

- **Board of Directors**  
**Engineering, Operations and Real Property Committee**

November 20, 2001 Board Meeting

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9-5

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**Subject**

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Authorize \$15.12 million for seven Capital Investment Plan program appropriations to increase solids handling reliability and to enhance the ability to treat higher blends of California State project water supplies (Appropriations 15227, 15363, 15365, 15369, 15371, 15380 and 15381)

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**Description**

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Metropolitan presently operates five filtration plants that range in age from the original treatment facilities at the 60-year-old Weymouth plant to the Mills plant that was placed in service in 1976. Systematic reviews of each treatment plant were conducted in fiscal year 2000/01 as part of Metropolitan's Infrastructure Reliability and Protection Plan (IRPP). These investigations determined that improvements are needed at each of Metropolitan's five filtration plants to address issues related to aging infrastructure, and ensure meeting water quality requirements.

Recent flow projections and changes in source water quality have shown that to reliably meet Metropolitan's demands, optimally use all available State project water (SPW) supplies, and achieve the Board's treated water salinity goal, a blend of greater than 25 percent SPW will be needed at times at the Diemer, Weymouth and Skinner plants. In light of these revisions, further planning efforts were undertaken in mid-2001 to assess each plant's ability to treat increased quantities of SPW supplies. These recent studies identified upgrades needed at all the filtration plants to maintain existing plant capacities when treating higher quantities of SPW supplies. These upgrades will enable Metropolitan to comply with upcoming regulations on an interim basis until a long-term compliance strategy has been selected. A Board workshop on long-term strategies is planned for December 2001.

In order to address the variety of projects that have been identified at each plant, the funding request in this board action includes the use of budgeted and non-budgeted FY 2001/02 Capital Investment Plan (CIP) funds. Budgeted CIP funds will be utilized to implement the variety of projects that were identified through the IRPP. Non-budgeted CIP funds will be utilized to implement projects that have been recently identified due to the interim compliance plan that has been developed for the new regulations and due to the anticipated use of higher amounts of SPW supplies.

**Recommended Improvements**

A number of new projects have been identified at each plant to address the issues related to aging equipment and infrastructure, internal capacity shortfalls in the area of residual solids processing, and to address the requirements of the new water quality regulations. Specific projects at each plant are identified below.

*Skinner Plant*

The Skinner plant was placed in service in 1976 to supply treated water to Riverside and San Diego counties. The plant has been expanded three times since its original construction and has a current rated capacity of 520 mgd. The Skinner plant treats a blend of SPW and Colorado River water (CRW). Recommended projects at the Skinner plant include the following:

- Replace 24 traveling bridge pumps in Modules 1 and 2 (Approp. 15365).
- Replace belt press and conveyor system (Approp. 15365).
- Conduct final design and construct one solids thickener (Approp. 15365).

- Study additional issues related to solids handling (Approp. 15365).

#### *Diemer Plant*

The Diemer plant was placed in service in 1963 and was expanded in 1969. The plant typically treats a blend of SPW and CRW supplies and delivers up 520 mgd of treated water to Metropolitan's Central Pool portion of the distribution system. Recommended projects at the Diemer plant include the following:

- Conduct final design of northwest hill grading for solids processing (Approp. 15227).
- Construct concrete linings in four sedimentation lagoons (Approp. 15363).
- Conduct final design and construct one solids thickener and make improvements to two existing thickeners (Approp. 15363).
- Conduct final design and begin replacement of mixing and settling basin equipment (Approp. 15380).
- Study additional issues related to solids handling (Approp. 15363).

#### *Weymouth Plant*

The Weymouth plant was placed in service in 1941 and has been expanded twice to its existing capacity of 520 mgd. Recommended projects at the Weymouth plant include the following:

- Replace 2 solids thickener pumps (Approp. 15369).
- Replace solids handling pipelines and appurtenances (Approp. 15369).
- Rebuild 10 existing solids handling pumps (Approp. 15369).
- Study additional issues related to solids handling (Approp. 15369).

#### *Jensen Plant*

The Jensen plant was placed in service in 1972 and has been expanded once to its current capacity of 750 mgd. Recommended projects at the Jensen plant include the following:

- Modify existing chlorine feed system (Approp. 15371).
- Modify washwater reclamation system (Approp. 15371).
- Modify chemical feed systems (Approp. 15371).
- Reactivate 4 mixing and settling basins (Approp. 15371).
- Study future issues related to solids handling (Approp. 15371).

#### *Mills Plant*

The Mills plant was placed in service in 1978 and has expanded twice since that time, the most recent of which was completed in 1996. The plant is currently permitted to treat up to 220 mgd. Recommended projects at the Mills plant include the following:

- Modify existing chlorine feed system (Approp. 15381).
- Study future issues related to solids handling (Approp. 15381).

Seven separate programs have been evaluated and recommended by the CIP Evaluation Team and are included in the Capital Budget for FY 2001/02. These programs are: Skinner Plant Improvements, Weymouth Plant Improvements, Mills Plant Improvements, Jensen Plant Improvements, Diemer Plant Improvements, Diemer Plant Solids Handling and Water Reclamation, and the Diemer Land Acquisition, Habitat Conservation Plan and Site Grading. See [Attachment 1](#) for the Detailed Report, [Attachment 2](#) for Project Location, [Attachment 3](#) for the Financial Statement and Addendum No. 1 to the Diemer Improvements Project Final EIR (available in Executive Office).

## Policy

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Metropolitan Water District Administrative Code § 5108: Capital Project Appropriation

Metropolitan Water District Administrative Code § 8113: Construction Contract Award

## CEQA

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### *Skinner Plant*

- Replace 24 traveling bridge pumps in Modules 1 and 2 and replace belt press and conveyor system.

The two proposed actions are categorically exempt under the provisions of the California Environmental Quality Act (CEQA). The separate actions will include the replacement of 24 traveling bridge pumps in Modules 1 and 2 as well as the replacement of the belt press and conveyor system at the Skinner plant (Approp. 15365). This equipment will be located at the same sites with the same purpose and capacity as those older components being replaced. Therefore, each of the two proposed actions qualifies under a Class 2 Categorical Exemption (Section 15302 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the two proposed actions (Approp. 15365) at the Skinner plant each qualify under a Categorical Exemption (Class 2, Section 15302 of the State CEQA Guidelines).

- Conduct final design and construct one solids thickener.

The proposed action at the Skinner plant will be to design and construct one solids thickener (Approp. 15365). This action will be carried out at the existing public facilities at the Skinner plant with negligible expansion of use and no possibility of significantly impacting the physical environment. As such, this proposed action qualifies under a Class 1 Categorical Exemption (Section 15301 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the design and construction of one solids thickener (Approp. 15365) at the Skinner plant qualifies under a Categorical Exemption (Class 1, Section 15301 of the State CEQA Guidelines).

- Study additional issues related to solids handling.

Future studies (Approp. 15365) to be performed at the Skinner plant relating to solids handling, elevated coagulation and compliance with new water quality regulations will consist of basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource. These may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded. As such, the proposed action qualifies under a Class 6 Categorical Exemption (Section 15306 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, future studies at the Skinner plant related to solids handling (Approp. 15365) qualify under a Categorical Exemption (Class 6, Section 15306 of the State CEQA Guidelines).

### *Diemer Plant*

- Conduct final design of northwest hill grading for solids processing, conduct final design and construct one solids thickener and make improvements to two existing thickeners.

