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IN THE MATTER OF THE APPLICATION OF PALO VERDE UTILITIES COMPANY FOR AN EXTENSION OF ITS EXISTING CERTIFICATE OF CONVENIENCE AND NECESSITY.

Docket No. SW-03575A-03-0167

IN THE MATTER OF THE APPLICATION OF SANTA CRUZ WATER COMPANY FOR AN EXTENSION OF ITS EXISTING CERTIFICATE OF CONVENIENCE AND NECESSITY.

Docket No. W-03576A-03-0167

NOTICE OF FILING ARSENIC REMEDIATION PLAN IN COMPLIANCE WITH DECISION NO. 66394

Santa Cruz Water Company submits its Arsenic Remediation Plan in compliance with Decision No. 66394 (October 6, 2003), a copy of which is attached.

RESPECTFULLY submitted this 30th day of December, 2004.

ROSHKA HEYMAN & DEWULF, PLC

By ____________________

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SANTA CRUZ WATER COMPANY
ARSENIC REMEDIATION PLAN

INTRODUCTION

In accordance with ACC Decision 66394 6 Oct 03, Santa Cruz Water Company ("SCWC") is required to submit a plan to meet the new arsenic maximum contaminant level ("MCL") of 0.010 mg/L in January 2006. The plan and methodology presented in this report provides a means by which SCWC will continue to provide water that in all respects meets or exceeds the requirements of the Safe Drinking Water Act ("SDWA").

This analysis is based on the build-out requirements of the present CC&N. However, it should be noted that the concepts and tactics developed here will serve SCWC in any future configuration, and can be expanded to meet the needs of any growth in the service area.

In addition, as SCWC is in an area of rapid growth, the arsenic plan presented here will be reviewed and updated at many points in the future, for example when considering the provision of service to additional areas; if the long-term water quality derived from the wells improves or degrades; and the consideration of bringing additional wells into the potable production cycle.

WATER REQUIREMENTS

The Maricopa service area continues to grow rapidly. In order to meet the needs of the community, SCWC currently maintains the following infrastructure:

1. Potable Production Wells (Smith and Vance);
2. Raw Water Production Wells (Cobblestone, Porter, Neely East, Neely West and Neely North);
3. 2 x 1.5 MGal Potable Water Storage Tanks;
4. 2 x Hydropneumatic Tanks;
5. Sodium Hypochlorite Injection System;
6. 4 x 500 GPM Booster Pumps;
7. 2 x 1000 GPM Booster Pumps;
8. Auxiliary Power Generation Equipment for the Distribution System; and
9. Associated Transmission and Distribution Lines.

In addition, the Neely Wells (East, North, and West) are under conversion to potable production wells.

WATER USES AND SOURCES

SCWC has available ground water (raw), potable water (treated) and reclaimed water to meet the needs of the developments. These sources of water are employed as:

1. Potable water supply to customers;
2. Potable water supply to HOA irrigation;
3. Potable water supply as construction water;
4. Reclaimed water supply to mass irrigation activities; and
5. Raw water supplies to mass irrigation activities.

By emphasizing the availability of non-potable sources, and providing the infrastructure necessary to deliver these other sources of water to the end users, the pressure on the potable system is reduced. This has obvious impacts on the costs of treatment, and the size of the treatment infrastructure that will be deployed, and also the number of wells supplying that infrastructure.

As development progresses, SCWC assumes control over all wells in the development area, and evaluates each well for possible inclusion in the utility's well inventory. The Utility also requires that the developers set aside a two-acre site for additional water treatment and distribution centers.

