CHAPTER 6

ANALYSIS OF PROJECT ALTERNATIVES

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CHAPTER 6 ANALYSIS OF PROJECT ALTERNATIVES

INTRODUCTION

The purpose of the 2015 Plan is to identify the most cost-effective, and environmentally sound means to provide wastewater conveyance, treatment, and disposal services to the residents and businesses within the projected service area of the SCVJSS through the year 2015. The scope of planning includes all foreseeable development within the existing spheres of influence of Districts Nos. 26 and 32, as well as development within the projected expansion of the spheres in the intervening period.

Specifically, the analysis of project alternatives involved defining the planning objective of the 2015 Plan, and then developing and evaluating the feasibility of a series of project alternatives based on both: 1) necessary, and 2) performance-based screening criteria. Through this two-tiered process, a single project was identified as the recommended project due to its relative superiority over the other alternatives. As the selected alternative, the recommended project will establish a plan for the necessary expansion/upgrade of the SCVJSS through the year 2015.

PLANNING OBJECTIVE

The objective of the 2015 Plan is *to provide for the necessary wastewater conveyance, treatment, and disposal facilities to meet the needs of the projected service area for Districts Nos. 26 and 32 through the year 2015 in a cost-effective and environmentally sound manner.*

FIRST-LEVEL SCREENING: NECESSARY CRITERIA

There are a number of criteria that define the 2015 SCVJSS needs and/or constrain development and evaluation of project alternatives. These criteria represent the broad-based planning goals for the SCVJSS, ensure compliance with the planning objective, and constitute minimum requirements for any feasible alternative. The criteria identified as necessary for any feasible alternative are as follows:

- Accommodate Flow
- Continue Tertiary Treatment
- Preserve Regional System
- Maintain Consistency with Previous Planning
- Comply with Regulatory Requirements

Accommodate Flow

Population/Flow Forecasts

The 2015 Plan must anticipate increases in wastewater flow in the projected service area of Districts Nos. 26 and 32, and plan for necessary future wastewater conveyance, treatment, and disposal facilities. Future wastewater flow was estimated through a disaggregation of the most recent SCAG population projections and forecasts (consistent with the City of Santa Clarita's projections) of industrial and contracted flow throughout the planning horizon. As indicated in Chapter 5, the recommended project must ultimately provide sewerage service to a population of approximately 321,000 in 2015. This population, along with the associated industrial and contracted flows, is expected to generate 34.2 mgd of wastewater flow which must be accommodated by the SCVJSS facilities.

Managing Uncertainty

Planning projections always hold some degree of uncertainty. The wastewater flow projections presented in Chapter 5 are based on projected population growth, industrial output growth, and

historical wastewater per capita generation rates. Population projections, in particular, are tenuous under normal conditions, and even more so in an area such as the SCVJSS planning area that is subject to substantial growth throughout the planning horizon. To the extent that these projections are uncertain, wastewater flow projections corresponding to the population projections are also uncertain. For example, the previous Districts Nos. 26 and 32 wastewater facilities plan, the 1980 Plan, was based on SCAG's population projections at that time. These projections significantly underestimated growth in the Santa Clarita Valley. As a result, the 1980 Plan failed to identify sufficient treatment capacity necessary to meet the actual needs of the service area throughout the planning period (the year 2000). Consequently, a December 1987 Addendum to the 1980 Plan was produced that included revised population and flow projections and plans for expansion beyond those identified in the 1980 Plan.

The 2015 Plan is based on the most recent growth projections, but as revised projections emerge, the recommendations will be re-examined based on available information. The current SCAG 96 population forecasts, on which the flow projections used in this facilities plan are based, predict significant growth in the projected service area of Districts Nos. 26 and 32. If this growth does not materialize within the planning period, the construction of proposed facilities will be postponed until necessary. Correspondingly, if growth develops more quickly than anticipated, design and construction phases will be accelerated to meet the needs of the service area. This approach will also allow Districts Nos. 26 and 32 to respond to other factors affecting wastewater flow, such as water conservation or other changes in per capita consumption practices.