The proposed actions will be to conduct final design of northwest hill grading for solids processing (Approp. 15227), conduct final design and construct one solids thickener, and make improvements to two existing thickeners (Approp. 15363) at the Diemer plant. The environmental effects of the proposed actions have already been contemplated in the previous environmental analysis in the Final Environmental Impact Report (Final EIR) for the Robert B. Diemer Filtration Plant Improvements Project (Project). Metropolitan's Board of Directors (Board) certified the Final EIR and approved the Project in February 2000. This previous

action taken by the Board fully complies with CEQA and the State CEQA Guidelines and, as such, no further CEQA documentation is necessary for the Board to act on the proposed action.

The CEQA determination is: Determine that the two proposed actions (Approp. 15227 and 15363) have been previously addressed in the certified 2000 Robert B. Diemer Filtration Plant Improvements Project Final EIR and that no further environmental analysis is required.

- Construct concrete linings in four lagoons.

The Board certified the Final EIR for the Project in February 2000. In October 2001, Addendum No. 1 to the Final EIR for the Project was prepared to document the minor Project modifications, i.e., construction of the concrete linings of the four existing lagoons at the Diemer plant (Approp. 15363; Addendum No. 1 is available in the Executive Office).

CEQA and the State CEQA Guidelines require the preparation of an addendum to a previously certified EIR if changes or additions are necessary, but none of the conditions described in Section 15162 of the State CEQA Guidelines calling for the preparation of a Subsequent EIR has occurred (Section 15164 of the State CEQA Guidelines). The proposed modifications to the Project also do not meet any of the conditions requiring the preparation of a Supplement to an EIR (State CEQA Guidelines, Section 15163). Instead, the proposed modifications require only minor changes or additions to the evaluation in the certified Final EIR to make it adequate under CEQA. The proposed modifications are not anticipated to result in significant adverse impacts beyond those impacts already disclosed in the original Final EIR.

The CEQA determination is:

1. Consider the information contained in Addendum No.1 to the certified 2000 Robert B. Diemer Filtration Plant Improvements Project Final EIR and find that there is no substantial evidence that the proposed modifications (i.e., construct concrete linings in four lagoons) to the Project (Approp. 15363) will create any new significant impacts; and
2. Certify Addendum No. 1.

- Conduct final design and replacement of mixing and settling basin equipment and two chemical storage tanks.

The proposed action will include the design and replacement of mixing and settling basin equipment (including gears, shafts, and other internal components) and two chemical storage tanks at the Diemer plant (Approp. 15380). These pieces of equipment and related appurtenances will be located at the same sites with the same purpose and capacity as those older components being replaced. Therefore, the proposed action qualifies under a Class 2 Categorical Exemption (Section 15302 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the final design and replacement of mixing and settling basin equipment (Approp. 15380) at the Diemer plant each qualifies under a Categorical Exemption (Class 2, Section 15302 of the State CEQA Guidelines).

- Study additional issues related to solids handling.

Future studies (Approp. 15380) to be performed at the Diemer plant relating to solids handling, elevated coagulation and compliance with new water quality regulations will consist of basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource. These may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded. As such, the proposed action qualifies under a Class 6 Categorical Exemption (Section 15306 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, future studies at the Diemer plant related to solids handling (Approp. 15380) qualify under a Categorical Exemption (Class 6, Section 15306 of the State CEQA Guidelines).

*Weymouth Plant*

- Replace two solids thickener pumps and replace solids handling pipelines and appurtenances.

The two proposed actions will include the replacement of two solids thickener pumps, solids handling pipelines and appurtenances (including piping) at the Weymouth plant (Approp. 15369). These pieces of equipment and related appurtenances will be located at the same sites with the same purpose and capacity as those older components being replaced. Therefore, each of the two proposed actions qualifies under a Class 2 Categorical Exemption (Section 15302 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the two proposed actions (Approp. 15369) at the Weymouth plant each qualifies under a Categorical Exemption (Class 2, Section 15302 of the State CEQA Guidelines).

- Rebuild 10 existing solids handling pumps.

The proposed action at the Weymouth plant will require rebuilding 10 existing solids handling pumps (Approp. 15369). This action will involve the existing public facilities at the Weymouth plant with negligible expansion of use and no possibility of significantly impacting the physical environment. As such, this proposed action qualifies under a Class 1 Categorical Exemption (Section 15301 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the rebuilding of 10 existing solids handling pumps (Approp. 15369) at the Weymouth plant qualifies under a Categorical Exemption (Class 1, Section 15301 of the State CEQA Guidelines).

- Study additional issues related to solids handling.

Future studies (Approp. 15369) to be performed at the Weymouth plant relating to solids handling and compliance with new water quality regulations will consist of basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource. These may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded. As such, the proposed action qualifies under a Class 6 Categorical Exemption (Section 15306 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, future studies at the Weymouth plant related to elevated coagulation (Approp. 15369) qualify under a Categorical Exemption (Class 6, Section 15306 of the State CEQA Guidelines).

*Jensen Plant*

- Modify existing chlorine feed, modify washwater reclamation system, modify chemical feed systems, and reactivate four mixing and settling basins.

The proposed actions at the Jensen plant will require the modification of the existing chlorine feed, washwater processing systems, chemical feed systems, and the reactivation of four mixing and settling basins (Approp. 15371). These actions will involve modifications and repairs to existing equipment; installation of new pumps, diffusers, flow meters, instrumentation, and piping; and minor trenching. All of these actions will be associated with existing public facilities at the Jensen plant with negligible expansion of use and no possibility of significantly impacting the physical environment. As such, each of the four proposed projects qualify under Class 1 Categorical Exemptions (Section 15301 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the four proposed actions (Approp. 15371) at the Jensen plant each qualifies under a Categorical Exemption (Class 1, Section 15301 of the State CEQA Guidelines).

- Study future issues related to solids handling.

Future studies to be performed at the Jensen plant relating to solids handling, elevated coagulation and compliance with new water quality regulations will consist of basic data collection, research, experimental

management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource. These may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded. As such, the proposed action qualifies under a Class 6 Categorical Exemption (Section 15306 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, future studies at the Jensen plant related to solids handling (Approp. 15371) qualify under a Categorical Exemption (Class 6, Section 15306 of the State CEQA Guidelines).

#### *Mills Plant*

- Modify existing chlorine feed.

The proposed activity (Approp. 15381) at the Mills plant involves modifying the existing chlorine feed (i.e., miscellaneous equipment, piping, and diffusers) associated with existing public facilities with no expansion of use and no possibility of significantly impacting the physical environment. As such, the proposed project qualifies under a Class 1 Categorical Exemption (Section 15301 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, the modification of the existing chlorine feed (Approp. 15381) at the Mills plant qualifies under a Categorical Exemption (Class 1, Section 15301 of the State CEQA Guidelines).

- Study future issues related to solids handling.

Future studies (Approp. 15381) to be performed at the Mills plant relating to solids handling, elevated coagulation and compliance with new water quality regulations will consist of basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource. These may be strictly for information gathering purposes, or as part of a study leading to an action which a public agency has not yet approved, adopted, or funded. As such, the proposed action qualifies under a Class 6 Categorical Exemption (Section 15306 of the State CEQA Guidelines).

The CEQA determination is: Determine that pursuant to CEQA, future studies at the Mills plant related to solids handling (Approp. 15381) qualify under a Categorical Exemption (Class 6, Section 15306 of the State CEQA Guidelines).

