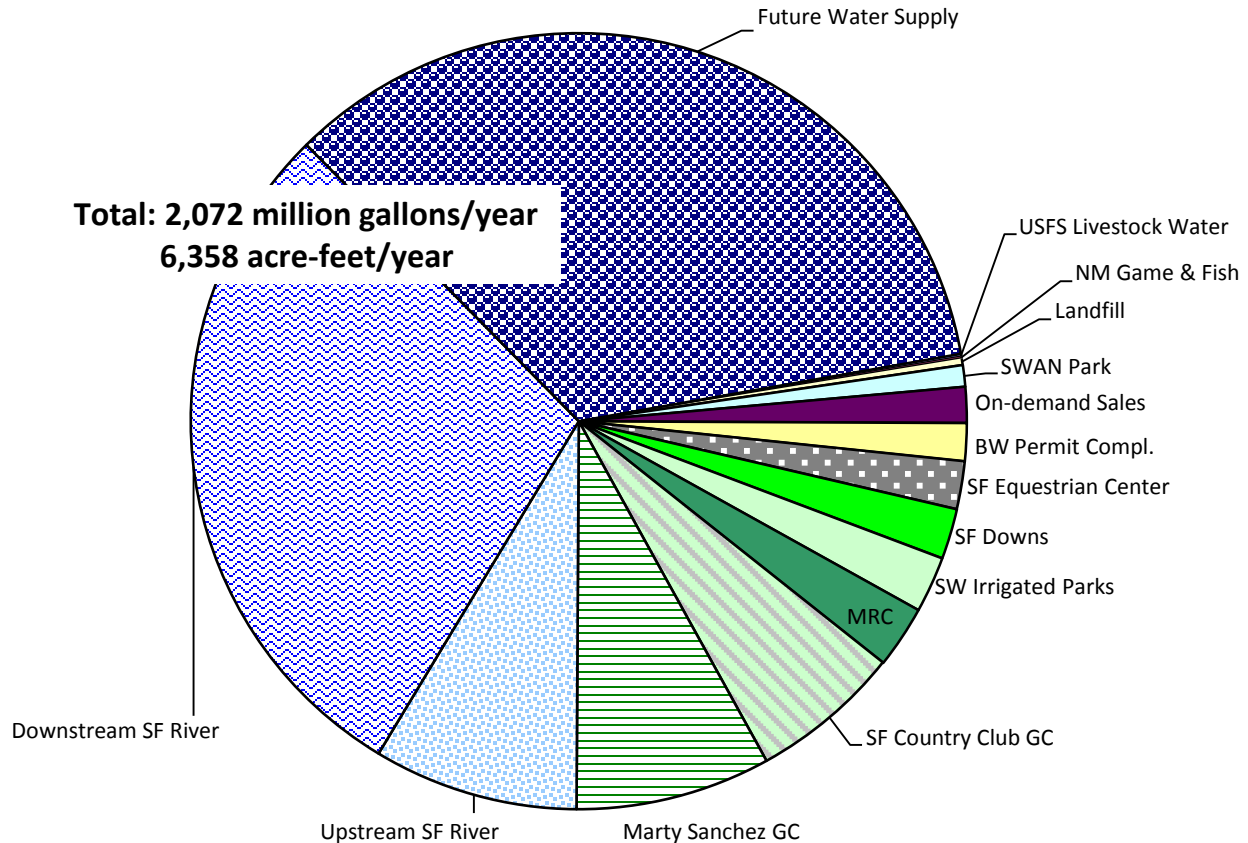


Figure 9. Annual total and relative proportion of all reclaimed wastewater use options combined

The demand for monthly and daily RW is even greater. The combined monthly demand for all the options except RW for potable water supply is 213 mg/d (Table 2), 40% more than the RW available and the combined *daily* demand of all the options (except RW for potable water) supply is 6.9 mg/d (Table 2), 38% more than the available amount. Hence, RW demand is greater than available supply under current average conditions, which will only worsen under drier hotter drought and projected climate change-impacted conditions, and become more pronounced during high seasonal demand.

5.4 Revenue Generation from Reclaimed Wastewater Options

As shown in Figure 10, only 2% of the City’s RW currently generates revenue in the amount of approximately \$121,000 annually. If all of the RW currently used were sold at the current rate of \$3.03 per 1000/gallons, the resource could generate \$1.4 million. Since 2012, one of the largest RW revenue sources, CLCI, no longer pays \$300,000 to \$400,000 annually to the WWMD.



Table 2. Options listed From Least to Greatest Reclaimed Wastewater Use Budgets

Option ID	Option Name	Annual Use (mg/yr)	Maximum Monthly Use (mg/mo)	Maximum Daily Use (mg/d)
14	USFS Livestock Water	2	0.4	0.01
11	NM Game & Fish	2	0.2	0.01
12	Landfill	6	1.3	0.04
3	SWAN Park	19	3.6	0.18
10	On-demand Sales	31	4.4	0.14
13	BW Permit Compl.	33	2.7	0.09
9	SF Equestrian Center	41	12.4	0.40
2	SF Downs	44	7.8	0.26
4	SW Irrigated Parks	48	9.8	0.33
1	MRC	54	10.9	0.36
8	SF Country Club GC	130	25.1	0.70
7	Marty Sanchez GC	168	26.9	0.87
6	Upstream SF River	177	14.7	0.48
5	Downstream SF River	600	93.0	3.00
15	Future Water Supply	717	-	-
	TOTAL	2072	213	6.871

Note: Shading indicates current use

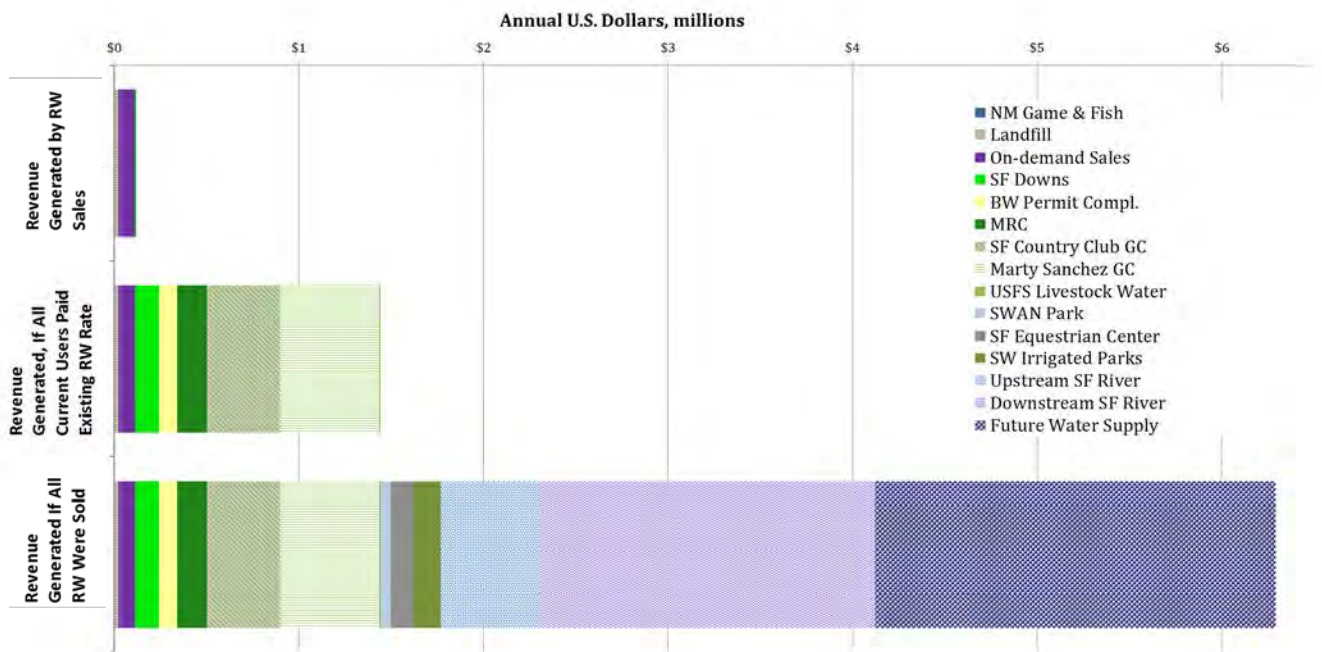


Figure 10. Current and potential revenue from sale of reclaimed wastewater



6 Prioritizing Options

6.1 Ranking Options Using Approved Criteria

The methodology of this RWRP scored then ranked options identified in Section 5 according to criteria and performance measures (below) developed by the Working Group and approved by the City Council on November 30, 2011 (Appendix F). The criteria are also similar to those used to evaluate long-range potable water supply options in the City’s 2008 LRWSP.

Primary Objectives

Performance Measures

Ensure Community Acceptability	<i>Maximize community and cultural values</i> <i>Maximize quality of life for community</i> <i>Maximize municipal use of reclaimed wastewater</i>
Improve Water Supply Reliability	<i>Minimize water shortage during drought</i> <i>Maximize long-term water supply sustainability</i> <i>Maximize ability to meet peak day demands</i>
Protect the Environment	<i>Minimize impact on ecosystems</i> <i>Maximize “greenness”</i>
Manage Costs	<i>Minimize overall project costs</i> <i>Minimize ongoing government costs</i>

The options were individually scored by the RWRP working group members according to how well the option meets the performance measure (right side column in Table 3 and Appendix F). Each criteria received a maximum score of fifteen points which were divided up equally among the performance measures (e.g. if the criteria has three performance measures, each performance measure is worth five points). The RWRP working group decided to collectively score the ‘cost’ criterion, using a more quantitative (\$ - \$\$\$\$\$) versus qualitative approach.

6.2 Ranking Options Using Weighted Criteria

While all the criteria above are important, some individuals place higher value on one criterion versus another. To identify the relative preference among the criteria, the community was surveyed via a ‘forced-comparison’ exercise (Appendix F), in which the participants are forced to choose between a pair of values. Seventy-six people, including elected officials, Working Group members, and public meeting attendees, participated in the exercise. The survey was also posted on the City’s website, but no surveys were received from this outreach effort. The forced comparison results were compiled and grouped according to the following categories: elected officials, public, RWRP working group members and all respondents (Figure 11).

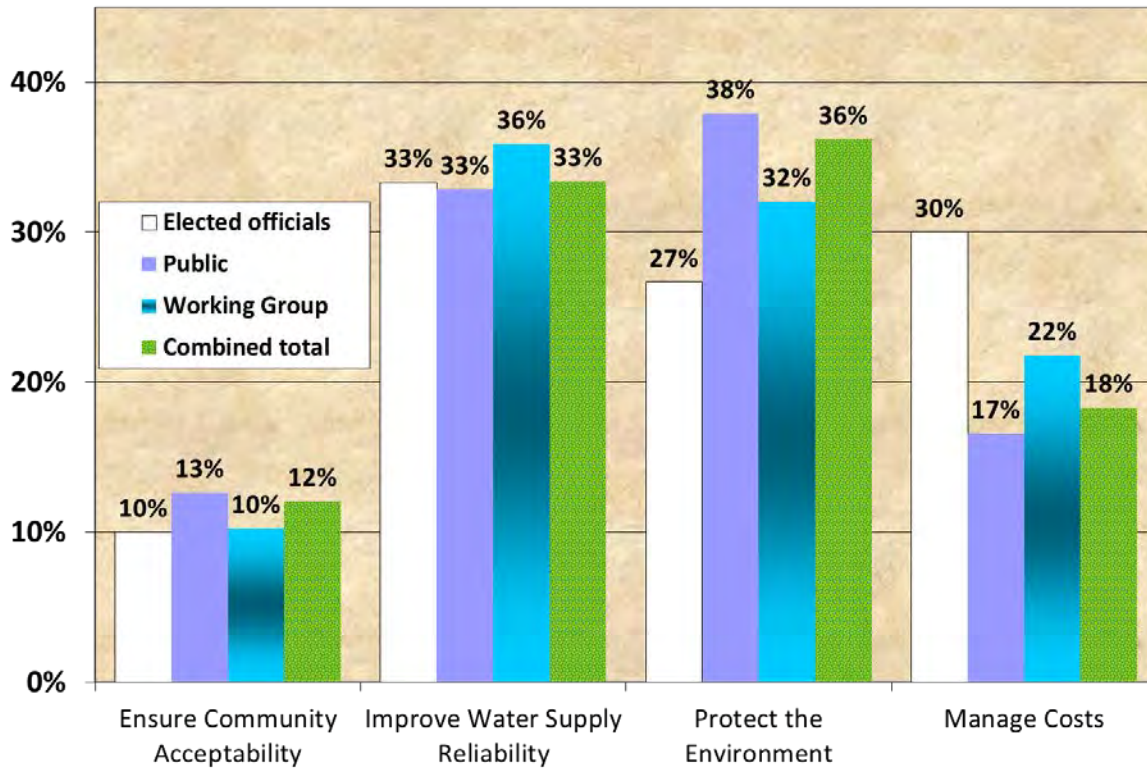


Figure 11. Results from the forced-comparison survey of the evaluation criteria

Of the four criteria, overall those surveyed identified that protecting the environment (36%) was most important followed by improve water supply reliability (33%; green bar in Figure 11). Managing costs (18%) was less important and least important was community acceptability (12%; Figure 11).

The options scored by the Working Group (Appendix F) were then weighted and resorted according to the weighted criteria in the survey findings above. The results (Table 3) indicate that by adding the criteria weighting both the overall score of the options and their ranking changed. Most notably, because the ‘Improve Water Supply Reliability’ was considered important in the survey, and costs less so, the costly option to use RW for future potable water supply changed from a ranking of eleventh to second (Appendix F).

6.3 Ranking Options Combining Weighted Criteria with Requirements and City Policy

After refining the ranking with weighted criteria, final adjustments were made to the ranking. First, the three options that are governed either by existing contracts or permit requirements (BW Permit Compliance, USFS Livestock Watering, and SF Country Club GC) were moved to the top of the prioritized list (Table 4), because the City does not have discretion over these options. Then all current uses that have been approved by past City ordinance (most important) and resolution (next important), were elevated in ranking yet kept in the relative priority. These options include on-demand sales, MRC dust control at the landfill, Marty Sanchez golf course, and the Santa Fe Downs (Table 4). The SF Downs is



included in the list, since the infield provides recreational playing fields that augment City municipal fields, and thus currently functions like a municipal facility.

Table 3. Comparison of option ranking using the weighted criteria vs. non-weighted

Ranking: Weighted Criteria	Option Name and Number	Weighted Score	Non-weighted Score
1	13 BW Permit Compliance	11.6	11.2
2	15 Future Potable Water Supply	9.8	9.3
3	14 USFS Livestock Water	9.2	8.6
4	11 NM Game & Fish	8.7	10.1
5	5 Downstream SF River	8.6	9.3
6	10 On-demand Sales	8.4	10.3
7	1 MRC	8.4	10.7
8	12 Landfill	8.3	10.3
9	3 SWAN Park	8.1	10.1
10	2 SF Downs	7.9	9.8
11	7 Marty Sanchez GC	7.8	9.7
12	4 SW Irrigated Parks	7.7	9.6
13	6 Upstream SF River	7.1	7.8
14	9 SF Equestrian Center	6.7	8.0
15	8 SF Country Club GC	5.9	7.3

Table 4. Option Ranking with Weighted Criteria, Requirements and City Policies

RW Water Budget, mg/yr	Option Name and Number	Ranking using Contracts, Ord., Policies, Etc.	Ranking: Weighted Criteria
33	13 BW Permit Compliance	1	1
2	14 USFS Livestock Water	1	3
130	8 SF Country Club GC	1	15
31	10 On-demand Sales	4	6
54	1 MRC	5	7
6	12 Landfill	6	8
168	7 Marty Sanchez GC	7	11
44	2 SF Downs	8	10
717	15 Future Potable Water Supply	9	2
19	3 SWAN Park	10	9
2	11 NM Game & Fish	11	4
600	5 Downstream SF River	12	5
48	4 SW Irrigated Parks	13	12
177	6 Upstream SF River	14	13
41	9 SF Equestrian Center	15	14



7 Reclaimed Wastewater Use Portfolios

The final step in this analytical process builds RW portfolios, or a combination of option using the ranked RW options and their budgets (Table 4) and compares it to the available monthly RW of 150 mg/mo (467 af/mo). Four distinct portfolios represent three different time frames:

- 'Current-actual' (Figure 12),
- 'Current-requested' (Figure 13)
- 'Near-term' (Figure 14), and
- '2020s' (Figure 15).

The 'near-term' refers to 5-7 years in the future when the planning, design and construction for most of the RW options can be completed and the allocated RW used. The '2020s' defines the future when the means for using RW to augment potable water supply has been selected and implemented. In the future portfolios, the added options have been placed according to their overall rank, and therefore may reorder the rankings in the 'current' portfolio.

7.1 'Current-Actual' Portfolio

The 'current- actual' portfolio (Figure 12) looks very similar to the way RW is currently used. Enough RW exists to satisfy all the options except the Downstream Santa Fe River and SF Equestrian Center in the peak month of June (Figure 12). Note that options with RW budgets of less than 2 mg/mo do not show up well in Figure 12 because they are much smaller in scale than the other uses. The SWAN park use is not shown here because, although Phase 1 may be completed by 2014, Phase 1 will not consume the majority of the RW allocated for the park. The Upstream SF River, SW Irrigated Parks and Potable Supply options are not included, because none are existing uses. In this portfolio, all RW potentially earmarked for potable supply in the future flows into the Santa Fe River, downstream from the WWTP, as it does today. The maximum daily demand of the 'current-actual' portfolio is 5.5 mg/d, which is 10% more than the RW availability of 5.0 mg/d (million gallons per day) assumed in this analysis.

NOTE: On May 29, 2013 the Governing Body approved the RWRP with the budgets presented in the 'Current-Actual' Portfolio

7.2 'Current-Requested' Portfolio

The 'current- requested' portfolio (Figure 13) is generally like the portfolio represented in Figure 12, except that the RW budgets for MRC, Marty Sanchez GC, Landfill and On-demand Sales have been expanded to the anticipated needs. Like the previous analysis, enough RW exists to satisfy all the current options except the Downstream Santa Fe River in the peak month of June and the SF Equestrian Center in May, June, and July (Figure 13). Like in the previous portfolio, future uses are not included and all the water earmarked for future potable water supply flow contributed to the flows in the Santa Fe River until that project comes is implemented. The maximum daily demand of the 'current-requested' portfolio is 5.7 mg/d, which is 15% more than the RW availability of 5.0 mg/d assumed in this analysis.