Project Schedule

In order to accommodate flow as it materializes, an important consideration is the lead time needed to allow for new facilities to be constructed and operational at the time needed. The lead time required includes provision for planning, land acquisition (if needed), design, site preparation, construction, and startup. The project schedule must incorporate sufficient time for all these activities in order to allow operation of facilities before the capacity of previously constructed facilities is exceeded for a prolonged period. Accordingly, the project schedule must consider the interim flows and the ability of facilities to be constructed in a timely manner to treat the flows throughout the planning horizon, not just the projected 2015 flow. Furthermore, the flow projections demonstrate the immediate need for a project as existing SCVJSS capacity will be exceeded in 1999.

Continue Tertiary Treatment

Minimize Impacts on the Santa Clara River

Currently, all treated effluent from the SCVJSS is discharged into the Santa Clara River. The RWQCB, through its NPDES permits, regulates the quality of effluent discharged to surface waters by specifying limits for constituents in the effluent and parameters for discharge. Since the SWRP and VWRP will continue to discharge all or portions of the treated effluent to the Santa Clara River, they must comply with the discharge limitations. Tertiary treatment is necessary to ensure compliance with the permit limits.

Furthermore, the Santa Clara River provides habitat for a wide variety of plants and animals. Consequently, any proposed expansion of the treatment system must treat influent wastewater to a level that permits its discharge to the Santa Clara River without any harmful effects on these species. Tertiary treatment is required to ensure adequate water quality to support the Santa Clara River ecosystem. Part II of this document, the 2015 Plan EIR, details the water quality impacts of the existing and proposed SCVJSS.

One of the potential water quality impacts is ammonia toxicity. Ammonia levels are a concern because the treated effluent is discharged to the Santa Clara River where elevated ammonia concentrations in the receiving water caused by the effluent could be detrimental to aquatic life. The RWQCB, in the current NPDES permit, has given Districts Nos. 26 and 32 until June 2003 to meet the Basin Plan receiving water objectives for ammonia, or to conduct studies leading to an approved, less restrictive site specific objective for ammonia. Preliminary chronic toxicity studies examining the impact of SWRP and VWRP effluent on the Santa Clara River indicate a likely toxic effect. The toxicity studies also indicate that a large part of the observed toxicity may be due to the presence of ammonia in the effluent. Accordingly, during the screening process, it was required that all feasible alternatives include provision for removal of ammonia at both the SWRP and the VWRP to lower the ammonia concentrations to non-toxic levels.

The requirement for tertiary treatment influences identification of alternatives as it requires that Districts Nos. 26 and 32 either incrementally expand existing facilities or construct a new WRP with similar wastewater treatment efficiency. A description of existing SCVJSS facilities and the processes used in the tertiary treatment of wastewater are provided in Chapter 4.

Optimize Opportunities for Water Reuse

Historically, although of acceptable quality for a number of uses, nearly all effluent from the SCVJSS has been discharged to the Santa Clara River. However, demand for reclaimed water is expected to increase as water resources become limited for future growth. Recent state legislation has made it mandatory for developers and regulatory agencies to evaluate the availability of infrastructure elements, including water supply, prior to approval of building permits for large developments. The scarcity of additional water supply sources in Southern California has provided incentive for project proponents and water supply agencies to consider reclaimed water as a viable source of water supply. In addition, Section 461 of the California Water Code states that *the primary interest of the people of the state in the conservation of all available water resources requires the maximum reuse of reclaimed water in the satisfaction of requirements for beneficial uses of water.* Accordingly, the Districts will continue to support reuse as a means of augmenting Southern California's water supply.

Currently, the Districts provide reclaimed water at the request of project proponents, as viable projects arise. To facilitate potential future water reuse, a site at the VWRP has been reserved for a reclaimed water pump station. Furthermore, plans have been developed by the CLWA for using in excess of 8 mgd of reclaimed water from the SCVJSS. Agreements between Districts Nos. 26 and 32 and the CLWA have been signed allowing the CLWA to begin distributing up to 1,600 AFY (1.4 mgd) of reclaimed water from the VWRP.

The ultimate quantity of reclaimed water actually available for reuse, however, will not simply be a function of the future reclaimed water production and demand; it will also be a function of the hydrological and biological needs of the Santa Clara River ecosystem in the vicinity and downstream of the SWRP and VWRP. The requirements of the river ecosystem have been analyzed in Part II of this document, the 2015 Plan EIR.

