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INTRODUCTION

The County Sanitation Districts of Los Angeles County (Districts) have prepared this Master Facilities Plan to continue to guide the orderly development of the Joint Outfall System (JOS) into the next millennium. The JOS is operated under a joint powers agreement between 15 individual sanitation districts (Districts Nos. 1, 2, 3, 5, 8, 15, 16, 17, 18, 19, 21, 22, 23, 29, and South Bay Cities). On July 1, 1995, the number of districts in the JOS will increase to 17 when Districts Nos. 28 and 34, which are located in the City of La Cañada Flintridge in the northern portion of the Los Angeles Basin, become members of the JOS. JOS facilities include the Joint Water Pollution Control Plant (JWPCP), five water reclamation plants (WRPs) and an interconnected network of sewers and pumping plants. The JWPCP provides advanced primary treatment to all influent wastewater plus secondary treatment to approximately 60 percent of the flow, followed by ocean disposal. The WRPs provide tertiary treatment and the reclaimed water is reused or discharged to inland waters. When the La Cañada WRP Outfall Trunk Sewer is completed, the 0.2 mgd La Cañada Water Reclamation Plant, which is located in the City of La Cañada Flintridge, will be connected to the JOS. The JOS service area includes 72 cities (73 cities effective July 1, 1995) and unincorporated areas and currently treats approximately 470 million gallons per day (mgd) of wastewater. Figure ES-1 is a map of the Districts' service area and facilities, including the JOS.

The planning horizon for this document extends only through the year 2010. This intermediate time frame was selected for two reasons. First, the use of long range growth forecasts for facilities planning is not always practical due to inherent uncertainties of long range predictions. The use of intermediate forecasts and the monitoring of actual growth, in order to phase the construction of facilities consistent with this growth, is a more cost-effective approach to facilities planning. Second, credible regional forecasts that have been developed using meaningful input from the majority of the local jurisdictions are not available beyond the year 2010. This Master Facilities Plan uses a forecast of the future population growth and changes in land use within the Districts' service area based on the Southern California Association of Governments' 1994 Regional Comprehensive Plan (RCP). Based on the RCP, the JOS service area population is expected to increase from approximately 4.6 million to 5.2 million between now and the year 2010.

The JOS 2010 Master Facilities Plan was prepared by Districts' staff. An associated Program Environmental Impact Report (PEIR) for the Master Facilities Plan was prepared for the Districts by the environmental consulting firm of Jones and Stokes Associates, Inc.

THE OBJECTIVES OF THE JOS 2010 MASTER FACILITIES PLAN

The objectives of the Master Facilities Plan are to:

- Provide full secondary treatment for all flows, as required by a Consent Decree between the Districts, the United States, the State of California, the Natural Resources Defense Council, and Heal the Bay, and

- Provide wastewater conveyance, treatment, and reclamation/disposal facilities to meet service area needs through the year 2010 in a cost-effective and environmentally sound manner.

THE PLANNING PROCESS

The planning process is the identification of a "preferred plan" which is capable of achieving the stated objectives within the planning period. The plan is intended to recommend changes to the JOS which will provide full secondary treatment of all wastewater flows by December 31, 2002 and adequate system capacity to accommodate future growth in the service area. There are a number of feasible project alternatives which can meet these objectives. Each has differing technical, environmental, and economic impacts. The planning process documents and evaluates these impacts and seeks to find the most cost-effective and environmentally sound alternative that can meet project objectives while considering other non-monetary concerns.

THE EVALUATION AND SCREENING OF ALTERNATIVES

An analysis of the JOS service area was conducted to determine the estimated quantity of wastewater flow expected to be generated during the planning period. Population was allocated to specific treatment plant drainage areas through the use of a Geographic Information System (GIS). These GIS-derived data, along with an estimated per capita residential/commercial wastewater generation rate and projected industrial flows, were used to forecast future JOS wastewater flows. The per capita generation rate used is based on historical wastewater flows experienced in the service area during and after the extended drought period that began in the late 1980s. A midrange value which the Districts believe would be representative of conservation levels during the planning period was selected. Based on this information the JOS will need to manage approximately 628 mgd of wastewater by the year 2010. The results of the GIS analysis allowed the Districts to determine which treatment plants could be expanded to accommodate future flows based on the spatial locations of expected population growth and existing infrastructure.

