

## **4.0 RECOMMENDATIONS – WATER/WASTEWATER QUALITY STRATEGY**

---

The City must take action to address its immediate wastewater discharge concern – its current inability to regularly meet its numerical NPDES permit effluent limits for TDS and related constituents (chloride, sodium, and sulfate). Currently the City is at high risk for continuing to exceed its permit limits, which is not an acceptable situation. Based on the discussions in the previous three chapters, this chapter provides recommendations for the City to implement to address this high priority concern, as well as realize benefits relative to longer-term NPDES/wastewater concerns and the City’s long-range plans.

This chapter provides conclusions and recommendations in two categories. First, findings from Chapter 2 regarding potentially importing surface water (water blending, treatment, and TDS benefits) are presented. Second, three specific recommendations regarding implementation of selected alternatives evaluated in Chapter 3 are provided.

### **4.1 FINDINGS REGARDING IMPORTING SURFACE WATER**

1. Blending treated Lake Nacimiento water in the City’s existing groundwater system is very feasible based on the water qualities of the two waters. It is recommended to match pH values, types of disinfectant residuals, and introduce the surface water gradually (e.g., over 6-12 months). Desktop modeling could be performed to confirm the compatibility of the two waters. Bench- or pilot- scale work would be necessary to determine whether a corrosion control product (e.g., a polyphosphate or orthophosphate product) would also be desirable.
2. In addition to the regional water treatment plant information compiled by Boyle (2002), a treatment plant dedicated to the City, if feasible, would provide high-quality finished water. Recommended technologies include conventional treatment and microfiltration, each with or without granular activated carbon (GAC) post-filter adsorption. If GAC is used, free chlorine could likely be used as the residual disinfectant, while chloramines would be required if GAC is not used. GAC will provide additional TOC removal, and therefore free chlorine could be used to match the City’s existing disinfectant while still complying with disinfection by-product (DBP) regulations. If additional TOC removal were not provided by GAC addition at the water treatment plant, chloramines would likely be required to minimize DBP formation. In this case, the City should chloramine its well water to avoid any adverse impacts of disinfectant blending.
3. Because of the general compatibility of the waters as indicated by available data, the selection of the treatment process (e.g., conventional, microfiltration, with or without GAC) can be conducted independently of blending considerations. In terms of selecting a process for the treatment of Lake Nacimiento water, blending impacts are secondary in importance to the considerations of adequate microbial control, disinfection by-product minimization, and cost.

4. The City can realize a significant wastewater regulatory benefit with respect to TDS if treated surface water is imported. Currently the City's wastewater TDS averages very close to its discharge limit of 1100 mg/L, and available data indicate this would be reduced to 800-850 mg/L upon the introduction of surface water, representing an approximate 25% margin of safety against discharge violations.

## 4.2 RECOMMENDED ALTERNATIVES

Three specific recommendations based on the alternatives evaluated in Chapter 3 are provided below. Malcolm Pirnie designed these to be considered as a group of three complementary alternatives to most efficiently address the City's immediate TDS compliance need, as well as provide the foundation for future ceasing of discharge to the Salinas River and for ensuring adequate water supply for future growth.

1. ***Desalinate WWTP Effluent.*** As indicated in Chapter 3, this alternative is the most cost-efficient way for the City to meet its current numerical TDS and related constituent effluent limits. It is also a necessary step for the City to take to prepare for ceasing discharge to the Salinas River, because wastewater desalination is a prerequisite for implementing any treated wastewater recharge or reuse program. Desalination can be implemented modularly; that is, a system to achieve current TDS compliance can be implemented now, and simply be enhanced in the future to achieve the lower TDS values necessary for a treated wastewater recharge or reuse program. Achieving wastewater effluent TDS concentrations at recharge/reuse standards or better (e.g., equal to or less than 450 mg/L) cannot be achieved without wastewater desalination. To consistently achieve this TDS concentration in wastewater effluent without desalinating wastewater would theoretically require desalinating the City's source water (well water and/or surface water) to near-zero TDS concentrations, which is neither practical nor desirable.