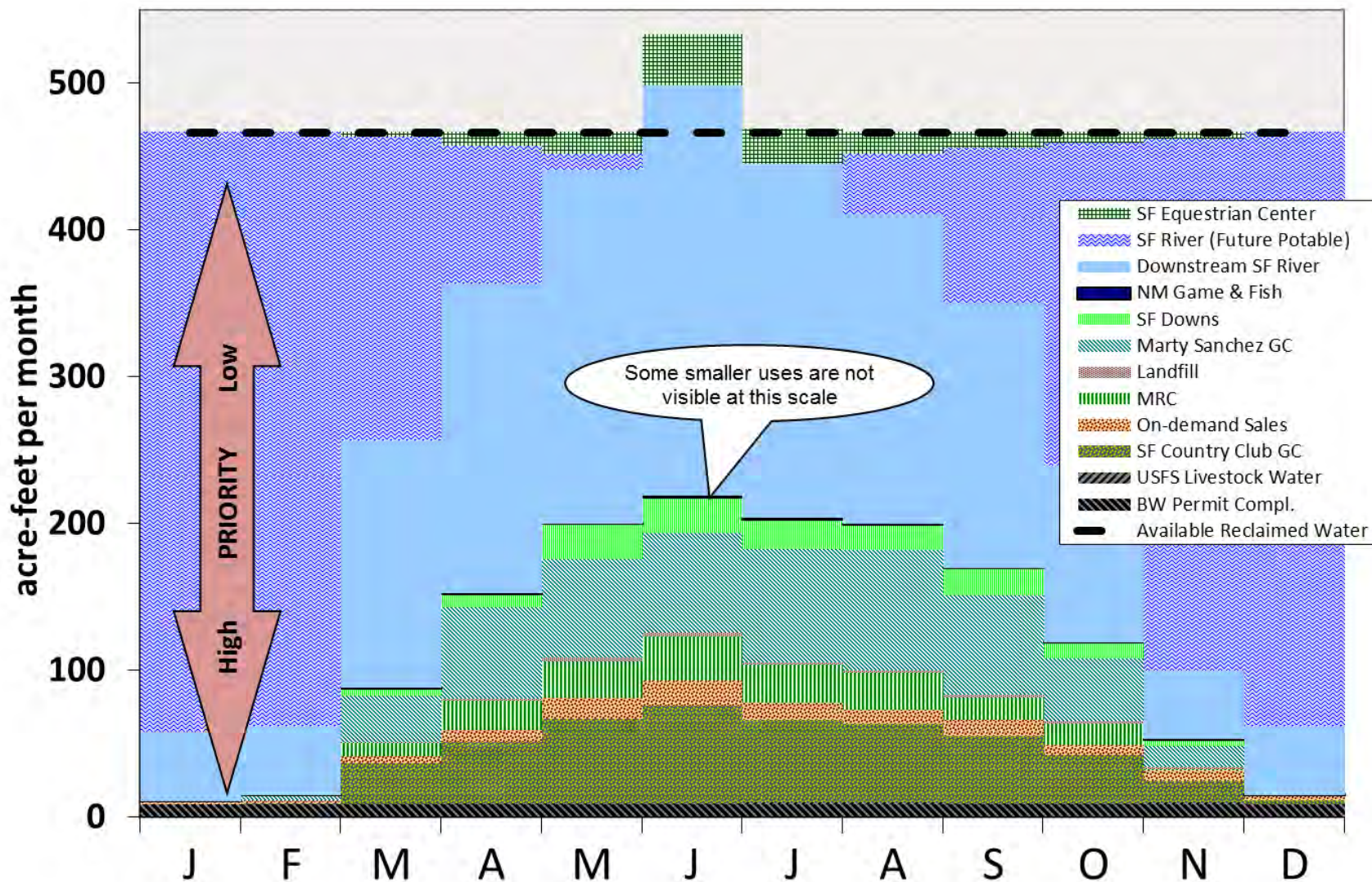


Figure 12. 'Current-Actual' reclaimed wastewater portfolio, which uses actual reclaimed wastewater budgets based on use

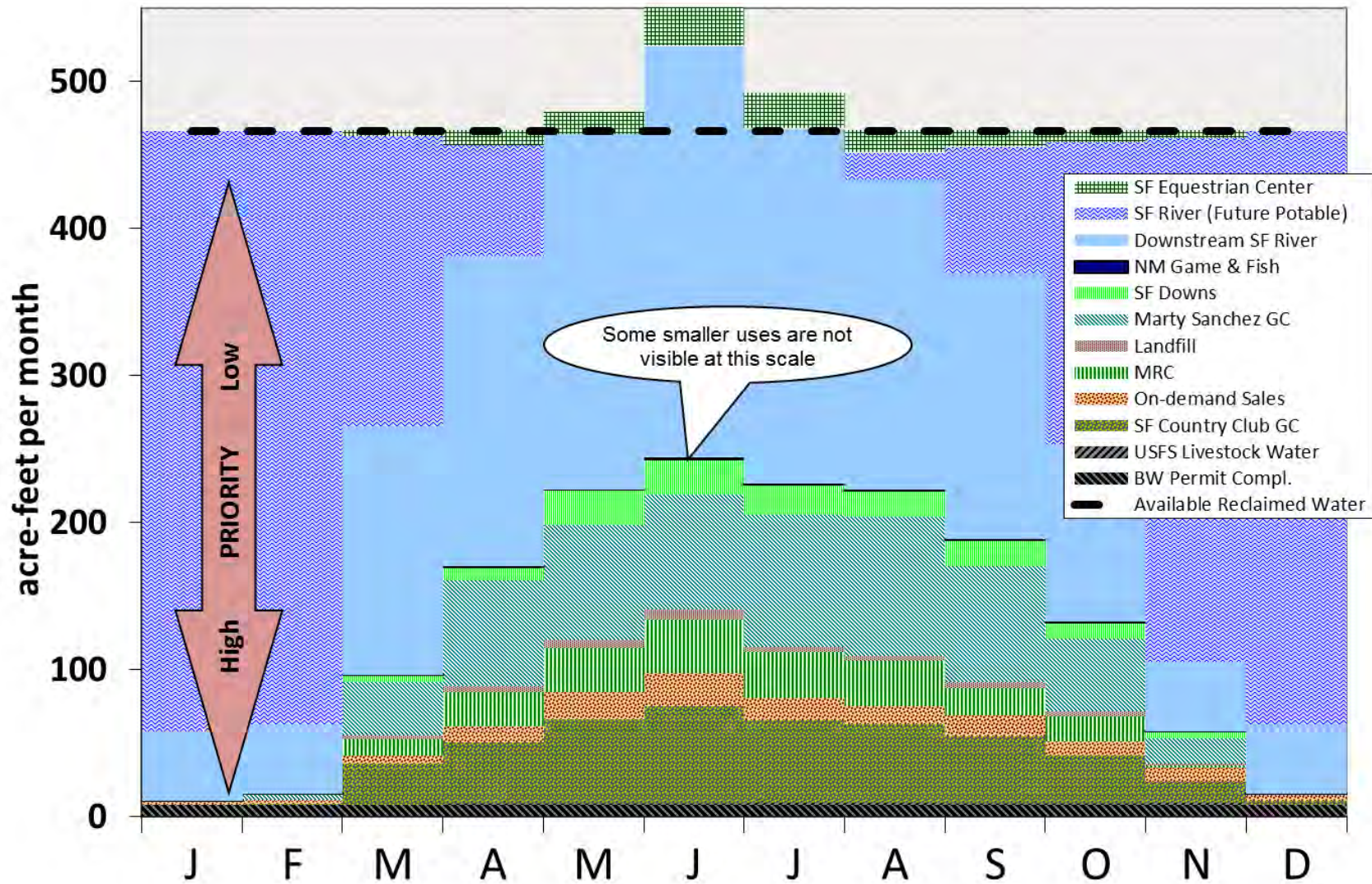


Figure 13. 'Current-Requested' reclaimed wastewater portfolio, which uses requested reclaimed wastewater budgets



7.3 'Near-Future' Portfolio

In the 'near-future' RW portfolio (Figure 14), the number of RW options increase because by this time the City has had the opportunity to implement RW options - like the SWAN Park, the SW irrigated parks, and Upstream SF River. Using the 'Current-Actual' RW budgets (not the requested), all options can be met in the 'near-future' except the Downstream SF River in May-July, SF Equestrian Center in May-July, and the Upstream SF River in May- July (Figure 14). Note that In the current ranking (Table 4), the Future Potable Supply option is valued as more important than Upstream Santa Fe River, which means that although the Upstream SF River demand can be satisfied in the 'near-future', the use of the RW for potable supply would trump this use in the '2020s'. If the Upstream SF River is identified as higher priority, the amount of water available for future potable supply would be reduced by approximately 25%. The maximum daily demand of all the all the options in the 'near-future' portfolio whose demand can be met is 6.0 mg/d, which is 20% more than the RW availability of 5.0 mg/d assumed in this analysis.

7.4 '2020s' Portfolio

In the '2020s' RW portfolio (Figure 15), the City could begin using RW to augment potable water supply. Because using RW for potable supply ranks higher (Table 4) than the SF Equestrian Center or Upstream SF River, the RW demand of these options are not met, and are shown above the RW availability line in Figure 15. The amount of RW available for potable supply is approximately 717 mg/yr (2,200 af/yr). Bringing the Future Potable Water Supply online will not add to the maximum daily demand, since this option will divert only the available water after the daily demand of other RW users has been met.

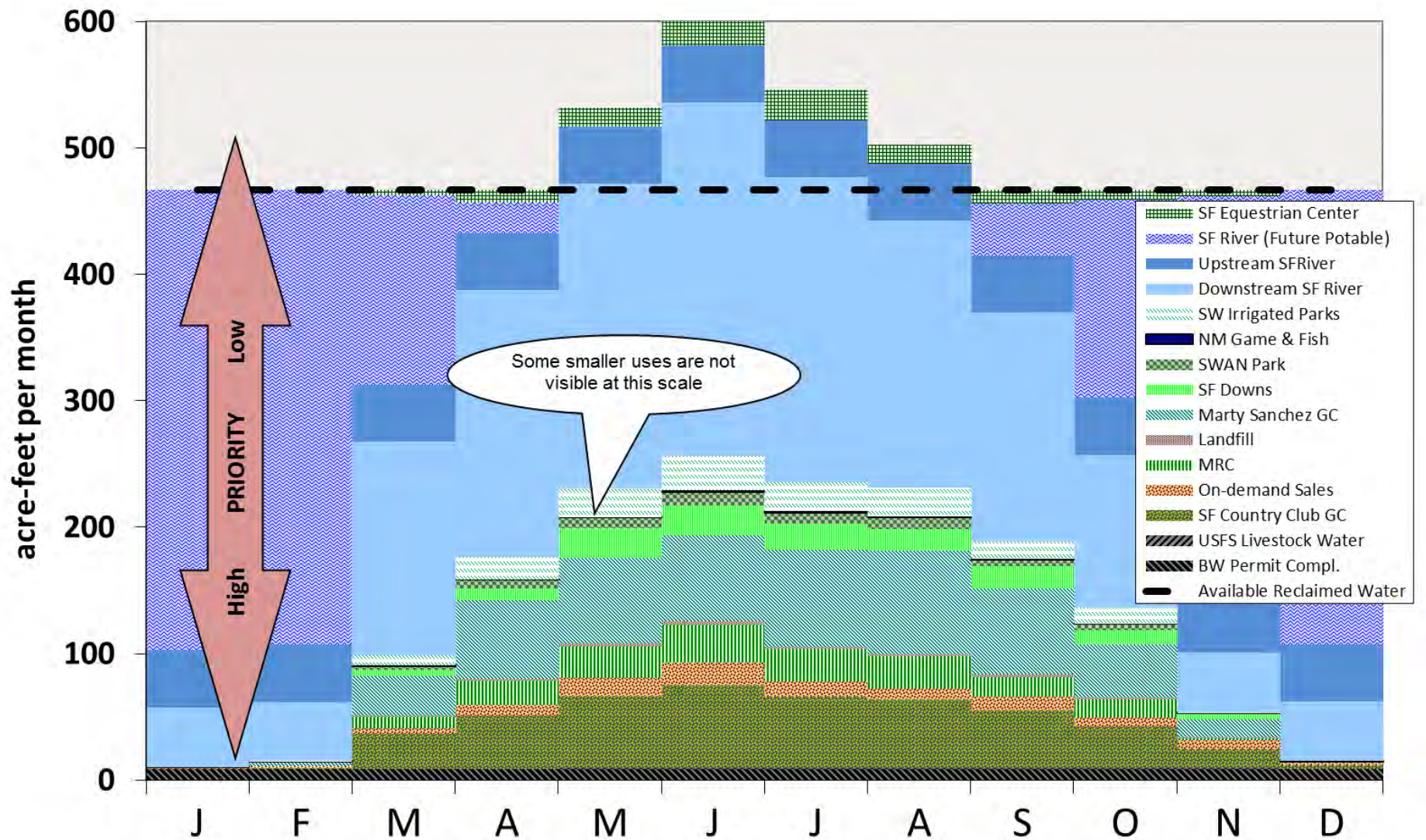


Figure 14. 'Near-future' reclaimed wastewater portfolio

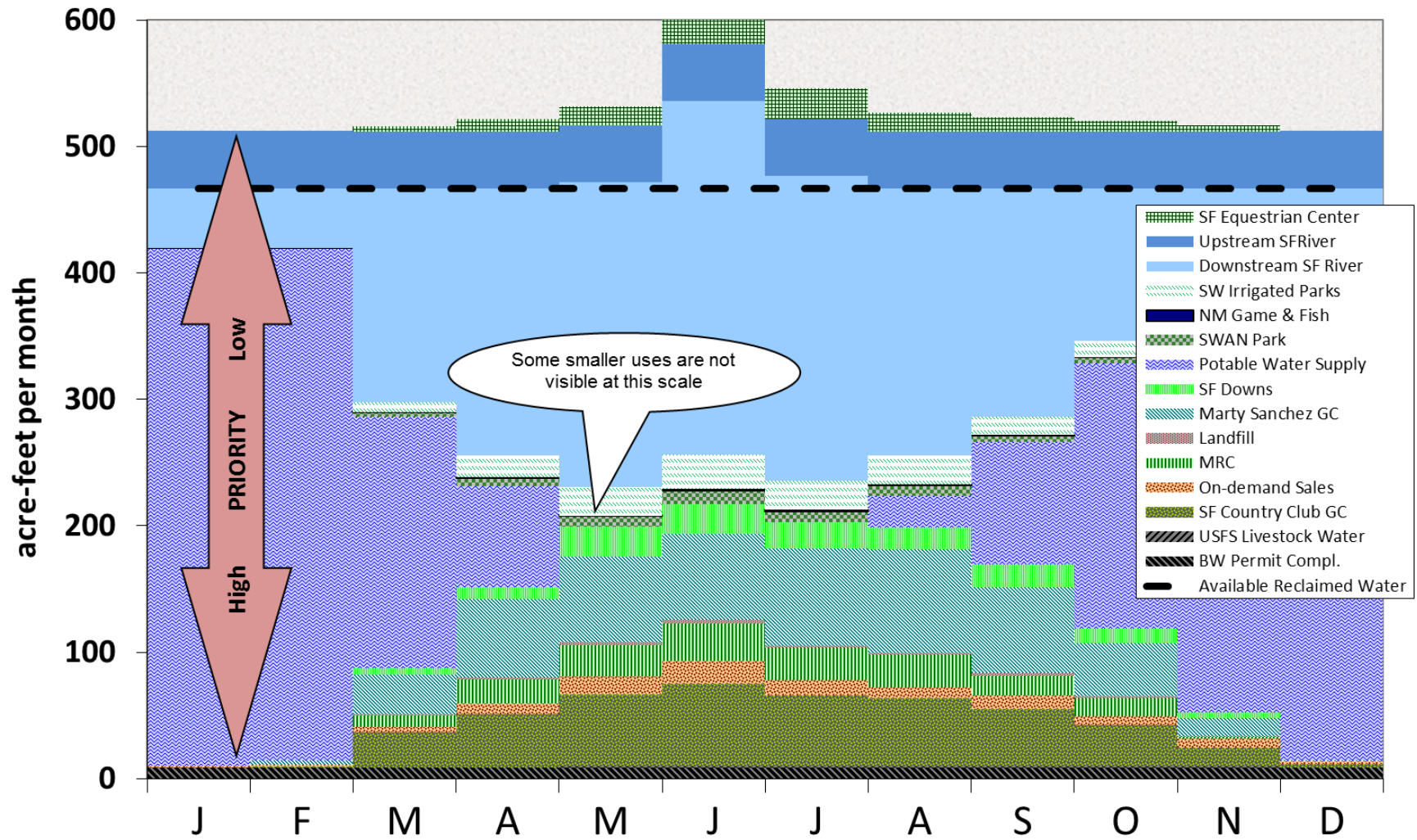


Figure 15. '2020s' reclaimed wastewater portfolio



8 Reclaimed Wastewater Policy Guidelines and Implementation Actions

Based on the findings of this Plan, the City establishes the following policy guideline and associated implementing actions that relate to the management, use, and allocation of RW currently and in the future. The strategies are grouped into six themes: water supply, water quality, economic, operational and management, 'green', stewardship. Although the policies are categorized under these themes, both the policies and the associated actions are often interrelated. Recognizing the need to prioritize among the many implementing actions, the Working Group scored the actions on a scale from ☆ to ☆☆☆☆☆ with five stars indicating the highest priority.



8.1 Water Supply Theme

Use RW as a non-potable water supply. The City will continue to use RW as a water supply source. Currently about 13% (1.34 mg/d) of the City's 10.3 mg/d annual demand is met by RW, and as much as 17% is supplied during summer months. The supply is used for irrigating recreation turf (playing fields, golf courses, etc.), construction, dust control, and with additional treatment could supplement potable drinking sources in the future.

IMPLEMENTING ACTIONS:

- ☆☆☆ WS1. To encourage the use of as much RW as possible, employ the methodology herein to allocate RW supplies if and when they exceed the amounts assumed in this plan.

Use RW to meet Buckman Wells permit offset requirements. The City will work with the OSE to use released RW to offset the surface water impacts caused by groundwater pumping from the Buckman well field.

IMPLEMENTING ACTIONS:

- ☆☆☆☆ WS2. Submit discharge credit application, plan, and necessary data to the OSE to demonstrate the discharge of RW offsets Buckman well field pumping impacts.

Use RW to supplement the City's future potable water needs. The City will use RW to augment future potable water supply needs and recognizes that expeditious implementation of this RW use has hydrological and ecological benefits to the region's water supplies. This consideration could be further influenced by continued development of nitrogen and phosphorous TMDL standards for the Santa Fe River, the cost to the City in meeting those standards, and the City's ability to implement the required technology (i.e., the cost of meeting the new standards could be greater than the cost to treat effluent to drinking water quality).



IMPLEMENTING ACTIONS:

- ☆☆☆☆☆ WS3. Conduct a feasibility analysis of the options and timing for using RW for potable supply (e.g. return flow credit pipeline to the Rio Grande, direct use with treatment, aquifer storage and recovery).
- ☆☆☆☆☆ WS4. Determine water right requirement, if any, to use RW for potable use.
- ☆☆☆☆☆ WS5. Secure necessary water and environmental permits.
- ☆☆☆☆☆ WS6. Design and construct the chosen RW potable supply option.

Measure RW production and use. The City will accurately track RW production, use, and Santa Fe River discharges.

IMPLEMENTING ACTIONS:

- ☆☆☆☆☆ WS7. Develop a program to more accurately quantify RW use. The program may include RW meter reading and calibration requirements, standard RW recording and calculation procedures, and additional meters.
- ☆☆☆☆☆ WS8. Build a cooperative RW meter calibration program wherein qualified Public Utilities staff members calibrate meters of RW users for a nominal fee.
- ☆☆☆☆☆ WS9. Annually calculate unaccounted RW and, if necessary, identify ways to reduce RW system losses.



8.2 Economic Theme

Value RW as a municipal asset. Presently, water and wastewater rate payers subsidize non-paying RW uses. As was recommended in the 2003 WRATF report, an equitable economic model entails all facilities benefiting from the RW paying for the use of the resource.

IMPLEMENTING ACTIONS:

- ☆☆☆☆☆ E1. Require all RW users to pay equitably for the resource.

Use RW to generate revenue. Currently, the City’s wastewater users, through their payment of sanitary sewer rates, fund the collection and treatment of wastewater and the creation of RW. The current RW pricing is not consistent (varies from no charge to \$3.20 per 1,000 gallons of RW). Since 2012, one of the largest RW revenue sources, CLCI, no longer pays \$300,000 to \$400,000 annually to the WWMD. As shown in Figure 10, only 2% of the RW distributed generates revenue. Revenues collected by the sale of additional RW could be used to defray current or enhanced treatment costs (e.g. filtration, ultraviolet disinfection system, emergency disinfection procedures) or to fund the implementation actions in this Plan.

IMPLEMENTING ACTIONS:

- ☆☆☆☆☆ E2. Identify the true cost and value of RW. Determine the historic, current and future capital cost for producing RW, managing RW use, the RW opportunity



cost (either the market value or the value to City for other uses), and the RW economic value. Include factors like cost avoidance, recreational and environmental services, and aquifer sustainability while recognizing market limitations.

- ☆☆☆ E3. Determine a RW rate structure that considers the various economic factors above. The rate factor may differ for different types of users (municipal, regional governmental, federal government, commercial, etc.), but the program should be systematic and transparent and shift some of the RW production costs from the RW producers (sanitary sewer customers) to the RW users.
- ☆☆☆ E4. Seek compensation for RW released to the Santa Fe River explicitly for the benefit of users downstream.
- ☆☆☆ E5. Claim and market the RW stored in the aquifer near the WWTP from RW passively infiltrating via the Santa Fe River.

Seek financial assistance to implement recommendations of this plan. Many of the implementing actions in this Plan require financial resources to implement. Some funding may be available within current City departmental budgets; much will need to be secured through local, state, federal and non-profit organizations grants and loans.

IMPLEMENTING ACTIONS:

- ☆☆☆☆ E6. Seek grants and low-cost loans to implement the recommendations herein from federal (e.g. Bureau of Reclamation Title 16, Bureau of Reclamation WaterSMART program), state (e.g. Water Trust Board, NMED 319 program) and non-profit (e.g. River Network) sources.



8.3 Water Quality Theme

Produce high quality RW. The City’s WWTP produces RW that meets the state regulatory requirements and federal guidelines. Periodically and as needed, the WWTP upgrades its processes and facilities to meet new regulatory requirements and enhance the quality of RW produced.

IMPLEMENTING ACTIONS:

- ☆☆ WQ1. Monitor the development of RW discharge and reuse standards in other states and monitor EPA’s adoption of more stringent guidelines in the future.
- ☆☆☆ WQ2. In order to better assure meeting bacteriological discharge requirements and to minimize potential adverse health effects due to exposure of RW, evaluate appropriate advanced treatment technologies, improvements to the filtration, and disinfection unit operations.
- ☆☆☆☆ WQ3. Support existing household pharmaceutical disposal program to decrease pharmaceutical products in the City’s wastewater, RW, and Santa Fe River.
- ☆☆☆ WQ4. Work with local community to determine stream and sediment quality and health impacts downstream of the WWTP.