## **Board Options/Fiscal Impacts**

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### **Option #1**

Adopt the CEQA determinations for all projects described herein and

- Appropriate \$15.12 million in budgeted and non-budgeted funds.
- Authorize the Chief Executive Officer to have all work performed and delegate to the CEO the authority to award competitively bid contracts over \$250,000, for all projects under seven appropriations as described in this letter and its attachments:

**Fiscal Impact:** \$6.495 million of budgeted and \$8.625 of non-budgeted CIP funds under the following appropriations:

- Appropriation 15227 (Diemer): \$1,500,000 budgeted
- Appropriation 15363 (Diemer): \$5,430,000 non-budgeted
- Appropriation 15365 (Skinner): \$3,960,000 budgeted
- Appropriation 15369 (Weymouth): \$580,000 non-budgeted
- Appropriation 15371 (Jensen): \$2,375,000 non-budgeted
- New Appropriation 15380 (Diemer): \$1,035,000 budgeted
- New Appropriation 15381 (Mills): \$240,000 non-budgeted

If the Board approves this recommendation, the FY 2001/02 CIP expenditure plan will be adjusted as required.

**Option #2**

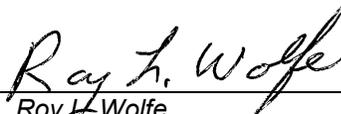
Do not perform studies, design, procurement or installation of equipment, or construction of required improvements at five filtration plants.

**Fiscal Impact:** \$0 for the current FY 2000/01 budget. Implementation of this option will result in blend limitations and flow restrictions at the Weymouth, Diemer, and Skinner plants. This option may also result in difficulties in reliably treating SPW to meet water quality requirements.

**Staff Recommendation**

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Option #1

	11/1/2001
Roy L. Wolfe Manager, Corporate Resources	<i>Date</i>
	11/2/2001
Ronald R. Gastelum Chief Executive Officer	<i>Date</i>

**Attachment 1 – Detailed Report**

**Attachment 2 – Project Location**

**Attachment 3 – Financial Statement**

BLA #1276

## Detailed Report

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### *Purpose/Background*

Metropolitan presently operates five filtration plants that range in age from the original treatment facilities at the 60-year-old Weymouth plant to the Mills plant that was placed in service in 1976. Systematic reviews of each treatment plant were conducted in fiscal year 2000/01 as part of Metropolitan's Infrastructure Reliability and Protection Plan (IRPP). These investigations determined that improvements are needed at each of Metropolitan's five filtration plants to address issues related to aging infrastructure, and ensure meeting water quality requirements.

Recent flow projections and changes in source water quality have shown that to reliably meet Metropolitan's demands, optimally use all available State project water (SPW) supplies, and achieve the Board's treated water salinity goal, a blend of greater than 25 percent SPW will, at times, be needed at the Diemer, Weymouth and Skinner plants. In light of these revisions, further planning efforts were undertaken in mid-2001 to assess each plant's ability to treat increased quantities of SPW supplies. These recent studies identified upgrades needed at all the filtration plants to maintain existing plant capacities when treating higher quantities of SPW supplies. These upgrades will enable Metropolitan to comply with upcoming regulations on an interim basis until a long-term compliance strategy has been selected. A Board workshop on long-term strategies is planned for December 2001.

The recommended projects include both budgeted and non-budgeted projects for the FY 2001/02 Capital Investment Plan (CIP). The first group of projects provides for replacement and upgrade of aging solids handling facilities. These projects were previously identified within the Infrastructure Reliability and Protection Plan in FY 2000/01 and budgeted within the FY 2001/02 CIP. The second group of projects is required due to new information that pertains to water supply and water quality projections that have been developed since the FY 2001/02 CIP budget was originally prepared. As such, this second group of projects was not previously included in the FY 2001/02 CIP budget. This group of projects is now recommended to enhance Metropolitan's ability to treat higher volumes of California SPW at all plants and to provide interim compliance with new water quality regulations, specifically the Stage 1 Microbial/Disinfection By-Products (M/DBP) Rule.

The majority of recommended projects will address capacity shortfall or bottlenecks in the residual solids processing capabilities at each plant that stem from aging equipment or the new regulatory requirements. At Metropolitan's filtration plants, water treatment chemicals (coagulants) are added to the raw water to facilitate the removal of suspended particulate matter. Mechanical equipment in the plant's large mixing basins serves to mix and distribute the coagulants. Subsequent equipment in the plant's settling basins collect settled solids that result from the mixing process and remove the settled material from the basins. Once these residual materials are removed from the main treatment process, they are thickened for disposal or further treatment on-site. Thickened residuals are discharged to the sewer at the Weymouth plant. At the remaining plants, the material is further processed either with mechanical dewatering equipment or within drying lagoons. After the material is sufficiently dry, an outside contractor removes the dried material from the site for ultimate disposal or reuse.

### *Aging Infrastructure Issues*

A significant number of the recommended projects address aging infrastructure and reliability issues that have been identified in several of key subsystems at each plant. These subsystems include equipment and facilities related to chemical mixing, solids settling and residual solids processing. These issues have arisen from two primary factors that include the relative age of existing equipment and incremental changes to plant processes that have slowly occurred over a number of years.

Typically, staff conducts routine preventive maintenance on process equipment to ensure the continued operation of the treatment processes at each plant. However, because much of the core process equipment at Metropolitan's five plants is in excess of 30 years old, significant maintenance work, above and beyond routine preventative maintenance is now required. In many cases, staff has determined that extensive rehabilitation, and in some cases complete replacement of this equipment, is now required.

Recent studies have found that some subsystems within each plant's overall treatment process are no longer capable of meeting the demands placed upon them by the rest of the treatment process. Typically, these shortfalls

or process bottlenecks have been identified in the areas of residual solids processing. Demands on these systems have increased gradually over a number of years as the plants utilized higher chemical coagulant dosages to maintain compliance with evolving and more stringent water quality regulations. Up to this point in time, the overall treatment capacity of each plant has not been affected, as plant operators have been able to utilize redundant equipment and surplus subsystem capacity to keep the treatment system operational. However recent studies have shown that residual solids processing capacity is now fully utilized at many of the plants. It is anticipated that under less than ideal operating conditions, or upon the failure of a key process component, a subsystem failure could trigger a reduction or curtailment of overall filtration plant production. Consequently, a number of projects are recommended to increase residual solids processing capabilities at plant where capacity shortfalls have been identified.

### ***Water Quality and Water Supply Issues***

The U.S. Environmental Protection Agency promulgated Stage 1 of the M/DBP Rule in December 1998. The rule, which becomes effective in January 2002, includes two components: (1) new and reduced maximum contaminant levels (MCLs) for disinfection by-products, and (2) implementation of a treatment technique (e.g., ozone disinfection, chlorine dioxide disinfection or total organic carbon removal) for many surface waters. Water utilities must comply with both components of the rule.

The precursors that form disinfection by-products differ widely in Metropolitan's two sources of supply. SPW supplies contains higher concentrations of disinfection by-product precursors (e.g., total organic carbon and bromide) than Colorado River water (CRW) and forms more disinfection by-products when chlorinated. Also, the nature of the organic carbon in SPW is different from that found in CRW. As such, Metropolitan's filtration plants that treat SPW exclusively must implement a treatment technique to comply with the M/DBP rule.

Water from the Colorado River contains fewer disinfection by-product precursors and the organic precursors in CRW are more difficult to remove than in SPW. For this reason, when 100 percent CRW is treated at any of Metropolitan's plants, no additional treatment is required to meet either the treatment technique or the maximum contaminant level provisions of the M/DBP Rule. However, when SPW and CRW are blended, additional treatment may be required.