At the present time, SCWC has the following water resources available:

SCWC Schedule of Wells

Well	ADWR Registration #	ADWR ID#	Flow (GPM)	Use	Arsenic, average (mg/L)
Smith	55-612737	4 3 14CBB	1150	Potable Water Production	0.0101
Vance	55-617336	4 3 15DCD	2000	Potable Water Production and Irrigation Supply	0.00838
Porter	55-621410	4 3 14ADD	1200	Golf Course Irrigation	0.01783
Cobblestone	55-801069			Irrigation Supply	N/A
Neely East	55-621408	4 3 13DDD	2000	Under evaluation for Potable Water Production	0.01771
Neely West	55-621407	4 3 13CDC	2000	Under evaluation for Potable Water Production	0.0101
Neely North	55-621406	4 3 13ADD	2000	Under evaluation for Potable Water Production	0.00823

SCWC maintains a priority of water supply as illustrated below:

Priority 1 Provision of Potable Water
Priority 2 Provision of Irrigation Water
Priority 3 Provision of Construction and Non-Potable Water Services

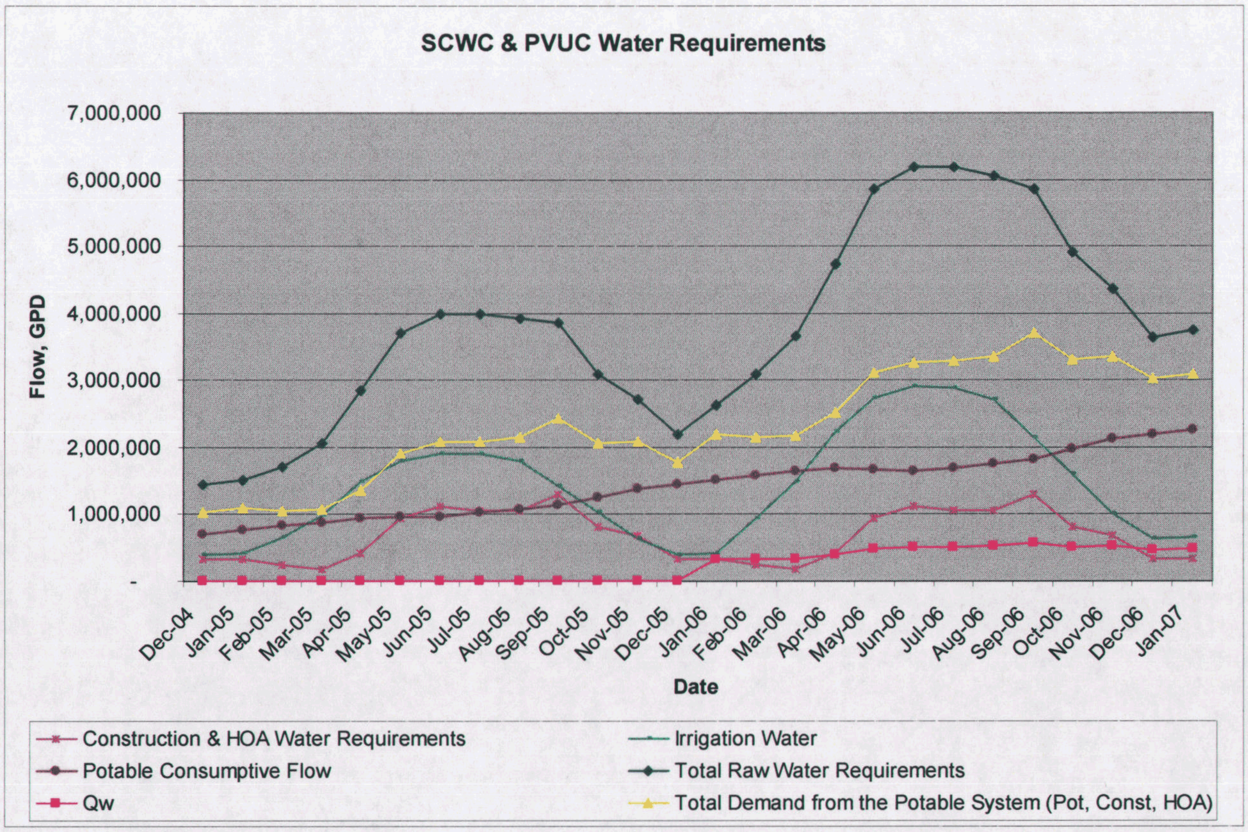
In each case, SCWC has identified primary, secondary and tertiary sources of water to supply the needs of the users, and has installed infrastructure necessary to allow for redundant operations. The following chart illustrates the operating configuration of SCWC:

SCWC Water Sources

Water Use	Primary Source	Secondary Source	Tertiary Source	Notes
Potable Water Production	Smith Well	Vance Well	Neely Well (East/West)	Neely Wells will be available for use no later than 30 April 2005.
Irrigation Water to Province Development	Reclaimed Water (from PVUC)	Neely Well (East/West)	Neely Well (East/West)	Neely Wells are currently capable of providing water to the Province irrigation lake.
Irrigation Water to Villages Development	Vance Well	Cobblestone Well	Potable Water	Reclaimed water may be supplied (requires installation of air gap at Cobblestone Well).
Irrigation Water to Cobblestone Development	Cobblestone Well	Potable via hydrants		
Irrigation Water to The Duke Golf Course	Porter Road Well	Reclaimed Water		A tertiary supply is being developed to allow Neely/Vance Wells to serve the golf course.

WATER MODEL

In order to plan for the delivery of potable and other waters throughout the service area, and ensure that potable water at all times meets the requirements of the SDWA, SCWC has evaluated the requirements for water over a period of 10 years. The results of the evaluation are summarized in the following graph (note this graph has been truncated to show the next two years in order to highlight the requirements as the MCL transitions from 0.050 to 0.010 mg/L):



SCWC's water model is based on maintaining a growth rate of 250 customers per month, each requiring an average daily flow of 250 GPD. In addition, maximum day and peak hour capacities are considered. From a supply standpoint, the utility looks at capacity on a three tiered basis:

1. Average Daily Flow;
2. Maximum Daily Flow; and
3. Peak Hour Flow.

SCWC meets these demands using different portions of the infrastructure:

1. Average Daily Flow requirement (250 GPD per DU) is met through the use of Production Wells;
2. Maximum Daily Flow requirement (495 GPD per DU) is met through a combination of Well Production + Storage – Fire Flow; and
3. Peak Hour Flow requirement (0.584 GPM per DU – determined from the ADEQ requirement for a 1.7 peaking factor on the Maximum Daily Flow) is met through the Booster Pump Production.

From a treatment capacity point of view, enough water must at all times be available to meet the Maximum Day Flow, and while there will be a requirement to initially charge the system with water that meets the MCL, a system design capable of meeting the Average Daily Flow will be sufficient.

From an infrastructure standpoint, the utility as the following capacities:

CAPACITY ANALYSIS		
PEAK CAPACITY (Based on Booster Pumps)	4,000	GPM
ADEQ Peak Hour Capacity	0.584375	GPM per DU
TOTAL PEAK UNITS SERVICABLE	6845	Units
MAX DAY CAPACITY (Based on Well Prodution + Storage - Fire Fl	7176000	GPD
ADEQ Max Day Capacity	495	GPD/DU
TOTAL MAX DAY UNITS SERVICEABLE	14497	Units
AVERAGE DAY CAPACITY (Based on Well Production)	4,536,000	GPD
ADEQ Average Flow Capacity	250	GPD/DU
TOTAL AVERAGE UNITS SERVICEABLE	18144	Units

In addition, the current Water Treatment Plant site has available room for a 1.0 million gallon raw water storage tank (for feeding the treatment system) and an area set aside for a future treatment facility. Also, the utility, in anticipation of having to introduce a physical barrier technology for treatment, has installed an 8" pipeline from the water treatment plant to the wastewater facility (Palo Verde Utilities Company, also owned by Global Water Resources). The brine management plan includes the following:

1. Conversion of the existing lagoon structures to the Reclaimed Water Storage Facility ("RSWF");
2. Partitioning of the RSWF into two cells – one for reclaimed water and the other for brine;
3. Employing brine as a priority construction water source; and
4. Allowing the blending of the reclaimed wand brine streams to allow for discharge under the Type 2 Reclaimed Water Re-Use Permits.

PROJECTED CONSUMPTION

At the projected build-out of the current CC&N (18,750 DUs), and assuming that the requirements for irrigation and other water consumption remain stable, SCWC will be required to produce approximately 5,800,000 gallons of potable water during the peak periods (for consumption, HOA irrigation and construction). Total raw water demands at this time will be in the order of 9,000,000 gallons, which includes additional flow to account for reject water from the treatment system and make-up water for irrigation purposes.

