

6.0 ANALYSIS OF ALTERNATIVES

6.1 INTRODUCTION

This chapter reviews alternatives to the Proposed Project considered during the preparation of this EIR. The purpose of the alternative analysis, according to CEQA *Guidelines* Section 15126.6(a), is to describe a range of reasonable alternative projects that could feasibly attain most of the objectives of the Proposed Project and to evaluate the comparative merits of the alternatives. CEQA *Guidelines* Section 15126.6(b) requires consideration of alternatives that could reduce to a less than significant level or eliminate any significant adverse environmental effects of the Proposed Project, including alternatives that may be more costly or could otherwise impede the Proposed Project's objectives. The range of alternatives evaluated in an EIR is governed by a "rule of reason," which requires the evaluation of alternatives "necessary to permit a reasoned choice." Alternatives considered must include those that offer substantial environmental advantages over the Proposed Project and may be feasibly accomplished in a successful manner considering economic, environmental, social, technological, and legal factors.

In accordance with the CEQA *Guidelines*, the alternatives considered in this EIR include those that 1) could accomplish most of the basic objectives of the project, and 2) could avoid or substantially lessen one or more of the significant effects of the project. To provide the appropriate context for this alternatives analysis, the project objectives and key significant effects are summarized below in **Section 6.2**. Alternatives initially considered but eliminated from further consideration due to their inability to achieve the project objectives and/or to reduce environmental impacts associated with the Proposed Project are described in **Section 6.3**. Alternatives determined to achieve the selection criteria are discussed in **Section 6.4**. This discussion evaluates the capacity of selected project alternatives to accomplish the basic objectives of the project and provides a comparison of the potential environmental impacts expected to occur for each issue area. These comparisons are used in **Section 6.5** to determine the Environmentally Superior Alternative.

6.2 OVERVIEW OF THE PROPOSED PROJECT

6.2.1 PROJECT OBJECTIVES

The Proposed Project has been designed to meet the objectives outlined below:

- Upgrade the quality of the plant's treated effluent as required by the 2008 NPDES permit within the timeframe established in the permit;
- Protect water quality and public health through compliance with applicable regulations for the treatment, disposal and reuse of wastewater and wastewater residuals (biosolids);

- Improve the general operability and maintainability of the City's wastewater treatment facilities;
- Maximize operational flexibility, reliability, efficiency, and safety;
- Be compatible with future Master Planned Facilities for the site;
- Maximize energy efficiency;
- Reduce impacts of the EWWTP on area residents by reducing odors, noise, glare and aesthetic impacts generated onsite;
- Site and operate new facilities to minimize adverse environmental effects; and
- Achieve the above objectives in a cost-effective manner that limits system capital costs, operations and maintenance costs, and user rates to the extent possible.
- Avoid the significant fiscal impact of fines if the improvements are not completed within the time limits specified by the Central Valley Regional Water Quality Control Board.

6.2.2 KEY IMPACTS OF THE PROPOSED PROJECT

The impacts of the Proposed Project are evaluated in **Section 4.0** of this Draft EIR and summarized in **Table 2-1**. By upgrading the EWWTP to meet the requirements of the 2008 NPDES permit, the Proposed Project would have a significant beneficial impact to regional water quality. Construction of the Proposed Project could result in potential short-term impacts associated with soils and geology, hydrology and water quality, biological resources, noise, transportation/traffic, and air quality. Project design, regulatory requirements, and mitigation measures would reduce all potential short-term impacts to a less-than-significant level. Operation and maintenance of the Proposed Project could result in potential long-term adverse impacts associated with geology and soils, hydrology and water quality, noise, and air quality. Project design, regulatory requirements, and recommended mitigation measures would reduce all potential long-term impacts to a less than significant level. As described under **Impact 4.11-1**, the Proposed Project would result in the conversion of up to approximately 8.34 acres of Prime Farmland; this impact is considered significant and unavoidable.