Using this information a set of preliminary project alternatives was developed which could provide sufficient capacity to treat 628 mgd. Due to the geographic location of future flow increases, certain JOS treatment plants were found to not need expansion. No expansion of the Long Beach WRP (LBWRP) would be required based on the flow analysis. Table ES-1 lists possible combinations of projects at the JWPCP and JOS WRPs which could meet the plan objectives of 628 mgd total system capacity and a minimum of full secondary treatment of all JOS wastewater flows. The preliminary project alternatives can be organized into three groupings: emphasize coastal, balanced and emphasize inland treatment. Project alternatives were screened based on the following criteria:

**Table ES-1
DEVELOPMENT OF PROJECT ALTERNATIVES FOR DETAILED EVALUATION**

PRELIMINARY PROJECT ALTERNATIVES		SCREENING CRITERIA		FEASIBLE PROJECT ALTERNATIVES (NOP)		SCREENING CRITERIA		PROJECT ALTERNATIVES FOR DETAILED EVALUATION	
Emphasize Coastal JWPCP 480		<ul style="list-style-type: none"> ● Conveyance System Impacts ● Cost Effectiveness ● Refined Flow Projections ● Operational Constraints 		Emphasize Coastal JWPCP 450		<ul style="list-style-type: none"> ● Public Input ● Cost Effectiveness ● Minimize Environmental Impacts ● Conveyance and Outfall System Impacts 		Balanced	
Balanced JWPCP 400 / P 25 / SJC 125				Balanced JWPCP 400 / WN 82.5				#1 JWPCP 400 / SJC 125 / LC 50	
JWPCP 400 / P 25 / WN 40				JWPCP 400 / LC 75				#2 JWPCP 400 / LC 75	
JWPCP 400 / P 25 / LC 82.5				JWPCP 400 / SJC 125 / WN 27.5				#3 JWPCP 400 / WN 82.5	
JWPCP 400 / WN 82.5				JWPCP 400 / SJC 125 / LC 50				Emphasize Inland	
JWPCP 400 / LC 75				Emphasize Inland JWPCP 350 / P 25 / LC 112.5				#4 JWPCP 350 / SJC 125 / WN 82.5 / LC 62.5	
JWPCP 400 / SJC 125 / WN 27.5				JWPCP 350 / P 25 / SJC 125 / LC 87.5					
JWPCP 400 / SJC 125 / LC 50				JWPCP 350 / P 25 / WN 88 / LC 52.5					
Emphasize Inland JWPCP 350 / P 25 / LC 112.5				JWPCP 350 / P 25 / WN 88 / LC 52.5					
JWPCP 350 / P 25 / SJC 125 / LC 87.5				JWPCP 350 / LC 125					
JWPCP 350 / P 25 / WN 88 / LC 52.5		JWPCP 350 / SJC 125 / LC 100							
JWPCP 350 / LC 125		JWPCP 350 / WN 80 / LC 62.5							
JWPCP 350 / SJC 125 / LC 100									
JWPCP 350 / WN 80 / LC 62.5									

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JWPCP = Joint Water Pollution Control Plant WN = Whittier Narrows Water Reclamation Plant
 P = Pomona Water Reclamation Plant LC = Los Coyotes Water Reclamation Plant
 SJC = San Jose Creek Water Reclamation Plant NOP = The "Notice of Preparation" included these alternatives

Figures shown are the resulting capacities of treatment plants in million gallons per day and are only indicated for facilities for which an expansion or a rerating of capacity is proposed.

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- Public input
- Flow Projections
- Conveyance and outfall system impacts
- Operational constraints
- Optimizing use of existing site capacities
- Minimizing environmental impacts
- Cost effectiveness

The screening process resulted in the elimination of the sole alternative under "emphasize coastal" which was expanding the capacity of the JWPCP to 450 mgd. In addition, four alternatives were eliminated from the "balanced" and six from the "emphasize inland" groupings. One modified "emphasize inland" alternative was retained for further evaluation. Alternatives which provided for expansion of the Pomona WRP (PWRP) were also eliminated because of the higher construction costs at that site due to required demolition, coupled with the ability to bypass flows tributary to the PWRP to another WRP. The final four alternatives which are evaluated in detail in the Master Facilities Plan and Program EIR are shown in Table ES-2. These alternatives can be categorized by flow distributions. Three alternatives allocate flows between the JWPCP and upstream WRPs with a 400 mgd JWPCP / 228 mgd WRP flow split distribution. One alternative allocates flows with a 350 mgd JWPCP / 278 mgd WRP flow split distribution. The 400 mgd JWPCP alternatives require 37.5 mgd of additional capacity to be constructed at WRP sites. This expansion may occur at the San Jose Creek WRP (SJCWRP) and the Los Coyotes WRP (LCWRP) (Alternative 1), or wholly at the LCWRP (Alternative 2) or wholly at the Whittier Narrows WRP (WNWRP) (Alternative 3). A larger expansion of the WRPs would be provided by reducing the JWPCP capacity to 350 mgd and constructing 87.5 mgd of additional capacity at the WRP sites. This expansion would occur at the SJCWRP, the LCWRP and the WNWRP (Alternative 4). In addition, Alternatives 2 and 4 would require additional conveyance system improvements. The No Project Alternative was rejected because it does not meet the objectives of the Facilities Plan.