- ☆☆☆☆ WQ5. Continue to monitor and participate in the NMED’s current development and adoption of new water quality standards and limits for nutrients (nitrogen and phosphorous) which could impact the City’s discharge of RW to the Santa Fe River.

Minimize the public health risk in land application of RW. Because of inherent RW exposure risk, state regulations dictate under what conditions RW can be used for irrigation. While the WWMD produces RW and is required to meet the regulations outlined in “NMED Ground Water Quality Bureau Guidance: Above Ground Use of Reclaimed Domestic Wastewater”, the division does not manage the land application.

IMPLEMENTING ACTIONS:

- ☆☆ WQ5. Review and update protocols and Best Management Practices for municipal entities that irrigate with RW.
- ☆☆☆☆ WQ6. Cooperate with all RW land applicators to assure compliance.
- ☆☆ WQ7. Collect and centralize use data, compliance reports and other RW use related documents from municipal RW users.
- ☆☆☆☆ WQ8. Add release of liability statements into contracts with non-municipal RW irrigators.



8.4 Operational and Management Theme

Optimize existing RW delivery capacity. Currently, no standard operating procedure exists on how to allocate RW daily among the users or handle RW shortages. Additionally, some key infrastructure improvements may assist in the ability to meet multiple, often competing demands for RW. Enhanced management allows better use

of the resource.

IMPLEMENTING ACTIONS:

- ☆☆☆☆ OM1. Develop an RW diversion and delivery protocol identifying which users can divert when, how much, and for how long.
- ☆☆☆☆ OM2. Conduct a RW infrastructure improvement study to determine how existing or new RW infrastructure can be optimized to best supply existing and future RW users.
- ☆☆☆☆ OM3. Consider how increased above or below ground surface storage (e.g. the 2 million gallon RW tank), other infrastructure improvements, automation, variable frequency pumping, etc. can be used to achieve equity, timing, and shortage-sharing objectives.
- ☆☆☆☆ OM4. Identify if the Las Campanas RW pipeline can assist in creating system redundancy, reliability, or optimization and seek necessary use agreements and infrastructure improvements.

Develop necessary and equitable contracts, resolutions, and ordinances. Current RW



users receive RW under varying circumstances, rates, and conditions.

- ☆☆☆ OM5. Unify contract provisions, renewal processes, and RW rates. Streamline process for short-term contract renewal.
- ☆☆☆☆ OM6. Seek compensation for all RW use. In instances where the municipality or another entity does not pay for RW, recognize the value of the RW being provided “on the books”.
- ☆☆ OM7. Seek short-term, non-summer month RW contracts.

Determine shortage sharing and emergency guidelines. Currently, no guidelines exist on how to curtail RW during shortages or emergencies, as recommended within the WRATF Final 2003 Report. Additionally, no provisions exist for back-up water supply for some uses.

IMPLEMENTING ACTIONS:

- ☆☆☆☆ OM8. Develop criteria, strategies, processes, and protocols for addressing shortages, water quality changes, back-up supplies, and emergencies to better adapt to future conditions.
- ☆☆☆☆ OM9. Revise RW use agreements to include sharing shortage parameters, water quality constraints, and other circumstances of non-delivery.

Build Resiliency into RW allocations. All RW users require reliability to buffer against the natural daily and seasonal fluctuations that occur in RW production and unforeseen circumstances. A reserve and redundant supply would provide some water for unforeseen conditions.

IMPLEMENTING ACTIONS:

- ☆☆ OM10. Reserve or store a portion (e.g. 1-5%) of the available RW to a reserve account, perhaps storing water in the regional aquifer.
- ☆☆ Develop a second water supply source for RW users for reliability and back-up. Options include a high yielding production well from RW stored in the aquifer or raw Rio Grande water.



8.5 Stewardship Theme

Provide adequate flows to the Santa Fe River. The City recognizes the environmental, recreational, and water quality enhancing services provided by the Santa Fe River and specifically the Santa Fe Rural Protection Zone.

IMPLEMENTING ACTIONS:



- ☆☆☆ S1. Determine the minimum and target flow requirements to maintain and/or enhance the ecological services provided by the Rural Protection Zone, including the reduction of nutrients (especially nitrogen and phosphorous).

Collaborate and coordinate with downstream agricultural communities and other stakeholders. The City recognizes that the RW from the WWTP provides water that downstream agriculture has become dependent upon since natural spring flows in the area have decreased.

IMPLEMENTING ACTIONS:

- ☆☆☆☆ S2. Collectively develop and implement a stream flow monitoring program to better understand water budgets in the La Cienegilla, La Cienega, and La Bajada region.
- ☆☆☆☆ S3. Provide WWTP output data regularly to interested parties.
- ☆☆☆☆ S4. Convene a public workshop with water right experts to develop a common understanding of the water rights issues and to better understand the City’s legal obligations.
- ☆☆☆☆ S5. Develop an operating arrangement with daily, monthly and annual stream flow targets, within the adopted RW priority system.
- ☆☆☆☆ S6. Participate in planning processes of area communities, encourage rural-urban relationships, and seek multi-party win-win solutions to water quality quantity issues identified.



8.6 Green Theme

Use RW efficiently. Like all others water resource, RW is precious. By using RW efficiently, the number of RW uses can expand or flows provided to the ecosystem can be increased.

IMPLEMENTING ACTIONS:

- ☆☆☆☆ G1. Initiate a required irrigation efficiency analysis for each RW user (this could be expanded to cover all turf irrigated by the City) and identify locations where irrigation of RW can be reduced or eliminated. Evaluate the cost vs. benefit of using of more advanced irrigation technology, monitoring application rates by evapotranspiration (ET), or converting irrigated recreational areas to artificial turf.
- ☆☆☆☆ G2. Institute annual, monthly and daily water budgets and maximums for each RW user and, to the extent possible, define the use quantity, either by contract or governing body action.
- ☆☆☆☆ G3. Provide incentives and resources for RW users to increase efficiency.
- ☆☆☆☆ G4. Incorporate applicable RW use to existing City water conservation ordinances.

Optimize energy consumption and production in RW transmission and use. Energy is



used by transmission of RW from the WWTP to the use locations. In the future, the RW could be used to generate hydropower as it is moved from one location to the other.

IMPLEMENTING ACTIONS:

- ☆☆ G6. Size RW transmission infrastructure to optimize energy use.
- ☆☆ G7. If applicable, build hydropower production and energy storage into new RW use projects.

Build resiliency and adaptation to climate change into RW planning and management.

While RW production is relatively immune to the impacts of climate change, RW irrigation demand will likely increase under hotter and drier conditions projected under climate change impacts. The management of RW needs to plan for, adapt, and thus become more resilient to projected climate change effects.

IMPLEMENTING ACTIONS:

- ☆☆☆ G8. Determine projected climate change impacts on RW demand and build into RW budgets, management, and operations procedures.
- ☆☆☆ G9. Bank excess RW in local aquifers, particularly during the fall and spring shoulder months and throughout the winter.



References and Resources

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Appendix A: Reclaimed Water Production and Use Data

- **2007-2012 Monthly RW Production and Use, compiled by WWMD**
- **2002-2012 Monthly RW Use at MRC and Marty Sanchez GC**
- **2010-2011 Monthly Use at SF Downs RW**
- **1999-2012 Monthly Use at Landfill**

Effluent Reuse 2007 Monthly Totals (MG)

2007	INFLUENT Flow MG Monthly Totals	Las Campanas			SF Country Club			Santa Fe Horse Park			SF Downs			Standpipe/Process			Caja Del Rio			Marty Sanchez			Sports Complex			NM Game and Fish			US Forest Service			Total Users			SF River			TOTAL FLOW		
		Flow	MG	Monthly Totals	Flow	MG	Monthly Totals	Flow	MG	Monthly Totals	Flow	MG	Monthly Totals	Flow	MG	Monthly Totals	Flow	MG	Monthly Totals	Flow	MG	Monthly Totals	Flow	MG	Monthly Totals	Flow	MG	Monthly Totals	Flow	MG	Monthly Totals	Flow	MG	Monthly Totals	Flow	MG	Monthly Totals			
Jan	150.79	0	0.00	0	0.00	0	0.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.44	153.95	154.39	153.95	154.39								
Feb	141.55	0	0.00	0	0.00	0	1.10	0.00	1.03	0.00	0.00	1.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.12	139.15	141.27	139.15	141.27									
Mar	158.24	1.822	5.90	0	2.98	0	2.98	0.57	6.74	2.71	0.00	6.74	2.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.72	138.74	159.46	138.74	159.46									
Apr	154.07	10.91	9.44	0	3.14	0	3.14	0.38	14.43	3.60	0.00	14.43	3.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.27	115.53	159.80	115.53	159.80									
May	165.16	17.31	10.78	0	3.64	0	3.64	1.02	22.57	5.32	0.00	22.57	5.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	66.34	104.74	171.08	104.74	171.08									
Jun	162.32	20.33	15.43	0	4.32	0	4.32	1.20	25.65	10.93	0.00	25.65	10.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	86.20	90.70	176.89	90.70	176.89									
Jul	171.05	23.28	14.39	0	4.50	0	4.50	0.89	23.35	7.04	0.00	23.35	7.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	79.29	93.67	172.96	93.67	172.96									
Aug	168.04	18.93	17.30	0	5.46	0	5.46	4.74	22.27	10.24	0.00	22.27	10.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87.55	85.18	172.73	85.18	172.73									
Sep	157.62	14.44	11.80	0	4.06	0	4.06	0.50	16.22	6.42	0.00	16.22	6.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	59.48	111.10	170.57	111.10	170.57									
Oct	166.20	14.70	10.85	0	4.88	0	4.88	0.44	15.40	4.66	0.00	15.40	4.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	57.60	134.70	192.30	134.70	192.30									
Nov	171.10	0	6.06	0	3.37	0	3.37	0.12	9.47	3.00	0.00	9.47	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.36	165.16	189.52	165.16	189.52									
Dec	183.44	0	0.00	0	1.07	0	1.07	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.47	142.91	144.38	142.91	144.38										
Total	1949.57	121.71	101.94	0.00	40.40	0.00	40.40	9.91	157.12	53.93	0.00	157.12	53.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	529.84	1475.51	2005.35	1475.51	2005.35									

Effluent Reuse 2007 Monthly Totals (Acre-Ft)

2007	INFLUENT Flow Acre-Ft Monthly Totals	Las Campanas			SF Country Club			Santa Fe Horse Park			SF Downs			Standpipe/Process			Caja Del Rio			Marty Sanchez			Sports Complex			NM Game and Fish			US Forest Service			Total Users			SF River			TOTAL FLOW		
		Flow	Acre-Ft	Monthly Totals	Flow	Acre-Ft	Monthly Totals	Flow	Acre-Ft	Monthly Totals	Flow	Acre-Ft	Monthly Totals	Flow	Acre-Ft	Monthly Totals	Flow	Acre-Ft	Monthly Totals	Flow	Acre-Ft	Monthly Totals	Flow	Acre-Ft	Monthly Totals	Flow	Acre-Ft	Monthly Totals	Flow	Acre-Ft	Monthly Totals	Flow	Acre-Ft	Monthly Totals	Flow	Acre-Ft	Monthly Totals			
Jan	462.76	0.00	0.00	0.00	1.36	0.00	1.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.36	472.44	473.80	472.44	473.80									
Feb	434.39	0.00	0.00	0.00	3.37	0.00	3.37	0.00	3.15	0.00	0.00	3.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.51	427.03	433.54	427.03	433.54									
Mar	485.63	5.59	18.10	0.00	9.14	0.00	9.14	1.74	20.69	8.32	0.00	20.69	8.32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.59	425.77	489.36	425.77	489.36									
Apr	472.82	33.48	28.97	0.00	9.63	0.00	9.63	1.16	44.28	11.04	0.00	44.28	11.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	135.87	354.55	490.42	354.55	490.42									
May	506.85	53.13	33.07	0.00	11.16	0.00	11.16	3.14	69.25	16.33	0.00	69.25	16.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	203.59	321.43	525.02	321.43	525.02									
Jun	498.14	62.38	47.36	0.00	13.24	0.00	13.24	3.68	78.71	33.56	0.00	78.71	33.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	264.53	278.33	542.86	278.33	542.86									
Jul	524.92	71.43	44.15	0.00	13.81	0.00	13.81	2.73	71.65	21.61	0.00	71.65	21.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	243.33	287.46	530.79	287.46	530.79									
Aug	515.68	58.08	53.09	0.00	16.75	0.00	16.75	4.56	68.34	31.43	0.00	68.34	31.43	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	268.68	261.41	530.09	261.41	530.09									
Sep	483.73	44.30	36.21	0.00	12.46	0.00	12.46	1.52	49.77	19.69	0.00	49.77	19.69	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	182.54	340.94	523.47	340.94	523.47									
Oct	510.06	45.11	33.30	0.00	19.44	0.00	19.44	1.35	47.26	14.31	0.00	47.26	14.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	176.77	413.39	590.15	413.39	590.15									
Nov	525.07	0.00	18.59	0.00	10.34	0.00	10.34	0.37	29.08	9.20	0.00	29.08	9.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	74.75	506.85	581.60	506.85	581.60									
Dec	562.96	0.00	0.00	0.00	3.27	0.00	3.27	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.50	438.58	443.08	438.58	443.08										
Total	5983.01	373.51	312.84	0.00	123.98	0.00	123.98	30.40	482.18	165.49	0.00	482.18	165.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1626.01	4528.18	6154.19	4528.18	6154.19									

Effluent Reuse 2010 Monthly Totals (MG)

2010	INFLUENT Flow MG Monthly Totals	Las Campanas Flow MG Monthly Totals	SF Country Club Flow MG Monthly Totals	Santa Fe Horse Park Flow MG Monthly Totals	SF Downs Flow MG Monthly Totals	Standpipe/ Process Flow MG Monthly Totals	Caja Del Rio Flow MG Monthly Totals	Marty Sanchez Flow MG Monthly Totals	Sports Complex Flow MG Monthly Totals	NM Game and Fish Flow MG Monthly Totals	US Forest Service Flow MG Monthly Totals	Total Users Flow MG Monthly Totals	SF River Flow MG Monthly Totals	TOTAL FLOW MG Monthly Totals
Feb	212.25	0	0.00	0	0	0.22	0.02	0.00	0.00	0.00	0.00	0.24	135.28	135.52
Mar	233.51	0	1.57	0	0	0.49	0.08	1.97	0.00	0.00	0.00	4.11	150.9	155.01
Apr	223.61	13.63	8.72	0	2.78	2.77	0.48	14.24	3.87	0.00	0.00	46.48	105.29	151.77
May	233.17	19.64	16.18	0	7.47	4.4	0.93	23.44	8.51	0.00	0.19	80.77	75.09	155.86
Jun	229.62	23.45	19.70	0	8.23	5.43	1.14	27.44	9.23	0.41	0.21	95.23	70.48	165.71
Jul	246.14	25.34	13.22	0	6.26	3.67	0.35	13.51	5.06	0.41	0.29	68.10	97.13	165.23
Aug	244.40	18.60	15.31	0	6.38	2.32	0.41	24.43	6.61	0.22	0.21	74.49	96.47	170.96
Sep	249.97	17.74	15.19	0	6.67	2.11	0.71	19.84	6.70	0.00	0.34	69.29	91.69	160.98
Oct	269.58	16.02	7.69	0	2.25	1.42	0.42	11.36	4.24	0.00	0.30	43.68	116.54	160.22
Nov	255.12	0	3.41	0	1.49	1.53	0.26	6.58	0.86	0.00	0.34	14.46	130.26	144.72
Dec	260.26	0	2.43	0	0	0.76	0.11	0.00	0.00	0.00	0.00	3.30	143.44	146.74
Total	2888.91	134.42	103.40	0.00	41.52	25.99	5.04	142.81	45.09	1.03	1.88	501.17	1356.71	1857.88

Effluent Reuse 2010 Monthly Totals (Acre-Ft)

2010	INFLUENT Flow Acre-Ft Monthly Totals	Las Campanas Flow Acre-Ft Monthly Totals	SF Country Club Flow Acre-Ft Monthly Totals	Santa Fe Horse Park Flow Acre-Ft Monthly Totals	SF Downs Flow Acre-Ft Monthly Totals	Standpipe/ Process Flow Acre-Ft Monthly Totals	Caja Del Rio Flow Acre-Ft Monthly Totals	Marty Sanchez Flow Acre-Ft Monthly Totals	Sports Complex Flow Acre-Ft Monthly Totals	NM Game and Fish Flow Acre-Ft Monthly Totals	US Forest Service Flow Acre-Ft Monthly Totals	Total Users Flow Acre-Ft Monthly Totals	SF River Flow Acre-Ft Monthly Totals	TOTAL FLOW Acre-Ft Monthly Totals
Feb	651.37	0.00	0.00	0.00	0.00	0.68	0.06	0.00	0.00	0.00	0.00	0.74	415.16	415.90
Mar	716.62	0.00	4.82	0.00	0.00	1.50	0.25	6.05	0.00	0.00	0.00	12.62	463.10	475.71
Apr	686.24	41.84	26.76	0.00	8.52	8.50	1.46	43.69	11.89	0.00	0.00	142.65	323.12	465.78
May	715.57	60.27	49.67	0.00	22.93	13.50	2.86	71.94	26.10	0.00	0.60	247.88	230.44	478.33
Jun	704.67	71.96	60.46	0.00	25.24	16.66	3.49	84.21	28.33	1.24	0.65	292.25	216.30	508.55
Jul	755.36	77.75	40.57	0.00	19.21	11.26	1.08	41.47	15.52	1.24	0.89	209.00	298.08	507.08
Aug	750.03	57.09	46.97	0.00	19.56	7.12	1.26	74.98	20.30	0.66	0.65	228.60	296.06	524.65
Sep	767.12	54.44	46.60	0.00	20.48	6.48	2.16	60.89	20.57	0.00	1.04	212.66	281.39	494.04
Oct	827.30	49.15	23.58	0.00	6.90	4.36	1.28	34.86	13.01	0.00	0.91	134.06	357.65	491.71
Nov	782.92	0.00	10.45	0.00	4.56	4.70	0.78	20.19	2.65	0.00	1.03	44.37	399.75	444.12
Dec	798.70	0.00	7.45	0.00	0.00	2.33	0.33	0.00	0.00	0.00	0.00	10.11	440.20	450.31
Total	8865.75	412.51	317.33	0.00	127.42	79.76	15.45	438.28	138.36	3.15	5.77	1538.04	4163.59	5701.63

Effluent Reuse 2011 Monthly Totals (MG)

2011	INFLUENT Flow MG Monthly Totals	Las Campanas		SF Country Club		Santa Fe Horse Park		SF Downs		Standpipe/Process		Caja Del Rio		Marty Sanchez		Sports Complex		NM Game and Fish		US Forest Service		Total Users		SF River		TOTAL FLOW MG Monthly Totals
		Flow	MG	Flow	MG	Flow	MG	Flow	MG	Flow	MG	Flow	MG	Flow	MG	Flow	MG	Flow	MG	Flow	MG	Flow	MG	Flow	MG	
Jan	257.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.07	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	141.56	141.56	141.90	
Feb	236.03	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.64	0.10	0.10	0.09	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.83	136.43	136.43	139.26	
Mar	254.83	0.00	15.43	0.00	0.00	0.00	0.00	2.41	2.41	1.98	0.46	0.46	4.83	4.83	0.12	0.14	4.83	4.83	0.12	0.14	0.14	38.42	116.23	116.23	154.65	
Apr	251.32	14.36	14.24	14.24	0.00	0.00	0.00	2.09	2.09	2.60	0.53	0.53	20.87	20.87	0.14	0.14	7.42	7.42	0.14	0.14	0.28	62.52	82.34	82.34	144.86	
May	261.80	19.68	18.47	18.47	0.00	0.00	0.00	6.30	6.30	4.74	0.39	0.39	9.77	9.77	0.12	0.12	6.25	6.25	0.12	0.12	0.19	65.91	74.33	74.33	140.23	
Jun	252.99	23.30	19.30	19.30	0.00	0.00	0.00	7.03	7.03	5.71	0.68	0.68	2.68	2.68	0.17	0.17	7.82	7.82	0.17	0.17	0.22	66.92	64.03	64.03	130.94	
Jul	259.38	25.46	18.08	18.08	0.00	0.00	0.00	4.01	4.01	3.88	0.56	0.56	26.94	26.94	0.18	0.18	8.58	8.58	0.18	0.18	0.29	87.99	67.34	67.34	155.34	
Aug	250.08	14.69	15.77	15.77	0.00	0.00	0.00	4.85	4.85	2.47	0.27	0.27	22.08	22.08	0.12	0.12	6.77	6.77	0.12	0.12	0.34	67.37	93.38	93.38	160.75	
Sep	233.53	14.86	13.82	13.82	0.00	0.00	0.00	4.90	4.90	4.20	0.32	0.32	18.19	18.19	0.25	0.25	4.09	4.09	0.25	0.25	0.27	60.88	92.02	92.02	152.90	
Oct	238.98	14.48	10.19	10.19	0.00	0.00	0.00	3.50	3.50	1.60	0.21	0.21	10.23	10.23	0.04	0.04	2.31	2.31	0.04	0.04	0.18	42.74	110.15	110.15	152.89	
Nov	226.34	0.00	4.44	4.44	0.00	0.00	0.00	1.71	1.71	1.14	0.07	0.07	0.71	0.71	0.00	0.00	0.00	0.00	0.00	0.00	0.29	8.41	137.69	137.69	146.10	
Dec	231.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.32	160.33	160.33	160.64	160.64	
Total	2954.31	126.83	130.23	130.23	0.00	0.00	0.00	36.81	36.81	29.37	3.67	3.67	126.03	126.03	1.25	1.25	48.17	48.17	1.25	1.25	2.31	504.66	1275.82	1275.82	1780.47	