With the wells identified, SCWC can easily supply the required flow (9,000,000 gallons or 6,200 GPM) with any of the largest production wells out of service.

WATER TREATMENT

In evaluating the needs of the service area, SCWC has assumed that the water quality will remain constant. The utility, however, employs an influent arsenic value of the Average + 2 Standard Deviations to allow for variability in the data, provide a conservative estimate and to maximize the in-compliance opportunities.

The goal for this treatment strategy is a potable water maximum arsenic level of 8 µg/L.

Water Evaluation Plan

In the current service area, SCWC is undergoing a three-phased treatment evaluation effort:

1. Water quality analyses for possible installation of physical barrier technology;
2. Blending analysis (slipstream treatment process);and
3. Well rehabilitation studies to determine if segmenting the screened interval of the well casing can yield raw water that can meet the Safe Drinking Water Act ("SDWA") requirements without treatment.

From an operational perspective, the latter of the three options is obviously preferred. The SCWC water model presented herein assumes, however, the worst case scenario (direct treatment) by way of a separation technology.

It is felt that there is significant opportunity to explore and exploit the potential for a non-treatment solution. Originally, it was believed that the impact of re-screening would be too detrimental to the flow capacities. However, as the analysis progressed, it was determined that with an RO treatment process, there is a significant volume of water that is rejected in favour of producing potable water. In this case, 25% of the water sent to the treatment system is rejected. As a consequence, any activity on the re-screening can consume 25% of the production and still result in net savings to the utility. Compounding this effect are the requirements to treat or dewater the brine, which over time are significant.

Treatment Technology Discussion

Arsenic may be removed in a number of ways: ion exchange ("IX"); activated alumina adsorption ("AA"); reverse osmosis ("RO"); blending; and sealing of aquifer layers etc. The current MCL for arsenic is 50 µg/L. In January 2006, the MCL will be reduced to 10 µg/L.

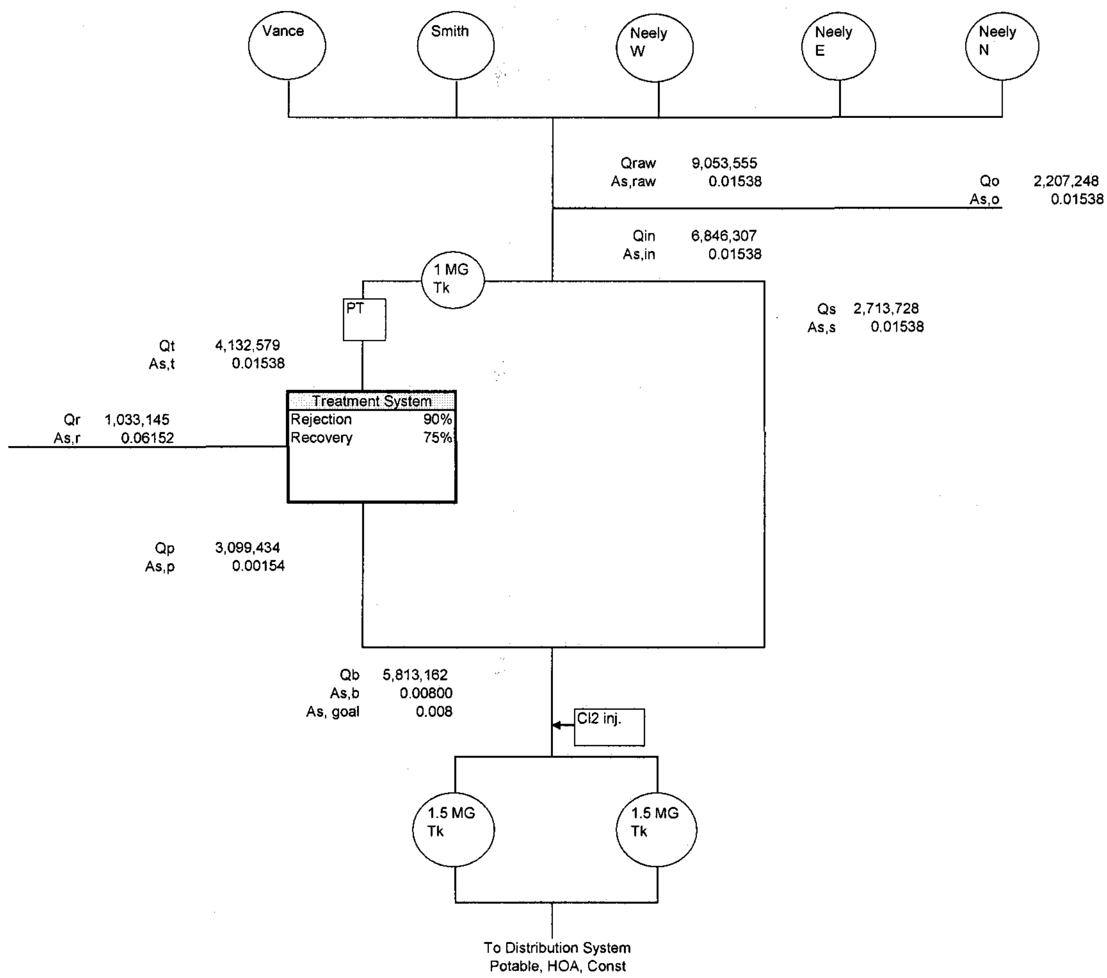
The various constituents of interest at SCWC have interfering properties associated with the removal of arsenic. For example, TDS will affect the ability to employ AA processes or IX processes for arsenic removal; nitrates and sulphates will compete for adsorption with arsenic etc.