### ***Metropolitan's CRW and SPW Blend Plants***

Currently, the Weymouth, Diemer, and Skinner filtration plants operate year round with a blend of SPW ranging from 20 to 60 percent. Though the exact blend varies, additional treatment would not be required at Weymouth, Diemer, or Skinner if the blend consistently remained below an average critical blend of approximately 25 percent. In the short term (less than five years), it is anticipated that these three plants will experience blends in excess of the critical blend of 25 percent. Consequently, increases in the coagulant dose will be required to provide additional operational flexibility. However this revised treatment practice also contains a number of important limitations. The amount of coagulant increase will depend on the quantity and quality of SPW delivered to these plants. Increasing the coagulant dose should only be seen as a short-term treatment solution because—without changing the disinfection technology or adding chlorine contactors downstream of filtration—the levels of DBPs produced may still restrict the SPW blend to less than 25 percent. In addition, meeting the Board's salinity goal with this treatment solution may be more difficult because increasing coagulation also increases salinity.

Though increasing coagulation is not recommended to comply with the M/DBP Rule and meet salinity objectives in the long term, possible water resource benefits (e.g., using SPW when available and meeting flow demands) make this a viable interim strategy until permanent treatment upgrades can be implemented. As a long-term strategy, new treatment technologies such as ozone, enhanced coagulation, chlorine dioxide, granular activated carbon and membranes are being considered for the Weymouth, Diemer, and Skinner filtration plants. These new technologies would ensure disinfection, reduce disinfection by-products, meet the treatment technique, and allow unrestricted blending of SPW.

For a number of reasons, the coagulation systems at Metropolitan's filtration plants were originally designed only for turbidity and particle removal—not for total organic carbon removal or DBP minimization. Recent engineering investigations determined that the Weymouth, Diemer, and Skinner plants would exhibit major process bottlenecks in the areas of solids handling and disposal if increased coagulant dosages were applied for

substantial periods of time. Thus, in their present configuration, these three plants cannot reliably maintain elevated coagulant dosages to ensure sufficient SPW blending above approximately 25 percent. Therefore, process upgrades are needed at these plants.

#### *Metropolitan's SPW Plants*

The Jensen and Mills plants treat SPW supplies exclusively. For these two plants, ozonation facilities are under design and construction. Until ozone or another technology is on-line, additional coagulants are likely to be needed to be periodically added to ensure compliance with the MCLs. The frequency and duration of the coagulant increase will depend on the raw water quality. This short-term or interim increase in coagulant dosage will require some improvements in the sludge handling systems at the Jensen plant. Furthermore, changes to the Jensen and Mills plant chlorination schemes are needed to reduce disinfection by-products. Once ozone or another technology is on-line, elevated coagulant dosages will not be required.

#### **Summary**

Implementation of both the previously planned and recently identified capital projects will ensure Metropolitan's ability to meet demands, optimally use all available supplies, continue to meet the Board's treated water salinity goal, and achieve interim compliance with the M/DBP Rule. Increasing coagulant dosages are recommended as interim strategies at all five plants to allow greater SPW blends to be treated while maintaining compliance with new regulations. A Board workshop on long-term strategies is planned for December 2001.

#### **Recommended Improvements**

##### *Skinner Plant (\$3,960,000)*

The Skinner plant was placed into service in 1976 to supply treated water to Riverside and San Diego counties. Since its original construction, the plant has been expanded three times and now consists of six treatment modules that are operated as two distinct filtration plants (Plants 1 and 2). Plants 1 and 2 have capacities of 240 million gallons per day (mgd) and 280 mgd, respectively, for a total combined rated capacity of 520 mgd.

Presently, the operating condition of the aging solids processing equipment at the plant is unreliable. In addition, the amount of residual material may increase as a result of the Stage 1 M/DBP rule. Consequently, a series of projects are recommended for implementation at the Skinner plant to rehabilitate the existing solids processing facilities. These projects, along with their anticipated actions and milestones, include:

- Replace 24 solids transfer pumps for the Plant No. 1 traveling bridges (Approp. 15365).
  - November 2001 – Board authorization and funding for equipment design and procurement
  - April 2003 – Complete installation of new pumps
- Replace belt presses and solids conveyor system (Approp. 15365).
  - November 2001 – Board authorization and funding for equipment design and procurement
  - August 2002 – Award contract to install equipment
  - May 2003 - Complete installation of new belt presses and conveyor
- Construct one solids thickener (Approp. 15365).
  - November 2001 - Board authorization and funding for equipment design and procurement
  - August 2002 – Award contract to construct new thickener
  - May 2003 – Complete construction

Pumps, mounted on traveling bridges, lift the residual solids from Modules 1 and 2 sedimentation basins for subsequent processing. The 25-year-old pumps for Modules 1 and 2 have deteriorated significantly and are at the end of their expected useful life. Replacement parts for the pumps are no longer available from outside suppliers and must be obtained through special fabrication orders. The plant uses belt presses and a conveyor system to dry process residual solids material prior to off-site disposal. This equipment is approximately 20 years old and, like the traveling bridge pumps, has reached the end of its useful life. Recent inspections revealed that the belt presses and the conveyor system are significantly deteriorated due to the corrosive nature of their operating environment.

Both the belt presses and solids conveyor should be replaced with new equipment. The plant's solids thickening system consists of two units that reduce solids bulk from the washwater return flow stream. The thickeners also provide a consistent feed material to the belt presses. Current operating conditions indicate that the capacity of the thickeners is inadequate to reliably process existing washwater flows. The solids processing capacity will be further strained once elevated coagulation treatment begins. It is recommended that a third thickener be designed and constructed to provide the appropriate capacity and system redundancy.

The recommended projects for the Skinner plant will be implemented as part of the Skinner Filtration Plant Improvements Program. This program was initiated with Board authorization of the program in March 2001. The \$3.95 million appropriated through this board action for the activities described herein represent budgeted funds in the FY 2001/02 CIP budget. FY 2001/02 budgeted funds in the Skinner Improvements Program will be utilized to make necessary equipment and facility upgrades and modifications that stem from process limitations that had been identified in advance of the need to utilize elevated coagulation. In order to streamline award of contracts, this letter seeks the Board's delegation of authority to the Chief Executive Officer to award contracts following competitive bids in accordance with Section 8113 of the Metropolitan Water District Administrative Code.

Attachment 3 shows the breakdown of the total estimated costs for these projects.

*Diemer Plant (\$7,965,000)*

The Diemer plant was placed into service in 1963 with an initial capacity of 200 mgd. The plant was expanded in 1969 to its current rating of 520 mgd. The plant typically treats a blend of SPW and CRW supplies and delivers treated water to Metropolitan's Central Pool portion of the distribution system.

Presently, staff has identified a number of issues concerning the ability to maintain reliable operation of the critical, but aging pieces of mechanical equipment in the mixing and settling basins. Additionally, staff has identified concerns that are attributed to the existing capacity of the Diemer plant to process residual solids generated in the water treatment process. Staff anticipates that this capacity shortfall will be exacerbated by the elevated coagulant dosages needed to treat a higher blend of SPW. Consequently, a series of projects are recommended for implementation at the Diemer plant to rehabilitate the existing residual processing facilities. These projects, along with the anticipated actions and milestones, include:

- Conduct preliminary and final design of northwest hill grading for residuals processing facilities (Approp. 15227).
  - November 2001 – Board authorization and funding for final design activities
  - September 2002 – Complete final design
  - March 2003 – Board authorization to appropriate funding for construction and award a construction contract
  - March 2004 – Construction complete
- Construct concrete lining in four solids drying lagoons (Approp. 15363).
  - November 2001 – Board authorization and funding for final design and construction activities for four lagoons
  - April 2002 – Award construction contract for lagoon lining
  - October 2002 – Complete construction of first two lagoons
  - October 2003 – Complete construction of final two lagoons; project completion
- Conduct final design and construct an additional solids thickener, and install mixers in the existing two thickeners (Approp. 15363).
  - November 2001 – Board authorization and funding for final design and construction
  - March 2003 – Award construction contract for new thickener

February 2004 – Complete construction

- Conduct final design and construction for flocculation/sedimentation basin equipment and chemical storage tanks (Approp. 15380).