Effluent Reuse 2011 Monthly Totals (Acre-Ft)

2011	INFLUENT Flow Acre-Ft Monthly Totals	Las Campanas		SF Country Club		Santa Fe Horse Park		SF Downs		Standpipe/Process		Caja Del Rio		Marty Sanchez		Sports Complex		NM Game and Fish		US Forest Service		Total Users		SF River		TOTAL FLOW Acre-Ft Monthly Totals
		Flow	Acre-Ft	Flow	Acre-Ft	Flow	Acre-Ft	Flow	Acre-Ft	Flow	Acre-Ft	Flow	Acre-Ft	Flow	Acre-Ft	Flow	Acre-Ft	Flow	Acre-Ft	Flow	Acre-Ft	Flow	Acre-Ft	Flow	Acre-Ft	
Jan	790.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.82	0.22	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.04	434.42	434.42	435.46	
Feb	724.34	0.00	1.53	1.53	0.00	0.00	0.00	0.00	0.00	1.98	0.31	0.31	4.62	4.62	0.26	0.26	0.26	0.26	0.00	0.00	0.00	8.70	418.68	418.68	427.38	
Mar	782.04	0.00	47.34	47.34	0.00	0.00	0.00	7.41	7.41	6.07	1.42	1.42	40.03	40.03	14.84	14.84	0.38	0.38	0.38	0.43	0.43	117.91	356.71	356.71	474.62	
Apr	771.26	44.07	43.70	43.70	0.00	0.00	0.00	6.40	6.40	7.97	1.62	1.62	64.06	64.06	22.77	22.77	0.43	0.43	0.43	0.85	0.85	191.87	252.68	252.68	444.55	
May	803.43	60.41	56.68	56.68	0.00	0.00	0.00	19.33	19.33	14.53	1.20	1.20	29.99	29.99	19.19	19.19	0.37	0.37	0.37	0.57	0.57	202.27	228.10	228.10	430.36	
Jun	776.39	71.50	59.23	59.23	0.00	0.00	0.00	21.59	21.59	17.54	2.09	2.09	8.22	8.22	24.00	24.00	0.68	0.68	0.68	0.68	0.68	205.36	196.49	196.49	401.85	
Jul	796.02	78.15	55.48	55.48	0.00	0.00	0.00	12.31	12.31	11.92	1.72	1.72	82.69	82.69	26.33	26.33	0.55	0.55	0.55	0.90	0.90	270.04	206.67	206.67	476.71	
Aug	767.48	45.08	48.39	48.39	0.00	0.00	0.00	14.89	14.89	7.59	0.82	0.82	67.76	67.76	20.78	20.78	0.38	0.38	0.38	1.05	1.05	206.75	286.58	286.58	493.33	
Sep	716.68	45.59	42.40	42.40	0.00	0.00	0.00	15.03	15.03	12.87	0.97	0.97	55.83	55.83	12.55	12.55	0.76	0.76	0.76	0.82	0.82	186.84	282.40	282.40	469.24	
Oct	733.41	44.43	31.28	31.28	0.00	0.00	0.00	10.74	10.74	4.91	0.64	0.64	31.40	31.40	7.09	7.09	0.11	0.11	0.11	0.55	0.55	131.18	338.03	338.03	469.21	
Nov	694.62	0.00	13.63	13.63	0.00	0.00	0.00	5.25	5.25	3.49	0.22	0.22	2.19	2.19	0.00	0.00	0.12	0.12	0.12	0.90	0.90	25.81	422.56	422.56	448.36	
Dec	710.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.01	0.01	0.00	0.00	0.00	0.00	0.23	0.23	0.23	0.32	0.32	0.98	492.02	492.02	493.00	
Total	9066.44	389.23	399.66	399.66	0.00	0.00	0.00	112.96	112.96	90.12	11.27	11.27	386.78	386.78	147.83	147.83	3.83	3.83	3.83	7.08	7.08	1548.74	3915.33	3915.33	5464.08	

Effluent Reuse 2012 Monthly Totals (MG)

2012	INFLUENT Flow MG Monthly Totals	Las Campanas Flow MG Monthly Totals	SF Country Club Flow MG Monthly Totals	Santa Fe Horse Park Flow MG Monthly Totals	SF Downs Flow MG Monthly Totals	Standpipe/ Process Flow MG Monthly Totals	Caja Del Rio Flow MG Monthly Totals	Marty Sanchez Flow MG Monthly Totals	Sports Complex Flow MG Monthly Totals	NM Game and Fish Flow MG Monthly Totals	US Forest Service Flow MG Monthly Totals	Total Users Flow MG Monthly Totals	SF River Flow MG Monthly Totals	TOTAL FLOW MG Monthly Totals
Jan	230.91	0.00	0.00	0.00	0.00	0.14	0.03	0.00	0.00	0.01	0.00	0.18	154.49	154.67
Feb	214.10	0.00	0.00	0.00	0.19	0.40	0.09	1.42	0.00	0.04	0.00	2.13	141.32	143.45
Mar	230.29	0.00	7.95	0.00	1.98	1.07	0.20	11.54	3.06	0.08	0.00	25.87	126.91	152.78
Apr	150.61	0.00	14.28	0.00	3.51	1.53	0.24	17.49	5.81	0.19	0.12	43.18	103.62	146.80
May	157.34	0.00	16.15	0.00	7.80	2.88	0.60	23.79	7.02	0.11	0.27	58.62	92.84	151.47
Jun	160.81	0.00	19.61	0.00	6.81	3.46	0.46	27.01	9.30	0.15	0.17	66.98	89.79	156.77
Jul	171.42	0.00	18.72	0.00	8.33	2.23	0.28	24.88	8.95	0.10	0.35	63.84	111.38	175.22
Aug	173.92	0.00	16.82	0.00	4.70	2.83	0.53	22.75	8.94	0.08	0.21	56.87	128.66	185.53
Sep	161.70	0.00	11.81	0.00	4.81	2.73	0.46	19.31	2.71	0.08	0.00	41.91	121.32	163.23
Oct	153.14	0.00	11.08	0.00	4.60	3.00	0.56	14.32	5.96	0.06	0.19	39.77	130.49	170.26
Nov	151.58	0.00	5.12	0.00	0.78	3.65	0.18	5.23	0.00	0.04	0.26	15.26	150.60	165.86
Dec	158.29	0.00	0.00	0.00	0.00	0.94	0.12	0.70	0.00	0.02	0.00	1.78	171.85	173.62
Total	2114.10	0.00	121.54	0.00	43.51	24.85	3.76	168.44	51.75	0.97	1.57	416.39	1523.27	1939.66

Effluent Reuse 2012 Monthly Totals (Acre-Ft)

2012	INFLUENT Flow Acre-Ft Monthly Totals	Las Campanas Flow Acre-Ft Monthly Totals	SF Country Club Flow Acre-Ft Monthly Totals	Santa Fe Horse Park Flow Acre-Ft Monthly Totals	SF Downs Flow Acre-Ft Monthly Totals	Standpipe/ Process Flow Acre-Ft Monthly Totals	Caja Del Rio Flow Acre-Ft Monthly Totals	Marty Sanchez Flow Acre-Ft Monthly Totals	Sports Complex Flow Acre-Ft Monthly Totals	NM Game and Fish Flow Acre-Ft Monthly Totals	US Forest Service Flow Acre-Ft Monthly Totals	Total Users Flow Acre-Ft Monthly Totals	SF River Flow Acre-Ft Monthly Totals	TOTAL FLOW Acre-Ft Monthly Totals
Jan	708.65	0.00	0.00	0.00	0.00	0.44	0.08	0.00	0.00	0.04	0.00	0.56	474.10	474.66
Feb	657.05	0.00	0.00	0.00	0.58	1.22	0.27	4.35	0.00	0.11	0.00	6.53	433.70	440.23
Mar	706.72	0.00	24.39	0.00	6.06	3.27	0.63	35.41	9.40	0.24	0.00	79.39	389.48	468.88
Apr	462.20	0.00	43.84	0.00	10.78	4.69	0.73	53.69	17.82	0.58	0.37	132.51	318.00	450.52
May	482.86	0.00	49.57	0.00	23.93	8.85	1.84	73.00	21.54	0.35	0.83	179.90	284.93	464.83
Jun	493.50	0.00	60.19	0.00	20.91	10.61	1.41	82.89	28.55	0.47	0.52	205.56	275.54	481.10
Jul	526.08	0.00	57.46	0.00	25.55	6.84	0.87	76.35	27.47	0.30	1.08	195.93	341.80	537.73
Aug	533.74	0.00	51.63	0.00	14.44	8.68	1.64	69.81	27.43	0.24	0.66	174.52	394.85	569.37
Sep	496.23	0.00	36.23	0.00	14.77	8.38	1.42	59.25	8.31	0.25	0.00	128.62	372.30	500.92
Oct	469.98	0.00	33.99	0.00	14.11	9.22	1.72	43.95	18.29	0.20	0.57	122.05	400.46	522.52
Nov	465.17	0.00	15.71	0.00	2.39	11.21	0.57	16.04	0.00	0.12	0.79	46.83	462.18	509.01
Dec	485.76	0.00	0.00	0.00	0.00	2.87	0.35	2.16	0.00	0.07	0.00	5.45	527.38	532.83
Total	6487.95	0.00	373.00	0.00	133.52	76.27	11.54	516.91	158.81	2.97	4.83	1277.86	4674.73	5952.59

2002 Month	MRC Pipe System Flow in MGD	MRC Acre Feet	MSGC Flow Gallons	MSGC Acre Feet	Sportcom Flow Gallons	Sportcom Acre Feet
Jan	1.003					
Feb	0.04					
Mar	0					
Apr	0					
May	0					
Jun	0					
Jul	7.515					
Aug	43.36					
Sep	32.728					
Oct	25.124					
Nov	12.308	37.77	5681664	17.44	1085786	3.33
Dec	0.125	0.38	0	0	0	0
Sum	122.203	38.16	5681664	17.44	1085786	3.33
Avg	10.184	19.08	2840832	8.72	542893.2	1.67
Max	43.36	37.77	5681664	17.44	1085786	3.33
Min	0	0.38	0	0	0	0

2003 Month	MRC Pipe System Flow in MGD	MRC Acre Feet	MSGC Flow Gallons	MSGC Acre Feet	Sportcom Flow Gallons	Sportcom Acre Feet
Jan	2.013	6.18	464692	1.43	0	0
Feb	6.196	19.02	2101508.8	6.45	875000	2.69
Mar	13.295	40.8	3893066.5	11.95	1447599	4.44
Apr	23.792	73.02	14603177	44.82	6092555	18.7
May	31.005	95.15	17361721.2	53.28	5159264	15.83
Jun	39.447	121.06	23727797.8	72.82	7263285	22.29
Jul	45.73	140.34	29204549.8	89.63	10133879	31.1
Aug	34.562	106.07	21007093.4	64.47	4216843	12.94
Sep	28.072	86.15	22256151.6	68.3	4611353	14.15
Oct	22.178	68.06	13704906.2	42.06	4286272	13.15
Nov	13.176	40.44	7294091.2	22.38	936749	2.87
Dec	0.557	1.71	22000	0.07	0	0
Sum	260.023	797.98	155640755.5	477.65	45022799	138.17
Avg	21.669	66.5	12970062.96	39.8	3751900	11.51
Max	45.73	140.34	29204549.8	89.63	10133879	31.1
Min	0.557	1.71	22000	0.07	0	0

2004 Month	MRC Pipe System Flow in MGD	MRC Acre Feet	MSGC Flow Gallons	MSGC Acre Feet	Sportcom Flow Gallons	Sportcom Acre Feet
Jan	1.442	4.43	215000	0.66	0	0
Feb	2.959	9.08	70000	0.21	48000	0.15
Mar	18.451	56.62	17040251.8	52.29	5664384	17.38

Apr	15.784	48.44	12689982.4	38.94	5183883	15.91
May	40.047	122.9	26422938.2	81.09	7059645	21.67
Jun	44.532	136.66	29706089.8	91.16	6991294	21.46
Jul	35.129	107.81	23161099.84	71.08	9235200	28.34
Aug	30.697	94.21	15389500	47.23	10374300	31.84
Sep	28.853	88.55	21683300	66.54	5210900	15.99
Oct	8.709	26.73	4047600	12.42	1650300	5.06
Nov	2.32	7.12	2410000	7.4	1065098	3.27
Dec	0.103	0.32	0	0	0	0
Sum	229.024	702.85	152835762	469.04	52483004	161.06
Avg	19.085	58.57	12736313.5	39.09	4373584	13.42
Max	44.532	136.66	29706089.8	91.16	10374300	31.84
Min	0.103	0.32	0	0	0	0

2005 Month	MRC Pipe System Flow in MGD	MRC Acre Feet	MSGC Flow Gallons	MSGC Acre Feet	Sportcom Flow Gallons	Sportcom Acre Feet
Jan	0.052	0.16	0	0	0	0
Feb	0.191	0.59	268000	0.82	0	0
Mar	3.565	10.94	173400	0.53	1183100	3.63
Apr	9.829	30.16	12530200	38.45	2009000	6.17
May	22.678	69.6	22468300	68.95	6526500	20.03
Jun	28.471	87.38	25620700	78.63	11230700	34.47
Jul	30.829	94.61	25653348	78.73	15942223	48.93
Aug	21.441	65.8	23220300	71.26	8800500	27.01
Sep	17.785	54.58	14663800	45	5158700	15.83
Oct	6.052	18.57	8304700	25.49	1981600	6.08
Nov	7.535	23.12	6674700	20.48	1290800	3.96
Dec	0.044	0.14	27000	0.08	0	0
Sum	148.473	455.65	139604448	428.43	54123123	166.1
Avg	12.373	37.97	11633704	35.7	4510260	13.84
Max	30.829	94.61	25653348	78.73	15942223	48.93
Min	0.044	0.14	0	0	0	0

2006 Month	MRC Pipe System Flow in MGD	MRC Acre Feet	MSGC Flow Gallons	MSGC Acre Feet	Sportcom Flow Gallons	Sportcom Acre Feet
Jan	0.789	2.42	1692800	5.2	0	0
Feb	6.665	20.45	6596600	20.24	0	0
Mar	11.061	33.95	7629600	23.41	4528900	13.9
Apr	20.366	62.5	21845900	67.04	3982100	12.22
May	24.378	74.81	25009900	76.75	6520500	20.01
Jun	24.668	75.7	25209600	77.37	7138000	21.91
Jul	24.272	74.49	20956900	64.31	5155300	15.82
Aug	11.356	34.85	11994200	36.81	2805100	8.61
Sep	12.559	38.54	10278400	31.54	5163100	15.85
Oct	12.747	39.12	10677900	32.77	5578200	17.12
Nov	9.285	28.5	7785400	23.89	2098700	6.44

Dec	0.559	1.72	0	0	0	0
Sum	158.706	487.05	149677200	459.34	42969900	131.87
Avg	13.225	40.59	12473100	38.28	3580825	10.99
Max	24.668	75.7	25209600	77.37	7138000	21.91
Min	0.559	1.72	0	0	0	0

2007 Month	MRC Pipe System Flow in MGD	MRC Acre Feet	MSGC Flow Gallons	MSGC Acre Feet	Sportcom Flow Gallons	Sportcom Acre Feet
Jan	0.025	0.08	0	0	0	0
Feb	1.195	3.67	1025300	3.15	0	0
Mar	10.77	33.05	6742100	20.69	2712500	8.32
Apr	15.654	48.04	14428500	44.28	3597800	11.04
May	22.327	68.52	22566600	69.25	5321700	16.33
Jun	28.538	87.58	25646500	78.71	10934900	33.56
Jul	18.112	55.58	23347300	71.65	7042900	21.61
Aug	21.406	65.69	22269800	68.34	10240500	31.43
Sep	16.056	49.28	16218300	49.77	6417600	19.69
Oct	16.76	51.43	15400000	47.26	4661300	14.31
Nov	9.342	28.67	9474900	29.08	2997500	9.2
Dec	0.008	0.02	0	0	0	0
Sum	160.193	491.61	157119300	482.18	53926700	165.5
Avg	13.349	40.97	13093275	40.18	4493892	13.79
Max	28.538	87.58	25646500	78.71	10934900	33.56
Min	0.008	0.02	0	0	0	0

2008 Month	MRC Pipe System Flow in MGD	MRC Acre Feet	MSGC Flow Gallons	MSGC Acre Feet	Sportcom Flow Gallons	Sportcom Acre Feet
Jan	0.021	0.06	0	0	0	0
Feb	0.01	0.03	0	0	0	0
Mar	5.837	17.91	5970100	18.32	426500	1.31
Apr	13.513	41.47	19169200	58.83	4692300	14.4
May	13.672	41.96	20415900	62.65	4731500	14.52
Jun	28.093	86.21	29107800	89.33	6840000	20.99
Jul	25.291	77.62	22746800	69.81	8972100	27.53
Aug	23.653	72.59	20099400	61.68	8631300	26.49
Sep	16.746	51.39	18546800	56.92	7662800	23.52
Oct	20.569	63.12	16969800	52.08	2835200	8.7
Nov	9.115	27.97	8458400	25.96	148300	0.46
Dec	2.268	6.96	0	0	0	0
Sum	158.789	487.31	161484200	495.58	44940000	137.92
Avg	13.232	40.61	13457016.67	41.3	3745000	11.49
Max	28.093	86.21	29107800	89.33	8972100	27.53
Min	0.01	0.03	0	0	0	0

2009 Month	MRC Pipe System Flow in MGD	MRC Acre Feet	MSGC Flow Gallons	MSGC Acre Feet	Sportcom Flow Gallons	Sportcom Acre Feet
Jan	0.82	2.52	0	0	0	0
Feb	4.407	13.53	2501800	7.68	0	0
Mar	12.517	38.41	12922100	39.66	0	0
Apr	17.262	52.97	20224000	62.07	4071600	12.5
May	22.62	69.42	21834900	67.01	7742600	23.76
Jun	22.565	69.25	19939500	61.19	7123400	21.86
Jul	27.73	85.1	26387900	80.98	8102800	24.87
Aug	27.734	85.11	22101700	67.83	9372000	28.76
Sep	19.915	61.12	13261200	40.7	4341100	13.32
Oct	15.558	47.75	11420600	35.05	2881500	8.84
Nov	0.264	0.81	4470700	13.72	0	0
Dec	1.975	6.06	0	0	0	0
Sum	173.368	532.05	155064400	475.88	43635000	133.91
Avg	14.447	44.34	12922033.33	39.66	3636250	11.16
Max	27.734	85.11	26387900	80.98	9372000	28.76
Min	0.264	0.81	0	0	0	0

2010 Month	MRC Pipe System Flow in MGD	MRC Acre Feet	MSGC Flow Gallons	MSGC Acre Feet	Sportcom Flow Gallons	Sportcom Acre Feet
Jan	0.636	0.02	0	0	0	0
Feb	0	0	0	0	0	0
Mar	3.114	9.56	1970200	6.05	0	0
Apr	15.517	47.62	14235200	43.69	3874100	11.89
May	27.452	84.25	23442600	71.94	8505300	26.1
Jun	26.326	80.79	27439800	84.21	9229800	28.33
Jul	19.494	59.83	13514400	41.47	5057200	15.52
Aug	24.801	76.11	24431000	74.98	6613800	20.3
Sep	20.075	61.61	19841600	60.89	6701700	20.57
Oct	8.519	26.14	11358800	34.86	4239100	13.01
Nov	4.118	12.64	6580400	20.19	864500	2.65
Dec	1.16	3.56	0	0	0	0
Sum	151.212	462.12	142814000	438.28	45085500	138.36
Avg	12.601	38.51	11901166.67	36.52	3757125	11.53
Max	27.452	84.25	27439800	84.21	9229800	28.33
Min	0	0	0	0	0	0