6.3 ALTERNATIVES ELIMINATED FROM CONSIDERATION

In addition to the alternatives evaluated in **Section 6.4** below, an off-site alternative and variations in the Proposed Project have been considered for their potential to reduce the environmental impacts of the Proposed Project. These alternatives were preliminarily considered but eventually excluded from full comparative analysis within the EIR because they were determined to be infeasible, unable to meet the objectives of the Proposed Project, and/or were not likely to reduce significant environmental impacts of the Proposed Project. Alternatives considered, but rejected, are briefly discussed below.

6.3.1 ALTERNATIVE LOCATION FOR TERTIARY TREATMENT FACILITIES

This alternative would include the construction of the proposed tertiary treatment facilities at an alternative site. Depending on the location of the alternative site, significant extensions to the existing sewer lines

would be required to convey the flow from the existing EWWTP to the tertiary treatment facilities. A specific site was not identified; however, the issues and impacts related to the offsite tertiary treatment facilities would be generally similar. An offsite alternative was considered in the 1998 EWWTP Expansion EIR (City of Vacaville, 1998). The conclusion of their analysis was that the offsite alternative would have a high capital cost which would result in a substantial increase in sewer rates for service area customers. However, the offsite alternative had the potential to avoid significant impacts associated with noise, odor, aesthetics, and hazardous materials, depending on the alternative site's location. Since the time of the 1998 EIR, additional capital investments have been made to the existing EWWTP site, including the development of the South Plant facilities. An off-site alternative was therefore dismissed from further consideration within this EIR as it would not achieve the basic objectives in a cost-effective matter and would result in significant increases to sewer rates for service area customers.

6.3.2 ALTERNATIVE METHOD OF TERTIARY TREATMENT

The alternative would result in the use of a membrane filtration tertiary treatment instead of the granular media filtration system included within the components of the Proposed Project; all other components of this alternative would be identical to those of the Proposed Project. This alternative would utilize an ultrafiltration (UF) pressure cartridge filter to produce tertiary treated water from secondary effluent. UF membranes are designed to remove suspended solids such as colloids, bacteria, cysts, and viruses. A membrane filtration system requires substantial ancillary systems for backwash and chemical cleaning of the membrane elements. This method of tertiary filtration was evaluated within the City Tertiary Project Draft Facilities Plan (2009). This alternative was dismissed from further consideration because it would not "avoid or substantially lessen one or more of the significant effects of the project" and so does not meet CEQA's requirement of a reasonable range of alternatives.

6.4 ALTERNATIVES EVALUATED IN THIS DRAFT EIR

6.4.1 ALTERNATIVE A – NO PROJECT ALTERNATIVE

Description

As required by CEQA *Guidelines* Section 15126.6(e), a No Project Alternative has been evaluated. The evaluation of the No Project Alternative allows decision makers to compare the impacts of the Proposed Project against no development of the project. According to the CEQA *Guidelines* Section 15126.6(e)(2), the No Project Alternative shall discuss what would reasonably be expected to occur in the foreseeable future if the project were not approved. Thus, the No Project/No Development Alternative consists of the environmental conditions that currently exist with no future development on the project site. The project site and existing treatment methods at the EWWTP would remain as currently described in the existing setting under each issue area discussed in **Chapter 3.0**.

Ability to Meet Project Objectives

Since the EWWTP would not be upgraded, the quality of effluent would be unchanged. This alternative would not accomplish the basic objectives of the Proposed Project to upgrade the quality of the plant's

treated effluent as required by the 2008 NPDES permit within the timeframe established in the permit nor would it improve the general operability and maintainability of the City's wastewater treatment facilities. In addition, the No Project Alternative would not reduce impacts of the EWWTP on area residents by reducing odors and noise generated onsite. Finally the no project alternative would result in a fiscal burden to the City resulting from significant fines, making it difficult for the City to continue to provide a reasonable level of public services in all areas of municipal government.

Summary of Environmental Impacts

This alternative would eliminate short-term impacts related to construction activities. Temporary impacts associated with noise, traffic, and pollutant emissions from construction activities would be avoided. Additionally, because ground-disturbing activities would not occur, potential impacts to agricultural, biological, and cultural resources would also be avoided. However, without improvements to the EWWTP, the existing impacts to water quality, noise, odor, and aesthetic resources would not be improved.