Preserve Regional System

Districts Nos. 26 and 32 operate as a regional system, known as the SCVJSS, that was created through a 1984 JPA. The joint operation of the regional system has proven to be beneficial as it provides for a sharing of resources that allows for cost-effective operation of the system. Based on this experience and the inherent

operational flexibility of an integrated system, maintaining a regional system was identified as a necessary component of any feasible alternative.

Centralized Solids Processing

An important component of the current regional system is centralized solids processing at the VWRP. Due to the success and cost-effectiveness of this approach, the SCVJSS will maintain centralized solids processing at the VWRP throughout this planning horizon. Any feasible alternative, therefore, should allow for continued centralized solids processing. The existing solids processing site has adequate additional area for the expansion of facilities necessary to accommodate the additional solids expected to be generated through 2015.

Maintain Consistency with Previous Planning

As stated previously, the prior planning efforts of the SCVJSS have been documented in the 1980 Plan and the associated 1987 Addendum. These documents set the precedent for the master development of the SCVJSS to this point. The 2015 planning process builds upon this foundation and remains consistent with the objectives and the means to achieve those objectives identified in the previous planning efforts. Maintaining consistency with previous planning efforts ensures that any feasible alternative will be a logical evolution of the current SCVJSS.

Comply with Regulatory Requirements

Any feasible alternative must comply with a variety of federal, state, and local rules and regulations. Some of the resource specific regulations include:

Water Quality

- Clean Water Act (Federal)
- Safe Drinking Water Act
- Porter-Cologne Water Quality Control Act
- The RWQCB's Basin Plan
- California Water Code - Title 22

Air Quality

- Clean Air Act (Federal)
- California Clean Air Act
- South Coast Air Quality Management District Air Quality Management Plan
- California Toxics Regulations
- Hot Spots Act

Other Resources

- Endangered Species Act (Federal)
- California Endangered Species Act
- California Fish and Game Code
- National Historic Preservation Act

Any feasible alternative must also consider other regulations and requirements that are specific to the site selection and operation of any proposed facility. These include the Occupational Safety and Health Act (OSHA); the State Water Resources Control Board's Revolving Fund Loan Program Requirements, Hazardous Waste Control Act; Comprehensive Environmental Response, Compensation and Liability Act; the Resource Conservation and Recovery Act; and Superfund Amendment Reauthorization Act.

Also, as noted earlier, the RWQCB has prescribed a schedule for meeting receiving water objectives for ammonia, or to conduct studies leading to an approved, less restrictive site specific objective for ammonia.

Furthermore, the 2015 Plan and the resulting recommended project must comply with the provisions of CEQA. CEQA mandates an assessment of the environmental impacts of any proposed alternative before final selection of a recommended project. Part II of this document, the 2015 Plan EIR, was prepared to comply with the specific provisions of CEQA, and it contains detailed discussion on the impacts of the recommended project including compliance with the above rules and regulations.

IDENTIFICATION AND SCREENING OF ALTERNATIVES

Alternative identification and screening was a multi-phased process in which alternatives were initially developed as concepts. These concepts represent strategies to meet the planning objective. Just as important, however, is the capability of the conceptual alternatives to meet the necessary criteria. As part of the initial screening process, a number of conceptual alternatives were formulated and analyzed as to their ability to meet the necessary requirements specified above. A common element to each of the alternatives, other than the No Project Alternative, would be a process upgrade to provide for ammonia removal through implementation of a nitrification-denitrification process, as described in Chapter 7. The conceptual alternatives analyzed were as follows:

- Expansion of the VWRP
- Expansion of the SWRP
- Construction of an Additional WRP
- Process Modification of the SCVJSS Facilities
- No Project

Expansion of the Valencia WRP

In order to assess the feasibility of expansion at the VWRP, a detailed site analysis was conducted. It was determined that the VWRP has adequate site capacity for additional expansion. The additional site capacity can be provided at two locations: 1) the developed, southern portion of the site (for both additional wastewater treatment and solids processing), and 2) the approximately five-acre undeveloped area at the north end of the site.

Conservation Easement

One limitation to expansion at the VWRP is a conservation easement granted to the state of California Department of Fish and Game (No. 93-1486854). The easement covers approximately three acres of land, located along the western boundary of the VWRP site (see Figure 7-1). The easement states that *the property will be retained forever in a natural state*, and that the use of the property will be confined to *such activities, including without limitation, those involving the conservation, protection, restoration, and enhancement of native species and conservation purposes.*

The conservation easement was a provision of an August 6, 1992, streambed alteration agreement (No. 5-644-91, CSD Contract No. 3218) entered into with the Department of Fish and Game as part of the VWRP Stage IV expansion retaining wall project. This project required construction in riparian habitat along the Santa Clara River, and the easement was established to replace the lost riparian habitat at a ratio of three acres to one.