2011 Month	MRC Pipe System Flow in MGD	MRC Acre Feet	MSGC Flow Gallons	MSGC Acre Feet	Sportcom Flow Gallons	Sportcom Acre Feet
Jan	0.581	1.78	0	0	0	0
Feb	0.201	0.62	1504400	4.62	85900	0.26
Mar	6.703	20.57	13043500	40.03	4834400	14.84

Apr	11.685	35.86	20873300	64.06	7420900	22.77
May	17.325	53.17	9771000	29.99	6251900	19.19
Jun	20.396	62.59	2679300	8.22	7821100	24
Jul	31.428	96.45	26943000	82.69	8580000	26.33
Aug	21.979	67.45	22081000	67.76	6772800	20.79
Sep	17.868	54.84	18191000	55.83	4090900	12.55
Oct	12.238	37.56	10232000	31.4	2311100	7.09
Nov	2.994	9.19	714000	2.19	0	0
Dec	0	0	0	0	0	0
Sum	143.398	440.07	126032500	386.78	48169000	147.83
Avg	11.95	36.67	10502708.33	32.23	4014083	12.32
Max	31.428	96.45	26943000	82.69	8580000	26.33
Min	0	0	0	0	0	0

2012 Month	MRC Pipe System Flow in MGD	MRC Acre Feet	MSGC Flow Gallons	MSGC Acre Feet	Sportcom Flow Gallons	Sportcom Acre Feet
Jan	1.17	3.59	0	0	0	0
Feb	0.847	2.6	1419000	4.35	0	0
Mar	13.221	40.57	11538000	35.41	3063100	9.4
Apr	16.84	51.68	17494000	53.69	5807100	17.82
May	24.265	74.47	23787000	73	7017700	21.54
Jun	25.229	77.43	27011000	82.89	9302800	28.55
Jul	27.227	83.56	24880000	76.35	8947400	27.46
Aug	22.749	69.81	22686000	69.62	8938100	27.43
Sep	19.308	59.26	18850000	57.85	2707900	8.31
Oct	14.32	43.95	14425000	44.27	5961000	18.29
Nov	5.226	16.04				
Dec						
Sum	170.402	522.95	162090000	497.44	51745100	158.8
Avg	15.491	47.54	16209000	49.74	5174510	15.88
Max	27.227	83.56	27011000	82.89	9302800	28.55
Min	0.847	2.6	0	0	0	0

TABLE 1. EFFLUENT USAGE IN GALLONS FOR DUST CONTROL AT THE CAJA DEL RIO LANDFILL - OPERATIONS PERMIT NO. P185LR2													
Year	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	TOTALS
1999	92,000	155,000	274,000	188,000	214,000	312,000	242,000	159,000	141,000	202,500	202,000	48,000	2,229,500
2000	132,000	180,000	160,000	243,000	441,000	148,000	196,000	260,000	311,000	92,000	8,000	40,000	2,211,000
2001	35,600	88,000	88,000	160,000	263,000	390,000	175,000	68,000	452,000	422,000	162,000	68,000	2,371,600
2002	142,000	92,000	264,000	499,000	421,000	683,500	492,000	355,000	290,000	552,000	27,800	10,000	3,828,300
2003	100,000	35,000	71,000	259,000	577,500	386,000	522,500	302,500	70,000	552,000	222,500	285,000	3,383,000
2004	148,000	258,000	202,050	86,000	577,500	247,500	155,000	315,500	560,200	344,000	282,000	99,000	3,274,750
2005	30,000	16,000	12,500	314,000	374,000	330,000	229,000	254,000	109,500	65,000	150,000	70,000	1,954,000
2006	105,000	405,000	590,000	340,000	415,000	345,000	350,500	137,000	321,000	402,000	90,000	15,000	3,515,500
2007	0	70,000	190,000	275,000	464,000	824,920	558,800	845,000	495,000	440,000	120,000	48,500	4,331,220
2008	57,000	107,060	428,030	800,700	798,800	1,417,760	441,000	645,000	653,000	155,500	380,750	134,020	6,018,620
2009	282,300	312,780	617,361	322,229	878,294	728,047	832,837	741,532	322,500	308,500	307,500	70,000	5,723,880
2010	142,250	21,000	81,100	475,000	993,400	1,137,550	351,000	435,000	705,000	417,500	255,000	106,500	5,120,300
2011	73,300	102,200	463,900	527,100	392,000	682,000	557,500	268,000	316,226	209,525	71,500	3,600	3,666,851
2012	26,500	87,500	204,513	238,500	600,200	459,500	284,737	533,238	463,989				2,898,677

Santa Fe Downs Effluent Reuse

2010	WWTP to Downs	Downs Pond to INFIELD		
	MG	MG		
January	0	0		
February	0	0		
March	0.000	0.000		
April	2.777	2.439		
May	7.473	6.872		
June	8.225	7.312		
July	6.260	6.117		
August	6.375	5.841		
September	6.672	5.730		
October	2.250	2.915		
November	1.487	0.73		
December	0.000	0.281		
	41.519	38.2373	3.2817	92%

2011	WWTP to Downs	Downs Pond to INFIELD		
	MG	MG		
January	0	0		
February	0	0		
March	2.414	6.259		
April	2.086	6.479		
May	6.300	5.454		
June	7.034	6.519		
July	4.010	3.744		
August	4.852	3.962		
September	4.899	4.723		
October	3.501	3.024		
November				
December				
	35.096	40.164	-5.068	114%



**Appendix B: NMED Ground Water Quality Bureau Guidance:
Above Ground Use of Reclaimed Domestic Wastewater (2007)**

- **Table 1: Approved Uses for Reclaimed Wastewater by Class**
- **Table 3: Access Restrictions and Set Back Requirements**



Table 1. Approved Uses for Reclaimed Wastewater by Class

Class of Reclaimed Wastewater	Approved Uses
Class 1A	All Class 1 uses. <i>No setback limit</i> to dwelling unit or occupied establishment.
	Backfill around potable water pipes
	Irrigation of food crops ¹
Class 1B	Impoundments (recreational or ornamental)
	Irrigation of parks, school yards, golf courses ²
	Irrigation of urban landscaping ²
	Snow making
	Street cleaning
	Toilet flushing
	Backfill around non-potable piping

Table 3. Access Restrictions and Set Back Requirements

Class of Reclaimed Wastewater	Spray Irrigation	Flood Irrigation and Surface Drip Irrigation
Class 1A	<ul style="list-style-type: none"> • No access control • No setback to dwelling unit or occupied establishment • Low pressure/low trajectory irrigation system only 	<ul style="list-style-type: none"> • No access control
Class 1B	<ul style="list-style-type: none"> • No access control; irrigate at times when public exposure is unlikely • 100 ft set-back from dwelling unit or occupied establishment • Low pressure/low trajectory irrigation system only 	<ul style="list-style-type: none"> • No access control; irrigate at times when public exposure is unlikely



Appendix C: Community Outreach and Public Involvement

- **Proposed Public Involvement Process (4/21/11)** (Includes the Formation of the Working Group)
- **Governing Body Committee and Council Meetings**
 - City Council: 11/30/2011 (approval of evaluation objectives)
 - Public Utilities Committee: 6/1/2011 (study session), 11/2/2011 (approval of evaluation objectives), 3/7/2012, 5/2/2012, 8/1/2012 (study session), 11/7/2012, 12/5/2012 (presentation of draft RWRP), and 3/6/2013
 - Public Works Committee: 11/21/2011 (approval of evaluation objectives)
 - Finance Committee: 1/22/2013 (presentation of draft RWRP)
 - River Commission: 12/13/2012 (presentation of draft RWRP)
 - Water Conservation Committee: 12/11/2012 (presentation of draft RWRP)
 - Parks and Open Space Committee: 12/18/12 (presentation of draft RWRP)
- **Public Meetings** <http://www.santafenm.gov/index.aspx?nid=2576>
 - December 1, 2011, Southside Public Library, 6 pm
 - January 24th, 2013, Southside Public Library, 6 pm
- **Stakeholder Meetings**
 - Espanola Basin Regional Issues Forum: 11/15/2012
 - Santa Fe River Traditional Communities Collaborative: 12/13/2012
 - Reclaimed Water Users: 1/7/2013, Nancy Rodriguez Community Center, 11 am
 - NM State Legislature House Agriculture and Water Committee: 2/27/13
 - Board of Santa Fe County Commission: 2/12/2013 (presentation of draft RWRP made by SF County staff)
- **Feedback from the January 24th Public Meeting**
- **Selected News Articles**
 - New Pipeline to connect Las Campanas golf courses to diversion project, 11/11/2011, J.A. Grimm, The New Mexican
 - Santa Fe Pondering New Effluent Plan, 11/29/2011, K. Hay, ABQJournal Online
 - City Wants Public Input on Different Uses for Effluent, 11/30/2011, K. Hay, Journal Santa Fe
 - Plan for Treated Effluent Revised, 1/27/2013, K. Hay, Journal Santa Fe
 - Club's Effluent Pact Is Reviewed, 2/9/2013, K. Hay, Journal Santa Fe
- **Website:** <http://www.santafenm.gov/index.aspx?nid=2576>



Treated Effluent Management Plan Update: Proposed Public Involvement Process

The purpose of this outline is to describe how the City plans to involve the community in the TEMP2 process

1. CORE TEMP2 WORKING GROUP:

A. What- A working group that is composed of knowledgeable and engaged community members that represent the key interests in TEMP and the broader constituents of Santa Fe.

B. Working Group Role/Assignment

- i. review of effluent use options
- ii. review of 40-year supply projections
- iii. feedback on draft criteria adopted by PUC
- iv. attend public meetings
- v. review of ranking results,
- vi. discussion/ideas on prioritization and/or sharing of shortage
- vii. feedback on initial recommendations/strategies/plan

C. Potential Members – Below is a list of potential Working Group members that staff has compiled group to represent a variety of perspectives (recreationists, local businesses, downstream irrigators, environmentalists, effluent contractors), includes members from the 2003 Wastewater Reuse taskforce, and draws from some retired water resource experts.

*Neva van Peski, retired economist, citizen water expert, City resident

*Don Percious, retired hydrologist and Washington DC policy analyst, City resident

*Mike Crawford, semi-retired water and wastewater engineer, Eldorado resident

*Charlie Nylander, water resource consultant, Las Campanas resident, Western Coalition of Arid States board member

*Felicity Broennan, Santa Fe Watershed Association Director

Jose Varela Lopez, La Cienegilla irrigator

A Santa Fe County staff representative

Maryann McGraw, New Mexico Environment Department Surface Water Bureau

*Staff has discussed the possibility of serving with these individuals: Claudia Borchert, Gretel Follingstad, Dan Ransom (Water Division), Kathleen Garcia (Wastewater Division), Brian Drypolcher (Santa Fe River Coordinator), Fabian Chavez (Parks).

Other potential members to be considered by the PUC include: Dave Gold or John Miles Smith (*Santa Fe Basin Water Association*), Tom Dixon (*Guicu ditch irrigator*), Simon Brackley (*Santa Fe Chamber of Commerce*), John Horning (*Wild Earth Guardian*), Jan-Willem (*Earth Works Institute*), Cochiti Pueblo representative,



- D. Selection – Staff has identified a list of potentially interested community members (above). Staff is seeking PUC guidance to finalize list and prioritize runner-ups in case any of the people identified above cannot participate. Staff to call and invite members on list.
- E. Working Group Ground Rules
 - i. Provide information to the process
 - ii. Advise the governing body on alternatives, strategies, implementation, etc
 - iii. Requires commitment of participation

2. PUBLIC INVOLVEMENT:

- A. Two Public meetings – (October and January, same location, eg GCCC classroom)
 - i. First meeting – Gain public opinion and input on options for using the effluent and the criteria to assess those options;
 - ii. Second meeting – Report on findings from public process including the survey results, paper ballots and the progress of the working group and next steps for implementation.
 - iii. Strategies for Public Meeting Attendance
 - 1. Advertisements – Newspapers, local free publications, craigslist
 - 2. Billing Inserts – 1-2 months prior to meeting dates
 - 3. Email list serves – General announcements and reminders
 - 4. Radio spots/Ads- One week prior to meeting, 2-3 times
 - 5. Press Releases
 - 6. Post information on website
 - 7. In all advertisement- provide link to website for more information;
- B. Public Education, Information and Feedback Campaign
 - i. Press releases- release a newsworthy item approximately 1x month
 - ii. Radio: Record short public service announcements, KSUAVE radio show
 - iii. Write news articles for free local community newsletters and newspapers (Greenfire Times, church news letters, ...)
 - iv. Post detailed information on City Web page
 - v. Survey Monkey (web-based) – Send out online questionnaire to vast email list to gain feedback; use as an electronic ballot for the public to weigh in on different options and criteria for TEMP. This is a good tool for people who are unable to attend the meetings, but would like to participate (both meetings)
 - vi. Informational flyer with feedback opportunity at City properties including Water Division billing, public libraries, City gyms/public pools etc.
 - vii. Provide information in English and Spanish.



Comments from January 24th public meeting:

SF Country Club Option: “This should be condemned as a public nuisance water waster”
 BW Permit Compliance “Voting for this option would imply that using aquifer is a good idea. What about recharge?”

SF River Upstream: “if treated on the way down”

SF River Downstream:

“The easiest way and the cheapest way for the City to get more water is to steal it from the three minority communities and an Indian reservation downstream. This is in no way a progressive or liberal agenda to generate [and] promote a living river in the City and dry up these down river communities is neither moral nor equitable. The minority communities are being given the back seats of the bus.”

“ Stop sending treated effluent down the Santa Fe River in the winter to be lost to evaporation. It is a crime and will be part of the Texas law suit unless you want a trip to DC.”

- When do we need RW to supplement our other potable resources? (in approximately one-two decades)
- Will we need the SF Downs once SWAN Park is completed? (beyond scope of the RWRP)
- Who is going to pay for storage to meet downstream use? (will be considered in the implementing actions)

Poll of participants at the 1/24/13 public meeting:

Option	1 st place votes	2 nd place votes	3 rd place votes	Overall Score*
1 MRC		2	1	5
3	1	1	4	9
4	1		3	6
5 SF River Downstream	8	3	4	34
6		3	1	7
7	1	1		5
10			1	1
12	2			6
13 BW	1	9	1	22
14			3	3
15 Future Potable Water Supply	10	2	1	35

* calculated by assigning 3 points to first place, 2 points to second, and 1 point to third

Community Meeting: Using Treated Wastewater

How would you like to see your treated wastewater used?

Join the City of Santa Fe for
An Interactive Public Meeting
Designed to Gain Your Input!

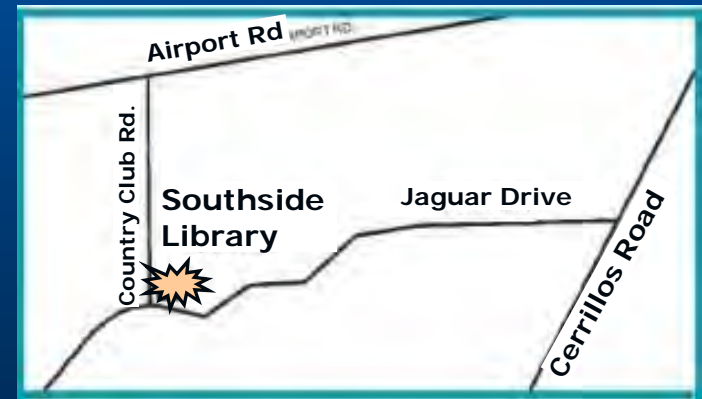
Be an important part of Santa Fe
decision-making process!

Thursday, December 1, 2011, 6pm-7:30pm

Southside Public Library, 6599 Jaguar Drive



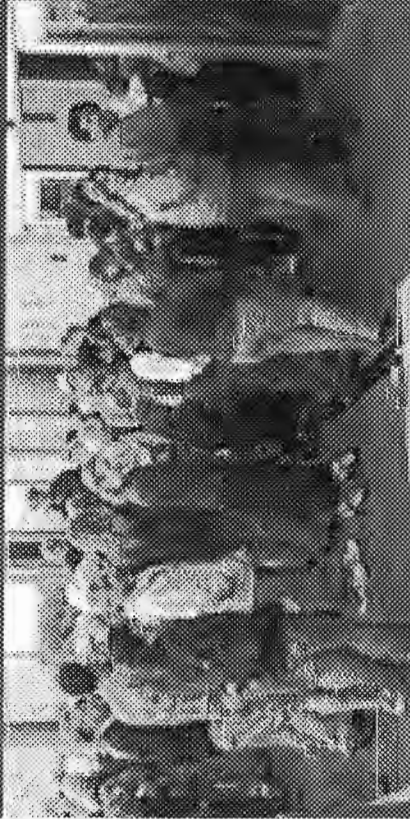
*What is important to you?
Recreation? Parks? Water
security? Water for the
river? Costs? Something
else?*



Questions? Claudia Borchert, (505) 955-4203

ciborchert@santafenm.gov

Community Meeting: Using Reclaimed Wastewater

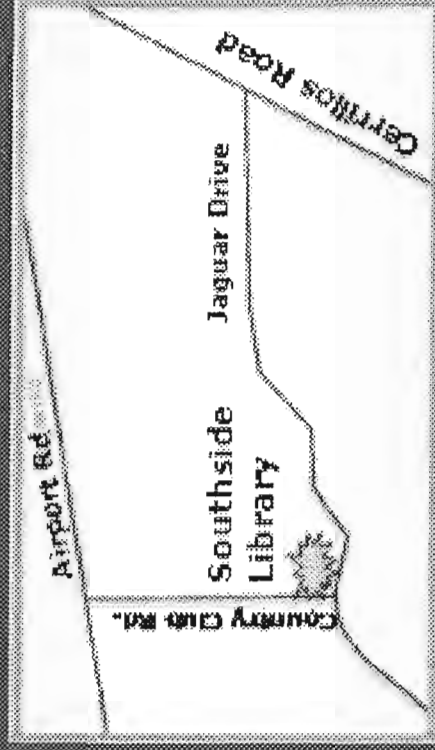


Join the **City of Santa Fe** for
an interactive public meeting on the

Use of Reclaimed Wastewater

Thursday, January 24, 2013, 6pm-7:30pm

Southside Public Library, 6599 Jaguar Drive



- Learn the ways in which reclaimed waste water is or may be used. (What do you think of using reclaimed wastewater for potable water supply?)
- Find out what strategies we've developed to guide use and management of this precious resource. (Who do you think should pay for the use of reclaimed waste water?)
- Tell us which recycled water uses are important to you. (Playing fields, golf courses, Santa Fe Rivers....?)

Questions? Claudia Borchert, (505) 955-4208

cborchert@santafenm.gov

New pipeline to connect Las Campanas golf courses to diversion project

Club to buy water from county via private link to Buckman project

By Julie Ann Grimm | The New Mexican

11/11/2011

The golf courses at Las Campanas expect to get all their irrigation water via a new pipeline by next spring.

On Tuesday, the Santa Fe County Commission approved a plan to supply the golf courses as a wholesale raw water customer — a move that creates revenue to help the county pay for its share of operating costs for the city-county Buckman Direct Diversion at the Rio Grande.

The arrangement, which also gives club managers a long-term solution to water-supply needs, is the last step in a years-long effort for water customers at Las Campanas to transition from the city's jurisdiction to the county's.

Both the club and the residents of the luxury-home subdivision northwest of the city limits originally planned to get water through partnership in a massive project to divert surface water from the Rio Grande and not depend on public utilities as a water customer. However, next year the bulk of the water used for drinking and irrigation there will be bought from Santa Fe County.

Currently, the two 18-hole golf courses at The Club at Las Campanas use about 600 acre-feet of water a year. Of that, 450 acre-feet is treated effluent from the city wastewater treatment plant southwest of town. About 100 acre-feet comes from well water that the club buys from the city, and the remaining water comes from the effluent generated by the Las Campanas sewer co-op.

A private pipeline now under construction will change all that. Work began in July and should be complete by December on a line to connect the club to a raw water pipeline coming off the city/county Buckman Direct Diversion, explained club president Phil George. Once the kinks are ironed out, it will enable the club to stop buying both the city's treated wastewater and well water. A settlement agreement between the city and Las Campanas developers called for such purchases to cease after the river diversion came online.

A wrinkle in the plan emerged when some of the financial backers of Las Campanas Limited

Partnership lost their footing. A bank took over the partnership several years ago, and the club's 750 members assumed ownership of club operations last year.

Club managers first sought to buy more of the city's treated wastewater, but gave up on that plan and began working on the idea of becoming a county utility customer.