November 2001 – Board authorization and funding for final design and construction

April 2002 – Begin Metropolitan forces installation of new equipment

September 2002 – Board authorization to appropriate funding for construction and award a construction contract

February 2006 – Complete construction

Mechanical equipment in the plant's main basins provides chemical mixing and solids removal. Recent inspections have shown that this equipment, which is more than 30 years old, is in immediate need of repair, replacement, or upgrade. The gears, shafts and other internal rotating components on this process equipment are deteriorated and should be replaced to ensure continued and reliable operation of the affected equipment. Additionally, load cells should be added to the clarifier and thickener rakes to ensure that the equipment will operate based on actual solids loading requirements rather than just on time intervals as presently operated. Two alum storage tanks of steel construction need to be replaced so that the plant can utilize ferric chloride to optimize the coagulation process and minimize residual solids production. A critical process bottleneck at the plant is the solids drying lagoon system. Presently, the four main lagoons marginally meet existing solids drying needs. The existing lagoon capacity would be completely inadequate to handle the added solids drying demands due to elevated coagulation requirements. Such inadequacies could limit flows through the Diemer plant. The existing lagoons should be retrofitted with concrete liners to shorten solids drying time, facilitate solids removal, and permit the plant to continuously process residual solids material. The plant's existing solids thickener system operates to reduce solids bulk from the washwater return flow stream and also operates to provide consistent feed material to the belt presses. The operating capacity of the thickeners is marginally adequate to reliably process existing washwater flows, and will be completely inadequate to process the increased solids flows that are anticipated once the elevated coagulation treatment commences. It is recommended that a third thickener be designed and constructed to provide the appropriate capacity and system redundancy. The existing northwest hill at the plant must be graded to provide an adequate site for a third thickener, additional solids handling facilities and/or future treatment-related facilities. Deferment of the grading of the northwest hill is not recommended as the high amount of truck traffic associated with this project will likely meet great resistance by future residents of the Vista del Verde development now under construction.

The recommended projects for the Diemer plant will be implemented under several existing appropriations as well as one new appropriation. The repair, replacement and upgrade of the existing equipment in the plant's mixing and settling basins will be conducted as part of the Diemer Filtration Plant Improvements Program (Approp. 15380). This will be the initial appropriation of funds under this program; these funds have been included in the FY 2001/02 CIP budget. The preliminary and final design activities related to grading the north west hill in preparation for construction of a third thickener will be conducted under the existing Diemer Land Acquisition and Site Grading Program (Approp. 15227). This represents the fifth board action for this program that was initiated in 1996. Funds for this work have been included in the FY 2001/02 CIP budget. The design and construction of the third thickener and the concrete lining of four lagoons will be funded under the existing Diemer Plant Solids Handling and Water Reclamation Program (Approp. 15363). This program was initiated with Board authorization in February 2001. This funding request includes \$2.535 million of budgeted and \$5.43 million of non-budgeted funds in the FY 2001/02 CIP budget. FY 2001/02 budgeted funds in the Diemer Land Acquisition, Habitat Conservation Plan and Site Grading Program and the Diemer Improvements Program will be utilized to make necessary site, and equipment modifications that stem from limitations that had been identified in advance of the need to utilize elevated coagulation. The necessity to utilize non-budgeted CIP funds for the Diemer Solids Handling Program results from the fact that anticipated flow projections, and blend percentages at this plant have been revised since the FY2001/02 CIP budget was prepared. The CIP expenditure plan for this program will be revised if this action is approved. In order to streamline award of contracts, this letter seeks the Board's delegation of authority to the CEO to award contracts following competitive bids in accordance with Section 8113 of the Metropolitan Water District Administrative Code.

Attachment 3 contains the breakdown of the total estimated costs for these projects.

*Weymouth Plant (\$580,000)*

The Weymouth plant was placed into service in 1941 with an initial capacity of 100 mgd. Then the plant was expanded twice to its current plant capacity of 520 mgd. The plant treats a blend of SPW and CRW supplies.

Staff has identified several areas of concern with the solids processing equipment at the Weymouth plant. These issues should be addressed to ensure continued and reliable operation of the solids processing equipment at the plant. The plant's two thickener pumps are more than 30 years old and are prone to unanticipated failures. The existing solids pipeline that transports dilute material from the treatment basins to the thickeners is undersized to meet the plant's current solids flows. Ten existing pumps that transport residual solids from the sedimentation basins to the washwater plant need to be refurbished or replaced. Finally, Metropolitan's permit to discharge solids to the Los Angeles County Sanitation District's sewer system is limited. The discharge limit is set at 40 million gallons per year. Consequently, it is necessary to study and investigate methods of providing additional on-site solids dewatering, possibly in the form of belt presses or other similar equipment. Such a facility will allow Metropolitan to process increased amounts of solids, while complying with the existing permit conditions. Staff anticipates that this capacity shortfall will be exacerbated if elevated coagulant dosages are employed. To address these shortfalls, a series of projects are recommended for implementation at the Weymouth plant to rehabilitate the existing residual processing facilities. The proposed projects for the Weymouth plant, along with the anticipated actions and milestones, include:

- Replace two solids thickener pumps (Approp. 15369).
  - November 2001 – Board authorization and funding for equipment design and procurement
  - February 2002 – Complete equipment installation
- Replace/refurbish 10 solids handling pumps (Approp. 15369).
  - November 2001 – Board authorization and funding for equipment design and procurement
  - April 2002 – Complete equipment installation (Approp. 15369).
- Replace solids transport pipeline and appurtenances.
  - November 2001 – Board authorization and funding for pipeline design and material procurement
  - September 2002 – Complete pipeline installation (Approp. 15369).
- Study future on-site solids handling facilities and other issues related to elevated coagulation.
  - November 2001 – Board authorization and funding for study
  - September 2002 – Complete study and make recommendations

The recommended projects for the Weymouth plant will be implemented as part of the Weymouth Filtration Plant Improvements Program. This program was initiated with Board authorization of the program in August 2001. The \$0.58 million appropriated through this board action for the activities described herein represent non-budgeted funds in the FY 2001/02 CIP budget. The necessity to utilize non-budgeted CIP funds for the Weymouth Improvements Program results from the fact that anticipated flow projections and blend percentages at this plant have been revised since the FY2001/02 CIP budget was prepared. The CIP expenditure plan for this program will be revised if this action is approved. In order to streamline award of contracts, this letter seeks the Board's delegation of authority to the CEO to award contracts following competitive bids in accordance with Section 8113 of the Metropolitan Water District Administrative Code.

Attachment 3 shows the breakdown of the total estimated costs for these projects.