The conservation easement may limit any VWRP expansion at the north end of the site. Allowing for limitations imposed by the easement, the site analysis found that the north end could accommodate primary and secondary treatment facilities for approximately 9 mgd of additional flow.

Feasibility Analysis

The feasibility of the concept was evaluated in light of the necessary criteria, and it was determined that

expansion of the VWRP met all the necessary criteria. The future site capacity of the north parcel combined with the ability for more immediate expansion on the south parcel allowed adequate capacity to accommodate the projected flow. The criteria of maintaining a regional system, remaining consistent with previous planning documents, and continuing tertiary treatment would be met because the alternative would involve incremental expansion of existing facilities with similar treatment facilities. The requirement of complying with regulatory requirements was also deemed possible due to the previous environmental assessments of the site. As such, the expansion of the VWRP was determined to have met all necessary criteria.

Expansion of the Saugus WRP

As with the VWRP, a detailed site analysis of the SWRP was conducted to assess the possibility of expansion. The SWRP site, however, was found to not support expansion due to topographical constraints and restrictions imposed by adjacent land uses. The SWRP is bordered by railroad lines to the north and west, steep embankments to the east, and a Metropolitan Water District easement to the south. As such it was determined that expansion of the SWRP was not a feasible alternative.

Construction of an Additional WRP

Two general locations were initially identified as possible sites for construction of a third WRP: 1) eastern Santa Clarita Valley, or 2) western Santa Clarita Valley. While the topography of the region, which enables easy discharge of effluent to the Santa Clara River, made an eastern treatment plant advantageous, it was not selected because it would not accommodate treatment of all the flow generated in the SCVJSS through 2015. Notwithstanding the projected growth in the eastern part of the valley, some flow would not be tributary to a site in the eastern valley, necessitating expansion of the VWRP. Additionally, environmental and operational impacts would be greater by siting a new WRP rather than the recommended project which expands existing facilities. Economic factors also indicated expansion of existing facilities would be more cost effective, both operationally and with respect to the unit cost associated with water reuse; costs associated with constructing and operating a new WRP would greatly outweigh those additional costs to construct and operate a reclaimed water delivery system from the SWRP and/or VWRP.

A site in the western part of the valley was also not selected since all of the necessary selection criteria would not be satisfied and there would be relatively higher environmental and operational impacts of siting a new WRP. The time needed to acquire land and complete the entitlement process for a new facility was considered prohibitive since existing system capacity is expected to be exceeded by 1999; thus, the flow could not be accommodated by the time the additional capacity is needed. Furthermore, if centralized solids processing was to continue, the topography of the valley would require pumping of solids uphill to the VWRP. Costly pumping of solids would reduce the advantages of centralized solids processing. Also, the environmental impacts associated with developing a new site were considered undesirable, since the impacts of constructing a new plant are potentially much greater than those for constructing additional facilities at the extensively studied existing VWRP and SWRP sites.

As neither of these potential sites satisfied the necessary criteria for a feasible project, and since more cost effective and operationally advantageous developable site capacity was identified at the VWRP, both sites were screened out and the concept of constructing a third treatment plant was not selected.

Process Modification of SCVJSS Facilities

Process modification of existing facilities as a means of increasing WRP capacity to accommodate 2015 flow was also considered as an option. The types of process modifications considered included changing unit processes (e.g., changing to a pure-oxygen activated sludge process versus conventional air activated sludge process for secondary treatment), altering design criteria, and increasing the use of flow equalization. Given the necessity for continued tertiary treatment, the types of process modification examined could not accommodate the projected flow while maintaining the same level of treatment. Also, many types of process modification entail relatively high operation and maintenance costs. Furthermore, types of process modification that would allow the existing facilities to accommodate the 2015 flow would not satisfy the requirement of consistency with previous planning documents, which guided the selection of the existing unit processes. As such, this alternative was deemed undesirable.

No Project

CEQA requires that the No Project Alternative be considered along with other project alternatives during the planning process. The No Project Alternative is investigated to provide a baseline of environmental impacts for comparison with the other alternatives.