In order to meet the new MCL for arsenic, SCWC anticipates using a combination of blending (reverse osmosis or other effective treatment blended with raw water) and actively screening perforated intervals in the well casings to reduce or eliminate the arsenic levels in the raw water.

While the actual treatment configuration is still under evaluation, under the worst case conditions (ie RO treatment and no reduction in influent arsenic levels as a result of re-screening) the analysis indicates that treatment of 60 to 65% of the raw water flow will be sufficient to meet the SCWC blended treatment goal. The application of treatment technology will also provide an increase in the quality of water from the perspective of other elements as well, in particular total dissolved solids (TDS).

Assuming the re-screening effect is minimal and that an RO system is required to meet the MCL, SCWC expects that the treatment facility will be configured as shown below:

SANTA CRUZ WATER LLC
BUILD-OUT TREATMENT PLANT CONFIGURATION



Legend

Qraw	Total Raw Water Pumped	As,raw	Raw Water As (Avg + 2STD)
Qo	Flow to Irrigation Make-Up (untreated)	As,o	As to other uses
Qin	Influent Flow to WTP	As,in	As to WTP
Qs	Slipstream Flow	As,s	As in Slipstream Flow
Qt	Flow to Treatment Unit	As,t	As to Treatment Plant
Qr	Reject Flow (Brine)	As,r	As in Reject Water
Qp	Prodcut Water	As,p	As in Product Water
Qb	Blended Flow	As,b	As in Blended Water
PT	Pre-Treatment (if Reqd)		
Cl2 inj.	Chlorine Injection (NaOCl)		
All Q in GPD			
All As in mg/L			

TIMELINE

SCWC began the collection of data in 2004 for use in determining the treatment configuration. The re-screening evaluation began in December 2004. We expect that the necessary data collection, reduction and analysis will be completed by the end of January 2005, with design/implementation activities to commence immediately thereafter.

SCWC expects completion of the first phase of treatment no later than end-October 2005, to allow for a set-to-work/commissioning process to be completed by end-December 2005.

Costs

The ultimate costs associated with providing treatment have not yet been finalized. SCWC's parent company, Global Water, has budgeted approximately $6.0MM in order to provide treatment, but this is clearly dependent on the final configuration of treatment, the effectiveness of the re-screening efforts, and the water quality derived from the new production wells. Similarly, operating costs are dependent on the final configuration and the effectiveness of the re-screening process.