*Jensen Plant (\$2,375,000)*

The Jensen plant was placed into service in 1972 with an initial capacity of 350 mgd. The plant was expanded in the early 1990s to its current capacity of 750 mgd. The plant exclusively treats SPW supplies and delivers treated water to Metropolitan's Central Pool portion of the distribution system. Final design activities are underway at the plant to install an ozone pre-disinfection system to replace the existing chlorine pre-disinfection system. At

Jensen, the commitment to install a new disinfection technology allows the plant to avoid enhanced coagulation. However, in the interim period, the plant must still meet the new, lower DBP levels.

The proposed projects associated with accomplishing this interim requirement for the Jensen plant can be grouped into four general categories that include making modifications to the chlorine system, the chemical feed system, the washwater reclamation system, and repairs to mixing and settling basins. Additionally, further studies are required to determine if additional projects are necessary to insure compliance with the new regulations.

The plant's existing primary chlorine feed point will be relocated from the raw water inlet channel to a location just upstream of the filters. The existing chlorine gas feed equipment and chlorine piping and diffusers must be modified to provide this capability. In addition, elevated dosages of coagulants may also be required (depending on water quality) to meet the maximum contaminant levels. However this use of elevated coagulant dosages is not considered "enhanced coagulation" because this practice is only used on an as-needed basis, rather than on a full-time basis. However, new chemical feed pumps, chemical diffusers and a variety of new flow meters must be installed to accommodate any increased coagulant feed rates. In order to adequately process the larger volumes of residual solids produced from the increased coagulant feed rates, the plant's existing washwater reclamation facilities must be modified. A variety of modifications to the washwater reclamation plant are proposed to permit the plant to better process the increased volumes of solids that will be generated as a result of the increased coagulant usage. These modifications include the installation of new instrumentation, the modification to existing piping, the provision of additional chemical feed capabilities to these facilities, and the installation of variable frequency drives on four pumps. Finally, repairs must be made to flocculator drive units in existing mixing and settling basins. Several of these process components have been out of service for several years, and now must be returned to service so that the plant can reliably operate to comply with the maximum contaminant level provisions of the M/DBP Rule.

The proposed projects for the Jensen plant, along with the anticipated actions and milestones, include:

- Modify existing chlorine feed system (Approp. 15371).
  - November 2001 – Board authorization and funding for equipment design and procurement
  - January 2002 – Complete equipment installation
- Modify existing chemical feed systems (Approp. 15371).
  - November 2001 – Board authorization and funding for equipment design and procurement
  - February 2002 – Complete equipment installation
- Modify existing washwater reclamation system (Approp. 15371).
  - November 2001 – Board authorization and funding for equipment design and procurement
  - June 2003 – Complete equipment installation
- Reactivate 4 mixing and settling basins (Approp. 15371).
  - November 2001 – Board authorization and funding for equipment design and procurement
  - June 2002 – Complete equipment installation and repairs
- Study future issues related to elevated coagulation (Approp. 15371).
  - November 2001 – Board authorization and funding for study
  - June 2002 – Complete study and make recommendations

The recommended projects for the Jensen plant will be implemented as part of the Jensen Filtration Plant Improvements Program. This program was initiated with Board authorization of the program in August 2001. The \$2.375 million appropriated through this board action for the activities described herein represent non-budgeted funds in the FY 2001/02 CIP budget. The necessity to utilize non-budgeted CIP funds for the Jensen Improvements Program results from the fact that water quality has varied since the FY 2001/02 CIP budget was prepared. The CIP expenditure plan for this program will be revised if this action is approved. In order to

streamline award of contracts, this letter seeks the Board's delegation of authority to the CEO to award contracts following competitive bids in accordance with Section 8113 of the Metropolitan Water District Administrative Code.

Attachment 3 shows the breakdown of the total estimated costs for these projects.

*Mills Plant (\$240,000)*

The Mills plant was placed into service in 1978 with an initial capacity of 75 mgd. The plant has been expanded on two occasions with the most recent expansion being completed in 1996. The plant is currently permitted to treat up to 220 mgd. The plant exclusively treats SPW supplies and delivers treated water to Eastern and Western Municipal Water Districts. The plant is currently undergoing a retrofit project to install an ozone predisinfection system to replace the existing chlorine predisinfection system. This work will be completed in early 2003.

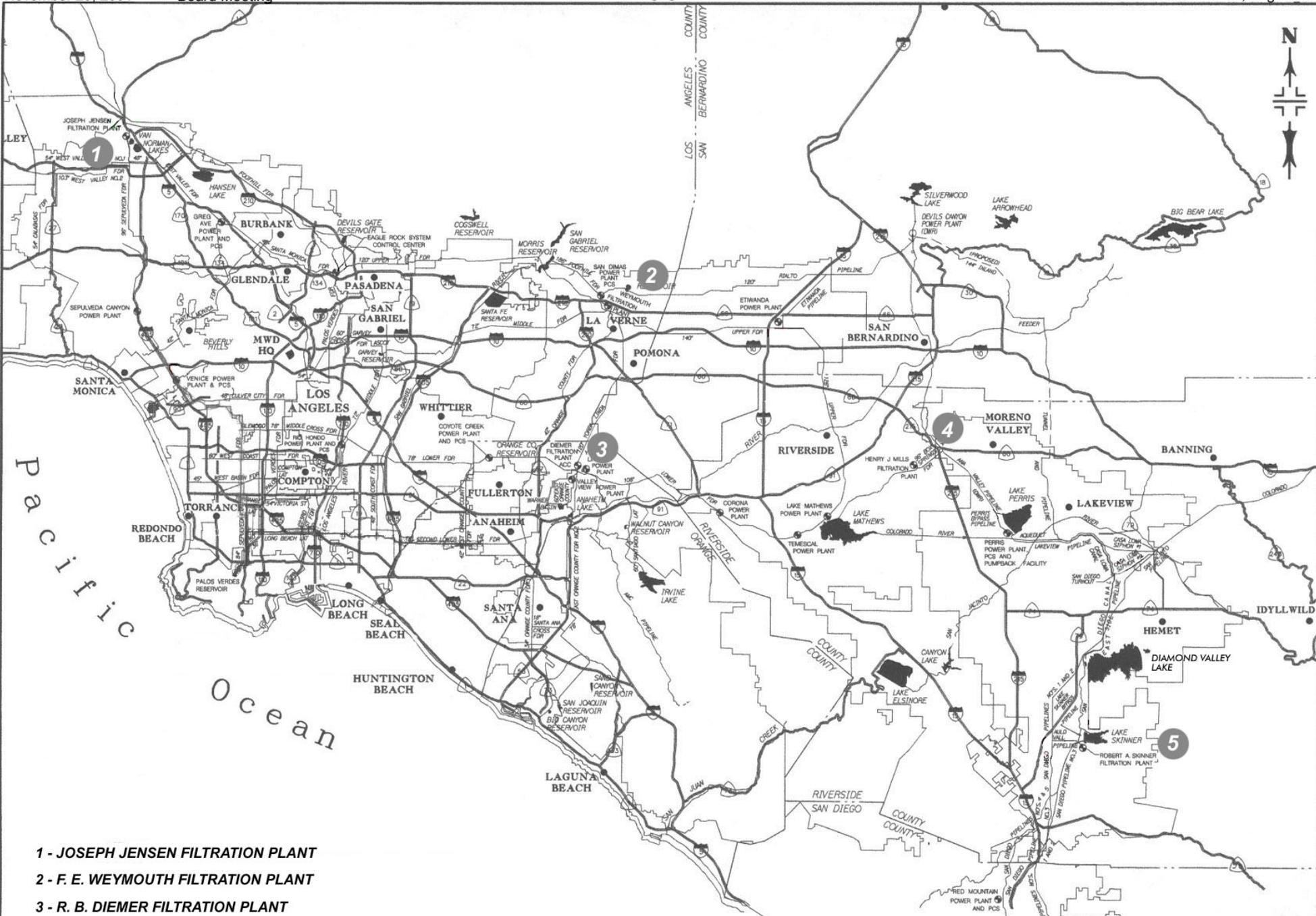
At Mills, the current commitment to the ozone disinfection technology will allow the plant to avoid enhanced coagulation until the ozone comes on-line as presently scheduled in early-2003. However, in the interim the plant must still meet the new, lower DBP levels. In order to accomplish this requirement, the plant's existing primary chlorine feed point will be relocated from the raw water inlet channel to a location just upstream of the filters. The existing chlorine gas feed equipment and chlorine piping and diffusers must be modified to provide this capability. Additionally, further studies are required to determine if additional projects are necessary to insure compliance with the new regulations.