As described in **Section 3.0**, the majority of the proposed alterations to the existing EWWTP are required for compliance with the 2008 NPDES permit. Under the No Project alternative, the EWWTP's treated effluent would not meet permit requirements. Failure to meet NPDES permit requirements would result in legal action, which may result in fines to the City, and the degradation of water bodies downstream.

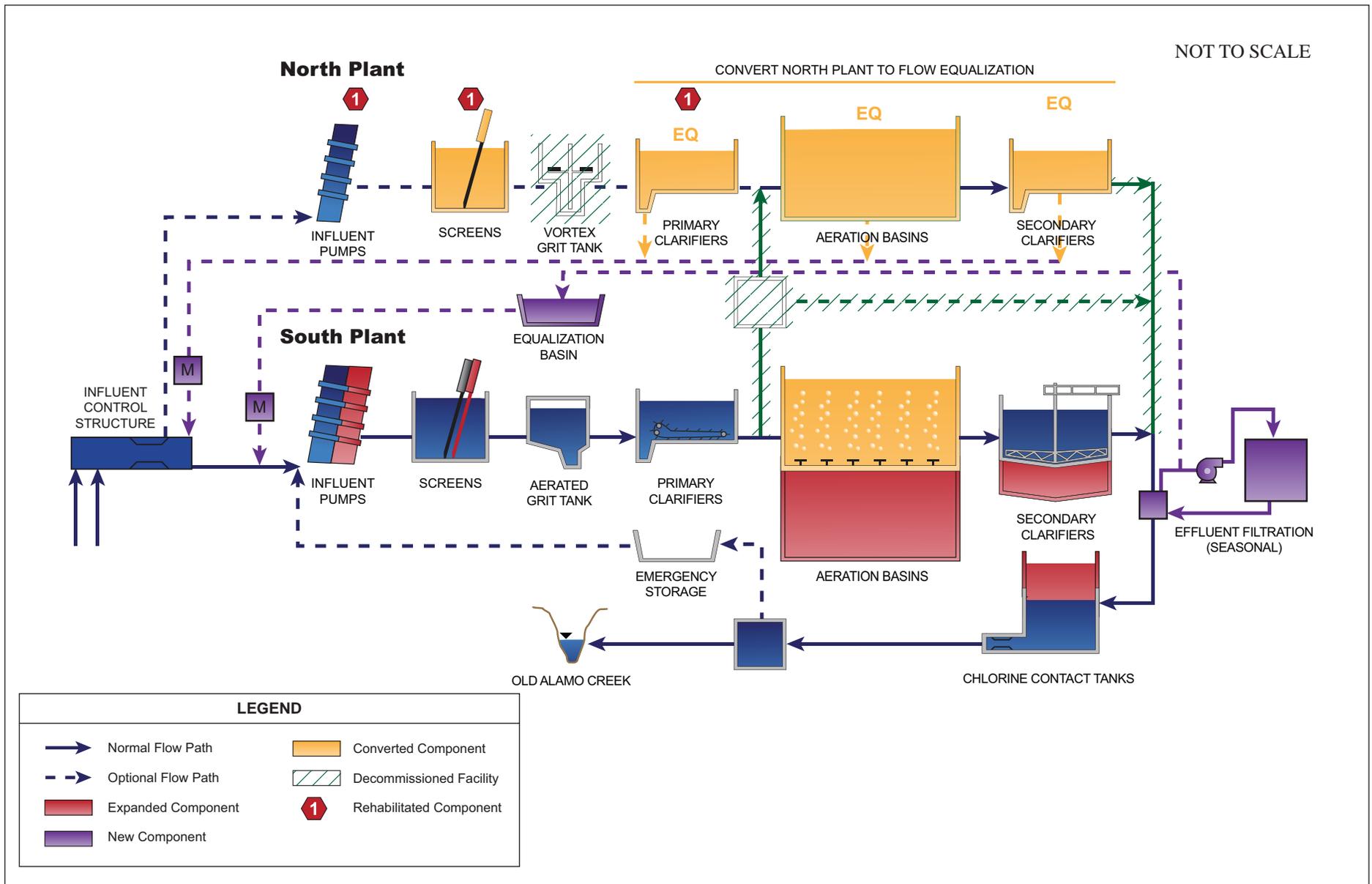
Under the Proposed Project, improvements would be made to reduce existing impacts to sensitive receptors concerning odor and noise through the relocation of the headworks and additional facilities in North Plant to a location further removed from sensitive receptors. The relocation of EWWTP components from the North Plant to the South Plant and the addition of odor control facilities and landscape buffer would reduce existing odor and noise impacts. The No Project alternative would not improve odor and noise conditions on the site, and therefore results in a greater impact.