George said the club has invested nearly \$500,000 in irrigation upgrades and turf removal in efforts to conserve water on the courses. The club now uses up to 25 percent less water overall than its original water budget, and club members set a goal of cutting water use by 30 percent, according to a presentation organizers made to the County Commission.

Santa Fe County also sells wholesale water to Las Campanas Water Cooperative, which serves 800 to 900 homes in the development. Before May, the co-op also bought water from the city of Santa Fe.

County Utilities Director Patricio Guerrortiz wrote in a memo to policymakers that the plan should allow the county to achieve a greater economy of scale for its water service, keeping rates affordable and easing the cost of expansion.

City Utilities Director Brian Snyder said the city has for several years anticipated that most of the water use at Las Campanas would eventually be supplied by another provider.

A formal study of how the city uses its treated effluent is under way and could be discussed by officials early next year. In addition to the Las Campanas golf courses, which have been irrigated with city effluent since 2004, the Santa Fe Country Club, The Downs at Santa Fe and Santa Fe Horse Park also buy effluent from the city.

Contact Julie Ann Grimm at 986-3017 or jgrimm@sfnewmexican.com.

Comments:

One acre foot is almost 326 thousand gallons. 600 acre feet is about 195 million gallons. That's an average of over 530 thousand per day. It kind of sounds like a lot; but spread over 36 holes it's only about 15 thousand gallons per hole per day. Look at your monthly water bill usage to get some personal perspective.

Good responses!

The most shocking thing I have ever seen in drought-challenged New Mexico is a golf course.

There have been 6 new area courses built since LC including the City course. SF country club gets free effluent.

The same water source from the Buckman Diversion will end up at all of these wealthy golf courses in one way or the other.

What is wrong with this picture? By the way, why should the City and the County continue to support the Santa Fe Polo grounds and the Forest Guardian Beaver Project with city effluent waters that belong to the traditional farmers downstream from the city treatment plant? It appears the city would rather feed the golf courses verses to protect and sustain the old historical and traditional communities downstream.

Reintroducing beavers actually HELPS downstream farmers by overall improvement of the watershed. Last summer the farmers were complaining about the beavers "taking" all the water--but there would not have been flow further south in that dry season even without the ponds.

Beavers are an asset to water management in the small streams they tend to favor. Golf courses are a drain on water resources. Personally, I would rather allocate water to small farmers than to golf courses. Although not practical yet, our parks and golf courses really should be using treated effluent, as they do in AZ and CA.

ABQJournal Online » Santa Fe Pondering New Effluent Plan

Santa Fe residents are about to get a chance to offer their thoughts on how the city should use its treated wastewater.

On Thursday, city water staff are hosting a meeting at the Southside Library to solicit input on 22 options ranging from irrigation of public spaces to return flow credits for the municipal water system.

“I think the public has a vested interest in many things, including their water resources. We want to hear from them. I personally also think the public has good ideas and I want to make sure I capture them,” city Water Resources Coordinator Borchert said.

Essentially, Santa Fe’s treated effluent management plan is out-of-date. Created more than a dozen years ago, it’s based on the assumption that the city is working with about 12,000 acre-feet of effluent a year. In reality, Santa Fe has been generating between 5,400 and 5,800 acre-feet over the past few years.

That’s not a bad thing – having less effluent “is largely because of conservation efforts,” Borchert said.

But, “it was time to re-evaluate the priorities identified in that plan and see if they still make sense with out current understanding of having half as much treated effluent,” she said.

Possible effluent uses include:

- Irrigation for public spaces, including the Municipal Recreation Complex, certain playing fields at Santa Fe Downs, parks and the Santa Fe River upstream of 599.
- Irrigation for public golf courses.
- Recharging groundwater to mitigate surface water impact from the city’s well fields.
- Future water supply considerations, including return flow credits, re-use of highly treated effluent and aquifer storage.
- Selling to private entities, including the Las Campanas subdivision, which helps keep wastewater rates down for regular city customers.

The meeting will be at the Southside Library, located at 6599 Jaguar Drive, from 6 to 7:30 p.m. Information will also soon be available on the city’s website at www.santafenm.gov.

[Reprint story](#)



-- Email the reporter at khay@abqjournal.com. Call the reporter at 505-992-6290



Appendix D: Reclaimed Wastewater Availability Calculations

- **Inter-monthly Variability in RW Production**
- **RW Return Factor**
- **Future Demand**



Inter-monthly Variability in RW Production									
	2008	2009	2010	2011	2012	Average		+/- monthly average afm	monthly average
						afm	mgm		
Jan	512.7	475.5	445.5	435.5	474.7	468.8	152.7	3.5	1%
Feb	475.8	422.5	415.9	427.7	440.2	436.4	142.2	35.8	8%
Mar	517.4	467.8	475.7	474.4	468.9	480.8	156.7	-8.6	-2%
Apr	436.7	455.9	464.2	444.6	450.5	450.4	146.8	21.8	5%
May	470.0	488.0	478.3	430.4	464.8	466.3	152.0	5.9	1%
Jun	478.4	452.2	508.5	401.8	481.1	464.4	151.3	7.8	2%
Jul	512.7	511.0	506.2	476.7	537.7	508.9	165.8	-36.6	-8%
Aug	509.8	431.5	524.7	493.3	569.4	505.7	164.8	-33.5	-7%
Sep	473.2	399.2	494.0	469.2	500.9	467.3	152.3	4.9	1%
Oct	492.1	399.3	491.7	469.2	522.5	475.0	154.8	-2.7	-1%
Nov	461.9	437.2	444.1	448.4	509.0	460.1	149.9	12.1	3%
Dec	486.6	451.0	450.3	493.0	532.8	482.8	157.3	-10.5	-2%
					Annual	472.2	153.9		

Reclaimed Wastewater Return Factor					
	RW Production		Potable Production		TE:Potable
	af	mg	af	mg	
2007	6,154	2,005	9,151	2,982	67.3%
2008	5,984	1,950	9,250	3,014	64.7%
2009	5,484	1,787	9,086	2,961	60.4%
2010	5,702	1,858	9,226	3,006	61.8%
2011	5,464	1,780	9,567	3,117	57.1%
2012	5,953	1,940	9,777	3,186	60.9%
			Average		62.0%



Future Demand Calculations											
Year	LRWSP Service Area Population	Annual Growth Rate	Actual City of SF Population	Estimated Population of those served outside	Adjusted Population of Service Area	with 110 gpcd	TE production, 62%	TE production, full conservn.	with 105 gpcd	TE production, 62%	TE production, full conservn.
2009	84,317										
2010	85,750	1.017	67,947	12,013	79,960	9,852	5,911	5,911	9,405	5,643	5,643
2011	86,925	1.0137	68,219	12,061	80,279	9,892	5,935	5,911	9,442	5,665	5,643
2012	88,116	1.0137	68,649	12,137	80,785	9,954	5,972	5,911	9,502	5,701	5,643
2013	89,323	1.0137			81,892	10,090	6,054	5,911	9,632	5,779	5,643
2014	90,547	1.0137			83,014	10,229	6,137	5,911	9,764	5,858	5,643
2015	91,787	1.0137			84,151	10,369	6,221	5,911	9,897	5,938	5,643
2016	92,962	1.0128			85,229	10,502	6,301	5,911	10,024	6,014	5,643
2017	94,152	1.0128			86,319	10,636	6,382	5,911	10,152	6,091	5,643
2018	95,357	1.0128			87,424	10,772	6,463	5,911	10,282	6,169	5,643
2019	96,578	1.0128			88,543	10,910	6,546	5,911	10,414	6,248	5,643
2020	97,814	1.0128			89,677	11,050	6,630	5,911	10,547	6,328	5,643
2021	99,007	1.0122			90,771	11,184	6,711	5,911	10,676	6,406	5,643
2022	100,215	1.0122			91,878	11,321	6,793	5,911	10,806	6,484	5,643
2023	101,438	1.0122			92,999	11,459	6,875	5,911	10,938	6,563	5,643
2024	102,675	1.0122			94,134	11,599	6,959	5,911	11,072	6,643	5,643
2025	103,928	1.0122			95,282	11,740	7,044	5,911	11,207	6,724	5,643
2026	104,915	1.0095			96,187	11,852	7,111	5,911	11,313	6,788	5,643
2027	105,912	1.0095			97,101	11,964	7,179	5,911	11,421	6,852	5,643
2028	106,918	1.0095			98,024	12,078	7,247	5,911	11,529	6,917	5,643
2029	107,934	1.0095			98,955	12,193	7,316	5,911	11,639	6,983	5,643
2030	108,959	1.0095			99,895	12,309	7,385	5,911	11,749	7,049	5,643
2031	109,875	1.0084			100,734	12,412	7,447	5,911	11,848	7,109	5,643
2032	110,798	1.0084			101,580	12,516	7,510	5,911	11,947	7,168	5,643
2033	111,728	1.0084			102,433	12,621	7,573	5,911	12,048	7,229	5,643
2034	112,667	1.0084			103,294	12,727	7,636	5,911	12,149	7,289	5,643
2035	113,613	1.0084			104,161	12,834	7,701	5,911	12,251	7,351	5,643
2036	114,477	1.0076			104,953	12,932	7,759	5,911	12,344	7,406	5,643
2037	115,347	1.0076			105,751	13,030	7,818	5,911	12,438	7,463	5,643
2038	116,223	1.0076			106,554	13,129	7,878	5,911	12,532	7,519	5,643
2039	117,107	1.0076			107,364	13,229	7,937	5,911	12,628	7,577	5,643
2040	117,997	1.0076			108,180	13,330	7,998	5,911	12,724	7,634	5,643
2041	118,799	1.0068			108,916	13,420	8,052	5,911	12,810	7,686	5,643
2042	119,607	1.0068			109,657	13,511	8,107	5,911	12,897	7,738	5,643
2043	120,420	1.0068			110,402	13,603	8,162	5,911	12,985	7,791	5,643
2044	121,239	1.0068			111,153	13,696	8,217	5,911	13,073	7,844	5,643
2045	122,063	1.0068			111,909	13,789	8,273	5,911	13,162	7,897	5,643
2046	122,893	1.0068			112,670	13,883	8,330	5,911	13,252	7,951	5,643
2047	123,729	1.0068			113,436	13,977	8,386	5,911	13,342	8,005	5,643
2048	124,571	1.0068			114,207	14,072	8,443	5,911	13,432	8,059	5,643
2049	125,418	1.0068			114,984	14,168	8,501	5,911	13,524	8,114	5,643
2050	126,270	1.0068			115,766	14,264	8,559	5,911	13,616	8,169	5,643
2051	127,129	1.0068			116,553	14,361	8,617	5,911	13,708	8,225	5,643
2052	127,994	1.0068			117,346	14,459	8,675	5,911	13,802	8,281	5,643
2053	128,864	1.0068			118,143	14,557	8,734	5,911	13,895	8,337	5,643
2054	129,740	1.0068			118,947	14,656	8,794	5,911	13,990	8,394	5,643
2055	130,622	1.0068			119,756	14,756	8,853	5,911	14,085	8,451	5,643
2056	131,511	1.0068			120,570	14,856	8,914	5,911	14,181	8,509	5,643
2057	132,405	1.0068			121,390	14,957	8,974	5,911	14,277	8,566	5,643



Appendix E: Development of Options

- **Reclaimed Wastewater Usage and Associated Contracts, 2011 (produced by WWMD)**
- **List of All Options Considered**
- **SF River Downstream**
 - August 8, 2012 Letter to Brian Snyder from the Santa Fe River Traditional Communities Collaborative
 - 2012 House Memorial 74- “Requesting that the City and County of Santa Fe Ensure That Sufficient Water Is Released Into the Santa Fe River to Support Traditional Agriculture Around La Bajada and La Cienega..”
 - 2013 House Joint Memorial 33 (amended)- “Requesting that the City of Santa Fe Give Consideration To the Release of Reclaimed Wastewater To Downstream Users in the Villages of La Cieneguilla, La Cienega, and La Bajada and the Pueblo of Cochiti to Sustain Historic Agricultural Traditions...”
 - September 25th, 2012 Santa Fe County Resolution 2012-__ “Respectfully Request That the City of Santa Fe Give Priority to the Release of Sufficient Reclaimed Wastewater to Downstream Users of La Cienegilla, La Cienega, Te Village of La Bajada and Tribes for Historic Agricultural Traditions...”
 - 2012 Memo to City Public Utilities Committee from Marcos Martinez, Assistant City Attorney Regarding City’s Right to Reclaimed Wastewater and Downstream Obligations
- **City of Santa Fe Resolution 2006-64 – “Directing Staff to Prepare a Report For the Governing Body of the City of Santa Fe Regarding Plans for Effluent Liines...”**
- **December 5,2011 Letter from Kyle Harwood on behalf of Los Alamos National Bank Requesting Reclaimed Wastewater for the Santa Fe Equestrian Center**
- **January 24, 2012 Email from Ted Williams Expressing Ideas on Potential Uses of Renovated Water**
- **October 23, 2012 Email from Randy Watkins from Santa Fe Solid Waste Management Agency Describing Use of RW at the Landfill**
- **Exhibit A to Chapter XXII: City of Santa Fe Sanitary Sewer Rate, Fee and Penalty Schedule**

Status of Reclaimed Wastewater Usage and Associated Contracts

User	2009 Usage (acre-feet)	2010 Usage (acre-feet)	2011 Usage (acre-feet)	Cost per 1000 g	2011 Payment	Contract	General Notes
Pueblo of Pojoaque	109	126	113	\$ 2.51	\$ 15,948.23	Based on a provision of the contract, Pueblo of Pojoaque is currently on an automatic month-to-month basis until the agreement is renewed for another year. Agreement expired on 11/30/11. Pojoaque Pueblo has expressed interest to renew and will be working with City Attorney's Office.	Water continues to be delivered.
US Forest Service	5.75	9.03	11	\$	\$	The Memorandum of Understanding expired on 12/31/09. City is working with the US Forest Service on the terms of the new MOU. The original MOU traded water for the ability to obtain wood to chip for composting. The City never obtained the wood to chip due to it being impractical. City needs to provide water for non-use of USFS well impacted by Buckman wellfield pumping.	There has not been any ideas (items) established as a beneficial trade to the City for the water to this point, therefore the approach is to charge for the water based on current effluent rates. Delivery has continued due to livestock needs and environmental concerns.
NM Dept. of Game & Fish	0.05	3.15	4	\$ 2.69	\$ 8,872.93	Contract is up for renewal one year after date of first delivery. NM Game and Fish has contacted the City to renew. Agreement expired in March 2012. A draft agreement is being prepared by the City Attorney's Office.	Water is utilized for an educational fish pond and some landscape irrigation. Water delivery continues.
Non-contract sales at the standpipe	83	80	90			Many non-potable uses required by City conservation code.	
Las Campanas	405	404	389	\$ 2.51	\$ 344,917.71	Per 2003 Settlement Agreement. First renewal term ends 12/31/12. Las Campanas does not plan to renew.	
Santa Fe Horse Park	0	0	0	NA	\$ -	Contract expired 10/31/06.	
Caja Del Rio Landfill	15	15	11	\$ 2.69	\$ 6,516.49	None	
Santa Fe Country Club	314	317	400	\$ -	\$ -	Valid if golf course is open to the public or WWTP is in operation at current location.	
Marty Sanchez Golfcourse	390	326	387	\$ -	\$ -	None	
Multituse Rec. Complex	133	138	148	\$ -	\$ -	None	
SF River	3949	4164	3915	\$ -	\$ -	None; SF River basin adjudication may determine requirement.	



Option ID	Option Name
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Public Park/Greenspace Irrigation:

- | | |
|---|---------------------------------------|
| 1 | Multi-Use Recreation Complex |
| 2 | Santa Fe Downs Infield Playing Fields |
| 3 | SWAAN: Planned Recreation Park |
| 4 | SW Sector: Other Irrigation Parks |
| 5 | SF River Rural Protection Zone |
| 6 | SF River, Upstream of 599, 0.75 cfs |

Public Golf Course Irrigation:

- | | |
|---|-----------------------------------|
| 7 | Santa Fe Country Club Golf Course |
| 8 | Marty Sanchez Golf Course |

Revenue Generating:

- | | |
|----|--------------------------|
| 9 | Las Campanas Golf Course |
| 10 | SF Equestrian Center |

Conservation, Education, and Resource Management

- | | |
|----|--|
| 11 | Reclaimed, On-Demand Water Sales for Construction, Dust Control, etc |
| 12 | Educational Center, NM Game and Fish (Pond) |
| 13 | Caja del Rio Regional Landfill |

Traditional Irrigated Agriculture

- | | |
|----|--|
| 14 | SF River Downstream WWTP Flow: 1.5 cfs (in addition to Option #5) |
| 15 | SF River Downstream WWTP Flows: 2.0 cfs (in addition to Option #5) |
| 16 | SF River Downstream WWTP Flows: 0.75 to 2.0 cfs (in addition to Option #5) |

Buckman Well Permit Compliance (Office of the State Engineer Requirements):

- | | |
|----|------------------------|
| 17 | Discharge credit |
| 18 | USFS: well replacement |

Future Water Supply:

- | | |
|----|---|
| 19 | Return flow credit via Rio Grande |
| 20 | Direct Reuse |
| 21 | Aquifer storage (AS) - for later recovery |

Possible Future Ecosystem Requirements:

- | | |
|----|--------------------------------|
| 22 | Wetlands |
| 23 | Santa Fe Basin Adjudication |
| 24 | ESA requirements on Rio Grande |

Santa Fe River Traditional Communities Collaborative
PO Box 23947
Santa Fe, New Mexico 87502

August 8, 2012

Brian K. Snyder, Director
Public Utilities Department and Water Division
801 W. San Mateo
PO Box 909
Santa Fe, NM 87504

RE: Reclaimed Water Allocation

Dear Mr. Snyder,

This letter is written in regard to the City of Santa Fe's ongoing process for allocating reclaimed water produced by the City's Wastewater Treatment Plant. The Santa Fe River Traditional Communities Collaborative (SFRTCC) respectfully requests that a priority be given to the release of sufficient water to sustain a natural flow for a healthy and living river and that the release provides plenty of water for the historic agricultural traditions of downstream users and tribes.

The SFRTCC understands that there are many demands for the City's reclaimed water and is aware that the City of Santa Fe holds the position that the reclaimed water is a product that is controlled by the City with no obligation to provide water for the historic agricultural traditions of the Lower Santa Fe River Watershed. SFRTCC is also aware that downstream users with senior water rights dispute that claim. As the City's water decisions over the last several decades have had a significant impact on water resources in the Lower Santa Fe River Watershed, the SFRTCC encourages the City of Santa Fe to recognize its unique capacity for participating in the protection and preservation of this vital water course.

The SFRTCC has begun an attempt to determine what a natural and functional flow of the river below the City's Wastewater Treatment Plant should be and acknowledges, after meeting with a number of flow experts, that it is a complex calculation affected by a number of variables. One factor complicating these essential calculations is the unknown impact of the City's Rural Protection Zone on the river's flow. SFRTCC has created a subcommittee to discuss a plan for the Rural Protection Zone, and seeks to support the City of Santa Fe in creating a plan for the area. At the same time the SFRTCC is aware of farmers and ranchers tired of the drawn out process in responding to their demonstrated need for water who are considering their own remedies to address those concerns.

In order to consider these many interests in a collaborative environment, the SFRTCC was established to assist in the restoration of the Santa Fe River from the village of La Cieneguilla to the community of La Bajada. A portion of this restoration consists of a federally approved

project. SFRTCC's role (based on Federal Advisory Committee Act) in the federal planning is to comment on site specific actions and proposals for the river restoration as well as serving as a source of data and information that will be considered in establishing a common vision and plan for the area. Beyond this role, the SFRTCC also considers the broader interests of the communities of this region, including traditional farming. SFRTCC members have agreed that any successful river restoration must include a certain and steady flow of water in the river.

SFRTCC includes representatives from; WildEarth Guardians, La Bajada Acequia Association, La Bajada Traditional Village Committee, La Cienega Valley Association, Santa Fe Watershed Association, State Representative Jim Hall, Acequia de La Cienega, El Guicu Ditch Association, Santa Fe-Pojoaque Soil and Water Conservation District, Pueblo de Cochiti and farmers and ranchers from La Cieneguilla, El Canon, La Cienega and La Bajada. Felicity Broennan, Executive Director of the Santa Fe Watershed Association and Carl Dickens, President, La Cienega Valley Association were selected to co-chair the SFRTCC.

Non-member governmental agencies and entities who attend SFRTCC meetings and provide support, guidance, advice and access to resources include the United States Forest Service, Bureau of Land Management, New Mexico Game and Fish, Office of the State Engineer, City of Santa Fe and Santa Fe County.

It should be noted that both the Santa Fe Board of County Commissioners through County Resolution Number 2011-101 and the New Mexico State Legislature through 2012 House Memorial 74 have formally recognized problems with water flows to traditional farms and ranches in the Lower Santa Fe River Watershed . SFRTCC must consider its responsibility in addressing these legislative initiatives during the river restoration planning process.