The No Project Alternative would limit the treatment capacity of the SCVJSS to 19.1 mgd. Based on current growth projections, this capacity will be exceeded by 1999. Under the No Project Alternative, once the current capacity is reached at the SCVJSS facilities, new project proponents will not be allowed to discharge into the existing SCVJSS facilities and will instead need to provide alternate plans for the conveyance, treatment, and disposal of the wastewater associated with their projects. As the No Project Alternative does not accommodate the projected flow, thus, not meeting the planning objective, it was also considered infeasible.

SECOND-LEVEL SCREENING: PERFORMANCE-BASED CRITERIA

The first-level screening process limited the alternatives to be considered. Table 6-1 summarizes the results of the preliminary screening process. Upon review, the only feasible option identified, in light of the necessary criteria, was expansion of the VWRP. The No Project Alternative, due to CEQA requirements, was also retained. The next step in the alternatives screening process was to evaluate the alternatives in greater detail. Accordingly, the alternatives were taken beyond a conceptual level and formed into detailed project alternatives. Typically, the projects would then be subjected to a rigorous performance-based analysis in which the alternatives would be evaluated relative to one another. In this case, however, only one alternative was considered truly feasible, and it was unnecessary to compare the alternatives in this manner. The No Project Alternative, as mandated by CEQA, was used to introduce baseline environmental impacts that the recommended alternative was compared against. That analysis is contained in Part II of this document, the 2015 Plan EIR.

Nonetheless, performance-based screening criteria were used to develop the conceptual alternative, expansion of the VWRP, into a detailed project alternative. The criteria used may be summarized according to three general categories:

- Minimize Environmental Impacts
- Provide for Cost Effectiveness
- Provide for Good Engineering and Operation

Table 6-1
SUMMARY OF THE FIRST-LEVEL SCREENING PROCESS

CONCEPTUAL ALTERNATIVE	ACCOM-MODATES FLOW	MAINTAINS REGIONAL SYSTEM	CONSISTENT WITH PREVIOUS PLANNING	CONTINUES TERTIARY TREATMENT	MEETS REGULATORY REQUIREMENTS
Expansion of the VWRP	✓	✓	✓	✓	✓
Expansion of the SWRP		✓	✓	✓	✓
Construction of an Additional WRP		✓		✓	✓
Process Modification of SCVJSS WRPs		✓			
No Project		✓	✓	✓	

Minimize Environmental Impacts

The selected layout and operational plan of the expansion of the VWRP was designed to minimize environmental impacts. A complete description of the environmental impacts of the proposed alternative is contained in Part II of this document, the 2015 Plan EIR.

The new layout will continue to use the existing outfall; outfalls can cause regions of turbulence at the discharge point, which are not suitable habitat for some species, therefore, localizing the discharge area minimizes the potential impacts on the species in the vicinity of the WRP. Furthermore, construction of an outfall would potentially cause an impact on the riparian habitat adjacent to the associated construction activities.

The VWRP layout was also conceived to avoid any construction or operational incursion into the conservation easement, thereby preserving riparian habitat. The expansion of the VWRP will also occur in a previously developed area, precluding the elimination of open space.

Provide for Cost Effectiveness

By maintaining the regional system concept and by utilizing current owned land, the expansion of the VWRP would be less costly than siting a new WRP. It was determined that the regional system would allow for more cost-effective treatment of solids at a centralized site rather than at the individual sites. By utilizing land at the VWRP site, no further capital outlay would be necessary for site identification and acquisition. The VWRP site also has existing support facilities such as laboratories, control rooms, and maintenance facilities that can be modified or upgraded to accommodate the new expansions, saving cost as compared to building new facilities. Also, the economic advantages of expanding at an active site are realized as some existing facilities such as filters, chlorination-dechlorination, and solids processing will simply need to be incrementally expanded to accommodate the increased flow. Furthermore, existing equalization tanks and outfalls were deemed adequate without upgrade for the expected flow. Lastly, the advantages of economies of scale were identified; staffing and procurement of supplies becomes incrementally less expensive for the expanded facility.