Under the No Project Alternative a landscape buffer around the City's property would not be cultivated; therefore, the appearance of the City property to the surrounding area would not be improved.

6.4.2 ALTERNATIVE B – NORTH PLANT EQUALIZATION ALTERNATIVE

Description

Alternative B would result in the conversion of the North Plant's primary clarifiers, aeration basins, and secondary clarifiers into wet weather flow equalization facilities, which would store either raw influent or primary effluent when the capacity of the South Plant's secondary treatment facilities is reached during high inflow events. **Figure 6-1** shows the flow schematic for **Alternative B**. As with the Proposed Project, this alternative would replace the North Plant's treatment capacity through expansions to the South Plant facilities; however, additional flow equalization would be required under this alternative because the expansion of the South Plant's preliminary and primary treatment facilities would not be as extensive as would occur under the Proposed Project. This alternative was considered within the City Tertiary Project Draft Facilities Plan (2009) as Alternative 1A.



SOURCE: West Yost Associates, 2009; AES, 2009

Vacaville EWWTP Tertiary Project DEIR / 209508 ■

Figure 6-1
Alternative B Flow Schematic

Ability to Meet Project Objectives

Alternative B would accomplish most of the project objectives. As with the Proposed Project, Alternative B would produce a treated effluent that would meet or exceed the Title 22 requirement of the 2008 NPDES permit. However, the complex diversion process to accommodate wet weather hydraulic peaks reduces Alternative B's flexibility and ability to meet future discharge requirements. In addition, storing raw influent or primary influent within the North Plant, closer to the Town of Elmira, would increase odor impacts for area residents.

Summary of Environmental Impacts

Short-term construction impacts resulting from Alternative B associated with traffic, noise, and air quality would be slightly reduced when compared to the Proposed Project as the construction footprint would be slightly reduced. Alternative B would result in a smaller area of ground disturbance and therefore fewer impacts to geology and soils, biological resources, hydrology, and water quality. Long term impacts due to noise and odor would be greater due to the continued use of the North Plants influent pumps and the more frequent occurrence and duration of storage of raw or primary influent within the converted North Plant facilities which are in closer proximity to sensitive receptors.

6.4.3 ALTERNATIVE C – REDUCED FOOTPRINT/PARALLEL TREATMENT ALTERNATIVE

Description

Alternative C involves the continued use of the North Plant for primary and secondary treatment; all other components of Alternative C not related to primary and secondary treatment would be those of the Proposed Project. Under this alternative, the North Plant would be rehabilitated to meet the regulations set in the 2008 NPDES permit. Modifications to the North Plant would include rehabilitating or replacing the influent pumps to accommodate a 20 mgd flow rate; rehabilitating the influent screens; removing the screenings handling equipment; demolishing the grit tank and grit handling system; providing new sludge and scum collection mechanisms for the primary sedimentation basins; installing odor control facilities; modifying the aeration basins to accommodate the required denitrification process; and the adding a secondary effluent pump station to pump effluent to the proposed tertiary treatment system. Only the aeration basins, secondary clarifiers and chlorine contact tanks would be expanded within the South Plant in order to meet the denitrification and Title 22 requirements. **Figure 6-2** shows the flow schematic for Alternative C. Of the seven alternatives analyzed within the Tertiary Project Draft Facilities Plan (2009), Alternative C (identified as Alternative 2A within the Facilities Plan) would result in the fewest modifications to the South Plant, and therefore has the smallest footprint.