There are two project elements that are common to all four alternatives. These are the solids processing element and biosolids (residual solids after treatment) management element. The quantity of biosolids generated within the JOS is expected to increase from 325 dry tons per day (dtpd) in 1993 to approximately 500 dtpd by 2002, and to approximately 575 dtpd by 2010. No significant differences in the quantity of biosolids production are anticipated between the four alternatives.

Table ES-2
ALTERNATIVES EVALUATED IN DETAIL IN FACILITIES PLAN

Alternative No.	Year 2010 Capacity -mgd-					
	JWPCP	SJCWRP	LCWRP	WNWRP	LBWRP	PWRP
1	400	125 (25)	50 (12.5)	15	25	13
2 ¹	400	100	75 (37.5)	15	25	13
3	400	100	37.5	52.5 (37.5)	25	13
4 ¹	350 ²	125 (25)	62.5 (25)	52.5 (37.5)	25	13
No Project	385	100	37.5	15	25	13

▨ = Upgrade or change in capacity of a facility

() = Expansion increment

¹ = Additional conveyance system improvements required

² = JWPCP capacity reduced to 350 mgd under this alternative

■ Solids Processing Element

This will consist of continued centralized processing of all solids generated in the JOS at the JWPCP. Additional primary and secondary (waste activated) solids will be generated as a result of full secondary treatment at the JWPCP as well as increased flows at the WRPs. Additional solids processing facilities proposed include: digesters, a new dewatering facility, a flaring station, a truck loading station, and odor control facilities.

■ Biosolids Management Element

This will consist of continued utilization of existing or new onsite demonstration facilities and separately permitted offsite facilities operated either by private contractors or the Districts. Management options will include landfill co-disposal with municipal solid waste, composting, direct land application, chemical treatment and use as alternative daily landfill cover, and continued evaluation of onsite demonstration facilities. The Districts recognize the importance of maintaining diversity of practice and location to insure the availability of reliable management options, as well as implementing beneficial reuse where feasible and cost-effective. The Districts plan to maintain multiple management options in order to be able to properly manage all biosolids produced at all times.

In order to select a recommended project the four final project alternatives were evaluated and compared based on the following criteria:

- Public input
- Environmental impacts
- Technical feasibility

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- Cost effectiveness
- Ability to achieve project objectives and to meet specific project needs

Ability to Meet Project Objectives and Specific Project Needs

Project Alternatives 1, 2, 3 and 4 would provide full secondary treatment of all JOS flows by December 31, 2002 as required by the Consent Decree and would provide sufficient system capacity to accommodate projected growth in the JOS through the year 2010. These alternatives would also be capable of handling projected peak sanitary flows. Analyses indicate that Alternatives 1 and 4 would be capable of accommodating expected peak storm flows, but Alternative 4 would best accommodate these flows. According to the analyses, Alternatives 2 and 3 would not be capable of accommodating expected peak storm flows without additional modifications.

Certain alternatives will also require additional conveyance facilities. The expansion of the LCWRP to 75 mgd under Alternative 2 would require relief of Joint Outfall sewers downstream of the SJCWRP and the WNWRP. Implementation of Alternative 4 which would expand the WNWRP to 52.5 mgd and the LCWRP to 62.5 mgd would require the construction of a sewer to divert sewage solids removed at the WNWRP to sewers that are tributary to the JWPCP for processing.

As discussed earlier, all four alternatives have common solids processing and biosolids management elements which are sufficient to meet 2010 needs.

Public Input

Prior to Publication of Draft 2010 Plan and Draft PEIR

The Districts solicited early input into the planning process through the publication of the Notice of Preparation and information newsletter. Focus group meetings were held with the JWPCP Citizens Advisory Committee and leaders of environmental organizations. Agency scoping meetings were held with trustee and responsible agencies. Three public workshops were held in different locations within the JOS.

There was general public consensus that the Districts should continue to reclaim and reuse as much wastewater as is practical. The public also wanted to insure that all wastewater management facilities are constructed and operated in a manner that prevents nuisances, particularly sewage spills, dust and odor.