The proposed projects for the Mills plant, along with the anticipated actions and milestones, include:

- Modify existing chlorine feed system (Approp. 15381).
  - November 2001 – Board authorization and funding for equipment design and procurement
  - March 2002 – Complete equipment installation
- Study future issues related to elevated coagulation (Approp. 15381).
  - November 2001 – Board authorization and funding for study
  - May 2002 – Complete study and make recommendations

The recommended projects for the Mills plant will be implemented as part of the Mills Filtration Plant Improvements Program. This program was initiated with Board authorization of the program in August 2001. The \$0.24 million appropriated through this board action for the activities described herein represent non-budgeted funds in the FY 2001/02 CIP budget. The necessity to utilize non-budgeted CIP funds for the Mills Improvements Program results from the fact that water quality has varied since the FY 2001/02 CIP budget was prepared. The CIP expenditure plan for this program will be revised if this action is approved. The CIP expenditure plan for this program will be revised if this action is approved. In order to streamline award of contracts, this letter seeks the Board's delegation of authority to the CEO to award contracts following competitive bids in accordance with Section 8113 of the Metropolitan Water District Administrative Code.

Attachment 3 shows the breakdown of the total estimated costs for these projects.



- 1 - JOSEPH JENSEN FILTRATION PLANT**
- 2 - F. E. WEYMOUTH FILTRATION PLANT**
- 3 - R. B. DIEMER FILTRATION PLANT**
- 4 - H. J. MILLS FILTRATION PLANT**
- 5 - R. A. SKINNER FILTRATION PLANT**

**GENERAL LOCATION MAP**



**Financial Statement for Skinner Plant – Improvements Program**

A breakdown of Board Action No. 3 for Appropriation No. 15365 for replacement of belt presses and conveyor system, solids handling pumps, construction of one solids thickener, and conduct solids handling studies for the Skinner Filtration Plant Improvements Program is as follows:

	<b>Board Action No. 2 <u>(Jul. 2001)</u></b>	<b>Board Action No. 3 <u>(Nov. 2001)</u></b>
Labor		
Studies and Investigations	\$ 605,000	\$ 805,000
Design and Specifications	0	320,000
Owner Costs (Program Management, Environmental Docs., Control System Integration, Bidding Process)	108,000	240,000
Construction Management and Inspection	24,000	295,000
Water System Operations (Metropolitan Force Installation and Construction, Water Quality)	5,000	180,000
Materials and Supplies	11,000	230,000
Incidental Expenses	9,000	15,000
Professional/Technical Services	975,000	975,000
Equipment Use	10,000	15,000
Contracts	150,000	2,305,000
Remaining Budget	333,000	810,000
<b>Total</b>	<b><u>\$ 2,230,000</u></b>	<b><u>\$ 6,190,000</u></b>

**FUNDING REQUEST**

<b>Program Name:</b>	Skinner Filtration Plant - Improvements Program		
<b>Source of Funds:</b>	Construction Funds (possibly General Obligation, Revenue Bonds, Pay-As-You-Go Fund)		
<b>Appropriation No.:</b>	15365	<b>Board Action No.:</b>	3
<b>Requested Amount:</b>	\$ 3,960,000	<b>Capital Program No.:</b>	15365-I
<b>Total Appropriated Amount:</b>	\$ 6,190,000	<b>Capital Program Page No.:</b>	E-43
<b>Total Program Estimate:</b>	\$ 118,000,000	<b>Project Goal:</b>	I- Infrastructure Reliability

### **Financial Statement for Diemer Land Acquisition, Habitat Conservation Plan, and Site Grading**

A breakdown of the Board Action No. 5 for Appropriation No. 15227 for final design to grade the northwest hill for residuals processing at the Diemer plant as part of the Diemer Land Acquisition, Habitat Conservation Plan, and Site Grading is as follows:

	<b>Board Action No. 4 <u>(Feb. 2001)</u></b>	<b>Board Action No. 5 <u>(Nov. 2001)</u></b>
Labor:		
Design and Specifications	\$ 80,000	\$ 890,000
Owner Costs (Program Management, Environmental Docs., Control System Integration, Bidding Process)	391,400	575,000
Construction Management and Inspection	70,000	70,000
Water System Operations (Metropolitan Force Installation and Construction, Water Quality)	20,000	30,000
Environmental Documentation/Coordination	150,000	160,000
Property Documentation/Coordination	75,000	80,000
Materials and Supplies	6,100	15,000
Incidental Expenses	4,200	20,000
Professional/Technical Services	1,268,800	1,525,000
Rights of Way	2,672,000	2,672,000
Operating Equipment	2,500	8,000
Contracts	255,000	255,000
Remaining Budget	75,000	270,000
<b>Total</b>	<b><u>\$5,070,000</u></b>	<b><u>\$ 6,570,000</u></b>

### **FUNDING REQUEST**

<b>Program Name:</b>	Diemer Filtration Plant –Land Acquisition, Habitat Conservation Plan, and Site Grading		
<b>Source of Funds:</b>	Construction Funds (possibly General Obligation, Revenue Bonds, Pay-As-You-Go Fund)		
<b>Appropriation No.:</b>	15227	<b>Board Action No.:</b>	5
<b>Requested Amount:</b>	\$ 1,500,000	<b>Capital Program No.:</b>	15227-I
<b>Total Appropriated Amount:</b>	\$ 6,570,000	<b>Capital Program Page No.:</b>	E-20
<b>Total Program Estimate:</b>	\$ 11,900,000	<b>Project Goal:</b>	I- Infrastructure Reliability

### **Financial Statement for Diemer Plant Solids Handling and Water Reclamation**

A breakdown of the Board Action No. 2 for Appropriation No. 15363 for design and construction of solids handling and water reclamation facilities and conduct solids handling studies for the Diemer plant is as follows:

	<b>Board Action No. 1 <u>(Feb. 2001)</u></b>	<b>Board Action No. 2 <u>(Nov. 2001)</u></b>
Labor:		
Studies and Investigations	\$ 125,000	\$ 275,000
Owner Costs (Program Management, Environmental Docs., Control System Integration, Bidding Process)	40,000	195,000
Design and Specifications	210,000	415,000
Construction Management and Inspection	45,000	245,000
Water System Operations (Metropolitan Force Installation and Construction, Water Quality)	460,000	775,000
Materials and Supplies	530,000	725,000
Incidental Expenses	15,000	50,000
Operating Equipment	65,000	125,000
Contracts	310,000	3,650,000
Remaining Budget	195,000	970,000
<b>Total</b>	<b><u>\$ 1,995,000</u></b>	<b><u>\$ 7,425,000</u></b>