Ability to Meet Project Objectives

Alternative C would be able to meet the effluent requirements set by the 2008 NPDES Permit. However, by retaining the North Plant as a treatment train, this alternative is not compatible with Master Planned

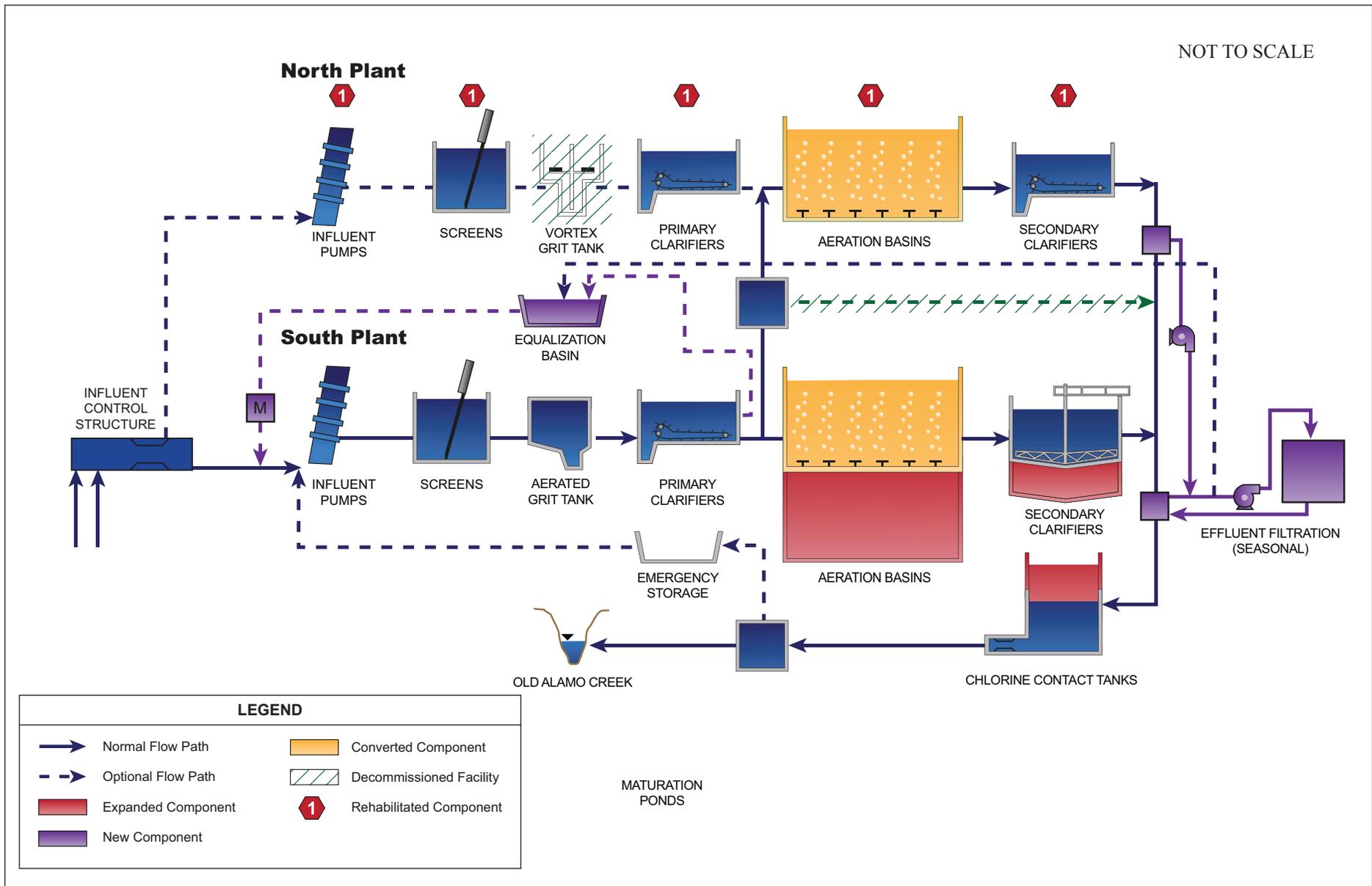


Figure 6-2
Alternative C Flow Schematic

Facilities which call for the North Plant liquid stream treatment process to eventually be replaced by capacity in the South Plant. Due to the complicated nature of parallel treatment systems, the continued use of the North Plant would not maximize the operational flexibility, reliability, efficiency of the EWWTP.