After Publication of Draft 2010 Plan and Draft PEIR

Two public information meetings were held by the Districts to present information on the Draft 2010 Plan and the Draft PEIR, and to answer questions. The information meetings were held on December 6, 1994 at the Carson Community Center and December 8, 1994 at the Districts' Joint Administration Office (JAO) in Whittier.

Two public hearings were held by the Districts during the 60-day public review period. The public hearings were held on January 10, 1995 at the Carson Community Center and January 12, 1995 at the JAO. Formal testimony was solicited but not received at either public hearing.

Seventeen agencies and organizations provided written comments on the Draft 2010 Plan and the Draft PEIR. The comment letters and Districts' responses are found in Appendix A-8. Primary concerns include protecting botanical and wildlife resources, maintaining aesthetic quality at project sites, avoiding loss of recreational resources, minimizing construction and operational impacts, and making available more reclaimed water.

Environmental Impacts

The PEIR which accompanies this Master Facilities Plan has identified short-term construction impacts that are common to all alternatives, including traffic disruption, increase in emissions of certain air pollutants, noise, and potential runoff. Operational impacts include less than significant impacts in water quality, odor, noise, energy consumption and visual quality. The PEIR has determined the following:

- Alternatives 2 and 4 would impact a recreational use (a golf course driving range). This is a less-than-significant impact.
- Alternatives 3 and 4 would cause loss of flood control capacity. This impact can be reduced to a less-than-significant level with proposed mitigation.
- All alternatives have potential for construction related short-term increases in emissions of reactive organic gases, nitrogen oxides, and inhalable particulates (PM 10) due to construction activities and operations related increase in emissions of nitrogen oxides from the transport of biosolids. These impacts can be reduced, but not to a less-than-significant level.
- All alternatives would have a less-than-significant impact on the quality of the marine environment associated with upgrade of the JWPCP to full secondary treatment.
- All alternatives would have the beneficial impact of making available more reclaimed water.

The PEIR proposes a series of mitigation measures to reduce project impacts. Specific mitigation measures include: stormwater pollution prevention and erosion control programs during construction, traffic control plans, procedures and equipment to reduce emissions of air pollutants, noise-reducing construction practices, landscaping along portions of the perimeter of JWPCP and irrigation of an athletic field (buffer lands adjacent to the JWPCP owned by the Districts) to improve aesthetic quality, and in cooperation with the County of Los Angeles, development and implementation of a marsh management plan for a portion of Bixby Slough adjacent to JWPCP.

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Cost Effectiveness

Based on equivalent annual costs, project alternatives listed in order of most cost-effective first are: Alternative 1, Alternative 2, Alternative 3, and Alternative 4. Table ES-3 summarizes project costs for the alternatives. Since the solids processing element is common to all four alternatives, the cost for solids processing facilities must be added to the cost of each alternative.

Technical Analysis

Alternatives 1 and 2 would be easiest to implement because standardized modular expansions of facilities under these alternatives have already been master planned at these sites. In addition, previous expansions at the SJCWRP and the LCWRP have provided some of the facilities necessary

Table ES-3
COMPARISON OF PROJECT COSTS FOR ALTERNATIVES

	Capital Cost	Annual O&M	Equivalent Annual Cost
Alternative 1	\$259,800,000	\$13,800,000	\$40,300,000
Alternative 2	278,800,000	14,200,000	42,600,000
Alternative 3	279,000,000	14,400,000	42,800,000
Alternative 4	323,800,000	16,400,000	49,400,000
JWPCP Solids Processing (Common to all Alternatives)	196,800,000	14,800,000	34,800,000

Note: All costs are in 1994 dollars.

Equivalent annual costs based on 20-year amortization

to accommodate further expansions at these facilities proposed in Alternatives 1 and 2. Alternative 3 would be more difficult to implement because of restrictions which would be imposed upon the construction of facilities at the WNWRP due to its location in the Whittier Narrows Flood Control Basin. Alternative 4 would be most difficult to implement because, in addition to the aforementioned restrictions on construction at the WNWRP, Alternative 4 would require completion of construction of secondary treatment facilities at the JWPCP and three separate WRP expansions within a six-year period.

In the JOS, additional operational reliability and flexibility are provided by the ability to move wastewater flows between different treatment facilities, thereby allowing flows to be diverted to alternate treatment facilities to accommodate construction or operational considerations at the treatment facilities. To provide for system reliability and flexibility in the JOS, the capacities of the LCWRP, the WNWRP, and the two separate plants (East and West) comprising the SJCWRP, should be balanced to the extent possible and sufficient bypass capacity should be maintained in the sewers which interconnect these facilities. Under these ideal conditions, Alternative 4 would seem to provide the most operational reliability and flexibility because it would balance the capacities of these four facilities more evenly and would provide additional bypass capacity in sewers. Alternatives 1 and 3 would provide good operational reliability and flexibility by balancing the

capacities of three of the four previously identified facilities while also providing bypass capacity in sewers. Alternative 2 is clearly inferior in terms of operational reliability and flexibility because it provides the least degree of balance between WRP capacities.