SFRTCC thanks you for considering our request in regard to City of Santa Fe's reclaimed water allocation. We believe it is a fair and honest request that respects the traditional communities in the Lower Santa Fe Watershed, provides appropriate habitat for wildlife and sufficient water for native vegetation. Please let us know if you need any additional information or if we can be of any further service. We look forward to working with you and ask that the SFRTCC be notified of any committee or council meetings concerning the reclaimed water allocation determinations. The SFRTCC is happy to arrange tours of the proposed restoration area and we encourage everyone to visit the Rural Protection Zone to see firsthand its impact on the flow of the Santa Fe River.

Sincerely,



Felicity Broennan, Co-Chair
For the Santa Fe River Traditional Communities Collaborative



Carl Dickens Co-Chair

CC: Public Utilities Committee

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HOUSE MEMORIAL 74

50TH LEGISLATURE - STATE OF NEW MEXICO - SECOND SESSION, 2012

INTRODUCED BY

Jim W. Hall

A MEMORIAL

REQUESTING THAT THE CITY AND COUNTY OF SANTA FE ENSURE THAT SUFFICIENT WATER IS RELEASED INTO THE SANTA FE RIVER TO SUPPORT TRADITIONAL AGRICULTURE AROUND LA BAJADA AND LA CIENEGA.

WHEREAS, residents of the areas around La Bajada and La Cienega in Santa Fe county have practiced traditional irrigated agriculture for generations; and

WHEREAS, these areas were once known as the "breadbasket of New Mexico"; and

WHEREAS, these communities are among the oldest settlements in New Mexico; and

WHEREAS, residents of these communities continue to maintain their lands and customs by wise and productive use of their land and water resources; and

WHEREAS, maintaining the heritage of these communities is

underscored material = new
[bracketed material] = delete

1 important for retaining the diversity of people and cultures
2 that truly makes Santa Fe unique; and

3 WHEREAS, the waters of the Santa Fe river are critical for
4 the agriculture of these communities;

5 NOW, THEREFORE, BE IT RESOLVED BY THE HOUSE OF
6 REPRESENTATIVES OF THE STATE OF NEW MEXICO that the city of
7 Santa Fe and the county of Santa Fe work together to ensure
8 that sufficient water is released into the Santa Fe river to
9 support traditional agriculture in the areas of La Bajada and
10 La Cienega; and

11 BE IT FURTHER RESOLVED that copies of this memorial be
12 transmitted to the members of the Santa Fe city council and the
13 Santa Fe county board of county commissioners.

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HOUSE JOINT MEMORIAL 33
51ST LEGISLATURE - STATE OF NEW MEXICO - FIRST SESSION, 2013
INTRODUCED BY
Stephanie Garcia Richard

A JOINT MEMORIAL
REQUESTING THAT THE CITY OF SANTA FE GIVE PRIORITY TO THE
RELEASE OF SUFFICIENT RECLAIMED WATER TO DOWNSTREAM USERS IN
THE VILLAGES OF LA CIENEGUILLA, LA CIENEGA AND LA BAJADA AND
THE PUEBLO OF COCHITI TO SUSTAIN HISTORIC AGRICULTURAL
TRADITIONS.

WHEREAS, the city of Santa Fe has an ongoing process for
allocating reclaimed water produced by the city's wastewater
treatment plant; and

WHEREAS, the legislature is aware of the many demands for
the city's reclaimed water and the city's position that the
reclaimed water is a resource that is controlled by the city;
and

WHEREAS, the city's decisions regarding water over the
last several decades have had a significant impact on water

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~~[bracketed material] = delete~~

1 resources in the lower Santa Fe river watershed; and

2 WHEREAS, the legislature has encouraged the city of Santa
3 Fe to recognize its unique capacity for participation in the
4 protection and preservation of this vital water course; and

5 WHEREAS, the legislature acknowledges and supports the
6 efforts of the Santa Fe river traditional communities
7 collaborative in the collaborative's attempt to address the
8 many issues that affect the flow of the Santa Fe river; and

9 WHEREAS, nonmember governmental agency representatives
10 that attend Santa Fe river traditional communities
11 collaborative meetings in advisory capacities and provide
12 technical support and guidance include representatives from the
13 United States forest service, the federal bureau of land
14 management, the department of game and fish, the office of the
15 state engineer, the city of Santa Fe, Santa Fe county and the
16 Santa Fe-Pojoaque soil and water conservation district; and

17 WHEREAS, the Santa Fe county board of county
18 commissioners, through county resolution number 2011-101, and
19 the legislature, through House Memorial 74 of the second
20 session of the fiftieth legislature in 2012, have formally
21 recognized the problems with the lack of water flow during the
22 growing season to traditional farms and ranches in the lower
23 Santa Fe river watershed; and

24 WHEREAS, in times of drought, communities must work
25 together to address water shortages in a manner that is

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1 beneficial to all parties;

2 NOW, THEREFORE, BE IT RESOLVED BY THE LEGISLATURE OF THE
3 STATE OF NEW MEXICO that the city of Santa Fe be requested to
4 give priority to the release of sufficient reclaimed water
5 during the growing season to the downstream users of the
6 villages of La Cieneguilla, La Cienega and La Bajada and the
7 Pueblo of Cochiti to sustain historic agricultural traditions;
8 and

9 BE IT FURTHER RESOLVED that the city of Santa Fe and Santa
10 Fe county be encouraged to continue to work with the Santa Fe
11 river traditional communities collaborative to address the
12 problems associated with the lack of water flow in the lower
13 Santa Fe watershed; and

14 BE IT FURTHER RESOLVED that copies of this memorial be
15 transmitted to the members of the Santa Fe city council and the
16 Santa Fe county board of county commissioners.

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FIFTY-FIRST LEGISLATURE
FIRST SESSION, 2013

February 27, 2013

Mr. Speaker:

Your AGRICULTURE AND WATER RESOURCES COMMITTEE, to whom has been referred

HOUSE JOINT MEMORIAL 33

has had it under consideration and reports same with recommendation that it DO PASS, amended as follows:

1. On page 3, line 4, strike "priority" and insert in lieu thereof "consideration", and strike "sufficient".,

and thence referred to the HEALTH, GOVERNMENT & INDIAN AFFAIRS COMMITTEE.

Respectfully submitted,

George Dodge, Jr., Chairman

Adopted _____
(Chief Clerk)

Not Adopted _____
(Chief Clerk)

Date _____

The roll call vote was 7 For 0 Against
Yes: 7
No: 0
Excused: Brown, Cook, Jeff
Absent: None

SANTA FE COUNTY

RESOLUTION NO. 2012-____

A RESOLUTION TO RESPECTFULLY REQUEST THAT THE CITY OF SANTA FE GIVE PRIORITY TO THE RELEASE OF SUFFICIENT RECLAIMED WATER TO DOWNSTREAM USERS OF LA CIENEGUILLA, LA CIENEGA, THE VILLAGE OF LA BAJADA AND TRIBES FOR HISTORIC AGRICULTURAL TRADITIONS

WHEREAS, the City of Santa Fe has an ongoing process for allocating reclaimed water produced by the City's Wastewater Treatment Plant;

WHEREAS, the County of Santa Fe is aware of the many demands for the City's reclaimed water and the City's position that the reclaimed water is a resource that is controlled by the City;

WHEREAS, the City's decisions regarding water over the last several decades have had a significant impact on water resources in the Lower Santa Fe River Watershed;

WHEREAS, the County of Santa Fe encourages the City of Santa Fe to recognize its unique capacity for participation in the protection and preservation of this vital water course;

WHEREAS, the County of Santa Fe acknowledges and supports the efforts of the Santa Fe River Traditional Communities Collaborative (SFRTCC) which consists of representatives from: the Villages of La Bajada, La Cieneguilla and La Cienega; the Pueblo of Cochiti; the Santa Fe Watershed Association; Wild Earth Guardians; and legislative dignitaries;

WHEREAS, non-member governmental agencies who attend SFRTCC meetings in advisory capacities and provide technical support and guidance include, US Forest Service, Bureau of Land Management, New Mexico Game and Fish, Office of the State Engineer, City of Santa Fe, Santa Fe County Staff and Santa Fe-Pojoaque Soil and Water Conservation District;

WHEREAS, the Santa Fe County Board of Commissioners through County Resolution Number 2011-101, and the New Mexico State Legislature through 2012 House Memorial 74, have formally recognized the problems with the lack of water flows to traditional farms and ranches in the Lower Santa Fe River Watershed;

WHEREAS, SFRTCC will consider its responsibility in addressing these legislative initiatives during the river restoration planning process.

NOW, THEREFORE, BE IT RESOLVED by the Board of County Commissioners of Santa Fe County to request that the City of Santa Fe give priority to release of sufficient reclaimed water to the downstream users of La Cieneguilla, La Cienega, the Village of La Bajada and the Pueblo of Cochiti for historic and agricultural traditions.

PASSED, APPROVED, and ADOPTED this 25th day of September, 2012.

By: _____
Liz Stefanics, Chair

Attest:

Valerie Espinoza, Santa Fe County Clerk

Approved as to form:



Stephen C. Ross, County Attorney

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THE BOARD OF COUNTY COMMISSIONERS
OF SANTA FE COUNTY

RESOLUTION NO. 2011- _____

A RESOLUTION REQUESTING THAT THE CITY OF SANTA FE RELEASE
ADDITIONAL EFFLUENT INTO THE SANTA FE RIVER TO SUPPORT THE
HISTORICAL AND CURRENT AGRICULTURAL NEEDS IN THE
COMMUNITY VILLAGES OF LA CIENEGUILLA AND LA BAJADA

WHEREAS, Santa Fe County has been experiencing severe drought conditions,
including above normal temperatures with little or no precipitation;

WHEREAS, numerous streams including the Santa Fe River have experienced
decreased water levels;

WHEREAS, the villages of La Cieneguilla and La Bajada encompass a segment
of the Santa Fe River which also conveys water that is released from the City of Santa
Fe's waste water treatment plant;

WHEREAS, the villages of La Cieneguilla and La Bajada are traditional acequia-
based communities that utilize the Santa Fe River and whose culture and heritage are
intrinsically tied to water and agriculture;

WHEREAS, the County is experiencing increased urbanization and development
that is contributing to the loss of water in the Santa Fe River; and

WHEREAS, there is a critical need for the villages of La Cieneguilla and La
Bajada to maintain a traditional and sustainable local, small farming and ranching
economy that is essential to the health and economic well-being of County residents.

NOW THEREFORE, BE IT RESOLVED that the Board of County
Commissioners of the County of Santa Fe requests that the City of Santa Fe release
additional effluent water into the Santa Fe River to continue to support the historical and
current agricultural needs in the downstream community villages of La Cieneguilla and
La Bajada.

PASSED, ADOPTED and APPROVED this ____ day of _____, 2011.

VIRGINIA VIGIL, CHAIR

1 ATTEST:

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4 VALERIE ESPINOZA,
5 SANTA FE COUNTY CLERK

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7 APPROVED AS TO FORM:

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Stephen C. Ross
STEPHEN C. ROSS,
SANTA FE COUNTY ATTORNEY

CITY OF SANTA FE, NEW MEXICO

RESOLUTION NO. 2006- 64

INTRODUCED BY:

[Handwritten signatures: Kelly C. Dominguez, Paul J. Brooker, Miguel Chavez, and others]

A RESOLUTION

DIRECTING STAFF TO PREPARE A REPORT FOR THE GOVERNING BODY
REGARDING PLANS FOR EFFLUENT LINES.

WHEREAS, water is a valuable limited resource; and

WHEREAS, the use of effluent for irrigation instead of potable water provides a benefit
to the city and community; and

WHEREAS, in 1998 the governing body adopted Resolution No. 1998-51 approving the
treated effluent management plan which established the basis for future development of the city's
treated effluent supply as a renewable water resource; and

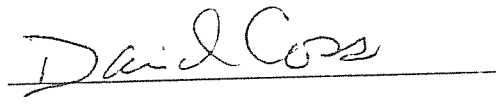
WHEREAS, the efficient use of effluent is dependent upon effluent distribution lines
extending from the city's wastewater treatment plant out into the community; and

WHEREAS, the construction of these lines could be incorporated into the plans for
future road, water or sanitary sewer plans where appropriate.

NOW, THEREFORE, BE IT RESOLVED BY THE GOVERNING BODY OF THE
CITY OF SANTA FE that staff is directed to review the treated effluent plan and prepare a

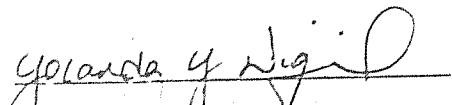
1 report making recommendations to the public utilities committee and the governing body
2 regarding plans for effluent lines. The report shall be presented to the public utilities committee
3 within 60 days.

4 PASSED, APPROVED, and ADOPTED this 14 day of June, 2006.

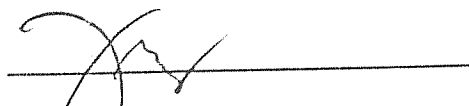
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8 DAVID COSS, MAYOR

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10 ATTEST:

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13 YOLANDA Y. WIGIL, CITY CLERK

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15 APPROVED AS TO FORM:

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18 FRANK D. KATZ, CITY ATTORNEY

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25 jp/cmassign/utilities sewer/effluent lines res

Brian K. Snyder, PE
Public Utilities Department and Water Division Director
City of Santa Fe

Re: Treated Effluent contract for SF Equestrian Center
Date: December 5, 2011

Dear Brian:

I am writing on behalf of Los Alamos National Bank, the current owner and operator of the Santa Fe Equestrian Center (formerly Santa Fe Horse Park), regarding the future use of treated effluent supplies. This facility has used treated effluent from the Wastewater Plant in the past, and LANB would like to maintain the option of using treated effluent in the future. We have completed the work necessary to maintain an updated Discharge Permit from the NMED (DP-78), which was set to expire at the end of 2010.

I understand that the City Council has requested an update to the Treated Effluent Management Plan, and your staff will be making a recommendation in the near future regarding policies and terms for future treated effluent contracts. I have provided the following technical information to Ms. Claudia Borchert regarding the facility's needs:

Volume:	maximum of 127 afy, average 95 afy
Daily demand:	maximum of 400,000 gpd
Term:	10 years or longer

Thank you for your consideration of this request. I have also discussed with your counsel, Marcos Martinez, the City's position regarding unpaid fees during the term of the prior owner's use of the facility. I look forward to an opportunity to meet with you and discuss any questions you may have regarding this request.

Sincerely,

Kyle Harwood
LANB counsel

-----Original Message-----

From: TC Williams [mailto:tedskis@comcast.net]

Sent: Tue 1/24/2012 2:17 PM

To: BORCHERT, CLAUDIA I.; FOLLINGSTAD, GRETTEL R.; bill Loeb; Paul Paryski; Paul White; ssilber1@juno.com

Cc:

Subject: living river

Hello Claudia--

I've read that the Council will soon be considering conditions for release of water from Nichols Res. to our river and wanted you to have my thots about City long-range water plan update since the December 1st public input meeting on effluent use that I believe should be considered in planning for our future.

RENOVATED WATER (WASTE WATER PLANT EFFLUENT)--

The data I have says we are discharging about 3500 AcFt of high quality renovated water into the Santa Fe River at Airport Road each year.

My idea:

- + Reduce the discharge to the river to 1,000 AcFt
- + Pump 500 AcFt to the La Cienega springs thru a short extension of the existing Downs pipeline during the non-irrigation season.
- + Pump 2,000 AcFt to the pre-sedimentation basins at the new BDD drinking water treatment plant where it will mix with the water pumped up from the Rio Grande.
- + In winter when the water distribution system demand is low put 2,000 AcFt of BDD drinking water into the local aquifer thru the existing City Wells

CANYON WATER--

Now that the BDD is in operation, build a flow metering station on the river just below Cerro Gordo. When flow is less than flow above McClure Res. open the plant bypass to bring flow at Cerro Gordo up to equal flow above McClure - but not more than 3 mgd so that any additional flow is captured in the Canyon reservoirs.

NOTES--

+Much of the time the quality of the renovated water is quite as good as raw Rio Grande water that the new BDD plant was designed to treat.

+ Renovated water consistently has less than 30 mg/l suspended solids and less than 30 mg/l BOD5, Fecal coliform counts are less than 30 organisms per 100 ml

+ Rio Grande water at Otawi tests by the USGS show many samples with Fecal organisms too numerous to count and suspended solids ranging from 100 to 7,000 mg/l. I have asked for, but not received, current data from BDD as to the quality of their influent from the Rio Grande.

+According to reports I have seen there is an obligation to let 300 acre feet of water go down the river at Airport Rd. There has been

no adjudication!

- + There is no need to pipe effluent all the way down to the Rio Grande and then pump it back up thru the BDD system

- + The difference between influent and effluent flows currently is about 4,800 ac ft /year, that amount is currently used for irrigation I assume

- + In an emergency when, Rio Grande water is not available, the effluent relegated to irrigation could be interrupted temporality.

TC Williams P.E. (retired)

tedskis@comcast.net

505/984-2664

BORCHERT, CLAUDIA I.

From: Randy Watkins [RWatkins@sfswwa.org]
Sent: Tuesday, October 23, 2012 3:56 PM
To: BORCHERT, CLAUDIA I.
Subject: RE: Use of Treated Effluent (Reclaimed wastewater)

Hi Claudia,

The water from the golf course is kept in a 500,000-gallon pond on site and is used by two parties: the landfill and the Santa Fe National Forest. The landfill uses the water for dust control, landscape watering and composting, and provides some to a rock crushing contractor for dust control. The Santa Fe National Forest uses the water for watering cattle on its property. Additionally, there is a loss of approximately one million gallons a year due to evaporation. I've begun a record of all flow meter readings and water truck loads that will give us a better idea of the water balance on site. The use patterns do vary significantly, primarily due to increased demand during the summer. The dirt roads and compost windrows become drier, requiring more water. The demand for water is typically eight times higher in June than in December.

Please find attached updated Table 1 for permit No P185LR2. This is the new air quality permit number under which the landfill operates. This table includes only water used by landfill and its contractor. We keep more detailed records of the monthly use. Feel free to contact me if you need more information.

Thanks,
Randy

Randy Watkins
(505) 424-1850 x130

From: BORCHERT, CLAUDIA I. [mailto:ciborchert@ci.santa-fe.nm.us]
Sent: Tuesday, October 23, 2012 12:43 PM
To: Randy Watkins
Subject: Use of Treated Effluent (Reclaimed wastewater)

Hello Randy,

I'm working on the City's Reclaimed Wastewater use Plan (RWUP) and identifying all the ways in which RW is currently used. I know that water is pumped from Marty Sanchez GC to the landfill and used for dust control. I was wondering if you could tell me if it is used for anything else, and does your use patterns vary significantly from month to month? If yes, why would your demand in one month be more/less than the previous month...

Also- could you please provide me an updated Table 1: Effluent Usage in g for Dust Control at the Caja del Rio Landfill-Operations permit No P185LR1M1? The one I have has data through May 2011.

If you'd rather have quick phone conversation, my contact info is below.

Thanks-

*Claudia Borchert, Water Resources Coordinator
City of Santa Fe Water Resources Section
801 W. San Mateo Rd.
Santa Fe, NM 87505
Off. (505) 955-4203
Mob. (505) 412-1254*

12/12/2012

City of Santa Fe, New Mexico

memo

To: Public Utilities Committee
From: Marcos D. Martínez, Assistant City Attorney *B.D. Snyder*
Via: Brian Snyder, Public Utilities and Water Division Director *BKS*
Re: 2012 Short-term effluent discharges

Although the City has an obligation to offset its groundwater pumping impacts from Buckman Wells 10-13 on La Cienega Springs, and although the City is seeking to have such discharges recognized by the Office of the State Engineer, the City does not have the obligation to discharge additional effluent beyond what the State would recognize as an offset.

Consequently, the City may, in its discretion, discharge additional available effluent in the short term, which creates no ongoing obligation by the City to continually discharge effluent in the medium or long-term. New Mexico courts have recognized that a municipality's "sewage water is private water which the City may use or dispose of as it wishes." *Reynolds v. City of Roswell*, 99 N.M. 84, 85 (1982). Therefore, the City may discharge additional effluent, subject to the availability of supply, at the City's discretion.

Endangered Species Act issues or changes to the regulation of Clean Water Act could change this analysis. Similarly, new claims made in the adjudication of the Santa Fe River could also affect this analysis.

EXHIBIT A to Chapter XXII

CITY OF SANTA FE

SANITARY SEWER RATE, FEE

AND PENALTY SCHEDULE

Amended: October 29, 2007 (Ordinance 2007-40)

“13. Treated Effluent Rates.