### **FUNDING REQUEST**

<b>Program Name:</b>	Diemer Filtration Plant Solids Handling and Water Reclamation		
<b>Source of Funds:</b>	Construction Funds (possibly General Obligation, Revenue Bonds, Pay-As-You-Go Fund)		
<b>Appropriation No.:</b>	15363	<b>Board Action No.:</b>	2
<b>Requested Amount:</b>	\$ 5,430,000	<b>Capital Program No.:</b>	15363-R
<b>Total Appropriated Amount:</b>	\$ 7,425,000	<b>Capital Program Page No.:</b>	E-19
<b>Total Program Estimate:</b>	\$ 9,545,000	<b>Project Goal:</b>	I- Infrastructure Reliability

**Financial Statement for Diemer Plant – Improvements Program**

A breakdown of Board Action No. 1 for Appropriation No. 15380 for design and construction of improvements to the Mixing and Settling Basins Nos.1-4 and replacement of two chemical storage tanks for the Diemer Filtration Plant Improvements Program is as follows:

	<b>Board Action No. 1 (Nov. 2001)</b>
Labor:	
Studies and Investigations	\$ 95,000
Owner Costs (Program Management, Environmental Docs., Control System Integration, Bidding Process)	25,000
Design and Specifications	75,000
Construction Management and Inspection	25,000
Water System Operations (Metropolitan Force Installation and Construction, Water Quality)	140,000
Materials and Supplies	200,000
Incidental Expenses	25,000
Operating Equipment	15,000
Contracts	300,000
Remaining Budget	135,000
<b>Total</b>	<b><u>\$1,035,000</u></b>

**FUNDING REQUEST**

<b>Program Name:</b>	Diemer Filtration Plant – Improvements Program		
<b>Source of Funds:</b>	Construction Funds (possibly General Obligation, Revenue Bonds, Pay-As-You-Go Fund)		
<b>Appropriation No.:</b>	15380	<b>Board Action No.:</b>	1
<b>Requested Amount:</b>	\$ 1,035,000	<b>Capital Program No.:</b>	01211-I
<b>Total Appropriated Amount:</b>	\$ 1,035,000	<b>Capital Program Page No.:</b>	E-19
<b>Total Program Estimate:</b>	\$ 11,100,000	<b>Project Goal:</b>	I- Infrastructure Reliability

### **Financial Statement for Jensen Plant - Improvements Program**

A breakdown of Board Action No. 2 for Appropriation No. 15371 for studies, design, purchase of equipment, and preparation of bid documents to award contract to modify the existing chlorine system and chemical feed systems for M/DBP regulatory compliance, modify existing washwater reclamation and solids handling systems and conduct solids handling studies at the Jensen Filtration Plant Improvements Program is as follows:

	<b>Board Action No. 1 <u>(Aug. 2001)</u></b>	<b>Board Action No. 2 <u>(Nov. 2001)</u></b>
Labor		
Conceptual Design	\$ 170,000	\$ 170,000
Studies and Investigations	100,000	225,000
Design and Specifications	551,000	875,000
Owner Costs (Program Management, Environmental Docs., Control System Integration, Bidding Process)	151,000	300,000
Construction Management and Inspection	310,000	450,000
Water System Operations (Metropolitan Force Installation and Construction, Water Quality)	275,000	865,000
Materials and Supplies	575,000	1,310,000
Incidental Expenses	31,000	70,000
Professional/Technical Services	75,000	100,000
Equipment Use	55,000	80,000
Contracts	3,100,000	3,100,000
Remaining Budget	907,000	1,130,000
<b>Total</b>	<b><u>\$ 6,300,000</u></b>	<b><u>\$ 8,675,000</u></b>

### **FUNDING REQUEST**

<b>Program Name:</b>	Jensen Filtration Plant – Improvements Program		
<b>Source of Funds:</b>	Construction Funds (possibly General Obligation, Revenue Bonds, Pay-As-You-Go Fund)		
<b>Appropriation No.:</b>	15371	<b>Board Action No.:</b>	2
<b>Requested Amount:</b>	\$ 2,375,000	<b>Capital Program No.:</b>	01215-I
<b>Total Appropriated Amount:</b>	\$ 8,675,000	<b>Capital Program Page No.:</b>	E-30
<b>Total Program Estimate:</b>	\$ 8,675,000	<b>Project Goal:</b>	I – Infrastructure Reliability

### **Financial Statement for Weymouth Plant – Improvements Program**

A breakdown of Board Action No. 2 for Appropriation 15369 for studies, procurement and installation of new equipment and conduct solids handling studies as part of the Weymouth Filtration Plant Improvements Program is as follows:

	<b>Board Action No. 1 <u>(Aug. 2001)</u></b>	<b>Board Action No. 2 <u>(Nov. 2001)</u></b>
Labor		
Studies and Investigations	\$ 205,000	\$ 550,000
Owner Costs (Program Management, Environmental Docs., Control System Integration, Bidding Process)	35,000	40,000
Design and Specifications	71,000	71,000
Construction Management and Inspection	123,000	123,000
Water System Operations (Metropolitan Force Installation and Construction, Water Quality)	108,000	200,000
Materials and Supplies	146,000	200,000
Incidental Expenses	5,000	10,000
Professional Technical Services	40,000	40,000
Contracts	902,000	902,000
Remaining Budget	245,000	324,000
<b>Total</b>	<b><u>\$ 1,880,000</u></b>	<b><u>\$ 2,460,000</u></b>

### **FUNDING REQUEST**

<b>Program Name:</b>	Weymouth Filtration Plant – Improvements Program		
<b>Source of Funds:</b>	Construction Funds (possibly General Obligation, Revenue Bonds, Pay-As-You-Go)		
<b>Appropriation No.:</b>	15369	<b>Board Action No.:</b>	2
<b>Requested Amount:</b>	\$ 580,000	<b>Capital Program No.:</b>	01226-I
<b>Total Appropriated Amount:</b>	\$ 2,460,000	<b>Capital Program Page No.:</b>	E-50
<b>Total Program Estimate:</b>	\$ 8,380,000	<b>Program Goal:</b>	I – Infrastructure Reliability

### **Financial Statement for Mills Plant – Improvements Program**

A breakdown of Board Action No. 1 for Appropriation No. 15381 for studies, design, purchase of equipment, installation related to chlorine modifications and solids handling studies for the Mills Filtration Plant Improvements Program is as follows:

	<b>Board Action No. 1 (Nov. 2001)</b>
Labor	
Studies and Investigations	\$ 100,000
Design and Specifications	16,000
Owner Costs (Program Management, Environmental Docs., Control System Integration, Bidding Process)	5,000
Water System Operations (Metropolitan Force Installation and Construction, Water Quality)	25,000
Materials and Supplies	55,000
Incidental Expenses	5,000
Equipment Use	4,000
Remaining Budget	30,000
<b>Total</b>	<b><u>\$ 240,000</u></b>

### **FUNDING REQUEST**

<b>Program Name:</b>	Mills Filtration Plant – Improvements Program		
<b>Source of Funds:</b>	Construction Funds (possibly General Obligation, Revenue Bonds, Pay-As-You-Go)		
<b>Appropriation No.:</b>	15381	<b>Board Action No.:</b>	1
<b>Requested Amount:</b>	\$ 240,000	<b>Capital Program No.:</b>	01217-I
<b>Total Appropriated Amount:</b>	\$ 240,000	<b>Capital Program Page No.:</b>	E-35
<b>Total Program Estimate:</b>	\$ 2,840,000	<b>Program Goal:</b>	I – Infrastructure Reliability