Provide for Good Engineering and Operation

The advantages of maintaining a regional system are also realized in terms of operational benefits. The design of the integrated system would provide for increased flexibility for flow allocation between the

two SCVJSS WRPs. Also, continued centralized solids processing would allow for efficient transport of biosolids as the mass is concentrated at one site. Another measure employed to minimize engineering impacts is to design the VWRP plant expansion in modular segments with independent primary and secondary unit processes. For example, to preserve the existing headworks, which could not simply be incrementally expanded without considerable redesign, the expansion on the north parcel of the VWRP is designed with independent influent pumps, comminutors, and grit chambers. The independent headworks also allow for more flexible operation as flows tributary to the VWRP can be distributed between the two headworks, as appropriate. A more complete description of the plant layout and the different components of expansion follows.

SELECTION OF THE RECOMMENDED PROJECT

According to SCAG projections, there is a demonstrable need for a project. Districts Nos. 26 and 32 have a responsibility to plan for the conveyance, treatment, and disposal of wastewater expected to be generated in their projected service area. As such, the above detailed screening process has identified the optimum treatment alternative.

Wastewater treatment, however, is only one component of the planning objective. The other two components are conveyance and disposal. These two components, however, are much more difficult to address in a programmatic fashion. Disposal activities related to biosolids management, in particular, may continually change in order to secure the most cost effective option. Therefore, it is often more appropriate to approach wastewater conveyance and biosolids disposal methods in an incremental manner.

Wastewater conveyance needs are a function of patterns and timing of individual developments. Each individual development is subject to many elements that affect the timing of the development, including regional economic conditions and institutional approval. Thus, while on a regional scale the cumulative effects of these developments can be addressed in a program for wastewater treatment, identifying the associated sub-regional wastewater conveyance requirements (i.e. pump stations or alignment of new trunk sewers) well in advance of need is difficult and impractical.

Similarly, specific biosolids management methods are difficult to address in the long term. The economics of biosolids management are constantly changing as new alternatives arise and the regulatory environment changes. Therefore, the viability of management options frequently vary and make it difficult to programmatically address biosolids management over a long-term planning horizon.

As much as was practical, the associated wastewater conveyance and biosolids disposal needs were analyzed throughout the planning horizon. The Districts, however, wish to retain as much flexibility in the future with regards to wastewater conveyance and biosolids disposal in order to facilitate their ability to respond to changing conditions. The incremental approach the Districts use to evaluate conveyance and biosolids management is detailed below.

Wastewater Conveyance

Districts Nos. 26 and 32 are responsible for the planning, construction, operation, and maintenance of the SCVJSS trunk sewers. The level of flow in each trunk sewer, as well as the condition of the trunk sewer, is checked periodically, and a recommendation is made as to whether relief, repair, or replacement is necessary. Typically, the conveyance facilities are evaluated every two years. The facilities must be able to meet the conveyance needs for at least two years into the future due to the lead time needed for design and construction.

An analysis of projected growth impacts on the SCVJSS conveyance system was conducted for the 2015 Plan. This analysis, which is discussed in Chapter 5, identified several sewers requiring relief before the year 2015. However, the actual scheduling of relief for any particular sewer will be decided on a case-by-case basis, and project level environmental assessments will be prepared for each project.

Biosolids Management

All solids processing for the SCVJSS occurs at the centralized facilities located at the VWRP. Solids processing in the SCVJSS consists of DAF, digestion, and mechanical dewatering. The VWRP currently has six digesters with the capacity to process solids from 19.1 mgd of system flow. Three additional digesters (two as part of the south expansion, one as part of the north expansion) will be built as part of the recommended project.

For most of the history of the SCVJSS, biosolids produced through solids digestion and dewatering were disposed of at various sites in Los Angeles County, most recently at the Chiquita Canyon Landfill. In 1995, however, Districts Nos. 26 and 32 contracted with a firm that utilizes all of the biosolids for direct application to agricultural land. In general, biosolids management is achieved through a diversified management program that encourages the reuse of biosolids for beneficial purposes and seeks out alternative methods of disposal. Through continued implementation of this program, Districts Nos. 26 and 32 will continue to reuse biosolids as much as is practical throughout the planning period and it is anticipated that demand for biosolids will be identified commensurate with the increased biosolids production due to growth in SCVJSS.