The rate for treated effluent shall be two dollars and five cents (\$2.05) per one thousand (1,000) gallons of treated effluent or fifty percent (50%) of the rate for potable water as set forth in Chapter XXV SFCC 1987, which ever is more, plus administrative costs and applicable state taxes. However, contract users of treated effluent who enter a recreational access agreement with the city that allows for recreational access to their facilities for conduct of city parks or recreation division authorized programs may be granted a discount of no more than seventy-five dollars (75.00) per parks or recreation division maximum planned or actual authorized use for programs that will be conducted at their facility at regular times and a credit of no more than seventy-five dollars (\$75.00) per parks or recreation maximum planned or actual authorized use for programs that will be conducted at regular intervals. The terms of such discounts or credits will be determined on a case by case basis, and included in any such recreational access agreement. Any discount or credit may only apply against total charges incurred during the same annual effluent delivery period as the authorized program and shall never result in the contractor being credited more than fifty percent (50%) of the total amount charged for treated effluent delivered during such period.”

Since the City of Santa Fe agreed to increase the Potable Water as scheduled below, the treated effluent rate automatically increases to the following:

From March 1, 2009 through December 31, 2009

Potable Water rate \$4.43/1000 gallons

Treated Effluent \$2.215/1000 gallons

January 1, 2010 through December 31, 2010

Potable Water rate \$4.79/1000 gallons

Treated Effluent \$2.395/1000 gallons

January 1, 2011 through December 31, 2011

Potable Water rate \$5.18/1000 gallons

Treated Effluent \$2.59/1000 gallons

January 1, 2012 through December 31, 2012

Potable Water rate \$5.60/1000 gallons

Treated Effluent \$2.80/1000 gallons

January 1, 2013 through December 31, 2013

Potable Water rate \$6.06/1000 gallons

Treated Effluent \$3.03/1000 gallons



Appendix F: Criteria Used in Scoring and Ranking of Options

- **Approach For Selecting Objectives and Objective Weighting (8/30/2011)**
- **Forced- Pair Criteria Weighting Exercise**
- **Individual Working Group Scores**
- **Ranking of Options – Equally Weighted Criteria (A), Weighted Criteria (B), and Weighted Criteria and City Contracts and Policies (C)**

Santa Fe Treated Effluent Management Plan Update: Draft Approach for Selecting Objectives and Objective Weighting August 30, 2011

Background

To help evaluate alternatives for the TEMP2, criteria are needed to indicate how successful the alternative is in terms of meeting key objectives. Objectives define the essential reasons why the TEMP2 is being developed and represent high-level goals for the program. Each objective can be represented by one or more predetermined performance measure. The performance measures indicate to what degree a certain objective is being achieved. The performance measures become the criteria by which alternatives or groups of alternatives (portfolios) are compared.

Because different people place different values on how important one objective is over another, it is important to weight the objectives. The weights for the objective, together with the performance criteria, will be used to calculate a weighted total score for each alternative or portfolio (see Figure 1).

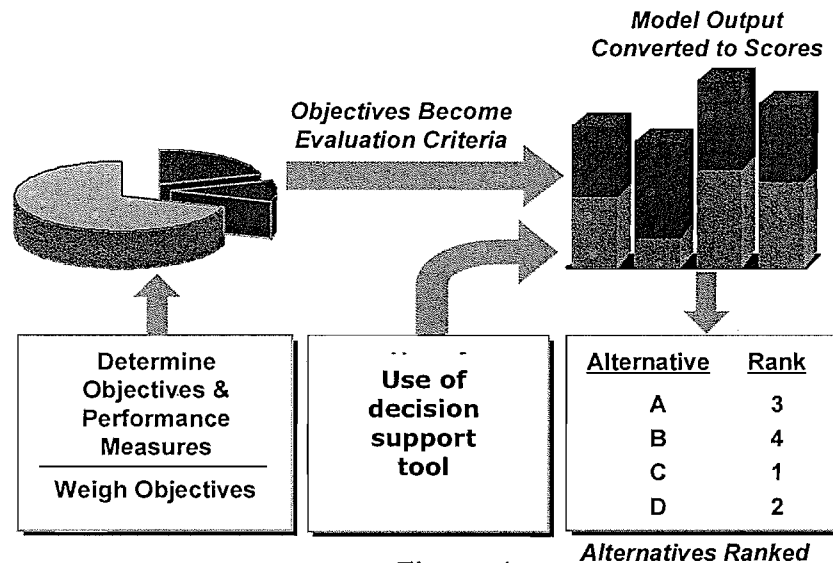


Figure 1

Proposed Objectives

The primary objectives proposed for the TEMP2 are largely based on the objectives used in the previous TEMP

analysis, with some changes based on the Long Range Water Supply Plan methodology, staff's research on what criteria other communities used, and staff's analysis. The proposed primary objectives are listed below, along with performance measures.

Primary Objectives

Ensure Acceptability

Improve Water Supply Reliability

Protect the Environment

Performance Measures

Maximize community and cultural values
Minimize institutional challenges
Maximize quality of life for citizens

Minimize water shortage during drought
Maximize long term water supply sustainability
Maximize ability to meet peak day demand

Minimize impact on riparian habitats
Minimize carbon footprint
Minimize impact on cultural resources

Manage Costs

Minimize overall life cycle costs

Minimize water and wastewater rate impacts

Previously Used Objectives

TEMP1 Objectives:

- Economic Considerations
- Community/Cultural Values
- Environmental Impacts
- Regulatory Issues and Legal Constraints
- Technical Issues and Implementability

Long Range Water Supply Plan Objectives:

- Manage Costs
- Ensure Acceptability
- Protect the Environment
- Technically Feasible
- Ensure Technical Implementability
- Improve Reliability and Sustainability
- Ensure Timeliness

Proposed Weighting Approach

There are several ways to weight objectives for an evaluation of different treated effluent alternative and/or portfolios. One way involves simply deriving one set of values for each objective. Another is to have several stakeholders (City Councilors and Mayor, the core working group, the interested public, etc) go through a weighting exercise, for example using a technique called Forced Pair Comparison. In this technique, all possible pairs of objectives are compared and the participant is asked which is more important. Each time a certain objective is preferred over the other, a tally is kept. A total is then derived and a percent weight is calculated for each objective and for each participating individual. This approach has been successfully used in many decision support applications, including the City's Long Range Water Supply Plan, Los Angeles, San Diego, and the State of Colorado.

Although the results of this approach can be kept as individual sets of preferences, for this project, the approach recommended uses an average among all participants and further segregate according to participant type (eg. City Councilors and Mayor, the core working group, the interested public, etc). Individuals weight the primary objectives using the Forced Pair Comparison technique (below). Staff will then use the average weight values among all participants as the primary means of comparing supply portfolios, but use the range of participant type results to develop sensitivities for the weightings. For example, if the average weight value for cost was 15%, but some participant group had it weighted as high as 30% and as low as 5%, this range could be used as sensitivity for evaluating the portfolios. The secondary objectives (within the primary objectives) will be weighted by the city staff/working group/consultant team.

Staff also plans to use a decision support tool to do sensitivity on weights and performance. This sensitivity can be used to test how robust the overall ranking of the portfolios is to different values and uncertainty.

Name (optional): _____

Date: _____

Weighting Grid

Please circle one number in each of the 6 boxes below. The circled number should correspond to the objective that is the more important of the two for you.

1 Ensure Acceptability

1	2	2 Improve Water Supply Reliability	
1	2	3	3 Protect the Environment
1	2	3	4 Manage Costs
	4	4	4

1	2	3	4	Objective Number
				Numbers of Times Circled (Total = 6)
				Percentage of All Matches (Divide number above by 6)

Please check one of the following

- Elected Official
- Working Group Member
- Member of the Public
- City Staff

ENSURE COMMUNITY ACCEPTABILITY**Maximize community and cultural values (Is this important to the community?)**

- 5 Enjoys widespread support (eg. augments SF River flows, irrigated agriculture, helps local economy, supports traditional acequia use and other community values)
2.5
0 Little widespread support (eg. no SF River flows, not good for local economy, conflicts with traditional acequia use and other community values)

Maximize Quality of Life for Community (i.e. Is this a nice place to live?)

- 5 provides for community enjoyment (green space/parks; recreational opportunities); provides water reliability
2.5
0

Maximize Municipal Use of Effluent

- 5 provides TE for municipal benefit
2.5
0 provides TE for benefit of non-municipal uses

IMPROVE WATER SUPPLY RELIABILITY**Minimize water shortage during drought**

- 5 Provides water supply during drought; relieves reliance on groundwater pumping
2.5
0 Provides no water supply during drought; relies on 'mined' groundwater during drought

Maximize long-term water supply sustainability

- 5 Secures water supply for planning period; improves long term aquifer sustainability; relies on renewable water supply source
2.5
0 Unreliable supply source; requires reliance on groundwater;

Maximize ability to meet peak demands

- 5 Available during peak use; allows other sources to be available during peak demand (eg. facilitates use of groundwater or SJC water during peak demand)
2.5
0 Not available during peak demands; limits availability of other water supply sources during peak demand

PROTECT THE ENVIRONMENT**Minimize impact on ecosystems**

- 7.5 Least impact on riparian systems; provides water to SF River; creates little land disturbance; provides water for endangered species
5
2.5
0 Most impact on riparian systems; provides no water to the SF River; creates significant land disturbance; no water for endangered species

Maximize "greenness"

- 7.5 Least use of electric use, low carbon footprint, air quality friendly, little dust production, low noise, little light emission, max carbon sequestration
5
2.5
0 High electric use, high carbon footprint, high air quality impacts, high dust production, high noise, high night time light emission, little carbon sequestration

MANAGE COSTS**Minimize overall project cost**

- 7.5 Least expensive life cycle costs, opportunity costs, upfront capital costs, unit cost for water, highly fundability, has low permitting and regulatory compliance costs, uses existing City infrastructure; high likelihood of outside funding
\$\$\$\$\$
5
2.5
0 Most expensive life cycle costs, opportunity costs, upfront capital costs, unit cost for water; low fundability; high permitting and regulatory compliance costs; requires costly, new City infrastructure; low likelihood of outside funding
\$

Minimize government cost (impact on water and wastewater rates)

- 7.5 Generates income for WWTP; low infrastructure costs
5
2.5
0 Generates little/no income for WWTP; no cost impact to water rates

C. Ranking Weighting Criteria and City Contracts and Policies

Option Name and Number	Score
13 BW Permit Compl.	11.6
14 USFS Livestock Water	9.2
8 SF Country Club GC	5.9
10 On-demand Sales	8.4
1 MRC	8.4
12 Landfill	8.3
7 Marty Sanchez GC	7.8
2 SF Downs	7.9
15 Future Potable Water Supply	9.8
3 SWAN Park	8.1
11 NM Game & Fish	8.7
5 Downstream SF River	8.6
4 SW Irrigated Parks	7.7
6 Upstream SF River	7.1
9 SF Equestrian Center	6.7

B. Ranking: Weighted Criteria

Option Name and Number	Score
13 BW Permit Compl.	11.6
15 Future Potable Water Supply	9.8
14 USFS Livestock Water	9.2
11 NM Game & Fish	8.7
5 Downstream SF River	8.6
10 On-demand Sales	8.4
1 MRC	8.4
12 Landfill	8.3
3 SWAN Park	8.1
2 SF Downs	7.9
7 Marty Sanchez GC	7.8
4 SW Irrigated Parks	7.7
6 Upstream SF River	7.1
9 SF Equestrian Center	6.7
8 SF Country Club GC	5.9

A. Ranking: Equally Weighted Criteria

Option Name and Number	Score
13 BW Permit Compl.	11.2
1 MRC	10.7
10 On-demand Sales	10.3
12 Landfill	10.3
11 NM Game & Fish	10.1
3 SWAN Park	10.1
2 SF Downs	9.8
7 Marty Sanchez GC	9.7
4 SW Irrigated Parks	9.6
15 Future Potable Water Supply	9.3
5 Downstream SF River	9.3
14 USFS Livestock Water	8.6
9 SF Equestrian Center	8.0
6 Upstream SF River	7.8
8 SF Country Club GC	7.3



Appendix G: Public Comments to December 2012 Draft of RWRP

- **December 1, 2011 Email from Bette Booth on behalf of POSAC**
- **November 27, 2012 Email from Ben Gurule, Acting Parks Division Director Regarding RW Needs at MRC and Marty Sanchez GC**
- **January 25, 2013 Email from Randy Watkins from Santa Fe Solid Waste Management Agency Requesting a RW Budget for the Landfill of 12 Million Gallons per Year**
- **January 28, 2013 Email from Jana Werner for the Downs of Santa Fe Identifying Corrections in the December 2012 RWRP Draft and Noting that the Downs RW Budget Needs to Match the Existing Contract.**
- **February 15, 2013 Letter from the Rio Grande Chapter of the Sierra Club**

BORCHERT, CLAUDIA I.

From: Bette Booth [ebooth13@comcast.net]
Sent: Thursday, December 01, 2011 2:53 PM
To: BORCHERT, CLAUDIA I.
Subject: POSAC supports effluent for SWAN

Hi Claudia, I had hoped to come to the meeting this evening but am fighting a cold so am going to stick to the couch with my tea!

I wanted to let you know that the Parks and Open Spaces Advisory Commission (POSAC) strongly supports prioritizing using effluent for the SWAN park.

Also, I'd really like you to come present the water sustainability plans and study at a meeting early next year. When will you have results from the study?

Thanks so much,

Bette Booth
Chair, POSAC

Seek peace. Work for justice. Be of good courage. Know that you are loved.

BORCHERT, CLAUDIA I.

To: BORCHERT, CLAUDIA I.
Subject: RE: resolution

From: GURULE, BEN J.
Sent: Tuesday, November 27, 2012 3:32 PM
To: BORCHERT, CLAUDIA I.
Cc: ROMERO, JENNIFER C.; PINO, ISAAC J.
Subject: FW: resolution

Good afternoon Claudia,

On January 18, 1996, the MRC sports complex & golf course received approval of a discharge permit for 2mgd (see attached permit). Our effluent pumps were producing 2mgd to efficiently water the 27-hole golf course as well as the softball, hardball, and soccer fields located at the MRC sports complex. Over time, our pump capability has decreased. In addition, we have acquired the Game & Fish, USFS Livestock, the SWAMA Landfill and Rugby fields. In 2012, we are pumping approximately 900,000 gallons per day and not able to sustain the golf course or the sports complex turf needs. Because of the inefficiency, the sports complex is only getting 50% of its watering needs. Our plan is to rebuild these pumps in the off season and return the pumps to 100% efficiency of 2mgd by the spring. It is imperative that we are given a 2mgd allotment.

Thank you,

Ben J. Gurule,
Interim Parks Division Director
Phone: (505) 955-2105
Fax: (505) 955-2111
Email: bjgurule@santafenm.gov

BORCHERT, CLAUDIA I.

From: Randy Watkins [RWatkins@sfswma.org]
Sent: Friday, January 25, 2013 10:26 AM
To: BORCHERT, CLAUDIA I.
Subject: SFSWMA Reclaimed Wastewater Use

Hi Claudia,

The RW Users Meeting on January 7 and the public meeting yesterday were very informative. I read the RW Resource Plan Draft and found an error regarding the landfill in the first paragraph on page 6. The landfill does not directly measure the RW that is delivered to the USFS livestock watering pipeline. The landfill does measure the RW that is delivered to its 500,00-gallon pond by using a calibrated flow meter at a source pond at the golf course. The USFS measures the RW pumped from the landfill pond to its pipeline.

Regarding discussion on "meter management", we began tracking meter readings last year to get a better idea of how RW is distributed and used at our facility. Every month I take a reading from our meter at the golf course and the USFS meter. I track RW use for dust control, rock crushing & screening, and evaporation loss from the pond. Evaporation loss, calculated using the pan evaporation rate for the Santa Fe area, is surprisingly one million gallons a year (assuming the pond is full). The resulting surplus or deficit of RW each month is added or deducted from the pond. The landfill is supportive of the idea of having a company manage the reading and/or calibration of flow meters.

The landfill receives effluent regularly nine months a year, and none during the winter months.

As dust control is a continuous issue for us and may become more stringent, we would like to request that 12,000,000 gallons of RW annually be available for the Caja del Rio Landfill to remain in compliance with its air quality permit. Feel free to contact me if you have any questions about our effluent use.

Thank you,
Randy

Randy Watkins

Santa Fe Solid Waste Management Agency
149 Wildlife Way, Santa Fe, NM 87506-8342
Caja del Rio Landfill
Operations Manager
Office: (505) 424-1850 x130
r Watkins@sfswma.org
www.SantaFeRecycling.org

BORCHERT, CLAUDIA I.

From: Jana Werner <jwerner@buffalothunder.com>
Sent: Monday, January 28, 2013 11:29 AM
To: BORCHERT, CLAUDIA I.
Cc: Allen Mosley; Tim Vigil; Amy Walton
Subject: FW: Santa Fe Downs -- Draft Dec. 2012 Report Reclaimed Wastewater Resource Plan-
City of Santa Fe

Claudia,

This email follows up the January 7, 2013 Reclaimed Wastewater Resource Plan Working Group and RW Users Meeting. Thank you for extending the invitation to the Downs at Santa Fe.

On behalf of the Downs at Santa Fe, we wish to comment on the City of Santa Fe Dec. 2012 Draft Report - Reclaimed Wastewater Resource Plan. Specifically, regarding Section 5.3(2) *SF Downs*: Our existing contract with the City is for 43.5 mg/yr and our highest use over the past three years was 41.52 mg/yr. We are in the process of amending our contract with the City. However "39 mg/yr (120 af/yr); Peak month: 8 mg/mo (25 af/mo); Daily maximum: 400,000g" is lower than we plan for the next contract. We believe these revised numbers result in us being penalized for our conservation measures. In addition, we would ask that the reference to "The annual value of the RW that is not sold is \$109,000" be clarified by adding at the end of that sentence "due to the RW being used for the purpose of the City recreational soccer fields."

Please let me know whether this Draft Plan can be changed to either use our current contract amounts or anticipated amounts that more accurately reflect our needs. Thank you.

Jana Werner
General Counsel
30 Buffalo Thunder Trail
Santa Fe, NM 87506
(505) 819-2254
jwerner@buffalothunder.com

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1807 2nd St. #45
Santa Fe, NM 87505

February 15, 2013

Claudia Borchert
City of Santa Fe
Santa Fe, NM 87501
Email: ciborchert@ci.santa-fe.nm.us

Re: Reclaimed Wastewater Resource Plan, December 2012

Dear Ms. Borchert:

Thank you for creating an excellent analysis of uses for the treated wastewater generated by the City of Santa Fe. We appreciate that long-time water activist Neva Van Peski and SF Watershed Association Director Felicity Broennan were involved in its production. That kind of community engagement in this important process has clearly impacted its scope and quality.

We are pleased to see that a large portion of the treated effluent is allocated to the River and to the recharge of the aquifer through infiltration of the flowing water. Over time, the allocation to turf should be gradually reduced, and treatment to drinking water standards for community reuse be increased, to meet the growing needs of the community. It is preferable to see a closed-loop system, rather than sending some of the treated wastewater back into the Rio Grande. The City should aggressively pursue advanced technologies to deal with pharmaceuticals and endocrine disruptors that currently end up in the treated effluent. There is no need to wait for standards to be set by the federal government. A large set of scientific evidence on the negative effects of endocrine disruptors on biological organisms already exists.

There is an unidentified opportunity in the possible storage of effluent water. As the cost of renewable energy goes down, and the City becomes less dependent on coal by increasing its investment in renewable energy, there will be an increasing need to deal with the 'gap' created when demand exceeds the power created by the sun, wind, biomass, and other renewable energy sources. The simplest way to address this currently is with natural gas generation, which is not a renewable resource. However, improving technologies in hydropower generation are trending toward requiring less elevation difference (head) between the stored water and generator. The cost of installing a storage facility on a hill or a high point is significant, but different sizes of storage capacity could be considered. A full analysis of this opportunity would need to be a distinct engineering study taking into account the full cost of energy generation and distribution. The River is always a happy recipient of water, but if released water is treated sufficiently, it can also be used as a source of drinking water.

The effluent storage, mentioned previously, could be a new section 8.7, Energy Storage Theme. It also fits well into section 8.6, Green Theme. Water Storage/Release is consistent with section 8.5, Stewardship Theme, as the water can be easily released into the river. Finally, it fits into section 8.2, the Economic Theme, as the treated wastewater becomes a resource to minimize overall costs of attaining near 100% renewable energy sources for the City.

Sincerely,

Norma McCallan

Handwritten signature of Norma McCallan in cursive script.

Teresa Seamster

Co-chairs, Northern N.M. Group
Rio Grande Chapter of the Sierra Club

1807 2nd Street, Ste. 45
Santa Fe, N.M. 87505
(505) 983-2703

Explore, enjoy and protect the Planet