Because of the immediate need for lower effluent TDS concentrations and the apparent inevitability of wastewater desalination for future recharge/reuse applications, we recommend that the City implement treated wastewater desalination – now to meet current TDS effluent limits, and to a greater degree in the future to meet recharge/reuse standards depending on evolving NPDES permit requirements. Depending on evolving NPDES requirements, the City may wish to either lease desalination equipment until a surface water project is brought on line (discussed below), or permanently upgrade its wastewater treatment plant with permanent desalination capability. Leasing may be desirable if the City's current TDS limit (1100 mg/L) remains in effect with its upcoming NPDES permit renewal, because either wastewater desalination or surface water imports alone would bring the TDS of the City's effluent comfortably below that level. If the RWQCB reduces the City's effluent limit to 900 mg/L or lower, it is recommended that the City purchase permanent desalination capability.

2. ***Import Lake Nacimiento Water.*** The method of City implementation of this alternative (participate in either the Nacimiento Project treated or raw water option, or import lake water independently) is largely a function of the results of ongoing City discussions with the Nacimiento Participants Advisory Committee. Of the three choices presented, all three would address the City's immediate TDS concern, but those that include participation in the Nacimiento Project are most favorable from a water supply and regulatory perspective. Unlike the regional options, importing Lake Nacimiento water independently has not yet been investigated and may not be feasible. If implemented, the City would have none of the water supply flexibility inherent in a regional project, and would have to bear the sole burden of ownership and maintenance of the 20-mile transmission line, as well as its own treatment plant, a significant and probably undesirable expansion of City responsibility and risk. The regional projects, which are already in the advance planning stages (the EIR for both options is to be completed in the coming months), are more attractive from a City perspective. The treated water option would be significantly more costly, but allow the City to rely on the regional system for its treated water and require the least degree of variation from current City operations. Significant cost savings are possible if the City participates in the raw water option of the Nacimiento Project and treats its own water with a package (largely pre-designed, commercially available) plant. With its own plant, the City also gains control over staffing and operation of the plant, and may have the opportunity to sell water to other agencies during periods of low demand.

Importing Lake Nacimiento water by either means provides a unique set of benefits among the alternatives considered in this report. It would provide increased water supply reliability, improved drinking water quality, relief from local groundwater overdraft, and salt reduction across all TDS sources to the City's wastewater treatment plant. We recommend the City continue and expedite its work with neighboring municipalities to implement the Nacimiento Project. The City should consider the pros and cons of the treated water and raw water options as mentioned in the above paragraph and advocate for the option most favorable to the City (and likely to other participants as well). As discussed under recommendation #1 above, this alternative can be implemented in conjunction with wastewater desalination if necessary to meet a more stringent TDS effluent limit if put into place by the RWQCB.

3. ***Achieve Greater Industrial and Commercial Discharge Quality Control.*** City salt grab sampling results indicate that TDS concentrations well in excess of City Sewer Code standards can be found in the wastewater collection system. Although the mass salt loading from industrial/commercial facilities (and thus the potential benefit of this alternative) cannot yet be quantified based on available data, this alternative represents a relatively low-cost measure that the City can take in addition to others to further reduce the TDS loading to its wastewater treatment plant. Although it may not be enough on its own to reduce TDS concentrations in treated wastewater to below NPDES limits, this alternative may well provide an worthwhile incremental TDS reduction, and therefore (1) a

greater margin of safety against future TDS violations, as well as (2) decreased operating costs and brine disposal for a future City wastewater desalination system.

We recommend that the City perform an industrial/commercial wastewater flow monitoring program to complement the City's existing salt monitoring data. Flow-weighted composite wastewater quality samples should also be collected and analyzed to provide a more representative picture of industrial/commercial wastewater TDS concentrations. Following these steps, mass loading of salt from these facilities in the City's wastewater service area can be quantified, and the City can begin more active cooperation and/or Sewer Code enforcement for those facilities responsible for the most significant salt loadings to the City system.