The Recommended Project

Planning for 2015 was not solely restricted to consideration of growth related concerns. The need to reduce ammonia levels in the effluent from the SWRP and VWRP is discussed in Chapter 5. As a result, a modification of an existing unit process, independent of expansion of treatment capacity, is also included as part of the recommended project. Therefore, the recommended project consists of two components: 1) upgrade of treatment processes, and 2) expansion of treatment capacity.

Upgrade of Treatment Processes - Effluent Ammonia Control

As part of the recommended project, ammonia in the effluent will be reduced through implementation of a nitrification process at the SWRP and VWRP. In the nitrification process, the ammonia is converted to nitrate (NO_3). Elevated levels of nitrate in the effluent can degrade water quality of the receiving waters, especially groundwater, and can pose a public health problem. Wastewater containing nitrate, however, can be subjected to a denitrification process that causes conversion of nitrate to nitrogen gas (N_2), which then volatilizes to the atmosphere. Nitrogen gas is the predominant constituent in ambient air and is very stable in the atmosphere.

As a result of the potential threat caused by toxicity of ammonia and degradation of water quality due to nitrates, the Districts propose implementation of a combined nitrification-denitrification process. As will be discussed in Chapter 7, the nitrification-denitrification process will be implemented through upgrade of existing SWRP and VWRP facilities. Furthermore, nitrification-denitrification will be incorporated into the planned expansion of the VWRP facilities.

Expansion of the Valencia WRP

Based on flow projections, the SCVJSS will need to treat approximately 34 mgd of flow by 2015. The SWRP, which has limited site capacity, can treat 6.5 mgd, and existing facilities at the VWRP can treat

12.6 mgd, making the current permitted SCVJSS total 19.1 mgd. Thus, the VWRP must be incrementally expanded to treat 15 mgd of additional flow increasing the total treatment capacity to 27.6 mgd.

Flow projections and construction practicalities logically lend expansion of the VWRP to two phases: 1) expansion of facilities on the existing developed portion of the site (south expansion), and 2) construction of a largely stand-alone plant on the undeveloped north parcel (north expansion).[1] The design of the VWRP expansion was formulated with the intent of first maximizing the site capacity of the developed, southern portion of the site. Then, the north parcel was examined in terms of both ultimate capacity and capacity needed to accommodate the 2015 flow. Including consideration of the limitations placed on the parcel by the adjacent DFG conservation easement, the north parcel was determined to have adequate room for at least 9 mgd. This total capacity identified was more than sufficient to accommodate the 2015 flow.

Maximizing the southern portion of the site was determined to result in an additional 9.0 mgd of capacity, bringing the total VWRP capacity to 21.6 mgd. The north expansion, therefore, would need to have capacity to treat at least 6 mgd of flow by 2015. As mentioned above, the currently undeveloped north parcel has adequate space for an expansion of this size. Limitations of the site, however, dictate that the plant act largely as a stand-alone plant, with separate headworks, primary treatment, and secondary treatment facilities. All solids processing will be carried out at the centralized SCVJSS DAF units, digesters, and dewatering facilities located on the southern portion of the VWRP. These facilities will be incrementally expanded to handle the increased solids from the projected flow. The north expansion will not include flow equalization due to space limitations. In order to accommodate the projected 2015 flows, the plant capacity of the north expansion will be 6 mgd[2] bringing the total SCVJSS capacity to 34.1 mgd. Table 6-2 shows the planned 2015 treatment capacity for the SCVJSS under the recommended project.

The indicated facilities will not be built all at once; rather, the facilities will be staged in order to accommodate flow as it materializes. Figure 6-1 shows the projected SCVJSS wastewater flow through the year 2015 and an approximate schedule for expansion. As noted, however, construction scheduling will be accelerated or delayed depending on how the rate of flow increase varies throughout the planning horizon. Adequate lead time will be included to accommodate design and construction in order to allow the SCVJSS to have sufficient capacity to treat the expected flow.

Table 6-2
SCVJSS 2015 TREATMENT CAPACITY WITH VWRP EXPANSION

COMPONENT	CAPACITY (mgd)
Existing VWRP	12.6
South Expansion (Stage V)	9.0
North Expansion (Stage VI)	6.0
Existing SWRP	6.5
Total	**34.1**

1. This area will not include solids processing facilities. All solids processing expansion will be constructed adjacent to existing solids processing facilities on the southern portion of the VWRP.

2. Additional expansion beyond the 6 mgd needed for treatment of the 2015 flow would be possible on the north parcel.