THE RECOMMENDED PROJECT

A summary comparison of project alternatives based on the aforementioned evaluation criteria is shown in Table ES-4. Based on the evaluation criteria used to weigh the merits and liabilities of each of the alternatives, Alternative 1 is the preferred alternative.

Table ES-4
COMPARISON OF PROJECT ALTERNATIVES

Comparison	Alternative 1	Alternative 2	Alternative 3	Alternative 4
MEETING PROJECT NEEDS:				
■ Treatment Capacity	+	+	+	+
■ Full Secondary	+	+	+	+
■ Conveyance Capacity	0	0	+	+
■ Peak Sanitary Capacity	+	+	+	+
■ Peak Storm Capacity	0	—	—	+
■ Solids Processing Capacity	+	+	+	+
■ Biosolids Management Capacity	+	+	+	+
■ Water Reclamation Capacity	0	—	0	+
■ Long Range Compatibility	0	0	+	0
COST EFFECTIVENESS	+	0	0	—
TECHNICAL ANALYSIS				
■ Design Construction & Scheduling	+	+	0	—
■ System Operation	+	+	—	—
■ System Reliability & Flexibility	0	—	0	+
ENVIRONMENTAL IMPACTS	+	—	0	0
PUBLIC INPUT	+	+	+	+

+ = Superior 0 = Neutral — = Inferior

The Recommended Project would provide for an upgrade of the JWPCP to 400 mgd of full secondary treatment. The SJCWRP would be expanded by 25 mgd, increasing its capacity to 125 mgd, and the LCWRP would be expanded by 12.5 mgd, increasing its capacity to 50 mgd. The Recommended Project is illustrated in Figure ES-2. Adequate solids processing facilities would be provided at the JWPCP to accommodate quantities of solids which the JOS is expected to generate

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in 2010. The biosolids management program will include existing or new onsite demonstration facilities and separately permitted offsite facilities for reuse or disposal.

The sedimentation of effluent suspended solids associated with discharge from the JWPCP is slowly covering much of the deposit of historically DDT-contaminated sediments. Full secondary treatment of all JWPCP flows will reduce the sedimentation rate and result in slower burial of the deposit and higher potential for contaminant releases in the future. Although the recommended project provides for a December 31, 2002 compliance date for full secondary treatment for all JOS flows, it should be pointed out that the Consent Decree includes an allowance for the Districts to request a modification of the start-up date for secondary treatment if it can be shown that the harm of proceeding to secondary treatment exceeds the benefits.

It is also important to point out that expansions of the WRPs will be phased to match the actual growth in the service area. If the forecasted growth does not materialize and/or water conservation is greater than expected, planned expansions will be deferred until additional capacity in the JOS is needed in order to avoid unnecessary construction of excess capacity. On the other hand, if actual growth exceeds the forecasted growth and/or water conservation is less than expected, the implementation of proposed facilities will be accelerated.

PROJECT COST AND FINANCING

As shown in Table ES-3, the capital cost of the recommended project including the associated solids processing facilities is approximately \$457 million. For purposes of preliminary financial analysis, the project can be divided into two components, upgrade (for the benefit of existing users) and expansion (for the benefit of new users). These respective costs are approximately \$309 million and \$148 million.

The upgrade portion of the project will be funded by the existing users through the Districts' Service Charge Program (annual user charge). The upgrade capital cost equates to approximately \$155 per single family home (commercial and industrial users would pay proportionally). A 1995 federal appropriation will provide a \$50 million grant for JWPCP secondary treatment facilities, bringing the net cost per single family home to \$130. This cost can be spread over a number of years to lessen the impact in any given year. The impact will be further reduced by the use of existing funds set aside for JWPCP secondary treatment and possible state low-interest loans. The estimated additional annual cost of operating upgraded facilities is roughly \$9 per single family home per year in 1994 dollars. The expansion portion of the project will be funded by new users through the Connection Fee Program and will not affect the service charge rates of existing users. While there will be increased annual costs associated with operating expansion projects, there will also be an increase in the number of users accommodated by these projects. Therefore, this increase in operating costs will not result in an increase in the annual user charge for existing users.