Summary of Environmental Impacts

Short-term construction impacts resulting from Alternative C associated with traffic, noise, and air quality would be less than impacts from the Proposed Project because less construction would be required for the modifications to the South Plant and significantly less demolition of North Plant facilities would be required. A smaller area of ground disturbance would result in fewer impacts to geology and soils, biological resources, hydrology, and water quality. Long-term operational impacts would be similar to those of the Proposed Project. Impacts due to noise and odor would be greater, due to the continued use of the North Plant treatment facilities which are in closer proximity to sensitive receptors and lack noise and odor control facilities.

6.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA *Guidelines* Section 15126.6(d) requires an evaluation of alternatives to the Proposed Project.

The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed.

Consistent with this CEQA requirement, a summary matrix has been prepared which qualitatively compares the effectiveness of each of the alternatives in reducing environmental impacts. This matrix, presented in **Table 6-1**, identifies for each impact area whether the alternatives would have greater, lesser, or similar impacts compared with the Proposed Project. With the exception of the significant and unavoidable impacts to agriculture under the Proposed Project and water quality under the No Project Alternative, each of the impacts identified under the Proposed Project and other alternatives are considered less than significant after mitigation. Therefore “greater” and “lesser” impacts identified in **Table 6-1** are referring to varying degrees of impacts below established significance thresholds.

Generally, the environmentally superior alternative is the alternative that would cause the least impact to the biological and physical environment. As discussed above, implementation of the No Project Alternative would result in fewer short term environmental effects than would occur under the Proposed Project and other development alternatives. Specifically, potential temporary construction impacts would be avoided, including increased noise, traffic, and air quality emissions, unanticipated discovery of cultural resources, and potential impacts to soils, water quality and biological resources. However,

Alternative A would not meet the 2008 NPDES requirements and would therefore reduce the water quality of surface waters. Additionally, Alternative A would not achieve any of the project objectives and would result in increased operational impacts associated with noise and odors from continued operation of the North Plant facilities, which lack odor and noise control facilities and are in closer proximity to sensitive receptors. Further, from an indirect perspective, Alternative A may result in environmental consequences caused by a reduction in service levels throughout the City due to fiscal limitations caused by significant fines. The significance of adverse environmental consequences resulting from continued operation of existing facilities under Alternative A would outweigh the temporary impacts associated with construction of the Proposed Project.

When comparing Alternatives B and C, the Alternative C-Reduced Footprint Alternative would be the most environmentally superior alternative. Alternative C would generate substantially fewer vehicle trips associated with construction, which would reduce the significance of impacts associated with traffic and circulation, noise, and mobile emissions including GHGs, and would result in a less significant odor impact than Alternative B. When compared to the Proposed Project, although Alternative C would result in fewer short-term impacts associated with construction, long term impacts associated with odor and noise from the operation of facilities in the North Plant would be greater. Additionally, significant unavoidable impacts associated with impacts to agricultural resources resulting from development of the proposed landscape buffer would also occur with Alternative C. Therefore, because the Proposed Project would reduce operational impacts associated with odor and noise at the EWWTP, it is considered to be the environmentally superior alternative that accomplishes all of the City's project objectives.

TABLE 6-1. ENVIRONMENTAL IMPACT COMPARISON BETWEEN THE PROPOSED PROJECT AND ALTERNATIVES

Issue Area	Project Alternatives		
	Alternative A No Project	Alternative B North Plant Equalization	Alternative C Reduced Footprint
Aesthetics	Greater	Similar	Similar
Air Quality	Greater	Greater	Greater
Biological Resources	Lesser	Lesser	Lesser
Cultural Resources	Lesser	Lesser	Lesser
Geology and Soils	Lesser	Lesser	Lesser
Hazards and Hazardous Materials	Similar	Similar	Similar
Hydrology and Water Quality	Greater	Similar	Similar
Land Use	Lesser	Similar	Similar
Noise	Greater	Greater	Greater
Transportation and Circulation	Lesser	Lesser	Lesser
Agricultural Resources	Lesser	Similar	Similar

Source: AES, 2009